

Rainey Neighborhood Mobility Study

TECHNICAL MEMORANDUM: APPENDICES

City of Austin Transportation Department & Planning and Zoning

December 2019

Mode			Vehicles		Scooters		Bicycle		Pedestrians	
Direction			SB	NB	SB	NB	SB	NB	SB	NB
Start	Time		Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Thursday, June 20, 2019	4:00	AM	3	10	1	0	2	0	0	1
Thursday, June 20, 2019	4:30	AM	0	16	0	0	0	0	0	1
Thursday, June 20, 2019	5:00	AM	2	11	0	0	0	1	3	0
Thursday, June 20, 2019	5:30	AM	9	21	0	0	0	1	2	1
Thursday, June 20, 2019	6:00	AM	5	18	0	0	0	0	1	2
Thursday, June 20, 2019	6:30	AM	9	37	1	2	0	6	4	8
Thursday, June 20, 2019	7:00	AM	10	64	1	2	26	2	2	7
Thursday, June 20, 2019	7:30	AM	12	93	1	10	1	3	7	13
Thursday, June 20, 2019	8:00	AM	17	93	0	21	1	3	5	9
Thursday, June 20, 2019	8:30	AM	20	107	1	17	0	8	10	2
Thursday, June 20, 2019	9:00	AM	23	78	0	13	2	7	2	11
Thursday, June 20, 2019	9:30	AM	28	75	4	10	2	3	1	6
Thursday, June 20, 2019	10:00	AM	33	60	2	2	2	4	6	6
Thursday, June 20, 2019	10:30	AM	36	81	1	3	1	1	6	3
Thursday, June 20, 2019	11:00	AM	39	75	2	4	3	2	12	12
Thursday, June 20, 2019	11:30	AM	42	64	5	5	1	1	3	23
Thursday, June 20, 2019	12:00	PM	34	74	7	5	0	1	38	18
Thursday, June 20, 2019	12:30	PM	44	85	5	3	2	2	20	24
Thursday, June 20, 2019	1:00	PM	51	55	6	5	2	4	22	47
Thursday, June 20, 2019	1:30	PM	39	72	6	3	3	4	8	21
Thursday, June 20, 2019	2:00	PM	51	72	11	2	1	1	24	19
Thursday, June 20, 2019	2:30	PM	43	77	16	11	1	4	20	31
Thursday, June 20, 2019	3:00	PM	64	84	6	3	2	3	18	22
Thursday, June 20, 2019	3:30	PM	82	81	10	6	4	5	24	26
Thursday, June 20, 2019	4:00	PM	62	82	8	12	2	0	19	42
Thursday, June 20, 2019	4:30	PM	74	114	19	11	2	2	26	19
Thursday, June 20, 2019	5:00	PM	81	120	16	5	5	5	23	54
Thursday, June 20, 2019	5:30	PM	97	108	23	5	4	2	41	74
Thursday, June 20, 2019	6:00	PM	79	86	13	10	1	1	67	71
Thursday, June 20, 2019	6:30	PM	102	106	5	9	3	3	69	67
Thursday, June 20, 2019	7:00	PM	89	90	20	7	9	4	57	83
Thursday, June 20, 2019	7:30	PM	91	119	13	17	13	3	89	92
Thursday, June 20, 2019	8:00	PM	90	120	14	6	19	4	64	165
Thursday, June 20, 2019	8:30	PM	103	118	20	10	5	17	108	209
Thursday, June 20, 2019	9:00	PM	95	119	17	12	5	5	99	203
Thursday, June 20, 2019	9:30	PM	102	118	4	10	5	2	75	203
Thursday, June 20, 2019	10:00	PM	118	137	9	2	17	1	114	194
Thursday, June 20, 2019	10:30	PM	109	107	5	3	10	4	75	165
Thursday, June 20, 2019	11:00	PM	99	113	13	7	17	5	92	119
Thursday, June 20, 2019	11:30	PM	105	89	3	6	9	2	69	84

Mode			Vehicles		Scooters		Bicycle		Pedestrians	
Direction			SB	NB	SB	NB	SB	NB	SB	NB
Start	Time		Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Friday, June 21, 2019	12:00	AM	98	88	6	10	4	5	48	128
Friday, June 21, 2019	12:30	AM	115	113	5	1	7	2	33	29
Friday, June 21, 2019	1:00	AM	82	106	6	0	4	3	19	67
Friday, June 21, 2019	1:30	AM	85	107	5	6	5	4	11	15
Friday, June 21, 2019	2:00	AM	52	72	8	3	6	3	16	20
Friday, June 21, 2019	2:30	AM	29	34	0	0	1	0	2	5
Friday, June 21, 2019	3:00	AM	15	19	2	0	1	0	3	0
Friday, June 21, 2019	3:30	AM	2	9	0	0	0	0	0	0
Friday, June 21, 2019	4:00	AM	2	9	2	0	0	0	2	1
Friday, June 21, 2019	4:30	AM	5	14	0	0	1	0	1	0
Friday, June 21, 2019	5:00	AM	7	11	0	1	1	0	0	0
Friday, June 21, 2019	5:30	AM	12	15	0	0	0	2	2	1
Friday, June 21, 2019	6:00	AM	8	30	0	2	0	0	0	3
Friday, June 21, 2019	6:30	AM	10	39	1	2	1	3	2	8
Friday, June 21, 2019	7:00	AM	20	55	0	4	1	3	2	5
Friday, June 21, 2019	7:30	AM	15	68	1	12	1	6	4	7
Friday, June 21, 2019	8:00	AM	21	88	4	17	2	4	8	12
Friday, June 21, 2019	8:30	AM	20	94	2	23	7	7	1	8
Friday, June 21, 2019	9:00	AM	33	65	1	12	1	6	4	7
Friday, June 21, 2019	9:30	AM	26	61	7	7	8	11	10	8
Friday, June 21, 2019	10:00	AM	32	84	12	13	0	7	4	14
Friday, June 21, 2019	10:30	AM	41	87	1	6	0	3	18	13
Friday, June 21, 2019	11:00	AM	42	84	13	7	8	6	48	33
Friday, June 21, 2019	11:30	AM	47	88	1	6	2	4	29	36
Friday, June 21, 2019	12:00	PM	50	85	6	18	2	1	26	64
Friday, June 21, 2019	12:30	PM	61	100	20	9	2	11	43	55
Friday, June 21, 2019	1:00	PM	53	85	12	5	10	1	48	42
Friday, June 21, 2019	1:30	PM	64	102	5	11	5	1	25	56
Friday, June 21, 2019	2:00	PM	49	86	6	4	7	9	25	65
Friday, June 21, 2019	2:30	PM	58	95	5	5	3	4	31	43
Friday, June 21, 2019	3:00	PM	71	94	9	4	6	3	33	91
Friday, June 21, 2019	3:30	PM	77	120	13	16	3	1	32	68
Friday, June 21, 2019	4:00	PM	97	93	11	5	2	3	30	53
Friday, June 21, 2019	4:30	PM	92	117	4	9	4	2	21	53
Friday, June 21, 2019	5:00	PM	96	115	12	9	8	2	53	92
Friday, June 21, 2019	5:30	PM	123	117	20	14	4	2	54	83
Friday, June 21, 2019	6:00	PM	103	112	14	11	4	2	62	97
Friday, June 21, 2019	6:30	PM	91	101	18	21	4	4	67	138
Friday, June 21, 2019	7:00	PM	97	133	18	13	9	3	96	132
Friday, June 21, 2019	7:30	PM	105	129	6	6	3	1	97	210
Friday, June 21, 2019	8:00	PM	129	128	9	10	2	8	103	244
Friday, June 21, 2019	8:30	PM	127	150	14	19	6	9	115	236

Friday, June 21, 2019	9:00	PM	122	128	32	16	5	0	173	280
Friday, June 21, 2019	9:30	PM	115	145	20	21	3	2	218	340
Friday, June 21, 2019	10:00	PM	101	145	6	10	3	4	176	446
Friday, June 21, 2019	10:30	PM	119	129	11	3	5	2	189	483
Friday, June 21, 2019	11:00	PM	92	108	7	9	5	2	216	676
Friday, June 21, 2019	11:30	PM	81	80	4	7	4	3	202	521

Mode	Direction	Start	Time	Vehicles		Scooters		Bicycle		Pedestrians	
				SB	NB	SB	NB	SB	NB	SB	NB
				Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Saturday, June 22, 2019		12:00	AM	74	94	8	2	3	3	144	398
Saturday, June 22, 2019		12:30	AM	83	110	6	3	7	8	185	269
Saturday, June 22, 2019		1:00	AM	94	95	5	4	8	6	131	180
Saturday, June 22, 2019		1:30	AM	93	118	3	2	1	5	136	80
Saturday, June 22, 2019		2:00	AM	77	106	5	0	4	4	79	40
Saturday, June 22, 2019		2:30	AM	75	130	6	0	8	2	12	18
Saturday, June 22, 2019		3:00	AM	54	87	2	1	1	1	14	2
Saturday, June 22, 2019		3:30	AM	14	43	0	0	1	1	5	1
Saturday, June 22, 2019		4:00	AM	12	17	0	0	0	0	3	0
Saturday, June 22, 2019		4:30	AM	5	17	0	0	0	0	5	4
Saturday, June 22, 2019		5:00	AM	1	10	0	0	0	0	0	0
Saturday, June 22, 2019		5:30	AM	5	16	0	0	0	0	1	0
Saturday, June 22, 2019		6:00	AM	7	23	0	0	1	0	2	0
Saturday, June 22, 2019		6:30	AM	10	23	0	0	0	1	0	1
Saturday, June 22, 2019		7:00	AM	18	30	0	0	5	3	2	5
Saturday, June 22, 2019		7:30	AM	14	30	0	0	1	2	0	1
Saturday, June 22, 2019		8:00	AM	11	43	2	2	21	2	6	2
Saturday, June 22, 2019		8:30	AM	27	60	1	2	1	6	6	10
Saturday, June 22, 2019		9:00	AM	22	66	0	3	8	5	10	7
Saturday, June 22, 2019		9:30	AM	26	87	3	4	0	6	12	14
Saturday, June 22, 2019		10:00	AM	28	67	9	5	8	1	21	40
Saturday, June 22, 2019		10:30	AM	49	97	10	11	4	7	22	31
Saturday, June 22, 2019		11:00	AM	56	94	5	7	5	23	39	39
Saturday, June 22, 2019		11:30	AM	63	105	6	11	7	5	55	80
Saturday, June 22, 2019		12:00	PM	59	104	21	26	2	7	55	75
Saturday, June 22, 2019		12:30	PM	65	87	5	13	4	7	64	86
Saturday, June 22, 2019		1:00	PM	74	101	12	11	3	3	44	107
Saturday, June 22, 2019		1:30	PM	87	113	15	8	2	4	81	93
Saturday, June 22, 2019		2:00	PM	80	138	11	16	7	4	58	108
Saturday, June 22, 2019		2:30	PM	80	128	15	6	9	7	73	93
Saturday, June 22, 2019		3:00	PM	103	120	15	20	3	4	67	148
Saturday, June 22, 2019		3:30	PM	101	133	28	18	4	6	69	148
Saturday, June 22, 2019		4:00	PM	98	118	15	8	7	5	69	167
Saturday, June 22, 2019		4:30	PM	100	126	14	13	1	4	81	196
Saturday, June 22, 2019		5:00	PM	107	116	20	43	7	7	69	157
Saturday, June 22, 2019		5:30	PM	109	137	12	15	2	0	95	170
Saturday, June 22, 2019		6:00	PM	93	123	22	24	3	12	81	189
Saturday, June 22, 2019		6:30	PM	101	134	12	29	11	7	129	262
Saturday, June 22, 2019		7:00	PM	121	134	11	9	5	4	113	227
Saturday, June 22, 2019		7:30	PM	125	150	15	13	5	4	131	227
Saturday, June 22, 2019		8:00	PM	146	134	19	12	4	6	192	276
Saturday, June 22, 2019		8:30	PM	123	128	15	12	6	5	169	257

Saturday, June 22, 2019	9:00	PM	113	119	10	8	6	8	135	416
Saturday, June 22, 2019	9:30	PM	112	141	11	7	5	1	183	443
Saturday, June 22, 2019	10:00	PM	123	115	5	3	8	5	208	519
Saturday, June 22, 2019	10:30	PM	114	102	5	10	3	6	204	559
Saturday, June 22, 2019	11:00	PM	84	110	20	5	5	6	234	674
Saturday, June 22, 2019	11:30	PM	74	106	9	10	10	9	261	630

Mode			Vehicles		Scooters		Bicycle		Pedestrians	
Direction			SB	NB	SB	NB	SB	NB	SB	NB
Start		Time	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Sunday, June 23, 2019		12:00 AM	90	94	1	3	7	6	254	512
Sunday, June 23, 2019		12:30 AM	103	89	6	4	6	12	143	399
Sunday, June 23, 2019		1:00 AM	89	102	1	5	9	10	113	185
Sunday, June 23, 2019		1:30 AM	76	110	7	3	3	4	111	137
Sunday, June 23, 2019		2:00 AM	71	95	6	1	3	5	97	85
Sunday, June 23, 2019		2:30 AM	65	122	4	0	3	3	17	36
Sunday, June 23, 2019		3:00 AM	47	94	4	0	5	0	12	4
Sunday, June 23, 2019		3:30 AM	23	49	0	0	2	2	6	7

Appendix 2-hr Saturday Counts

1- Rainey St at River St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685945, Location: 30.257841, -97.739108, Site Code: 1



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	Rainey St Southbound							River St Westbound							Rainey St Northbound							River St Eastbound							Int		
	R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*				
2019-08-17																															
7:00PM	5	8	25	4	42	25		37	5	14	2	58	63		14	2	1	0	17	7		0	9	6	0	15	19		132		
7:15PM	6	8	20	5	39	19		41	5	18	1	65	49		15	17	0	0	32	1		4	10	4	0	18	12		154		
7:30PM	5	13	24	5	47	22		37	6	10	1	54	76		10	10	0	1	21	3		0	5	4	0	9	31		131		
7:45PM	4	11	22	7	44	19		41	13	13	5	72	87		15	3	0	1	19	0		3	12	5	0	20	16		155		
Hourly Total	20	40	91	21	172	85		156	29	55	9	249	275		54	32	1	2	89	11		7	36	19	0	62	78		572		
8:00PM	4	11	22	12	49	26		43	10	12	6	71	39		12	7	3	0	22	0		1	14	4	0	19	35		161		
8:15PM	2	6	29	7	44	31		36	7	13	6	62	43		15	10	1	0	26	6		2	6	0	0	8	16		140		
8:30PM	11	6	23	16	56	39		44	8	17	8	77	86		10	3	1	0	14	0		3	11	4	0	18	12		165		
8:45PM	6	11	25	10	52	30		53	15	14	6	88	76		16	6	0	0	22	0		2	18	5	0	25	20		187		
Hourly Total	23	34	99	45	201	126		176	40	56	26	298	244		53	26	5	0	84	6		8	49	13	0	70	83		653		
Total	43	74	190	66	373	211		332	69	111	35	547	519		107	58	6	2	173	17		15	85	32	0	132	161		1225		
% Approach	11.5%	19.8%	50.9%	17.7%	-	-	60.7%	12.6%	20.3%	6.4%	-	-	61.8%	33.5%	3.5%	1.2%	-	-	11.4%	64.4%	24.2%	0%	-	-	-	-					
% Total	3.5%	6.0%	15.5%	5.4%	30.4%	-	27.1%	5.6%	9.1%	2.9%	44.7%	-	8.7%	4.7%	0.5%	0.2%	14.1%	-	1.2%	6.9%	2.6%	0%	10.8%	-	-	-					
Lights	43	73	190	65	371	-	330	69	109	35	543	-	107	58	6	2	173	-	15	85	32	0	132	-	1219	-					
% Lights	100%	98.6%	100%	98.5%	99.5%	-	99.4%	100%	98.2%	100%	99.3%	-	100%	100%	100%	100%	100%	-	100%	100%	100%	0%	100%	-	99.5%	-					
Articulate d Trucks	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
% Articulate d Trucks	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%
Buses and Single-Unit Trucks	0	1	0	1	2	-	2	0	2	0	4	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	6
% Buses and Single-Unit Trucks	0%	1.4%	0%	1.5%	0.5%	-	0.6%	0%	1.8%	0%	0.7%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	-	211	-	-	-	-	-	519	-	-	-	-	-	17	-	-	-	-	-	161	-						
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-						

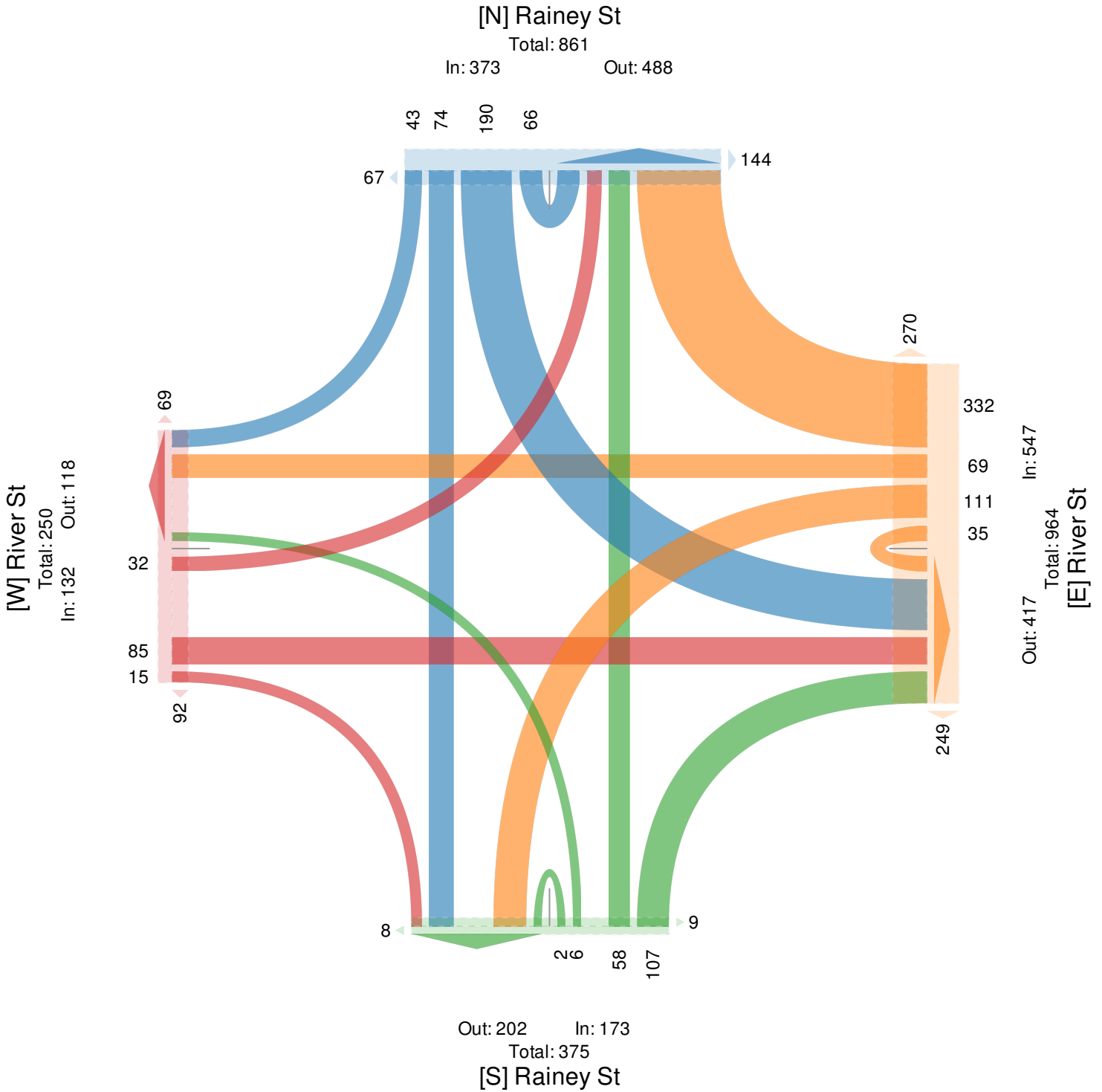
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

1 - Rainey St at River St - TMC

Sat Aug 17, 2019
 Full Length (7 PM-9 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685945, Location: 30.257841, -97.739108, Site Code: 1



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



1 - Rainey St at River St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685945, Location: 30.257841, -97.739108, Site Code: 1



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	Rainey St Southbound						River St Westbound						Rainey St Northbound						River St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17 8:00PM	4	11	22	12	49	26	43	10	12	6	71	39	12	7	3	0	22	0	1	14	4	0	19	35	161
8:15PM	2	6	29	7	44	31	36	7	13	6	62	43	15	10	1	0	26	6	2	6	0	0	8	16	140
8:30PM	11	6	23	16	56	39	44	8	17	8	77	86	10	3	1	0	14	0	3	11	4	0	18	12	165
8:45PM	6	11	25	10	52	30	53	15	14	6	88	76	16	6	0	0	22	0	2	18	5	0	25	20	187
Total	23	34	99	45	201	126	176	40	56	26	298	244	53	26	5	0	84	6	8	49	13	0	70	83	653
% Approach	11.4%	16.9%	49.3%	22.4%	-	-	59.1%	13.4%	18.8%	8.7%	-	-	63.1%	31.0%	6.0%	0%	-	-	11.4%	70.0%	18.6%	0%	-	-	-
% Total	3.5%	5.2%	15.2%	6.9%	30.8%	-	27.0%	6.1%	8.6%	4.0%	45.6%	-	8.1%	4.0%	0.8%	0%	12.9%	-	1.2%	7.5%	2.0%	0%	10.7%	-	-
PHF	0.523	0.773	0.853	0.703	0.897	-	0.830	0.667	0.824	0.813	0.847	-	0.828	0.650	0.417	-	0.808	-	0.667	0.681	0.650	-	0.700	-	0.873
Lights	23	34	99	44	200	-	175	40	54	26	295	-	53	26	5	0	84	-	8	49	13	0	70	-	649
% Lights	100%	100%	100%	97.8%	99.5%	-	99.4%	100%	96.4%	100%	99.0%	-	100%	100%	100%	0%	100%	-	100%	100%	100%	0%	100%	-	99.4%
Articulate d Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulate d Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	1	1	-	1	0	2	0	3	-	0	0	0	0	0	-	0	0	0	0	0	-	4
% Buses and Single-Unit Trucks	0%	0%	0%	2.2%	0.5%	-	0.6%	0%	3.6%	0%	1.0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.6%
Pedestrians	-	-	-	-	-	126	-	-	-	-	-	244	-	-	-	-	-	6	-	-	-	-	-	83	-
% Pedestrians	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-	-

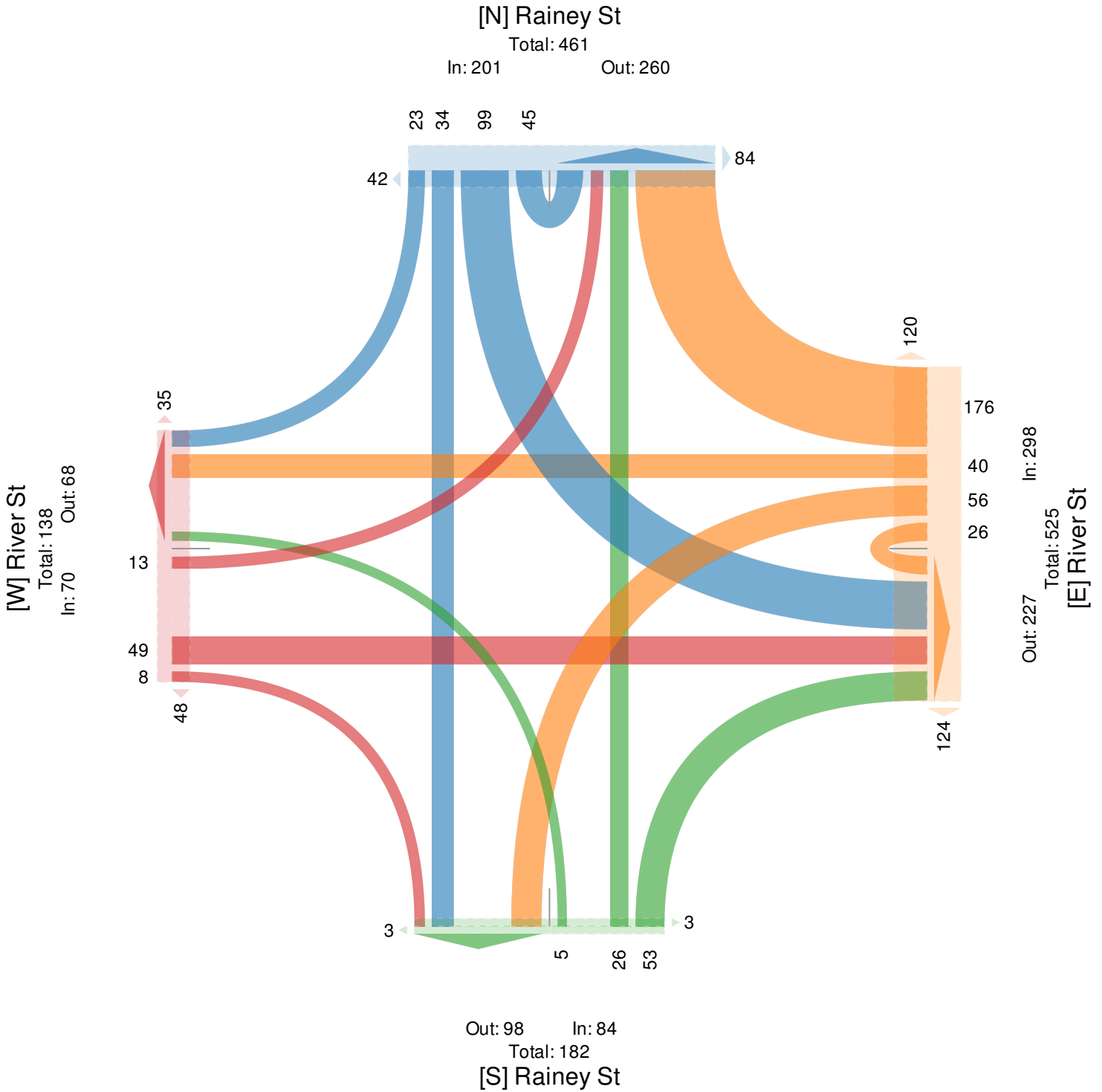
* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

1 - Rainey St at River St - TMC

Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
 Pedestrians)
 All Movements
 ID: 685945, Location: 30.257841, -97.739108, Site Code: 1



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



2 - IH 35 SBFR at River St / Holly St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685898, Location: 30.257401, -97.73765, Site Code: 2



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	IH 35 SBFR Southbound						Holly St Westbound						IH 35 SBFR Northbound						River St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17 7:00PM	0	31	12	0	43	6	0	35	34	0	69	0	0	0	0	0	0	0	29	29	0	0	58	0	170
7:15PM	0	34	12	0	46	9	0	39	42	0	81	0	0	0	0	0	0	3	25	22	0	0	47	2	174
7:30PM	0	31	15	0	46	4	0	39	43	0	82	0	0	0	0	0	0	2	19	33	0	0	52	0	180
7:45PM	0	31	10	0	41	8	0	50	47	0	97	0	0	0	0	0	0	2	34	31	0	0	65	1	203
Hourly Total	0	127	49	0	176	27	0	163	166	0	329	0	0	0	0	0	0	7	107	115	0	0	222	3	727
8:00PM	0	29	9	0	38	6	0	38	54	0	92	0	0	0	0	0	0	3	31	33	0	0	64	0	194
8:15PM	0	19	21	0	40	5	0	42	40	0	82	0	0	0	0	0	0	2	23	32	0	0	55	0	177
8:30PM	0	26	13	0	39	7	0	41	45	0	86	0	0	0	0	0	0	5	34	22	0	0	56	0	181
8:45PM	0	21	22	0	43	16	0	66	38	0	104	0	0	0	0	0	0	4	32	44	0	0	76	1	223
Hourly Total	0	95	65	0	160	34	0	187	177	0	364	0	0	0	0	0	0	14	120	131	0	0	251	1	775
Total	0	222	114	0	336	61	0	350	343	0	693	0	0	0	0	0	0	21	227	246	0	0	473	4	1502
% Approach	0%	66.1%	33.9%	0%	-	-	0%	50.5%	49.5%	0%	-	-	0%	0%	0%	0%	-	-	48.0%	52.0%	0%	0%	-	-	-
% Total	0%	14.8%	7.6%	0%	22.4%	-	0%	23.3%	22.8%	0%	46.1%	-	0%	0%	0%	0%	0%	-	15.1%	16.4%	0%	0%	31.5%	-	-
Lights	0	222	114	0	336	-	0	348	340	0	688	-	0	0	0	0	0	-	227	246	0	0	473	-	1497
% Lights	0%	100%	100%	0%	100%	-	0%	99.4%	99.1%	0%	99.3%	-	0%	0%	0%	0%	-	-	100%	100%	0%	0%	100%	-	99.7%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	2	3	0	5	-	0	0	0	0	0	-	0	0	0	0	0	-	5
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	0.6%	0.9%	0%	0.7%	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	-	0.3%
Pedestrians	-	-	-	-	-	61	-	-	-	-	-	0	-	-	-	-	-	21	-	-	-	-	-	4	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2 - IH 35 SBFR at River St / Holly St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685898, Location: 30.257401, -97.73765, Site Code: 2

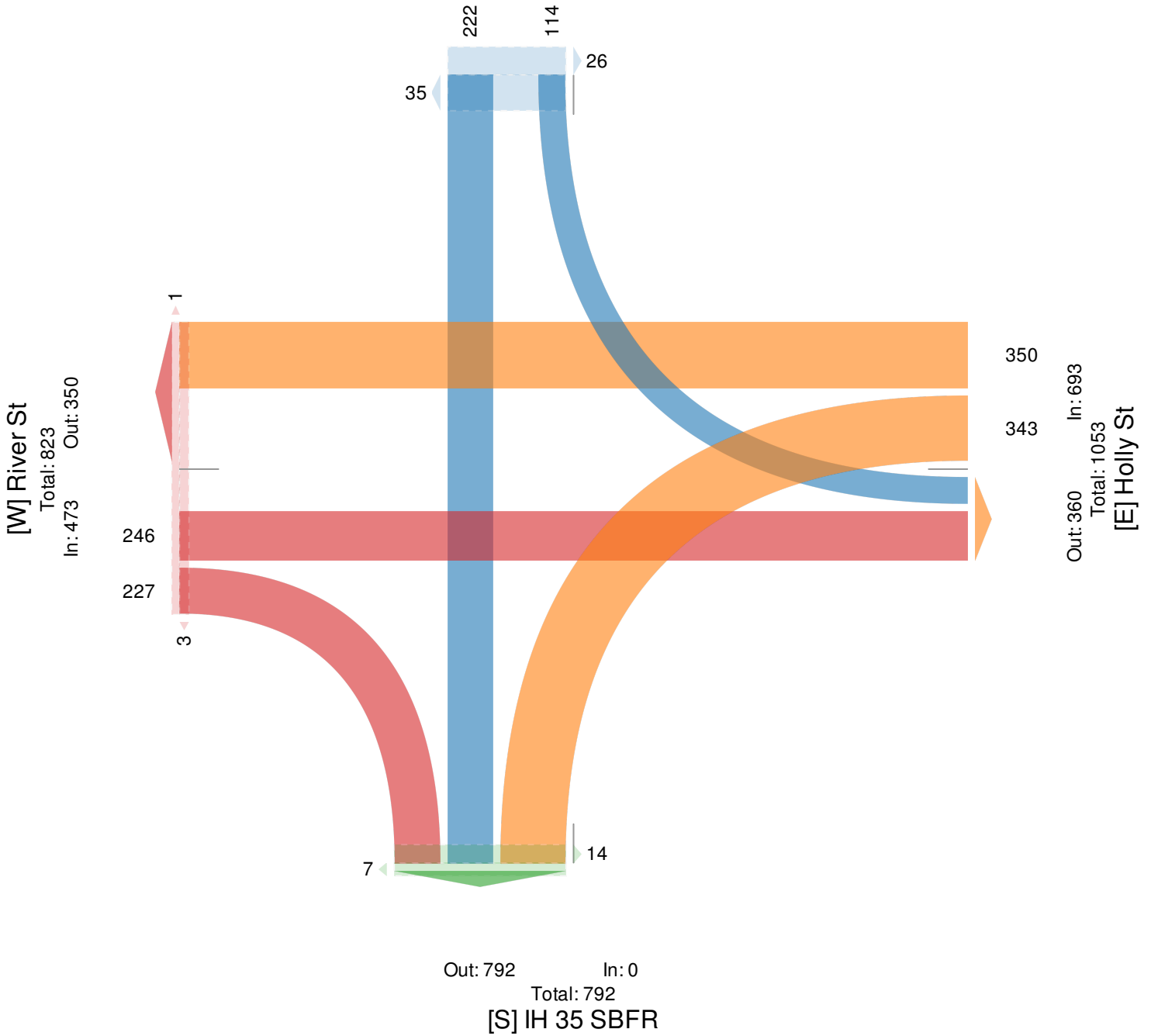


Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

[N] IH 35 SBFR

Total: 336

In: 336 Out: 0



2 - IH 35 SBFR at River St / Holly St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685898, Location: 30.257401, -97.73765, Site Code: 2



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	IH 35 SBFR Southbound						Holly St Westbound						IH 35 SBFR Northbound						River St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17																									
8:00PM	0	29	9	0	38	6	0	38	54	0	92	0	0	0	0	0	0	3	31	33	0	0	64	0	194
8:15PM	0	19	21	0	40	5	0	42	40	0	82	0	0	0	0	0	0	2	23	32	0	0	55	0	177
8:30PM	0	26	13	0	39	7	0	41	45	0	86	0	0	0	0	0	0	5	34	22	0	0	56	0	181
8:45PM	0	21	22	0	43	16	0	66	38	0	104	0	0	0	0	0	0	4	32	44	0	0	76	1	223
Total	0	95	65	0	160	34	0	187	177	0	364	0	0	0	0	0	0	14	120	131	0	0	251	1	775
% Approach	0%	59.4%	40.6%	0%	-	-	0%	51.4%	48.6%	0%	-	-	0%	0%	0%	0%	-	-	47.8%	52.2%	0%	0%	-	-	-
% Total	0%	12.3%	8.4%	0%	20.6%	-	0%	24.1%	22.8%	0%	47.0%	-	0%	0%	0%	0%	0%	-	15.5%	16.9%	0%	0%	32.4%	-	-
PHF	-	0.819	0.739	-	0.930	-	-	0.708	0.819	-	0.875	-	-	-	-	-	-	-	0.882	0.744	-	-	0.826	-	0.869
Lights	0	95	65	0	160	-	0	185	177	0	362	-	0	0	0	0	0	-	120	131	0	0	251	-	773
% Lights	0%	100%	100%	0%	100%	-	0%	98.9%	100%	0%	99.5%	-	0%	0%	0%	0%	-	-	100%	100%	0%	0%	100%	-	99.7%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	2	0	0	2	-	0	0	0	0	0	-	0	0	0	0	0	-	2
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	1.1%	0%	0%	0.5%	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	-	0.3%
Pedestrians	-	-	-	-	-	34	-	-	-	-	-	0	-	-	-	-	-	14	-	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2 - IH 35 SBFR at River St / Holly St - TMC

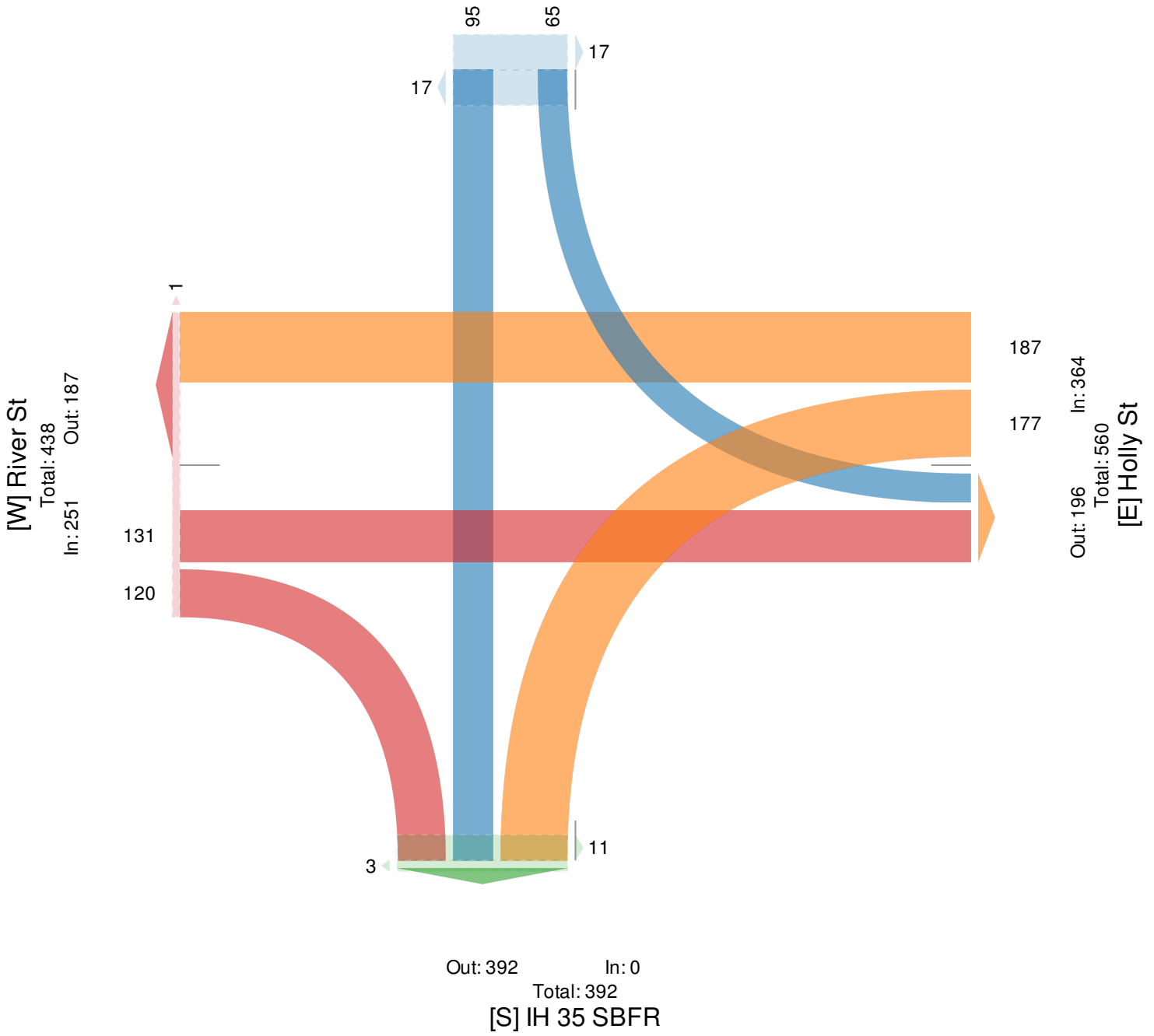
Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685898, Location: 30.257401, -97.73765, Site Code: 2



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US

[N] IH 35 SBFR

Total: 160
 In: 160 Out: 0



3 - East Ave at River St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685899, Location: 30.257583, -97.738144, Site Code: 3



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction Time	East Ave Southbound						River St Westbound						East Ave Northbound						River St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17 7:00PM	32	7	2	0	41	6	0	31	4	0	35	2	8	0	7	0	15	8	4	47	0	0	51	13	142
7:15PM	35	9	2	0	46	8	0	36	3	0	39	2	4	0	4	0	8	3	1	43	0	0	44	9	137
7:30PM	25	11	1	0	37	6	0	36	3	0	39	0	7	0	3	0	10	13	7	43	0	0	50	19	136
7:45PM	26	13	3	1	43	8	0	47	1	0	48	0	9	0	3	0	12	4	3	53	0	0	56	13	159
Hourly Total	118	40	8	1	167	28	0	150	11	0	161	4	28	0	17	0	45	28	15	186	0	0	201	54	574
8:00PM	41	8	1	0	50	6	0	39	3	0	42	0	8	0	5	0	13	9	5	55	0	1	61	19	166
8:15PM	38	9	1	0	48	3	0	39	5	0	44	0	4	0	4	1	9	3	8	49	1	0	58	9	159
8:30PM	35	7	1	0	43	11	0	37	4	0	41	3	5	0	8	0	13	3	1	52	0	0	53	11	150
8:45PM	33	11	2	0	46	18	0	60	6	0	66	0	4	0	3	0	7	9	2	68	0	1	71	9	190
Hourly Total	147	35	5	0	187	38	0	175	18	0	193	3	21	0	20	1	42	24	16	224	1	2	243	48	665
Total	265	75	13	1	354	66	0	325	29	0	354	7	49	0	37	1	87	52	31	410	1	2	444	102	1239
% Approach	74.9%	21.2%	3.7%	0.3%	-	-	0%	91.8%	8.2%	0%	-	-	56.3%	0%	42.5%	1.1%	-	-	7.0%	92.3%	0.2%	0.5%	-	-	-
% Total	21.4%	6.1%	1.0%	0.1%	28.6%	-	0%	26.2%	2.3%	0%	28.6%	-	4.0%	0%	3.0%	0.1%	7.0%	-	2.5%	33.1%	0.1%	0.2%	35.8%	-	-
Lights	264	75	13	1	353	-	0	323	29	0	352	-	49	0	36	1	86	-	31	410	1	2	444	-	1235
% Lights	99.6%	100%	100%	100%	99.7%	-	0%	99.4%	100%	0%	99.4%	-	100%	0%	97.3%	100%	98.9%	-	100%	100%	100%	100%	100%	-	99.7%
Articulate d Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulate d Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	1	0	0	0	1	-	0	2	0	0	2	-	0	0	1	0	1	-	0	0	0	0	0	-	4
% Buses and Single-Unit Trucks	0.4%	0%	0%	0%	0.3%	-	0%	0.6%	0%	0%	0.6%	-	0%	0%	2.7%	0%	1.1%	-	0%	0%	0%	0%	0%	-	0.3%
Pedestrians	-	-	-	-	-	66	-	-	-	-	-	7	-	-	-	-	-	52	-	-	-	-	-	102	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3 - East Ave at River St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

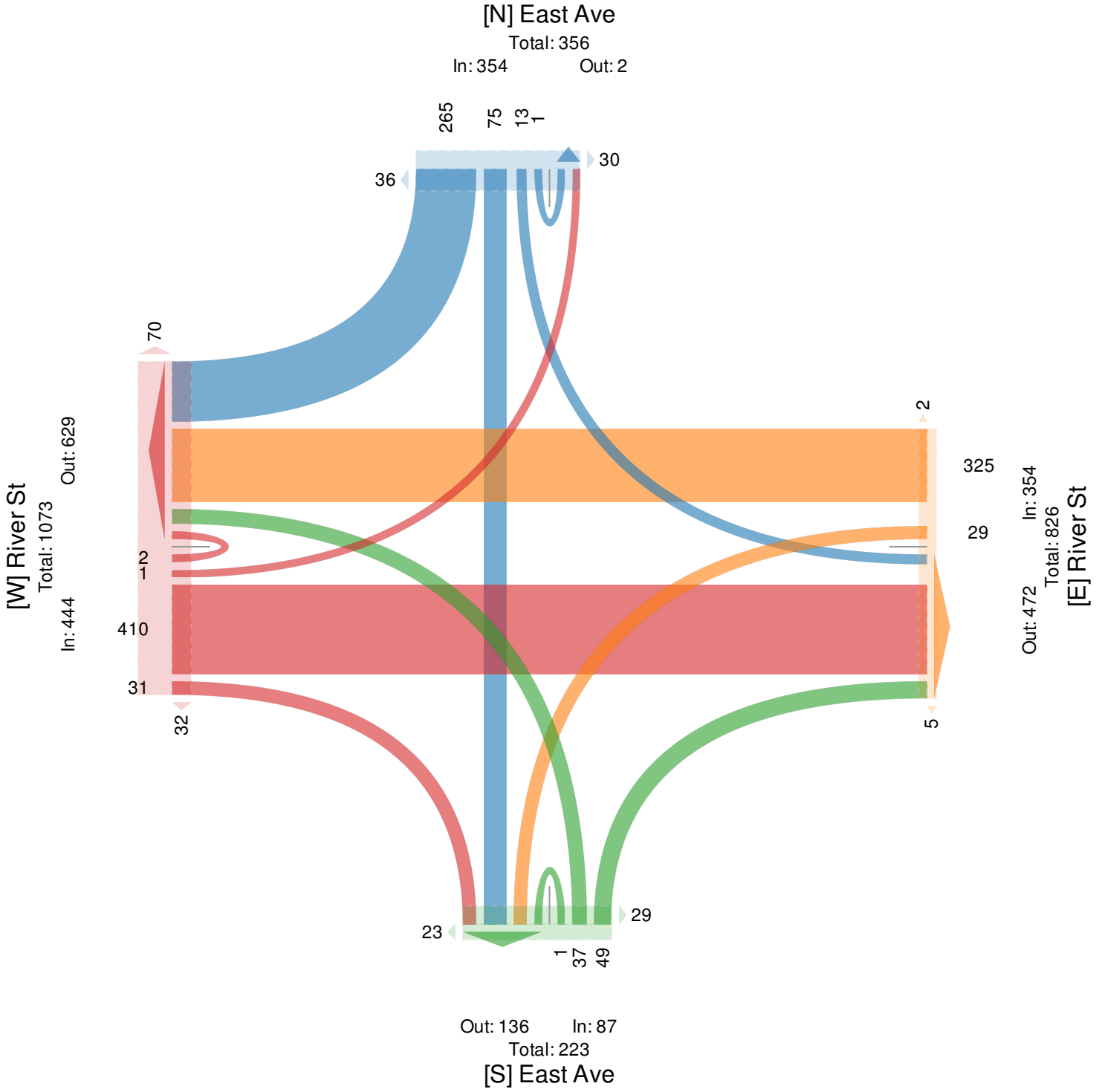
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685899, Location: 30.257583, -97.738144, Site Code: 3



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



3 - East Ave at River St - TMC

Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685899, Location: 30.257583, -97.738144, Site Code: 3



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	East Ave Southbound						River St Westbound						East Ave Northbound						River St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17 8:00PM	41	8	1	0	50	6	0	39	3	0	42	0	8	0	5	0	13	9	5	55	0	1	61	19	166
8:15PM	38	9	1	0	48	3	0	39	5	0	44	0	4	0	4	1	9	3	8	49	1	0	58	9	159
8:30PM	35	7	1	0	43	11	0	37	4	0	41	3	5	0	8	0	13	3	1	52	0	0	53	11	150
8:45PM	33	11	2	0	46	18	0	60	6	0	66	0	4	0	3	0	7	9	2	68	0	1	71	9	190
Total	147	35	5	0	187	38	0	175	18	0	193	3	21	0	20	1	42	24	16	224	1	2	243	48	665
% Approach	78.6%	18.7%	2.7%	0%	-	-	0%	90.7%	9.3%	0%	-	-	50.0%	0%	47.6%	2.4%	-	-	6.6%	92.2%	0.4%	0.8%	-	-	-
% Total	22.1%	5.3%	0.8%	0%	28.1%	-	0%	26.3%	2.7%	0%	29.0%	-	3.2%	0%	3.0%	0.2%	6.3%	-	2.4%	33.7%	0.2%	0.3%	36.5%	-	-
PHF	0.896	0.795	0.625	-	0.935	-	-	0.729	0.750	-	0.731	-	0.656	-	0.625	0.250	0.808	-	0.500	0.824	0.250	0.500	0.856	-	0.875
Lights	146	35	5	0	186	-	0	173	18	0	191	-	21	0	20	1	42	-	16	224	1	2	243	-	662
% Lights	99.3%	100%	100%	0%	99.5%	-	0%	98.9%	100%	0%	99.0%	-	100%	0%	100%	100%	100%	-	100%	100%	100%	100%	100%	-	99.5%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	1	0	0	0	1	-	0	2	0	0	2	-	0	0	0	0	0	-	0	0	0	0	0	-	3
% Buses and Single-Unit Trucks	0.7%	0%	0%	0%	0.5%	-	0%	1.1%	0%	0%	1.0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	-	38	-	-	-	-	-	3	-	-	-	-	-	24	-	-	-	-	-	48	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

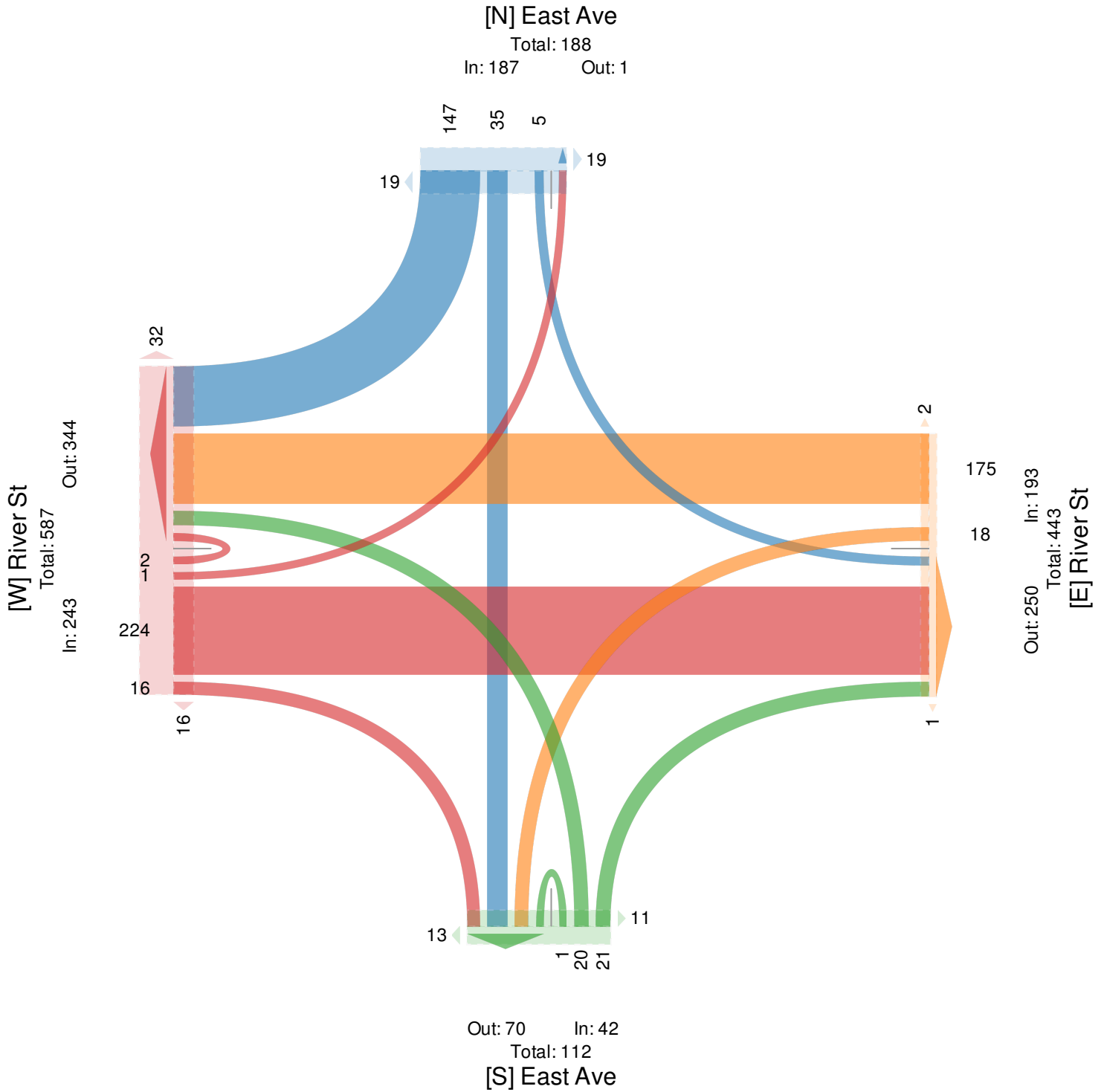
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3 - East Ave at River St - TMC

Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685899, Location: 30.257583, -97.738144, Site Code: 3



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



4 - Rainey St at Davis St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685900, Location: 30.260111, -97.73827, Site Code: 4



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Rainey St Southbound					Rainey St Northbound					Davis St Eastbound					Int
	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	
2019-08-17 7:00PM	6	24	0	30	10	26	24	0	50	28	17	11	0	28	121	108
7:15PM	7	22	1	30	31	44	19	0	63	17	23	9	0	32	132	125
7:30PM	6	25	0	31	11	40	16	0	56	18	19	7	0	26	120	113
7:45PM	12	27	0	39	21	38	12	0	50	25	22	11	0	33	144	122
Hourly Total	31	98	1	130	73	148	71	0	219	88	81	38	0	119	517	468
8:00PM	8	22	1	31	25	47	17	0	64	18	31	14	0	45	179	140
8:15PM	8	24	0	32	8	45	10	0	55	33	22	12	0	34	182	121
8:30PM	9	30	2	41	5	38	22	0	60	32	23	10	0	33	222	134
8:45PM	15	27	0	42	19	43	22	1	66	16	26	11	1	38	248	146
Hourly Total	40	103	3	146	57	173	71	1	245	99	102	47	1	150	831	541
Total	71	201	4	276	130	321	142	1	464	187	183	85	1	269	1348	1009
% Approach	25.7%	72.8%	1.4%	-	-	69.2%	30.6%	0.2%	-	-	68.0%	31.6%	0.4%	-	-	-
% Total	7.0%	19.9%	0.4%	27.4%	-	31.8%	14.1%	0.1%	46.0%	-	18.1%	8.4%	0.1%	26.7%	-	-
Lights	71	200	4	275	-	320	141	1	462	-	182	84	1	267	-	1004
% Lights	100%	99.5%	100%	99.6%	-	99.7%	99.3%	100%	99.6%	-	99.5%	98.8%	100%	99.3%	-	99.5%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	1	0	1	-	1	1	0	2	-	1	1	0	2	-	5
% Buses and Single-Unit Trucks	0%	0.5%	0%	0.4%	-	0.3%	0.7%	0%	0.4%	-	0.5%	1.2%	0%	0.7%	-	0.5%
Pedestrians	-	-	-	-	130	-	-	-	-	187	-	-	-	-	1348	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-

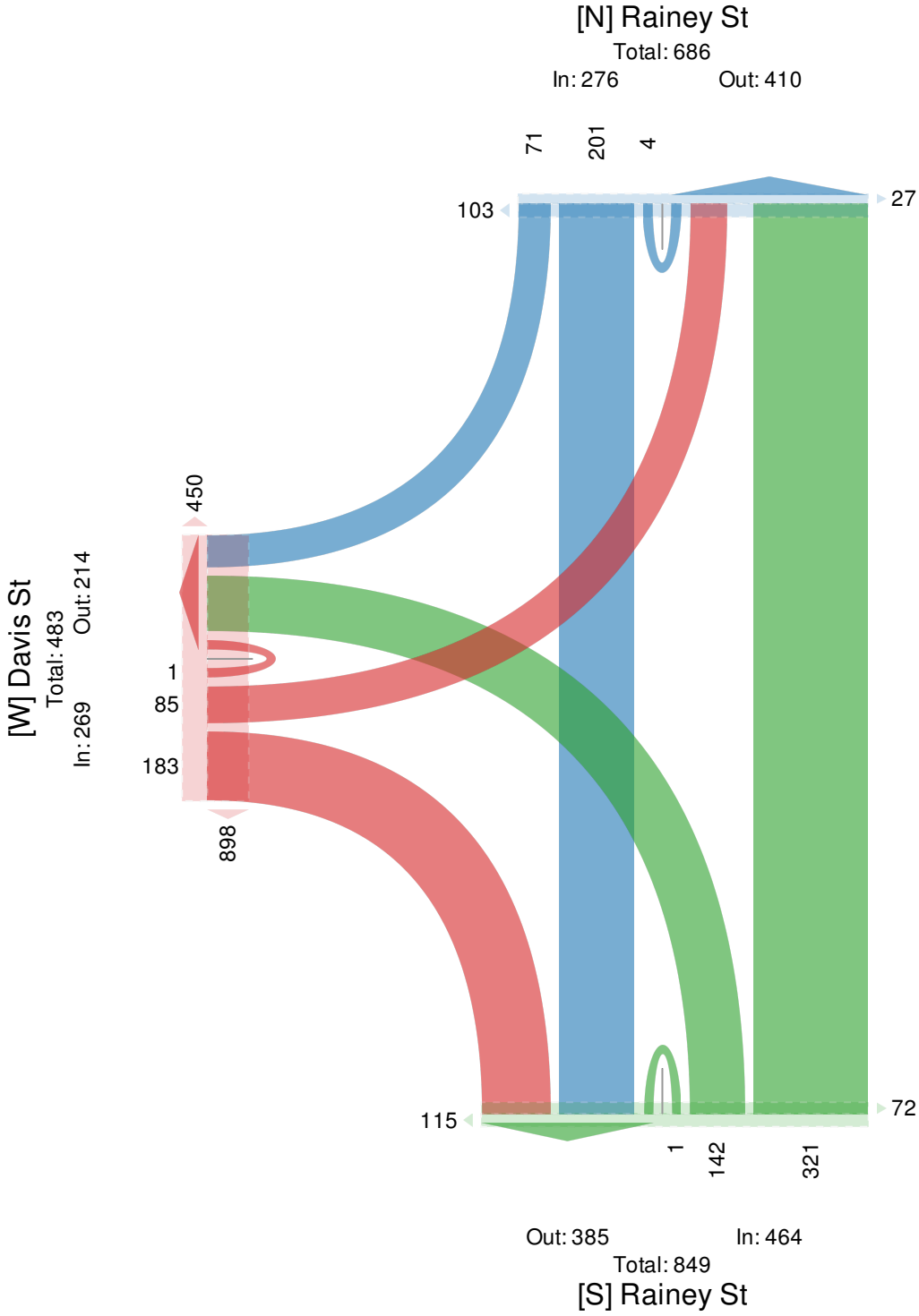
* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

4 - Rainey St at Davis St - TMC

Sat Aug 17, 2019
 Full Length (7 PM-9 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685900, Location: 30.260111, -97.73827, Site Code: 4



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



4 - Rainey St at Davis St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685900, Location: 30.260111, -97.73827, Site Code: 4



Provided by: C. J. Hensch & Associates Inc.

5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Rainey St Southbound					Rainey St Northbound					Davis St Eastbound					Int
	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	
Time																
2019-08-17 8:00PM	8	22	1	31	25	47	17	0	64	18	31	14	0	45	179	140
8:15PM	8	24	0	32	8	45	10	0	55	33	22	12	0	34	182	121
8:30PM	9	30	2	41	5	38	22	0	60	32	23	10	0	33	222	134
8:45PM	15	27	0	42	19	43	22	1	66	16	26	11	1	38	248	146
Total	40	103	3	146	57	173	71	1	245	99	102	47	1	150	831	541
% Approach	27.4%	70.5%	2.1%	-	-	70.6%	29.0%	0.4%	-	-	68.0%	31.3%	0.7%	-	-	-
% Total	7.4%	19.0%	0.6%	27.0%	-	32.0%	13.1%	0.2%	45.3%	-	18.9%	8.7%	0.2%	27.7%	-	-
PHF	0.667	0.858	0.375	0.869	-	0.920	0.807	0.250	0.928	-	0.823	0.839	0.250	0.833	-	0.926
Lights	40	103	3	146	-	173	70	1	244	-	101	46	1	148	-	538
% Lights	100%	100%	100%	100%	-	100%	98.6%	100%	99.6%	-	99.0%	97.9%	100%	98.7%	-	99.4%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	-	0	1	0	1	-	1	1	0	2	-	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0%	1.4%	0%	0.4%	-	1.0%	2.1%	0%	1.3%	-	0.6%
Pedestrians	-	-	-	-	57	-	-	-	-	99	-	-	-	-	831	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-

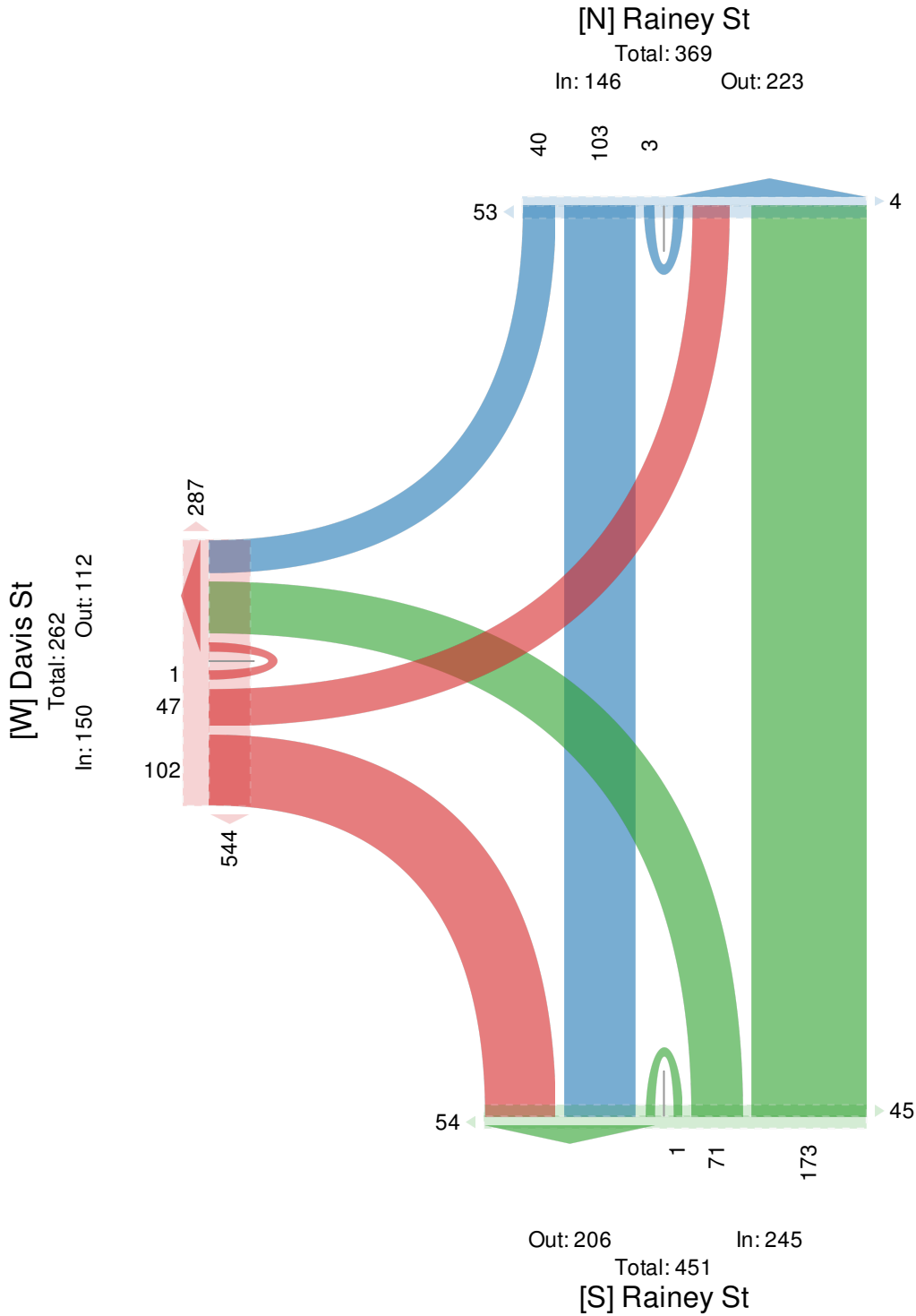
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

4 - Rainey St at Davis St - TMC

Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685900, Location: 30.260111, -97.73827, Site Code: 4



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



5 - Red River St at Davis St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685905, Location: 30.260381, -97.73929, Site Code: 5



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Red River St Southbound					Davis St Westbound					Northwestbound Approach Northwestbound		Condo Drwy Northbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	App	Ped*	R	T	U	App	Ped*	
2019-08-17 7:00PM	5	27	0	32	4	20	0	1	21	0	0	21	4	15	0	19	13	72
7:15PM	1	32	0	33	4	18	2	0	20	0	0	4	5	11	0	16	2	69
7:30PM	1	35	0	36	3	17	2	0	19	2	0	13	3	4	0	7	16	62
7:45PM	8	36	1	45	5	23	1	1	25	0	0	17	3	12	0	15	5	85
Hourly Total	15	130	1	146	16	78	5	2	85	2	0	55	15	42	0	57	36	288
8:00PM	4	51	0	55	4	25	0	0	25	9	0	14	11	9	0	20	5	100
8:15PM	4	43	0	47	2	13	0	0	13	4	0	7	9	15	0	24	9	84
8:30PM	9	36	0	45	2	27	0	0	27	7	0	16	2	6	0	8	6	80
8:45PM	6	43	1	50	3	32	2	0	34	3	0	8	5	13	0	18	9	102
Hourly Total	23	173	1	197	11	97	2	0	99	23	0	45	27	43	0	70	29	366
Total	38	303	2	343	27	175	7	2	184	25	0	100	42	85	0	127	65	654
% Approach	11.1%	88.3%	0.6%	-	-	95.1%	3.8%	1.1%	-	-	-	-	33.1%	66.9%	0%	-	-	-
% Total	5.8%	46.3%	0.3%	52.4%	-	26.8%	1.1%	0.3%	28.1%	-	0%	-	6.4%	13.0%	0%	19.4%	-	-
Lights	38	301	2	341	-	174	7	2	183	-	0	-	42	85	0	127	-	651
% Lights	100%	99.3%	100%	99.4%	-	99.4%	100%	100%	99.5%	-	-	-	100%	100%	0%	100%	-	99.5%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	-	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	2	0	2	-	1	0	0	1	-	0	-	0	0	0	0	-	3
% Buses and Single-Unit Trucks	0%	0.7%	0%	0.6%	-	0.6%	0%	0%	0.5%	-	-	-	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	27	-	-	-	-	25	-	100	-	-	-	-	65	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	100%	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

5 - Red River St at Davis St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

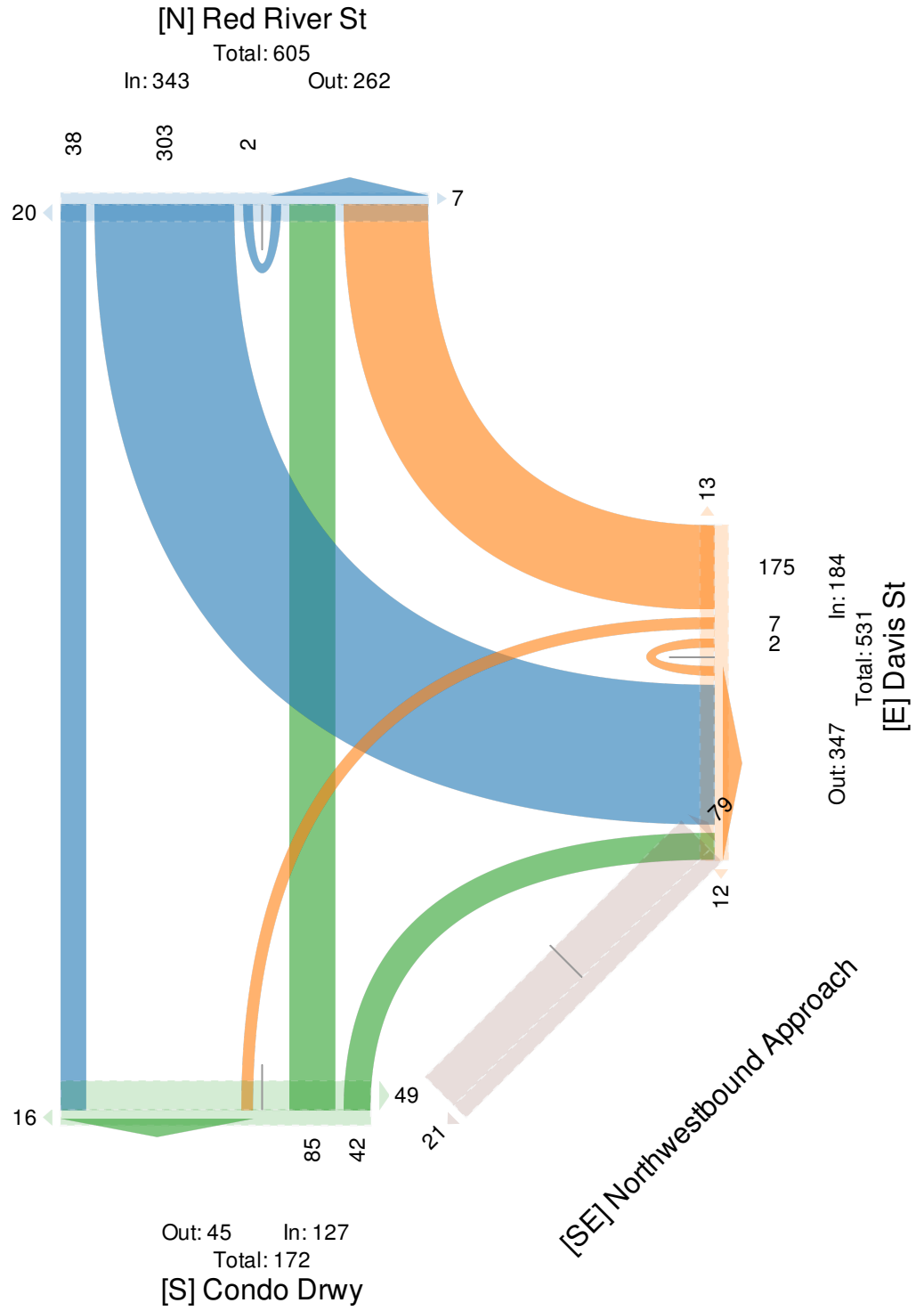
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685905, Location: 30.260381, -97.73929, Site Code: 5



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



5 - Red River St at Davis St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685905, Location: 30.260381, -97.73929, Site Code: 5



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Red River St					Davis St					Northwestbound Approach		Condo Drwy					Int
	Southbound					Westbound					Northwestbound		Northbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	App	Ped*	R	T	U	App	Ped*	
2019-08-17 8:00PM	4	51	0	55	4	25	0	0	25	9	0	14	11	9	0	20	5	100
8:15PM	4	43	0	47	2	13	0	0	13	4	0	7	9	15	0	24	9	84
8:30PM	9	36	0	45	2	27	0	0	27	7	0	16	2	6	0	8	6	80
8:45PM	6	43	1	50	3	32	2	0	34	3	0	8	5	13	0	18	9	102
Total	23	173	1	197	11	97	2	0	99	23	0	45	27	43	0	70	29	366
% Approach	11.7%	87.8%	0.5%	-	-	98.0%	2.0%	0%	-	-	-	-	38.6%	61.4%	0%	-	-	-
% Total	6.3%	47.3%	0.3%	53.8%	-	26.5%	0.5%	0%	27.0%	-	0%	-	7.4%	11.7%	0%	19.1%	-	-
PHF	0.639	0.848	0.250	0.895	-	0.758	0.250	-	0.728	-	-	-	0.614	0.717	-	0.729	-	0.897
Lights	23	171	1	195	-	96	2	0	98	-	0	-	27	43	0	70	-	363
% Lights	100%	98.8%	100%	99.0%	-	99.0%	100%	0%	99.0%	-	-	-	100%	100%	0%	100%	-	99.2%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	-	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	2	0	2	-	1	0	0	1	-	0	-	0	0	0	0	-	3
% Buses and Single-Unit Trucks	0%	1.2%	0%	1.0%	-	1.0%	0%	0%	1.0%	-	-	-	0%	0%	0%	0%	-	0.8%
Pedestrians	-	-	-	-	11	-	-	-	-	23	-	45	-	-	-	-	-	29
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	100%	-	-	-	-	-	100%

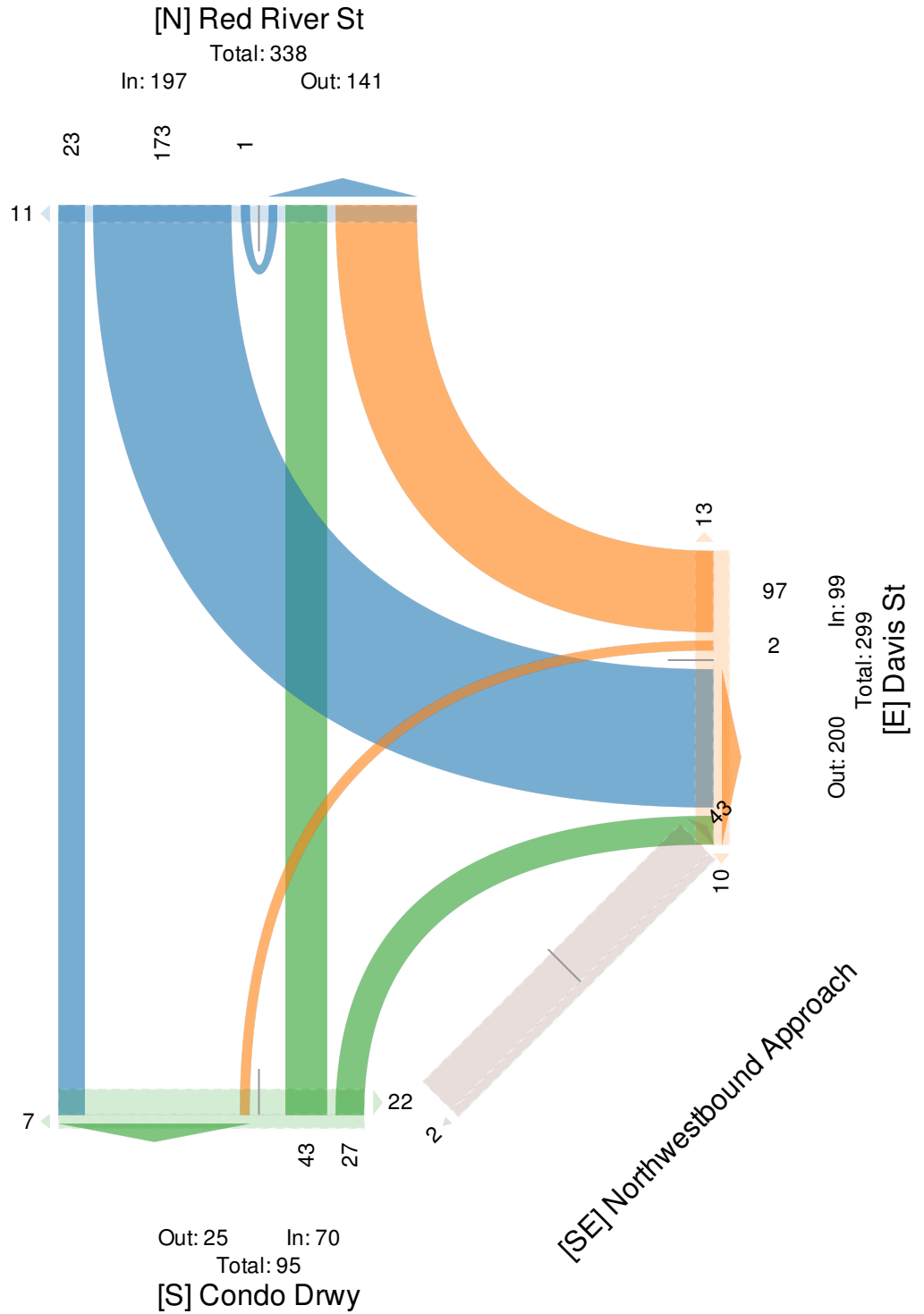
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

5 - Red River St at Davis St - TMC

Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685905, Location: 30.260381, -97.73929, Site Code: 5



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



6 - Red River St at Driskill St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685902, Location: 30.26118, -97.739018, Site Code: 6



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Red River St Southbound					Driskill St Westbound					Red River St Northbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	
2019-08-17 7:00PM	30	24	0	54	29	35	2	0	37	0	5	30	0	35	1	126
7:15PM	29	23	1	53	20	32	3	0	35	0	2	28	0	30	10	118
7:30PM	33	27	0	60	19	30	4	0	34	0	3	17	0	20	9	114
7:45PM	33	25	0	58	25	28	13	0	41	0	6	29	0	35	0	134
Hourly Total	125	99	1	225	93	125	22	0	147	0	16	104	0	120	20	492
8:00PM	51	21	0	72	11	52	6	0	58	8	6	27	0	33	8	163
8:15PM	43	16	0	59	20	36	6	0	42	3	2	29	0	31	2	132
8:30PM	37	31	0	68	72	42	6	0	48	3	2	30	0	32	2	148
8:45PM	44	34	0	78	45	46	7	0	53	0	7	41	0	48	3	179
Hourly Total	175	102	0	277	148	176	25	0	201	14	17	127	0	144	15	622
Total	300	201	1	502	241	301	47	0	348	14	33	231	0	264	35	1114
% Approach	59.8%	40.0%	0.2%	-	-	86.5%	13.5%	0%	-	-	12.5%	87.5%	0%	-	-	-
% Total	26.9%	18.0%	0.1%	45.1%	-	27.0%	4.2%	0%	31.2%	-	3.0%	20.7%	0%	23.7%	-	-
Lights	298	200	1	499	-	298	47	0	345	-	33	230	0	263	-	1107
% Lights	99.3%	99.5%	100%	99.4%	-	99.0%	100%	0%	99.1%	-	100%	99.6%	0%	99.6%	-	99.4%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	2	1	0	3	-	3	0	0	3	-	0	1	0	1	-	7
% Buses and Single-Unit Trucks	0.7%	0.5%	0%	0.6%	-	1.0%	0%	0%	0.9%	-	0%	0.4%	0%	0.4%	-	0.6%
Pedestrians	-	-	-	-	241	-	-	-	-	14	-	-	-	-	35	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6 - Red River St at Driskill St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

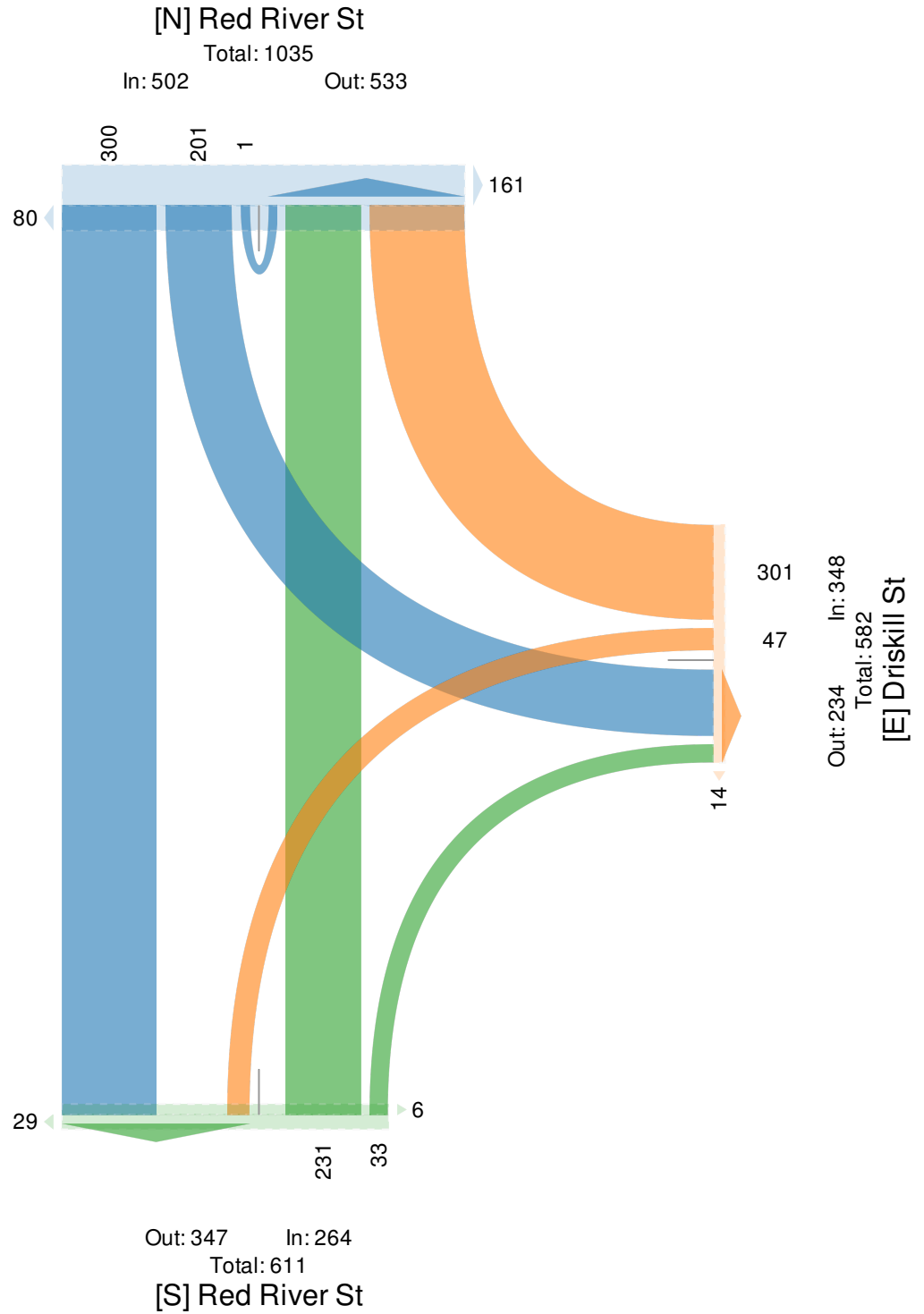
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685902, Location: 30.26118, -97.739018, Site Code: 6



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



6 - Red River St at Driskill St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685902, Location: 30.26118, -97.739018, Site Code: 6



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Red River St Southbound					Driskill St Westbound					Red River St Northbound					Int
	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	
2019-08-17 8:00PM	51	21	0	72	11	52	6	0	58	8	6	27	0	33	8	163
8:15PM	43	16	0	59	20	36	6	0	42	3	2	29	0	31	2	132
8:30PM	37	31	0	68	72	42	6	0	48	3	2	30	0	32	2	148
8:45PM	44	34	0	78	45	46	7	0	53	0	7	41	0	48	3	179
Total	175	102	0	277	148	176	25	0	201	14	17	127	0	144	15	622
% Approach	63.2%	36.8%	0%	-	-	87.6%	12.4%	0%	-	-	11.8%	88.2%	0%	-	-	-
% Total	28.1%	16.4%	0%	44.5%	-	28.3%	4.0%	0%	32.3%	-	2.7%	20.4%	0%	23.2%	-	-
PHF	0.858	0.750	-	0.888	-	0.846	0.893	-	0.866	-	0.607	0.774	-	0.750	-	0.869
Lights	173	102	0	275	-	174	25	0	199	-	17	126	0	143	-	617
% Lights	98.9%	100%	0%	99.3%	-	98.9%	100%	0%	99.0%	-	100%	99.2%	0%	99.3%	-	99.2%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	2	0	0	2	-	2	0	0	2	-	0	1	0	1	-	5
% Buses and Single-Unit Trucks	1.1%	0%	0%	0.7%	-	1.1%	0%	0%	1.0%	-	0%	0.8%	0%	0.7%	-	0.8%
Pedestrians	-	-	-	-	148	-	-	-	-	14	-	-	-	-	15	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

6 - Red River St at Driskill St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

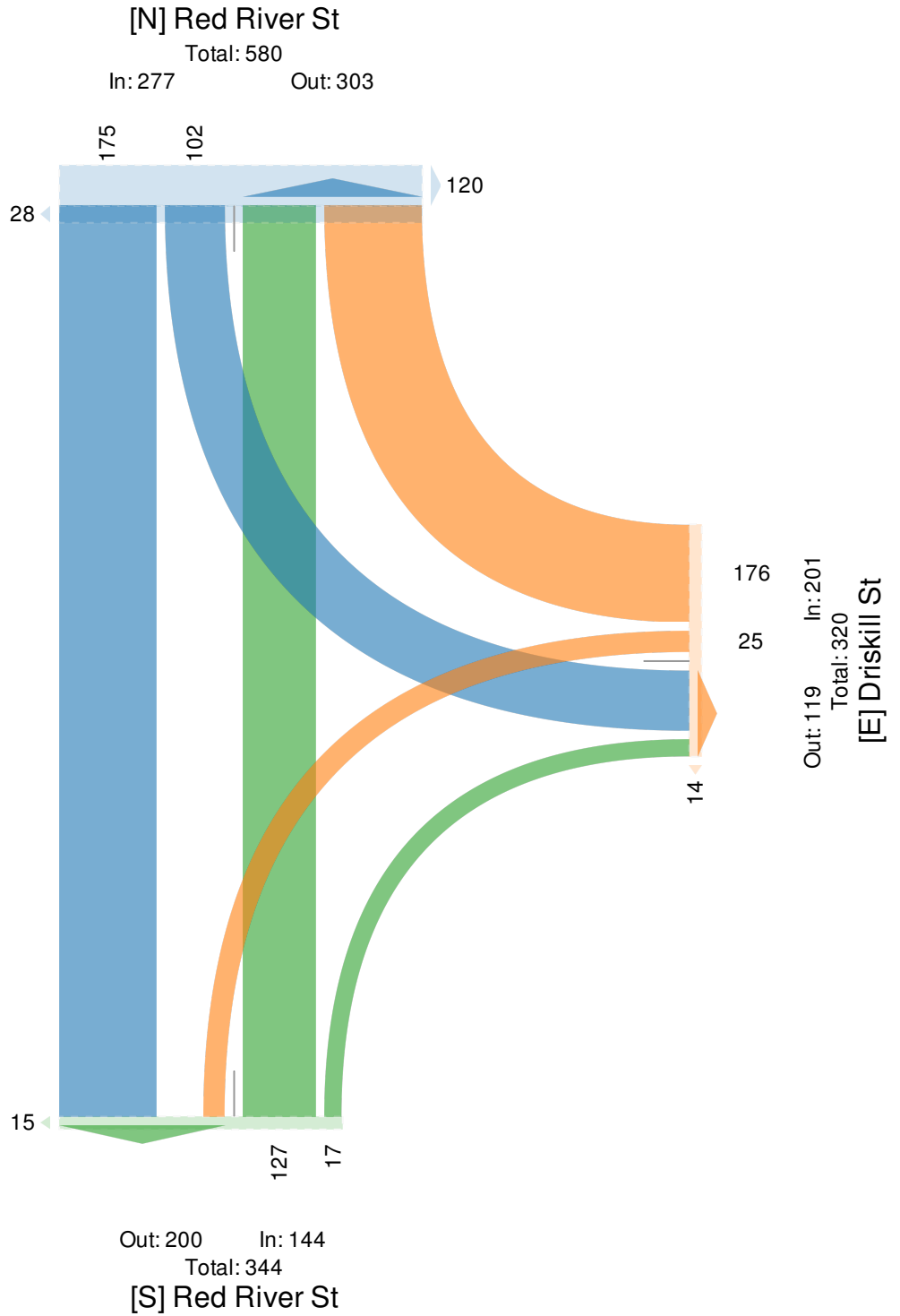
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685902, Location: 30.26118, -97.739018, Site Code: 6



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



7 - Rainey St at Driskill St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685904, Location: 30.260879, -97.737987, Site Code: 7



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	Parking Lot Southbound						Driskill St Westbound						Rainey St Northbound						Driskill St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17 7:00PM	1	0	4	0	5	6	1	11	15	0	27	23	13	3	22	1	39	28	16	10	0	0	26	49	97
7:15PM	0	0	2	0	2	17	2	6	12	0	20	41	23	3	28	0	54	26	20	5	0	1	26	40	102
7:30PM	3	1	1	0	5	20	2	6	20	0	28	29	17	5	23	0	45	28	15	11	3	0	29	33	107
7:45PM	1	0	2	0	3	25	2	15	13	0	30	39	19	7	22	0	48	47	19	6	1	0	26	58	107
Hourly Total	5	1	9	0	15	68	7	38	60	0	105	132	72	18	95	1	186	129	70	32	4	1	107	180	413
8:00PM	3	0	0	0	3	14	2	12	14	0	28	42	20	7	34	0	61	33	18	8	2	0	28	53	120
8:15PM	1	0	2	0	3	8	1	8	23	0	32	24	19	6	31	1	57	27	8	9	1	0	18	72	110
8:30PM	3	2	5	0	10	8	4	17	18	0	39	33	16	6	28	2	52	36	20	7	1	0	28	124	129
8:45PM	1	1	4	0	6	12	2	11	16	0	29	52	10	10	34	1	55	55	23	20	0	0	43	68	133
Hourly Total	8	3	11	0	22	42	9	48	71	0	128	151	65	29	127	4	225	151	69	44	4	0	117	317	492
Total	13	4	20	0	37	110	16	86	131	0	233	283	137	47	222	5	411	280	139	76	8	1	224	497	905
% Approach	35.1%	10.8%	54.1%	0%	-	-	6.9%	36.9%	56.2%	0%	-	-	33.3%	11.4%	54.0%	1.2%	-	-	62.1%	33.9%	3.6%	0.4%	-	-	-
% Total	1.4%	0.4%	2.2%	0%	4.1%	-	1.8%	9.5%	14.5%	0%	25.7%	-	15.1%	5.2%	24.5%	0.6%	45.4%	-	15.4%	8.4%	0.9%	0.1%	24.8%	-	-
Lights	13	4	20	0	37	-	16	85	131	0	232	-	137	47	220	5	409	-	137	76	8	1	222	-	900
% Lights	100%	100%	100%	0%	100%	-	100%	98.8%	100%	0%	99.6%	-	100%	100%	99.1%	100%	99.5%	-	98.6%	100%	100%	100%	99.1%	-	99.4%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	1	0	0	1	-	0	0	2	0	2	-	2	0	0	0	2	-	5
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	1.2%	0%	0%	0.4%	-	0%	0%	0.9%	0%	0.5%	-	1.4%	0%	0%	0%	0.9%	-	0.6%
Pedestrians	-	-	-	-	-	110	-	-	-	-	-	283	-	-	-	-	-	280	-	-	-	-	-	497	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

7 - Rainey St at Driskill St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685904, Location: 30.260879, -97.737987, Site Code: 7

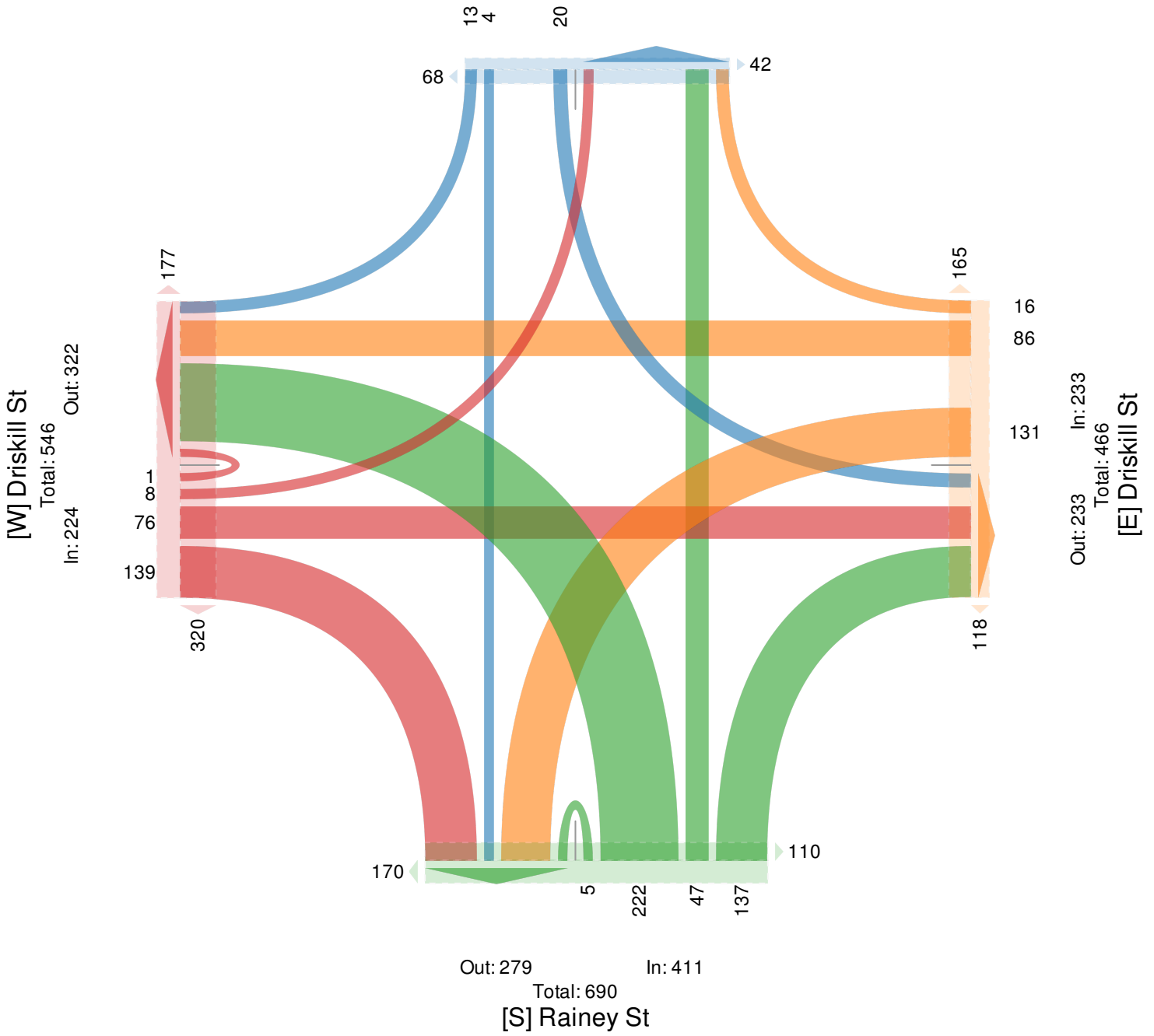


Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

[N] Parking Lot

Total: 108

In: 37 Out: 71



7 - Rainey St at Driskill St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685904, Location: 30.260879, -97.737987, Site Code: 7



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	Parking Lot Southbound						Driskill St Westbound						Rainey St Northbound						Driskill St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17																									
8:00PM	3	0	0	0	3	14	2	12	14	0	28	42	20	7	34	0	61	33	18	8	2	0	28	53	120
8:15PM	1	0	2	0	3	8	1	8	23	0	32	24	19	6	31	1	57	27	8	9	1	0	18	72	110
8:30PM	3	2	5	0	10	8	4	17	18	0	39	33	16	6	28	2	52	36	20	7	1	0	28	124	129
8:45PM	1	1	4	0	6	12	2	11	16	0	29	52	10	10	34	1	55	55	23	20	0	0	43	68	133
Total	8	3	11	0	22	42	9	48	71	0	128	151	65	29	127	4	225	151	69	44	4	0	117	317	492
% Approach	36.4%	13.6%	50.0%	0%	-	-	7.0%	37.5%	55.5%	0%	-	-	28.9%	12.9%	56.4%	1.8%	-	-	59.0%	37.6%	3.4%	0%	-	-	-
% Total	1.6%	0.6%	2.2%	0%	4.5%	-	1.8%	9.8%	14.4%	0%	26.0%	-	13.2%	5.9%	25.8%	0.8%	45.7%	-	14.0%	8.9%	0.8%	0%	23.8%	-	-
PHF	0.667	0.375	0.550	-	0.550	-	0.563	0.706	0.772	-	0.821	-	0.813	0.725	0.934	0.500	0.922	-	0.750	0.550	0.500	-	0.680	-	0.925
Lights	8	3	11	0	22	-	9	47	71	0	127	-	65	29	126	4	224	-	69	44	4	0	117	-	490
% Lights	100%	100%	100%	0%	100%	-	100%	97.9%	100%	0%	99.2%	-	100%	100%	99.2%	100%	99.6%	-	100%	100%	100%	0%	100%	-	99.6%
Articulate d Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulate d Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	0	1	0	0	1	-	0	0	1	0	1	-	0	0	0	0	0	-	2
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0%	2.1%	0%	0%	0.8%	-	0%	0%	0.8%	0%	0.4%	-	0%	0%	0%	0%	0%	-	0.4%
Pedestrians	-	-	-	-	-	42	-	-	-	-	-	151	-	-	-	-	-	151	-	-	-	-	-	317	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

7 - Rainey St at Driskill St - TMC

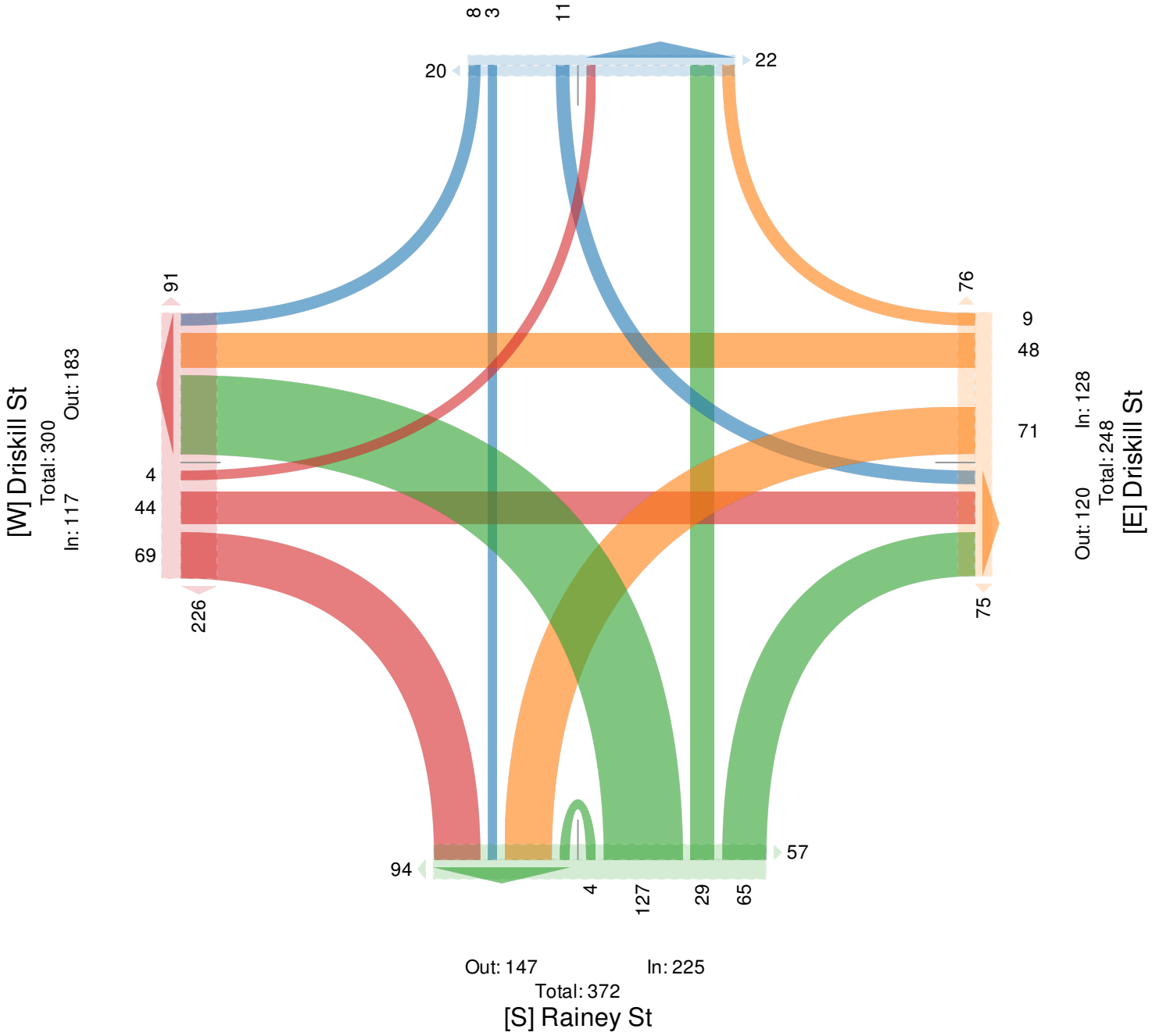
Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685904, Location: 30.260879, -97.737987, Site Code: 7



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US

[N] Parking Lot

Total: 64
 In: 22 Out: 42



8 - IH 35 SBFR at Driskill St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685903, Location: 30.260617, -97.737015, Site Code: 8



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	IH 35 SBFR Southbound					IH 35 SBFR Northbound					Driskill St Eastbound					Int
	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	
2019-08-17 7:00PM	23	209	0	232	0	0	0	0	0	0	22	0	0	22	3	254
7:15PM	18	205	0	223	0	0	0	0	0	0	26	0	0	26	3	249
7:30PM	29	187	0	216	0	0	0	0	0	0	29	0	0	29	0	245
7:45PM	35	196	0	231	0	0	0	0	0	0	24	0	0	24	4	255
Hourly Total	105	797	0	902	0	0	0	0	0	0	101	0	0	101	10	1003
8:00PM	25	207	0	232	0	0	0	0	0	0	26	1	0	27	2	259
8:15PM	33	207	0	240	0	0	0	0	0	0	30	0	0	30	0	270
8:30PM	40	207	0	247	0	0	0	0	0	0	25	0	0	25	9	272
8:45PM	31	189	0	220	0	0	0	0	0	0	37	0	0	37	2	257
Hourly Total	129	810	0	939	0	0	0	0	0	0	118	1	0	119	13	1058
Total	234	1607	0	1841	0	0	0	0	0	0	219	1	0	220	23	2061
% Approach	12.7%	87.3%	0%	-	-	0%	0%	0%	-	-	99.5%	0.5%	0%	-	-	-
% Total	11.4%	78.0%	0%	89.3%	-	0%	0%	0%	0%	-	10.6%	0%	0%	10.7%	-	-
Lights	233	1595	0	1828	-	0	0	0	0	-	219	1	0	220	-	2048
% Lights	99.6%	99.3%	0%	99.3%	-	0%	0%	0%	-	-	100%	100%	0%	100%	-	99.4%
Articulated Trucks	0	3	0	3	-	0	0	0	0	-	0	0	0	0	-	3
% Articulated Trucks	0%	0.2%	0%	0.2%	-	0%	0%	0%	-	-	0%	0%	0%	0%	-	0.1%
Buses and Single-Unit Trucks	1	9	0	10	-	0	0	0	0	-	0	0	0	0	-	10
% Buses and Single-Unit Trucks	0.4%	0.6%	0%	0.5%	-	0%	0%	0%	-	-	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	23	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

8 - IH 35 SBFR at Driskill St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

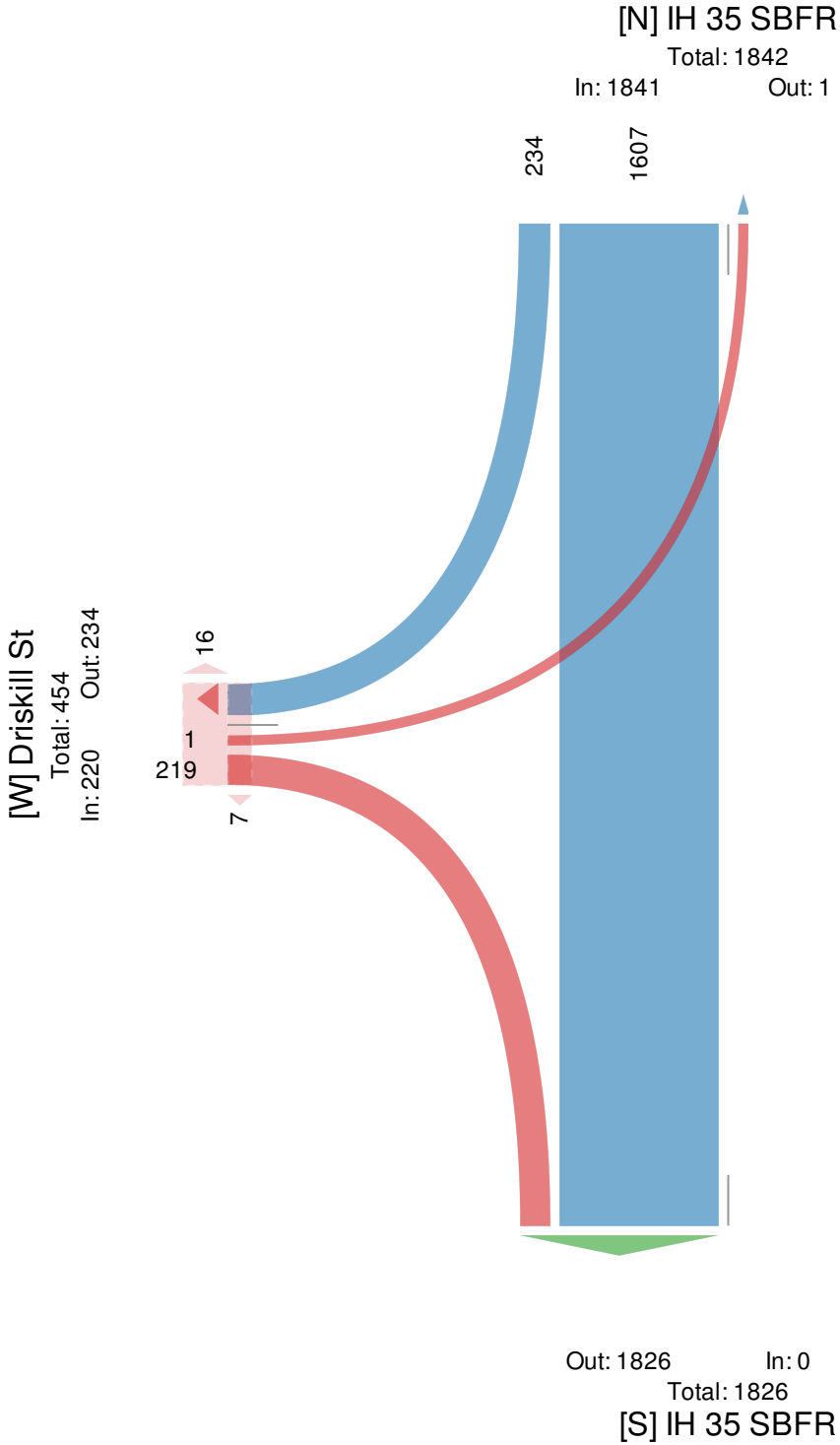
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685903, Location: 30.260617, -97.737015, Site Code: 8



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



8 - IH 35 SBFR at Driskill St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685903, Location: 30.260617, -97.737015, Site Code: 8



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	IH 35 SBFR Southbound					IH 35 SBFR Northbound					Driskill St Eastbound					Int
	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	
2019-08-17 8:00PM	25	207	0	232	0	0	0	0	0	0	26	1	0	27	2	259
8:15PM	33	207	0	240	0	0	0	0	0	0	30	0	0	30	0	270
8:30PM	40	207	0	247	0	0	0	0	0	0	25	0	0	25	9	272
8:45PM	31	189	0	220	0	0	0	0	0	0	37	0	0	37	2	257
Total	129	810	0	939	0	0	0	0	0	0	118	1	0	119	13	1058
% Approach	13.7%	86.3%	0%	-	-	0%	0%	0%	-	-	99.2%	0.8%	0%	-	-	-
% Total	12.2%	76.6%	0%	88.8%	-	0%	0%	0%	0%	-	11.2%	0.1%	0%	11.2%	-	-
PHF	0.806	0.978	-	0.950	-	-	-	-	-	-	0.797	0.250	-	0.804	-	0.972
Lights	128	802	0	930	-	0	0	0	0	-	118	1	0	119	-	1049
% Lights	99.2%	99.0%	0%	99.0%	-	0%	0%	0%	-	-	100%	100%	0%	100%	-	99.1%
Articulated Trucks	0	2	0	2	-	0	0	0	0	-	0	0	0	0	-	2
% Articulated Trucks	0%	0.2%	0%	0.2%	-	0%	0%	0%	-	-	0%	0%	0%	0%	-	0.2%
Buses and Single-Unit Trucks	1	6	0	7	-	0	0	0	0	-	0	0	0	0	-	7
% Buses and Single-Unit Trucks	0.8%	0.7%	0%	0.7%	-	0%	0%	0%	-	-	0%	0%	0%	0%	-	0.7%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	13
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-

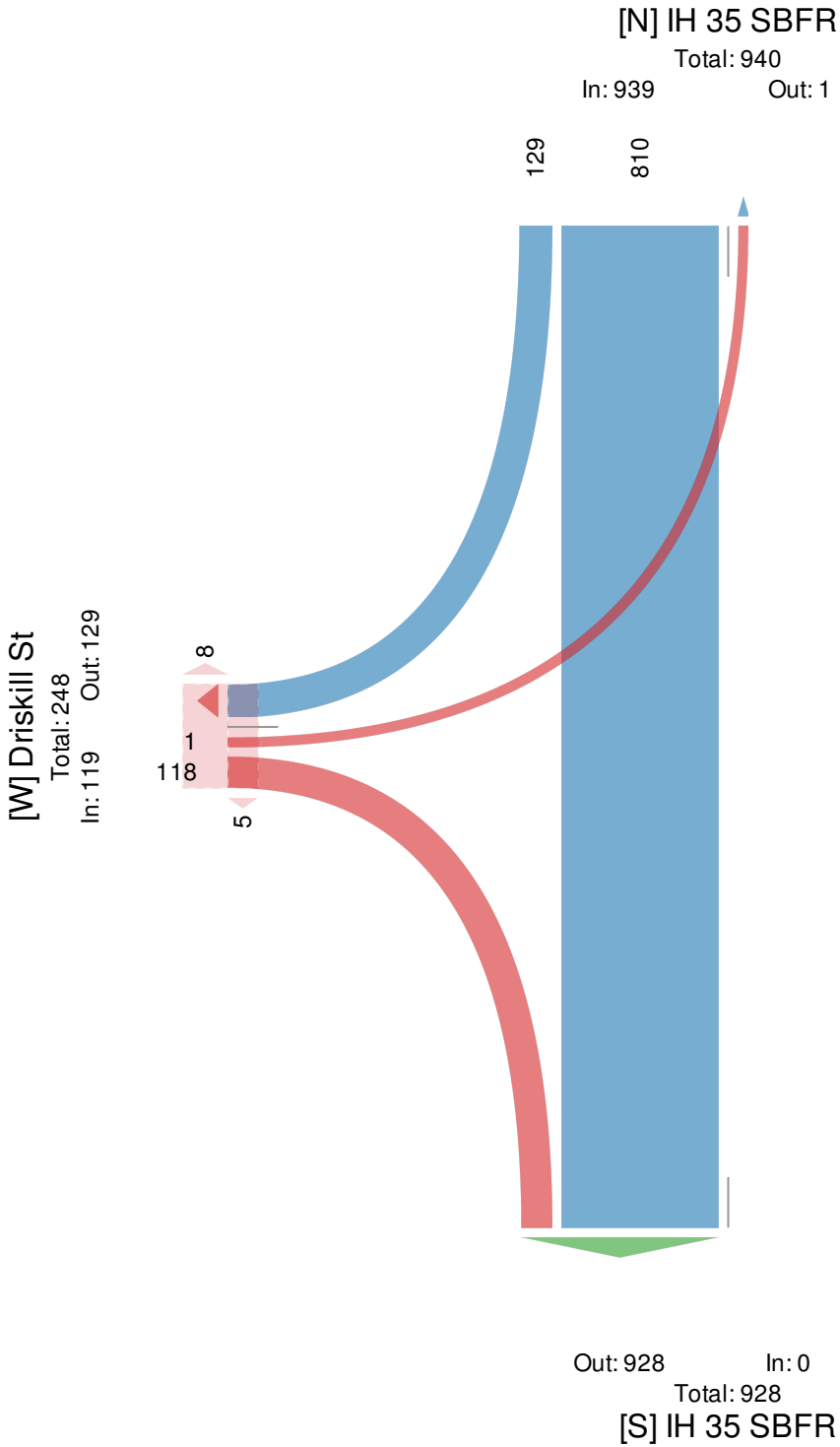
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

8 - IH 35 SBFR at Driskill St - TMC

Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
 Pedestrians)
 All Movements
 ID: 685903, Location: 30.260617, -97.737015, Site Code: 8



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



9 - Red River St at 1st St - TMC

Sat Aug 17, 2019

Full Length (7 PM-9 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685901, Location: 30.261748, -97.738812, Site Code: 9



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction Time	Red River St Southbound						1st St Westbound						Red River St Northbound						1st St Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2019-08-17 7:00PM	2	1	0	0	3	11	51	133	14	0	198	36	24	11	29	0	64	5	37	204	32	0	273	56	538
7:15PM	1	1	1	0	3	25	36	180	12	0	228	35	20	11	34	0	65	13	44	201	28	0	273	31	569
7:30PM	0	0	1	0	1	31	58	166	7	0	231	36	13	7	29	0	49	5	51	189	34	0	274	16	555
7:45PM	0	0	0	0	0	16	45	151	14	0	210	32	13	11	31	0	55	9	40	178	30	0	248	26	513
Hourly Total	3	2	2	0	7	83	190	630	47	0	867	139	70	40	123	0	233	32	172	772	124	0	1068	129	2175
8:00PM	1	1	1	0	3	15	37	163	12	0	212	38	27	9	44	0	80	4	58	168	35	0	261	32	556
8:15PM	0	1	0	0	1	51	39	150	8	0	197	77	12	16	39	0	67	9	50	176	17	0	243	19	508
8:30PM	3	1	2	0	6	18	35	146	20	0	201	46	20	13	31	0	64	19	45	227	30	0	302	45	573
8:45PM	1	0	0	0	1	30	41	163	16	0	220	49	26	21	41	0	88	4	65	187	23	0	275	17	584
Hourly Total	5	3	3	0	11	114	152	622	56	0	830	210	85	59	155	0	299	36	218	758	105	0	1081	113	2221
Total	8	5	5	0	18	197	342	1252	103	0	1697	349	155	99	278	0	532	68	390	1530	229	0	2149	242	4396
% Approach	44.4%	27.8%	27.8%	0%	-	-	20.2%	73.8%	6.1%	0%	-	-	29.1%	18.6%	52.3%	0%	-	-	18.1%	71.2%	10.7%	0%	-	-	-
% Total	0.2%	0.1%	0.1%	0%	0.4%	-	7.8%	28.5%	2.3%	0%	38.6%	-	3.5%	2.3%	6.3%	0%	12.1%	-	8.9%	34.8%	5.2%	0%	48.9%	-	-
Lights	8	5	5	0	18	-	341	1244	103	0	1688	-	153	99	276	0	528	-	387	1516	226	0	2129	-	4363
% Lights	100%	100%	100%	0%	100%	-	99.7%	99.4%	100%	0%	99.5%	-	98.7%	100%	99.3%	0%	99.2%	-	99.2%	99.1%	98.7%	0%	99.1%	-	99.2%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Buses and Single-Unit Trucks	0	0	0	0	0	-	1	8	0	0	9	-	2	0	2	0	4	-	3	14	3	0	20	-	33
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0.3%	0.6%	0%	0%	0.5%	-	1.3%	0%	0.7%	0%	0.8%	-	0.8%	0.9%	1.3%	0%	0.9%	-	0.8%
Pedestrians	-	-	-	-	-	197	-	-	-	-	-	349	-	-	-	-	-	68	-	-	-	-	-	242	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

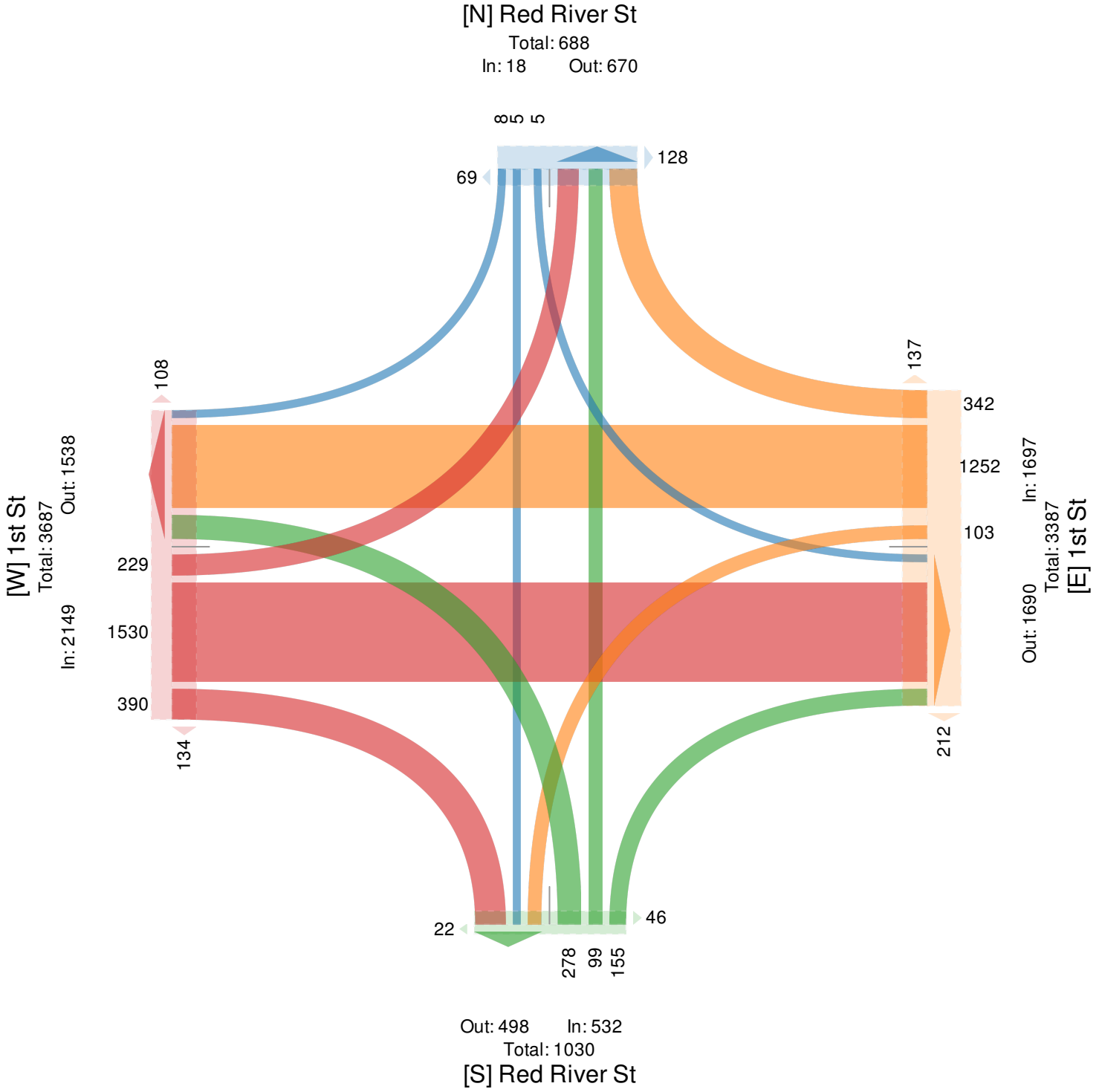
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

9 - Red River St at 1st St - TMC

Sat Aug 17, 2019
 Full Length (7 PM-9 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 685901, Location: 30.261748, -97.738812, Site Code: 9



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US



9 - Red River St at 1st St - TMC

Sat Aug 17, 2019

PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 685901, Location: 30.261748, -97.738812, Site Code: 9



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction Time	Red River St Southbound						1st St Westbound						Red River St Northbound						1st St Eastbound						Int	
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*		
2019-08-17 8:00PM	1	1	1	0	3	15	37	163	12	0	212	38	27	9	44	0	80	4	58	168	35	0	261	32	556	
8:15PM	0	1	0	0	1	51	39	150	8	0	197	77	12	16	39	0	67	9	50	176	17	0	243	19	508	
8:30PM	3	1	2	0	6	18	35	146	20	0	201	46	20	13	31	0	64	19	45	227	30	0	302	45	573	
8:45PM	1	0	0	0	1	30	41	163	16	0	220	49	26	21	41	0	88	4	65	187	23	0	275	17	584	
Total	5	3	3	0	11	114	152	622	56	0	830	210	85	59	155	0	299	36	218	758	105	0	1081	113	2221	
% Approach	45.5%	27.3%	27.3%	0%	-	-	18.3%	74.9%	6.7%	0%	-	-	28.4%	19.7%	51.8%	0%	-	-	20.2%	70.1%	9.7%	0%	-	-	-	
% Total	0.2%	0.1%	0.1%	0%	0.5%	-	6.8%	28.0%	2.5%	0%	37.4%	-	3.8%	2.7%	7.0%	0%	13.5%	-	9.8%	34.1%	4.7%	0%	48.7%	-	-	
PHF	0.417	0.750	0.375	-	0.458	-	0.927	0.954	0.700	-	0.943	-	0.787	0.702	0.881	-	0.849	-	0.838	0.835	0.750	-	0.895	-	0.951	
Lights	5	3	3	0	11	-	151	619	56	0	826	-	83	59	154	0	296	-	216	752	104	0	1072	-	2205	
% Lights	100%	100%	100%	0%	100%	-	99.3%	99.5%	100%	0%	99.5%	-	97.6%	100%	99.4%	0%	99.0%	-	99.1%	99.2%	99.0%	0%	99.2%	-	99.3%	
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	
Buses and Single-Unit Trucks	0	0	0	0	0	-	1	3	0	0	4	-	2	0	1	0	3	-	2	6	1	0	9	-	16	
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	0.7%	0.5%	0%	0%	0.5%	-	2.4%	0%	0.6%	0%	1.0%	-	0.9%	0.8%	1.0%	0%	0.8%	-	0.7%	
Pedestrians	-	-	-	-	-	114	-	-	-	-	-	210	-	-	-	-	-	36	-	-	-	-	-	113	-	
% Pedestrians	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-	-100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

9 - Red River St at 1st St - TMC

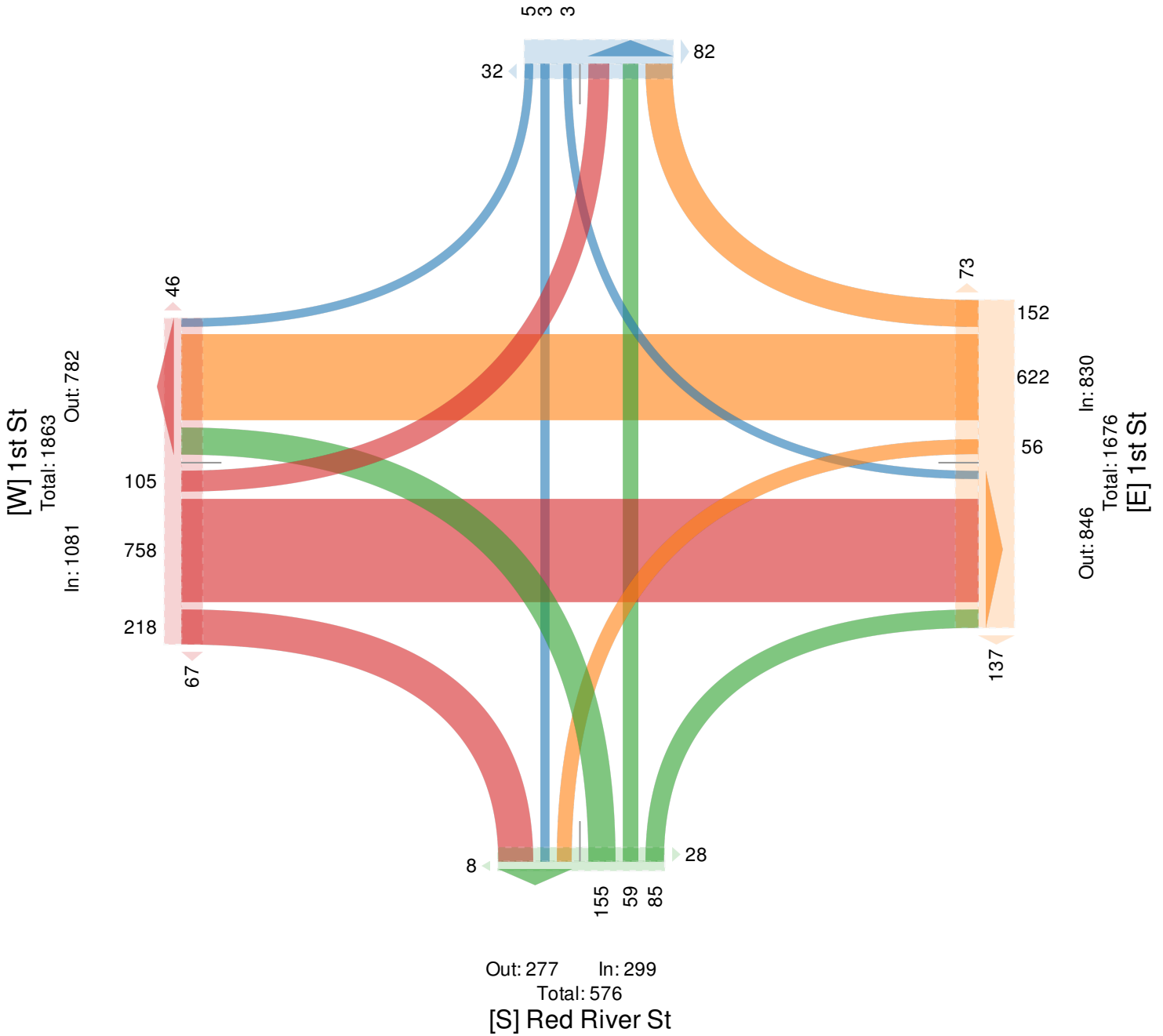
Sat Aug 17, 2019
 PM Peak (WKND) (8 PM - 9 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
 Pedestrians)
 All Movements
 ID: 685901, Location: 30.261748, -97.738812, Site Code: 9



Provided by: C. J. Hensch & Associates Inc.
 5215 Sycamore Ave.,
 Pasadena, TX, 77503, US

[N] Red River St

Total: 327
 In: 11 Out: 316



Appendix
Camden Rainey Street Vehicle Counts

2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

Full Length (12 AM-12 AM (+1))

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2019-04-25 12:00AM	0	0	1	1	1
12:15AM	2	2	2	2	4
12:30AM	0	0	1	1	1
12:45AM	0	0	0	0	0
Hourly Total	2	2	4	4	6
1:00AM	0	0	0	0	0
1:15AM	0	0	1	1	1
1:30AM	1	1	2	2	3
1:45AM	0	0	0	0	0
Hourly Total	1	1	3	3	4
2:00AM	0	0	1	1	1
2:15AM	1	1	0	0	1
2:30AM	1	1	0	0	1
2:45AM	0	0	0	0	0
Hourly Total	2	2	1	1	3
3:00AM	0	0	1	1	1
3:15AM	0	0	0	0	0
3:30AM	0	0	0	0	0
3:45AM	0	0	1	1	1
Hourly Total	0	0	2	2	2
4:00AM	1	1	0	0	1
4:15AM	0	0	0	0	0
4:30AM	0	0	1	1	1
4:45AM	0	0	1	1	1
Hourly Total	1	1	2	2	3
5:00AM	0	0	1	1	1
5:15AM	5	5	1	1	6
5:30AM	1	1	0	0	1
5:45AM	5	5	0	0	5
Hourly Total	11	11	2	2	13
6:00AM	1	1	0	0	1
6:15AM	4	4	2	2	6
6:30AM	5	5	0	0	5
6:45AM	4	4	3	3	7
Hourly Total	14	14	5	5	19
7:00AM	7	7	4	4	11
7:15AM	6	6	3	3	9
7:30AM	20	20	1	1	21
7:45AM	16	16	0	0	16
Hourly Total	49	49	8	8	57
8:00AM	11	11	1	1	12
8:15AM	12	12	0	0	12
8:30AM	11	11	0	0	11
8:45AM	7	7	3	3	10
Hourly Total	41	41	4	4	45
9:00AM	7	7	2	2	9
9:15AM	6	6	1	1	7
9:30AM	10	10	1	1	11
9:45AM	8	8	1	1	9
Hourly Total	31	31	5	5	36
10:00AM	6	6	1	1	7
10:15AM	6	6	6	6	12
10:30AM	4	4	2	2	6
10:45AM	4	4	2	2	6

Leg Direction	East		West		Int
	Westbound	App	Eastbound	App	
Time	T	App	T	App	Int
Hourly Total	20	20	11	11	31
11:00AM	2	2	1	1	3
11:15AM	4	4	2	2	6
11:30AM	4	4	5	5	9
11:45AM	3	3	7	7	10
Hourly Total	13	13	15	15	28
12:00PM	7	7	2	2	9
12:15PM	2	2	5	5	7
12:30PM	2	2	5	5	7
12:45PM	8	8	10	10	18
Hourly Total	19	19	22	22	41
1:00PM	4	4	4	4	8
1:15PM	5	5	4	4	9
1:30PM	3	3	3	3	6
1:45PM	3	3	4	4	7
Hourly Total	15	15	15	15	30
2:00PM	1	1	2	2	3
2:15PM	3	3	1	1	4
2:30PM	2	2	2	2	4
2:45PM	4	4	3	3	7
Hourly Total	10	10	8	8	18
3:00PM	3	3	11	11	14
3:15PM	5	5	7	7	12
3:30PM	3	3	4	4	7
3:45PM	3	3	2	2	5
Hourly Total	14	14	24	24	38
4:00PM	4	4	6	6	10
4:15PM	2	2	8	8	10
4:30PM	2	2	8	8	10
4:45PM	8	8	8	8	16
Hourly Total	16	16	30	30	46
5:00PM	4	4	7	7	11
5:15PM	2	2	8	8	10
5:30PM	10	10	11	11	21
5:45PM	3	3	13	13	16
Hourly Total	19	19	39	39	58
6:00PM	3	3	7	7	10
6:15PM	6	6	10	10	16
6:30PM	7	7	12	12	19
6:45PM	0	0	5	5	5
Hourly Total	16	16	34	34	50
7:00PM	6	6	14	14	20
7:15PM	7	7	14	14	21
7:30PM	2	2	10	10	12
7:45PM	2	2	9	9	11
Hourly Total	17	17	47	47	64
8:00PM	3	3	9	9	12
8:15PM	3	3	6	6	9
8:30PM	2	2	5	5	7
8:45PM	4	4	7	7	11
Hourly Total	12	12	27	27	39
9:00PM	1	1	2	2	3
9:15PM	3	3	10	10	13
9:30PM	1	1	6	6	7
9:45PM	5	5	9	9	14
Hourly Total	10	10	27	27	37
10:00PM	3	3	4	4	7
10:15PM	3	3	5	5	8
10:30PM	1	1	5	5	6
10:45PM	1	1	3	3	4

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
Hourly Total	8	8	17	17	25
11:00PM	1	1	1	1	2
11:15PM	0	0	3	3	3
11:30PM	0	0	1	1	1
11:45PM	0	0	0	0	0
Hourly Total	1	1	5	5	6
Total	342	342	357	357	699
% Approach	100%	-	100%	-	-
% Total	48.9%	48.9%	51.1%	51.1%	-
Vehicles	342	342	357	357	699
% Vehicles	100%	100%	100%	100%	100%
Bicycles on Road	0	0	0	0	0
% Bicycles on Road	0%	0%	0%	0%	0%

*T: Thru

2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

Full Length (12 AM-12 AM (+1))

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US



2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

AM Peak (Apr 25 2019 7:30AM - 8:30 AM)

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	East		West		Int
	Westbound		Eastbound		
Time	T	App	T	App	
2019-04-25 7:30AM	20	20	1	1	21
7:45AM	16	16	0	0	16
8:00AM	11	11	1	1	12
8:15AM	12	12	0	0	12
Total	59	59	2	2	61
% Approach	100%	-	100%	-	-
% Total	96.7%	96.7%	3.3%	3.3%	-
PHF	0.738	0.738	0.500	0.500	0.726
Vehicles	59	59	2	2	61
% Vehicles	100%	100%	100%	100%	100%
Bicycles on Road	0	0	0	0	0
% Bicycles on Road	0%	0%	0%	0%	0%

*T: Thru

2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

AM Peak (Apr 25 2019 7:30AM - 8:30 AM)

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US



2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

Midday Peak (Apr 25 2019 12PM - 1 PM)

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	East		West		Int
	Westbound	Eastbound	Westbound	Eastbound	
Time	T	App	T	App	
2019-04-25 12:00PM	7	7	2	2	9
12:15PM	2	2	5	5	7
12:30PM	2	2	5	5	7
12:45PM	8	8	10	10	18
Total	19	19	22	22	41
% Approach	100%	-	100%	-	-
% Total	46.3%	46.3%	53.7%	53.7%	-
PHF	0.594	0.594	0.550	0.550	0.569
Vehicles	19	19	22	22	41
% Vehicles	100%	100%	100%	100%	100%
Bicycles on Road	0	0	0	0	0
% Bicycles on Road	0%	0%	0%	0%	0%

*T: Thru

2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

Midday Peak (Apr 25 2019 12PM - 1 PM)

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US



2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

PM Peak (Apr 25 2019 6:30PM - 7:30 PM) - Overall Peak Hour

All Classes (Vehicles, Bicycles on Road)

All Channels

ID: 647142, Location: 30.260095, -97.737826, Site Code: 17



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	East		West		Int
	Westbound	App	Eastbound	App	
Time	T	App	T	App	Int
2019-04-25 6:30PM	7	7	12	12	19
6:45PM	0	0	5	5	5
7:00PM	6	6	14	14	20
7:15PM	7	7	14	14	21
Total	20	20	45	45	65
% Approach	100%	-	100%	-	-
% Total	30.8%	30.8%	69.2%	69.2%	-
PHF	0.714	0.714	0.804	0.804	0.774
Vehicles	20	20	45	45	65
% Vehicles	100%	100%	100%	100%	100%
Bicycles on Road	0	0	0	0	0
% Bicycles on Road	0%	0%	0%	0%	0%

*T: Thru

2nd floor Resident Entrance - ATR

Thu Apr 25, 2019

PM Peak (Apr 25 2019 6:30PM - 7:30 PM) - Overall Peak Hour

All Classes (Vehicles, Bicycles on Road)

All Channels

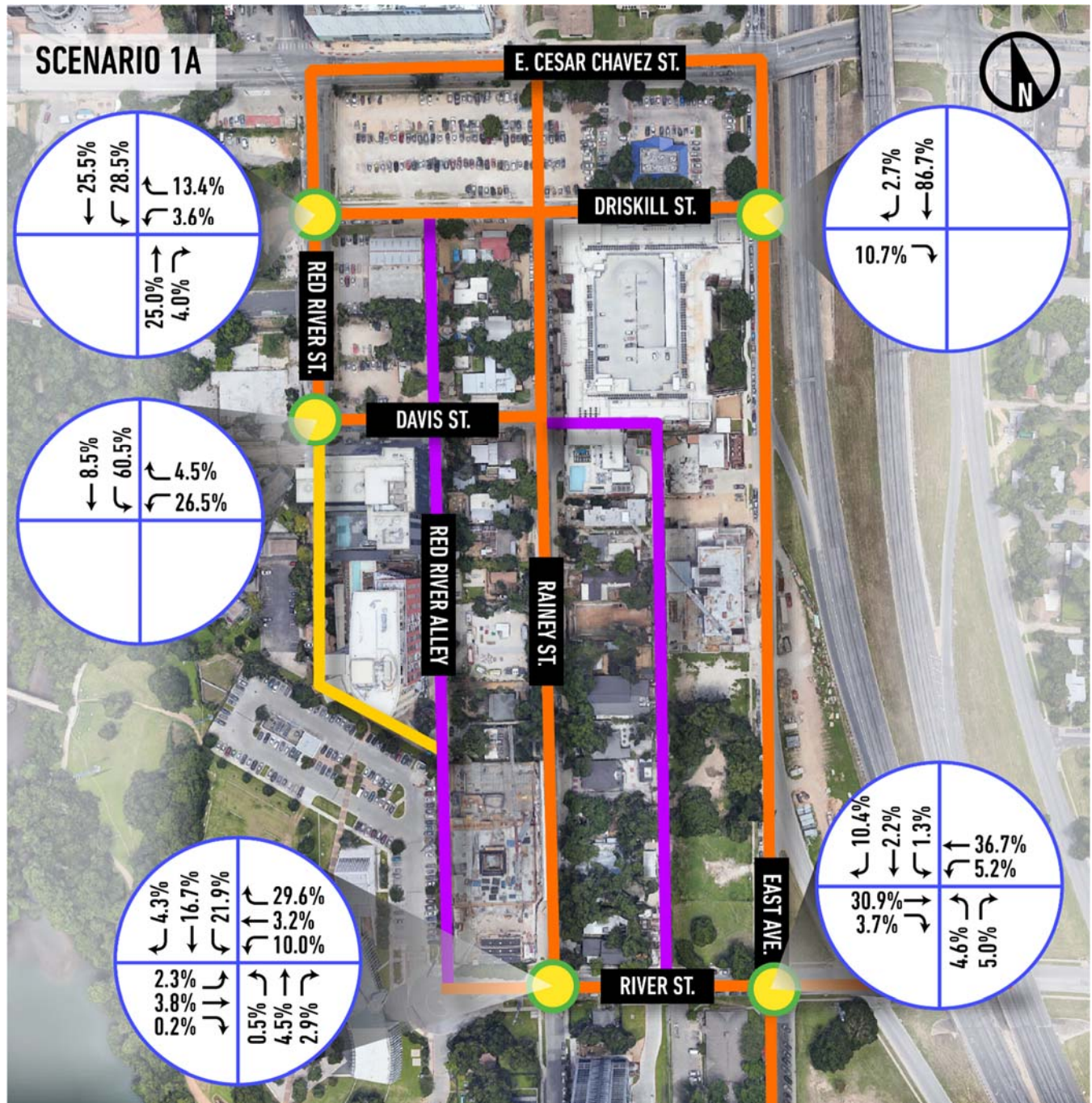
ID: 647142, Location: 30.260095, -97.737826, Site Code: 17

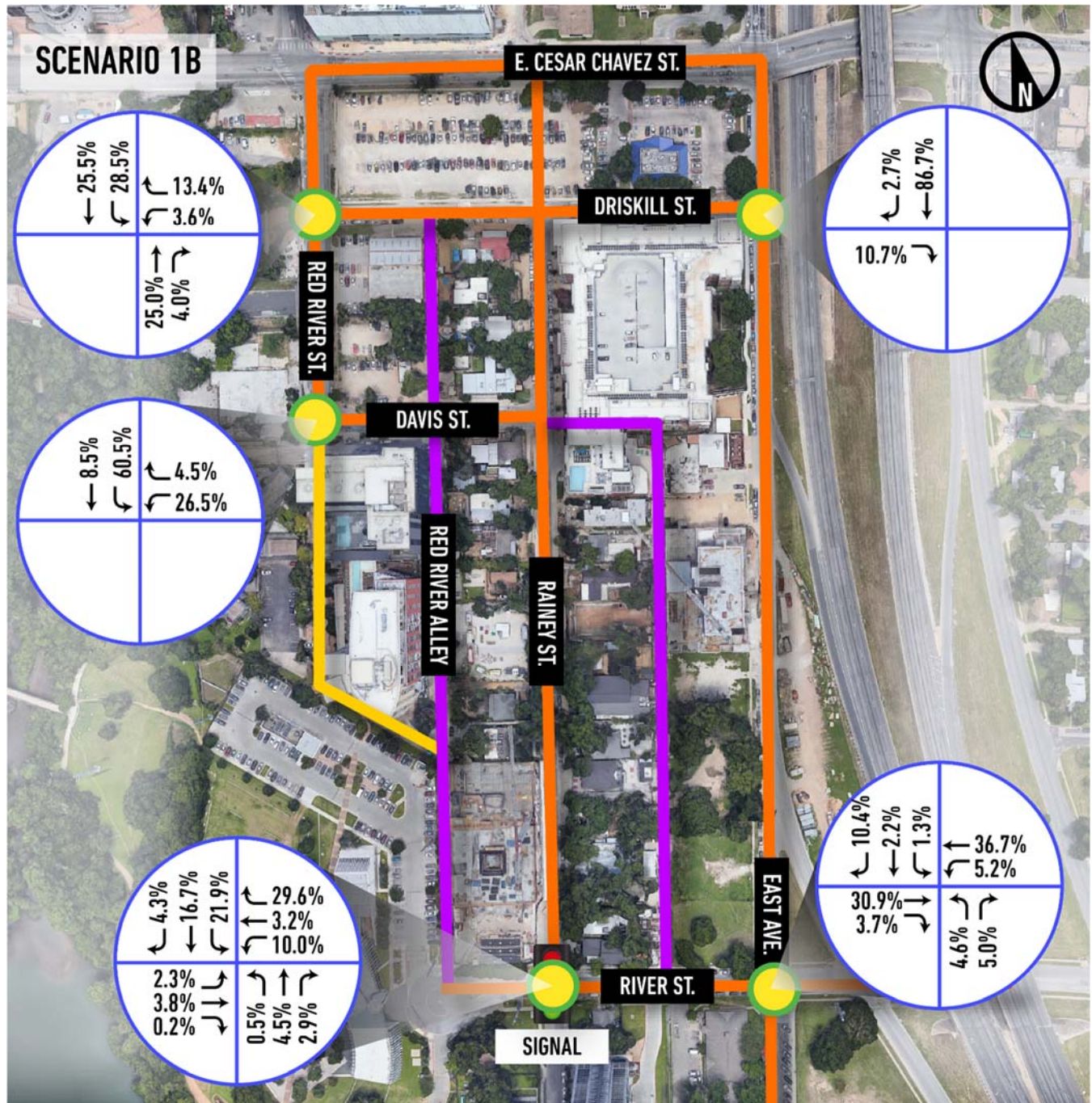


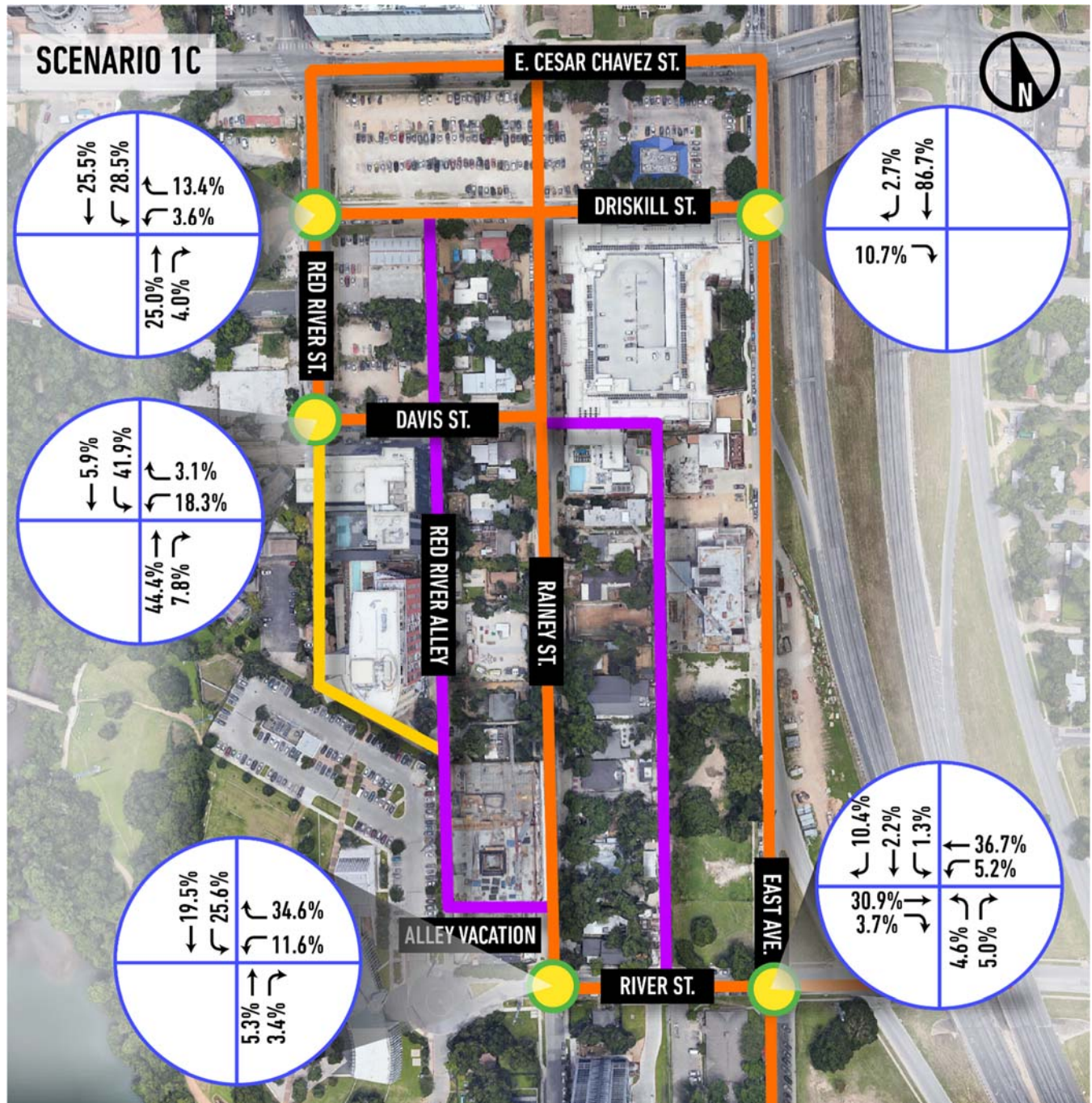
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

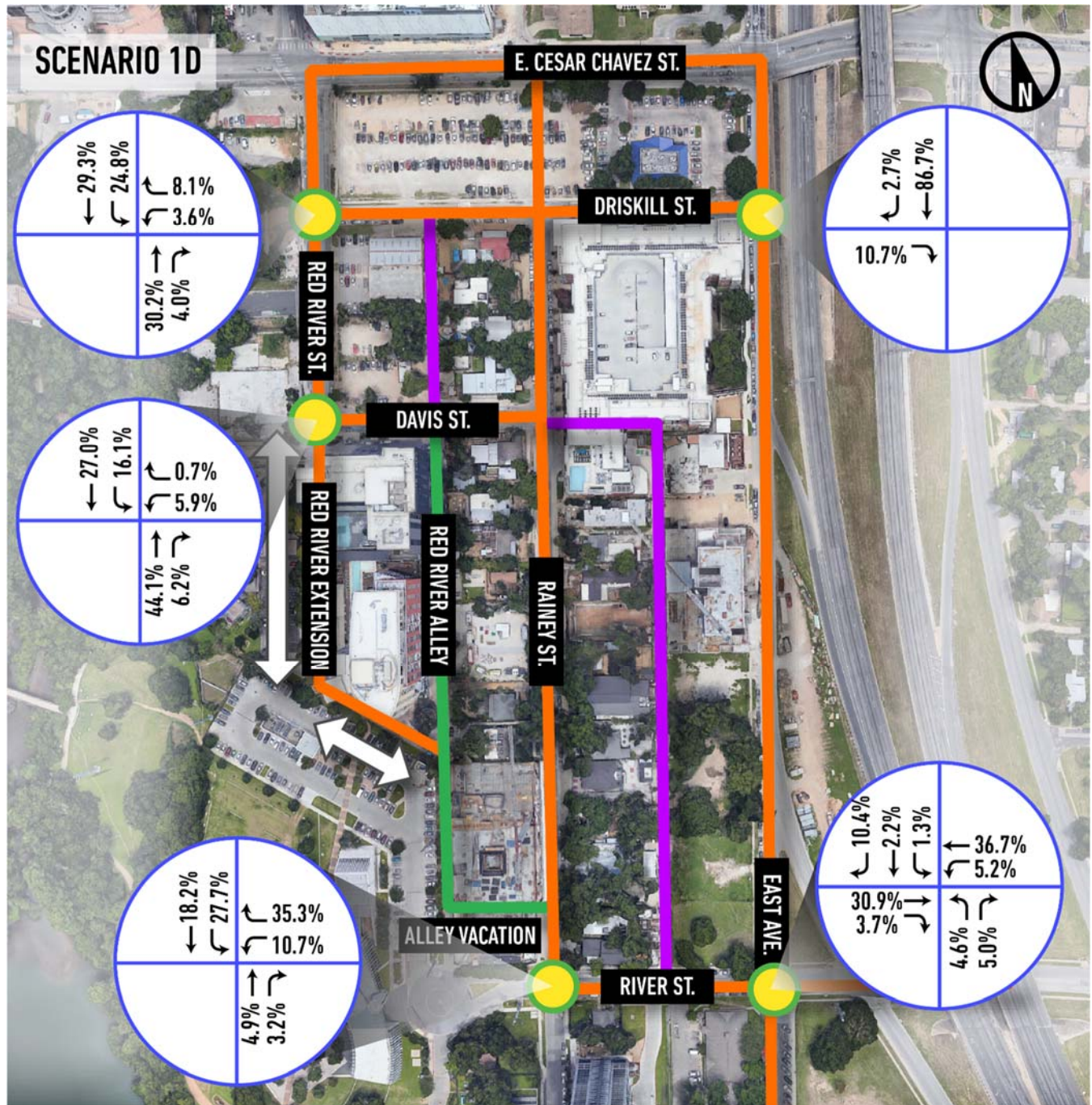


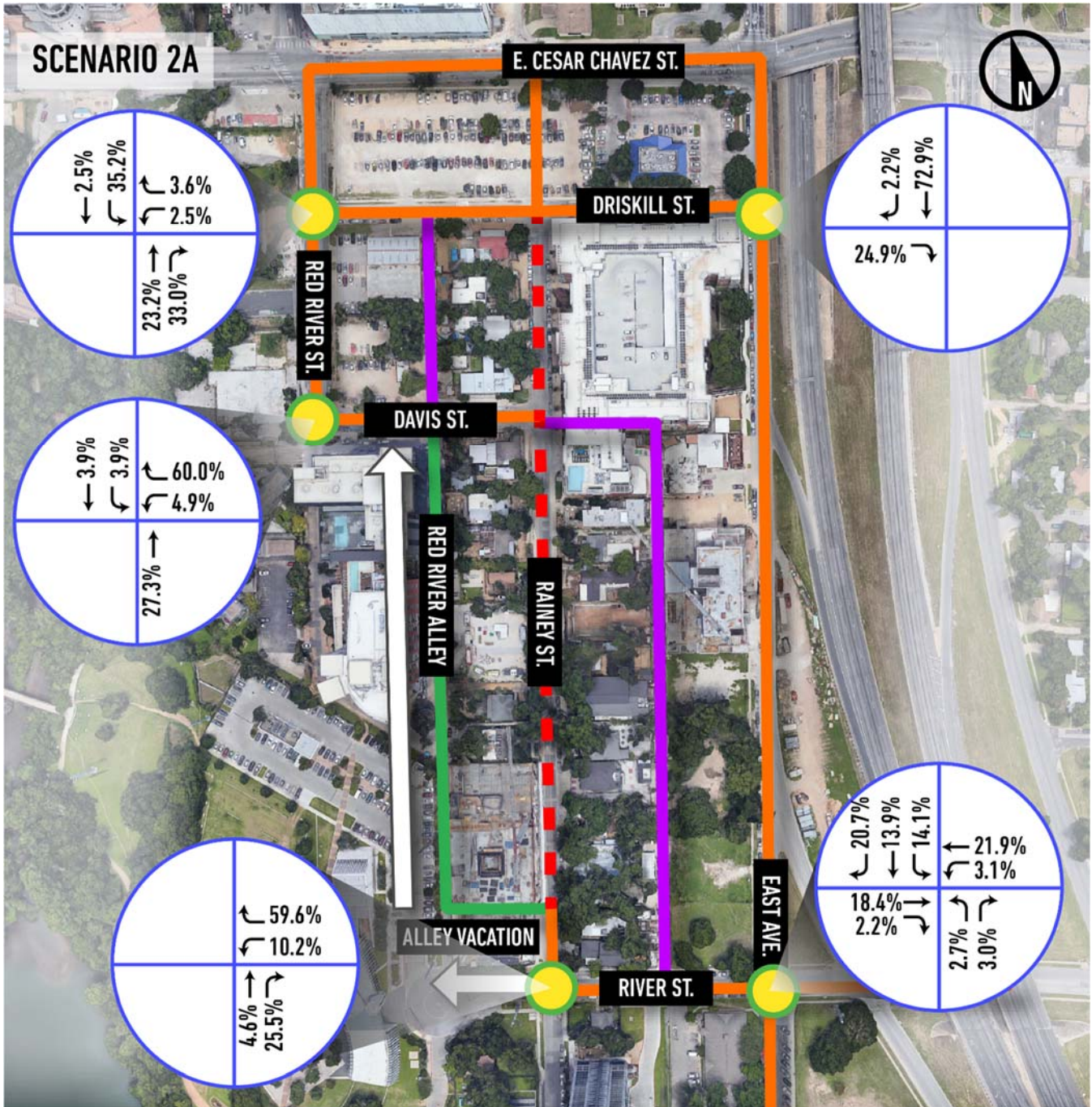
Appendix
PM Peak Trip Distributions

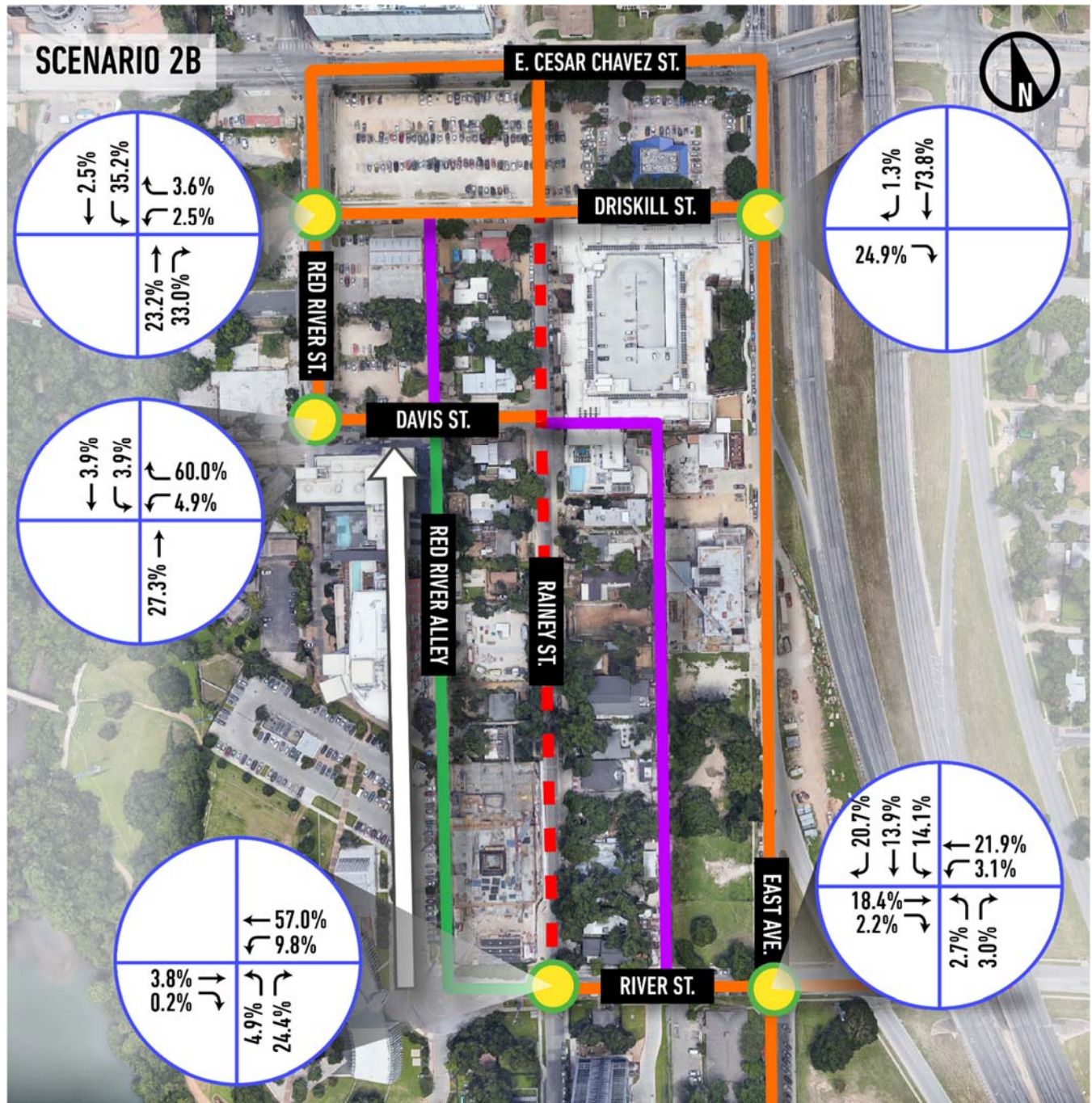


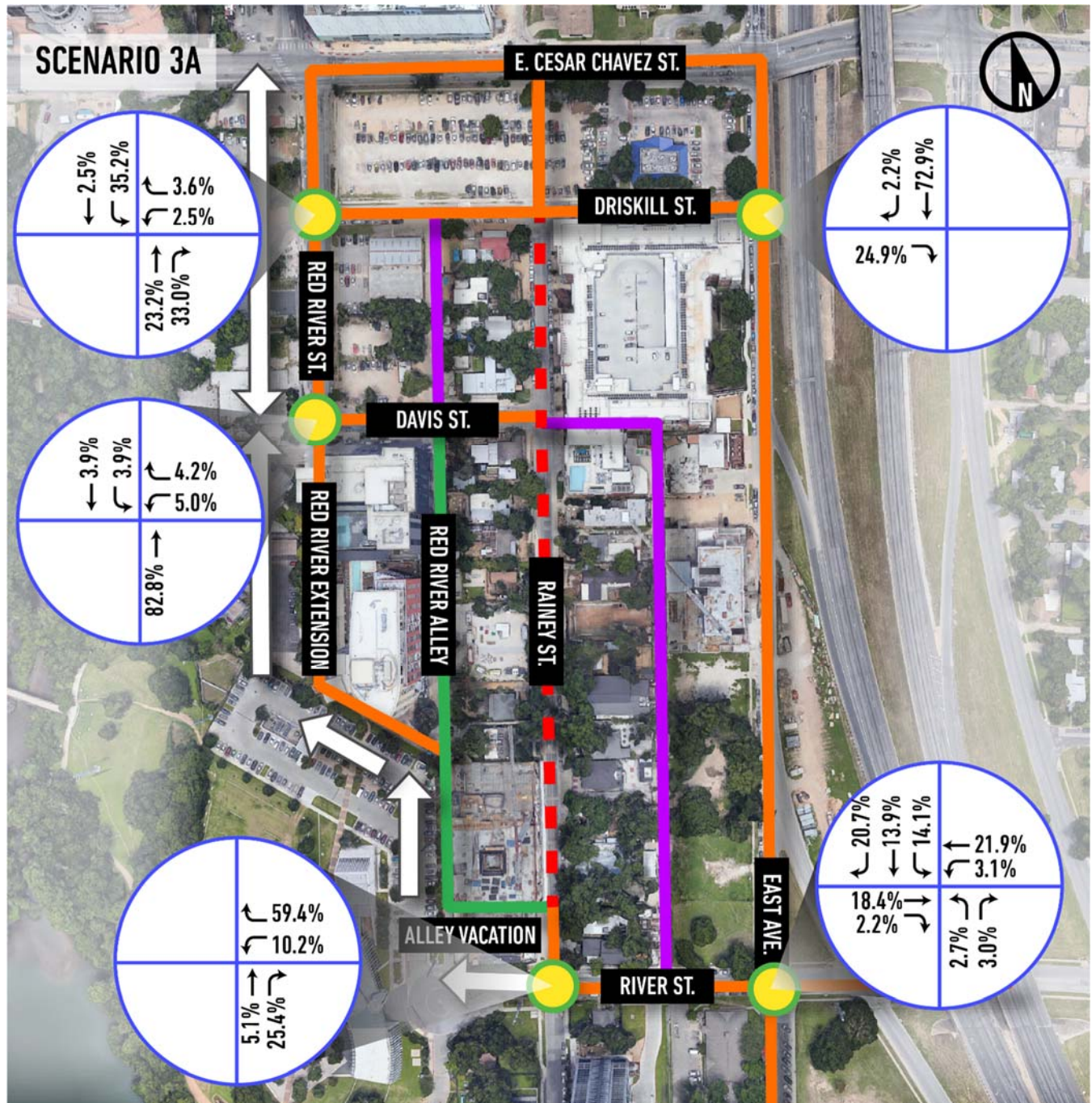


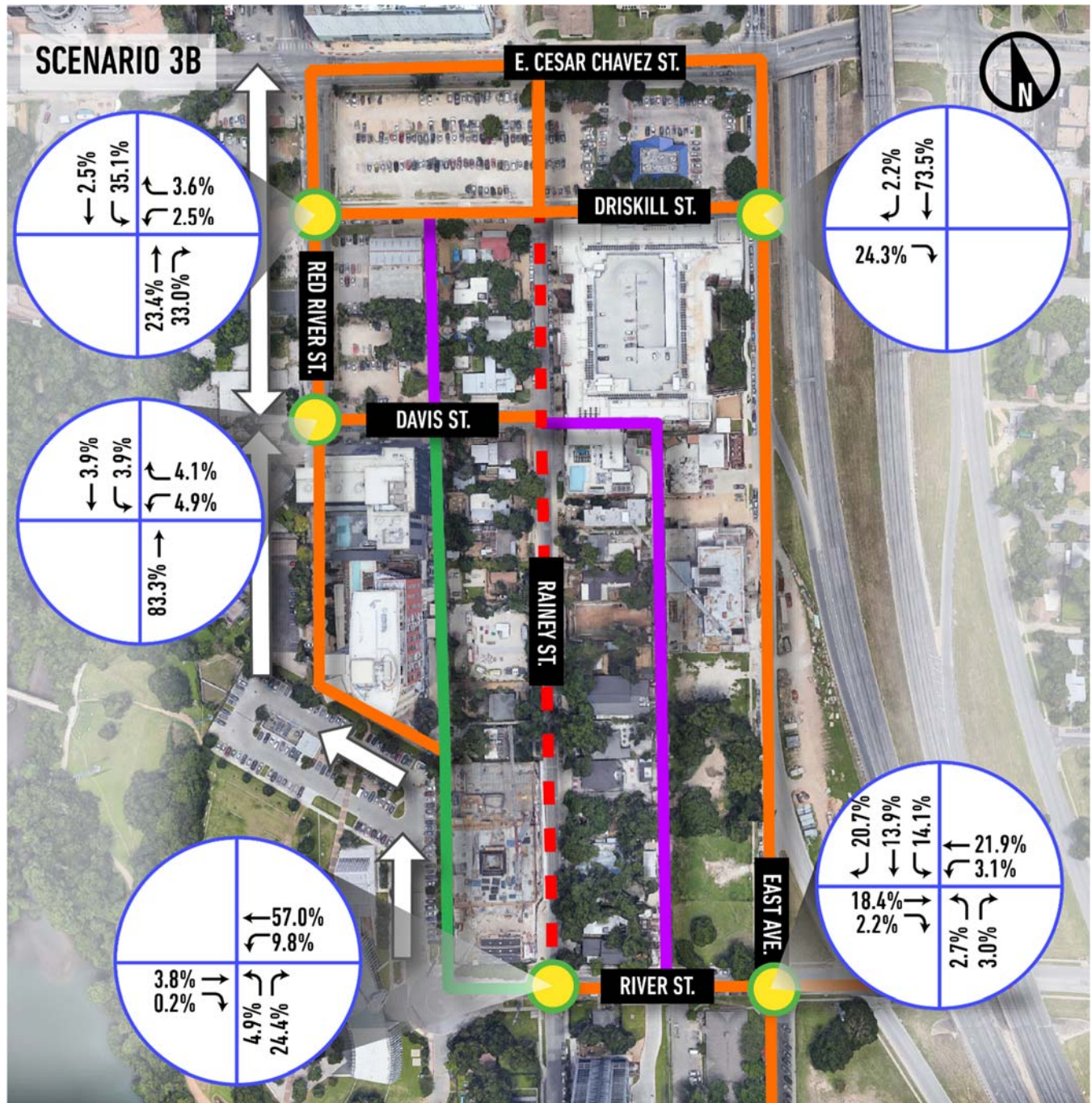


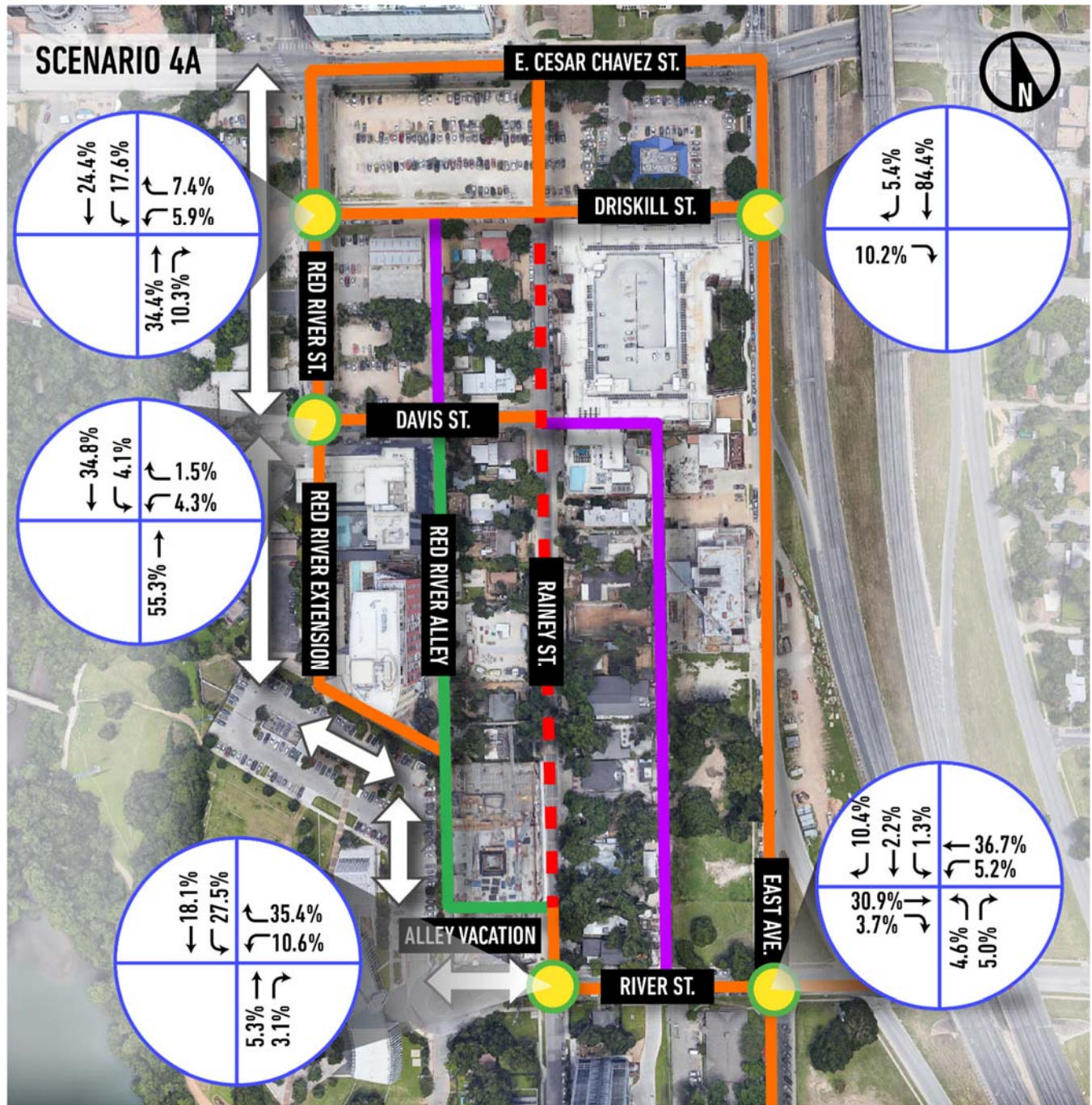


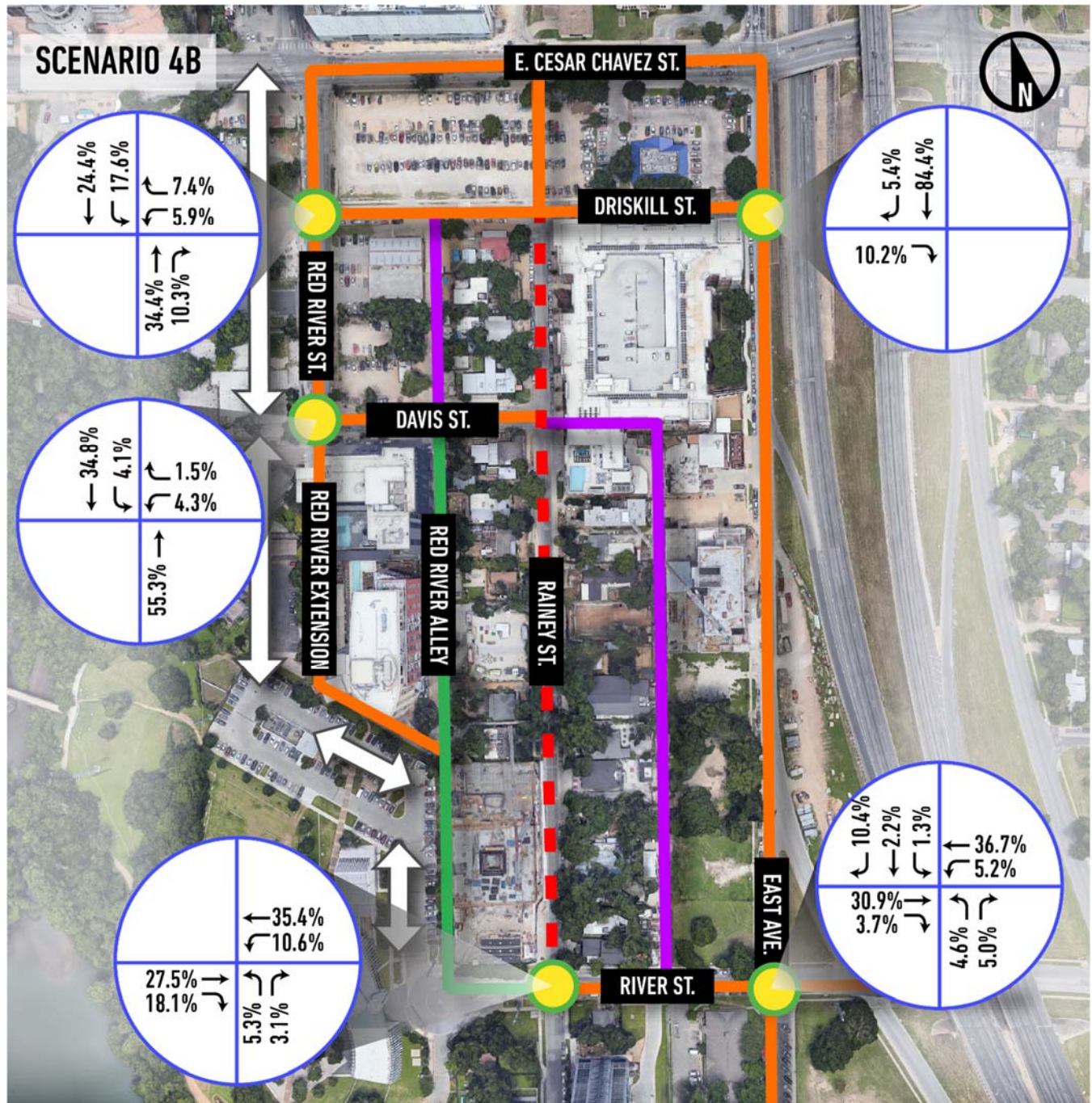


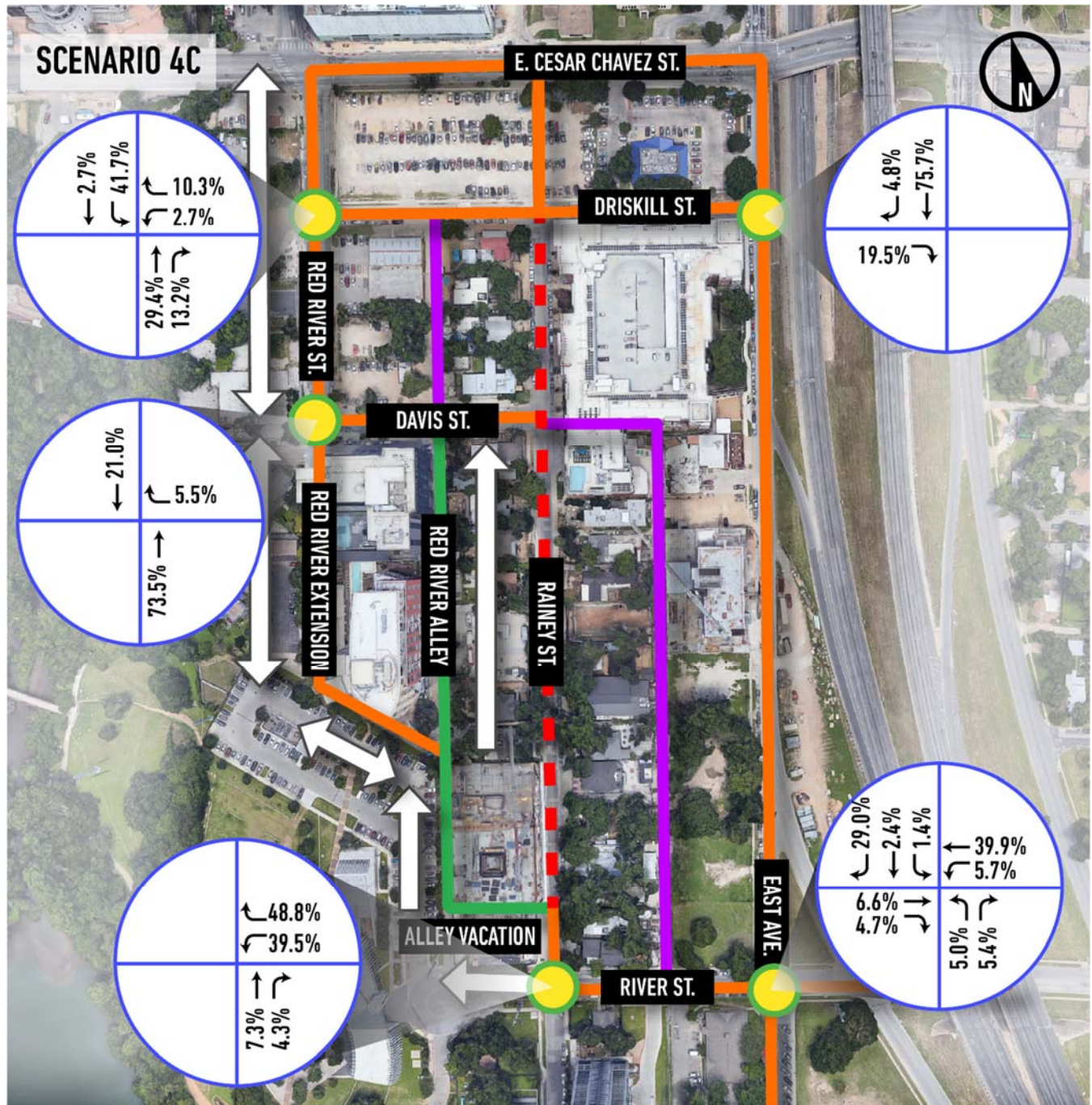




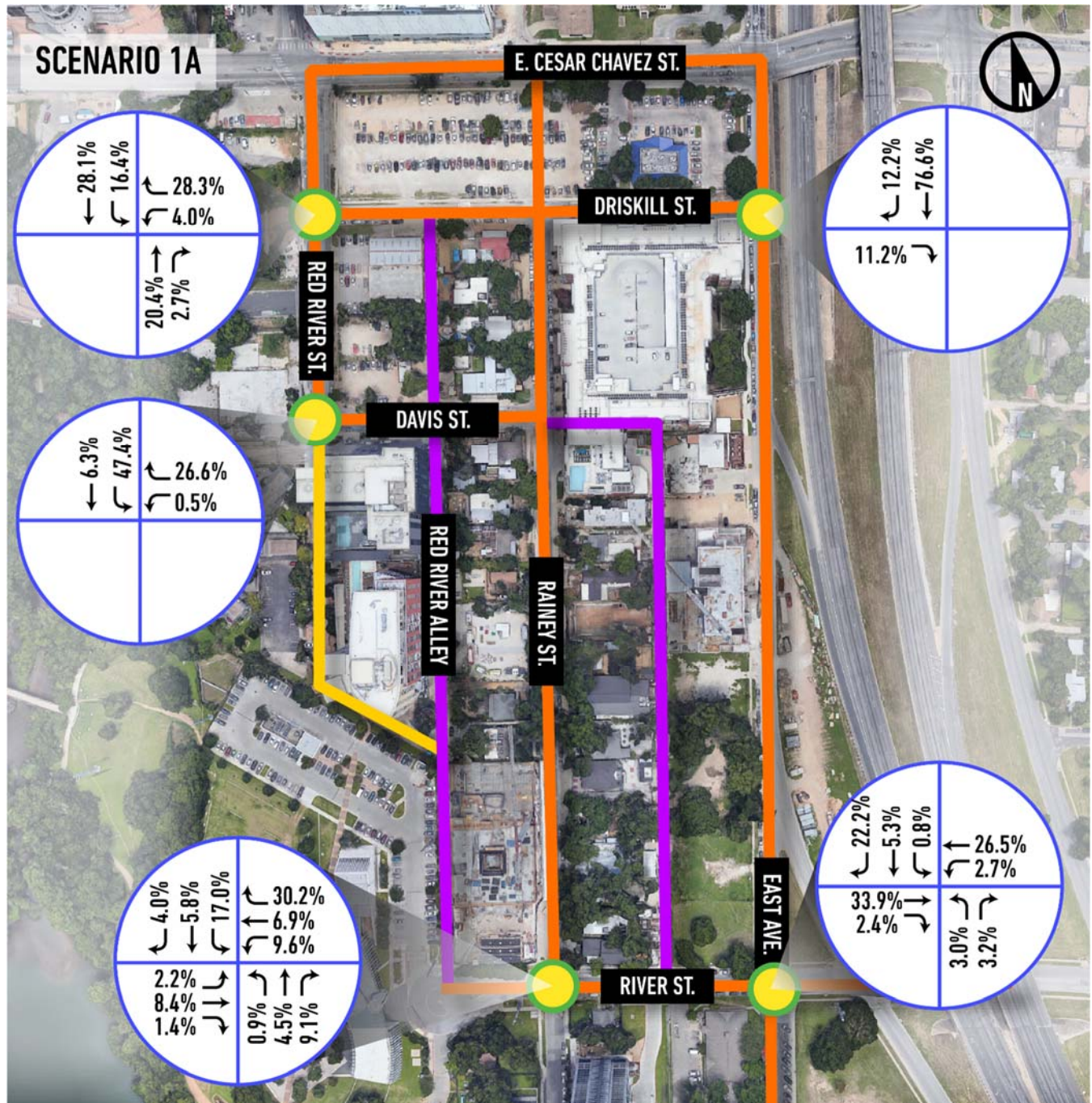


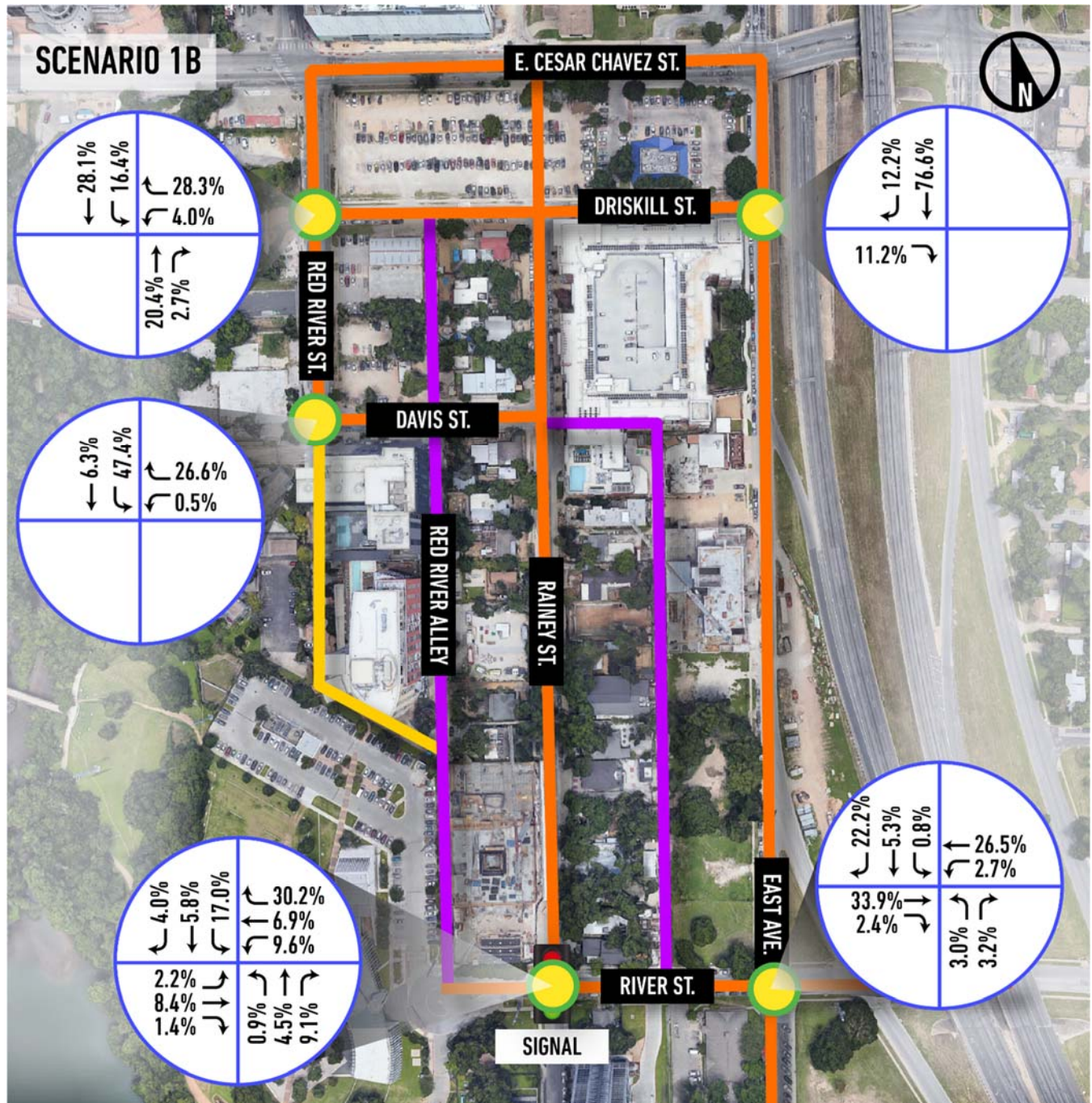


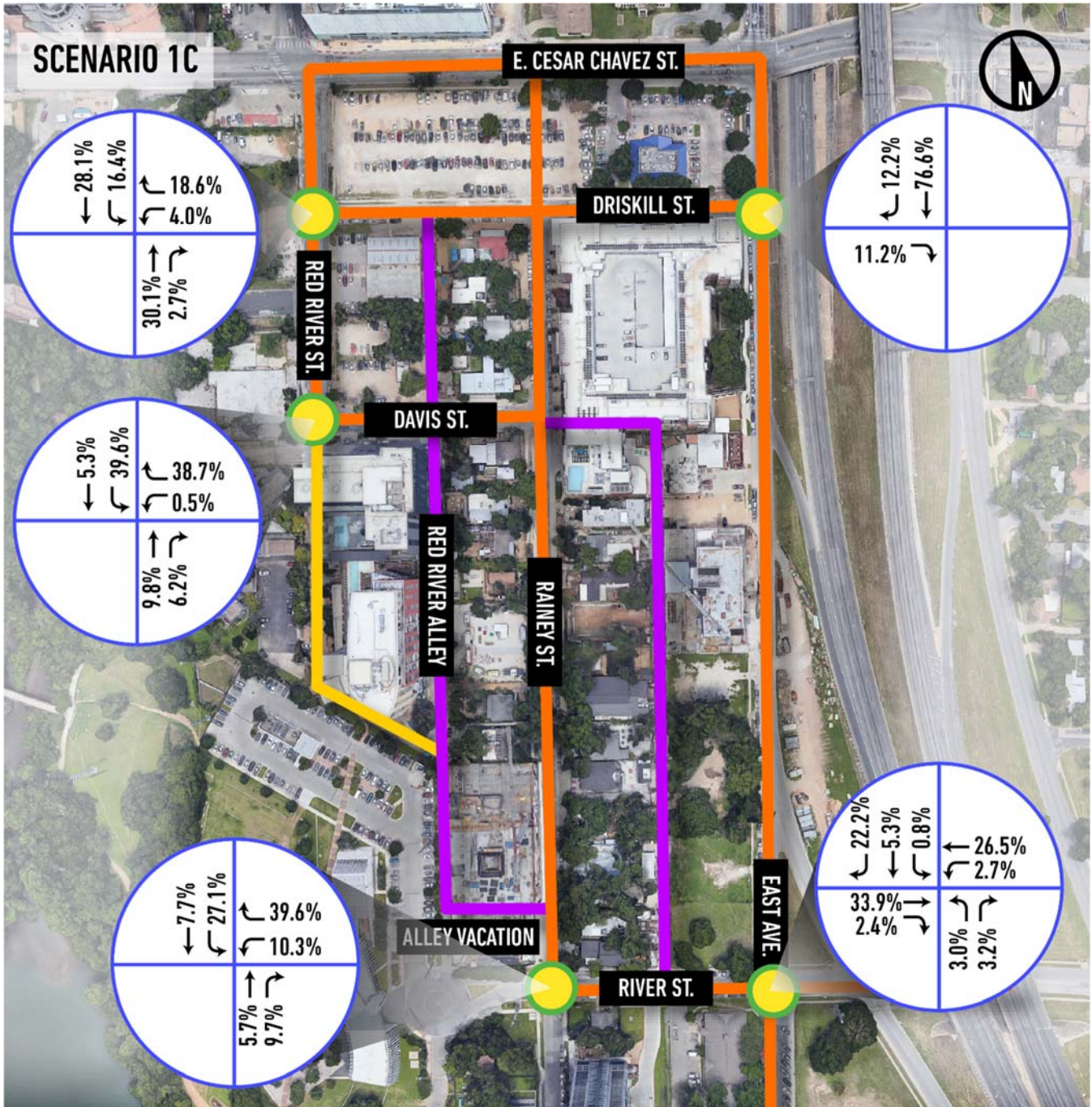


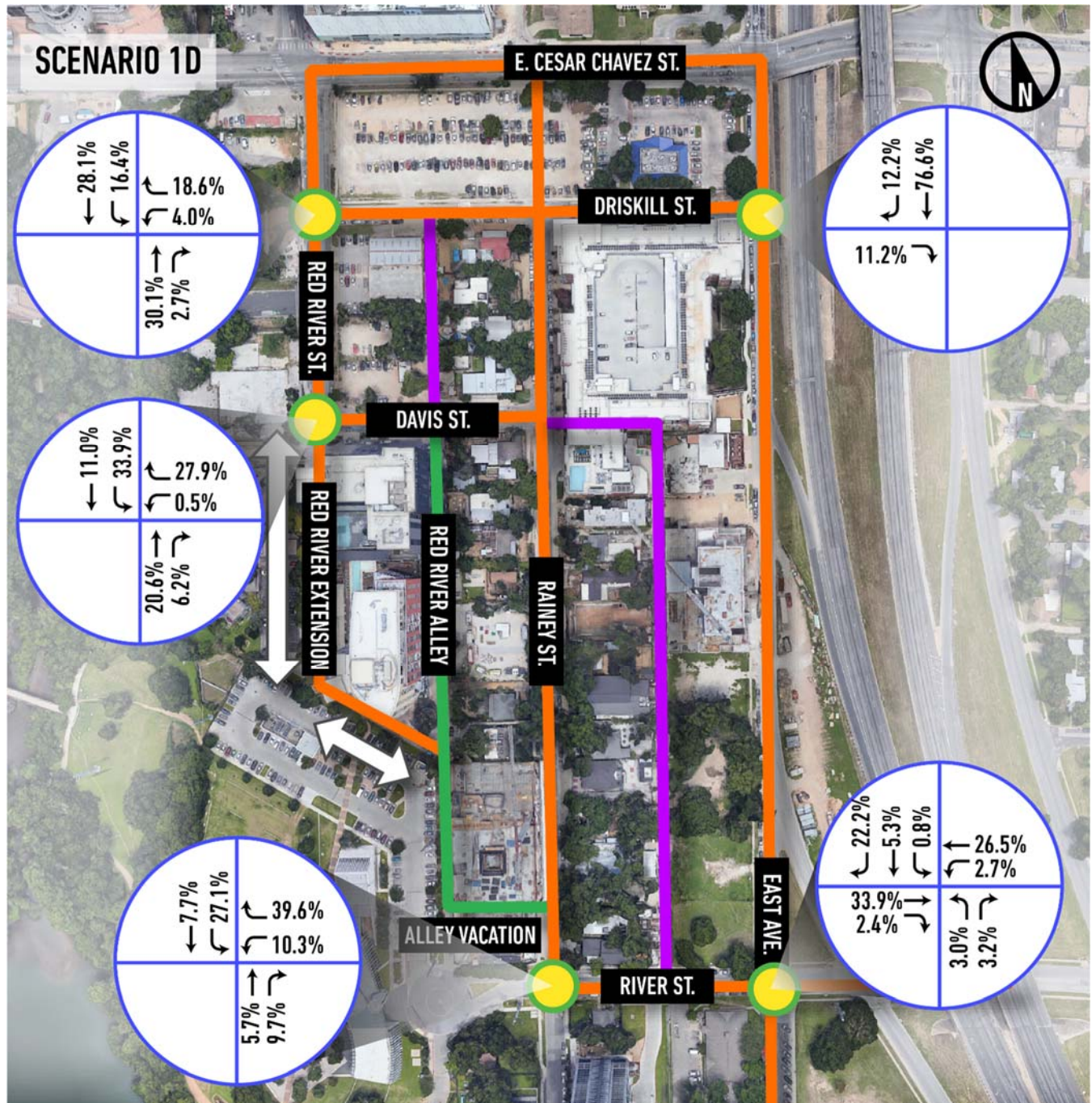


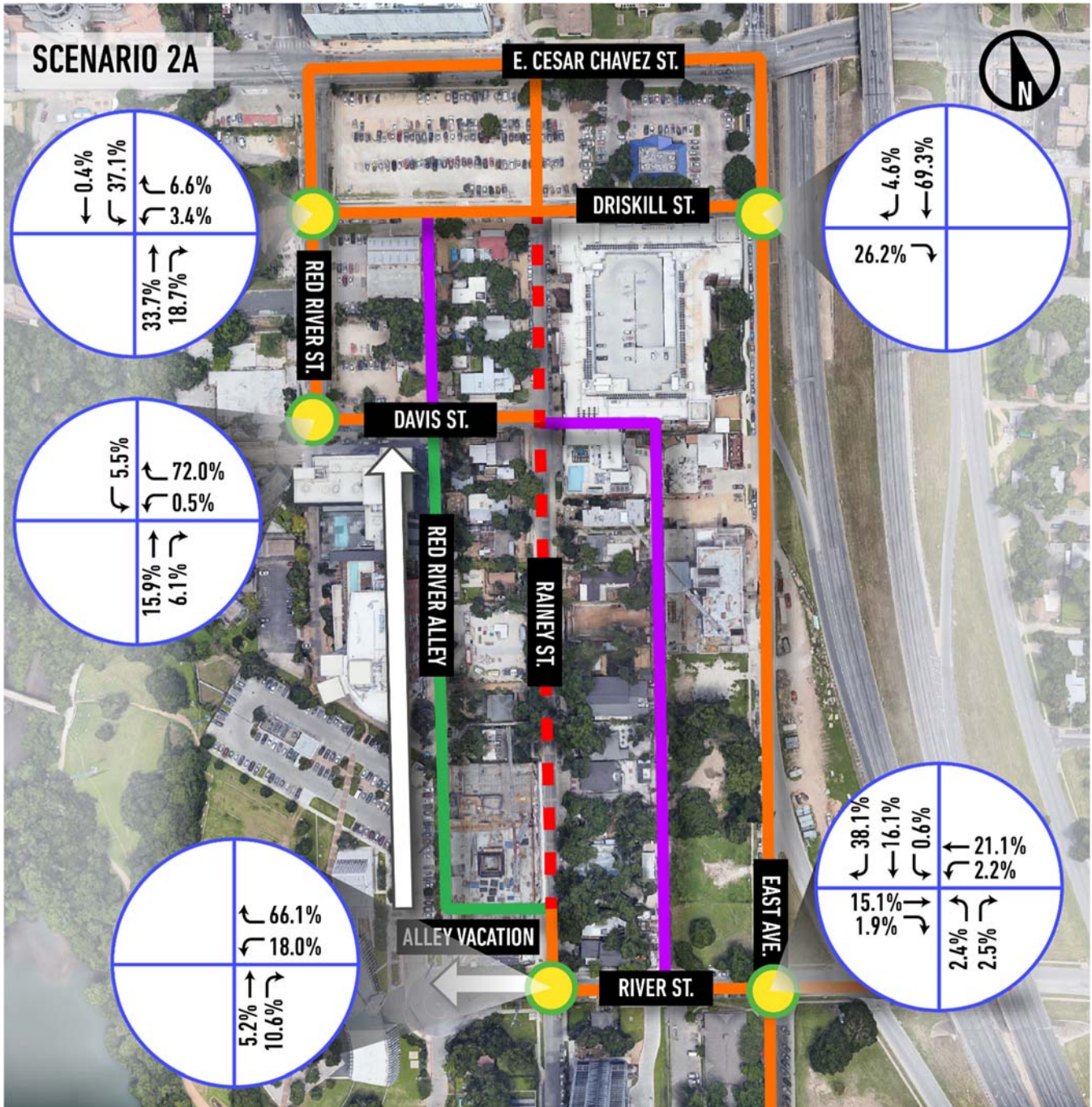
Appendix
Weekend Peak Trip Distributions

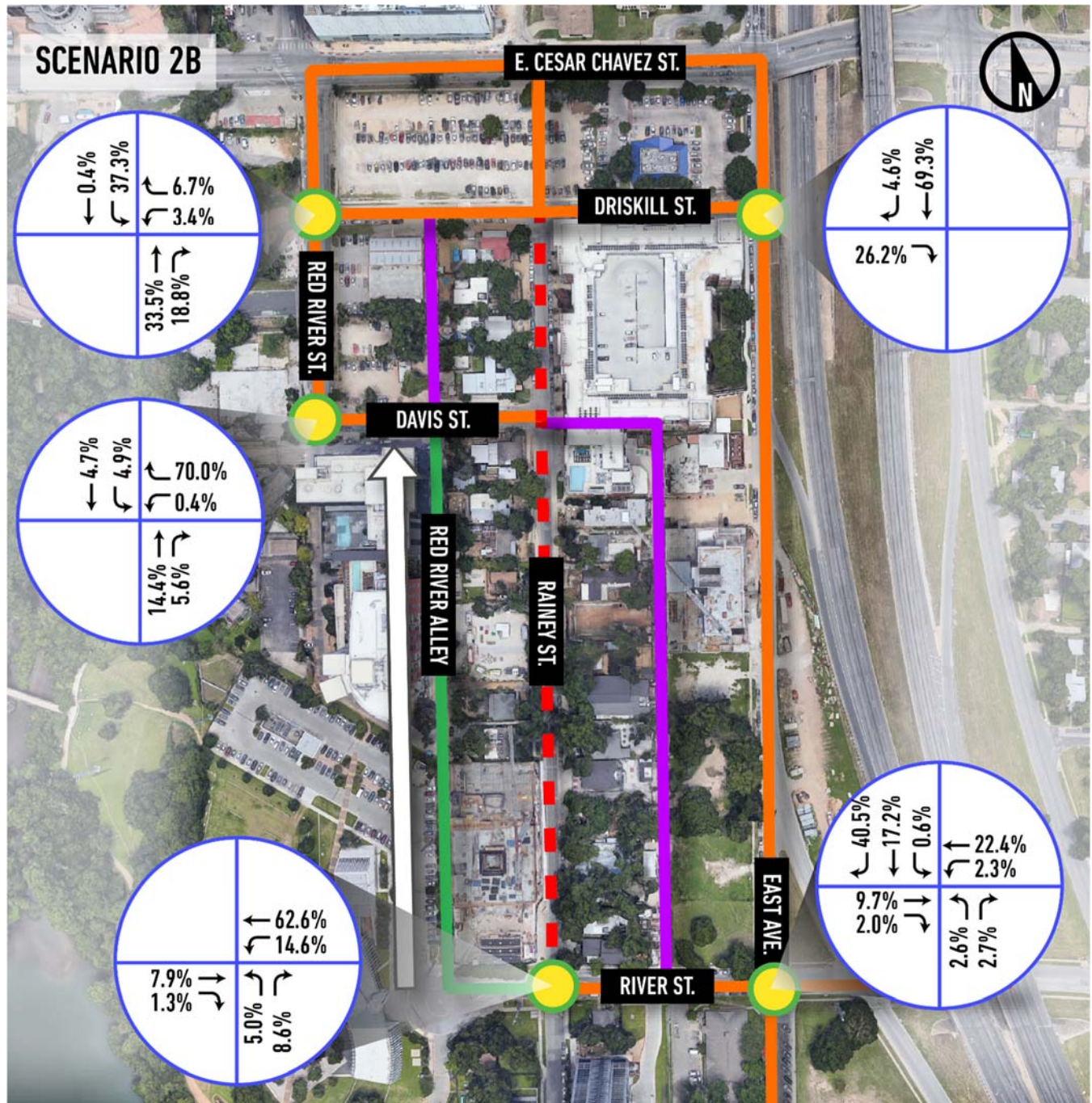


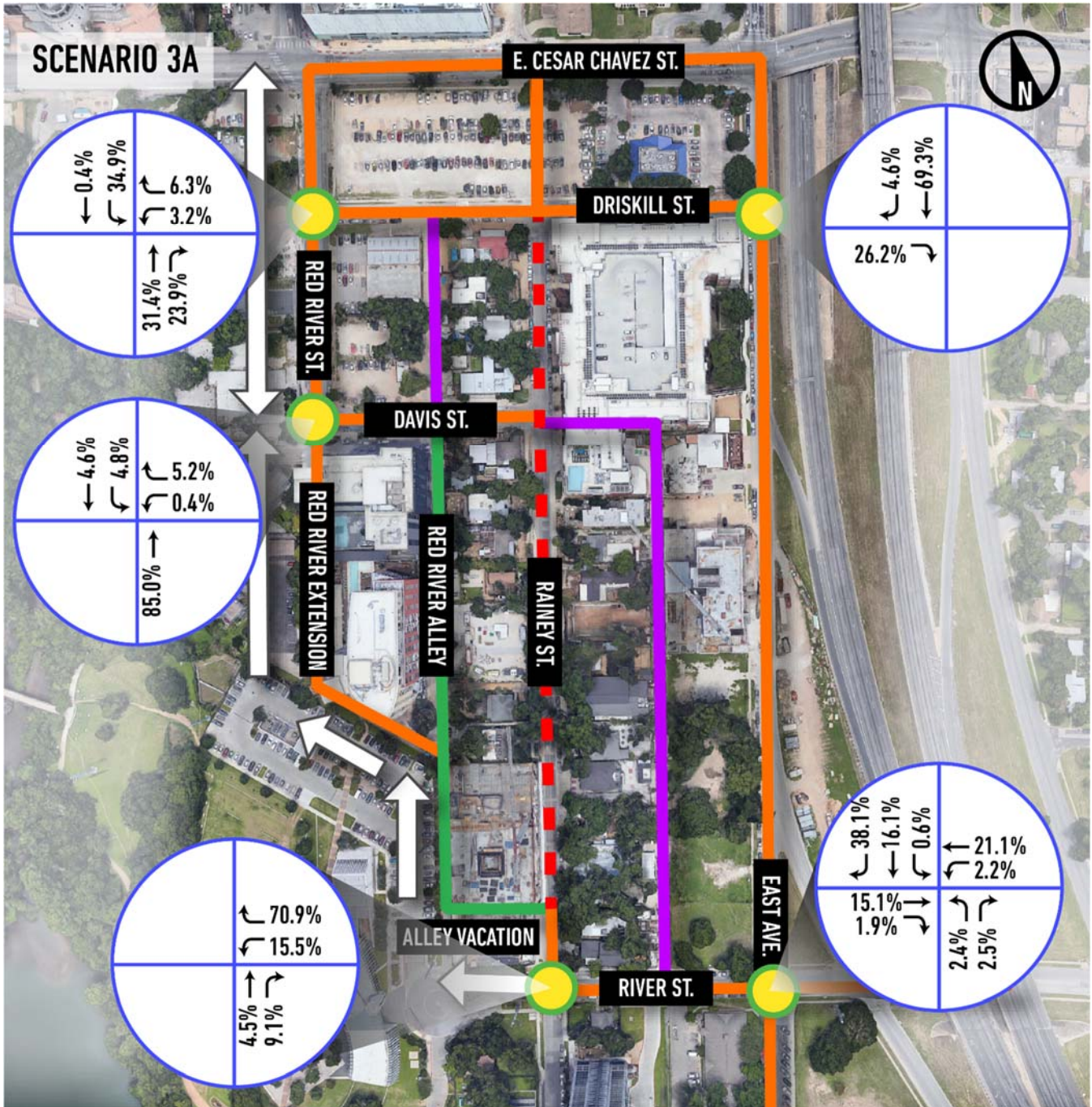


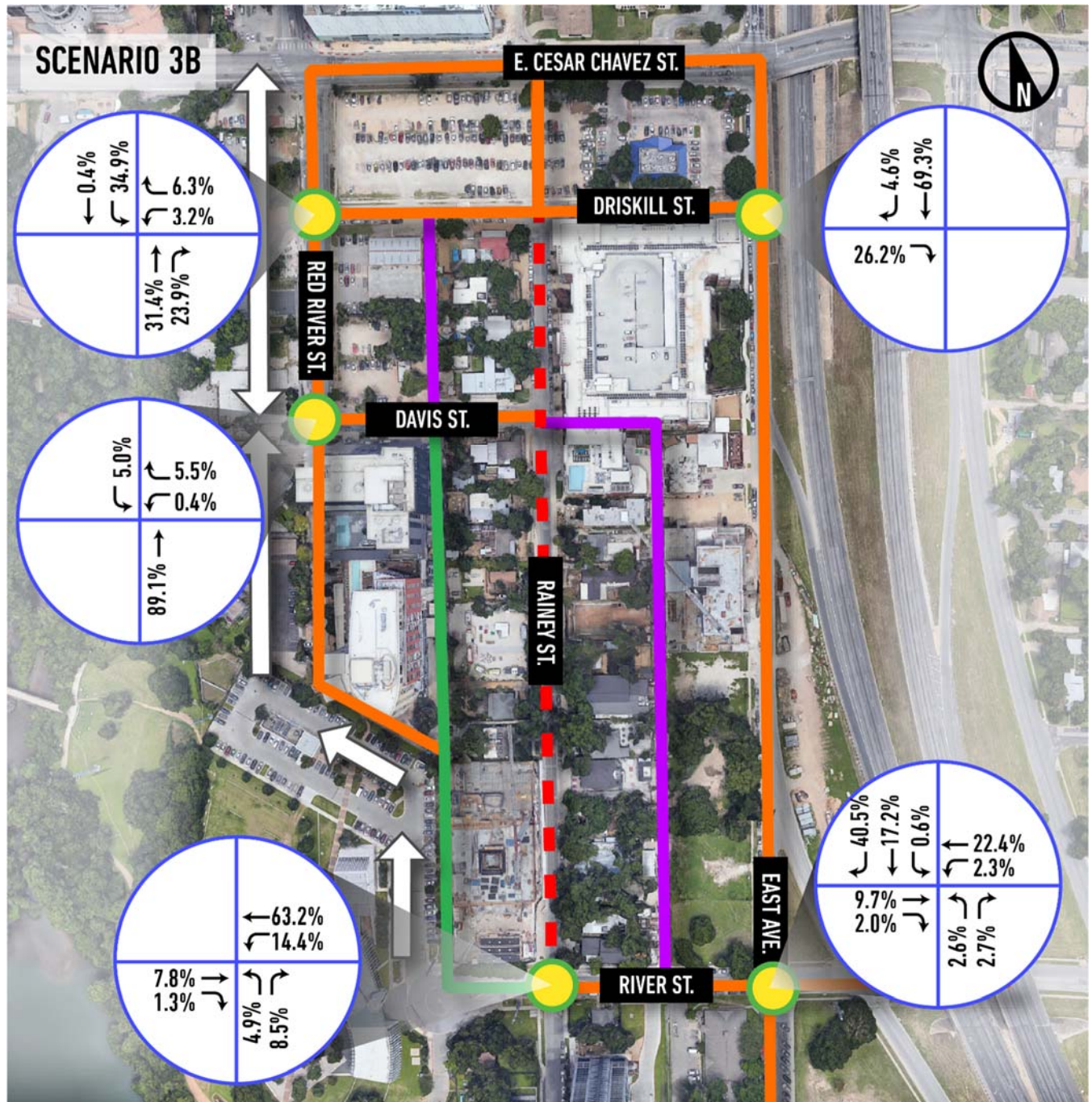


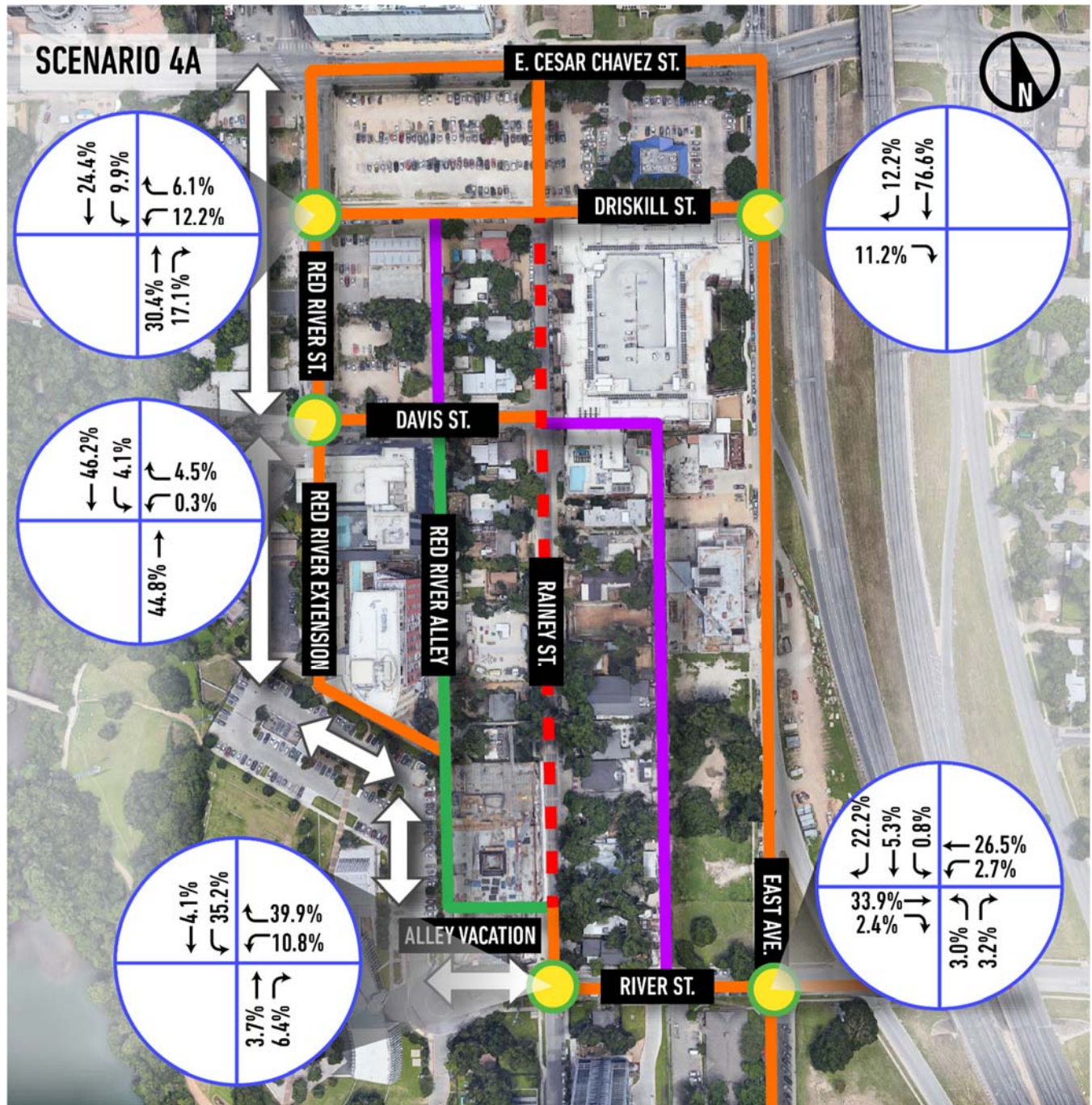


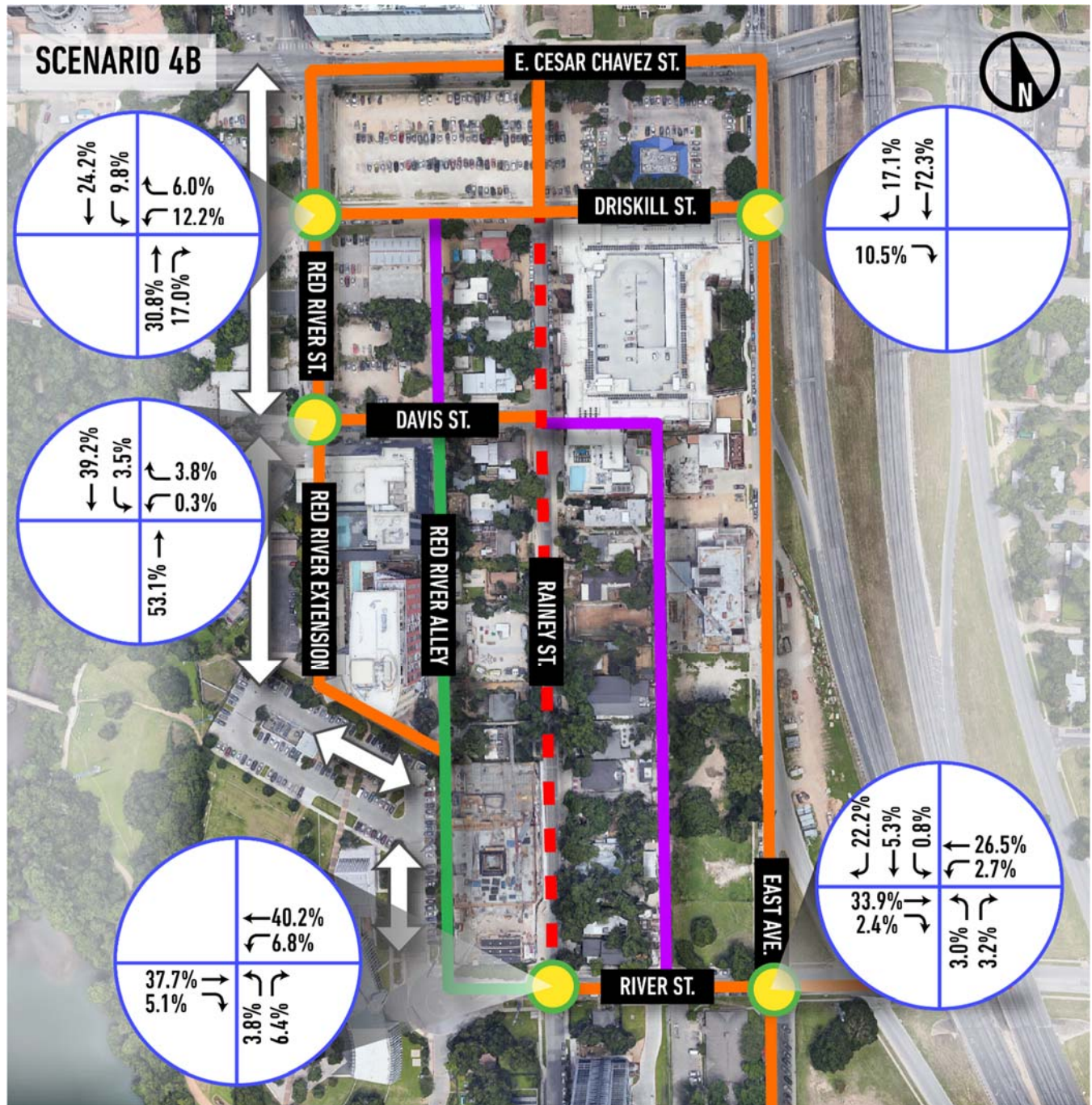


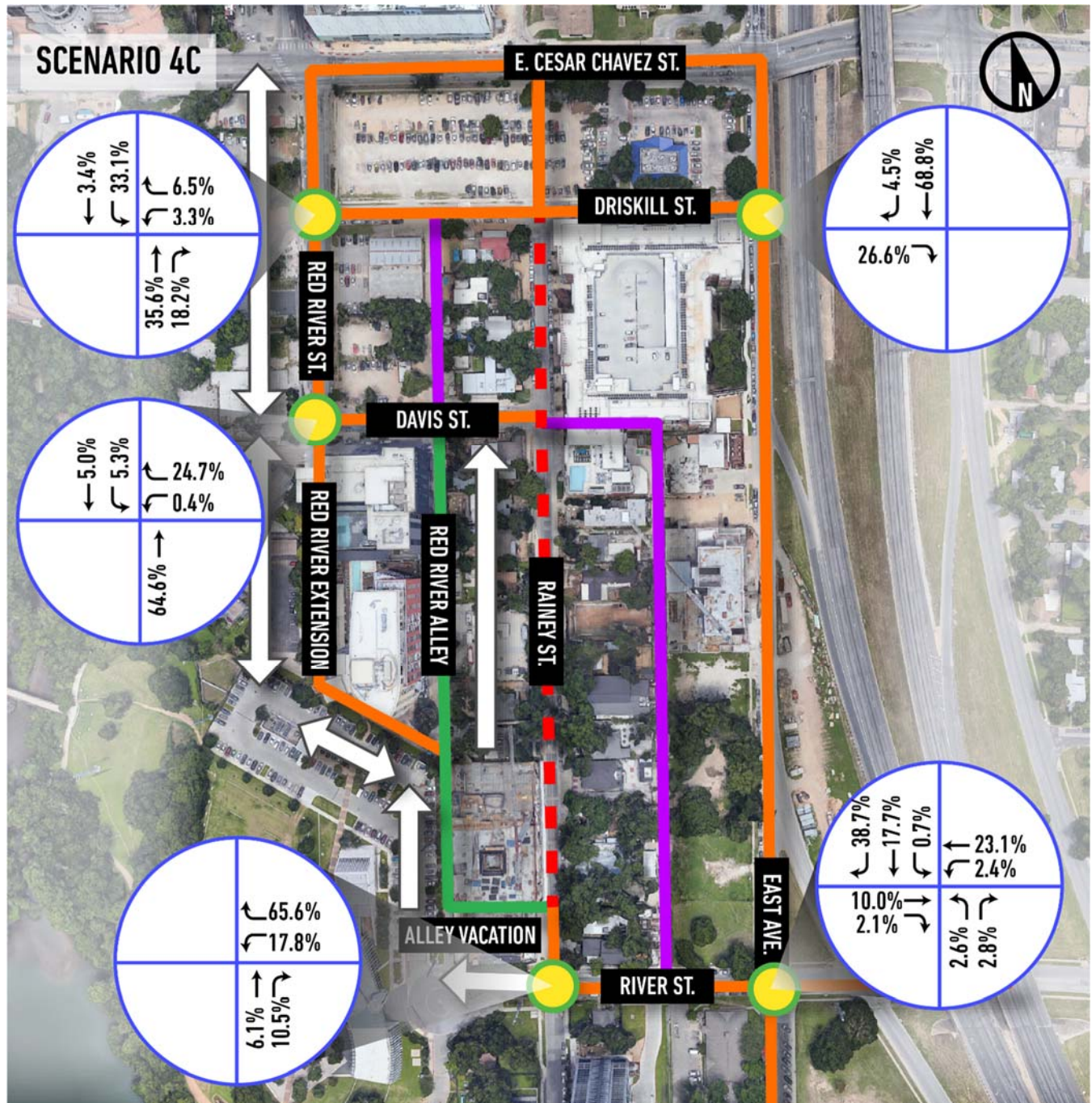












Appendix
Synchro Reports - PM Peak No Reductions

Existing Conditions

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.98		0.99	0.97		0.96	0.95			0.95	0.89
Frt		0.985			0.976			0.938				0.850
Flt Protected	0.950			0.950			0.950				0.972	
Satd. Flow (prot)	1770	3419	0	1676	3170	0	1770	1666	0	0	1811	1583
Flt Permitted	0.950			0.128			0.152				0.754	
Satd. Flow (perm)	1641	3419	0	223	3170	0	273	1666	0	0	1334	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			29			29				247
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			222				718
Travel Time (s)		15.8			4.0			5.0				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	1380	157	30	551	104	100	71	50	170	124	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1537	0	30	655	0	100	121	0	0	294	279
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	13.0	84.0		71.0	71.0		9.0	36.0		27.0	27.0	27.0
Total Split (%)	10.8%	70.0%		59.2%	59.2%		7.5%	30.0%		22.5%	22.5%	22.5%
Maximum Green (s)	7.0	78.0		65.0	65.0		3.0	30.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0
Act Efect Green (s)	9.0	80.0		67.0	67.0		31.0	32.0			23.0	23.0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.08	0.67		0.56	0.56		0.26	0.27			0.19	0.19
v/c Ratio	0.35	0.67		0.24	0.37		0.83	0.26			1.15	0.60
Control Delay	55.1	12.9		19.6	17.6		86.2	27.9			125.4	19.7
Queue Delay	0.0	0.2		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	55.1	13.1		19.6	17.6		86.2	27.9			125.4	19.7
LOS	E	B		B	B		F	C			F	B
Approach Delay		14.4			17.7			54.3			73.9	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	38	220		23	258		61	56			~268	68
Queue Length 95th (ft)	m45	321		m20	m168		#153	108			m#249	m60
Internal Link Dist (ft)		615			94			142			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	132	2286		124	1782		120	465			255	468
Starvation Cap Reductn	0	179		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.35	0.73		0.24	0.37		0.83	0.26			1.15	0.60

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 42 (35%), Referenced to phase 2:EBT and 6:WBTL, Start of Red

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 29.1

Intersection LOS: C

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

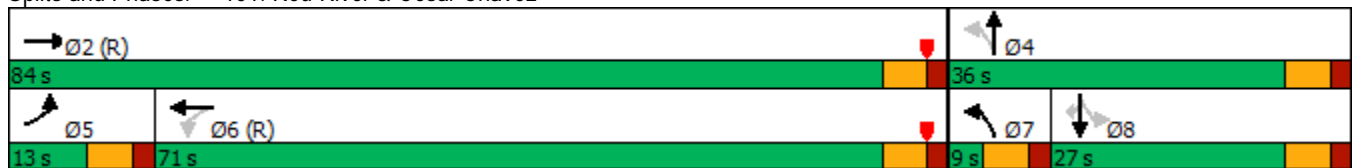
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



HCM 6th TWSC
102: Red River & J/Driskill

09/25/2019





Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	71	0	132	21	151	135	0
Future Vol, veh/h	0	0	0	19	0	71	0	132	21	151	135	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	21	0	77	0	143	23	164	147	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	668	641	147	630	630	155	-	0	0	166	0	0
Stage 1	475	475	-	155	155	-	-	-	-	-	-	-
Stage 2	193	166	-	475	475	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	372	393	900	394	399	891	0	-	-	1412	-	-
Stage 1	570	557	-	847	769	-	0	-	-	-	-	-
Stage 2	809	761	-	570	557	-	0	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	307	343	900	356	349	891	-	-	-	1412	-	-
Mov Cap-2 Maneuver	307	343	-	356	349	-	-	-	-	-	-	-
Stage 1	570	487	-	847	769	-	-	-	-	-	-	-
Stage 2	739	761	-	498	487	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.2	0	4.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	676	1412	-
HCM Lane V/C Ratio	-	-	-	0.145	0.116	-
HCM Control Delay (s)	-	-	0	11.2	7.9	0
HCM Lane LOS	-	-	A	B	A	A
HCM 95th %tile Q(veh)	-	-	-	0.5	0.4	-

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	59	10	143	25	135	19
Future Vol, veh/h	59	10	143	25	135	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	11	155	27	147	21
Number of Lanes	1	0	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	8.4	8.6	9.4
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	86%	100%	0%
Vol Thru, %	85%	0%	0%	100%
Vol Right, %	15%	14%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	168	69	135	19
LT Vol	0	59	135	0
Through Vol	143	0	0	19
RT Vol	25	10	0	0
Lane Flow Rate	183	75	147	21
Geometry Grp	5	2	7	7
Degree of Util (X)	0.22	0.101	0.219	0.028
Departure Headway (Hd)	4.339	4.853	5.371	4.869
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	829	740	672	740
Service Time	2.354	2.874	3.071	2.569
HCM Lane V/C Ratio	0.221	0.101	0.219	0.028
HCM Control Delay	8.6	8.4	9.6	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.3	0.8	0.1

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷		↶				↷	
Traffic Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Future Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	136	55	21	29	0	79	0	64	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	191	0	0	235	-	164	267	262	29
Stage 1	-	-	-	-	-	-	164	-	-	71	71	-
Stage 2	-	-	-	-	-	-	71	-	-	196	191	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1383	-	-	720	0	881	686	643	1046
Stage 1	0	-	-	-	-	-	838	0	-	939	836	-
Stage 2	0	-	-	-	-	-	939	0	-	806	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1383	-	-	712	-	881	629	633	1046
Mov Cap-2 Maneuver	-	-	-	-	-	-	712	-	-	629	633	-
Stage 1	-	-	-	-	-	-	838	-	-	939	823	-
Stage 2	-	-	-	-	-	-	925	-	-	747	742	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.2			10.7			0		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	779	-	-	1383	-	-	-
HCM Lane V/C Ratio	0.184	-	-	0.015	-	-	-
HCM Control Delay (s)	10.7	-	-	7.6	0	-	0
HCM Lane LOS	B	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-	-	-

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	20	140	49	112	50	20
Future Vol, veh/h	20	140	49	112	50	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	152	53	122	54	22

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	293	65	76	0	0
Stage 1	65	-	-	-	-
Stage 2	228	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	698	999	1523	-	-
Stage 1	958	-	-	-	-
Stage 2	810	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	672	999	1523	-	-
Mov Cap-2 Maneuver	672	-	-	-	-
Stage 1	923	-	-	-	-
Stage 2	810	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	2.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1523	-	942	-	-
HCM Lane V/C Ratio	0.035	-	0.185	-	-
HCM Control Delay (s)	7.4	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

HCM 6th TWSC
107: Red River Alley & Davis St

09/25/2019

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	160	0	0	69	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	0	0	75	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	174	0	249
Stage 1	-	-	-	-	174
Stage 2	-	-	-	-	75
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1403	-	739
Stage 1	-	-	-	-	856
Stage 2	-	-	-	-	948
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1403	-	739
Mov Cap-2 Maneuver	-	-	-	-	739
Stage 1	-	-	-	-	856
Stage 2	-	-	-	-	948

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1403	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection				
Intersection Delay, s/veh	4.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	38	215	46	216
Demand Flow Rate, veh/h	38	215	46	220
Vehicles Circulating, veh/h	248	43	151	69
Vehicles Exiting, veh/h	41	154	135	189
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	0.995
Approach Delay, s/veh	3.7	4.1	3.4	4.3
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	38	215	46	220
Cap Entry Lane, veh/h	1071	1321	1183	1286
Entry HV Adj Factor	1.000	1.000	1.000	0.982
Flow Entry, veh/h	38	215	46	216
Cap Entry, veh/h	1068	1307	1183	1257
V/C Ratio	0.036	0.165	0.039	0.172
Control Delay, s/veh	3.7	4.1	3.4	4.3
LOS	A	A	A	A
95th %tile Queue, veh	0	1	0	1

HCM 6th TWSC
112: East Ave & River St

09/25/2019

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	↻
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Conflicting Peds, #/hr	19	0	13	13	0	19	11	0	1	1	0	11
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	85	85	85	65	65	65	80	80	80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	197	24	28	199	0	32	0	35	8	13	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	234	0	0	525	477	223	483	489	210
Stage 1	-	-	-	-	-	-	222	222	-	255	255	-
Stage 2	-	-	-	-	-	-	303	255	-	228	234	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	0	-	-	1345	-	0	466	490	822	497	482	835
Stage 1	0	-	-	-	-	0	785	723	-	754	700	-
Stage 2	0	-	-	-	-	0	711	700	-	779	715	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1328	-	-	406	472	811	466	465	826
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	472	-	466	465	-
Stage 1	-	-	-	-	-	-	785	714	-	754	683	-
Stage 2	-	-	-	-	-	-	625	683	-	744	706	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	12.5	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	549	-	-	1328	-	692
HCM Lane V/C Ratio	0.123	-	-	0.021	-	0.116
HCM Control Delay (s)	12.5	-	-	7.8	0	10.9
HCM Lane LOS	B	-	-	A	A	B
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	0.4

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98			0.99							
Frt		0.910										
Flt Protected					0.965						0.997	
Satd. Flow (prot)	0	1650	0	0	1815	0	0	0	0	0	3565	0
Flt Permitted					0.491						0.997	
Satd. Flow (perm)	0	1650	0	0	918	0	0	0	0	0	3565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	75	150	574	210	0	0	0	0	32	589	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	225	0	0	784	0	0	0	0	0	621	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	
Detector Phase		12		3	3 12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		40.0		25.0						60.0	60.0	
Total Split (%)		32.0%		20.0%						48.0%	48.0%	
Maximum Green (s)		34.0		19.0						54.0	54.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0										-2.0
Total Lost Time (s)		4.0										4.0
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		36.0			57.0							56.0
Actuated g/C Ratio		0.29			0.46							0.45
v/c Ratio		0.42			1.38							0.39
Control Delay		25.4			204.1							24.0
Queue Delay		0.0			0.0							0.0
Total Delay		25.4			204.1							24.0
LOS		C			F							C
Approach Delay		25.4			204.1							24.0
Approach LOS		C			F							C
Queue Length 50th (ft)		92			-868							173
Queue Length 95th (ft)		127			m#906							179
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		532			569							1597
Starvation Cap Reductn		0			0							0
Spillback Cap Reductn		0			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		0.42			1.38							0.39

Intersection Summary

Area Type: Other
 Cycle Length: 125
 Actuated Cycle Length: 125
 Offset: 0 (0%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.38
 Intersection Signal Delay: 110.8
 Intersection LOS: F
 Intersection Capacity Utilization 81.1%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	184	0	0	1494	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	200	0	0	1624	50

Major/Minor	Minor2	Major2
Conflicting Flow All	- 837	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 310	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- 310	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	35.5	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	310	-	-
HCM Lane V/C Ratio	0.645	-	-
HCM Control Delay (s)	35.5	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	4.2	-	-

Scenario 1a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1419	428	66	507	96	570	223	130	175	246	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.95			0.97			0.96			0.98	0.88
Frt		0.965			0.976			0.945				0.850
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1770	3256	0	1676	3163	0	1770	1682	0	0	1825	1583
Flt Permitted	0.950			0.098			0.180				0.438	
Satd. Flow (perm)	1651	3256	0	173	3163	0	335	1682	0	0	803	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			17			1				134
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			124				718
Travel Time (s)		15.8			4.0			2.8				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1805	544	84	645	122	725	284	165	223	313	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	725	449	0	0	536	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	57.0		45.0	45.0		22.0	73.0		51.0	51.0	51.0
Total Split (%)	9.2%	43.8%		34.6%	34.6%		16.9%	56.2%		39.2%	39.2%	39.2%
Maximum Green (s)	6.0	51.0		39.0	39.0		16.0	67.0		45.0	45.0	45.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

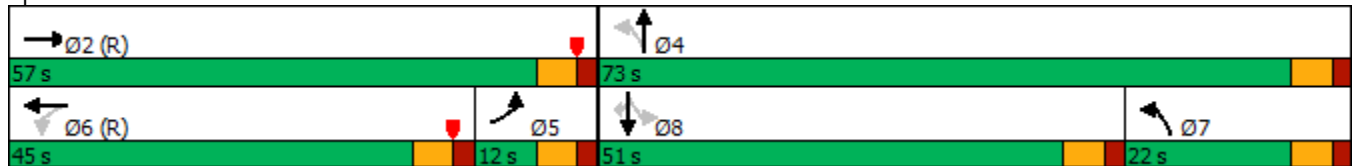
09/25/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	53.0		41.0	41.0		68.0	69.0			47.0	47.0
Actuated g/C Ratio	0.06	0.41		0.32	0.32		0.52	0.53			0.36	0.36
v/c Ratio	0.49	1.74		1.56	0.76		2.00	0.50			1.85	0.56
Control Delay	56.9	359.4		279.9	11.0		487.0	21.9			415.1	19.9
Queue Delay	0.0	0.0		0.0	0.6		0.0	0.0			0.0	0.0
Total Delay	56.9	359.4		279.9	11.5		487.0	21.9			415.1	20.0
LOS	E	F		F	B		F	C			F	B
Approach Delay		352.7			38.0			309.1			265.4	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	43	~1545		~58	64		~843	233			~689	95
Queue Length 95th (ft)	m40	m#1395		m#62	m61		#1087	328			m#892	m130
Internal Link Dist (ft)		615			94			44			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	108	1349		54	1009		362	893			290	588
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	52		0	0			0	2
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.49	1.74		1.56	0.80		2.00	0.50			1.85	0.56

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 44 (34%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 2.00
 Intersection Signal Delay: 278.2 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	197.5
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	132	21	151	135
Future Vol, veh/h	43	446	389	43	350	318
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	567	495	55	445	404
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	105.7	87	336.2
HCM LOS	F	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	52%
Vol Thru, %	90%	0%	48%
Vol Right, %	10%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	432	489	668
LT Vol	0	43	350
Through Vol	389	0	318
RT Vol	43	446	0
Lane Flow Rate	549	622	850
Geometry Grp	1	1	1
Degree of Util (X)	1.053	1.123	1.684
Departure Headway (Hd)	8.297	7.516	7.64
Convergence, Y/N	Yes	Yes	Yes
Cap	440	491	484
Service Time	6.297	5.516	5.64
HCM Lane V/C Ratio	1.248	1.267	1.756
HCM Control Delay	87	105.7	336.2
HCM Lane LOS	F	F	F
HCM 95th-tile Q	14.6	18.4	46.7

HCM 6th Roundabout
 103: Private Drive/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	6.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		276		325	
Demand Flow Rate, veh/h	143		282		331	
Vehicles Circulating, veh/h	474		385		335	
Vehicles Exiting, veh/h	121		281		282	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	5.0		7.2		7.3	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.797	0.203	1.000	1.000	0.527	0.473
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	114	29	282	331	192	172
Cap Entry Lane, veh/h	923	923	932	981	1151	1151
Entry HV Adj Factor	0.982	0.980	0.979	0.981	0.979	0.983
Flow Entry, veh/h	112	28	276	325	188	169
Cap Entry, veh/h	906	904	912	962	1127	1131
V/C Ratio	0.124	0.031	0.303	0.338	0.167	0.149
Control Delay, s/veh	5.1	4.3	7.2	7.3	4.7	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	1	1

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection

Int Delay, s/veh 1090.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Future Vol, veh/h	82	334	67	147	268	0	283	95	112	106	28	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	425	85	187	341	0	360	121	142	135	36	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	341	0	0	510	0	0	1458	1391	468	1522	1433	341
Stage 1	-	-	-	-	-	-	676	676	-	715	715	-
Stage 2	-	-	-	-	-	-	782	715	-	807	718	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1218	-	-	1055	-	-	~ 107	142	595	~ 97	134	701
Stage 1	-	-	-	-	-	-	443	453	-	422	434	-
Stage 2	-	-	-	-	-	-	387	434	-	375	433	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1218	-	-	1055	-	-	~ 50	~ 97	595	-	92	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 50	~ 97	-	-	92	-
Stage 1	-	-	-	-	-	-	389	398	-	371	339	-
Stage 2	-	-	-	-	-	-	~ 233	339	-	175	381	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	3.2	\$ 3555.3	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	1218	-	-	1055	-	-	-
HCM Lane V/C Ratio	8.655	0.086	-	-	0.177	-	-	-
HCM Control Delay (s)	\$ 3555.3	8.2	0	-	9.1	0	-	-
HCM Lane LOS	F	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	72.1	0.3	-	-	0.6	-	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	19.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	140	49	112	50	20
Future Vol, veh/h	99	140	158	391	160	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	178	201	497	203	104

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1154	255	307	0	0
Stage 1	255	-	-	-	-
Stage 2	899	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	218	784	1254	-	-
Stage 1	788	-	-	-	-
Stage 2	397	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	170	784	1254	-	-
Mov Cap-2 Maneuver	170	-	-	-	-
Stage 1	614	-	-	-	-
Stage 2	397	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	80.3	2.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1254	-	314	-	-
HCM Lane V/C Ratio	0.16	-	0.968	-	-
HCM Control Delay (s)	8.4	0	80.3	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.6	-	10.1	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	239	24	0	240	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	304	31	0	305	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	335	0	625
Stage 1	-	-	-	-	320
Stage 2	-	-	-	-	305
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1224	-	449
Stage 1	-	-	-	-	736
Stage 2	-	-	-	-	748
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1224	-	449
Mov Cap-2 Maneuver	-	-	-	-	449
Stage 1	-	-	-	-	736
Stage 2	-	-	-	-	748

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1224	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection				
Intersection Delay, s/veh	7.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	84	708	69	337
Demand Flow Rate, veh/h	84	709	69	345
Vehicles Circulating, veh/h	380	65	298	82
Vehicles Exiting, veh/h	47	302	166	692
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	0.995
Approach Delay, s/veh	4.7	9.1	4.1	5.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	84	709	69	345
Cap Entry Lane, veh/h	937	1291	1018	1269
Entry HV Adj Factor	1.000	0.999	1.000	0.977
Flow Entry, veh/h	84	708	69	337
Cap Entry, veh/h	933	1276	1018	1234
V/C Ratio	0.090	0.555	0.068	0.273
Control Delay, s/veh	4.7	9.1	4.1	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	4	0	1

Intersection	
Intersection Delay, s/veh	187.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	280	19	65	367	0	57	0	89	65	125	231
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	455	31	89	505	0	103	0	160	95	183	338
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	138.7	241.1	38.9	236.6
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	0%	15%	15%
Vol Thru, %	0%	94%	85%	30%
Vol Right, %	61%	6%	0%	55%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	146	299	432	421
LT Vol	57	0	65	65
Through Vol	0	280	367	125
RT Vol	89	19	0	231
Lane Flow Rate	263	486	595	616
Geometry Grp	1	1	1	1
Degree of Util (X)	0.68	1.171	1.439	1.433
Departure Headway (Hd)	12.68	11.231	10.547	9.975
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	289	326	351	369
Service Time	10.68	9.231	8.547	7.975
HCM Lane V/C Ratio	0.91	1.491	1.695	1.669
HCM Control Delay	38.9	138.7	241.1	236.6
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.6	15.8	25.9	26.8

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		36.0		41.0						53.0	53.0	
Total Split (%)		27.7%		31.5%						40.8%	40.8%	
Maximum Green (s)		30.0		35.0						47.0	47.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		32.0			69.0						49.0	
Actuated g/C Ratio		0.25			0.53						0.38	
v/c Ratio		1.49			2.16						0.92	
Control Delay		266.9			548.2						50.6	
Queue Delay		12.0			0.0						2.4	
Total Delay		278.8			548.2						53.0	
LOS		F			F						D	
Approach Delay		278.8			548.2						53.0	
Approach LOS		F			F						D	
Queue Length 50th (ft)		~750			~1688						514	
Queue Length 95th (ft)		#768			m#837						475	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		447			565						1334	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		273			0						47	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		3.84			2.16						0.95	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 84 (65%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.16
 Intersection Signal Delay: 295.4
 Intersection LOS: F
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	415.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	552	0	0	1800	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	702	0	0	2289	528

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1409	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 128	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 128	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2084.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	128	-	-
HCM Lane V/C Ratio	5.484	-	-
HCM Control Delay (s)	\$ 2084.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	75.2	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1419	428	66	507	96	570	223	130	175	246	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.96			0.97			0.96			0.99	0.89
Frt		0.965			0.976			0.945				0.850
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1770	3267	0	1676	3170	0	1770	1687	0	0	1825	1583
Flt Permitted	0.950			0.108			0.181				0.437	
Satd. Flow (perm)	1660	3267	0	191	3170	0	337	1687	0	0	802	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			19			1				143
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			124				718
Travel Time (s)		15.8			4.0			2.8				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1805	544	84	645	122	725	284	165	223	313	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	725	449	0	0	536	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	53.0		41.0	41.0		20.0	67.0		47.0	47.0	47.0
Total Split (%)	10.0%	44.2%		34.2%	34.2%		16.7%	55.8%		39.2%	39.2%	39.2%
Maximum Green (s)	6.0	47.0		35.0	35.0		14.0	61.0		41.0	41.0	41.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

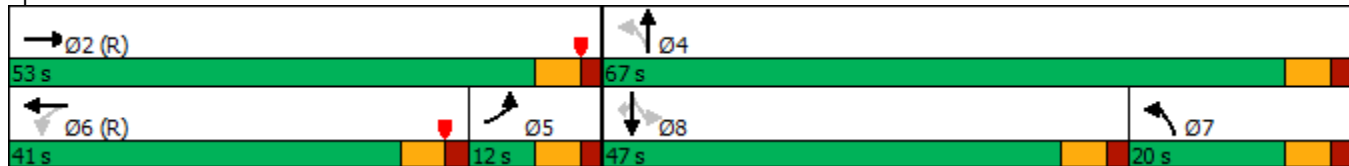


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	49.0		37.0	37.0		62.0	63.0			43.0	43.0
Actuated g/C Ratio	0.07	0.41		0.31	0.31		0.52	0.52			0.36	0.36
v/c Ratio	0.45	1.73		1.45	0.77		2.05	0.51			1.87	0.55
Control Delay	46.1	352.0		231.2	8.7		508.6	20.9			422.8	18.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	46.1	352.0		231.2	8.7		508.6	20.9			422.8	18.7
LOS	D	F		F	A		F	C			F	B
Approach Delay		345.3			30.7			322.1			269.7	
Approach LOS		F			C			F			F	
Queue Length 50th (ft)	39	~1420		-85	49		-784	216			~637	79
Queue Length 95th (ft)	m36	m#809		m#89	m48		#1023	309			m#806	m117
Internal Link Dist (ft)		615			94			44			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	1357		58	990		353	886			287	595
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.45	1.73		1.45	0.77		2.05	0.51			1.87	0.55

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 12 (10%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 2.05
 Intersection Signal Delay: 277.2 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	197.5
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	132	21	151	135
Future Vol, veh/h	43	446	389	43	350	318
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	567	495	55	445	404
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	105.7	87	336.2
HCM LOS	F	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	52%
Vol Thru, %	90%	0%	48%
Vol Right, %	10%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	432	489	668
LT Vol	0	43	350
Through Vol	389	0	318
RT Vol	43	446	0
Lane Flow Rate	549	622	850
Geometry Grp	1	1	1
Degree of Util (X)	1.053	1.123	1.684
Departure Headway (Hd)	8.297	7.516	7.64
Convergence, Y/N	Yes	Yes	Yes
Cap	440	491	484
Service Time	6.297	5.516	5.64
HCM Lane V/C Ratio	1.248	1.267	1.756
HCM Control Delay	87	105.7	336.2
HCM Lane LOS	F	F	F
HCM 95th-tile Q	14.6	18.4	46.7

Intersection						
Intersection Delay, s/veh	6.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		276		325	
Demand Flow Rate, veh/h	143		282		331	
Vehicles Circulating, veh/h	474		385		335	
Vehicles Exiting, veh/h	121		281		282	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	5.0		7.2		7.3	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.797	0.203	1.000	1.000	0.527	0.473
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	114	29	282	331	192	172
Cap Entry Lane, veh/h	923	923	932	981	1151	1151
Entry HV Adj Factor	0.982	0.980	0.979	0.981	0.979	0.983
Flow Entry, veh/h	112	28	276	325	188	169
Cap Entry, veh/h	906	904	912	962	1127	1131
V/C Ratio	0.124	0.031	0.303	0.338	0.167	0.149
Control Delay, s/veh	5.1	4.3	7.2	7.3	4.7	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	1	1

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection

Int Delay, s/veh 1090.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Future Vol, veh/h	82	334	67	147	268	0	283	95	112	106	28	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	425	85	187	341	0	360	121	142	135	36	98

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	341	0	0	510
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1218	-	-	1055
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1218	-	-	1055
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	3.2	\$ 3555.3	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	1218	-	-	1055	-	-	-
HCM Lane V/C Ratio	8.655	0.086	-	-	0.177	-	-	-
HCM Control Delay (s)	\$ 3555.3	8.2	0	-	9.1	0	-	-
HCM Lane LOS	F	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	72.1	0.3	-	-	0.6	-	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	19.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	20	140	49	112	50	20
Future Vol, veh/h	99	140	158	391	160	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	178	201	497	203	104

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1154	255	307	0	0
Stage 1	255	-	-	-	-
Stage 2	899	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	218	784	1254	-	-
Stage 1	788	-	-	-	-
Stage 2	397	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	170	784	1254	-	-
Mov Cap-2 Maneuver	170	-	-	-	-
Stage 1	614	-	-	-	-
Stage 2	397	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	80.3	2.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1254	-	314	-	-
HCM Lane V/C Ratio	0.16	-	0.968	-	-
HCM Control Delay (s)	8.4	0	80.3	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.6	-	10.1	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	239	24	0	240	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	304	31	0	305	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	335	0	625
Stage 1	-	-	-	-	320
Stage 2	-	-	-	-	305
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1224	-	449
Stage 1	-	-	-	-	736
Stage 2	-	-	-	-	748
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1224	-	449
Mov Cap-2 Maneuver	-	-	-	-	449
Stage 1	-	-	-	-	736
Stage 2	-	-	-	-	748

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1224	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
110: Rainey St & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	10	17	1	44	14	131	2	20	13	97	74	19
Future Volume (vph)	10	39	3	44	14	474	2	30	13	159	76	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Ped Bike Factor		1.00			0.94			0.96			0.93	
Frt		0.992			0.880			0.961			0.990	
Flt Protected		0.991			0.996			0.998			0.970	
Satd. Flow (prot)	0	1866	0	0	1564	0	0	1755	0	0	1771	0
Flt Permitted		0.872			0.966			0.983			0.769	
Satd. Flow (perm)	0	1638	0	0	1517	0	0	1727	0	0	1319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			555			20			9	
Link Speed (mph)		30			30			30			20	
Link Distance (ft)		184			135			829			246	
Travel Time (s)		4.2			3.1			18.8			8.4	
Confl. Peds. (#/hr)	35					35	27		77	77		27
Confl. Bikes (#/hr)			1						2			10
Peak Hour Factor	0.73	0.73	0.73	0.88	0.88	0.88	0.77	0.77	0.77	0.88	0.88	0.88
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%	0%
Adj. Flow (vph)	16	63	5	59	19	630	3	46	20	211	101	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	0	0	708	0	0	69	0	0	337	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		19.0			19.0			19.0			19.0	

Intersection	
Intersection Delay, s/veh	187.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	280	19	65	367	0	57	0	89	65	125	231
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	455	31	89	505	0	103	0	160	95	183	338
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	138.7	241.1	38.9	236.6
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	0%	15%	15%
Vol Thru, %	0%	94%	85%	30%
Vol Right, %	61%	6%	0%	55%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	146	299	432	421
LT Vol	57	0	65	65
Through Vol	0	280	367	125
RT Vol	89	19	0	231
Lane Flow Rate	263	486	595	616
Geometry Grp	1	1	1	1
Degree of Util (X)	0.68	1.171	1.439	1.433
Departure Headway (Hd)	12.68	11.231	10.547	9.975
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	289	326	351	369
Service Time	10.68	9.231	8.547	7.975
HCM Lane V/C Ratio	0.91	1.491	1.695	1.669
HCM Control Delay	38.9	138.7	241.1	236.6
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.6	15.8	25.9	26.8

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	170	264	528	432	0	0	0	0	198	599	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.918										
Flt Protected					0.973						0.988	
Satd. Flow (prot)	0	1669	0	0	1830	0	0	0	0	0	3540	0
Flt Permitted					0.107						0.988	
Satd. Flow (perm)	0	1669	0	0	201	0	0	0	0	0	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	262	406	671	549	0	0	0	0	305	922	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	668	0	0	1220	0	0	0	0	0	1227	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		33.0		38.0						49.0	49.0	
Total Split (%)		27.5%		31.7%						40.8%	40.8%	
Maximum Green (s)		27.0		32.0						43.0	43.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		29.0			63.0							45.0
Actuated g/C Ratio		0.24			0.52							0.38
v/c Ratio		1.52			2.15							0.92
Control Delay		277.1			543.8							48.5
Queue Delay		11.3			0.0							1.6
Total Delay		288.5			543.8							50.2
LOS		F			F							D
Approach Delay		288.5			543.8							50.2
Approach LOS		F			F							D
Queue Length 50th (ft)		-698			-1556							473
Queue Length 95th (ft)		#726			m#760							442
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		439			567							1327
Starvation Cap Reductn		0			0							0
Spillback Cap Reductn		260			0							33
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		3.73			2.15							0.95

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 49 (41%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.15
 Intersection Signal Delay: 294.6
 Intersection LOS: F
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St/Holly St

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Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	415.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	552	0	0	1800	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	702	0	0	2289	528

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1409	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 128	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 128	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2084.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	128	-	-
HCM Lane V/C Ratio	5.484	-	-
HCM Control Delay (s)	\$ 2084.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	75.2	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1c

Scenario 1d

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1458	389	66	507	96	570	223	199	209	212	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.96			0.97			0.94				0.88
Frt		0.968			0.976			0.929				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3280	0	1676	3163	0	1770	1632	0	0	1818	1583
Flt Permitted	0.950			0.103			0.223				0.352	
Satd. Flow (perm)	1651	3280	0	182	3163	0	415	1632	0	0	656	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			17			1				140
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			118				718
Travel Time (s)		15.8			4.0			2.7				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1854	495	84	645	122	725	284	253	266	270	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	725	537	0	0	536	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	55.0		43.0	43.0		19.0	75.0		56.0	56.0	56.0
Total Split (%)	9.2%	42.3%		33.1%	33.1%		14.6%	57.7%		43.1%	43.1%	43.1%
Maximum Green (s)	6.0	49.0		37.0	37.0		13.0	69.0		50.0	50.0	50.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

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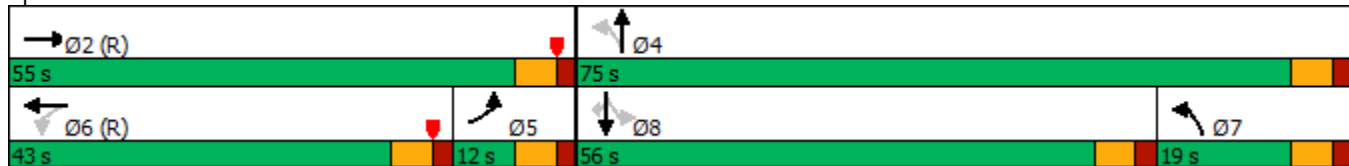


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	51.0		39.0	39.0		70.0	71.0			52.0	52.0
Actuated g/C Ratio	0.06	0.39		0.30	0.30		0.54	0.55			0.40	0.40
v/c Ratio	0.49	1.80		1.56	0.80		1.96	0.60			2.05	0.51
Control Delay	55.4	385.1		279.7	11.4		469.5	23.5			501.2	16.4
Queue Delay	0.0	0.0		0.0	0.6		0.0	0.0			0.0	0.0
Total Delay	55.4	385.1		279.7	12.0		469.5	23.5			501.2	16.4
LOS	E	F		F	B		F	C			F	B
Approach Delay		377.8			38.4			279.7			317.5	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	43	~1562		~56	67		~794	294			~609	75
Queue Length 95th (ft)	m40	m#1418		m#59	m63		#1038	412			m#698	m115
Internal Link Dist (ft)		615			94			38			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	108	1305		54	960		369	891			262	640
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	36		0	0			0	1
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.49	1.80		1.56	0.83		1.96	0.60			2.05	0.51

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 2.05
 Intersection Signal Delay: 291.4 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	177.6
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	43	160	21	131	155
Future Vol, veh/h	43	500	404	65	226	369
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	636	514	83	287	469
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	147	119.2	251.6
HCM LOS	F	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	8%	38%
Vol Thru, %	86%	0%	62%
Vol Right, %	14%	92%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	469	543	595
LT Vol	0	43	226
Through Vol	404	0	369
RT Vol	65	500	0
Lane Flow Rate	596	691	757
Geometry Grp	1	1	1
Degree of Util (X)	1.151	1.237	1.485
Departure Headway (Hd)	8.309	7.356	8.02
Convergence, Y/N	Yes	Yes	Yes
Cap	441	497	462
Service Time	6.309	5.356	6.02
HCM Lane V/C Ratio	1.351	1.39	1.639
HCM Control Delay	119.2	147	251.6
HCM Lane LOS	F	F	F
HCM 95th-tile Q	18.4	24	34.5

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	6.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		223		366	
Demand Flow Rate, veh/h	143		228		373	
Vehicles Circulating, veh/h	495		443		244	
Vehicles Exiting, veh/h	121		174		394	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	5.6		7.0		6.9	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.235	0.765
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	143	0	228	373	101	329
Cap Entry Lane, veh/h	905	905	878	1076	1199	1199
Entry HV Adj Factor	0.979	1.000	0.978	0.982	0.980	0.982
Flow Entry, veh/h	140	0	223	366	99	323
Cap Entry, veh/h	886	905	859	1056	1175	1177
V/C Ratio	0.158	0.000	0.260	0.347	0.084	0.274
Control Delay, s/veh	5.6	4.0	7.0	6.9	3.8	5.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	2	0	1

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection												
Int Delay, s/veh	851.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↷	
Traffic Vol, veh/h	0	125	27	19	27	0	45	0	59	0	0	0
Future Vol, veh/h	0	268	27	147	268	0	255	108	90	194	13	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	341	34	187	341	0	324	137	114	247	17	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	375	0	0	1131	1073	358	1199	1090	341
Stage 1	-	-	-	-	-	-	358	358	-	715	715	-
Stage 2	-	-	-	-	-	-	773	715	-	484	375	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1183	-	-	181	220	686	~ 162	215	701
Stage 1	0	-	-	-	-	-	660	628	-	422	434	-
Stage 2	0	-	-	-	-	-	392	434	-	564	617	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1183	-	-	~ 123	177	686	~ 43	173	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 123	177	-	~ 43	173	-
Stage 1	-	-	-	-	-	-	660	628	-	422	349	-
Stage 2	-	-	-	-	-	-	~ 259	349	-	367	617	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.1	\$ 1217.8	\$ 2393.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	161	-	-	1183	-	-	60
HCM Lane V/C Ratio	3.578	-	-	0.158	-	-	6.02
HCM Control Delay (s)	\$ 1217.8	-	-	8.6	0	\$ 2393.6	
HCM Lane LOS	F	-	-	A	A	-	F
HCM 95th %tile Q(veh)	55.8	-	-	0.6	-	-	41

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	6.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	70	7	84	26	20
Future Vol, veh/h	90	70	116	363	105	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	89	148	462	134	104

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	944	186	238	0	0
Stage 1	186	-	-	-	-
Stage 2	758	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	291	856	1329	-	-
Stage 1	846	-	-	-	-
Stage 2	463	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	247	856	1329	-	-
Mov Cap-2 Maneuver	247	-	-	-	-
Stage 1	719	-	-	-	-
Stage 2	463	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.4	1.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1329	-	359	-	-
HCM Lane V/C Ratio	0.111	-	0.567	-	-
HCM Control Delay (s)	8	0	27.4	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.4	-	3.3	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	0	0	27	0	0
Future Vol, veh/h	160	22	0	198	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	203	28	0	252	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	231	0	469
Stage 1	-	-	-	-	217
Stage 2	-	-	-	-	252
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1337	-	553
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	790
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1337	-	553
Mov Cap-2 Maneuver	-	-	-	-	553
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	790

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1337	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection			
Intersection Delay, s/veh	5.3		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	0	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	0	66	368
Demand Flow Rate, veh/h	0	66	379
Vehicles Circulating, veh/h	46	274	60
Vehicles Exiting, veh/h	294	165	239
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	1.000	1.000	0.995
Approach Delay, s/veh	0.0	4.0	5.5
Approach LOS	-	A	A
Lane	Left	Left	
Designated Moves	TR	LT	
Assumed Moves	TR	LT	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	66	379	
Cap Entry Lane, veh/h	1043	1298	
Entry HV Adj Factor	1.000	0.971	
Flow Entry, veh/h	66	368	
Cap Entry, veh/h	1043	1254	
V/C Ratio	0.063	0.293	
Control Delay, s/veh	4.0	5.5	
LOS	A	A	
95th %tile Queue, veh	0	1	

Intersection	
Intersection Delay, s/veh	187.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	280	19	65	367	0	57	0	89	65	125	231
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	455	31	89	505	0	103	0	160	95	183	338
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	138.7	241.1	38.9	236.6
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	0%	15%	15%
Vol Thru, %	0%	94%	85%	30%
Vol Right, %	61%	6%	0%	55%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	146	299	432	421
LT Vol	57	0	65	65
Through Vol	0	280	367	125
RT Vol	89	19	0	231
Lane Flow Rate	263	486	595	616
Geometry Grp	1	1	1	1
Degree of Util (X)	0.68	1.171	1.439	1.433
Departure Headway (Hd)	12.68	11.231	10.547	9.975
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	289	326	351	369
Service Time	10.68	9.231	8.547	7.975
HCM Lane V/C Ratio	0.91	1.491	1.695	1.669
HCM Control Delay	38.9	138.7	241.1	236.6
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.6	15.8	25.9	26.8

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	170	264	528	432	0	0	0	0	198	599	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.918										
Flt Protected					0.973						0.988	
Satd. Flow (prot)	0	1668	0	0	1830	0	0	0	0	0	3540	0
Flt Permitted					0.097						0.988	
Satd. Flow (perm)	0	1668	0	0	182	0	0	0	0	0	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	262	406	671	549	0	0	0	0	305	922	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	668	0	0	1220	0	0	0	0	0	1227	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		36.0		41.0						53.0	53.0	
Total Split (%)		27.7%		31.5%						40.8%	40.8%	
Maximum Green (s)		30.0		35.0						47.0	47.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		32.0			69.0						49.0	
Actuated g/C Ratio		0.25			0.53						0.38	
v/c Ratio		1.49			2.16						0.92	
Control Delay		266.9			548.2						50.6	
Queue Delay		12.0			0.0						2.4	
Total Delay		278.8			548.2						53.0	
LOS		F			F						D	
Approach Delay		278.8			548.2						53.0	
Approach LOS		F			F						D	
Queue Length 50th (ft)		~750			~1688						514	
Queue Length 95th (ft)		#768			m#837						475	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		447			565						1334	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		273			0						47	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		3.84			2.16						0.95	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 92 (71%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.16
 Intersection Signal Delay: 295.4
 Intersection LOS: F
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St/Holly St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	415.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	552	0	0	1800	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	702	0	0	2289	528

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1409	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 128	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 128	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2084.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	128	-	-
HCM Lane V/C Ratio	5.484	-	-
HCM Control Delay (s)	\$ 2084.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	75.2	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1426	421	66	507	96	570	223	225	175	246	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.95			0.97			0.94				0.88
Frt		0.966			0.976			0.925				0.850
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1770	3262	0	1676	3163	0	1770	1618	0	0	1825	1583
Flt Permitted	0.950			0.103			0.231				0.348	
Satd. Flow (perm)	1651	3262	0	182	3163	0	430	1618	0	0	648	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			17			1				142
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			151				718
Travel Time (s)		15.8			4.0			3.4				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1814	535	84	645	122	725	284	286	223	313	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	725	570	0	0	536	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	55.0		43.0	43.0		18.0	75.0		57.0	57.0	57.0
Total Split (%)	9.2%	42.3%		33.1%	33.1%		13.8%	57.7%		43.8%	43.8%	43.8%
Maximum Green (s)	6.0	49.0		37.0	37.0		12.0	69.0		51.0	51.0	51.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/25/2019

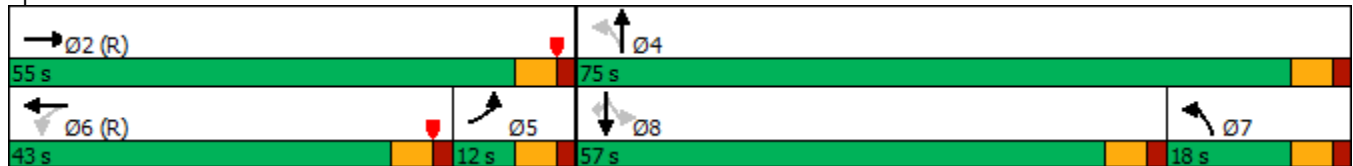


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	51.0		39.0	39.0		70.0	71.0			53.0	53.0
Actuated g/C Ratio	0.06	0.39		0.30	0.30		0.54	0.55			0.41	0.41
v/c Ratio	0.49	1.81		1.56	0.80		1.99	0.64			2.03	0.50
Control Delay	55.4	388.1		281.1	14.7		478.8	24.9			494.0	14.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	55.4	388.1		281.1	14.7		478.8	24.9			494.0	14.8
LOS	E	F		F	B		F	C			F	B
Approach Delay		380.8			41.0			279.0			312.4	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	43	~1562		-62	186		-789	324			~627	75
Queue Length 95th (ft)	m40	m#1419		m#66	m147		#1033	453			m#695	m103
Internal Link Dist (ft)		615			94			71			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	108	1300		54	960		365	884			264	651
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.49	1.81		1.56	0.80		1.99	0.64			2.03	0.50




Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 2.03
 Intersection Signal Delay: 292.1 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	453
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	176	250	267	19
Future Vol, veh/h	105	192	738	405	459	202
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	244	939	515	584	257
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	30.2	674.9	259.2
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	35%	69%
Vol Thru, %	65%	0%	31%
Vol Right, %	35%	65%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	1143	297	661
LT Vol	0	105	459
Through Vol	738	0	202
RT Vol	405	192	0
Lane Flow Rate	1454	378	841
Geometry Grp	1	1	1
Degree of Util (X)	2.453	0.704	1.501
Departure Headway (Hd)	6.805	8.804	8.248
Convergence, Y/N	Yes	Yes	Yes
Cap	552	415	446
Service Time	4.805	6.804	6.248
HCM Lane V/C Ratio	2.634	0.911	1.886
HCM Control Delay	674.9	30.2	259.2
HCM Lane LOS	F	D	F
HCM 95th-tile Q	100.9	5.3	34.5

HCM 6th Roundabout
 103: Private Drive/Red River & Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	70.8					
Intersection LOS	F					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		1041		280	
Demand Flow Rate, veh/h	143		1061		286	
Vehicles Circulating, veh/h	303		429		210	
Vehicles Exiting, veh/h	122		67		236	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.6		115.8		5.7	
Approach LOS	A		F		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.228	0.772
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	143	0	1061	286	67	227
Cap Entry Lane, veh/h	1078	1078	891	1114	1261	1261
Entry HV Adj Factor	0.979	1.000	0.981	0.980	0.985	0.981
Flow Entry, veh/h	140	0	1041	280	66	223
Cap Entry, veh/h	1055	1078	874	1092	1242	1236
V/C Ratio	0.133	0.000	1.191	0.257	0.053	0.180
Control Delay, s/veh	4.6	3.3	115.8	5.7	3.3	4.5
LOS	A	A	F	A	A	A
95th %tile Queue, veh	0	0	33	1	0	1

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	123.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	510	46	0	0	0
Future Vol, veh/h	83	861	349	0	141	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	1095	444	0	179	98

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	444	0	-	0	1751 444
Stage 1	-	-	-	-	444 -
Stage 2	-	-	-	-	1307 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1116	-	-	-	~ 94 614
Stage 1	-	-	-	-	646 -
Stage 2	-	-	-	-	253 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1116	-	-	-	~ 71 614
Mov Cap-2 Maneuver	-	-	-	-	~ 71 -
Stage 1	-	-	-	-	490 -
Stage 2	-	-	-	-	253 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	\$ 853.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1116	-	-	-	103
HCM Lane V/C Ratio	0.095	-	-	-	2.692
HCM Control Delay (s)	8.6	0	-	-	\$ 853.2
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	25.8

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	44.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	19	0	0	44	273	0
Future Vol, veh/h	19	0	0	44	717	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	912	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	80	24
Stage 1	-	-	-	24	-
Stage 2	-	-	-	56	-
Critical Hdwy	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	922	1052
Stage 1	-	0	0	999	-
Stage 2	-	0	0	967	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	922	1052
Mov Cap-2 Maneuver	-	-	-	922	-
Stage 1	-	-	-	999	-
Stage 2	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	48.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	922	-	-
HCM Lane V/C Ratio	0.989	-	-
HCM Control Delay (s)	48.2	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	17.9	-	-

Intersection				
Intersection Delay, s/veh	12.5			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	0
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	42	961	201	0
Demand Flow Rate, veh/h	42	980	202	0
Vehicles Circulating, veh/h	60	48	40	82
Vehicles Exiting, veh/h	22	194	62	946
Ped Vol Crossing Leg, #/h	27	77	0	0
Ped Cap Adj	0.996	0.989	1.000	1.000
Approach Delay, s/veh	3.0	14.7	4.0	0.0
Approach LOS	A	B	A	-
Lane	Left	Left	Left	
Designated Moves	LTR	LTR	LTR	
Assumed Moves	LTR	LTR	LTR	
RT Channelized				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	
Entry Flow, veh/h	42	980	202	
Cap Entry Lane, veh/h	1298	1314	1325	
Entry HV Adj Factor	1.000	0.981	0.997	
Flow Entry, veh/h	42	961	201	
Cap Entry, veh/h	1293	1275	1321	
V/C Ratio	0.032	0.754	0.152	
Control Delay, s/veh	3.0	14.7	4.0	
LOS	A	B	A	
95th %tile Queue, veh	0	8	1	

Intersection

Intersection Delay, s/veh 490.6
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	197	19	65	367	0	57	0	95	169	226	452
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	320	31	89	505	0	103	0	171	247	331	661
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	66.5	230.6	45.3	833.9
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	15%	20%
Vol Thru, %	0%	91%	85%	27%
Vol Right, %	62%	9%	0%	53%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	152	216	432	847
LT Vol	57	0	65	169
Through Vol	0	197	367	226
RT Vol	95	19	0	452
Lane Flow Rate	274	351	595	1239
Geometry Grp	1	1	1	1
Degree of Util (X)	0.676	0.843	1.393	2.795
Departure Headway (Hd)	15.341	15.165	12.933	9.16
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	238	242	285	409
Service Time	13.341	13.165	10.933	7.16
HCM Lane V/C Ratio	1.151	1.45	2.088	3.029
HCM Control Delay	45.3	66.5	230.6	833.9
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.3	6.6	20.7	92.6

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	217	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	161	300	528	432	0	0	0	0	215	666	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.912										
Flt Protected					0.973						0.988	
Satd. Flow (prot)	0	1654	0	0	1830	0	0	0	0	0	3540	0
Flt Permitted					0.091						0.988	
Satd. Flow (perm)	0	1654	0	0	171	0	0	0	0	0	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			294	
Travel Time (s)		3.1			8.2			4.7			5.7	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	248	462	671	549	0	0	0	0	331	1025	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	710	0	0	1220	0	0	0	0	0	1356	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		38.0		40.0						52.0	52.0	
Total Split (%)		29.2%		30.8%						40.0%	40.0%	
Maximum Green (s)		32.0		34.0						46.0	46.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		34.0			70.0							48.0
Actuated g/C Ratio		0.26			0.54							0.37
v/c Ratio		1.54			2.21							1.04
Control Delay		287.4			572.5							75.3
Queue Delay		11.4			0.0							24.7
Total Delay		298.7			572.5							100.0
LOS		F			F							F
Approach Delay		298.7			572.5							100.0
Approach LOS		F			F							F
Queue Length 50th (ft)		-821			-1699							-647
Queue Length 95th (ft)		#830			m#879							552
Internal Link Dist (ft)		57			279			232				214
Turn Bay Length (ft)												
Base Capacity (vph)		460			551							1307
Starvation Cap Reductn		0			0							0
Spillback Cap Reductn		277			0							80
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		3.88			2.21							1.11

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 87 (67%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.21
 Intersection Signal Delay: 318.4
 Intersection Capacity Utilization 92.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	1282.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	510	0	0	1496	46
Future Vol, veh/h	0	1002	0	0	1876	349
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1274	0	0	2386	444

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1415	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 127	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 127	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	4129.8	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	127	-	-
HCM Lane V/C Ratio	10.034	-	-
HCM Control Delay (s)	\$ 4129.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	146.7	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/30/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1426	421	66	507	96	570	223	225	175	246	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.95			0.96			0.93				0.86
Frt		0.966			0.976			0.925				0.850
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1770	3240	0	1676	3147	0	1770	1604	0	0	1825	1583
Flt Permitted	0.950			0.091			0.260				0.384	
Satd. Flow (perm)	1632	3240	0	161	3147	0	484	1604	0	0	715	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			15			1				129
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			132				718
Travel Time (s)		15.8			4.0			3.0				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1814	535	84	645	122	725	284	286	223	313	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	725	570	0	0	536	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	60.0		48.0	48.0		19.0	90.0		71.0	71.0	71.0
Total Split (%)	8.0%	40.0%		32.0%	32.0%		12.7%	60.0%		47.3%	47.3%	47.3%
Maximum Green (s)	6.0	54.0		42.0	42.0		13.0	84.0		65.0	65.0	65.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/30/2019

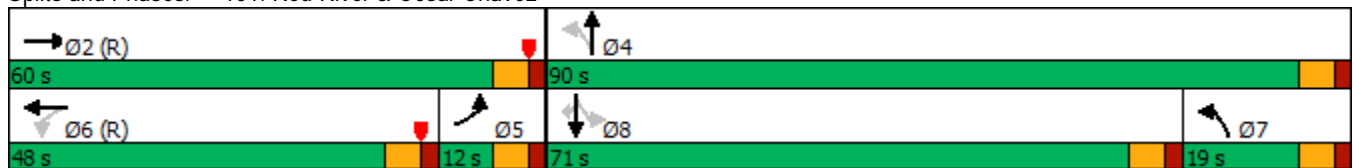


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	56.0		44.0	44.0		85.0	86.0			67.0	67.0
Actuated g/C Ratio	0.05	0.37		0.29	0.29		0.57	0.57			0.45	0.45
v/c Ratio	0.56	1.91		1.79	0.82		1.84	0.62			1.68	0.48
Control Delay	61.1	436.0		396.7	15.9		415.5	24.8			340.6	14.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	436.0		396.7	15.9		415.5	24.8			340.6	14.8
LOS	E	F		F	B		F	C			F	B
Approach Delay		427.8			53.5			243.5			217.1	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	52	~1852		~75	139		~841	356			~685	95
Queue Length 95th (ft)	m49	m#1768		m#85	m132		#1094	482			m#681	m107
Internal Link Dist (ft)		615			94			52			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1227		47	933		394	920			319	681
Starvation Cap Reductn	0	9		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.93		1.79	0.82		1.84	0.62			1.68	0.48

Intersection Summary




Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 93 (62%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 1.91
 Intersection Signal Delay: 291.2 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	453
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	176	250	267	19
Future Vol, veh/h	105	192	738	405	459	202
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	244	939	515	584	257
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	30.2	674.9	259.2
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	35%	69%
Vol Thru, %	65%	0%	31%
Vol Right, %	35%	65%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	1143	297	661
LT Vol	0	105	459
Through Vol	738	0	202
RT Vol	405	192	0
Lane Flow Rate	1454	378	841
Geometry Grp	1	1	1
Degree of Util (X)	2.453	0.704	1.501
Departure Headway (Hd)	6.805	8.804	8.248
Convergence, Y/N	Yes	Yes	Yes
Cap	552	415	446
Service Time	4.805	6.804	6.248
HCM Lane V/C Ratio	2.634	0.911	1.886
HCM Control Delay	674.9	30.2	259.2
HCM Lane LOS	F	D	F
HCM 95th-tile Q	100.9	5.3	34.5

Intersection										
Intersection Delay, s/veh	70.8									
Intersection LOS	F									
Approach	EB		WB		NB		SB			
Entry Lanes	2		1		1		2			
Conflicting Circle Lanes	1		1		1		1			
Adj Approach Flow, veh/h	140		1041		280		289			
Demand Flow Rate, veh/h	143		1061		286		294			
Vehicles Circulating, veh/h	303		429		210		131			
Vehicles Exiting, veh/h	122		67		236		1359			
Ped Vol Crossing Leg, #/h	0		0		0		0			
Ped Cap Adj	1.000		1.000		1.000		1.000			
Approach Delay, s/veh	4.6		115.8		5.7		4.2			
Approach LOS	A		F		A		A			
Lane	Left		Right		Left		Left		Right	
Designated Moves	L		TR		LTR		LTR		L TR	
Assumed Moves	L		TR		LTR		LTR		L TR	
RT Channelized										
Lane Util	1.000		0.000		1.000		1.000		0.228 0.772	
Follow-Up Headway, s	2.535		2.535		2.609		2.609		2.535 2.535	
Critical Headway, s	4.544		4.544		4.976		4.976		4.544 4.544	
Entry Flow, veh/h	143		0		1061		286		67 227	
Cap Entry Lane, veh/h	1078		1078		891		1114		1261 1261	
Entry HV Adj Factor	0.979		1.000		0.981		0.980		0.985 0.981	
Flow Entry, veh/h	140		0		1041		280		66 223	
Cap Entry, veh/h	1055		1078		874		1092		1242 1236	
V/C Ratio	0.133		0.000		1.191		0.257		0.053 0.180	
Control Delay, s/veh	4.6		3.3		115.8		5.7		3.3 4.5	
LOS	A		A		F		A		A A	
95th %tile Queue, veh	0		0		33		1		0 1	

HCM 6th TWSC
104: Driskill & Rainey St

09/30/2019

Intersection						
Int Delay, s/veh	123.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	510	46	0	0	0
Future Vol, veh/h	83	861	349	0	141	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	1095	444	0	179	98

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	444	0	-	0	1751
Stage 1	-	-	-	-	444
Stage 2	-	-	-	-	1307
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1116	-	-	-	~ 94
Stage 1	-	-	-	-	646
Stage 2	-	-	-	-	253
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1116	-	-	-	~ 71
Mov Cap-2 Maneuver	-	-	-	-	~ 71
Stage 1	-	-	-	-	490
Stage 2	-	-	-	-	253

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	\$ 853.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1116	-	-	-	103
HCM Lane V/C Ratio	0.095	-	-	-	2.692
HCM Control Delay (s)	8.6	0	-	-	\$ 853.2
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	25.8

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	44.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	44	273	0
Future Vol, veh/h	19	0	0	44	717	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	912	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	24	0	80
Stage 1	-	-	-	-	24
Stage 2	-	-	-	-	56
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1591	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	922
Mov Cap-2 Maneuver	-	-	-	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	0	48.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1591	-
HCM Lane V/C Ratio	0.989	-	-	-	-
HCM Control Delay (s)	48.2	-	-	0	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	17.9	-	-	0	-

Intersection			
Intersection Delay, s/veh	12.7		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	29	1000	207
Demand Flow Rate, veh/h	29	1001	207
Vehicles Circulating, veh/h	60	40	27
Vehicles Exiting, veh/h	981	194	62
Ped Vol Crossing Leg, #/h	27	77	0
Ped Cap Adj	0.996	0.989	1.000
Approach Delay, s/veh	3.0	14.8	3.9
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	29	1001	207
Cap Entry Lane, veh/h	1298	1325	1342
Entry HV Adj Factor	1.000	0.999	1.000
Flow Entry, veh/h	29	1000	207
Cap Entry, veh/h	1293	1309	1342
V/C Ratio	0.022	0.764	0.154
Control Delay, s/veh	3.0	14.8	3.9
LOS	A	B	A
95th %tile Queue, veh	0	8	1

Intersection	
Intersection Delay, s/veh	490.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	197	19	65	367	0	57	0	95	169	226	452
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	320	31	89	505	0	103	0	171	247	331	661
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	66.5	230.6	45.3	833.9
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	15%	20%
Vol Thru, %	0%	91%	85%	27%
Vol Right, %	62%	9%	0%	53%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	152	216	432	847
LT Vol	57	0	65	169
Through Vol	0	197	367	226
RT Vol	95	19	0	452
Lane Flow Rate	274	351	595	1239
Geometry Grp	1	1	1	1
Degree of Util (X)	0.676	0.843	1.393	2.795
Departure Headway (Hd)	15.341	15.165	12.933	9.16
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	238	242	285	409
Service Time	13.341	13.165	10.933	7.16
HCM Lane V/C Ratio	1.151	1.45	2.088	3.029
HCM Control Delay	45.3	66.5	230.6	833.9
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.3	6.6	20.7	92.6

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/30/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	217	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	161	300	528	432	0	0	0	0	215	666	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.912										
Flt Protected					0.973						0.988	
Satd. Flow (prot)	0	1651	0	0	1830	0	0	0	0	0	3540	0
Flt Permitted					0.084						0.988	
Satd. Flow (perm)	0	1651	0	0	158	0	0	0	0	0	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	248	462	671	549	0	0	0	0	331	1025	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	710	0	0	1220	0	0	0	0	0	1356	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/30/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		41.0		49.0						60.0	60.0	
Total Split (%)		27.3%		32.7%						40.0%	40.0%	
Maximum Green (s)		35.0		43.0						54.0	54.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		37.0			82.0						56.0	
Actuated g/C Ratio		0.25			0.55						0.37	
v/c Ratio		1.61			2.08						1.03	
Control Delay		320.2			515.0						77.5	
Queue Delay		10.5			0.0						28.7	
Total Delay		330.6			515.0						106.2	
LOS		F			F						F	
Approach Delay		330.6			515.0						106.2	
Approach LOS		F			F						F	
Queue Length 50th (ft)		-966			~1926						~742	
Queue Length 95th (ft)		#952			m#939						625	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		440			587						1321	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		251			0						159	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		3.76			2.08						1.17	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 7 (5%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.08
 Intersection Signal Delay: 306.5
 Intersection Capacity Utilization 92.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	1282.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	510	0	0	1496	46
Future Vol, veh/h	0	1002	0	0	1876	349
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1274	0	0	2386	444

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1415	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 127	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 127	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	4129.8	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	127	-	-
HCM Lane V/C Ratio	10.034	-	-
HCM Control Delay (s)	\$ 4129.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	146.7	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	94	65	46	156	114	257
Future Volume (vph)	42	1483	364	66	507	96	460	155	337	215	206	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.95			0.96			0.91				0.86
Frt		0.970			0.976			0.897				0.850
Flt Protected	0.950			0.950			0.950				0.975	
Satd. Flow (prot)	1770	3277	0	1676	3147	0	1770	1513	0	0	1816	1583
Flt Permitted	0.950			0.087			0.267				0.298	
Satd. Flow (perm)	1632	3277	0	154	3147	0	497	1513	0	0	555	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			15			1				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			127				718
Travel Time (s)		15.8			4.0			2.9				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1886	463	84	645	122	585	197	429	273	262	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	585	626	0	0	535	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	62.0		50.0	50.0		16.0	88.0		72.0	72.0	72.0
Total Split (%)	8.0%	41.3%		33.3%	33.3%		10.7%	58.7%		48.0%	48.0%	48.0%
Maximum Green (s)	6.0	56.0		44.0	44.0		10.0	82.0		66.0	66.0	66.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/25/2019

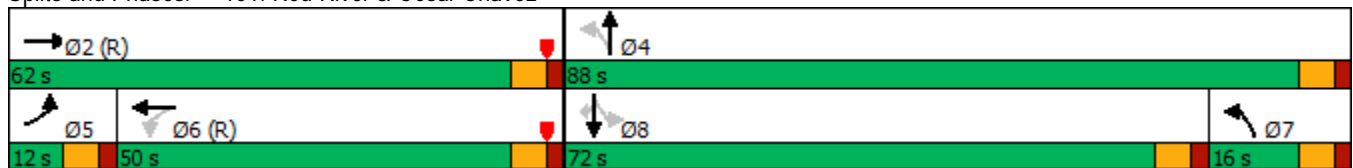


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	58.0		46.0	46.0		83.0	84.0			68.0	68.0
Actuated g/C Ratio	0.05	0.39		0.31	0.31		0.55	0.56			0.45	0.45
v/c Ratio	0.56	1.83		1.79	0.79		1.59	0.74			2.13	0.47
Control Delay	76.1	401.7		382.4	12.2		308.8	31.3			538.9	11.1
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	76.1	401.8		382.4	12.2		308.8	31.3			538.9	11.1
LOS	E	F		F	B		F	C			F	B
Approach Delay		394.6			48.8			165.4			338.7	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	52	~1824		~120	67		~570	445			~589	96
Queue Length 95th (ft)	m49	m#1737		m#122	m67		#811	611			m#817	m156
Internal Link Dist (ft)		615			94			47			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1281		47	975		368	847			251	693
Starvation Cap Reductn	0	19		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.86		1.79	0.79		1.59	0.74			2.13	0.47




Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 65 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 150
 Control Type: Pretimed
 Maximum v/c Ratio: 2.13
 Intersection Signal Delay: 278.2 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	469.4
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	178	250	267	19
Future Vol, veh/h	105	215	684	475	397	202
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	273	870	604	505	257
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	34.7	719.6	217.6
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	33%	66%
Vol Thru, %	59%	0%	34%
Vol Right, %	41%	67%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	1159	320	599
LT Vol	0	105	397
Through Vol	684	0	202
RT Vol	475	215	0
Lane Flow Rate	1474	407	762
Geometry Grp	1	1	1
Degree of Util (X)	2.553	0.757	1.4
Departure Headway (Hd)	6.792	8.855	8.518
Convergence, Y/N	Yes	Yes	Yes
Cap	545	411	434
Service Time	4.792	6.855	6.518
HCM Lane V/C Ratio	2.705	0.99	1.756
HCM Control Delay	719.6	34.7	217.6
HCM Lane LOS	F	D	F
HCM 95th-tile Q	107.6	6.2	28.8

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	22.0					
Intersection LOS	C					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		275		986	
Demand Flow Rate, veh/h	143		281		1005	
Vehicles Circulating, veh/h	222		1148		210	
Vehicles Exiting, veh/h	122		67		155	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.2		26.9		28.5	
Approach LOS	A		D		D	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.228	0.772
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	143	0	281	1005	67	227
Cap Entry Lane, veh/h	1160	1160	428	1114	1357	1357
Entry HV Adj Factor	0.979	1.000	0.979	0.981	0.985	0.981
Flow Entry, veh/h	140	0	275	986	66	223
Cap Entry, veh/h	1136	1160	419	1092	1337	1331
V/C Ratio	0.123	0.000	0.657	0.902	0.049	0.167
Control Delay, s/veh	4.2	3.1	26.9	28.5	3.1	4.1
LOS	A	A	D	D	A	A
95th %tile Queue, veh	0	0	5	14	0	1

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	173.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	0	510	46	0	0	0
Future Vol, veh/h	0	869	335	0	273	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1105	426	0	347	41

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	1531 426
Stage 1	-	-	-	-	426 -
Stage 2	-	-	-	-	1105 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	0	-	-	-	~ 129 628
Stage 1	0	-	-	-	659 -
Stage 2	0	-	-	-	~ 317 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	~ 129 628
Mov Cap-2 Maneuver	-	-	-	-	~ 129 -
Stage 1	-	-	-	-	659 -
Stage 2	-	-	-	-	~ 317 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	\$ 856.7
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	141
HCM Lane V/C Ratio	-	-	-	2.751
HCM Control Delay (s)	-	-	-	\$ 856.7
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	35

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
107: Red River Alley & Davis St

09/25/2019

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	44	0	0
Future Vol, veh/h	19	0	0	44	115	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	146	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	24	0	80
Stage 1	-	-	-	-	24
Stage 2	-	-	-	-	56
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1591	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	922
Mov Cap-2 Maneuver	-	-	-	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1591	-
HCM Lane V/C Ratio	0.159	-	-	-	-
HCM Control Delay (s)	9.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection				
Intersection Delay, s/veh	13.9			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	0
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	45	1019	207	0
Demand Flow Rate, veh/h	45	1020	207	0
Vehicles Circulating, veh/h	60	56	43	60
Vehicles Exiting, veh/h	0	194	62	1016
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	1.000
Approach Delay, s/veh	3.1	16.3	4.0	0.0
Approach LOS	A	C	A	-
Lane	Left	Left	Left	
Designated Moves	LTR	LTR	LTR	
Assumed Moves	LTR	LTR	LTR	
RT Channelized				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	
Entry Flow, veh/h	45	1020	207	
Cap Entry Lane, veh/h	1298	1303	1321	
Entry HV Adj Factor	1.000	0.999	1.000	
Flow Entry, veh/h	45	1019	207	
Cap Entry, veh/h	1293	1288	1321	
V/C Ratio	0.035	0.791	0.157	
Control Delay, s/veh	3.1	16.3	4.0	
LOS	A	C	A	
95th %tile Queue, veh	0	9	1	

Intersection

Intersection Delay, s/veh 497.4
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	197	19	65	381	0	57	0	95	169	230	452
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	320	31	89	524	0	103	0	171	247	336	661
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	67.3	249.1	46	840.4
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	15%	20%
Vol Thru, %	0%	91%	85%	27%
Vol Right, %	62%	9%	0%	53%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	152	216	446	851
LT Vol	57	0	65	169
Through Vol	0	197	381	230
RT Vol	95	19	0	452
Lane Flow Rate	274	351	614	1245
Geometry Grp	1	1	1	1
Degree of Util (X)	0.676	0.843	1.438	2.809
Departure Headway (Hd)	15.6	15.394	12.966	9.261
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	235	239	289	411
Service Time	13.6	13.394	10.966	7.261
HCM Lane V/C Ratio	1.166	1.469	2.125	3.029
HCM Control Delay	46	67.3	249.1	840.4
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.3	6.6	22	92.3

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	264	197	528	446	0	0	0	0	223	678	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.942										
Flt Protected					0.974						0.988	
Satd. Flow (prot)	0	1722	0	0	1832	0	0	0	0	0	3540	0
Flt Permitted					0.083						0.988	
Satd. Flow (perm)	0	1722	0	0	156	0	0	0	0	0	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	406	303	671	567	0	0	0	0	343	1044	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	709	0	0	1238	0	0	0	0	0	1387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		41.0		50.0						59.0	59.0	
Total Split (%)		27.3%		33.3%						39.3%	39.3%	
Maximum Green (s)		35.0		44.0						53.0	53.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		37.0			83.0						55.0	
Actuated g/C Ratio		0.25			0.55						0.37	
v/c Ratio		1.60			2.06						1.07	
Control Delay		317.1			508.5						90.5	
Queue Delay		11.9			0.0						13.4	
Total Delay		328.9			508.5						103.9	
LOS		F			F						F	
Approach Delay		328.9			508.5						103.9	
Approach LOS		F			F						F	
Queue Length 50th (ft)		~978			~1952						~787	
Queue Length 95th (ft)		#963			m#976						653	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		442			600						1298	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		268			0						166	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		4.07			2.06						1.23	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 132 (88%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.06
 Intersection Signal Delay: 302.0
 Intersection Capacity Utilization 91.1%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	1594.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	510	0	0	1494	46
Future Vol, veh/h	0	1142	0	0	1874	335
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1452	0	0	2383	426

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1405	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 129	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 129	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	4679.6	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	129	-	-
HCM Lane V/C Ratio	11.258	-	-
HCM Control Delay (s)	\$ 4679.6	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	168.6	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	94	65	46	156	114	257
Future Volume (vph)	42	1483	364	66	507	96	460	155	337	215	206	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.95			0.96			0.91				0.86
Frt		0.970			0.976			0.897				0.850
Flt Protected	0.950			0.950			0.950				0.975	
Satd. Flow (prot)	1770	3277	0	1676	3147	0	1770	1513	0	0	1816	1583
Flt Permitted	0.950			0.087			0.267				0.298	
Satd. Flow (perm)	1632	3277	0	154	3147	0	497	1513	0	0	555	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			15			1				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			127				718
Travel Time (s)		15.8			4.0			2.9				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1886	463	84	645	122	585	197	429	273	262	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	84	767	0	585	626	0	0	535	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	62.0		50.0	50.0		16.0	88.0		72.0	72.0	72.0
Total Split (%)	8.0%	41.3%		33.3%	33.3%		10.7%	58.7%		48.0%	48.0%	48.0%
Maximum Green (s)	6.0	56.0		44.0	44.0		10.0	82.0		66.0	66.0	66.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

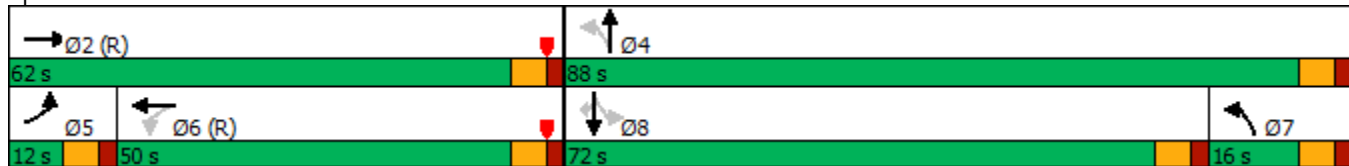


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	58.0		46.0	46.0		83.0	84.0			68.0	68.0
Actuated g/C Ratio	0.05	0.39		0.31	0.31		0.55	0.56			0.45	0.45
v/c Ratio	0.56	1.83		1.79	0.79		1.59	0.74			2.13	0.47
Control Delay	76.1	401.7		382.4	12.2		308.8	31.3			538.9	11.1
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	76.1	401.8		382.4	12.2		308.8	31.3			538.9	11.1
LOS	E	F		F	B		F	C			F	B
Approach Delay		394.6			48.8			165.4			338.7	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	52	~1824		~120	67		~570	445			~589	96
Queue Length 95th (ft)	m49	m#1737		m#122	m67		#811	611			m#817	m156
Internal Link Dist (ft)		615			94			47			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1281		47	975		368	847			251	693
Starvation Cap Reductn	0	19		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.86		1.79	0.79		1.59	0.74			2.13	0.47




Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 65 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 150
 Control Type: Pretimed
 Maximum v/c Ratio: 2.13
 Intersection Signal Delay: 278.2 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	469.4
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	178	250	267	19
Future Vol, veh/h	105	215	684	475	397	202
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	273	870	604	505	257
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	34.7	719.6	217.6
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	33%	66%
Vol Thru, %	59%	0%	34%
Vol Right, %	41%	67%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	1159	320	599
LT Vol	0	105	397
Through Vol	684	0	202
RT Vol	475	215	0
Lane Flow Rate	1474	407	762
Geometry Grp	1	1	1
Degree of Util (X)	2.553	0.757	1.4
Departure Headway (Hd)	6.792	8.855	8.518
Convergence, Y/N	Yes	Yes	Yes
Cap	545	411	434
Service Time	4.792	6.855	6.518
HCM Lane V/C Ratio	2.705	0.99	1.756
HCM Control Delay	719.6	34.7	217.6
HCM Lane LOS	F	D	F
HCM 95th-tile Q	107.6	6.2	28.8

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection										
Intersection Delay, s/veh	22.0									
Intersection LOS	C									
Approach	EB		WB		NB		SB			
Entry Lanes	2		1		1		2			
Conflicting Circle Lanes	1		1		1		1			
Adj Approach Flow, veh/h	140		275		986		289			
Demand Flow Rate, veh/h	143		281		1005		294			
Vehicles Circulating, veh/h	222		1148		210		50			
Vehicles Exiting, veh/h	122		67		155		1379			
Ped Vol Crossing Leg, #/h	0		0		0		0			
Ped Cap Adj	1.000		1.000		1.000		1.000			
Approach Delay, s/veh	4.2		26.9		28.5		3.9			
Approach LOS	A		D		D		A			
Lane	Left		Right		Left		Left		Right	
Designated Moves	L TR		LTR		LTR		L TR		L TR	
Assumed Moves	L TR		LTR		LTR		L TR		L TR	
RT Channelized										
Lane Util	1.000 0.000		1.000		1.000		0.228		0.772	
Follow-Up Headway, s	2.535 2.535		2.609		2.609		2.535		2.535	
Critical Headway, s	4.544 4.544		4.976		4.976		4.544		4.544	
Entry Flow, veh/h	143 0		281		1005		67		227	
Cap Entry Lane, veh/h	1160 1160		428		1114		1357		1357	
Entry HV Adj Factor	0.979 1.000		0.979		0.981		0.985		0.981	
Flow Entry, veh/h	140 0		275		986		66		223	
Cap Entry, veh/h	1136 1160		419		1092		1337		1331	
V/C Ratio	0.123 0.000		0.657		0.902		0.049		0.167	
Control Delay, s/veh	4.2 3.1		26.9		28.5		3.1		4.1	
LOS	A A		D		D		A		A	
95th %tile Queue, veh	0 0		5		14		0		1	

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection

Int Delay, s/veh 173.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	0	510	46	0	0	0
Future Vol, veh/h	0	869	335	0	273	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1105	426	0	347	41

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	1531 426
Stage 1	-	-	-	-	426 -
Stage 2	-	-	-	-	1105 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	0	-	-	-	~ 129 628
Stage 1	0	-	-	-	659 -
Stage 2	0	-	-	-	~ 317 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	~ 129 628
Mov Cap-2 Maneuver	-	-	-	-	~ 129 -
Stage 1	-	-	-	-	659 -
Stage 2	-	-	-	-	~ 317 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	\$ 856.7
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	141
HCM Lane V/C Ratio	-	-	-	2.751
HCM Control Delay (s)	-	-	-	\$ 856.7
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	35

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	44	0	0
Future Vol, veh/h	19	0	0	44	115	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	146	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	24	0	80
Stage 1	-	-	-	-	24
Stage 2	-	-	-	-	56
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1591	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	922
Mov Cap-2 Maneuver	-	-	-	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1591	-
HCM Lane V/C Ratio	0.159	-	-	-	-
HCM Control Delay (s)	9.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection			
Intersection Delay, s/veh	4.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	28	401	200
Demand Flow Rate, veh/h	29	402	200
Vehicles Circulating, veh/h	60	33	26
Vehicles Exiting, veh/h	375	193	63
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	3.1	5.4	3.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	29	402	200
Cap Entry Lane, veh/h	1298	1334	1344
Entry HV Adj Factor	0.966	0.998	1.000
Flow Entry, veh/h	28	401	200
Cap Entry, veh/h	1247	1317	1344
V/C Ratio	0.022	0.305	0.149
Control Delay, s/veh	3.1	5.4	3.9
LOS	A	A	A
95th %tile Queue, veh	0	1	1

Intersection

Intersection Delay, s/veh 497.4
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	197	19	65	381	0	57	0	95	169	230	452
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	320	31	89	524	0	103	0	171	247	336	661
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	67.3	249.1	46	840.4
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	15%	20%
Vol Thru, %	0%	91%	85%	27%
Vol Right, %	62%	9%	0%	53%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	152	216	446	851
LT Vol	57	0	65	169
Through Vol	0	197	381	230
RT Vol	95	19	0	452
Lane Flow Rate	274	351	614	1245
Geometry Grp	1	1	1	1
Degree of Util (X)	0.676	0.843	1.438	2.809
Departure Headway (Hd)	15.6	15.394	12.966	9.261
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	235	239	289	411
Service Time	13.6	13.394	10.966	7.261
HCM Lane V/C Ratio	1.166	1.469	2.125	3.029
HCM Control Delay	46	67.3	249.1	840.4
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.3	6.6	22	92.3

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	264	197	528	446	0	0	0	0	223	678	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.942										
Flt Protected					0.974						0.988	
Satd. Flow (prot)	0	1722	0	0	1832	0	0	0	0	0	3540	0
Flt Permitted					0.083						0.988	
Satd. Flow (perm)	0	1722	0	0	156	0	0	0	0	0	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	406	303	671	567	0	0	0	0	343	1044	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	709	0	0	1238	0	0	0	0	0	1387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		41.0		50.0						59.0	59.0	
Total Split (%)		27.3%		33.3%						39.3%	39.3%	
Maximum Green (s)		35.0		44.0						53.0	53.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		37.0			83.0						55.0	
Actuated g/C Ratio		0.25			0.55						0.37	
v/c Ratio		1.60			2.06						1.07	
Control Delay		317.1			508.5						90.5	
Queue Delay		11.9			0.0						13.4	
Total Delay		328.9			508.5						103.9	
LOS		F			F						F	
Approach Delay		328.9			508.5						103.9	
Approach LOS		F			F						F	
Queue Length 50th (ft)		~978			~1952						~787	
Queue Length 95th (ft)		#963			m#976						653	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		442			600						1298	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		268			0						166	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		4.07			2.06						1.23	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 132 (88%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.06
 Intersection Signal Delay: 302.0
 Intersection Capacity Utilization 91.1%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection

Int Delay, s/veh 1594.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	510	0	0	1494	46
Future Vol, veh/h	0	1142	0	0	1874	335
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1452	0	0	2383	426

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1405	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 129	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 129	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	4679.6	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	129	-	-
HCM Lane V/C Ratio	11.258	-	-
HCM Control Delay (s)	\$ 4679.6	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	168.6	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez




09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	110	79	95	156	114	239
Future Volume (vph)	42	1367	480	66	610	127	485	206	274	175	246	239
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.94			0.96			0.92				0.86
Frt		0.961			0.974			0.914				0.850
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1770	3198	0	1676	3130	0	1770	1569	0	0	1825	1583
Flt Permitted	0.950			0.085			0.255				0.327	
Satd. Flow (perm)	1661	3198	0	150	3130	0	475	1569	0	0	609	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			17			1				122
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			141				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1738	610	84	776	162	617	262	348	223	313	304
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2348	0	84	938	0	617	610	0	0	536	304
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	63.0		51.0	51.0		17.0	87.0		70.0	70.0	70.0
Total Split (%)	8.0%	42.0%		34.0%	34.0%		11.3%	58.0%		46.7%	46.7%	46.7%
Maximum Green (s)	6.0	57.0		45.0	45.0		11.0	81.0		64.0	64.0	64.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Intersection

Intersection Delay, s/veh	360.9
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	50	234	70	120	166
Future Vol, veh/h	301	215	662	137	290	430
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	383	273	842	174	369	547
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	160.6	458.8	395.7
HCM LOS	F	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	58%	40%
Vol Thru, %	83%	0%	60%
Vol Right, %	17%	42%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	799	516	720
LT Vol	0	301	290
Through Vol	662	0	430
RT Vol	137	215	0
Lane Flow Rate	1016	656	916
Geometry Grp	1	1	1
Degree of Util (X)	1.955	1.257	1.809
Departure Headway (Hd)	8.784	8.728	9.177
Convergence, Y/N	Yes	Yes	Yes
Cap	427	420	403
Service Time	6.784	6.728	7.177
HCM Lane V/C Ratio	2.379	1.562	2.273
HCM Control Delay	458.8	160.6	395.7
HCM Lane LOS	F	F	F
HCM 95th-tile Q	54.4	22.1	45.5

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	9.5					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		258		580	
Demand Flow Rate, veh/h	143		263		592	
Vehicles Circulating, veh/h	812		735		238	
Vehicles Exiting, veh/h	122		95		717	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	7.9		11.4		10.1	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.115	0.885
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	143	0	263	592	95	733
Cap Entry Lane, veh/h	678	678	652	1082	1290	1290
Entry HV Adj Factor	0.979	1.000	0.981	0.980	0.979	0.981
Flow Entry, veh/h	140	0	258	580	93	719
Cap Entry, veh/h	664	678	640	1061	1262	1265
V/C Ratio	0.211	0.000	0.403	0.547	0.074	0.568
Control Delay, s/veh	7.9	5.3	11.4	10.1	3.4	9.4
LOS	A	A	B	B	A	A
95th %tile Queue, veh	1	0	2	3	0	4

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	24.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	14	176	90	2	0	0
Future Vol, veh/h	96	417	568	2	82	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	530	722	3	104	98

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	725	0	-	0	1498 724
Stage 1	-	-	-	-	724 -
Stage 2	-	-	-	-	774 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	878	-	-	-	135 426
Stage 1	-	-	-	-	480 -
Stage 2	-	-	-	-	455 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	878	-	-	-	108 426
Mov Cap-2 Maneuver	-	-	-	-	108 -
Stage 1	-	-	-	-	385 -
Stage 2	-	-	-	-	455 -

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	186.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	878	-	-	-	169
HCM Lane V/C Ratio	0.139	-	-	-	1.196
HCM Control Delay (s)	9.8	0	-	-	186.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	11

Intersection						
Int Delay, s/veh	6.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	97	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	39	123	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	28	0	67
Stage 1	-	-	-	-	28
Stage 2	-	-	-	-	39
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1585	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	938
Mov Cap-2 Maneuver	-	-	-	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1585	-
HCM Lane V/C Ratio	0.132	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection			
Intersection Delay, s/veh	5.7		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	254	208	417
Demand Flow Rate, veh/h	255	208	429
Vehicles Circulating, veh/h	188	324	60
Vehicles Exiting, veh/h	344	165	383
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	5.3	5.6	5.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	255	208	429
Cap Entry Lane, veh/h	1139	992	1298
Entry HV Adj Factor	0.996	1.000	0.972
Flow Entry, veh/h	254	208	417
Cap Entry, veh/h	1123	992	1256
V/C Ratio	0.226	0.210	0.332
Control Delay, s/veh	5.3	5.6	5.9
LOS	A	A	A
95th %tile Queue, veh	1	1	1

Intersection	
Intersection Delay, s/veh	86.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	297	19	133	190	0	27	0	95	83	125	75
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	483	31	183	262	0	49	0	171	121	183	110
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	133.5	83.4	24.1	64.4
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	41%	29%
Vol Thru, %	0%	94%	59%	44%
Vol Right, %	78%	6%	0%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	316	323	283
LT Vol	27	0	133	83
Through Vol	0	297	190	125
RT Vol	95	19	0	75
Lane Flow Rate	220	514	445	414
Geometry Grp	1	1	1	1
Degree of Util (X)	0.55	1.188	1.03	0.954
Departure Headway (Hd)	9.793	8.534	8.937	8.932
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	371	431	409	410
Service Time	7.793	6.534	6.937	6.932
HCM Lane V/C Ratio	0.593	1.193	1.088	1.01
HCM Control Delay	24.1	133.5	83.4	64.4
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	3.2	19.5	13.3	10.9

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	211	264	528	323	0	0	0	0	299	599	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.925										
Flt Protected					0.970						0.984	
Satd. Flow (prot)	0	1682	0	0	1825	0	0	0	0	0	3529	0
Flt Permitted					0.085						0.984	
Satd. Flow (perm)	0	1682	0	0	160	0	0	0	0	0	3529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	325	406	671	411	0	0	0	0	460	922	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	731	0	0	1082	0	0	0	0	0	1382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		42.0		46.0						62.0	62.0	
Total Split (%)		28.0%		30.7%						41.3%	41.3%	
Maximum Green (s)		36.0		40.0						56.0	56.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		38.0			80.0						58.0	
Actuated g/C Ratio		0.25			0.53						0.39	
v/c Ratio		1.61			1.96						1.01	
Control Delay		316.9			464.8						72.8	
Queue Delay		11.1			0.0						33.3	
Total Delay		328.0			464.8						106.2	
LOS		F			F						F	
Approach Delay		328.0			464.8						106.2	
Approach LOS		F			F						F	
Queue Length 50th (ft)		-997			-1677						-728	
Queue Length 95th (ft)		#976			m#849						630	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		455			551						1364	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		270			0						305	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		3.95			1.96						1.31	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 6 (4%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.96
 Intersection Signal Delay: 278.4
 Intersection Capacity Utilization 87.8%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	375.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕	↘
Traffic Vol, veh/h	0	176	0	0	1450	92
Future Vol, veh/h	0	499	0	0	1764	570
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	635	0	0	2243	725

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1484	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 114	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 114	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2129.4	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	114	-	-
HCM Lane V/C Ratio	5.567	-	-
HCM Control Delay (s)	\$ 2129.4	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	68.5	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	110	79	95	156	114	239
Future Volume (vph)	42	1367	480	66	610	127	485	206	274	175	246	239
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.94			0.96			0.92				0.86
Frt		0.961			0.974			0.914				0.850
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1770	3198	0	1676	3130	0	1770	1569	0	0	1825	1583
Flt Permitted	0.950			0.085			0.255				0.327	
Satd. Flow (perm)	1661	3198	0	150	3130	0	475	1569	0	0	609	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			17			1				122
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			141				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1738	610	84	776	162	617	262	348	223	313	304
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2348	0	84	938	0	617	610	0	0	536	304
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	63.0		51.0	51.0		17.0	87.0		70.0	70.0	70.0
Total Split (%)	8.0%	42.0%		34.0%	34.0%		11.3%	58.0%		46.7%	46.7%	46.7%
Maximum Green (s)	6.0	57.0		45.0	45.0		11.0	81.0		64.0	64.0	64.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings

101: Red River & Cesar Chavez

09/25/2019



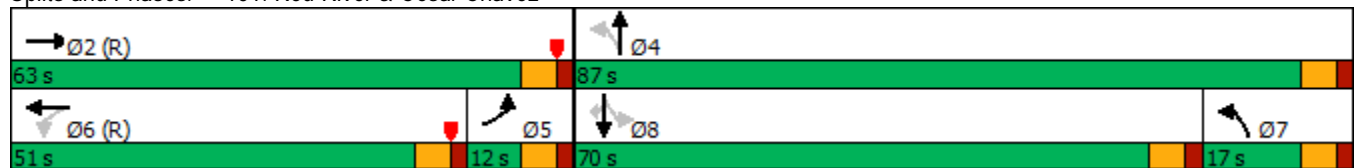
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	59.0		47.0	47.0		82.0	83.0			66.0	66.0
Actuated g/C Ratio	0.05	0.39		0.31	0.31		0.55	0.55			0.44	0.44
v/c Ratio	0.56	1.83		1.79	0.95		1.70	0.70			2.01	0.46
Control Delay	62.3	399.9		382.0	15.7		356.2	29.9			484.3	11.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	62.3	400.0		382.0	15.7		356.2	29.9			484.3	11.2
LOS	E	F		F	B		F	C			F	B
Approach Delay		392.5			45.8			194.0			313.1	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	52	~1830		~119	80		~659	422			~558	94
Queue Length 95th (ft)	m49	m#1737		m#89	m62		#902	575			m#791	m138
Internal Link Dist (ft)		615			94			61			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1281		47	992		363	868			267	668
Starvation Cap Reductn	0	16		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.86		1.79	0.95		1.70	0.70			2.01	0.46

Intersection Summary




Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 86 (57%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 140
 Control Type: Pretimed
 Maximum v/c Ratio: 2.01
 Intersection Signal Delay: 271.5 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	360.9
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	50	234	70	120	166
Future Vol, veh/h	301	215	662	137	290	430
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	383	273	842	174	369	547
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	160.6	458.8	395.7
HCM LOS	F	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	58%	40%
Vol Thru, %	83%	0%	60%
Vol Right, %	17%	42%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	799	516	720
LT Vol	0	301	290
Through Vol	662	0	430
RT Vol	137	215	0
Lane Flow Rate	1016	656	916
Geometry Grp	1	1	1
Degree of Util (X)	1.955	1.257	1.809
Departure Headway (Hd)	8.784	8.728	9.177
Convergence, Y/N	Yes	Yes	Yes
Cap	427	420	403
Service Time	6.784	6.728	7.177
HCM Lane V/C Ratio	2.379	1.562	2.273
HCM Control Delay	458.8	160.6	395.7
HCM Lane LOS	F	F	F
HCM 95th-tile Q	54.4	22.1	45.5

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	9.5					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		258		580	
Demand Flow Rate, veh/h	143		263		592	
Vehicles Circulating, veh/h	812		735		238	
Vehicles Exiting, veh/h	122		95		717	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	7.9		11.4		10.1	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.115	0.885
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	143	0	263	592	95	733
Cap Entry Lane, veh/h	678	678	652	1082	1290	1290
Entry HV Adj Factor	0.979	1.000	0.981	0.980	0.979	0.981
Flow Entry, veh/h	140	0	258	580	93	719
Cap Entry, veh/h	664	678	640	1061	1262	1265
V/C Ratio	0.211	0.000	0.403	0.547	0.074	0.568
Control Delay, s/veh	7.9	5.3	11.4	10.1	3.4	9.4
LOS	A	A	B	B	A	A
95th %tile Queue, veh	1	0	2	3	0	4

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	24.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	14	176	90	2	0	0
Future Vol, veh/h	96	417	568	2	82	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	530	722	3	104	98

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	725	0	-	0	1498 724
Stage 1	-	-	-	-	724 -
Stage 2	-	-	-	-	774 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	878	-	-	-	135 426
Stage 1	-	-	-	-	480 -
Stage 2	-	-	-	-	455 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	878	-	-	-	108 426
Mov Cap-2 Maneuver	-	-	-	-	108 -
Stage 1	-	-	-	-	385 -
Stage 2	-	-	-	-	455 -

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	186.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	878	-	-	-	169
HCM Lane V/C Ratio	0.139	-	-	-	1.196
HCM Control Delay (s)	9.8	0	-	-	186.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	11

Intersection						
Int Delay, s/veh	6.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	97	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	39	123	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	28	0	67 28
Stage 1	-	-	-	-	28 -
Stage 2	-	-	-	-	39 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1585	-	938 1047
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	983 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	938 1047
Mov Cap-2 Maneuver	-	-	-	-	938 -
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	983 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1585	-
HCM Lane V/C Ratio	0.132	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection			
Intersection Delay, s/veh	4.4		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	252	254	53
Demand Flow Rate, veh/h	258	255	53
Vehicles Circulating, veh/h	60	33	158
Vehicles Exiting, veh/h	228	178	160
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	4.6	4.4	3.4
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	258	255	53
Cap Entry Lane, veh/h	1298	1334	1174
Entry HV Adj Factor	0.976	0.996	1.000
Flow Entry, veh/h	252	254	53
Cap Entry, veh/h	1261	1315	1174
V/C Ratio	0.200	0.193	0.045
Control Delay, s/veh	4.6	4.4	3.4
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Intersection	
Intersection Delay, s/veh	86.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	297	19	133	190	0	27	0	95	83	125	75
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	483	31	183	262	0	49	0	171	121	183	110
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	133.5	83.4	24.1	64.4
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	41%	29%
Vol Thru, %	0%	94%	59%	44%
Vol Right, %	78%	6%	0%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	316	323	283
LT Vol	27	0	133	83
Through Vol	0	297	190	125
RT Vol	95	19	0	75
Lane Flow Rate	220	514	445	414
Geometry Grp	1	1	1	1
Degree of Util (X)	0.55	1.188	1.03	0.954
Departure Headway (Hd)	9.793	8.534	8.937	8.932
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	371	431	409	410
Service Time	7.793	6.534	6.937	6.932
HCM Lane V/C Ratio	0.593	1.193	1.088	1.01
HCM Control Delay	24.1	133.5	83.4	64.4
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	3.2	19.5	13.3	10.9

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	211	264	528	323	0	0	0	0	299	599	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.925										
Flt Protected					0.970						0.984	
Satd. Flow (prot)	0	1682	0	0	1825	0	0	0	0	0	3529	0
Flt Permitted					0.085						0.984	
Satd. Flow (perm)	0	1682	0	0	160	0	0	0	0	0	3529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	325	406	671	411	0	0	0	0	460	922	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	731	0	0	1082	0	0	0	0	0	1382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		42.0		46.0						62.0	62.0	
Total Split (%)		28.0%		30.7%						41.3%	41.3%	
Maximum Green (s)		36.0		40.0						56.0	56.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		38.0			80.0						58.0	
Actuated g/C Ratio		0.25			0.53						0.39	
v/c Ratio		1.61			1.96						1.01	
Control Delay		316.9			464.8						72.8	
Queue Delay		11.1			0.0						33.3	
Total Delay		328.0			464.8						106.2	
LOS		F			F						F	
Approach Delay		328.0			464.8						106.2	
Approach LOS		F			F						F	
Queue Length 50th (ft)		-997			-1677						-728	
Queue Length 95th (ft)		#976			m#849						630	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		455			551						1364	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		270			0						305	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		3.95			1.96						1.31	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 6 (4%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.96
 Intersection Signal Delay: 278.4
 Intersection Capacity Utilization 87.8%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	375.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕	↘
Traffic Vol, veh/h	0	176	0	0	1450	92
Future Vol, veh/h	0	499	0	0	1764	570
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	635	0	0	2243	725

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1484	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 114	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 114	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2129.4	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	114	-	-
HCM Lane V/C Ratio	5.567	-	-
HCM Control Delay (s)	\$ 2129.4	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	68.5	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	50	507	96	130	65	80	156	114	257
Future Volume (vph)	42	1473	374	88	610	127	505	192	259	212	209	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.95			0.96			0.92				0.86
Frt		0.970			0.974			0.914				0.850
Flt Protected	0.950			0.950			0.950				0.975	
Satd. Flow (prot)	1770	3273	0	1676	3130	0	1770	1568	0	0	1816	1583
Flt Permitted	0.950			0.073			0.223				0.287	
Satd. Flow (perm)	1661	3273	0	129	3130	0	415	1568	0	0	535	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			18			2				113
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			139				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1873	476	112	776	162	642	244	329	270	266	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2349	0	112	938	0	642	573	0	0	536	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	70.0		59.0	59.0		15.0	80.0		65.0	65.0	65.0
Total Split (%)	7.3%	46.7%		39.3%	39.3%		10.0%	53.3%		43.3%	43.3%	43.3%
Maximum Green (s)	5.0	64.0		53.0	53.0		9.0	74.0		59.0	59.0	59.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

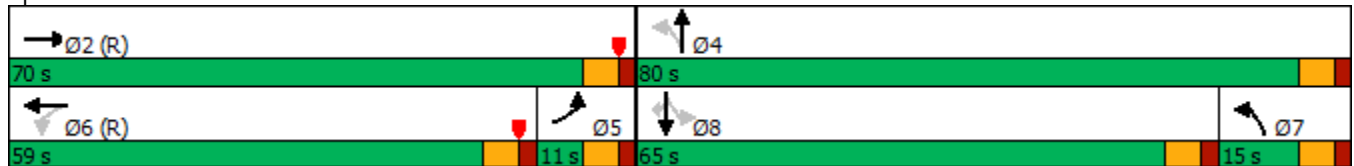


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	66.0		55.0	55.0		75.0	76.0			61.0	61.0
Actuated g/C Ratio	0.05	0.44		0.37	0.37		0.50	0.51			0.41	0.41
v/c Ratio	0.65	1.61		2.38	0.81		2.16	0.72			2.47	0.53
Control Delay	63.2	302.3		645.3	8.5		558.8	35.1			689.7	17.7
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	63.2	302.4		645.3	8.5		558.8	35.1			689.7	17.7
LOS	E	F		F	A		F	D			F	B
Approach Delay		297.1			76.4			311.8			435.1	
Approach LOS		F			E			F			F	
Queue Length 50th (ft)	52	~1728		~180	60		~822	425			~661	134
Queue Length 95th (ft)	m50	m#1060		m#130	m46		#1067	579			m#891	m199
Internal Link Dist (ft)		615			94			59			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	82	1455		47	1159		297	795			217	622
Starvation Cap Reductn	0	47		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.65	1.67		2.38	0.81		2.16	0.72			2.47	0.53




Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 73 (49%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 120
 Control Type: Pretimed
 Maximum v/c Ratio: 2.47
 Intersection Signal Delay: 280.0 Intersection LOS: F
 Intersection Capacity Utilization 96.3% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	349.8
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	203	91	288	19
Future Vol, veh/h	234	236	631	246	383	215
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	298	300	802	313	487	273
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	114.7	532.3	266.8
HCM LOS	F	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	50%	64%
Vol Thru, %	72%	0%	36%
Vol Right, %	28%	50%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	877	470	598
LT Vol	0	234	383
Through Vol	631	0	215
RT Vol	246	236	0
Lane Flow Rate	1115	598	760
Geometry Grp	1	1	1
Degree of Util (X)	2.126	1.134	1.512
Departure Headway (Hd)	7.987	8.63	9.106
Convergence, Y/N	Yes	Yes	Yes
Cap	468	424	403
Service Time	5.987	6.63	7.106
HCM Lane V/C Ratio	2.382	1.41	1.886
HCM Control Delay	532.3	114.7	266.8
HCM Lane LOS	F	F	F
HCM 95th-tile Q	68.7	17.3	32.3

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	8.0					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	140		231		604	
Demand Flow Rate, veh/h	143		236		616	
Vehicles Circulating, veh/h	338		759		209	
Vehicles Exiting, veh/h	122		66		272	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.8		11.0		10.0	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.143	0.857
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	143	0	236	616	66	394
Cap Entry Lane, veh/h	1044	1044	636	1115	1420	1420
Entry HV Adj Factor	0.979	1.000	0.979	0.980	0.985	0.981
Flow Entry, veh/h	140	0	231	604	65	387
Cap Entry, veh/h	1022	1044	623	1093	1399	1394
V/C Ratio	0.137	0.000	0.371	0.552	0.046	0.277
Control Delay, s/veh	4.8	3.4	11.0	10.0	2.9	5.0
LOS	A	A	B	B	A	A
95th %tile Queue, veh	0	0	2	4	0	1

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	290.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	14	365	90	2	8	0
Future Vol, veh/h	96	619	522	2	233	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	787	664	3	296	98

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	667	0	-	0	1697
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	1031
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	923	-	-	-	~ 102
Stage 1	-	-	-	-	511
Stage 2	-	-	-	-	344
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	923	-	-	-	~ 78
Mov Cap-2 Maneuver	-	-	-	-	~ 78
Stage 1	-	-	-	-	391
Stage 2	-	-	-	-	344

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	\$ 1449.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	923	-	-	-	98
HCM Lane V/C Ratio	0.132	-	-	-	4.023
HCM Control Delay (s)	9.5	0	-	-	\$ 1449.3
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	40.7

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	8.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	10	0	19
Future Vol, veh/h	0	0	0	10	97	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	123	24

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	14
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	13
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1005
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1010
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1005
Mov Cap-2 Maneuver	-	-	-	-	1005
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1010

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1017	-	-	1622	-
HCM Lane V/C Ratio	0.145	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

09/25/2019

Intersection			
Intersection Delay, s/veh	6.0		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	353	325	0
Demand Flow Rate, veh/h	355	325	0
Vehicles Circulating, veh/h	305	0	160
Vehicles Exiting, veh/h	20	160	500
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	7.4	4.6	0.0
Approach LOS	A	A	-
Lane	Left	Left	Left
Designated Moves	R	TR	LT
Assumed Moves	R	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	355	325	0
Cap Entry Lane, veh/h	1011	1380	1172
Entry HV Adj Factor	0.994	1.000	1.000
Flow Entry, veh/h	353	325	0
Cap Entry, veh/h	995	1380	1166
V/C Ratio	0.355	0.236	0.000
Control Delay, s/veh	7.4	4.6	3.1
LOS	A	A	A
95th %tile Queue, veh	2	1	0

Intersection	
Intersection Delay, s/veh	95.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	28	20	24	169	0	21	0	23	6	10	123
Future Vol, veh/h	0	99	22	133	190	0	27	0	95	83	206	187
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	161	36	183	262	0	49	0	171	121	301	273
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.2	47.8	17.6	172.2
HCM LOS	C	E	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	41%	17%
Vol Thru, %	0%	82%	59%	43%
Vol Right, %	78%	18%	0%	39%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	121	323	476
LT Vol	27	0	133	83
Through Vol	0	99	190	206
RT Vol	95	22	0	187
Lane Flow Rate	220	197	445	696
Geometry Grp	1	1	1	1
Degree of Util (X)	0.45	0.429	0.89	1.306
Departure Headway (Hd)	8.098	8.782	7.949	6.755
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	448	413	458	536
Service Time	6.098	6.782	5.949	4.813
HCM Lane V/C Ratio	0.491	0.477	0.972	1.299
HCM Control Delay	17.6	18.2	47.8	172.2
HCM Lane LOS	C	C	E	F
HCM 95th-tile Q	2.3	2.1	9.6	29.1

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	50	7	528	193	0	0	0	0	24	562	0
Future Volume (vph)	0	187	90	528	323	0	0	0	0	316	780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.956										
Flt Protected					0.970						0.986	
Satd. Flow (prot)	0	1756	0	0	1825	0	0	0	0	0	3534	0
Flt Permitted					0.090						0.986	
Satd. Flow (perm)	0	1756	0	0	169	0	0	0	0	0	3534	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	288	139	671	411	0	0	0	0	486	1201	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	427	0	0	1082	0	0	0	0	0	1687	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		40.0		47.0						63.0	63.0	
Total Split (%)		26.7%		31.3%						42.0%	42.0%	
Maximum Green (s)		34.0		41.0						57.0	57.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		36.0			79.0						59.0	
Actuated g/C Ratio		0.24			0.53						0.39	
v/c Ratio		0.99			1.92						1.21	
Control Delay		94.6			446.5						142.6	
Queue Delay		48.5			0.0						1.1	
Total Delay		143.1			446.5						143.7	
LOS		F			F						F	
Approach Delay		143.1			446.5						143.7	
Approach LOS		F			F						F	
Queue Length 50th (ft)		408			~1662						~1058	
Queue Length 95th (ft)		#464			m#802						#895	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		432			563						1390	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		276			0						323	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		2.74			1.92						1.58	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 139 (93%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.92
 Intersection Signal Delay: 246.1
 Intersection LOS: F
 Intersection Capacity Utilization 78.4%
 ICU Level of Service D
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St/Holly St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	1041					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	372	0	0	1448	92
Future Vol, veh/h	0	851	0	0	1808	524
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1082	0	0	2299	666

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1483	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 114	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 114	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	3893.6	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	114	-	-
HCM Lane V/C Ratio	9.493	-	-
HCM Control Delay (s)	\$ 3893.6	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	124.3	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix
Synchro Reports - PM Peak 60/40 Mode Split

Scenario 1a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1347	287	42	507	96	352	152	83	163	183	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.97			0.97			0.96				0.97
Frt		0.974			0.976			0.947				0.850
Flt Protected	0.950			0.950			0.950					0.977
Satd. Flow (prot)	1770	3333	0	1676	3170	0	1770	1693	0	0	1820	1583
Flt Permitted	0.950			0.085			0.108				0.707	
Satd. Flow (perm)	1660	3333	0	150	3170	0	201	1693	0	0	1275	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			21			6				141
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			124				718
Travel Time (s)		15.8			4.0			2.8				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1713	365	53	645	122	448	193	106	207	233	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	448	299	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	62.0		51.0	51.0		21.0	58.0		37.0	37.0	37.0
Total Split (%)	9.2%	51.7%		42.5%	42.5%		17.5%	48.3%		30.8%	30.8%	30.8%
Maximum Green (s)	5.0	56.0		45.0	45.0		15.0	52.0		31.0	31.0	31.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

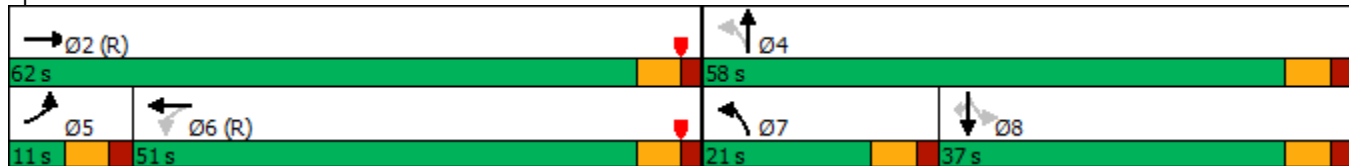


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	58.0		47.0	47.0		53.0	54.0			33.0	33.0
Actuated g/C Ratio	0.06	0.48		0.39	0.39		0.44	0.45			0.28	0.28
v/c Ratio	0.51	1.28		0.91	0.61		1.51	0.39			1.26	0.67
Control Delay	64.1	149.0		63.9	5.9		273.2	23.5			162.1	20.2
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	64.1	149.1		63.9	5.9		273.2	23.5			162.1	20.2
LOS	E	F		E	A		F	C			F	C
Approach Delay		147.0			9.6			173.2			101.6	
Approach LOS		F			A			F			F	
Queue Length 50th (ft)	40	~1066		6	40		-434	148			~427	112
Queue Length 95th (ft)	m41	m#1113		m8	m42		#643	222			m#622	m192
Internal Link Dist (ft)		615			94			44			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	103	1625		58	1254		297	765			350	488
Starvation Cap Reductn	0	32		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.51	1.30		0.91	0.61		1.51	0.39			1.26	0.67

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 88 (73%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 140
 Control Type: Pretimed
 Maximum v/c Ratio: 1.51
 Intersection Signal Delay: 118.4 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	45.1
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	132	21	151	135
Future Vol, veh/h	28	281	264	32	271	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	357	336	41	345	277
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	20.8	20.3	75.4
HCM LOS	C	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	55%
Vol Thru, %	89%	0%	45%
Vol Right, %	11%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	296	309	489
LT Vol	0	28	271
Through Vol	264	0	218
RT Vol	32	281	0
Lane Flow Rate	376	393	622
Geometry Grp	1	1	1
Degree of Util (X)	0.649	0.666	1.051
Departure Headway (Hd)	6.356	6.247	6.086
Convergence, Y/N	Yes	Yes	Yes
Cap	572	582	603
Service Time	4.356	4.247	4.086
HCM Lane V/C Ratio	0.657	0.675	1.032
HCM Control Delay	20.3	20.8	75.4
HCM Lane LOS	C	C	F
HCM 95th-tile Q	4.7	5	17.3

HCM 6th Roundabout
 103: Private Drive/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	5.0					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		186		278	
Demand Flow Rate, veh/h	68		190		284	
Vehicles Circulating, veh/h	395		289		253	
Vehicles Exiting, veh/h	43		248		210	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.1		5.3		6.0	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.794	0.206	1.000	1.000	0.656	0.344
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	54	14	190	284	185	97
Cap Entry Lane, veh/h	991	991	1028	1066	1231	1231
Entry HV Adj Factor	0.981	0.980	0.977	0.980	0.978	0.975
Flow Entry, veh/h	53	14	186	278	181	95
Cap Entry, veh/h	973	972	1004	1045	1204	1201
V/C Ratio	0.054	0.014	0.185	0.266	0.150	0.079
Control Delay, s/veh	4.2	3.8	5.3	6.0	4.3	3.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection												
Int Delay, s/veh	151.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Future Vol, veh/h	49	249	61	90	159	0	202	58	88	59	16	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	317	78	114	202	0	257	74	112	75	20	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	202	0	0	395	0	0	944	910	356	1003	949	202
Stage 1	-	-	-	-	-	-	480	480	-	430	430	-
Stage 2	-	-	-	-	-	-	464	430	-	573	519	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1370	-	-	1164	-	-	242	275	688	221	260	839
Stage 1	-	-	-	-	-	-	567	554	-	603	583	-
Stage 2	-	-	-	-	-	-	578	583	-	505	533	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1164	-	-	186	230	688	123	218	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	230	-	123	218	-
Stage 1	-	-	-	-	-	-	534	521	-	567	519	-
Stage 2	-	-	-	-	-	-	467	519	-	342	502	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	3	\$ 440.8	67.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	237	1370	-	-	1164	-	-	188
HCM Lane V/C Ratio	1.867	0.045	-	-	0.098	-	-	0.758
HCM Control Delay (s)	\$ 440.8	7.8	0	-	8.4	0	-	67.1
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	31	0.1	-	-	0.3	-	-	5

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	140	49	112	50	20
Future Vol, veh/h	66	140	107	282	115	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	178	136	359	146	66

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	810	179	212	0	0
Stage 1	179	-	-	-	-
Stage 2	631	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	349	864	1358	-	-
Stage 1	852	-	-	-	-
Stage 2	530	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	305	864	1358	-	-
Mov Cap-2 Maneuver	305	-	-	-	-
Stage 1	746	-	-	-	-
Stage 2	530	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	2.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	544	-	-
HCM Lane V/C Ratio	0.1	-	0.482	-	-
HCM Control Delay (s)	7.9	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.6	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	206	14	0	159	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	262	18	0	202	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	280	0	473
Stage 1	-	-	-	-	271
Stage 2	-	-	-	-	202
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1283	-	550
Stage 1	-	-	-	-	775
Stage 2	-	-	-	-	832
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1283	-	550
Mov Cap-2 Maneuver	-	-	-	-	550
Stage 1	-	-	-	-	775
Stage 2	-	-	-	-	832

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1283	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

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Intersection				
Intersection Delay, s/veh	5.8			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	67	519	64	302
Demand Flow Rate, veh/h	67	520	64	309
Vehicles Circulating, veh/h	344	60	248	82
Vehicles Exiting, veh/h	47	252	163	498
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	0.995
Approach Delay, s/veh	4.3	6.7	3.9	5.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	67	520	64	309
Cap Entry Lane, veh/h	972	1298	1071	1269
Entry HV Adj Factor	1.000	0.998	1.000	0.977
Flow Entry, veh/h	67	519	64	302
Cap Entry, veh/h	968	1282	1071	1234
V/C Ratio	0.069	0.405	0.060	0.245
Control Delay, s/veh	4.3	6.7	3.9	5.1
LOS	A	A	A	A
95th %tile Queue, veh	0	2	0	1

Intersection	
Intersection Delay, s/veh	47
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	223	18	48	280	0	43	0	61	41	83	159
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	29	66	385	0	77	0	110	60	121	233
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	43.5	63.5	18.8	45
HCM LOS	E	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	0%	15%	14%
Vol Thru, %	0%	93%	85%	29%
Vol Right, %	59%	7%	0%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	241	328	283
LT Vol	43	0	48	41
Through Vol	0	223	280	83
RT Vol	61	18	0	159
Lane Flow Rate	187	392	451	414
Geometry Grp	1	1	1	1
Degree of Util (X)	0.452	0.861	0.973	0.879
Departure Headway (Hd)	8.687	7.918	7.762	7.649
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	414	458	470	476
Service Time	6.775	5.969	5.809	5.697
HCM Lane V/C Ratio	0.452	0.856	0.96	0.87
HCM Control Delay	18.8	43.5	63.5	45
HCM Lane LOS	C	E	F	E
HCM 95th-tile Q	2.3	8.8	12.2	9.4

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	123	202	528	328	0	0	0	0	131	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.916										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1664	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.120						0.990	
Satd. Flow (perm)	0	1664	0	0	226	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	189	311	671	417	0	0	0	0	202	831	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	500	0	0	1088	0	0	0	0	0	1033	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		31.0		38.0						51.0	51.0	
Total Split (%)		25.8%		31.7%						42.5%	42.5%	
Maximum Green (s)		25.0		32.0						45.0	45.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag					Lag					Lead	Lead	
Lead-Lag Optimize?					Yes					Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		27.0			61.0						47.0	
Actuated g/C Ratio		0.22			0.51						0.39	
v/c Ratio		1.18			1.92						0.74	
Control Delay		140.0			442.8						35.4	
Queue Delay		0.2			3.5						0.7	
Total Delay		140.2			446.3						36.1	
LOS		F			F						D	
Approach Delay		140.2			446.3						36.1	
Approach LOS		F			F						D	
Queue Length 50th (ft)		-426			~1340						357	
Queue Length 95th (ft)		#480			m#683						343	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		423			567						1388	
Starvation Cap Reductn		0			186						0	
Spillback Cap Reductn		9			0						119	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		1.21			2.86						0.81	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 36 (30%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.92
 Intersection Signal Delay: 226.2
 Intersection LOS: F
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St/Holly St

09/25/2019

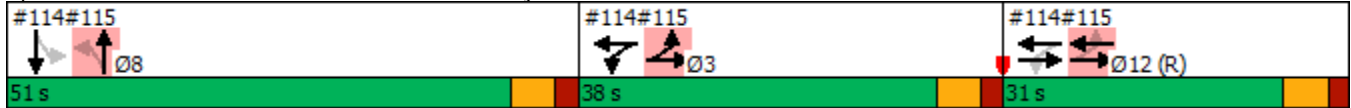
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	160.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	396	0	0	1681	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	504	0	0	2138	317

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1228	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 170	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 170	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	940.1	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	170	-	-
HCM Lane V/C Ratio	2.962	-	-
HCM Control Delay (s)	\$ 940.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	45.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1347	287	42	507	96	352	152	83	163	183	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.97			0.97			0.96			0.98	0.89
Frt		0.974			0.976			0.947				0.850
Flt Protected	0.950			0.950			0.950				0.977	
Satd. Flow (prot)	1770	3333	0	1676	3170	0	1770	1693	0	0	1820	1583
Flt Permitted	0.950			0.085			0.176				0.511	
Satd. Flow (perm)	1660	3333	0	150	3170	0	328	1693	0	0	928	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			21			6				142
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			124				718
Travel Time (s)		15.8			4.0			2.8				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1713	365	53	645	122	448	193	106	207	233	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	448	299	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	62.0		51.0	51.0		21.0	58.0		37.0	37.0	37.0
Total Split (%)	9.2%	51.7%		42.5%	42.5%		17.5%	48.3%		30.8%	30.8%	30.8%
Maximum Green (s)	5.0	56.0		45.0	45.0		15.0	52.0		31.0	31.0	31.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

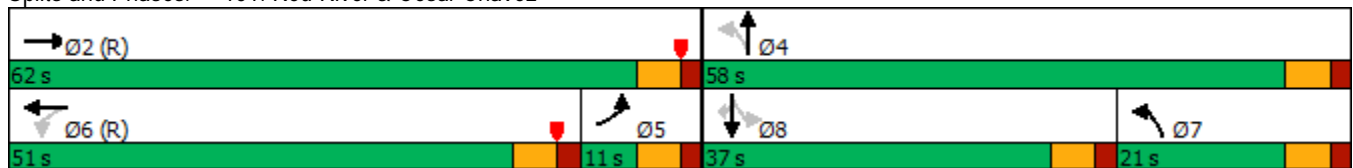


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	58.0		47.0	47.0		53.0	54.0			33.0	33.0
Actuated g/C Ratio	0.06	0.48		0.39	0.39		0.44	0.45			0.28	0.28
v/c Ratio	0.51	1.28		0.91	0.61		1.33	0.39			1.73	0.67
Control Delay	56.8	153.2		65.6	6.3		203.4	23.5			364.4	24.1
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	56.8	153.3		65.6	6.3		203.4	23.5			364.4	24.1
LOS	E	F		E	A		F	C			F	C
Approach Delay		150.9			10.2			131.4			219.3	
Approach LOS		F			B			F			F	
Queue Length 50th (ft)	40	~1065		6	40		~369	148			~507	100
Queue Length 95th (ft)	m41	m#1117		m48	m42		#577	222			m#701	m128
Internal Link Dist (ft)		615			94			44			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	103	1625		58	1254		337	765			255	489
Starvation Cap Reductn	0	32		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.51	1.30		0.91	0.61		1.33	0.39			1.73	0.67




Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 79 (66%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 120
 Control Type: Pretimed
 Maximum v/c Ratio: 1.73
 Intersection Signal Delay: 133.5 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	45.1
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	132	21	151	135
Future Vol, veh/h	28	281	264	32	271	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	357	336	41	345	277
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	20.8	20.3	75.4
HCM LOS	C	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	55%
Vol Thru, %	89%	0%	45%
Vol Right, %	11%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	296	309	489
LT Vol	0	28	271
Through Vol	264	0	218
RT Vol	32	281	0
Lane Flow Rate	376	393	622
Geometry Grp	1	1	1
Degree of Util (X)	0.649	0.666	1.051
Departure Headway (Hd)	6.356	6.247	6.086
Convergence, Y/N	Yes	Yes	Yes
Cap	572	582	603
Service Time	4.356	4.247	4.086
HCM Lane V/C Ratio	0.657	0.675	1.032
HCM Control Delay	20.3	20.8	75.4
HCM Lane LOS	C	C	F
HCM 95th-tile Q	4.7	5	17.3

Intersection						
Intersection Delay, s/veh	5.0					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		186		278	
Demand Flow Rate, veh/h	68		190		284	
Vehicles Circulating, veh/h	395		289		253	
Vehicles Exiting, veh/h	43		248		210	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.1		5.3		6.0	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.794	0.206	1.000	1.000	0.656	0.344
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	54	14	190	284	185	97
Cap Entry Lane, veh/h	991	991	1028	1066	1231	1231
Entry HV Adj Factor	0.981	0.980	0.977	0.980	0.978	0.975
Flow Entry, veh/h	53	14	186	278	181	95
Cap Entry, veh/h	973	972	1004	1045	1204	1201
V/C Ratio	0.054	0.014	0.185	0.266	0.150	0.079
Control Delay, s/veh	4.2	3.8	5.3	6.0	4.3	3.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection												
Int Delay, s/veh	151.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Future Vol, veh/h	49	249	61	90	159	0	202	58	88	59	16	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	317	78	114	202	0	257	74	112	75	20	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	202	0	0	395	0	0	944	910	356	1003	949	202
Stage 1	-	-	-	-	-	-	480	480	-	430	430	-
Stage 2	-	-	-	-	-	-	464	430	-	573	519	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1370	-	-	1164	-	-	242	275	688	221	260	839
Stage 1	-	-	-	-	-	-	567	554	-	603	583	-
Stage 2	-	-	-	-	-	-	578	583	-	505	533	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1164	-	-	186	230	688	123	218	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	230	-	123	218	-
Stage 1	-	-	-	-	-	-	534	521	-	567	519	-
Stage 2	-	-	-	-	-	-	467	519	-	342	502	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	3	\$ 440.8	67.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	237	1370	-	-	1164	-	-	188
HCM Lane V/C Ratio	1.867	0.045	-	-	0.098	-	-	0.758
HCM Control Delay (s)	\$ 440.8	7.8	0	-	8.4	0	-	67.1
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	31	0.1	-	-	0.3	-	-	5

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	140	49	112	50	20
Future Vol, veh/h	66	140	107	282	115	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	178	136	359	146	66

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	810	179	212	0	0
Stage 1	179	-	-	-	-
Stage 2	631	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	349	864	1358	-	-
Stage 1	852	-	-	-	-
Stage 2	530	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	305	864	1358	-	-
Mov Cap-2 Maneuver	305	-	-	-	-
Stage 1	746	-	-	-	-
Stage 2	530	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	2.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	544	-	-
HCM Lane V/C Ratio	0.1	-	0.482	-	-
HCM Control Delay (s)	7.9	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.6	-	-

HCM 6th TWSC
 107: Red River Alley & Davis St

09/25/2019

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	206	14	0	159	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	262	18	0	202	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	280	0	473
Stage 1	-	-	-	-	271
Stage 2	-	-	-	-	202
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1283	-	550
Stage 1	-	-	-	-	775
Stage 2	-	-	-	-	832
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1283	-	550
Mov Cap-2 Maneuver	-	-	-	-	550
Stage 1	-	-	-	-	775
Stage 2	-	-	-	-	832

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1283	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
110: Rainey St & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	10	17	1	44	14	131	2	20	13	97	74	19
Future Volume (vph)	10	30	2	44	14	332	2	27	13	133	75	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Ped Bike Factor		0.99			0.94			0.96			0.94	
Frt		0.994			0.885			0.958			0.989	
Flt Protected		0.988			0.994			0.998			0.972	
Satd. Flow (prot)	0	1864	0	0	1574	0	0	1745	0	0	1775	0
Flt Permitted		0.854			0.956			0.983			0.783	
Satd. Flow (perm)	0	1604	0	0	1513	0	0	1717	0	0	1348	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			441			20			10	
Link Speed (mph)		30			30			30			20	
Link Distance (ft)		184			135			829			246	
Travel Time (s)		4.2			3.1			18.8			8.4	
Confl. Peds. (#/hr)	35					35	27		77	77		27
Confl. Bikes (#/hr)			1						2			10
Peak Hour Factor	0.73	0.73	0.73	0.88	0.88	0.88	0.77	0.77	0.77	0.88	0.88	0.88
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%	0%
Adj. Flow (vph)	16	48	3	59	19	441	3	41	20	177	100	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	67	0	0	519	0	0	64	0	0	302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		19.0			19.0			19.0			19.0	

Lanes, Volumes, Timings
110: Rainey St & River St

09/25/2019

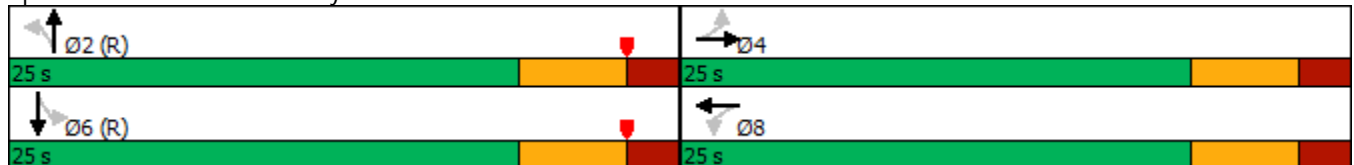


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.38			0.38			0.38			0.38	
v/c Ratio		0.11			0.61			0.10			0.58	
Control Delay		10.3			6.1			8.1			17.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.3			6.1			8.1			17.5	
LOS		B			A			A			B	
Approach Delay		10.3			6.1			8.1			17.5	
Approach LOS		B			A			A			B	
Queue Length 50th (ft)		12			14			8			65	
Queue Length 95th (ft)		24			65			22			126	
Internal Link Dist (ft)		104			55			749			166	
Turn Bay Length (ft)												
Base Capacity (vph)		611			848			664			518	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.11			0.61			0.10			0.58	

Intersection Summary

Area Type: Other
 Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Red
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 10.2
 Intersection LOS: B
 Intersection Capacity Utilization 46.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 110: Rainey St & River St



Intersection

Intersection Delay, s/veh	47
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	223	18	48	280	0	43	0	61	41	83	159
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	29	66	385	0	77	0	110	60	121	233
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	43.5	63.5	18.8	45
HCM LOS	E	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	0%	15%	14%
Vol Thru, %	0%	93%	85%	29%
Vol Right, %	59%	7%	0%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	241	328	283
LT Vol	43	0	48	41
Through Vol	0	223	280	83
RT Vol	61	18	0	159
Lane Flow Rate	187	392	451	414
Geometry Grp	1	1	1	1
Degree of Util (X)	0.452	0.861	0.973	0.879
Departure Headway (Hd)	8.687	7.918	7.762	7.649
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	414	458	470	476
Service Time	6.775	5.969	5.809	5.697
HCM Lane V/C Ratio	0.452	0.856	0.96	0.87
HCM Control Delay	18.8	43.5	63.5	45
HCM Lane LOS	C	E	F	E
HCM 95th-tile Q	2.3	8.8	12.2	9.4

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	123	202	528	328	0	0	0	0	131	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.916										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1664	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.120						0.990	
Satd. Flow (perm)	0	1664	0	0	226	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	189	311	671	417	0	0	0	0	202	831	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	500	0	0	1088	0	0	0	0	0	1033	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		31.0		38.0						51.0	51.0	
Total Split (%)		25.8%		31.7%						42.5%	42.5%	
Maximum Green (s)		25.0		32.0						45.0	45.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag					Lag					Lead	Lead	
Lead-Lag Optimize?					Yes					Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		27.0			61.0						47.0	
Actuated g/C Ratio		0.22			0.51						0.39	
v/c Ratio		1.18			1.92						0.74	
Control Delay		140.0			442.8						35.4	
Queue Delay		0.2			3.5						0.7	
Total Delay		140.2			446.3						36.1	
LOS		F			F						D	
Approach Delay		140.2			446.3						36.1	
Approach LOS		F			F						D	
Queue Length 50th (ft)		-426			~1340						357	
Queue Length 95th (ft)		#480			m#683						343	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		423			567						1388	
Starvation Cap Reductn		0			186						0	
Spillback Cap Reductn		9			0						119	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		1.21			2.86						0.81	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 24 (20%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.92
 Intersection Signal Delay: 226.2
 Intersection LOS: F
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St/Holly St

09/25/2019

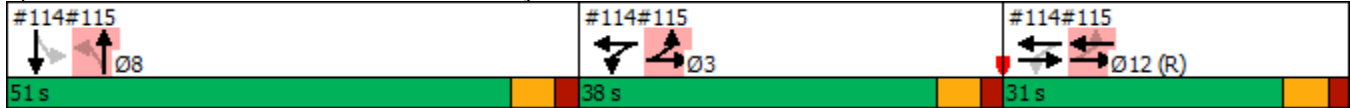
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection

Int Delay, s/veh 160.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖ ↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	396	0	0	1681	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	504	0	0	2138	317

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1228	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 170	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 170	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	940.1	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	170	-	-
HCM Lane V/C Ratio	2.962	-	-
HCM Control Delay (s)	\$ 940.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	45.8	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1372	262	42	507	96	352	152	75	185	161	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.97			0.97			0.96			0.96	0.88
Frt		0.976			0.976			0.951				0.850
Flt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1770	3342	0	1676	3163	0	1770	1701	0	0	1814	1583
Flt Permitted	0.950			0.077			0.123				0.686	
Satd. Flow (perm)	1651	3342	0	136	3163	0	229	1701	0	0	1227	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			20			5				138
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			139				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1745	333	53	645	122	448	193	95	235	205	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	448	288	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	67.0		56.0	56.0		22.0	63.0		41.0	41.0	41.0
Total Split (%)	8.5%	51.5%		43.1%	43.1%		16.9%	48.5%		31.5%	31.5%	31.5%
Maximum Green (s)	5.0	61.0		50.0	50.0		16.0	57.0		35.0	35.0	35.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/25/2019

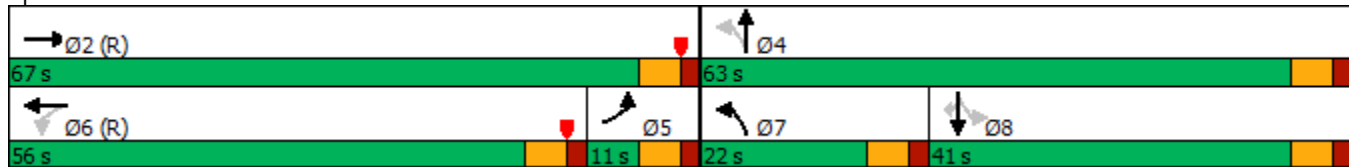


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	63.0		52.0	52.0		58.0	59.0			37.0	37.0
Actuated g/C Ratio	0.05	0.48		0.40	0.40		0.45	0.45			0.28	0.28
v/c Ratio	0.56	1.27		0.98	0.60		1.48	0.37			1.26	0.66
Control Delay	64.0	152.7		93.4	13.1		260.3	24.6			165.4	21.2
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	64.0	152.8		93.4	13.1		260.3	24.6			165.4	21.2
LOS	E	F		F	B		F	C			F	C
Approach Delay		150.6			18.3			168.1			104.0	
Approach LOS		F			B			F			F	

Intersection Summary




Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	85 (65%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
Natural Cycle:	140
Control Type:	Pretimed
Maximum v/c Ratio:	1.48
Intersection Signal Delay:	121.1
Intersection LOS:	F
Intersection Capacity Utilization:	91.9%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	32.2
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	132	21	151	135
Future Vol, veh/h	28	281	256	43	205	237
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	357	326	55	261	301
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	20.1	19.9	48.9
HCM LOS	C	C	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	46%
Vol Thru, %	86%	0%	54%
Vol Right, %	14%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	299	309	442
LT Vol	0	28	205
Through Vol	256	0	237
RT Vol	43	281	0
Lane Flow Rate	380	393	562
Geometry Grp	1	1	1
Degree of Util (X)	0.649	0.66	0.945
Departure Headway (Hd)	6.149	6.042	6.054
Convergence, Y/N	Yes	Yes	Yes
Cap	586	597	601
Service Time	4.201	4.088	4.054
HCM Lane V/C Ratio	0.648	0.658	0.935
HCM Control Delay	19.9	20.1	48.9
HCM Lane LOS	C	C	E
HCM 95th-tile Q	4.7	4.9	12.6

Intersection						
Intersection Delay, s/veh	5.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		186		279	
Demand Flow Rate, veh/h	68		190		284	
Vehicles Circulating, veh/h	419		292		277	
Vehicles Exiting, veh/h	43		269		210	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.4		5.3		6.2	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.683	0.317
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	190	284	209	97
Cap Entry Lane, veh/h	970	970	1024	1040	1231	1231
Entry HV Adj Factor	0.985	1.000	0.977	0.981	0.981	0.975
Flow Entry, veh/h	67	0	186	279	205	95
Cap Entry, veh/h	956	970	1001	1021	1207	1201
V/C Ratio	0.070	0.000	0.185	0.273	0.170	0.079
Control Delay, s/veh	4.4	3.7	5.3	6.2	4.4	3.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill

09/25/2019

Intersection												
Int Delay, s/veh	135.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	125	51	19	27	0	73	0	59	0	0	0
Future Vol, veh/h	49	204	51	90	159	0	202	66	77	115	7	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	259	65	114	202	0	257	84	98	146	9	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	202	0	0	324	0	0	874	846	292	937	878	202
Stage 1	-	-	-	-	-	-	416	416	-	430	430	-
Stage 2	-	-	-	-	-	-	458	430	-	507	448	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1370	-	-	1236	-	-	270	299	747	245	287	839
Stage 1	-	-	-	-	-	-	614	592	-	603	583	-
Stage 2	-	-	-	-	-	-	583	583	-	548	573	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1236	-	-	~ 219	253	747	~ 140	243	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 219	253	-	~ 140	243	-
Stage 1	-	-	-	-	-	-	580	559	-	569	522	-
Stage 2	-	-	-	-	-	-	485	522	-	382	541	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	3	\$ 336.3	162
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	268	1370	-	-	1236	-	-	178
HCM Lane V/C Ratio	1.637	0.045	-	-	0.093	-	-	1.136
HCM Control Delay (s)	\$ 336.3	7.8	0	-	8.2	0	-	162
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	27.4	0.1	-	-	0.3	-	-	10.4

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	20	121	14	112	50	20
Future Vol, veh/h	63	121	72	282	96	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	154	92	359	122	66

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	698	155	188	0	0
Stage 1	155	-	-	-	-
Stage 2	543	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	407	891	1386	-	-
Stage 1	873	-	-	-	-
Stage 2	582	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	373	891	1386	-	-
Mov Cap-2 Maneuver	373	-	-	-	-
Stage 1	801	-	-	-	-
Stage 2	582	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1386	-	604	-	-
HCM Lane V/C Ratio	0.066	-	0.387	-	-
HCM Control Delay (s)	7.8	0	14.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.8	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	141	19	0	34	35	0
Future Vol, veh/h	184	52	0	124	35	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	66	0	158	45	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	300	0	425 267
Stage 1	-	-	-	-	267 -
Stage 2	-	-	-	-	158 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1261	-	586 772
Stage 1	-	-	-	-	778 -
Stage 2	-	-	-	-	871 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1261	-	586 772
Mov Cap-2 Maneuver	-	-	-	-	586 -
Stage 1	-	-	-	-	778 -
Stage 2	-	-	-	-	871 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	586	-	-	1261	-
HCM Lane V/C Ratio	0.076	-	-	-	-
HCM Control Delay (s)	11.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection				
Intersection Delay, s/veh	5.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	45	519	64	320
Demand Flow Rate, veh/h	45	520	64	328
Vehicles Circulating, veh/h	363	60	245	82
Vehicles Exiting, veh/h	47	249	163	498
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	0.995
Approach Delay, s/veh	4.2	6.7	3.9	5.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	45	520	64	328
Cap Entry Lane, veh/h	953	1298	1075	1269
Entry HV Adj Factor	1.000	0.998	1.000	0.976
Flow Entry, veh/h	45	519	64	320
Cap Entry, veh/h	949	1282	1075	1232
V/C Ratio	0.047	0.405	0.060	0.260
Control Delay, s/veh	4.2	6.7	3.9	5.2
LOS	A	A	A	A
95th %tile Queue, veh	0	2	0	1

Intersection	
Intersection Delay, s/veh	47
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	223	18	48	280	0	43	0	61	41	83	159
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	29	66	385	0	77	0	110	60	121	233
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	43.5	63.5	18.8	45
HCM LOS	E	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	0%	15%	14%
Vol Thru, %	0%	93%	85%	29%
Vol Right, %	59%	7%	0%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	241	328	283
LT Vol	43	0	48	41
Through Vol	0	223	280	83
RT Vol	61	18	0	159
Lane Flow Rate	187	392	451	414
Geometry Grp	1	1	1	1
Degree of Util (X)	0.452	0.861	0.973	0.879
Departure Headway (Hd)	8.687	7.918	7.762	7.649
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	414	458	470	476
Service Time	6.775	5.969	5.809	5.697
HCM Lane V/C Ratio	0.452	0.856	0.96	0.87
HCM Control Delay	18.8	43.5	63.5	45
HCM Lane LOS	C	E	F	E
HCM 95th-tile Q	2.3	8.8	12.2	9.4

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	123	202	528	328	0	0	0	0	131	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.916										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1662	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.111						0.990	
Satd. Flow (perm)	0	1662	0	0	209	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	189	311	671	417	0	0	0	0	202	831	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	500	0	0	1088	0	0	0	0	0	1033	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		33.0		42.0						55.0	55.0	
Total Split (%)		25.4%		32.3%						42.3%	42.3%	
Maximum Green (s)		27.0		36.0						49.0	49.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		29.0			67.0						51.0	
Actuated g/C Ratio		0.22			0.52						0.39	
v/c Ratio		1.20			1.88						0.74	
Control Delay		150.1			423.8						37.9	
Queue Delay		2.8			2.7						0.0	
Total Delay		152.9			426.5						37.9	
LOS		F			F						D	
Approach Delay		152.9			426.5						37.9	
Approach LOS		F			F						D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 2 (2%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.88
 Intersection Signal Delay: 221.2
 Intersection LOS: F
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	160.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	396	0	0	1681	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	504	0	0	2138	317

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1228	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 170	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 170	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	940.1	0
HCM LOS	F	

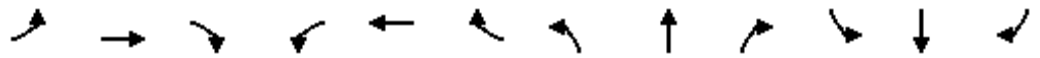
Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	170	-	-
HCM Lane V/C Ratio	2.962	-	-
HCM Control Delay (s)	\$ 940.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	45.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1d

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1372	262	42	507	96	352	152	124	185	161	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.97			0.97			0.95			0.97	0.88
Frt		0.976			0.976			0.932				0.850
Flt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1770	3342	0	1676	3163	0	1770	1641	0	0	1814	1583
Flt Permitted	0.950			0.077			0.196				0.428	
Satd. Flow (perm)	1651	3342	0	136	3163	0	365	1641	0	0	777	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			20			5				140
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			118				718
Travel Time (s)		15.8			4.0			2.7				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1745	333	53	645	122	448	193	158	235	205	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	448	351	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	67.0		56.0	56.0		21.0	63.0		42.0	42.0	42.0
Total Split (%)	8.5%	51.5%		43.1%	43.1%		16.2%	48.5%		32.3%	32.3%	32.3%
Maximum Green (s)	5.0	61.0		50.0	50.0		15.0	57.0		36.0	36.0	36.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/25/2019

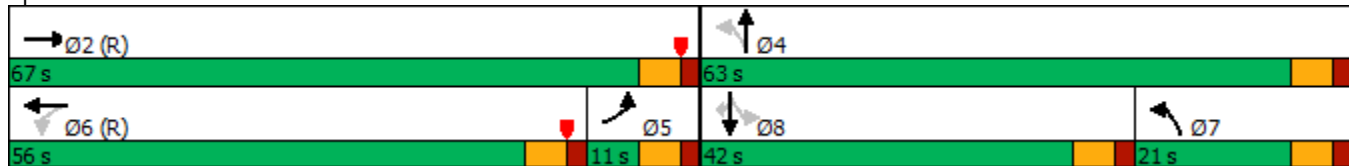


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	63.0		52.0	52.0		58.0	59.0			38.0	38.0
Actuated g/C Ratio	0.05	0.48		0.40	0.40		0.45	0.45			0.29	0.29
v/c Ratio	0.56	1.27		0.98	0.60		1.34	0.47			1.94	0.65
Control Delay	64.2	153.2		93.4	13.1		208.2	26.9			458.2	23.8
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	64.2	153.3		93.4	13.1		208.2	26.9			458.2	23.8
LOS	E	F		F	B		F	C			F	C
Approach Delay		151.1			18.3			128.5			273.0	
Approach LOS		F			B			F			F	
Queue Length 50th (ft)	44	~1157		14	81		~387	199			~575	114
Queue Length 95th (ft)	m47	m#1256		m#53	m84		#600	287			#787	m131
Internal Link Dist (ft)		615			94			38			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	95	1631		54	1277		335	747			227	505
Starvation Cap Reductn	0	53		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.32		0.98	0.60		1.34	0.47			1.94	0.65

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 1.94
 Intersection Signal Delay: 143.7 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	36.9
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	43	160	21	131	155
Future Vol, veh/h	28	302	284	43	185	257
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	384	361	55	235	327
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	23.7	24.8	55.7
HCM LOS	C	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	8%	42%
Vol Thru, %	87%	0%	58%
Vol Right, %	13%	92%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	327	330	442
LT Vol	0	28	185
Through Vol	284	0	257
RT Vol	43	302	0
Lane Flow Rate	416	420	562
Geometry Grp	1	1	1
Degree of Util (X)	0.731	0.721	0.972
Departure Headway (Hd)	6.33	6.184	6.227
Convergence, Y/N	Yes	Yes	Yes
Cap	570	583	585
Service Time	4.384	4.229	4.276
HCM Lane V/C Ratio	0.73	0.72	0.961
HCM Control Delay	24.8	23.7	55.7
HCM Lane LOS	C	C	F
HCM 95th-tile Q	6.2	6	13.5

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	4.9					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		133		322	
Demand Flow Rate, veh/h	68		135		328	
Vehicles Circulating, veh/h	401		338		162	
Vehicles Exiting, veh/h	43		152		307	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.3		5.0		5.8	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.282	0.718
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	135	328	94	239
Cap Entry Lane, veh/h	986	986	978	1170	1282	1282
Entry HV Adj Factor	0.985	1.000	0.983	0.981	0.979	0.978
Flow Entry, veh/h	67	0	133	322	92	234
Cap Entry, veh/h	971	986	960	1147	1255	1255
V/C Ratio	0.069	0.000	0.138	0.280	0.073	0.186
Control Delay, s/veh	4.3	3.7	5.0	5.8	3.5	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	1	0	1

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

09/25/2019

Intersection												
Int Delay, s/veh	55.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↷	
Traffic Vol, veh/h	0	125	27	19	27	0	45	0	59	0	0	0
Future Vol, veh/h	0	204	27	90	159	0	174	66	77	115	7	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	259	34	114	202	0	221	84	98	146	9	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	293	0	0	734	706	276	797	723	202
Stage 1	-	-	-	-	-	-	276	276	-	430	430	-
Stage 2	-	-	-	-	-	-	458	430	-	367	293	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1269	-	-	336	361	763	305	352	839
Stage 1	0	-	-	-	-	-	730	682	-	603	583	-
Stage 2	0	-	-	-	-	-	583	583	-	653	670	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1269	-	-	287	325	763	197	316	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	287	325	-	197	316	-
Stage 1	-	-	-	-	-	-	730	682	-	603	524	-
Stage 2	-	-	-	-	-	-	486	524	-	499	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.9	132.6	64.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	348	-	-	1269	-	-	245
HCM Lane V/C Ratio	1.158	-	-	0.09	-	-	0.825
HCM Control Delay (s)	132.6	-	-	8.1	0	-	64.1
HCM Lane LOS	F	-	-	A	A	-	F
HCM 95th %tile Q(veh)	16.2	-	-	0.3	-	-	6.4

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	70	7	84	26	20
Future Vol, veh/h	63	70	65	254	72	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	89	83	323	92	66

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	614	125	158	0	0
Stage 1	125	-	-	-	-
Stage 2	489	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	455	926	1422	-	-
Stage 1	901	-	-	-	-
Stage 2	616	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	423	926	1422	-	-
Mov Cap-2 Maneuver	423	-	-	-	-
Stage 1	837	-	-	-	-
Stage 2	616	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1422	-	592	-	-
HCM Lane V/C Ratio	0.058	-	0.286	-	-
HCM Control Delay (s)	7.7	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	0	0	27	0	0
Future Vol, veh/h	133	13	0	117	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	169	17	0	149	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	186	0	327
Stage 1	-	-	-	-	178
Stage 2	-	-	-	-	149
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1388	-	667
Stage 1	-	-	-	-	853
Stage 2	-	-	-	-	879
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1388	-	667
Mov Cap-2 Maneuver	-	-	-	-	667
Stage 1	-	-	-	-	853
Stage 2	-	-	-	-	879

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1388	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection			
Intersection Delay, s/veh	4.9		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	0	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	0	61	319
Demand Flow Rate, veh/h	0	61	328
Vehicles Circulating, veh/h	41	226	60
Vehicles Exiting, veh/h	246	162	234
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	1.000	1.000	0.995
Approach Delay, s/veh	0.0	3.8	5.1
Approach LOS	-	A	A
Lane	Left	Left	
Designated Moves	TR	LT	
Assumed Moves	TR	LT	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	61	328	
Cap Entry Lane, veh/h	1096	1298	
Entry HV Adj Factor	1.000	0.973	
Flow Entry, veh/h	61	319	
Cap Entry, veh/h	1096	1256	
V/C Ratio	0.056	0.254	
Control Delay, s/veh	3.8	5.1	
LOS	A	A	
95th %tile Queue, veh	0	1	

Intersection	
Intersection Delay, s/veh	47
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	223	18	48	280	0	43	0	61	41	83	159
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	29	66	385	0	77	0	110	60	121	233
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	43.5	63.5	18.8	45
HCM LOS	E	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	0%	15%	14%
Vol Thru, %	0%	93%	85%	29%
Vol Right, %	59%	7%	0%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	241	328	283
LT Vol	43	0	48	41
Through Vol	0	223	280	83
RT Vol	61	18	0	159
Lane Flow Rate	187	392	451	414
Geometry Grp	1	1	1	1
Degree of Util (X)	0.452	0.861	0.973	0.879
Departure Headway (Hd)	8.687	7.918	7.762	7.649
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	414	458	470	476
Service Time	6.775	5.969	5.809	5.697
HCM Lane V/C Ratio	0.452	0.856	0.96	0.87
HCM Control Delay	18.8	43.5	63.5	45
HCM Lane LOS	C	E	F	E
HCM 95th-tile Q	2.3	8.8	12.2	9.4

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	123	202	528	328	0	0	0	0	131	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.916										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1662	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.111						0.990	
Satd. Flow (perm)	0	1662	0	0	209	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	189	311	671	417	0	0	0	0	202	831	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	500	0	0	1088	0	0	0	0	0	1033	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		33.0		42.0						55.0	55.0	
Total Split (%)		25.4%		32.3%						42.3%	42.3%	
Maximum Green (s)		27.0		36.0						49.0	49.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		29.0			67.0							51.0
Actuated g/C Ratio		0.22			0.52							0.39
v/c Ratio		1.20			1.88							0.74
Control Delay		150.1			423.8							37.9
Queue Delay		2.8			2.7							0.0
Total Delay		152.9			426.5							37.9
LOS		F			F							D
Approach Delay		152.9			426.5							37.9
Approach LOS		F			F							D
Queue Length 50th (ft)		-472			-1434							388
Queue Length 95th (ft)		#520			m#761							369
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		416			580							1390
Starvation Cap Reductn		0			160							0
Spillback Cap Reductn		97			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		1.57			2.59							0.74

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 97 (75%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.88
 Intersection Signal Delay: 221.2
 Intersection Capacity Utilization 87.8%
 Analysis Period (min) 15

Intersection LOS: F
 ICU Level of Service E

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St/Holly St

09/25/2019

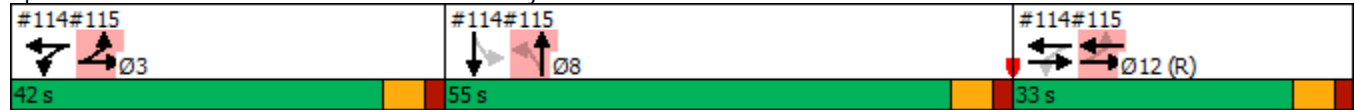
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	160.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	184	0	0	1494	46
Future Vol, veh/h	0	396	0	0	1681	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	504	0	0	2138	317

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1228	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 170	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 170	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	940.1	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	170	-	-
HCM Lane V/C Ratio	2.962	-	-
HCM Control Delay (s)	\$ 940.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	45.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1353	281	42	507	96	352	152	141	163	183	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.97			0.97			0.94			0.98	0.88
Frt		0.974			0.976			0.928				0.850
Flt Protected	0.950			0.950			0.950				0.977	
Satd. Flow (prot)	1770	3328	0	1676	3163	0	1770	1628	0	0	1820	1583
Flt Permitted	0.950			0.077			0.185				0.411	
Satd. Flow (perm)	1651	3328	0	136	3163	0	345	1628	0	0	750	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			20			6				139
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			151				718
Travel Time (s)		15.8			4.0			3.4				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1721	357	53	645	122	448	193	179	207	233	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	448	372	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	67.0		56.0	56.0		22.0	63.0		41.0	41.0	41.0
Total Split (%)	8.5%	51.5%		43.1%	43.1%		16.9%	48.5%		31.5%	31.5%	31.5%
Maximum Green (s)	5.0	61.0		50.0	50.0		16.0	57.0		35.0	35.0	35.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

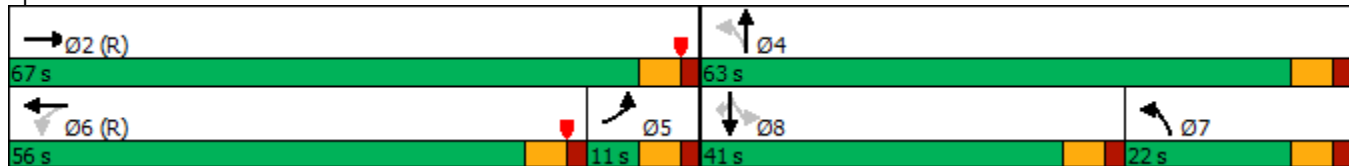


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	63.0		52.0	52.0		58.0	59.0			37.0	37.0
Actuated g/C Ratio	0.05	0.48		0.40	0.40		0.45	0.45			0.28	0.28
v/c Ratio	0.56	1.28		0.98	0.60		1.32	0.50			2.07	0.66
Control Delay	64.2	154.9		91.7	9.6		200.4	27.6			514.4	24.9
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	64.2	155.0		91.7	9.6		200.4	27.6			514.4	24.9
LOS	E	F		F	A		F	C			F	C
Approach Delay		152.7			14.9			122.0			305.7	
Approach LOS		F			B			F			F	
Queue Length 50th (ft)	44	~1159		13	93		~391	214			~587	118
Queue Length 95th (ft)	m47	m#1258		m#23	m100		#605	308			#799	m136
Internal Link Dist (ft)		615			94			71			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	95	1626		54	1277		340	742			213	495
Starvation Cap Reductn	0	51		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.32		0.98	0.60		1.32	0.50			2.07	0.66

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 140
 Control Type: Pretimed
 Maximum v/c Ratio: 2.07
 Intersection Signal Delay: 148.1 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	184.1
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	176	250	267	19
Future Vol, veh/h	60	108	495	337	381	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	137	630	429	485	130
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	15.4	291.4	58.1
HCM LOS	C	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	36%	79%
Vol Thru, %	59%	0%	21%
Vol Right, %	41%	64%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	832	168	483
LT Vol	0	60	381
Through Vol	495	0	102
RT Vol	337	108	0
Lane Flow Rate	1058	214	614
Geometry Grp	1	1	1
Degree of Util (X)	1.598	0.392	0.978
Departure Headway (Hd)	5.438	7.571	6.467
Convergence, Y/N	Yes	Yes	Yes
Cap	677	479	565
Service Time	3.438	5.571	4.467
HCM Lane V/C Ratio	1.563	0.447	1.087
HCM Control Delay	291.4	15.4	58.1
HCM Lane LOS	F	C	F
HCM 95th-tile Q	56.5	1.8	13.5

HCM 6th Roundabout
 103: Private Drive/Red River & Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	13.8					
Intersection LOS	B					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		780		234	
Demand Flow Rate, veh/h	68		796		239	
Vehicles Circulating, veh/h	215		307		117	
Vehicles Exiting, veh/h	44		49		166	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.6		19.7		4.7	
Approach LOS	A		C		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.283	0.717
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	796	239	49	124
Cap Entry Lane, veh/h	1168	1168	1009	1225	1313	1313
Entry HV Adj Factor	0.985	1.000	0.980	0.980	0.980	0.978
Flow Entry, veh/h	67	0	780	234	48	121
Cap Entry, veh/h	1151	1168	988	1201	1286	1285
V/C Ratio	0.058	0.000	0.789	0.195	0.037	0.094
Control Delay, s/veh	3.6	3.1	19.7	4.7	3.1	3.6
LOS	A	A	C	A	A	A
95th %tile Queue, veh	0	0	8	1	0	0

Intersection						
Int Delay, s/veh	6.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	1	510	46	0	0	0
Future Vol, veh/h	50	714	210	0	81	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	908	267	0	103	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	267	0	-	0	1303
Stage 1	-	-	-	-	267
Stage 2	-	-	-	-	1036
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1297	-	-	-	177
Stage 1	-	-	-	-	778
Stage 2	-	-	-	-	342
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1297	-	-	-	159
Mov Cap-2 Maneuver	-	-	-	-	159
Stage 1	-	-	-	-	700
Stage 2	-	-	-	-	342

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	54.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1297	-	-	-	212
HCM Lane V/C Ratio	0.049	-	-	-	0.708
HCM Control Delay (s)	7.9	0	-	-	54.9
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	4.6

Intersection						
Int Delay, s/veh	17					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	19	0	0	44	273	0
Future Vol, veh/h	19	0	0	44	534	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	679	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	80	24
Stage 1	-	-	-	24	-
Stage 2	-	-	-	56	-
Critical Hdwy	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	922	1052
Stage 1	-	0	0	999	-
Stage 2	-	0	0	967	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	922	1052
Mov Cap-2 Maneuver	-	-	-	922	-
Stage 1	-	-	-	999	-
Stage 2	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	922	-	-
HCM Lane V/C Ratio	0.737	-	-
HCM Control Delay (s)	19	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	6.8	-	-

Intersection				
Intersection Delay, s/veh	7.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	0
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	42	725	199	0
Demand Flow Rate, veh/h	42	739	200	0
Vehicles Circulating, veh/h	60	46	40	82
Vehicles Exiting, veh/h	22	194	62	703
Ped Vol Crossing Leg, #/h	27	77	0	0
Ped Cap Adj	0.996	0.989	1.000	1.000
Approach Delay, s/veh	3.0	9.3	4.0	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	
Designated Moves	LTR	LTR	LTR	
Assumed Moves	LTR	LTR	LTR	
RT Channelized				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	
Entry Flow, veh/h	42	739	200	
Cap Entry Lane, veh/h	1298	1317	1325	
Entry HV Adj Factor	1.000	0.981	0.997	
Flow Entry, veh/h	42	725	199	
Cap Entry, veh/h	1293	1278	1321	
V/C Ratio	0.032	0.567	0.151	
Control Delay, s/veh	3.0	9.3	4.0	
LOS	A	A	A	
95th %tile Queue, veh	0	4	1	

Intersection	
Intersection Delay, s/veh	254.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	174	18	48	280	0	43	0	65	144	182	336
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	283	29	66	385	0	77	0	117	211	266	491
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	34.5	68.3	22.1	459.2
HCM LOS	D	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	0%	15%	22%
Vol Thru, %	0%	91%	85%	27%
Vol Right, %	60%	9%	0%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	192	328	662
LT Vol	43	0	48	144
Through Vol	0	174	280	182
RT Vol	65	18	0	336
Lane Flow Rate	194	312	451	968
Geometry Grp	1	1	1	1
Degree of Util (X)	0.451	0.694	0.952	1.965
Departure Headway (Hd)	10.662	10.604	9.953	7.307
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	340	343	370	503
Service Time	8.662	8.604	7.953	5.385
HCM Lane V/C Ratio	0.571	0.91	1.219	1.924
HCM Control Delay	22.1	34.5	68.3	459.2
HCM Lane LOS	C	D	F	F
HCM 95th-tile Q	2.2	4.9	10.3	64.4

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	217	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	118	265	528	328	0	0	0	0	140	580	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.907										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1642	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.104						0.990	
Satd. Flow (perm)	0	1642	0	0	196	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			294	
Travel Time (s)		3.1			8.2			4.7			5.7	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	182	408	671	417	0	0	0	0	216	893	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	590	0	0	1088	0	0	0	0	0	1109	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		35.0		41.0						54.0	54.0	
Total Split (%)		26.9%		31.5%						41.5%	41.5%	
Maximum Green (s)		29.0		35.0						48.0	48.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		31.0			68.0						50.0	
Actuated g/C Ratio		0.24			0.52						0.38	
v/c Ratio		1.37			1.92						0.81	
Control Delay		215.2			444.2						41.7	
Queue Delay		3.2			0.0						0.0	
Total Delay		218.4			444.2						41.7	
LOS		F			F						D	
Approach Delay		218.4			444.2						41.7	
Approach LOS		F			F						D	
Queue Length 50th (ft)		-623			-1450						436	
Queue Length 95th (ft)		#655			m#813						410	
Internal Link Dist (ft)		57			279			232			214	
Turn Bay Length (ft)												
Base Capacity (vph)		431			566						1363	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		115			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		1.87			1.92						0.81	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 76 (58%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.92
 Intersection Signal Delay: 236.3
 Intersection LOS: F
 Intersection Capacity Utilization 92.5%
 ICU Level of Service F
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	667.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	510	0	0	1496	46
Future Vol, veh/h	0	795	0	0	1726	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1011	0	0	2195	267

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1231	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 169	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 169	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2293.7	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	169	-	-
HCM Lane V/C Ratio	5.982	-	-
HCM Control Delay (s)	\$ 2293.7	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	108.7	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/30/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	92	65	46	156	114	257
Future Volume (vph)	42	1353	281	42	507	96	352	152	141	163	183	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.96			0.96			0.93			0.97	0.86
Frt		0.974			0.976			0.928				0.850
Flt Protected	0.950			0.950			0.950				0.977	
Satd. Flow (prot)	1770	3311	0	1676	3147	0	1770	1614	0	0	1820	1583
Flt Permitted	0.950			0.091			0.344				0.547	
Satd. Flow (perm)	1632	3311	0	161	3147	0	641	1614	0	0	993	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			15			1				132
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			132				718
Travel Time (s)		15.8			4.0			3.0				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1721	357	53	645	122	448	193	179	207	233	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	448	372	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	60.0		48.0	48.0		19.0	90.0		71.0	71.0	71.0
Total Split (%)	8.0%	40.0%		32.0%	32.0%		12.7%	60.0%		47.3%	47.3%	47.3%
Maximum Green (s)	6.0	54.0		42.0	42.0		13.0	84.0		65.0	65.0	65.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

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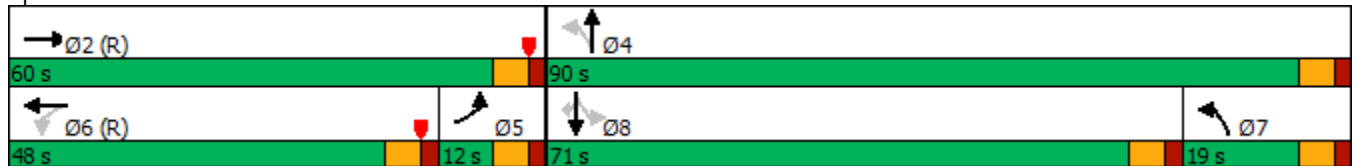


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	56.0		44.0	44.0		85.0	86.0			67.0	67.0
Actuated g/C Ratio	0.05	0.37		0.29	0.29		0.57	0.57			0.45	0.45
v/c Ratio	0.56	1.67		1.13	0.82		0.96	0.40			0.99	0.48
Control Delay	68.3	327.3		135.2	14.8		70.8	19.3			66.6	12.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	68.3	327.3		135.2	14.8		70.8	19.3			66.6	12.8
LOS	E	F		F	B		E	B			E	B
Approach Delay		320.9			22.6			47.5			43.7	
Approach LOS		F			C			D			D	
Queue Length 50th (ft)	51	~1552		-58	122		246	194			406	75
Queue Length 95th (ft)	m55	#1685		m#68	m123		#455	270			m#652	m112
Internal Link Dist (ft)		615			94			52			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1248		47	933		468	925			443	682
Starvation Cap Reductn	0	14		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.68		1.13	0.82		0.96	0.40			0.99	0.48

Intersection Summary




Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 93 (62%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 140
 Control Type: Pretimed
 Maximum v/c Ratio: 1.67
 Intersection Signal Delay: 170.7 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	184.1
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	176	250	267	19
Future Vol, veh/h	60	108	495	337	381	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	137	630	429	485	130
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	15.4	291.4	58.1
HCM LOS	C	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	36%	79%
Vol Thru, %	59%	0%	21%
Vol Right, %	41%	64%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	832	168	483
LT Vol	0	60	381
Through Vol	495	0	102
RT Vol	337	108	0
Lane Flow Rate	1058	214	614
Geometry Grp	1	1	1
Degree of Util (X)	1.598	0.392	0.978
Departure Headway (Hd)	5.438	7.571	6.467
Convergence, Y/N	Yes	Yes	Yes
Cap	677	479	565
Service Time	3.438	5.571	4.467
HCM Lane V/C Ratio	1.563	0.447	1.087
HCM Control Delay	291.4	15.4	58.1
HCM Lane LOS	F	C	F
HCM 95th-tile Q	56.5	1.8	13.5

Intersection						
Intersection Delay, s/veh	13.8					
Intersection LOS	B					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		780		234	
Demand Flow Rate, veh/h	68		796		239	
Vehicles Circulating, veh/h	215		307		117	
Vehicles Exiting, veh/h	44		49		166	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.6		19.7		4.7	
Approach LOS	A		C		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.283	0.717
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	796	239	49	124
Cap Entry Lane, veh/h	1168	1168	1009	1225	1313	1313
Entry HV Adj Factor	0.985	1.000	0.980	0.980	0.980	0.978
Flow Entry, veh/h	67	0	780	234	48	121
Cap Entry, veh/h	1151	1168	988	1201	1286	1285
V/C Ratio	0.058	0.000	0.789	0.195	0.037	0.094
Control Delay, s/veh	3.6	3.1	19.7	4.7	3.1	3.6
LOS	A	A	C	A	A	A
95th %tile Queue, veh	0	0	8	1	0	0

Intersection

Int Delay, s/veh 6.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	510	46	0	0	0
Future Vol, veh/h	50	714	210	0	81	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	908	267	0	103	47

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	267	0	0 1303 267
Stage 1	-	-	- 267 -
Stage 2	-	-	- 1036 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1297	-	- 177 772
Stage 1	-	-	- 778 -
Stage 2	-	-	- 342 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1297	-	- 159 772
Mov Cap-2 Maneuver	-	-	- 159 -
Stage 1	-	-	- 700 -
Stage 2	-	-	- 342 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	54.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1297	-	-	-	212
HCM Lane V/C Ratio	0.049	-	-	-	0.708
HCM Control Delay (s)	7.9	0	-	-	54.9
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	4.6

Intersection						
Int Delay, s/veh	17					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	44	273	0
Future Vol, veh/h	19	0	0	44	534	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	679	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	24	0	80
Stage 1	-	-	-	-	24
Stage 2	-	-	-	-	56
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1591	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	922
Mov Cap-2 Maneuver	-	-	-	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1591	-
HCM Lane V/C Ratio	0.737	-	-	-	-
HCM Control Delay (s)	19	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	6.8	-	-	0	-

Intersection			
Intersection Delay, s/veh	8.0		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	29	754	205
Demand Flow Rate, veh/h	29	755	205
Vehicles Circulating, veh/h	60	38	27
Vehicles Exiting, veh/h	733	194	62
Ped Vol Crossing Leg, #/h	27	77	0
Ped Cap Adj	0.996	0.989	1.000
Approach Delay, s/veh	3.0	9.3	3.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	29	755	205
Cap Entry Lane, veh/h	1298	1327	1342
Entry HV Adj Factor	1.000	0.999	1.000
Flow Entry, veh/h	29	754	205
Cap Entry, veh/h	1293	1312	1342
V/C Ratio	0.022	0.575	0.153
Control Delay, s/veh	3.0	9.3	3.9
LOS	A	A	A
95th %tile Queue, veh	0	4	1

Intersection	
Intersection Delay, s/veh	254.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	174	18	48	280	0	43	0	65	144	182	336
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	283	29	66	385	0	77	0	117	211	266	491
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	34.5	68.3	22.1	459.2
HCM LOS	D	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	0%	15%	22%
Vol Thru, %	0%	91%	85%	27%
Vol Right, %	60%	9%	0%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	192	328	662
LT Vol	43	0	48	144
Through Vol	0	174	280	182
RT Vol	65	18	0	336
Lane Flow Rate	194	312	451	968
Geometry Grp	1	1	1	1
Degree of Util (X)	0.451	0.694	0.952	1.965
Departure Headway (Hd)	10.662	10.604	9.953	7.307
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	340	343	370	503
Service Time	8.662	8.604	7.953	5.385
HCM Lane V/C Ratio	0.571	0.91	1.219	1.924
HCM Control Delay	22.1	34.5	68.3	459.2
HCM Lane LOS	C	D	F	F
HCM 95th-tile Q	2.2	4.9	10.3	64.4

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	57	217	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	118	265	528	328	0	0	0	0	140	580	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.907										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1639	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.087						0.990	
Satd. Flow (perm)	0	1639	0	0	164	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	182	408	671	417	0	0	0	0	216	893	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	590	0	0	1088	0	0	0	0	0	1109	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		41.0		49.0						60.0	60.0	
Total Split (%)		27.3%		32.7%						40.0%	40.0%	
Maximum Green (s)		35.0		43.0						54.0	54.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		37.0			82.0						56.0	
Actuated g/C Ratio		0.25			0.55						0.37	
v/c Ratio		1.33			1.85						0.84	
Control Delay		202.1			417.2						49.8	
Queue Delay		6.7			0.0						0.2	
Total Delay		208.8			417.2						50.0	
LOS		F			F						D	
Approach Delay		208.8			417.2						50.0	
Approach LOS		F			F						D	
Queue Length 50th (ft)		~707			~1651						518	
Queue Length 95th (ft)		#722			m#921						477	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		444			587						1323	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		200			0						14	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		2.42			1.85						0.85	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 7 (5%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.85
 Intersection Signal Delay: 227.0
 Intersection Capacity Utilization 92.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/30/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection

Int Delay, s/veh 667.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	510	0	0	1496	46
Future Vol, veh/h	0	795	0	0	1726	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1011	0	0	2195	267

Major/Minor

	Minor2	Major2
Conflicting Flow All	- 1231	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 169	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 169	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach

	EB	SB
HCM Control Delay, \$	2293.7	0
HCM LOS	F	

Minor Lane/Major Mvmt

	EBLn1	SBT	SBR
Capacity (veh/h)	169	-	-
HCM Lane V/C Ratio	5.982	-	-
HCM Control Delay (s)	\$ 2293.7	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	108.7	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	94	65	46	156	114	257
Future Volume (vph)	42	1387	247	42	507	96	298	120	208	189	157	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.97			0.97			0.92			0.97	0.88
Frt		0.977			0.976			0.905				0.850
Flt Protected	0.950			0.950			0.950				0.973	
Satd. Flow (prot)	1770	3352	0	1676	3163	0	1770	1556	0	0	1812	1583
Flt Permitted	0.950			0.075			0.160				0.621	
Satd. Flow (perm)	1651	3352	0	132	3163	0	298	1556	0	0	1117	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			20			5				148
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			127				718
Travel Time (s)		15.8			4.0			2.9				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1764	314	53	645	122	379	153	265	240	200	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	379	418	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	68.0		57.0	57.0		18.0	62.0		44.0	44.0	44.0
Total Split (%)	8.5%	52.3%		43.8%	43.8%		13.8%	47.7%		33.8%	33.8%	33.8%
Maximum Green (s)	5.0	62.0		51.0	51.0		12.0	56.0		38.0	38.0	38.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

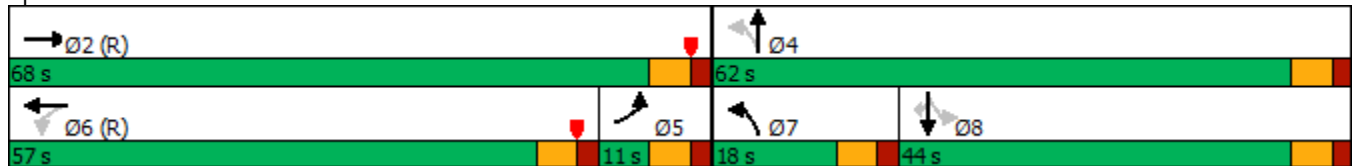


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	64.0		53.0	53.0		57.0	58.0			40.0	40.0
Actuated g/C Ratio	0.05	0.49		0.41	0.41		0.44	0.45			0.31	0.31
v/c Ratio	0.56	1.25		1.00	0.59		1.37	0.60			1.28	0.62
Control Delay	58.9	139.3		95.8	7.5		212.4	31.3			173.3	17.2
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	58.9	139.4		95.8	7.5		212.4	31.3			173.3	17.2
LOS	E	F		F	A		F	C			F	B
Approach Delay		137.4			13.2			117.4			106.7	
Approach LOS		F			B			F			F	
Queue Length 50th (ft)	44	~1143		10	42		~332	259			~469	106
Queue Length 95th (ft)	m47	m#1239		m#20	m48		#535	371			#684	m198
Internal Link Dist (ft)		615			94			47			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	95	1661		53	1301		277	696			343	530
Starvation Cap Reductn	0	59		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.30		1.00	0.59		1.37	0.60			1.28	0.62

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 92 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 120
 Control Type: Pretimed
 Maximum v/c Ratio: 1.37
 Intersection Signal Delay: 106.1 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	185.8
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	178	250	267	19
Future Vol, veh/h	60	130	470	369	337	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	165	598	469	429	130
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	16.2	298.4	44.1
HCM LOS	C	F	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	32%	77%
Vol Thru, %	56%	0%	23%
Vol Right, %	44%	68%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	839	190	439
LT Vol	0	60	337
Through Vol	470	0	102
RT Vol	369	130	0
Lane Flow Rate	1067	242	558
Geometry Grp	1	1	1
Degree of Util (X)	1.614	0.436	0.904
Departure Headway (Hd)	5.447	7.495	6.596
Convergence, Y/N	Yes	Yes	Yes
Cap	672	483	553
Service Time	3.447	5.495	4.596
HCM Lane V/C Ratio	1.588	0.501	1.009
HCM Control Delay	298.4	16.2	44.1
HCM Lane LOS	F	C	E
HCM 95th-tile Q	57.7	2.2	10.7

Intersection						
Intersection Delay, s/veh	10.1					
Intersection LOS	B					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		189		787	
Demand Flow Rate, veh/h	68		193		803	
Vehicles Circulating, veh/h	167		871		117	
Vehicles Exiting, veh/h	44		49		118	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.5		11.5		11.8	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.283	0.717
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	193	803	49	124
Cap Entry Lane, veh/h	1220	1220	568	1225	1372	1372
Entry HV Adj Factor	0.985	1.000	0.979	0.981	0.980	0.978
Flow Entry, veh/h	67	0	189	787	48	121
Cap Entry, veh/h	1202	1220	556	1201	1344	1342
V/C Ratio	0.056	0.000	0.340	0.656	0.036	0.090
Control Delay, s/veh	3.5	3.0	11.5	11.8	3.0	3.4
LOS	A	A	B	B	A	A
95th %tile Queue, veh	0	0	1	5	0	0

Intersection						
Int Delay, s/veh	14.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	0	510	46	0	0	0
Future Vol, veh/h	0	702	205	0	157	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	893	261	0	200	19

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	1154 261
Stage 1	-	-	-	-	261 -
Stage 2	-	-	-	-	893 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	0	-	-	-	218 778
Stage 1	0	-	-	-	783 -
Stage 2	0	-	-	-	400 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	218 778
Mov Cap-2 Maneuver	-	-	-	-	218 -
Stage 1	-	-	-	-	783 -
Stage 2	-	-	-	-	400 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	88.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	233
HCM Lane V/C Ratio	-	-	-	0.939
HCM Control Delay (s)	-	-	-	88.6
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	8.2

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	44	0	0
Future Vol, veh/h	19	0	0	44	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	88	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	24	0	80
Stage 1	-	-	-	-	24
Stage 2	-	-	-	-	56
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1591	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	922
Mov Cap-2 Maneuver	-	-	-	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1591	-
HCM Lane V/C Ratio	0.095	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

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Intersection				
Intersection Delay, s/veh	8.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	0
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	45	761	205	0
Demand Flow Rate, veh/h	45	762	205	0
Vehicles Circulating, veh/h	60	54	43	60
Vehicles Exiting, veh/h	0	194	62	756
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	1.000
Approach Delay, s/veh	3.1	9.7	4.0	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	
Designated Moves	LTR	LTR	LTR	
Assumed Moves	LTR	LTR	LTR	
RT Channelized				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	
Entry Flow, veh/h	45	762	205	
Cap Entry Lane, veh/h	1298	1306	1321	
Entry HV Adj Factor	1.000	0.999	1.000	
Flow Entry, veh/h	45	761	205	
Cap Entry, veh/h	1293	1290	1321	
V/C Ratio	0.035	0.590	0.155	
Control Delay, s/veh	3.1	9.7	4.0	
LOS	A	A	A	
95th %tile Queue, veh	0	4	1	

Intersection	
Intersection Delay, s/veh	257.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	174	18	48	285	0	43	0	65	144	182	336
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	283	29	66	392	0	77	0	117	211	266	491
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	34.9	72.1	22.4	464.2
HCM LOS	D	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	0%	14%	22%
Vol Thru, %	0%	91%	86%	27%
Vol Right, %	60%	9%	0%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	192	333	662
LT Vol	43	0	48	144
Through Vol	0	174	285	182
RT Vol	65	18	0	336
Lane Flow Rate	194	312	458	968
Geometry Grp	1	1	1	1
Degree of Util (X)	0.453	0.697	0.968	1.976
Departure Headway (Hd)	10.757	10.681	9.99	7.346
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	338	343	367	503
Service Time	8.757	8.681	7.99	5.427
HCM Lane V/C Ratio	0.574	0.91	1.248	1.924
HCM Control Delay	22.4	34.9	72.1	464.2
HCM Lane LOS	C	D	F	F
HCM 95th-tile Q	2.3	5	10.7	64.7

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	221	162	528	333	0	0	0	0	144	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.943										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1726	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.104						0.990	
Satd. Flow (perm)	0	1726	0	0	196	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	340	249	671	423	0	0	0	0	222	899	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	589	0	0	1094	0	0	0	0	0	1121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		35.0		42.0						53.0	53.0	
Total Split (%)		26.9%		32.3%						40.8%	40.8%	
Maximum Green (s)		29.0		36.0						47.0	47.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		31.0			69.0						49.0	
Actuated g/C Ratio		0.24			0.53						0.38	
v/c Ratio		1.36			1.89						0.84	
Control Delay		214.6			428.5						43.8	
Queue Delay		7.1			0.2						0.0	
Total Delay		221.6			428.7						43.8	
LOS		F			F						D	
Approach Delay		221.6			428.7						43.8	
Approach LOS		F			F						D	
Queue Length 50th (ft)		-639			-1447						449	
Queue Length 95th (ft)		#671			m#821						421	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		432			580						1336	
Starvation Cap Reductn		0			14						0	
Spillback Cap Reductn		198			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		2.52			1.93						0.84	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 121 (93%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.89
 Intersection Signal Delay: 231.3
 Intersection Capacity Utilization 91.1%
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	768					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	510	0	0	1494	46
Future Vol, veh/h	0	859	0	0	1724	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1092	0	0	2192	261

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1227	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 170	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 170	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2492.7	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	170	-	-
HCM Lane V/C Ratio	6.426	-	-
HCM Control Delay (s)	\$ 2492.7	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	118.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	94	65	46	156	114	257
Future Volume (vph)	42	1387	247	42	507	96	298	120	208	189	157	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.97			0.97			0.92			0.97	0.88
Frt		0.977			0.976			0.905				0.850
Flt Protected	0.950			0.950			0.950				0.973	
Satd. Flow (prot)	1770	3352	0	1676	3163	0	1770	1556	0	0	1812	1583
Flt Permitted	0.950			0.075			0.160				0.621	
Satd. Flow (perm)	1651	3352	0	132	3163	0	298	1556	0	0	1117	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			20			5				148
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			127				718
Travel Time (s)		15.8			4.0			2.9				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1764	314	53	645	122	379	153	265	240	200	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	767	0	379	418	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	68.0		57.0	57.0		18.0	62.0		44.0	44.0	44.0
Total Split (%)	8.5%	52.3%		43.8%	43.8%		13.8%	47.7%		33.8%	33.8%	33.8%
Maximum Green (s)	5.0	62.0		51.0	51.0		12.0	56.0		38.0	38.0	38.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

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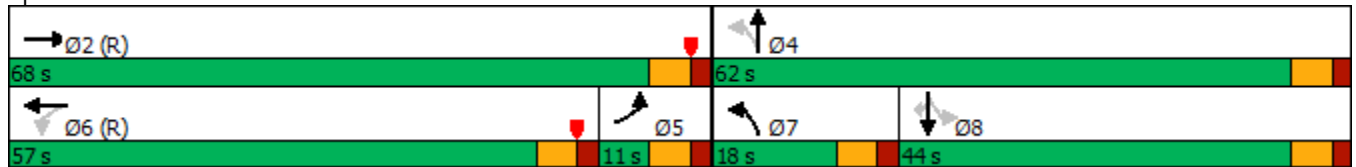


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	64.0		53.0	53.0		57.0	58.0			40.0	40.0
Actuated g/C Ratio	0.05	0.49		0.41	0.41		0.44	0.45			0.31	0.31
v/c Ratio	0.56	1.25		1.00	0.59		1.37	0.60			1.28	0.62
Control Delay	58.9	139.3		95.8	7.5		212.4	31.3			173.3	17.2
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	58.9	139.4		95.8	7.5		212.4	31.3			173.3	17.2
LOS	E	F		F	A		F	C			F	B
Approach Delay		137.4			13.2			117.4			106.7	
Approach LOS		F			B			F			F	

Intersection Summary




Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	92 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
Natural Cycle:	120
Control Type:	Pretimed
Maximum v/c Ratio:	1.37
Intersection Signal Delay:	106.1
Intersection LOS:	F
Intersection Capacity Utilization	91.9%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	185.8
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	27	178	250	267	19
Future Vol, veh/h	60	130	470	369	337	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	165	598	469	429	130
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	16.2	298.4	44.1
HCM LOS	C	F	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	32%	77%
Vol Thru, %	56%	0%	23%
Vol Right, %	44%	68%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	839	190	439
LT Vol	0	60	337
Through Vol	470	0	102
RT Vol	369	130	0
Lane Flow Rate	1067	242	558
Geometry Grp	1	1	1
Degree of Util (X)	1.614	0.436	0.904
Departure Headway (Hd)	5.447	7.495	6.596
Convergence, Y/N	Yes	Yes	Yes
Cap	672	483	553
Service Time	3.447	5.495	4.596
HCM Lane V/C Ratio	1.588	0.501	1.009
HCM Control Delay	298.4	16.2	44.1
HCM Lane LOS	F	C	E
HCM 95th-tile Q	57.7	2.2	10.7

HCM 6th Roundabout
103: RR Extension/Red River & J/Davis St

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Intersection						
Intersection Delay, s/veh	10.1					
Intersection LOS	B					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		189		787	
Demand Flow Rate, veh/h	68		193		803	
Vehicles Circulating, veh/h	167		871		117	
Vehicles Exiting, veh/h	44		49		118	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.5		11.5		11.8	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.283	0.717
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	193	803	49	124
Cap Entry Lane, veh/h	1220	1220	568	1225	1372	1372
Entry HV Adj Factor	0.985	1.000	0.979	0.981	0.980	0.978
Flow Entry, veh/h	67	0	189	787	48	121
Cap Entry, veh/h	1202	1220	556	1201	1344	1342
V/C Ratio	0.056	0.000	0.340	0.656	0.036	0.090
Control Delay, s/veh	3.5	3.0	11.5	11.8	3.0	3.4
LOS	A	A	B	B	A	A
95th %tile Queue, veh	0	0	1	5	0	0

Intersection						
Int Delay, s/veh	14.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	0	510	46	0	0	0
Future Vol, veh/h	0	702	205	0	157	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	893	261	0	200	19

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	1154 261
Stage 1	-	-	-	-	261 -
Stage 2	-	-	-	-	893 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	0	-	-	-	218 778
Stage 1	0	-	-	-	783 -
Stage 2	0	-	-	-	400 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	218 778
Mov Cap-2 Maneuver	-	-	-	-	218 -
Stage 1	-	-	-	-	783 -
Stage 2	-	-	-	-	400 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	88.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	233
HCM Lane V/C Ratio	-	-	-	0.939
HCM Control Delay (s)	-	-	-	88.6
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	8.2

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	44	0	0
Future Vol, veh/h	19	0	0	44	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	0	56	88	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	24	0	80
Stage 1	-	-	-	-	24
Stage 2	-	-	-	-	56
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1591	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	922
Mov Cap-2 Maneuver	-	-	-	-	922
Stage 1	-	-	-	-	999
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	922	-	-	1591	-
HCM Lane V/C Ratio	0.095	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection			
Intersection Delay, s/veh	8.1		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	28	761	205
Demand Flow Rate, veh/h	29	762	205
Vehicles Circulating, veh/h	60	38	26
Vehicles Exiting, veh/h	740	193	63
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	3.1	9.4	3.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	29	762	205
Cap Entry Lane, veh/h	1298	1327	1344
Entry HV Adj Factor	0.966	0.999	1.000
Flow Entry, veh/h	28	761	205
Cap Entry, veh/h	1247	1312	1344
V/C Ratio	0.022	0.580	0.153
Control Delay, s/veh	3.1	9.4	3.9
LOS	A	A	A
95th %tile Queue, veh	0	4	1

Intersection	
Intersection Delay, s/veh	257.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	109	107	160
Future Vol, veh/h	0	174	18	48	285	0	43	0	65	144	182	336
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	283	29	66	392	0	77	0	117	211	266	491
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	34.9	72.1	22.4	464.2
HCM LOS	D	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	0%	14%	22%
Vol Thru, %	0%	91%	86%	27%
Vol Right, %	60%	9%	0%	51%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	192	333	662
LT Vol	43	0	48	144
Through Vol	0	174	285	182
RT Vol	65	18	0	336
Lane Flow Rate	194	312	458	968
Geometry Grp	1	1	1	1
Degree of Util (X)	0.453	0.697	0.968	1.976
Departure Headway (Hd)	10.757	10.681	9.99	7.346
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	338	343	367	503
Service Time	8.757	8.681	7.99	5.427
HCM Lane V/C Ratio	0.574	0.91	1.248	1.924
HCM Control Delay	22.4	34.9	72.1	464.2
HCM Lane LOS	C	D	F	F
HCM 95th-tile Q	2.3	5	10.7	64.7

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	221	162	528	333	0	0	0	0	144	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.943										
Flt Protected					0.970						0.990	
Satd. Flow (prot)	0	1726	0	0	1825	0	0	0	0	0	3545	0
Flt Permitted					0.104						0.990	
Satd. Flow (perm)	0	1726	0	0	196	0	0	0	0	0	3545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	340	249	671	423	0	0	0	0	222	899	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	589	0	0	1094	0	0	0	0	0	1121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		35.0		42.0						53.0	53.0	
Total Split (%)		26.9%		32.3%						40.8%	40.8%	
Maximum Green (s)		29.0		36.0						47.0	47.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		31.0			69.0						49.0	
Actuated g/C Ratio		0.24			0.53						0.38	
v/c Ratio		1.36			1.89						0.84	
Control Delay		214.6			428.5						43.8	
Queue Delay		7.1			0.2						0.0	
Total Delay		221.6			428.7						43.8	
LOS		F			F						D	
Approach Delay		221.6			428.7						43.8	
Approach LOS		F			F						D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 121 (93%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.89
 Intersection Signal Delay: 231.3
 Intersection LOS: F
 Intersection Capacity Utilization 91.1%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	768					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	510	0	0	1494	46
Future Vol, veh/h	0	859	0	0	1724	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1092	0	0	2192	261

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1227	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 170	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 170	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	2492.7	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	170	-	-
HCM Lane V/C Ratio	6.426	-	-
HCM Control Delay (s)	\$ 2492.7	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	118.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	110	79	95	156	114	239
Future Volume (vph)	42	1318	316	42	572	116	305	146	190	163	183	239
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.96			0.96			0.92			0.98	0.86
Frt		0.971			0.975			0.915				0.850
Flt Protected	0.950			0.950			0.950				0.977	
Satd. Flow (prot)	1770	3284	0	1676	3136	0	1770	1571	0	0	1820	1583
Flt Permitted	0.950			0.071			0.303				0.433	
Satd. Flow (perm)	1652	3284	0	125	3136	0	564	1571	0	0	792	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			18			4				135
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			141				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1676	402	53	727	148	388	186	242	207	233	304
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	875	0	388	428	0	0	440	304
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	72.0		60.0	60.0		15.0	78.0		63.0	63.0	63.0
Total Split (%)	8.0%	48.0%		40.0%	40.0%		10.0%	52.0%		42.0%	42.0%	42.0%
Maximum Green (s)	6.0	66.0		54.0	54.0		9.0	72.0		57.0	57.0	57.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/25/2019

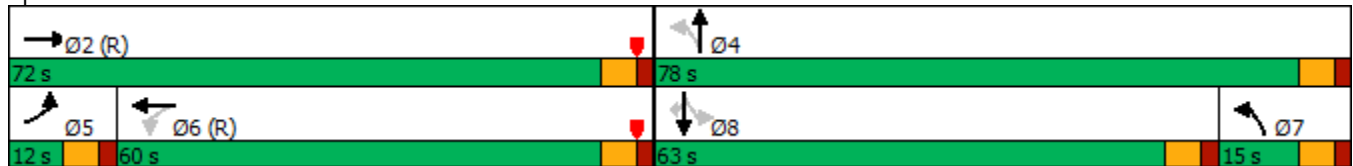


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	68.0		56.0	56.0		73.0	74.0			59.0	59.0
Actuated g/C Ratio	0.05	0.45		0.37	0.37		0.49	0.49			0.39	0.39
v/c Ratio	0.56	1.38		1.15	0.74		1.10	0.55			1.41	0.49
Control Delay	86.3	205.9		112.2	7.0		118.3	29.5			228.9	12.3
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	86.3	206.0		112.2	7.0		118.3	29.5			228.9	12.3
LOS	F	F		F	A		F	C			F	B
Approach Delay		203.1			13.0			71.7			140.4	
Approach LOS		F			B			E			F	
Queue Length 50th (ft)	51	~1410		~59	53		~286	283			~577	72
Queue Length 95th (ft)	m55	#1548		m#51	m51		#519	392			#801	m159
Internal Link Dist (ft)		615			94			61			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1502		46	1182		354	777			311	618
Starvation Cap Reductn	0	57		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.44		1.15	0.74		1.10	0.55			1.41	0.49

Intersection Summary




Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 99 (66%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 1.41
 Intersection Signal Delay: 131.6 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	122.3
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	50	234	70	120	166
Future Vol, veh/h	178	131	468	106	222	296
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	226	167	595	135	282	376
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	30	164.3	130.8
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	58%	43%
Vol Thru, %	82%	0%	57%
Vol Right, %	18%	42%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	574	309	518
LT Vol	0	178	222
Through Vol	468	0	296
RT Vol	106	131	0
Lane Flow Rate	730	393	659
Geometry Grp	1	1	1
Degree of Util (X)	1.288	0.75	1.199
Departure Headway (Hd)	6.682	7.592	6.987
Convergence, Y/N	Yes	Yes	Yes
Cap	547	479	527
Service Time	4.682	5.592	4.987
HCM Lane V/C Ratio	1.335	0.82	1.25
HCM Control Delay	164.3	30	130.8
HCM Lane LOS	F	D	F
HCM 95th-tile Q	28.5	6.3	22.9

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	6.6					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		172		495	
Demand Flow Rate, veh/h	68		175		505	
Vehicles Circulating, veh/h	602		573		135	
Vehicles Exiting, veh/h	44		67		535	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	5.3		7.3		7.3	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.117	0.883
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	175	505	67	504
Cap Entry Lane, veh/h	821	821	769	1202	1326	1326
Entry HV Adj Factor	0.985	1.000	0.983	0.980	0.985	0.980
Flow Entry, veh/h	67	0	172	495	66	494
Cap Entry, veh/h	809	821	756	1179	1307	1300
V/C Ratio	0.083	0.000	0.228	0.420	0.051	0.380
Control Delay, s/veh	5.3	4.4	7.3	7.3	3.2	6.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	2

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	14	176	90	2	0	0
Future Vol, veh/h	63	317	351	2	46	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	403	446	3	59	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	449	0	0	1011	448
Stage 1	-	-	-	448	-
Stage 2	-	-	-	563	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1111	-	-	265	611
Stage 1	-	-	-	644	-
Stage 2	-	-	-	570	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1111	-	-	240	611
Mov Cap-2 Maneuver	-	-	-	240	-
Stage 1	-	-	-	584	-
Stage 2	-	-	-	570	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1111	-	-	-	329
HCM Lane V/C Ratio	0.072	-	-	-	0.321
HCM Control Delay (s)	8.5	0	-	-	21
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	58	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	39	74	0

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	28	0	67	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1585	-	938	1047
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	938	1047
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1585	-
HCM Lane V/C Ratio	0.079	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection			
Intersection Delay, s/veh	5.0		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	254	146	347
Demand Flow Rate, veh/h	255	146	357
Vehicles Circulating, veh/h	126	255	60
Vehicles Exiting, veh/h	275	162	321
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	4.9	4.6	5.3
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	255	146	357
Cap Entry Lane, veh/h	1213	1064	1298
Entry HV Adj Factor	0.996	1.000	0.972
Flow Entry, veh/h	254	146	347
Cap Entry, veh/h	1196	1064	1256
V/C Ratio	0.212	0.137	0.276
Control Delay, s/veh	4.9	4.6	5.3
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Intersection

Intersection Delay, s/veh	19.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	234	18	88	182	0	25	0	65	53	83	64
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	380	29	121	251	0	45	0	117	78	121	94
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.4	21.1	12.9	17.2
HCM LOS	C	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	0%	33%	27%
Vol Thru, %	0%	93%	67%	42%
Vol Right, %	72%	7%	0%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	252	270	200
LT Vol	25	0	88	53
Through Vol	0	234	182	83
RT Vol	65	18	0	64
Lane Flow Rate	162	410	372	292
Geometry Grp	1	1	1	1
Degree of Util (X)	0.305	0.711	0.66	0.537
Departure Headway (Hd)	6.785	6.25	6.393	6.614
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	525	577	561	541
Service Time	4.884	4.324	4.469	4.694
HCM Lane V/C Ratio	0.309	0.711	0.663	0.54
HCM Control Delay	12.9	23.4	21.1	17.2
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.3	5.8	4.8	3.2

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	150	202	528	270	0	0	0	0	193	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.923										
Flt Protected					0.968						0.987	
Satd. Flow (prot)	0	1676	0	0	1821	0	0	0	0	0	3537	0
Flt Permitted					0.098						0.987	
Satd. Flow (perm)	0	1676	0	0	184	0	0	0	0	0	3537	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	231	311	671	343	0	0	0	0	297	831	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	542	0	0	1014	0	0	0	0	0	1128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		38.0		48.0						64.0	64.0	
Total Split (%)		25.3%		32.0%						42.7%	42.7%	
Maximum Green (s)		32.0		42.0						58.0	58.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0										-2.0
Total Lost Time (s)		4.0										4.0
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		34.0			78.0							60.0
Actuated g/C Ratio		0.23			0.52							0.40
v/c Ratio		1.32			1.76							0.80
Control Delay		199.3			377.5							44.8
Queue Delay		12.4			3.8							2.6
Total Delay		211.7			381.3							47.4
LOS		F			F							D
Approach Delay		211.7			381.3							47.4
Approach LOS		F			F							D
Queue Length 50th (ft)		-651			~1510							508
Queue Length 95th (ft)		#678			m#812							466
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		412			575							1414
Starvation Cap Reductn		0			202							0
Spillback Cap Reductn		250			0							176
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		3.35			2.72							0.91

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 138 (92%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.76
 Intersection Signal Delay: 206.8
 Intersection Capacity Utilization 87.8%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	140					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	↗
Traffic Vol, veh/h	0	176	0	0	1450	92
Future Vol, veh/h	0	363	0	0	1641	353
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	462	0	0	2087	449

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1268	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 160	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 160	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	\$ 909	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	160	-	-
HCM Lane V/C Ratio	2.885	-	-
HCM Control Delay (s)	\$ 909	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	41.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	28	507	96	110	79	95	156	114	239
Future Volume (vph)	42	1318	316	42	572	116	305	146	190	163	183	239
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.96			0.96			0.92			0.98	0.86
Frt		0.971			0.975			0.915				0.850
Flt Protected	0.950			0.950			0.950				0.977	
Satd. Flow (prot)	1770	3284	0	1676	3136	0	1770	1571	0	0	1820	1583
Flt Permitted	0.950			0.071			0.303				0.433	
Satd. Flow (perm)	1652	3284	0	125	3136	0	564	1571	0	0	792	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			18			4				135
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			141				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1676	402	53	727	148	388	186	242	207	233	304
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	53	875	0	388	428	0	0	440	304
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	72.0		60.0	60.0		15.0	78.0		63.0	63.0	63.0
Total Split (%)	8.0%	48.0%		40.0%	40.0%		10.0%	52.0%		42.0%	42.0%	42.0%
Maximum Green (s)	6.0	66.0		54.0	54.0		9.0	72.0		57.0	57.0	57.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

09/25/2019

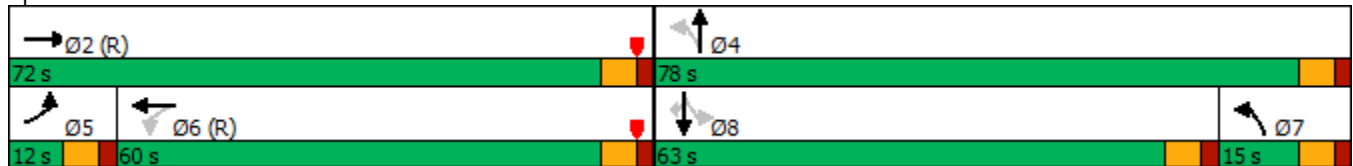


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	68.0		56.0	56.0		73.0	74.0			59.0	59.0
Actuated g/C Ratio	0.05	0.45		0.37	0.37		0.49	0.49			0.39	0.39
v/c Ratio	0.56	1.38		1.15	0.74		1.10	0.55			1.41	0.49
Control Delay	86.3	205.9		112.2	7.0		118.3	29.5			228.9	12.3
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	86.3	206.0		112.2	7.0		118.3	29.5			228.9	12.3
LOS	F	F		F	A		F	C			F	B
Approach Delay		203.1			13.0			71.7			140.4	
Approach LOS		F			B			E			F	
Queue Length 50th (ft)	51	~1410		~59	53		~286	283			~577	72
Queue Length 95th (ft)	m55	#1548		m#51	m51		#519	392			#801	m159
Internal Link Dist (ft)		615			94			61			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	94	1502		46	1182		354	777			311	618
Starvation Cap Reductn	0	57		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.56	1.44		1.15	0.74		1.10	0.55			1.41	0.49

Intersection Summary




Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 99 (66%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 1.41
 Intersection Signal Delay: 131.6 Intersection LOS: F
 Intersection Capacity Utilization 91.9% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	122.3
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	50	234	70	120	166
Future Vol, veh/h	178	131	468	106	222	296
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	226	167	595	135	282	376
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	30	164.3	130.8
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	58%	43%
Vol Thru, %	82%	0%	57%
Vol Right, %	18%	42%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	574	309	518
LT Vol	0	178	222
Through Vol	468	0	296
RT Vol	106	131	0
Lane Flow Rate	730	393	659
Geometry Grp	1	1	1
Degree of Util (X)	1.288	0.75	1.199
Departure Headway (Hd)	6.682	7.592	6.987
Convergence, Y/N	Yes	Yes	Yes
Cap	547	479	527
Service Time	4.682	5.592	4.987
HCM Lane V/C Ratio	1.335	0.82	1.25
HCM Control Delay	164.3	30	130.8
HCM Lane LOS	F	D	F
HCM 95th-tile Q	28.5	6.3	22.9

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	6.6					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		172		495	
Demand Flow Rate, veh/h	68		175		505	
Vehicles Circulating, veh/h	602		573		135	
Vehicles Exiting, veh/h	44		67		535	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	5.3		7.3		7.3	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.117	0.883
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	175	505	67	504
Cap Entry Lane, veh/h	821	821	769	1202	1326	1326
Entry HV Adj Factor	0.985	1.000	0.983	0.980	0.985	0.980
Flow Entry, veh/h	67	0	172	495	66	494
Cap Entry, veh/h	809	821	756	1179	1307	1300
V/C Ratio	0.083	0.000	0.228	0.420	0.051	0.380
Control Delay, s/veh	5.3	4.4	7.3	7.3	3.2	6.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	2

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	14	176	90	2	0	0
Future Vol, veh/h	63	317	351	2	46	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	403	446	3	59	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	449	0	0	1011	448
Stage 1	-	-	-	448	-
Stage 2	-	-	-	563	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1111	-	-	265	611
Stage 1	-	-	-	644	-
Stage 2	-	-	-	570	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1111	-	-	240	611
Mov Cap-2 Maneuver	-	-	-	240	-
Stage 1	-	-	-	584	-
Stage 2	-	-	-	570	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1111	-	-	-	329
HCM Lane V/C Ratio	0.072	-	-	-	0.321
HCM Control Delay (s)	8.5	0	-	-	21
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	58	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	39	74	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	28	0	67
Stage 1	-	-	-	-	28
Stage 2	-	-	-	-	39
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1585	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	938
Mov Cap-2 Maneuver	-	-	-	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1585	-
HCM Lane V/C Ratio	0.079	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection			
Intersection Delay, s/veh	5.0		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	347	254	146
Demand Flow Rate, veh/h	357	255	146
Vehicles Circulating, veh/h	60	126	255
Vehicles Exiting, veh/h	321	275	162
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	5.3	4.9	4.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	357	255	146
Cap Entry Lane, veh/h	1298	1213	1064
Entry HV Adj Factor	0.973	0.996	1.000
Flow Entry, veh/h	347	254	146
Cap Entry, veh/h	1256	1196	1064
V/C Ratio	0.276	0.212	0.137
Control Delay, s/veh	5.3	4.9	4.6
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Intersection	
Intersection Delay, s/veh	19.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	142	17	24	169	0	21	0	23	6	10	48
Future Vol, veh/h	0	234	18	88	182	0	25	0	65	53	83	64
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	380	29	121	251	0	45	0	117	78	121	94
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.4	21.1	12.9	17.2
HCM LOS	C	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	0%	33%	27%
Vol Thru, %	0%	93%	67%	42%
Vol Right, %	72%	7%	0%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	252	270	200
LT Vol	25	0	88	53
Through Vol	0	234	182	83
RT Vol	65	18	0	64
Lane Flow Rate	162	410	372	292
Geometry Grp	1	1	1	1
Degree of Util (X)	0.305	0.711	0.66	0.537
Departure Headway (Hd)	6.785	6.25	6.393	6.614
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	525	577	561	541
Service Time	4.884	4.324	4.469	4.694
HCM Lane V/C Ratio	0.309	0.711	0.663	0.54
HCM Control Delay	12.9	23.4	21.1	17.2
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.3	5.8	4.8	3.2

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	114	528	193	0	0	0	0	24	448	0
Future Volume (vph)	0	150	202	528	270	0	0	0	0	193	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.923										
Flt Protected					0.968						0.987	
Satd. Flow (prot)	0	1676	0	0	1821	0	0	0	0	0	3537	0
Flt Permitted					0.098						0.987	
Satd. Flow (perm)	0	1676	0	0	184	0	0	0	0	0	3537	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	231	311	671	343	0	0	0	0	297	831	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	542	0	0	1014	0	0	0	0	0	1128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		38.0		48.0						64.0	64.0	
Total Split (%)		25.3%		32.0%						42.7%	42.7%	
Maximum Green (s)		32.0		42.0						58.0	58.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		34.0			78.0						60.0	
Actuated g/C Ratio		0.23			0.52						0.40	
v/c Ratio		1.32			1.76						0.80	
Control Delay		199.3			377.5						44.8	
Queue Delay		12.4			3.8						2.6	
Total Delay		211.7			381.3						47.4	
LOS		F			F						D	
Approach Delay		211.7			381.3						47.4	
Approach LOS		F			F						D	
Queue Length 50th (ft)		-651			~1510						508	
Queue Length 95th (ft)		#678			m#812						466	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		412			575						1414	
Starvation Cap Reductn		0			202						0	
Spillback Cap Reductn		250			0						176	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		3.35			2.72						0.91	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 138 (92%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.76
 Intersection Signal Delay: 206.8
 Intersection Capacity Utilization 87.8%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

114: I-35 SBFR & River St

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Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	140					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	176	0	0	1450	92
Future Vol, veh/h	0	363	0	0	1641	353
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	462	0	0	2087	449

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1268	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 160	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 160	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	\$ 909	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	160	-	-
HCM Lane V/C Ratio	2.885	-	-
HCM Control Delay (s)	\$ 909	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	41.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1270	144	50	507	96	130	65	80	156	114	257
Future Volume (vph)	42	1382	252	64	572	116	325	132	175	187	159	257
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.97			0.96			0.93			0.98	0.87
Frt		0.977			0.975			0.914				0.850
Flt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1770	3343	0	1676	3144	0	1770	1577	0	0	1814	1583
Flt Permitted	0.950			0.062			0.145				0.308	
Satd. Flow (perm)	1659	3343	0	109	3144	0	270	1577	0	0	562	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			22			9				139
Link Speed (mph)		30			30			30				30
Link Distance (ft)		695			174			139				718
Travel Time (s)		15.8			4.0			3.2				16.3
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	53	1758	320	81	727	148	413	168	223	238	202	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	2078	0	81	875	0	413	391	0	0	440	327
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	11.0	79.0		68.0	68.0		20.0	61.0		41.0	41.0	41.0
Total Split (%)	7.9%	56.4%		48.6%	48.6%		14.3%	43.6%		29.3%	29.3%	29.3%
Maximum Green (s)	5.0	73.0		62.0	62.0		14.0	55.0		35.0	35.0	35.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

09/25/2019

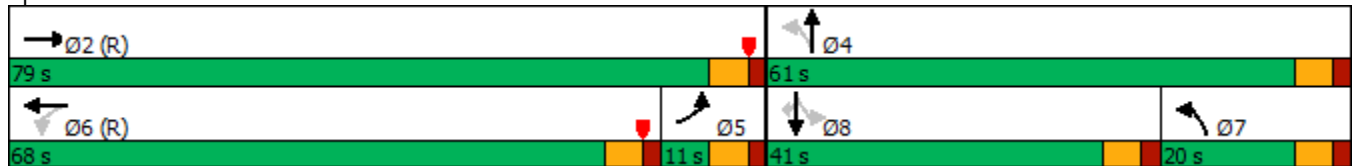


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	7.0	75.0		64.0	64.0		56.0	57.0			37.0	37.0
Actuated g/C Ratio	0.05	0.54		0.46	0.46		0.40	0.41			0.26	0.26
v/c Ratio	0.60	1.15		1.65	0.60		1.54	0.60			2.97	0.70
Control Delay	67.1	95.9		322.0	4.9		297.8	36.6			917.4	26.7
Queue Delay	0.0	0.2		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	67.1	96.1		322.0	4.9		297.8	36.6			917.4	26.7
LOS	E	F		F	A		F	D			F	C
Approach Delay		95.4			31.8			170.8			537.6	
Approach LOS		F			C			F			F	
Queue Length 50th (ft)	48	~1163		~109	41		-454	271			~669	141
Queue Length 95th (ft)	m51	#1298		m#95	m40		#668	384			#784	m244
Internal Link Dist (ft)		615			94			59			638	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	88	1801		49	1449		268	647			148	466
Starvation Cap Reductn	0	103		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.60	1.22		1.65	0.60		1.54	0.60			2.97	0.70

Intersection Summary




Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 106 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 130
 Control Type: Pretimed
 Maximum v/c Ratio: 2.97
 Intersection Signal Delay: 168.2 Intersection LOS: F
 Intersection Capacity Utilization 96.3% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	112.7
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	71	203	91	288	19
Future Vol, veh/h	130	152	437	178	342	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	165	193	556	226	435	139
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	24.5	183.4	71.3
HCM LOS	C	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	46%	76%
Vol Thru, %	71%	0%	24%
Vol Right, %	29%	54%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	615	282	451
LT Vol	0	130	342
Through Vol	437	0	109
RT Vol	178	152	0
Lane Flow Rate	782	359	574
Geometry Grp	1	1	1
Degree of Util (X)	1.339	0.677	1.021
Departure Headway (Hd)	6.165	7.37	6.928
Convergence, Y/N	Yes	Yes	Yes
Cap	587	495	528
Service Time	4.237	5.37	4.928
HCM Lane V/C Ratio	1.332	0.725	1.087
HCM Control Delay	183.4	24.5	71.3
HCM Lane LOS	F	C	F
HCM 95th-tile Q	33.2	5	14.8

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

09/25/2019

Intersection						
Intersection Delay, s/veh	5.9					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	67		145		502	
Demand Flow Rate, veh/h	68		148		512	
Vehicles Circulating, veh/h	222		580		107	
Vehicles Exiting, veh/h	44		39		183	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.6		6.9		7.1	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.147	0.853
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	68	0	148	512	39	227
Cap Entry Lane, veh/h	1160	1160	764	1237	1420	1420
Entry HV Adj Factor	0.985	1.000	0.980	0.980	0.974	0.980
Flow Entry, veh/h	67	0	145	502	38	222
Cap Entry, veh/h	1143	1160	748	1213	1384	1391
V/C Ratio	0.059	0.000	0.194	0.414	0.027	0.160
Control Delay, s/veh	3.6	3.1	6.9	7.1	2.8	3.9
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	1

HCM 6th TWSC
104: Driskill & Rainey St

09/25/2019

Intersection						
Int Delay, s/veh	23.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	14	365	90	2	8	0
Future Vol, veh/h	63	509	324	2	142	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	647	412	3	181	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	415	0	-	0	1221 414
Stage 1	-	-	-	-	414 -
Stage 2	-	-	-	-	807 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1144	-	-	-	199 638
Stage 1	-	-	-	-	667 -
Stage 2	-	-	-	-	439 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1144	-	-	-	~ 177 638
Mov Cap-2 Maneuver	-	-	-	-	~ 177 -
Stage 1	-	-	-	-	594 -
Stage 2	-	-	-	-	439 -

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	138.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1144	-	-	-	208
HCM Lane V/C Ratio	0.07	-	-	-	1.094
HCM Control Delay (s)	8.4	0	-	-	138.3
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	10.5

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	7.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	0	10	0	19
Future Vol, veh/h	0	0	0	10	58	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	74	24

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	14
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	13
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1005
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1010
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1005
Mov Cap-2 Maneuver	-	-	-	-	1005
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1010

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1023	-	-	1622	-
HCM Lane V/C Ratio	0.096	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection			
Intersection Delay, s/veh	5.4		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	353	216	0
Demand Flow Rate, veh/h	355	216	0
Vehicles Circulating, veh/h	196	0	160
Vehicles Exiting, veh/h	20	160	391
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	6.3	3.9	0.0
Approach LOS	A	A	-
Lane	Left	Left	Left
Designated Moves	R	TR	LT
Assumed Moves	R	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	355	216	0
Cap Entry Lane, veh/h	1130	1380	1172
Entry HV Adj Factor	0.994	1.000	1.000
Flow Entry, veh/h	353	216	0
Cap Entry, veh/h	1112	1380	1166
V/C Ratio	0.318	0.157	0.000
Control Delay, s/veh	6.3	3.9	3.1
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Intersection	
Intersection Delay, s/veh	21.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	28	20	24	169	0	21	0	23	6	10	123
Future Vol, veh/h	0	71	21	88	182	0	25	0	65	53	131	160
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	115	34	121	251	0	45	0	117	78	192	234
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.3	20.4	11.8	27.3
HCM LOS	B	C	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	0%	33%	15%
Vol Thru, %	0%	77%	67%	38%
Vol Right, %	72%	23%	0%	47%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	92	270	344
LT Vol	25	0	88	53
Through Vol	0	71	182	131
RT Vol	65	21	0	160
Lane Flow Rate	162	150	372	503
Geometry Grp	1	1	1	1
Degree of Util (X)	0.282	0.277	0.65	0.795
Departure Headway (Hd)	6.261	6.669	6.293	5.691
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	572	537	572	634
Service Time	4.326	4.737	4.343	3.737
HCM Lane V/C Ratio	0.283	0.279	0.65	0.793
HCM Control Delay	11.8	12.3	20.4	27.3
HCM Lane LOS	B	B	C	D
HCM 95th-tile Q	1.2	1.1	4.7	7.8

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	50	7	528	193	0	0	0	0	24	562	0
Future Volume (vph)	0	134	55	528	270	0	0	0	0	202	694	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.961										
Flt Protected					0.968						0.989	
Satd. Flow (prot)	0	1768	0	0	1821	0	0	0	0	0	3543	0
Flt Permitted					0.329						0.989	
Satd. Flow (perm)	0	1768	0	0	616	0	0	0	0	0	3543	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	206	85	671	343	0	0	0	0	311	1068	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	291	0	0	1014	0	0	0	0	0	1379	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

09/25/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		38.0		40.0						62.0	62.0	
Total Split (%)		27.1%		28.6%						44.3%	44.3%	
Maximum Green (s)		32.0		34.0						56.0	56.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		34.0			70.0						58.0	
Actuated g/C Ratio		0.24			0.50						0.41	
v/c Ratio		0.66			1.64						0.94	
Control Delay		53.8			322.0						52.5	
Queue Delay		66.6			1.8						11.0	
Total Delay		120.3			323.7						63.6	
LOS		F			F						E	
Approach Delay		120.3			323.7						63.6	
Approach LOS		F			F						E	
Queue Length 50th (ft)		229			~1353						627	
Queue Length 95th (ft)		268			m#777						559	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		439			617						1467	
Starvation Cap Reductn		0			126						0	
Spillback Cap Reductn		277			0						102	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		1.80			2.07						1.01	

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 2 (1%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.64
 Intersection Signal Delay: 168.0
 Intersection LOS: F
 Intersection Capacity Utilization 78.4%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

09/25/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	474.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	372	0	0	1448	92
Future Vol, veh/h	0	650	0	0	1666	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	827	0	0	2119	415

Major/Minor	Minor2	Major2
Conflicting Flow All	- 1267	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 160	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 160	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	1929.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	160	-	-
HCM Lane V/C Ratio	5.166	-	-
HCM Control Delay (s)	\$ 1929.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	86.9	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix
Synchro Reports - Weekend Peak No Reduction

Existing Conditions

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.93	0.95		0.96	0.96		0.90	0.93			0.94	0.87
Frt		0.966			0.970			0.916				0.850
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	1770	3254	0	1676	3106	0	1770	1582	0	0	1803	1583
Flt Permitted	0.950			0.244			0.611				0.822	
Satd. Flow (perm)	1650	3254	0	413	3106	0	1020	1582	0	0	1437	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			36			43				117
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			124				358
Travel Time (s)		34.3			4.0			2.8				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.84	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Adj. Flow (vph)	140	902	260	80	655	163	176	84	108	8	4	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	1162	0	80	818	0	176	192	0	0	12	12
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	19.0	103.0		84.0	84.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.6%	73.6%		60.0%	60.0%		7.1%	26.4%		19.3%	19.3%	19.3%
Maximum Green (s)	13.0	97.0		78.0	78.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0
Act Efect Green (s)	15.0	99.0		80.0	80.0		32.0	33.0			23.0	23.0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.11	0.71		0.57	0.57		0.23	0.24			0.16	0.16
v/c Ratio	0.74	0.50		0.34	0.46		0.68	0.47			0.05	0.04
Control Delay	83.7	9.5		21.0	17.5		62.4	39.8			50.2	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	83.7	9.5		21.0	17.5		62.4	39.8			50.2	0.2
LOS	F	A		C	B		E	D			D	A
Approach Delay		17.5			17.8			50.6			25.2	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	126	215		37	208		138	117			9	0
Queue Length 95th (ft)	165	232		56	259		209	139			24	0
Internal Link Dist (ft)		1427			94			44			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	189	2320		236	1790		259	405			236	324
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.74	0.50		0.34	0.46		0.68	0.47			0.05	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 27 (19%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 80
 Control Type: Pretimed
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 22.4
 Intersection LOS: C
 Intersection Capacity Utilization 69.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 101: Red River & Cesar Chavez



Intersection						
Int Delay, s/veh	5.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	S	S
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	25	176	127	17	102	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	85	77	61	75	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	207	165	28	136	203

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	654	179	0	0	193	0
Stage 1	179	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	431	864	-	-	1380	-
Stage 1	852	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	383	864	-	-	1380	-
Mov Cap-2 Maneuver	383	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	557	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	3.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	751	1380
HCM Lane V/C Ratio	-	-	0.313	0.099
HCM Control Delay (s)	-	-	12	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.3	0.3

Intersection	
Intersection Delay, s/veh	5
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔		↔	↔
Traffic Vol, veh/h	2	97	43	27	173	23
Future Vol, veh/h	2	97	43	27	173	23
Peak Hour Factor	0.25	0.76	0.72	0.61	0.85	0.64
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	128	60	44	204	36
Number of Lanes	0	0	1	0	1	1

Approach	NB	SB
Opposing Approach	SB	NB
Opposing Lanes	2	1
Conflicting Approach Left		
Conflicting Lanes Left	0	0
Conflicting Approach Right		
Conflicting Lanes Right	0	0
HCM Control Delay	5	5
HCM LOS	A	A

Lane	NBLn1	SBLn1	SBLn2
Vol Left, %	0%	100%	0%
Vol Thru, %	61%	0%	100%
Vol Right, %	39%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	70	173	23
LT Vol	0	173	0
Through Vol	43	0	23
RT Vol	27	0	0
Lane Flow Rate	104	204	36
Geometry Grp	0	0	0
Degree of Util (X)	0	0	0
Departure Headway (Hd)	0	0	0
Convergence, Y/N	Yes	Yes	Yes
Cap	0	0	0
Service Time	0	0	0
HCM Lane V/C Ratio	0	0	0
HCM Control Delay	5	5	5
HCM Lane LOS	N	N	N
HCM 95th-tile Q	0	0	0

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	80	92	92	68	16	137	40	80	20	8	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	172	0	0	412	410	126	462	448	76
Stage 1	-	-	-	-	-	-	142	142	-	260	260	-
Stage 2	-	-	-	-	-	-	270	268	-	202	188	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	-	1405	-	-	550	531	924	510	506	985
Stage 1	-	-	-	-	-	-	861	779	-	745	693	-
Stage 2	-	-	-	-	-	-	736	687	-	800	745	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1513	-	-	1405	-	-	506	491	924	412	468	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	506	491	-	412	468	-
Stage 1	-	-	-	-	-	-	856	774	-	741	645	-
Stage 2	-	-	-	-	-	-	669	640	-	688	741	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			4.1			15.9			12.6		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	586	1513	-	-	1405	-	-	514				
HCM Lane V/C Ratio	0.439	0.005	-	-	0.066	-	-	0.078				
HCM Control Delay (s)	15.9	7.4	0	-	7.7	0	-	12.6				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	2.2	0	-	-	0.2	-	-	0.3				

Intersection						
Int Delay, s/veh	4.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	102	71	173	103	40
Future Vol, veh/h	47	102	71	173	103	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	82	81	92	86	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	124	88	188	120	60

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	514	150	180	0	0
Stage 1	150	-	-	-	-
Stage 2	364	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	521	896	1396	-	-
Stage 1	878	-	-	-	-
Stage 2	703	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	485	896	1396	-	-
Mov Cap-2 Maneuver	485	-	-	-	-
Stage 1	817	-	-	-	-
Stage 2	703	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1396	-	709	-	-
HCM Lane V/C Ratio	0.063	-	0.254	-	-
HCM Control Delay (s)	7.8	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	160	0	0	69	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	0	0	75	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	174	0	249
Stage 1	-	-	-	-	174
Stage 2	-	-	-	-	75
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1403	-	739
Stage 1	-	-	-	-	856
Stage 2	-	-	-	-	948
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1403	-	739
Mov Cap-2 Maneuver	-	-	-	-	739
Stage 1	-	-	-	-	856
Stage 2	-	-	-	-	948

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1403	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

10/02/2019

Intersection				
Intersection Delay, s/veh	4.8			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	104	340	116	204
Demand Flow Rate, veh/h	104	341	116	209
Vehicles Circulating, veh/h	234	72	213	141
Vehicles Exiting, veh/h	116	257	125	272
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	0.995
Approach Delay, s/veh	4.2	5.2	4.1	4.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	104	341	116	209
Cap Entry Lane, veh/h	1087	1282	1110	1195
Entry HV Adj Factor	1.000	0.997	1.000	0.976
Flow Entry, veh/h	104	340	116	204
Cap Entry, veh/h	1083	1265	1110	1161
V/C Ratio	0.096	0.269	0.104	0.176
Control Delay, s/veh	4.2	5.2	4.1	4.6
LOS	A	A	A	A
95th %tile Queue, veh	0	1	0	1

HCM 6th TWSC
112: East Ave & River St

10/02/2019

Intersection												
Int Delay, s/veh	11.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Conflicting Peds, #/hr	19	0	13	13	0	19	11	0	1	1	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	82	50	75	73	25	62	25	66	62	80	90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	273	32	24	240	0	32	0	32	8	44	163

Major/Minor	Minor2	Minor1		Major1		Major2						
Conflicting Flow All	-	250	150	388	315	-	218	0	0	33	0	0
Stage 1	-	153	-	81	81	-	-	-	-	-	-	-
Stage 2	-	97	-	307	234	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.26	7.1	6.5	-	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.354	3.5	4	-	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	653	886	574	604	0	1364	-	-	1592	-	-
Stage 1	0	771	-	932	832	0	-	-	-	-	-	-
Stage 2	0	815	-	707	715	0	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	626	866	352	579	-	1350	-	-	1590	-	-
Mov Cap-2 Maneuver	-	626	-	352	579	-	-	-	-	-	-	-
Stage 1	-	759	-	909	811	-	-	-	-	-	-	-
Stage 2	-	795	-	428	704	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.5	17.6	3.9	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1350	-	-	645	547	1590	-
HCM Lane V/C Ratio	0.024	-	-	0.473	0.482	0.005	-
HCM Control Delay (s)	7.7	0	-	15.5	17.6	7.3	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	2.5	2.6	0	-

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.941										
Flt Protected					0.978						0.979	
Satd. Flow (prot)	0	1721	0	0	1840	0	0	0	0	0	3514	0
Flt Permitted					0.626						0.979	
Satd. Flow (perm)	0	1721	0	0	1178	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.25	0.74	0.88	0.82	0.71	0.25	0.25	0.25	0.25	0.74	0.82	0.25
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	177	136	216	263	0	0	0	0	88	116	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	313	0	0	479	0	0	0	0	0	204	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	
Detector Phase		12		3	3 12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		35.0						66.0	66.0	
Total Split (%)		27.9%		25.0%						47.1%	47.1%	
Maximum Green (s)		33.0		29.0						60.0	60.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0										-2.0
Total Lost Time (s)		4.0										4.0
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		77.5		106.0							22.0	
Actuated g/C Ratio		0.55		0.76							0.16	
v/c Ratio		0.32		0.47							0.37	
Control Delay		17.1		7.3							55.0	
Queue Delay		0.0		0.7							0.0	
Total Delay		17.1		8.0							55.0	
LOS		B		A							D	
Approach Delay		17.1		8.0							55.0	
Approach LOS		B		A							D	
Queue Length 50th (ft)		143		108							88	
Queue Length 95th (ft)		160		105							117	
Internal Link Dist (ft)		57		279				232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		964		1059							1556	
Starvation Cap Reductn		0		282							0	
Spillback Cap Reductn		0		0							0	
Storage Cap Reductn		0		0							0	
Reduced v/c Ratio		0.32		0.62							0.13	

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 47 (34%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.47
 Intersection Signal Delay: 20.5
 Intersection Capacity Utilization 61.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/02/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	118	0	0	810	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	148	0	0	827	159

Major/Minor	Minor2	Major2
Conflicting Flow All	- 493	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 522	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- 522	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -





















Approach	EB	SB
HCM Control Delay, s	14.6	0
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	522	-	-
HCM Lane V/C Ratio	0.283	-	-
HCM Control Delay (s)	14.6	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	1.2	-	-

Scenario 1a

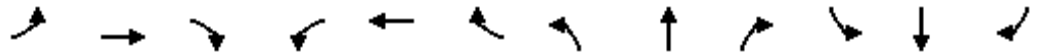
Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/01/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	108	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.95		0.97	0.95		0.90	0.92			0.95	0.87
Frt		0.967			0.970			0.907				0.850
Flt Protected	0.950			0.950			0.950				0.969	
Satd. Flow (prot)	1770	3257	0	1676	3105	0	1770	1554	0	0	1805	1583
Flt Permitted	0.950			0.203			0.610				0.802	
Satd. Flow (perm)	1667	3257	0	347	3105	0	1018	1554	0	0	1419	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			37			55				117
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			124				358
Travel Time (s)		34.3			4.0			2.8				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.84	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	158	1020	293	111	740	185	199	95	154	9	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1313	0	111	925	0	199	249	0	0	14	13
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	19.0	103.0		84.0	84.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.6%	73.6%		60.0%	60.0%		7.1%	26.4%		19.3%	19.3%	19.3%
Maximum Green (s)	13.0	97.0		78.0	78.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/01/2019

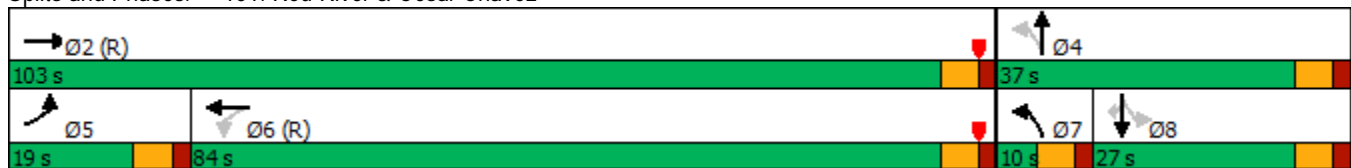


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	15.0	99.0		80.0	80.0		32.0	33.0			23.0	23.0
Actuated g/C Ratio	0.11	0.71		0.57	0.57		0.23	0.24			0.16	0.16
v/c Ratio	0.84	0.57		0.56	0.52		0.77	0.61			0.06	0.04
Control Delay	94.7	10.5		32.4	18.7		69.4	44.1			50.3	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	94.7	10.5		32.4	18.7		69.4	44.1			50.3	0.2
LOS	F	B		C	B		E	D			D	A
Approach Delay		19.6			20.1			55.3			26.2	
Approach LOS		B			C			E			C	
Queue Length 50th (ft)	143	265		61	248		159	159			11	0
Queue Length 95th (ft)	#193	281		87	305		#256	177			27	0
Internal Link Dist (ft)		1427			94			44			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	189	2322		198	1790		259	408			233	324
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.84	0.57		0.56	0.52		0.77	0.61			0.06	0.04

Intersection Summary




Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 27 (19%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 25.2 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	46.8
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	33	304	185	21	213	236
Peak Hour Factor	0.89	0.85	0.77	0.61	0.75	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	404	271	39	321	310
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	24.2	17.1	77.3
HCM LOS	C	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	47%
Vol Thru, %	90%	0%	53%
Vol Right, %	10%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	337	449
LT Vol	0	33	213
Through Vol	185	0	236
RT Vol	21	304	0
Lane Flow Rate	310	446	631
Geometry Grp	1	1	1
Degree of Util (X)	0.545	0.735	1.057
Departure Headway (Hd)	6.533	6.135	6.029
Convergence, Y/N	Yes	Yes	Yes
Cap	556	593	599
Service Time	4.533	4.135	4.106
HCM Lane V/C Ratio	0.558	0.752	1.053
HCM Control Delay	17.1	24.2	77.3
HCM Lane LOS	C	C	F
HCM 95th-tile Q	3.3	6.3	17.5

Intersection						
Intersection Delay, s/veh	5.2					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	90		340		163	
Demand Flow Rate, veh/h	91		346		166	
Vehicles Circulating, veh/h	439		175		334	
Vehicles Exiting, veh/h	148		325		196	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.4		6.0		5.3	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.802	0.198	1.000	1.000	0.603	0.397
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	73	18	346	166	243	160
Cap Entry Lane, veh/h	952	952	1154	982	1201	1201
Entry HV Adj Factor	0.986	0.980	0.982	0.982	0.979	0.979
Flow Entry, veh/h	72	18	340	163	238	157
Cap Entry, veh/h	939	934	1134	964	1176	1176
V/C Ratio	0.077	0.019	0.300	0.169	0.202	0.133
Control Delay, s/veh	4.5	4.0	6.0	5.3	4.8	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

10/01/2019

Intersection

Int Delay, s/veh 627.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	47	141	77	126	177	9	198	55	81	71	19	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	106	290	116	185	282	18	241	86	113	146	57	37

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	300	0	0	406
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1261	-	-	1153
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1261	-	-	1153
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	3.3	\$ 1575.6	\$ 1486.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	102	1261	-	-	1153	-	-	60
HCM Lane V/C Ratio	4.313	0.084	-	-	0.16	-	-	3.991
HCM Control Delay (s)	\$ 1575.6	8.1	0	-	8.7	0	-	\$ 1486.9
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	45.8	0.3	-	-	0.6	-	-	25.9

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
105: Davis St & Rainey St

10/01/2019

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	102	71	173	103	40
Future Vol, veh/h	64	102	106	269	161	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	82	81	92	86	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	141	148	330	212	103

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	890	264	315	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	313	775	1245	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	267	775	1245	-	-	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.8	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	450	-	-
HCM Lane V/C Ratio	0.119	-	0.504	-	-
HCM Control Delay (s)	8.3	0	20.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2.8	-	-

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	177	5	0	125	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	6	0	154	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	223	0	374
Stage 1	-	-	-	-	220
Stage 2	-	-	-	-	154
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1346	-	627
Stage 1	-	-	-	-	817
Stage 2	-	-	-	-	874
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1346	-	627
Mov Cap-2 Maneuver	-	-	-	-	627
Stage 1	-	-	-	-	817
Stage 2	-	-	-	-	874

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1346	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

10/01/2019

Intersection				
Intersection Delay, s/veh	6.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	126	563	141	256
Demand Flow Rate, veh/h	126	564	141	262
Vehicles Circulating, veh/h	290	92	273	158
Vehicles Exiting, veh/h	130	322	143	498
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	0.995
Approach Delay, s/veh	4.6	7.6	4.7	5.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	126	564	141	262
Cap Entry Lane, veh/h	1027	1256	1045	1174
Entry HV Adj Factor	1.000	0.998	1.000	0.977
Flow Entry, veh/h	126	563	141	256
Cap Entry, veh/h	1023	1241	1045	1142
V/C Ratio	0.123	0.454	0.135	0.224
Control Delay, s/veh	4.6	7.6	4.7	5.2
LOS	A	A	A	A
95th %tile Queue, veh	0	2	0	1

Intersection	
Intersection Delay, s/veh	64.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	285	18	31	261	0	35	0	42	49	71	237
Peak Hour Factor	0.25	0.82	0.50	0.75	0.73	0.25	0.62	0.25	0.66	0.62	0.80	0.90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	393	41	47	404	0	64	0	72	89	100	298
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	62.4	70.3	17.5	73.6
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	0%	11%	14%
Vol Thru, %	0%	94%	89%	20%
Vol Right, %	55%	6%	0%	66%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	303	292	357
LT Vol	35	0	31	49
Through Vol	0	285	261	71
RT Vol	42	18	0	237
Lane Flow Rate	136	433	451	487
Geometry Grp	1	1	1	1
Degree of Util (X)	0.351	0.962	0.996	1.017
Departure Headway (Hd)	9.476	8.098	8.061	7.512
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	381	451	455	482
Service Time	7.476	6.098	6.061	5.606
HCM Lane V/C Ratio	0.357	0.96	0.991	1.01
HCM Control Delay	17.5	62.4	70.3	73.6
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	1.5	11.7	12.8	13.9

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↗↖	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	194	183	177	286	0	0	0	0	114	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.940										
Flt Protected					0.983						0.977	
Satd. Flow (prot)	0	1718	0	0	1849	0	0	0	0	0	3508	0
Flt Permitted					0.456						0.977	
Satd. Flow (perm)	0	1718	0	0	858	0	0	0	0	0	3508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.25	0.74	0.88	0.82	0.71	0.25	0.25	0.25	0.25	0.74	0.82	0.25
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	296	235	244	455	0	0	0	0	174	196	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	531	0	0	699	0	0	0	0	0	370	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		35.0						66.0	66.0	
Total Split (%)		27.9%		25.0%						47.1%	47.1%	
Maximum Green (s)		33.0		29.0						60.0	60.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		73.4			104.4							23.6
Actuated g/C Ratio		0.52			0.75							0.17
v/c Ratio		0.58			0.81							0.63
Control Delay		25.0			33.5							59.0
Queue Delay		0.0			5.4							0.0
Total Delay		25.0			39.0							59.0
LOS		C			D							E
Approach Delay		25.0			39.0							59.0
Approach LOS		C			D							E
Queue Length 50th (ft)		297			290							169
Queue Length 95th (ft)		330			296							193
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		913			859							1553
Starvation Cap Reductn		0			111							0
Spillback Cap Reductn		0			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		0.58			0.93							0.24

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	47 (34%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	39.0
Intersection LOS:	D
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/01/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	34					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	291	0	0	998	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	411	0	0	1151	437

Major/Minor	Minor2	Major2
Conflicting Flow All	- 794	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 331	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 331	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	165.3	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	331	-	-
HCM Lane V/C Ratio	1.242	-	-
HCM Control Delay (s)	165.3	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	18.4	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	108	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.95		0.97	0.95		0.90	0.92			0.95	0.87
Frt		0.967			0.970			0.907				0.850
Flt Protected	0.950			0.950			0.950				0.969	
Satd. Flow (prot)	1770	3257	0	1676	3105	0	1770	1554	0	0	1805	1583
Flt Permitted	0.950			0.203			0.610				0.802	
Satd. Flow (perm)	1667	3257	0	347	3105	0	1018	1554	0	0	1419	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			37			55				117
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			124				358
Travel Time (s)		34.3			4.0			2.8				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.84	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	158	1020	293	111	740	185	199	95	154	9	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1313	0	111	925	0	199	249	0	0	14	13
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	19.0	103.0		84.0	84.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.6%	73.6%		60.0%	60.0%		7.1%	26.4%		19.3%	19.3%	19.3%
Maximum Green (s)	13.0	97.0		78.0	78.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/01/2019

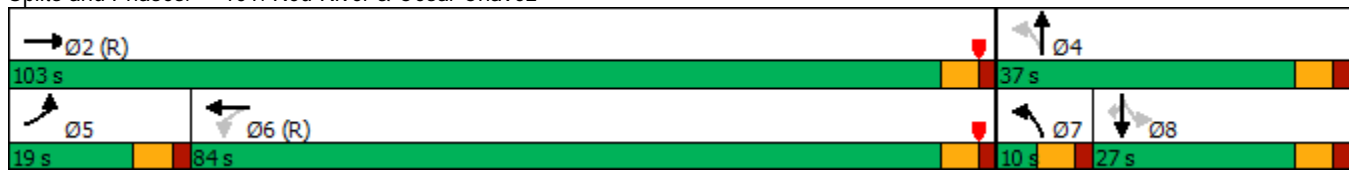


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	15.0	99.0		80.0	80.0		32.0	33.0			23.0	23.0
Actuated g/C Ratio	0.11	0.71		0.57	0.57		0.23	0.24			0.16	0.16
v/c Ratio	0.84	0.57		0.56	0.52		0.77	0.61			0.06	0.04
Control Delay	94.7	10.5		32.4	18.7		69.4	44.1			50.3	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	94.7	10.5		32.4	18.7		69.4	44.1			50.3	0.2
LOS	F	B		C	B		E	D			D	A
Approach Delay		19.6			20.1			55.3			26.2	
Approach LOS		B			C			E			C	
Queue Length 50th (ft)	143	265		61	248		159	159			11	0
Queue Length 95th (ft)	#193	281		87	305		#256	177			27	0
Internal Link Dist (ft)		1427			94			44			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	189	2322		198	1790		259	408			233	324
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.84	0.57		0.56	0.52		0.77	0.61			0.06	0.04




Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 27 (19%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 25.2 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	46.8
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	33	304	185	21	213	236
Peak Hour Factor	0.89	0.85	0.77	0.61	0.75	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	404	271	39	321	310
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	24.2	17.1	77.3
HCM LOS	C	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	47%
Vol Thru, %	90%	0%	53%
Vol Right, %	10%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	337	449
LT Vol	0	33	213
Through Vol	185	0	236
RT Vol	21	304	0
Lane Flow Rate	310	446	631
Geometry Grp	1	1	1
Degree of Util (X)	0.545	0.735	1.057
Departure Headway (Hd)	6.533	6.135	6.029
Convergence, Y/N	Yes	Yes	Yes
Cap	556	593	599
Service Time	4.533	4.135	4.106
HCM Lane V/C Ratio	0.558	0.752	1.053
HCM Control Delay	17.1	24.2	77.3
HCM Lane LOS	C	C	F
HCM 95th-tile Q	3.3	6.3	17.5

Intersection						
Intersection Delay, s/veh	5.2					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	90		340		163	
Demand Flow Rate, veh/h	91		346		166	
Vehicles Circulating, veh/h	439		175		334	
Vehicles Exiting, veh/h	148		325		196	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.4		6.0		5.3	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.802	0.198	1.000	1.000	0.603	0.397
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	73	18	346	166	243	160
Cap Entry Lane, veh/h	952	952	1154	982	1201	1201
Entry HV Adj Factor	0.986	0.980	0.982	0.982	0.979	0.979
Flow Entry, veh/h	72	18	340	163	238	157
Cap Entry, veh/h	939	934	1134	964	1176	1176
V/C Ratio	0.077	0.019	0.300	0.169	0.202	0.133
Control Delay, s/veh	4.5	4.0	6.0	5.3	4.8	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

10/01/2019

Intersection												
Int Delay, s/veh	627.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	47	141	77	126	177	9	198	55	81	71	19	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	106	290	116	185	282	18	241	86	113	146	57	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	406	0	0	1268	1230	348	1321	1279	291
Stage 1	-	-	-	-	-	-	560	560	-	661	661	-
Stage 2	-	-	-	-	-	-	708	670	-	660	618	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1261	-	-	1153	-	-	~ 145	178	695	~ 134	166	748
Stage 1	-	-	-	-	-	-	513	511	-	452	460	-
Stage 2	-	-	-	-	-	-	426	455	-	452	481	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1261	-	-	1153	-	-	~ 69	128	695	~ 42	119	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 69	128	-	~ 42	119	-
Stage 1	-	-	-	-	-	-	457	455	-	402	371	-
Stage 2	-	-	-	-	-	-	277	367	-	273	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	3.3	\$ 1575.6	\$ 1486.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	102	1261	-	-	1153	-	-	60
HCM Lane V/C Ratio	4.313	0.084	-	-	0.16	-	-	3.991
HCM Control Delay (s)	\$ 1575.6	8.1	0	-	8.7	0	-	\$ 1486.9
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	45.8	0.3	-	-	0.6	-	-	25.9

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	102	71	173	103	40
Future Vol, veh/h	64	102	106	269	161	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	125	130	330	198	75

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	826	236	273	0	-	0
Stage 1	236	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	342	803	1290	-	-	-
Stage 1	803	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	803	1290	-	-	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	554	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	2.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1290	-	488	-	-
HCM Lane V/C Ratio	0.101	-	0.418	-	-
HCM Control Delay (s)	8.1	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	177	5	0	125	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	6	0	154	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	223	0	374
Stage 1	-	-	-	-	220
Stage 2	-	-	-	-	154
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1346	-	627
Stage 1	-	-	-	-	817
Stage 2	-	-	-	-	874
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1346	-	627
Mov Cap-2 Maneuver	-	-	-	-	627
Stage 1	-	-	-	-	817
Stage 2	-	-	-	-	874

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1346	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
110: Rainey St & River St

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	49	8	56	40	176	5	26	53	99	34	23
Future Volume (vph)	13	53	9	56	40	308	5	32	53	117	34	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Ped Bike Factor		0.99			0.95			0.93			0.93	
Frt		0.984			0.900			0.931			0.974	
Flt Protected		0.991			0.993			0.995			0.970	
Satd. Flow (prot)	0	1848	0	0	1610	0	0	1646	0	0	1730	0
Flt Permitted		0.884			0.934			0.961			0.733	
Satd. Flow (perm)	0	1643	0	0	1515	0	0	1586	0	0	1237	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			338			72			28	
Link Speed (mph)		30			30			30			20	
Link Distance (ft)		184			135			829			246	
Travel Time (s)		4.2			3.1			18.8			8.4	
Confl. Peds. (#/hr)	35					35	27		77	77		27
Confl. Bikes (#/hr)			1						2			10
Peak Hour Factor	0.65	0.68	0.67	0.82	0.67	0.83	0.42	0.65	0.83	0.85	0.77	0.52
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%	0%
Adj. Flow (vph)	23	88	15	77	67	419	13	56	72	156	50	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	0	0	563	0	0	141	0	0	256	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Efect Green (s)		19.0			19.0			19.0			19.0	

Lanes, Volumes, Timings
110: Rainey St & River St

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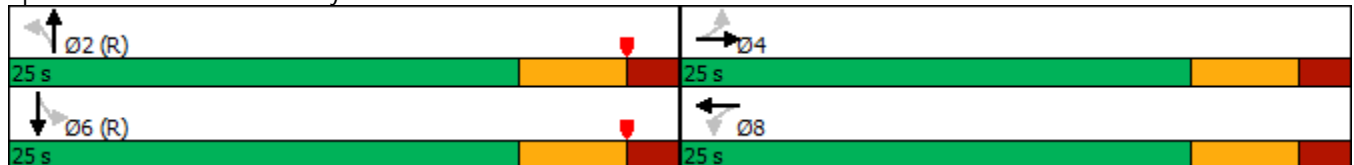


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.38			0.38			0.38			0.38	
v/c Ratio		0.20			0.72			0.22			0.53	
Control Delay		10.4			11.8			6.9			15.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.4			11.8			6.9			15.4	
LOS		B			B			A			B	
Approach Delay		10.4			11.8			6.9			15.4	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)		21			46			13			49	
Queue Length 95th (ft)		34			55			24			83	
Internal Link Dist (ft)		104			55			749			166	
Turn Bay Length (ft)												
Base Capacity (vph)		633			785			647			487	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.20			0.72			0.22			0.53	

Intersection Summary

Area Type: Other
 Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Red
 Natural Cycle: 55
 Control Type: Pretimed
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 11.8
 Intersection LOS: B
 Intersection Capacity Utilization 53.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 110: Rainey St & River St



Intersection	
Intersection Delay, s/veh	64.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	285	18	31	261	0	35	0	42	49	71	237
Peak Hour Factor	0.25	0.82	0.50	0.75	0.73	0.25	0.62	0.25	0.66	0.62	0.80	0.90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	393	41	47	404	0	64	0	72	89	100	298
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	62.4	70.3	17.5	73.6
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	0%	11%	14%
Vol Thru, %	0%	94%	89%	20%
Vol Right, %	55%	6%	0%	66%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	303	292	357
LT Vol	35	0	31	49
Through Vol	0	285	261	71
RT Vol	42	18	0	237
Lane Flow Rate	136	433	451	487
Geometry Grp	1	1	1	1
Degree of Util (X)	0.351	0.962	0.996	1.017
Departure Headway (Hd)	9.476	8.098	8.061	7.512
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	381	451	455	482
Service Time	7.476	6.098	6.061	5.606
HCM Lane V/C Ratio	0.357	0.96	0.991	1.01
HCM Control Delay	17.5	62.4	70.3	73.6
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	1.5	11.7	12.8	13.9

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↕	↘
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	194	183	177	286	0	0	0	0	114	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.940										
Flt Protected					0.983						0.977	
Satd. Flow (prot)	0	1718	0	0	1849	0	0	0	0	0	3508	0
Flt Permitted					0.456						0.977	
Satd. Flow (perm)	0	1718	0	0	858	0	0	0	0	0	3508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.25	0.74	0.88	0.82	0.71	0.25	0.25	0.25	0.25	0.74	0.82	0.25
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	296	235	244	455	0	0	0	0	174	196	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	531	0	0	699	0	0	0	0	0	370	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		35.0						66.0	66.0	
Total Split (%)		27.9%		25.0%						47.1%	47.1%	
Maximum Green (s)		33.0		29.0						60.0	60.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		73.4			104.4							23.6
Actuated g/C Ratio		0.52			0.75							0.17
v/c Ratio		0.58			0.81							0.63
Control Delay		25.0			33.5							59.0
Queue Delay		0.0			5.4							0.0
Total Delay		25.0			39.0							59.0
LOS		C			D							E
Approach Delay		25.0			39.0							59.0
Approach LOS		C			D							E
Queue Length 50th (ft)		297			290							169
Queue Length 95th (ft)		330			296							193
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		913			859							1553
Starvation Cap Reductn		0			111							0
Spillback Cap Reductn		0			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		0.58			0.93							0.24

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	47 (34%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	39.0
Intersection LOS:	D
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/01/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	34					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕	↘
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	291	0	0	998	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	411	0	0	1151	437

Major/Minor	Minor2	Major2
Conflicting Flow All	- 794	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 331	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 331	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	165.3	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	331	-	-
HCM Lane V/C Ratio	1.242	-	-
HCM Control Delay (s)	165.3	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	18.4	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

11/11/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	104	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.96		0.97	0.96		0.90	0.93			0.95	0.88
Frt		0.967			0.970			0.908				0.850
Flt Protected	0.950			0.950			0.950				0.969	
Satd. Flow (prot)	1770	3270	0	1676	3115	0	1770	1566	0	0	1805	1583
Flt Permitted	0.950			0.193			0.610				0.808	
Satd. Flow (perm)	1659	3270	0	332	3115	0	1027	1566	0	0	1430	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		64			38			58				126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			139				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.83	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	158	1032	293	111	740	185	199	95	149	9	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1325	0	111	925	0	199	244	0	0	14	13
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	17.0	93.0		76.0	76.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.1%	71.5%		58.5%	58.5%		7.7%	28.5%		20.8%	20.8%	20.8%
Maximum Green (s)	11.0	87.0		70.0	70.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

11/11/2019

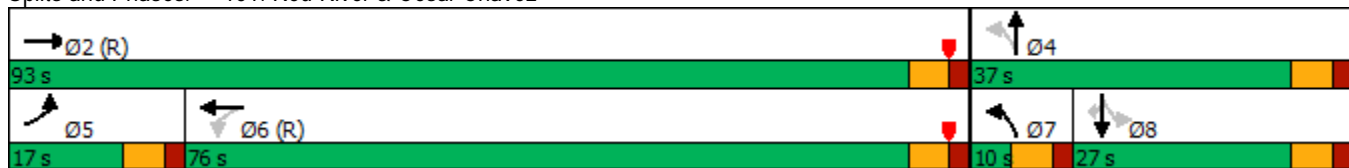


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	13.0	89.0		72.0	72.0		32.0	33.0			23.0	23.0
Actuated g/C Ratio	0.10	0.68		0.55	0.55		0.25	0.25			0.18	0.18
v/c Ratio	0.89	0.59		0.61	0.53		0.71	0.55			0.06	0.04
Control Delay	102.1	11.5		36.6	18.8		58.4	37.2			45.3	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	102.1	11.5		36.6	18.8		58.4	37.2			45.3	0.2
LOS	F	B		D	B		E	D			D	A
Approach Delay		21.1			20.7			46.7			23.6	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	134	268		60	238		143	136			10	0
Queue Length 95th (ft)	#195	282		89	297		#215	155			25	0
Internal Link Dist (ft)		1427			94			59			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	177	2258		183	1742		281	440			253	349
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.89	0.59		0.61	0.53		0.71	0.55			0.06	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 73 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 24.8 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	35.7
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	33	304	181	25	154	260
Peak Hour Factor	0.89	0.85	0.77	0.61	0.75	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	404	266	46	232	342
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	24.1	17.1	54.8
HCM LOS	C	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	37%
Vol Thru, %	88%	0%	63%
Vol Right, %	12%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	337	414
LT Vol	0	33	154
Through Vol	181	0	260
RT Vol	25	304	0
Lane Flow Rate	312	446	574
Geometry Grp	1	1	1
Degree of Util (X)	0.552	0.739	0.972
Departure Headway (Hd)	6.375	5.963	6.102
Convergence, Y/N	Yes	Yes	Yes
Cap	565	607	597
Service Time	4.433	4.01	4.102
HCM Lane V/C Ratio	0.552	0.735	0.961
HCM Control Delay	17.1	24.1	54.8
HCM Lane LOS	C	C	F
HCM 95th-tile Q	3.3	6.4	13.7

HCM 6th Roundabout
 103: Private Drive/Red River & J/Davis St

11/11/2019

Intersection						
Intersection Delay, s/veh	5.4					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	90		340		164	
Demand Flow Rate, veh/h	92		346		167	
Vehicles Circulating, veh/h	471		188		367	
Vehicles Exiting, veh/h	148		346		196	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.9		6.1		5.6	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.632	0.368
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	92	0	346	167	275	160
Cap Entry Lane, veh/h	925	925	1139	949	1201	1201
Entry HV Adj Factor	0.978	1.000	0.982	0.983	0.982	0.979
Flow Entry, veh/h	90	0	340	164	270	157
Cap Entry, veh/h	905	925	1119	933	1179	1176
V/C Ratio	0.099	0.000	0.304	0.176	0.229	0.133
Control Delay, s/veh	4.9	3.9	6.1	5.6	5.1	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill

11/11/2019

Intersection												
Int Delay, s/veh	523.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	47	94	69	126	177	9	198	59	77	122	3	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	106	193	104	185	282	18	241	93	107	251	9	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	297	0	0	1141	1127	245	1218	1170	291
Stage 1	-	-	-	-	-	-	457	457	-	661	661	-
Stage 2	-	-	-	-	-	-	684	670	-	557	509	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1261	-	-	1264	-	-	178	205	794	157	193	748
Stage 1	-	-	-	-	-	-	583	568	-	452	460	-
Stage 2	-	-	-	-	-	-	439	455	-	515	538	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1261	-	-	1264	-	-	129	152	794	57	143	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	129	152	-	57	143	-
Stage 1	-	-	-	-	-	-	524	510	-	406	379	-
Stage 2	-	-	-	-	-	-	336	375	-	327	483	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.1			3.2			\$ 782.5			\$ 1699.6		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	169	1261	-	-	1264	-	-	66
HCM Lane V/C Ratio	2.607	0.084	-	-	0.146	-	-	4.495
HCM Control Delay (s)	\$ 782.5	8.1	0	-	8.3	0	-	\$ 1699.6
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	38.3	0.3	-	-	0.5	-	-	32.3

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
105: Davis St & Rainey St

11/11/2019

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	57	47	173	103	40
Future Vol, veh/h	64	57	82	269	137	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	82	81	92	86	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	79	114	330	180	103

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	790	232	283	0	0
Stage 1	232	-	-	-	-
Stage 2	558	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	359	807	1279	-	-
Stage 1	807	-	-	-	-
Stage 2	573	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	320	807	1279	-	-
Mov Cap-2 Maneuver	320	-	-	-	-
Stage 1	719	-	-	-	-
Stage 2	573	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	2.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	449	-	-
HCM Lane V/C Ratio	0.089	-	0.367	-	-
HCM Control Delay (s)	8.1	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.7	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	140	45	0	62	24	0
Future Vol, veh/h	157	45	0	118	24	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	193	55	0	145	29	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	248	0	366 221
Stage 1	-	-	-	-	221 -
Stage 2	-	-	-	-	145 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1318	-	634 819
Stage 1	-	-	-	-	816 -
Stage 2	-	-	-	-	882 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1318	-	634 819
Mov Cap-2 Maneuver	-	-	-	-	634 -
Stage 1	-	-	-	-	816 -
Stage 2	-	-	-	-	882 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	634	-	-	1318	-
HCM Lane V/C Ratio	0.046	-	-	-	-
HCM Control Delay (s)	11	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection			
Intersection Delay, s/veh	4.7		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	0	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	0	132	273
Demand Flow Rate, veh/h	0	132	282
Vehicles Circulating, veh/h	54	227	73
Vehicles Exiting, veh/h	305	128	331
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	1.000	1.000	0.995
Approach Delay, s/veh	0.0	4.3	4.9
Approach LOS	-	A	A
Lane	Left	Left	
Designated Moves	TR	LT	
Assumed Moves	TR	LT	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	132	282	
Cap Entry Lane, veh/h	1095	1281	
Entry HV Adj Factor	1.000	0.968	
Flow Entry, veh/h	132	273	
Cap Entry, veh/h	1095	1234	
V/C Ratio	0.121	0.221	
Control Delay, s/veh	4.3	4.9	
LOS	A	A	
95th %tile Queue, veh	0	1	

Intersection	
Intersection Delay, s/veh	64.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	285	18	31	261	0	35	0	42	49	71	237
Peak Hour Factor	0.25	0.82	0.50	0.75	0.73	0.25	0.62	0.25	0.66	0.62	0.80	0.90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	393	41	47	404	0	64	0	72	89	100	298
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	62.4	70.3	17.5	73.6
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	0%	11%	14%
Vol Thru, %	0%	94%	89%	20%
Vol Right, %	55%	6%	0%	66%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	303	292	357
LT Vol	35	0	31	49
Through Vol	0	285	261	71
RT Vol	42	18	0	237
Lane Flow Rate	136	433	451	487
Geometry Grp	1	1	1	1
Degree of Util (X)	0.351	0.962	0.996	1.017
Departure Headway (Hd)	9.476	8.098	8.061	7.512
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	381	451	455	482
Service Time	7.476	6.098	6.061	5.606
HCM Lane V/C Ratio	0.357	0.96	0.991	1.01
HCM Control Delay	17.5	62.4	70.3	73.6
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	1.5	11.7	12.8	13.9

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

11/11/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	194	183	177	286	0	0	0	0	114	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.934										
Flt Protected					0.981						0.978	
Satd. Flow (prot)	0	1705	0	0	1845	0	0	0	0	0	3511	0
Flt Permitted					0.431						0.978	
Satd. Flow (perm)	0	1705	0	0	811	0	0	0	0	0	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	288	272	217	351	0	0	0	0	170	211	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	560	0	0	568	0	0	0	0	0	381	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

11/11/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		36.0		29.0						65.0	65.0	
Total Split (%)		27.7%		22.3%						50.0%	50.0%	
Maximum Green (s)		30.0		23.0						59.0	59.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		69.8			94.8						23.2	
Actuated g/C Ratio		0.54			0.73						0.18	
v/c Ratio		0.60			0.72						0.61	
Control Delay		22.8			27.6						53.5	
Queue Delay		0.0			1.3						0.0	
Total Delay		22.8			28.9						53.5	
LOS		C			C						D	
Approach Delay		22.8			28.9						53.5	
Approach LOS		C			C						D	
Queue Length 50th (ft)		286			221						159	
Queue Length 95th (ft)		330			322						168	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		931			790						1647	
Starvation Cap Reductn		0			83						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.60			0.80						0.23	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	91 (70%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	32.9
Intersection LOS:	C
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

11/11/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	34					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕	↘
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	291	0	0	998	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	411	0	0	1151	437

Major/Minor	Minor2	Major2
Conflicting Flow All	- 794	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 331	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 331	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	165.3	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	331	-	-
HCM Lane V/C Ratio	1.242	-	-
HCM Control Delay (s)	165.3	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	18.4	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 1d

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/01/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	147	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.95			0.96		0.91	0.91				0.96
Frt		0.966			0.971			0.893				0.850
Flt Protected	0.950			0.950			0.950					0.976
Satd. Flow (prot)	1770	3265	0	1676	3121	0	1770	1519	0	0	1818	1583
Flt Permitted	0.950			0.159			0.613					0.868
Satd. Flow (perm)	1678	3265	0	281	3121	0	1040	1519	0	0	1553	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			35			101				126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			118				358
Travel Time (s)		34.3			4.0			2.7				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	931	268	85	764	187	190	72	181	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	253	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	14.0	86.0		72.0	72.0		17.0	44.0		27.0	27.0	27.0
Total Split (%)	10.8%	66.2%		55.4%	55.4%		13.1%	33.8%		20.8%	20.8%	20.8%
Maximum Green (s)	8.0	80.0		66.0	66.0		11.0	38.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/01/2019

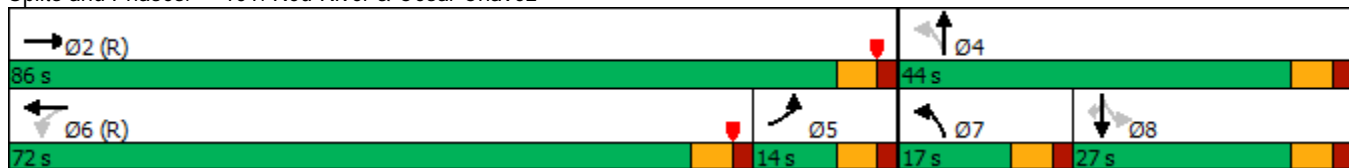


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	10.0	82.0		68.0	68.0		39.0	40.0			23.0	23.0
Actuated g/C Ratio	0.08	0.63		0.52	0.52		0.30	0.31			0.18	0.18
v/c Ratio	0.95	0.58		0.58	0.58		0.50	0.47			0.03	0.02
Control Delay	123.9	14.5		40.6	22.0		41.1	24.6			44.9	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	123.9	14.5		40.6	22.0		41.1	24.6			44.9	0.2
LOS	F	B		D	C		D	C			D	A
Approach Delay		25.2			23.5			31.6			25.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	110	275		47	268		126	101			6	0
Queue Length 95th (ft)	#238	336		#127	333		195	185			21	0
Internal Link Dist (ft)		1427			94			38			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	136	2079		146	1649		379	537			274	349
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.95	0.58		0.58	0.58		0.50	0.47			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 84 (65%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 25.6
 Intersection LOS: C
 Intersection Capacity Utilization 72.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	21.8
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	116	187	17	102	175
Future Vol, veh/h	33	287	241	25	154	260
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	353	296	31	189	319
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	17.6	15.7	29
HCM LOS	C	C	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	37%
Vol Thru, %	91%	0%	63%
Vol Right, %	9%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	266	320	414
LT Vol	0	33	154
Through Vol	241	0	260
RT Vol	25	287	0
Lane Flow Rate	327	393	508
Geometry Grp	1	1	1
Degree of Util (X)	0.535	0.618	0.811
Departure Headway (Hd)	5.897	5.656	5.74
Convergence, Y/N	Yes	Yes	Yes
Cap	608	633	625
Service Time	3.985	3.739	3.816
HCM Lane V/C Ratio	0.538	0.621	0.813
HCM Control Delay	15.7	17.6	29
HCM Lane LOS	C	C	D
HCM 95th-tile Q	3.2	4.3	8.2

Intersection						
Intersection Delay, s/veh	4.3					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	25		211		176	
Demand Flow Rate, veh/h	26		215		180	
Vehicles Circulating, veh/h	338		159		218	
Vehicles Exiting, veh/h	39		239		145	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.8		4.7		4.8	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.590	0.410
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	26	0	215	180	193	134
Cap Entry Lane, veh/h	1044	1044	1173	1105	1357	1357
Entry HV Adj Factor	0.962	1.000	0.980	0.980	0.979	0.984
Flow Entry, veh/h	25	0	211	176	189	132
Cap Entry, veh/h	1004	1044	1150	1083	1329	1335
V/C Ratio	0.025	0.000	0.183	0.163	0.142	0.099
Control Delay, s/veh	3.8	3.4	4.7	4.8	3.9	3.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	0	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

10/01/2019

Intersection												
Int Delay, s/veh	29.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	44	69	71	48	9	67	29	65	11	3	8
Future Vol, veh/h	4	94	69	126	177	9	138	59	77	122	3	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	115	85	155	217	11	170	72	95	150	4	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	228	0	0	200	0	0	716	706	158	784	743	223
Stage 1	-	-	-	-	-	-	168	168	-	533	533	-
Stage 2	-	-	-	-	-	-	548	538	-	251	210	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1340	-	-	1372	-	-	345	361	887	311	343	817
Stage 1	-	-	-	-	-	-	834	759	-	531	525	-
Stage 2	-	-	-	-	-	-	521	522	-	753	728	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1340	-	-	1372	-	-	297	313	887	206	297	817
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	313	-	206	297	-
Stage 1	-	-	-	-	-	-	831	756	-	529	457	-
Stage 2	-	-	-	-	-	-	435	454	-	606	725	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			3.2			60.7			58.3		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	370	1340	-	-	1372	-	-	234
HCM Lane V/C Ratio	0.91	0.004	-	-	0.113	-	-	0.772
HCM Control Delay (s)	60.7	7.7	-	-	8	0	-	58.3
HCM Lane LOS	F	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	9.3	0	-	-	0.4	-	-	5.5

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	51	36	113	0	0
Future Vol, veh/h	64	51	71	209	34	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	63	87	257	42	26

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	486	55	68	0	0
Stage 1	55	-	-	-	-
Stage 2	431	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	540	1012	1533	-	-
Stage 1	968	-	-	-	-
Stage 2	655	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	504	1012	1533	-	-
Mov Cap-2 Maneuver	504	-	-	-	-
Stage 1	904	-	-	-	-
Stage 2	655	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1533	-	648	-	-
HCM Lane V/C Ratio	0.057	-	0.218	-	-
HCM Control Delay (s)	7.5	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Intersection

Int Delay, s/veh 1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	98	26	0	36	48	0
Future Vol, veh/h	115	30	0	92	48	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	37	0	113	59	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	178	0	273
Stage 1	-	-	-	-	160
Stage 2	-	-	-	-	113
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1398	-	716
Stage 1	-	-	-	-	869
Stage 2	-	-	-	-	912
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1398	-	716
Mov Cap-2 Maneuver	-	-	-	-	716
Stage 1	-	-	-	-	869
Stage 2	-	-	-	-	912

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	716	-	-	1398	-
HCM Lane V/C Ratio	0.082	-	-	-	-
HCM Control Delay (s)	10.5	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection			
Intersection Delay, s/veh	4.7		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	0	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	0	132	273
Demand Flow Rate, veh/h	0	132	282
Vehicles Circulating, veh/h	54	227	73
Vehicles Exiting, veh/h	305	128	331
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	1.000	1.000	0.995
Approach Delay, s/veh	0.0	4.3	4.9
Approach LOS	-	A	A
Lane	Left	Left	
Designated Moves	TR	LT	
Assumed Moves	TR	LT	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	132	282	
Cap Entry Lane, veh/h	1095	1281	
Entry HV Adj Factor	1.000	0.968	
Flow Entry, veh/h	132	273	
Cap Entry, veh/h	1095	1234	
V/C Ratio	0.121	0.221	
Control Delay, s/veh	4.3	4.9	
LOS	A	A	
95th %tile Queue, veh	0	1	

Intersection

Intersection Delay, s/veh	60.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	285	18	31	261	0	35	0	42	49	71	237
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	447	28	41	347	0	61	0	73	69	100	335
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	73.5	43.6	16.8	73.4
HCM LOS	F	E	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	0%	11%	14%
Vol Thru, %	0%	94%	89%	20%
Vol Right, %	55%	6%	0%	66%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	303	292	357
LT Vol	35	0	31	49
Through Vol	0	285	261	71
RT Vol	42	18	0	237
Lane Flow Rate	134	476	388	504
Geometry Grp	1	1	1	1
Degree of Util (X)	0.335	1.013	0.858	1.02
Departure Headway (Hd)	9.25	7.821	8.116	7.414
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	391	466	450	494
Service Time	7.25	5.821	6.116	5.414
HCM Lane V/C Ratio	0.343	1.021	0.862	1.02
HCM Control Delay	16.8	73.5	43.6	73.4
HCM Lane LOS	C	F	E	F
HCM 95th-tile Q	1.4	13.6	8.6	14.2

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	194	183	177	286	0	0	0	0	114	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Fr t		0.934										
Flt Protected					0.981						0.978	
Satd. Flow (prot)	0	1705	0	0	1845	0	0	0	0	0	3511	0
Flt Permitted					0.086						0.978	
Satd. Flow (perm)	0	1705	0	0	162	0	0	0	0	0	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	288	272	217	351	0	0	0	0	170	211	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	560	0	0	568	0	0	0	0	0	381	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		36.0		29.0						65.0	65.0	
Total Split (%)		27.7%		22.3%						50.0%	50.0%	
Maximum Green (s)		30.0		23.0						59.0	59.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		32.0			57.0						61.0	
Actuated g/C Ratio		0.25			0.44						0.47	
v/c Ratio		1.26			1.44						0.23	
Control Delay		170.6			236.2						21.0	
Queue Delay		0.0			0.0						0.0	
Total Delay		170.6			236.2						21.0	
LOS		F			F						C	
Approach Delay		170.6			236.2						21.0	
Approach LOS		F			F						C	
Queue Length 50th (ft)		-569			-665						98	
Queue Length 95th (ft)		#607			m#481						109	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		446			394						1647	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		1.26			1.44						0.23	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 110 (85%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.44
 Intersection Signal Delay: 157.5
 Intersection LOS: F
 Intersection Capacity Utilization 65.3%
 ICU Level of Service C
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/01/2019

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	21.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	291	0	0	998	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	357	0	0	1226	384

Major/Minor	Minor2	Major2
Conflicting Flow All	- 805	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 325	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 325	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	115.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	325	-	-
HCM Lane V/C Ratio	1.1	-	-
HCM Control Delay (s)	115.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	13.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

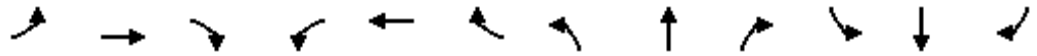
10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	69	622	152	155	59	162	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.91	0.92			0.96	0.89
Frt		0.970			0.971			0.890				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1521	0	0	1818	1583
Flt Permitted	0.950			0.158			0.613				0.866	
Satd. Flow (perm)	1685	3304	0	274	3130	0	1040	1521	0	0	1556	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			37			110				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			151				706
Travel Time (s)		34.3			4.0			3.4				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	85	764	187	190	72	199	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	271	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	13.0	79.0		66.0	66.0		14.0	41.0		27.0	27.0	27.0
Total Split (%)	10.8%	65.8%		55.0%	55.0%		11.7%	34.2%		22.5%	22.5%	22.5%
Maximum Green (s)	7.0	73.0		60.0	60.0		8.0	35.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/03/2019

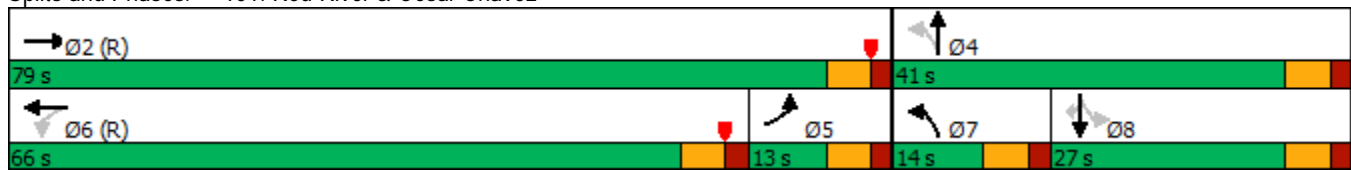


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	9.0	75.0		62.0	62.0		36.0	37.0			23.0	23.0
Actuated g/C Ratio	0.08	0.62		0.52	0.52		0.30	0.31			0.19	0.19
v/c Ratio	0.98	0.58		0.60	0.58		0.52	0.50			0.03	0.02
Control Delay	128.3	13.9		41.9	20.9		39.1	23.1			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	128.3	13.9		41.9	20.9		39.1	23.1			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		25.0			22.7			29.7			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	101	255		45	248		115	99			5	0
Queue Length 95th (ft)	#228	315		#129	313		183	184			19	0
Internal Link Dist (ft)		1427			94			71			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	132	2083		141	1635		366	545			298	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.98	0.58		0.60	0.58		0.52	0.50			0.03	0.02

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 24.9 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	54.8
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	249	138	274	3
Future Vol, veh/h	54	134	404	175	385	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	165	496	215	473	79
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	14.5	79.2	40.2
HCM LOS	B	F	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	29%	86%
Vol Thru, %	70%	0%	14%
Vol Right, %	30%	71%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	579	188	449
LT Vol	0	54	385
Through Vol	404	0	64
RT Vol	175	134	0
Lane Flow Rate	711	231	551
Geometry Grp	1	1	1
Degree of Util (X)	1.074	0.418	0.896
Departure Headway (Hd)	5.437	6.743	6.02
Convergence, Y/N	Yes	Yes	Yes
Cap	668	538	607
Service Time	3.48	4.743	4.02
HCM Lane V/C Ratio	1.064	0.429	0.908
HCM Control Delay	79.2	14.5	40.2
HCM Lane LOS	F	B	E
HCM 95th-tile Q	19.6	2	10.8

HCM 6th Roundabout
 103: Private Drive/Red River & Davis St

10/03/2019

Intersection								
Intersection Delay, s/veh	7.0							
Intersection LOS	A							
Approach	EB		WB		NB		SB	
Entry Lanes	2		1		1		2	
Conflicting Circle Lanes	1		1		1		1	
Adj Approach Flow, veh/h	25		580		120		106	
Demand Flow Rate, veh/h	26		592		122		109	
Vehicles Circulating, veh/h	102		147		71		33	
Vehicles Exiting, veh/h	40		46		56		706	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	3.1		8.6		3.6		3.0	
Approach LOS	A		A		A		A	
Lane	Left	Right	Left	Left	Left	Right		
Designated Moves	L	TR	LTR		TR	L TR		
Assumed Moves	L	TR	LTR		TR	L TR		
RT Channelized								
Lane Util	1.000	0.000	1.000		1.000	0.422 0.578		
Follow-Up Headway, s	2.535	2.535	2.609		2.609	2.535 2.535		
Critical Headway, s	4.544	4.544	4.976		4.976	4.544 4.544		
Entry Flow, veh/h	26	0	592		122	46 63		
Cap Entry Lane, veh/h	1294	1294	1188		1283	1378 1378		
Entry HV Adj Factor	0.962	1.000	0.980		0.980	0.978 0.975		
Flow Entry, veh/h	25	0	580		120	45 61		
Cap Entry, veh/h	1244	1294	1163		1258	1348 1344		
V/C Ratio	0.020	0.000	0.498		0.095	0.033 0.046		
Control Delay, s/veh	3.1	2.8	8.6		3.6	2.9 3.0		
LOS	A	A	A		A	A A		
95th %tile Queue, veh	0	0	3		0	0 0		

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	395	48	9	14	8
Future Vol, veh/h	48	533	198	9	90	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	655	243	11	111	27

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	254	0	0	1022	249
Stage 1	-	-	-	249	-
Stage 2	-	-	-	773	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1311	-	-	261	790
Stage 1	-	-	-	792	-
Stage 2	-	-	-	455	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1311	-	-	242	790
Mov Cap-2 Maneuver	-	-	-	242	-
Stage 1	-	-	-	736	-
Stage 2	-	-	-	455	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	29.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1311	-	-	-	280
HCM Lane V/C Ratio	0.045	-	-	-	0.491
HCM Control Delay (s)	7.9	0	-	-	29.7
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	2.5

Intersection						
Int Delay, s/veh	12.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	0	0	0	0	317	0
Future Vol, veh/h	0	0	0	0	460	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	565	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	2 1
Stage 1	-	-	-	-	1 -
Stage 2	-	-	-	-	1 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0	0	-	1021 1084
Stage 1	-	0	0	-	1022 -
Stage 2	-	0	0	-	1022 -
Platoon blocked, %	-				-
Mov Cap-1 Maneuver	-	-	-	-	1021 1084
Mov Cap-2 Maneuver	-	-	-	-	1021 -
Stage 1	-	-	-	-	1022 -
Stage 2	-	-	-	-	1022 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1021	-	-
HCM Lane V/C Ratio	0.553	-	-
HCM Control Delay (s)	12.8	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	3.5	-	-

Intersection			
Intersection Delay, s/veh	8.7		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	0
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	752	112	0
Demand Flow Rate, veh/h	766	113	0
Vehicles Circulating, veh/h	35	0	117
Vehicles Exiting, veh/h	78	117	684
Ped Vol Crossing Leg, #/h	77	0	0
Ped Cap Adj	0.989	1.000	1.000
Approach Delay, s/veh	9.5	3.3	0.0
Approach LOS	A	A	-
Lane	Left	Left	
Designated Moves	LR	TR	
Assumed Moves	LR	TR	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	766	113	
Cap Entry Lane, veh/h	1331	1380	
Entry HV Adj Factor	0.982	0.994	
Flow Entry, veh/h	752	112	
Cap Entry, veh/h	1293	1371	
V/C Ratio	0.581	0.082	
Control Delay, s/veh	9.5	3.3	
LOS	A	A	
95th %tile Queue, veh	4	0	

Intersection

Intersection Delay, s/veh 198.5
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	125	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	165	18	31	261	0	35	0	46	50	171	463
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	259	28	41	347	0	61	0	80	71	242	654
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	24	34.7	16	342.7
HCM LOS	C	D	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	11%	7%
Vol Thru, %	0%	90%	89%	25%
Vol Right, %	57%	10%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	183	292	684
LT Vol	35	0	31	50
Through Vol	0	165	261	171
RT Vol	46	18	0	463
Lane Flow Rate	141	287	388	966
Geometry Grp	1	1	1	1
Degree of Util (X)	0.3	0.581	0.76	1.708
Departure Headway (Hd)	9.101	9.128	8.782	6.366
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	397	399	415	580
Service Time	7.101	7.128	6.782	4.374
HCM Lane V/C Ratio	0.355	0.719	0.935	1.666
HCM Control Delay	16	24	34.7	342.7
HCM Lane LOS	C	C	D	F
HCM 95th-tile Q	1.2	3.5	6.3	56.4

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	46	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	121	92	177	286	0	0	0	0	119	159	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.942										
Flt Protected					0.981						0.979	
Satd. Flow (prot)	0	1726	0	0	1845	0	0	0	0	0	3514	0
Flt Permitted					0.646						0.979	
Satd. Flow (perm)	0	1726	0	0	1212	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			294	
Travel Time (s)		3.1			8.2			4.7			5.7	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	180	137	217	351	0	0	0	0	177	236	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	317	0	0	568	0	0	0	0	0	413	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		53.0		41.0						26.0	26.0	
Total Split (%)		44.2%		34.2%						21.7%	21.7%	
Maximum Green (s)		47.0		35.0						20.0	20.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lag						Lead	Lead	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		62.8			86.0						22.0	
Actuated g/C Ratio		0.52			0.72						0.18	
v/c Ratio		0.34			0.57						0.64	
Control Delay		16.8			11.6						50.6	
Queue Delay		0.0			0.5						0.0	
Total Delay		16.8			12.1						50.6	
LOS		B			B						D	
Approach Delay		16.8			12.1						50.6	
Approach LOS		B			B						D	
Queue Length 50th (ft)		118			212						157	
Queue Length 95th (ft)		167			287						174	
Internal Link Dist (ft)		57			279			232			214	
Turn Bay Length (ft)												
Base Capacity (vph)		922			1104						644	
Starvation Cap Reductn		0			205						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.34			0.63						0.64	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	10 (8%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	25.5
Intersection LOS:	C
Intersection Capacity Utilization	52.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	153.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	547	0	0	1109	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	672	0	0	1362	255

Major/Minor	Minor2	Major2
Conflicting Flow All	- 809	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 323	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 323	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	522.8	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	323	-	-
HCM Lane V/C Ratio	2.08	-	-
HCM Control Delay (s)	\$ 522.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	48.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	69	622	152	155	59	177	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.90	0.92			0.98	0.89
Frt		0.970			0.971			0.887				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1512	0	0	1818	1583
Flt Permitted	0.950			0.161			0.752				0.862	
Satd. Flow (perm)	1685	3304	0	279	3130	0	1258	1512	0	0	1566	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			38			114				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			132				706
Travel Time (s)		34.3			4.0			3.0				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	85	764	187	190	72	217	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	289	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	13.0	80.0		67.0	67.0		13.0	40.0		27.0	27.0	27.0
Total Split (%)	10.8%	66.7%		55.8%	55.8%		10.8%	33.3%		22.5%	22.5%	22.5%
Maximum Green (s)	7.0	74.0		61.0	61.0		7.0	34.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	9.0	76.0		63.0	63.0		35.0	36.0			23.0	23.0
Actuated g/C Ratio	0.08	0.63		0.52	0.52		0.29	0.30			0.19	0.19
v/c Ratio	0.98	0.57		0.58	0.57		0.47	0.54			0.03	0.02
Control Delay	128.3	13.3		39.0	20.2		40.3	25.0			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	128.3	13.3		39.0	20.2		40.3	25.0			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		24.4			21.7			31.1			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	101	248		43	243		117	111			5	0
Queue Length 95th (ft)	#228	307		#125	306		185	203			19	0
Internal Link Dist (ft)		1427			94			52			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	132	2110		146	1661		401	533			300	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.98	0.57		0.58	0.57		0.47	0.54			0.03	0.02




Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 24.6 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	59
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	249	138	274	3
Future Vol, veh/h	56	144	409	175	384	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	177	502	215	472	79
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	15.1	87.4	41.7
HCM LOS	C	F	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	28%	86%
Vol Thru, %	70%	0%	14%
Vol Right, %	30%	72%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	584	200	448
LT Vol	0	56	384
Through Vol	409	0	64
RT Vol	175	144	0
Lane Flow Rate	717	246	550
Geometry Grp	1	1	1
Degree of Util (X)	1.098	0.445	0.903
Departure Headway (Hd)	5.51	6.778	6.11
Convergence, Y/N	Yes	Yes	Yes
Cap	660	536	600
Service Time	3.552	4.778	4.11
HCM Lane V/C Ratio	1.086	0.459	0.917
HCM Control Delay	87.4	15.1	41.7
HCM Lane LOS	F	C	E
HCM 95th-tile Q	20.8	2.3	11

Intersection						
Intersection Delay, s/veh	6.5					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	25		445		265	
Demand Flow Rate, veh/h	26		454		270	
Vehicles Circulating, veh/h	80		295		71	
Vehicles Exiting, veh/h	40		46		34	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.0		8.7		4.7	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.411	0.589
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	26	0	454	270	46	66
Cap Entry Lane, veh/h	1320	1320	1021	1283	1410	1410
Entry HV Adj Factor	0.962	1.000	0.980	0.981	0.978	0.975
Flow Entry, veh/h	25	0	445	265	45	64
Cap Entry, veh/h	1270	1320	1001	1259	1379	1375
V/C Ratio	0.020	0.000	0.445	0.210	0.033	0.047
Control Delay, s/veh	3.0	2.7	8.7	4.7	2.9	3.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	2	1	0	0

HCM 6th TWSC
104: Driskill & Rainey St

10/03/2019

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	33	395	48	9	14	8
Future Vol, veh/h	33	532	195	9	66	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	653	240	11	81	27

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	251	0	0 981 246
Stage 1	-	-	- - 246 -
Stage 2	-	-	- - 735 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1314	-	- - 277 793
Stage 1	-	-	- - 795 -
Stage 2	-	-	- - 474 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1314	-	- - 263 793
Mov Cap-2 Maneuver	-	-	- - 263 -
Stage 1	-	-	- - 756 -
Stage 2	-	-	- - 474 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1314	-	-	-	316
HCM Lane V/C Ratio	0.031	-	-	-	0.342
HCM Control Delay (s)	7.8	-	-	-	22.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.5

Intersection						
Int Delay, s/veh	11					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	0	0	340	0
Future Vol, veh/h	0	0	0	0	351	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	431	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.422	-	-	-	-
HCM Control Delay (s)	11.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	2.1	-	-	0	-

Intersection			
Intersection Delay, s/veh	10.2		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	12	858	126
Demand Flow Rate, veh/h	12	859	126
Vehicles Circulating, veh/h	117	48	0
Vehicles Exiting, veh/h	790	78	129
Ped Vol Crossing Leg, #/h	27	77	0
Ped Cap Adj	0.996	0.989	1.000
Approach Delay, s/veh	3.0	11.3	3.3
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	12	859	126
Cap Entry Lane, veh/h	1225	1314	1380
Entry HV Adj Factor	1.000	0.999	1.000
Flow Entry, veh/h	12	858	126
Cap Entry, veh/h	1220	1299	1380
V/C Ratio	0.010	0.661	0.091
Control Delay, s/veh	3.0	11.3	3.3
LOS	A	B	A
95th %tile Queue, veh	0	5	0

Intersection	
Intersection Delay, s/veh	175
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	76	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	116	18	31	266	0	35	0	46	50	171	461
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	182	28	41	354	0	61	0	80	71	242	651
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18	31.4	14.5	291.6
HCM LOS	C	D	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	10%	7%
Vol Thru, %	0%	87%	90%	25%
Vol Right, %	57%	13%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	134	297	682
LT Vol	35	0	31	50
Through Vol	0	116	266	171
RT Vol	46	18	0	461
Lane Flow Rate	141	210	395	963
Geometry Grp	1	1	1	1
Degree of Util (X)	0.28	0.422	0.744	1.594
Departure Headway (Hd)	8.321	8.763	8.164	5.955
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	435	414	446	607
Service Time	6.321	6.763	6.164	4.028
HCM Lane V/C Ratio	0.324	0.507	0.886	1.586
HCM Control Delay	14.5	18	31.4	291.6
HCM Lane LOS	B	C	D	F
HCM 95th-tile Q	1.1	2	6.1	51.3

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	81	70	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	145	116	177	291	0	0	0	0	119	159	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.940										
Flt Protected					0.981						0.979	
Satd. Flow (prot)	0	1717	0	0	1845	0	0	0	0	0	3514	0
Flt Permitted					0.525						0.979	
Satd. Flow (perm)	0	1717	0	0	988	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	216	172	217	357	0	0	0	0	177	236	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	388	0	0	574	0	0	0	0	0	413	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		41.0		49.0						60.0	60.0	
Total Split (%)		27.3%		32.7%						40.0%	40.0%	
Maximum Green (s)		35.0		43.0						54.0	54.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		69.0			112.3						25.7	
Actuated g/C Ratio		0.46			0.75						0.17	
v/c Ratio		0.48			0.58						0.69	
Control Delay		29.9			20.9						64.3	
Queue Delay		0.0			2.2						0.0	
Total Delay		29.9			23.0						64.3	
LOS		C			C						E	
Approach Delay		29.9			23.0						64.3	
Approach LOS		C			C						E	
Queue Length 50th (ft)		247			255						203	
Queue Length 95th (ft)		295			369						205	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		803			1007						1311	
Starvation Cap Reductn		0			288						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.48			0.80						0.32	

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	7 (5%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	37.4
Intersection LOS:	D
Intersection Capacity Utilization:	63.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	139					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	522	0	0	1132	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	641	0	0	1390	252

Major/Minor	Minor2	Major2
Conflicting Flow All	- 821	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 318	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 318	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	495.1	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	318	-	-
HCM Lane V/C Ratio	2.016	-	-
HCM Control Delay (s)	\$ 495.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	45.7	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	69	622	152	155	59	177	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.90	0.92			0.98	0.89
Frt		0.970			0.971			0.887				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1512	0	0	1818	1583
Flt Permitted	0.950			0.159			0.752				0.862	
Satd. Flow (perm)	1685	3304	0	276	3130	0	1258	1512	0	0	1566	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			38			110				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			127				706
Travel Time (s)		34.3			4.0			2.9				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	85	764	187	190	72	217	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	289	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	79.0		67.0	67.0		14.0	41.0		27.0	27.0	27.0
Total Split (%)	10.0%	65.8%		55.8%	55.8%		11.7%	34.2%		22.5%	22.5%	22.5%
Maximum Green (s)	6.0	73.0		61.0	61.0		8.0	35.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	75.0		63.0	63.0		36.0	37.0			23.0	23.0
Actuated g/C Ratio	0.07	0.62		0.52	0.52		0.30	0.31			0.19	0.19
v/c Ratio	1.09	0.58		0.59	0.57		0.46	0.53			0.03	0.02
Control Delay	161.9	13.9		39.9	20.2		39.1	24.8			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	161.9	13.9		39.9	20.2		39.1	24.8			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		28.3			21.8			30.5			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	~113	255		44	243		115	113			5	0
Queue Length 95th (ft)	#240	315		#127	306		183	203			19	0
Internal Link Dist (ft)		1427			94			47			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	2083		144	1661		415	542			300	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	1.09	0.58		0.59	0.57		0.46	0.53			0.03	0.02




Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 60 (50%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 26.3 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	64.9
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	246	187	274	3
Future Vol, veh/h	54	144	406	224	326	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	177	499	275	400	79
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	14.6	104.2	26.9
HCM LOS	B	F	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	27%	84%
Vol Thru, %	64%	0%	16%
Vol Right, %	36%	73%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	630	198	390
LT Vol	0	54	326
Through Vol	406	0	64
RT Vol	224	144	0
Lane Flow Rate	774	243	479
Geometry Grp	1	1	1
Degree of Util (X)	1.149	0.428	0.773
Departure Headway (Hd)	5.346	6.688	6.116
Convergence, Y/N	Yes	Yes	Yes
Cap	689	542	594
Service Time	3.346	4.688	4.116
HCM Lane V/C Ratio	1.123	0.448	0.806
HCM Control Delay	104.2	14.6	26.9
HCM Lane LOS	F	B	D
HCM 95th-tile Q	24.4	2.1	7.2

Intersection						
Intersection Delay, s/veh	8.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	25		60		702	
Demand Flow Rate, veh/h	26		61		716	
Vehicles Circulating, veh/h	77		741		71	
Vehicles Exiting, veh/h	40		46		31	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.0		6.7		9.2	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.422	0.578
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	26	0	61	716	46	63
Cap Entry Lane, veh/h	1324	1324	648	1283	1410	1410
Entry HV Adj Factor	0.962	1.000	0.984	0.981	0.978	0.975
Flow Entry, veh/h	25	0	60	702	45	61
Cap Entry, veh/h	1273	1324	637	1259	1379	1375
V/C Ratio	0.020	0.000	0.094	0.558	0.033	0.045
Control Delay, s/veh	3.0	2.7	6.7	9.2	2.9	3.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	4	0	0

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	33	395	48	9	14	8
Future Vol, veh/h	33	474	193	9	149	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	582	237	11	183	27

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	248	0	-	0	907 243
Stage 1	-	-	-	-	243 -
Stage 2	-	-	-	-	664 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1318	-	-	-	306 796
Stage 1	-	-	-	-	797 -
Stage 2	-	-	-	-	512 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1318	-	-	-	292 796
Mov Cap-2 Maneuver	-	-	-	-	292 -
Stage 1	-	-	-	-	760 -
Stage 2	-	-	-	-	512 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	35.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1318	-	-	-	318
HCM Lane V/C Ratio	0.031	-	-	-	0.66
HCM Control Delay (s)	7.8	-	-	-	35.8
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	4.4

Intersection						
Int Delay, s/veh	7.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	14	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.013	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection				
Intersection Delay, s/veh	13.0			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	0
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	108	974	126	0
Demand Flow Rate, veh/h	108	975	126	0
Vehicles Circulating, veh/h	117	68	96	205
Vehicles Exiting, veh/h	88	154	129	838
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	1.000
Approach Delay, s/veh	3.7	15.2	3.7	0.0
Approach LOS	A	C	A	-
Lane	Left	Left	Left	
Designated Moves	LTR	LTR	LTR	
Assumed Moves	LTR	LTR	LTR	
RT Channelized				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	
Entry Flow, veh/h	108	975	126	
Cap Entry Lane, veh/h	1225	1287	1251	
Entry HV Adj Factor	1.000	0.999	1.000	
Flow Entry, veh/h	108	974	126	
Cap Entry, veh/h	1220	1273	1251	
V/C Ratio	0.089	0.765	0.101	
Control Delay, s/veh	3.7	15.2	3.7	
LOS	A	C	A	
95th %tile Queue, veh	0	8	0	

Intersection	
Intersection Delay, s/veh	200.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	125	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	165	18	31	266	0	35	0	46	50	171	463
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	259	28	41	354	0	61	0	80	71	242	654
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	24.2	36.2	16.1	346.7
HCM LOS	C	E	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	10%	7%
Vol Thru, %	0%	90%	90%	25%
Vol Right, %	57%	10%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	183	297	684
LT Vol	35	0	31	50
Through Vol	0	165	266	171
RT Vol	46	18	0	463
Lane Flow Rate	141	287	395	966
Geometry Grp	1	1	1	1
Degree of Util (X)	0.302	0.583	0.774	1.717
Departure Headway (Hd)	9.17	9.184	8.81	6.398
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	394	396	415	580
Service Time	7.17	7.184	6.81	4.407
HCM Lane V/C Ratio	0.358	0.725	0.952	1.666
HCM Control Delay	16.1	24.2	36.2	346.7
HCM Lane LOS	C	C	E	F
HCM 95th-tile Q	1.3	3.6	6.6	56.7

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	46	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	121	92	177	291	0	0	0	0	119	159	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.942										
Flt Protected					0.981						0.979	
Satd. Flow (prot)	0	1726	0	0	1845	0	0	0	0	0	3514	0
Flt Permitted					0.643						0.979	
Satd. Flow (perm)	0	1726	0	0	1207	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		36										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	180	137	217	357	0	0	0	0	177	236	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	317	0	0	574	0	0	0	0	0	413	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		48.0		39.0						33.0	33.0	
Total Split (%)		40.0%		32.5%						27.5%	27.5%	
Maximum Green (s)		42.0		33.0						27.0	27.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		61.8			84.8						23.2	
Actuated g/C Ratio		0.52			0.71						0.19	
v/c Ratio		0.35			0.59						0.61	
Control Delay		18.7			16.6						48.2	
Queue Delay		0.0			0.4						0.0	
Total Delay		18.7			17.0						48.2	
LOS		B			B						D	
Approach Delay		18.7			17.0						48.2	
Approach LOS		B			B						D	
Queue Length 50th (ft)		123			214						157	
Queue Length 95th (ft)		190			320						165	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		906			1160						849	
Starvation Cap Reductn		0			203						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.35			0.60						0.49	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	74 (62%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	27.3
Intersection LOS:	C
Intersection Capacity Utilization:	52.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	152.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	547	0	0	1109	203
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	672	0	0	1362	249

Major/Minor	Minor2	Major2
Conflicting Flow All	- 806	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 325	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 325	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	516.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	325	-	-
HCM Lane V/C Ratio	2.067	-	-
HCM Control Delay (s)	\$ 516.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	48.5	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	69	622	152	155	59	177	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.91	0.92			0.97	0.89
Frt		0.970			0.971			0.887				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1512	0	0	1818	1583
Flt Permitted	0.950			0.160			0.613				0.862	
Satd. Flow (perm)	1685	3304	0	278	3130	0	1040	1512	0	0	1550	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			37			114				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			127				706
Travel Time (s)		34.3			4.0			2.9				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	85	764	187	190	72	217	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	289	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	14.0	80.0		66.0	66.0		13.0	40.0		27.0	27.0	27.0
Total Split (%)	11.7%	66.7%		55.0%	55.0%		10.8%	33.3%		22.5%	22.5%	22.5%
Maximum Green (s)	8.0	74.0		60.0	60.0		7.0	34.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/03/2019

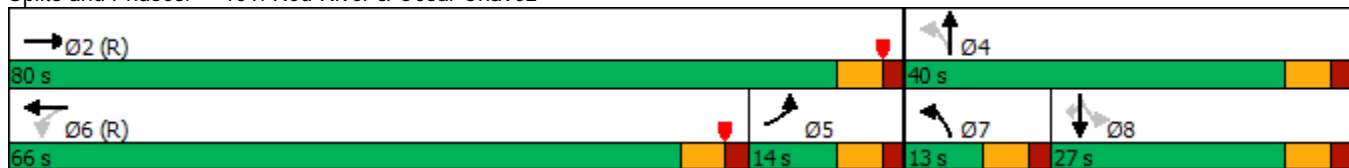


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	10.0	76.0		62.0	62.0		35.0	36.0			23.0	23.0
Actuated g/C Ratio	0.08	0.63		0.52	0.52		0.29	0.30			0.19	0.19
v/c Ratio	0.88	0.57		0.59	0.58		0.54	0.54			0.03	0.02
Control Delay	102.2	13.3		40.9	20.9		40.7	25.0			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	102.2	13.3		40.9	20.9		40.7	25.0			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		21.9			22.6			31.2			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	100	248		44	248		117	111			5	0
Queue Length 95th (ft)	#216	307		#128	313		185	203			19	0
Internal Link Dist (ft)		1427			94			47			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	147	2110		143	1635		352	533			297	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.88	0.57		0.59	0.58		0.54	0.54			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 34 (28%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 23.7 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	64.9
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	246	187	274	3
Future Vol, veh/h	54	144	406	224	326	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	177	499	275	400	79
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	14.6	104.2	26.9
HCM LOS	B	F	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	27%	84%
Vol Thru, %	64%	0%	16%
Vol Right, %	36%	73%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	630	198	390
LT Vol	0	54	326
Through Vol	406	0	64
RT Vol	224	144	0
Lane Flow Rate	774	243	479
Geometry Grp	1	1	1
Degree of Util (X)	1.149	0.428	0.773
Departure Headway (Hd)	5.346	6.688	6.116
Convergence, Y/N	Yes	Yes	Yes
Cap	689	542	594
Service Time	3.346	4.688	4.116
HCM Lane V/C Ratio	1.123	0.448	0.806
HCM Control Delay	104.2	14.6	26.9
HCM Lane LOS	F	B	D
HCM 95th-tile Q	24.4	2.1	7.2

HCM 6th TWSC
104: Driskill & Rainey St

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Intersection						
Int Delay, s/veh	7.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	395	58	0	14	0
Future Vol, veh/h	33	474	203	0	149	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	582	249	0	183	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	249	0	0	913	249
Stage 1	-	-	-	249	-
Stage 2	-	-	-	664	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1317	-	-	304	790
Stage 1	-	-	-	792	-
Stage 2	-	-	-	512	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1317	-	-	290	790
Mov Cap-2 Maneuver	-	-	-	290	-
Stage 1	-	-	-	756	-
Stage 2	-	-	-	512	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	36.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1317	-	-	-	307
HCM Lane V/C Ratio	0.031	-	-	-	0.652
HCM Control Delay (s)	7.8	0	-	-	36.3
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	4.3

Intersection						
Int Delay, s/veh	7.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	14	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.013	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection			
Intersection Delay, s/veh	6.7		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	73	625	123
Demand Flow Rate, veh/h	76	626	123
Vehicles Circulating, veh/h	117	45	66
Vehicles Exiting, veh/h	554	144	127
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	3.6	7.7	3.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	76	626	123
Cap Entry Lane, veh/h	1225	1318	1290
Entry HV Adj Factor	0.967	0.998	1.000
Flow Entry, veh/h	73	625	123
Cap Entry, veh/h	1178	1302	1290
V/C Ratio	0.062	0.480	0.095
Control Delay, s/veh	3.6	7.7	3.6
LOS	A	A	A
95th %tile Queue, veh	0	3	0

Intersection	
Intersection Delay, s/veh	176.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	76	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	116	18	31	266	0	35	0	46	50	171	463
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	182	28	41	354	0	61	0	80	71	242	654
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18	31.4	14.5	293.4
HCM LOS	C	D	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	10%	7%
Vol Thru, %	0%	87%	90%	25%
Vol Right, %	57%	13%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	134	297	684
LT Vol	35	0	31	50
Through Vol	0	116	266	171
RT Vol	46	18	0	463
Lane Flow Rate	141	210	395	966
Geometry Grp	1	1	1	1
Degree of Util (X)	0.28	0.422	0.744	1.598
Departure Headway (Hd)	8.328	8.772	8.172	5.955
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	434	414	446	609
Service Time	6.328	6.772	6.172	4.028
HCM Lane V/C Ratio	0.325	0.507	0.886	1.586
HCM Control Delay	14.5	18	31.4	293.4
HCM Lane LOS	B	C	D	F
HCM 95th-tile Q	1.1	2	6.1	51.6

Lanes, Volumes, Timings
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	81	70	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	145	116	177	291	0	0	0	0	119	159	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.940										
Flt Protected					0.981						0.979	
Satd. Flow (prot)	0	1721	0	0	1845	0	0	0	0	0	3514	0
Flt Permitted					0.581						0.979	
Satd. Flow (perm)	0	1721	0	0	1091	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	216	172	217	357	0	0	0	0	177	236	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	388	0	0	574	0	0	0	0	0	413	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		53.0		41.0						26.0	26.0	
Total Split (%)		44.2%		34.2%						21.7%	21.7%	
Maximum Green (s)		47.0		35.0						20.0	20.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lag						Lead	Lead	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		62.4			86.0						22.0	
Actuated g/C Ratio		0.52			0.72						0.18	
v/c Ratio		0.42			0.62						0.64	
Control Delay		18.8			12.3						50.6	
Queue Delay		0.0			0.5						0.0	
Total Delay		18.8			12.8						50.6	
LOS		B			B						D	
Approach Delay		18.8			12.8						50.6	
Approach LOS		B			B						D	
Queue Length 50th (ft)		157			214						157	
Queue Length 95th (ft)		217			290						174	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		913			1050						644	
Starvation Cap Reductn		0			163						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.42			0.65						0.64	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	100 (83%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	25.8
Intersection LOS:	C
Intersection Capacity Utilization:	63.9%
ICU Level of Service:	B
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019

Splits and Phases: 114: I-35 SBFR & River St



Intersection

Int Delay, s/veh 152.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	547	0	0	1109	203
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	672	0	0	1362	249

Major/Minor	Minor2	Major2
Conflicting Flow All	- 806	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 325	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 325	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	516.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	325	-	-
HCM Lane V/C Ratio	2.067	-	-
HCM Control Delay (s)	\$ 516.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	48.5	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	134	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96			0.96		0.90	0.92			0.97	0.89
Frt		0.967			0.971			0.896				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3279	0	1676	3130	0	1770	1538	0	0	1818	1583
Flt Permitted	0.950			0.151			0.752				0.872	
Satd. Flow (perm)	1688	3279	0	266	3130	0	1258	1538	0	0	1578	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			38			97				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			141				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	134	964	277	88	791	193	197	75	170	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	1241	0	88	984	0	197	245	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	80.0		68.0	68.0		13.0	40.0		27.0	27.0	27.0
Total Split (%)	10.0%	66.7%		56.7%	56.7%		10.8%	33.3%		22.5%	22.5%	22.5%
Maximum Green (s)	6.0	74.0		62.0	62.0		7.0	34.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/04/2019

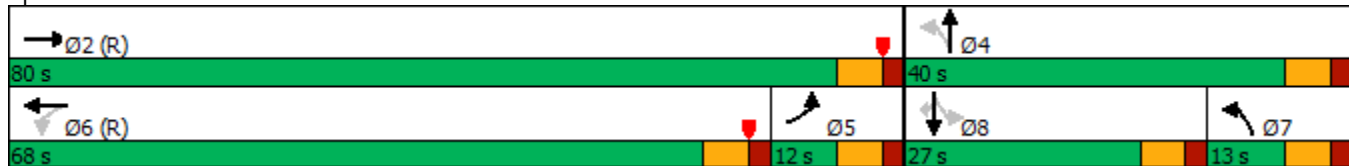


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	76.0		64.0	64.0		35.0	36.0			23.0	23.0
Actuated g/C Ratio	0.07	0.63		0.53	0.53		0.29	0.30			0.19	0.19
v/c Ratio	1.14	0.59		0.62	0.58		0.49	0.46			0.03	0.02
Control Delay	173.9	13.6		41.3	18.2		40.9	23.3			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	173.9	13.6		41.3	18.2		40.9	23.3			39.9	0.0
LOS	F	B		D	B		D	C			D	A
Approach Delay		29.2			20.1			31.1			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	~121	261		41	227		122	91			5	0
Queue Length 95th (ft)	#250	323		#138	283		191	170			19	0
Internal Link Dist (ft)		1427			94			61			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	2098		141	1687		401	529			302	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	1.14	0.59		0.62	0.58		0.49	0.46			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 80 (67%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 26.1 Intersection LOS: C
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	72.1
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	49	264	138	80	197
Future Vol, veh/h	197	106	369	152	172	311
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	242	130	453	187	211	382
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	26.7	91.1	80
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	65%	36%
Vol Thru, %	71%	0%	64%
Vol Right, %	29%	35%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	521	303	483
LT Vol	0	197	172
Through Vol	369	0	311
RT Vol	152	106	0
Lane Flow Rate	640	372	593
Geometry Grp	1	1	1
Degree of Util (X)	1.096	0.719	1.056
Departure Headway (Hd)	6.376	7.264	6.675
Convergence, Y/N	Yes	Yes	Yes
Cap	576	502	546
Service Time	4.376	5.264	4.675
HCM Lane V/C Ratio	1.111	0.741	1.086
HCM Control Delay	91.1	26.7	80
HCM Lane LOS	F	D	F
HCM 95th-tile Q	19	5.8	16.6

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

10/04/2019

Intersection						
Intersection Delay, s/veh	6.6					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	25		62		560	
Demand Flow Rate, veh/h	26		63		571	
Vehicles Circulating, veh/h	581		596		81	
Vehicles Exiting, veh/h	42		56		525	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.8		5.7		7.5	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.091	0.909
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	26	0	63	571	56	557
Cap Entry Lane, veh/h	837	837	751	1270	1407	1407
Entry HV Adj Factor	0.962	1.000	0.984	0.980	0.982	0.980
Flow Entry, veh/h	25	0	62	560	55	546
Cap Entry, veh/h	805	837	739	1246	1382	1379
V/C Ratio	0.031	0.000	0.084	0.449	0.040	0.396
Control Delay, s/veh	4.8	4.3	5.7	7.5	2.9	6.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	2	0	2

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	156	120	9	11	11
Future Vol, veh/h	76	252	339	9	53	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	320	431	11	67	32

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	442	0	0	951	437
Stage 1	-	-	-	437	-
Stage 2	-	-	-	514	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	288	620
Stage 1	-	-	-	651	-
Stage 2	-	-	-	600	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1118	-	-	257	620
Mov Cap-2 Maneuver	-	-	-	257	-
Stage 1	-	-	-	582	-
Stage 2	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	21.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1118	-	-	-	316
HCM Lane V/C Ratio	0.086	-	-	-	0.314
HCM Control Delay (s)	8.5	0	-	-	21.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.3

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	39	6	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	28	0	67
Stage 1	-	-	-	-	28
Stage 2	-	-	-	-	39
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1585	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	938
Mov Cap-2 Maneuver	-	-	-	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1585	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection			
Intersection Delay, s/veh	6.9		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	515	200	463
Demand Flow Rate, veh/h	516	200	480
Vehicles Circulating, veh/h	119	433	75
Vehicles Exiting, veh/h	514	122	560
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	7.3	6.4	6.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	516	200	480
Cap Entry Lane, veh/h	1222	887	1278
Entry HV Adj Factor	0.998	1.000	0.965
Flow Entry, veh/h	515	200	463
Cap Entry, veh/h	1207	887	1227
V/C Ratio	0.427	0.225	0.377
Control Delay, s/veh	7.3	6.4	6.6
LOS	A	A	A
95th %tile Queue, veh	2	1	2

Intersection	
Intersection Delay, s/veh	36.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	297	18	66	191	0	25	0	46	62	71	168
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	466	28	88	254	0	43	0	80	88	100	237
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	52.4	25.2	14.1	33.3
HCM LOS	F	D	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	35%	0%	26%	21%
Vol Thru, %	0%	94%	74%	24%
Vol Right, %	65%	6%	0%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	315	257	301
LT Vol	25	0	66	62
Through Vol	0	297	191	71
RT Vol	46	18	0	168
Lane Flow Rate	123	494	342	425
Geometry Grp	1	1	1	1
Degree of Util (X)	0.277	0.941	0.69	0.811
Departure Headway (Hd)	8.074	6.849	7.272	6.867
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	448	529	495	523
Service Time	6.074	4.928	5.363	4.946
HCM Lane V/C Ratio	0.275	0.934	0.691	0.813
HCM Control Delay	14.1	52.4	25.2	33.3
HCM Lane LOS	B	F	D	D
HCM 95th-tile Q	1.1	11.8	5.2	7.8

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	223	183	177	251	0	0	0	0	141	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.939										
Flt Protected					0.980						0.976	
Satd. Flow (prot)	0	1718	0	0	1844	0	0	0	0	0	3506	0
Flt Permitted					0.324						0.976	
Satd. Flow (perm)	0	1718	0	0	610	0	0	0	0	0	3506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	343	282	225	319	0	0	0	0	217	219	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	625	0	0	544	0	0	0	0	0	436	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		37.0		28.0						55.0	55.0	
Total Split (%)		30.8%		23.3%						45.8%	45.8%	
Maximum Green (s)		31.0		22.0						49.0	49.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		60.2			84.2						23.8	
Actuated g/C Ratio		0.50			0.70						0.20	
v/c Ratio		0.71			0.81						0.63	
Control Delay		27.9			36.7						48.2	
Queue Delay		0.0			1.0						0.0	
Total Delay		27.9			37.7						48.2	
LOS		C			D						D	
Approach Delay		27.9			37.7						48.2	
Approach LOS		C			D						D	
Queue Length 50th (ft)		333			182						167	
Queue Length 95th (ft)		398			#326						171	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		879			674						1490	
Starvation Cap Reductn		0			28						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.71			0.84						0.29	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 112 (93%), Referenced to phase 12:EBWB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 36.7
 Intersection LOS: D
 Intersection Capacity Utilization 66.6%
 ICU Level of Service C
 Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	18.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	256	0	0	1004	348
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	326	0	0	1277	443

Major/Minor	Minor2	Major2
Conflicting Flow All	- 860	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 299	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 299	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	116.4	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	299	-	-
HCM Lane V/C Ratio	1.089	-	-
HCM Control Delay (s)	116.4	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	12.8	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	134	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.95		0.98	0.96		0.89	0.92			0.97	0.88
Frt		0.966			0.971			0.896				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3265	0	1676	3121	0	1770	1528	0	0	1818	1583
Flt Permitted	0.950			0.167			0.752				0.871	
Satd. Flow (perm)	1678	3265	0	289	3121	0	1246	1528	0	0	1573	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			36			89				126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			141				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	931	268	85	764	187	190	72	165	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	237	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	15.0	89.0		74.0	74.0		14.0	41.0		27.0	27.0	27.0
Total Split (%)	11.5%	68.5%		56.9%	56.9%		10.8%	31.5%		20.8%	20.8%	20.8%
Maximum Green (s)	9.0	83.0		68.0	68.0		8.0	35.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	11.0	85.0		70.0	70.0		36.0	37.0			23.0	23.0
Actuated g/C Ratio	0.08	0.65		0.54	0.54		0.28	0.28			0.18	0.18
v/c Ratio	0.87	0.56		0.55	0.56		0.50	0.48			0.03	0.02
Control Delay	103.6	12.7		34.7	19.0		45.7	27.1			44.7	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	103.6	12.7		34.7	19.0		45.7	27.1			44.7	0.2
LOS	F	B		C	B		D	C			D	A
Approach Delay		21.5			20.3			35.3			25.6	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	109	255		41	234		130	101			6	0
Queue Length 95th (ft)	#226	311		117	291		202	184			21	0
Internal Link Dist (ft)		1427			94			61			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	149	2155		155	1697		381	498			278	349
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.87	0.56		0.55	0.56		0.50	0.48			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 46 (35%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 23.2 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	67.9
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	49	251	138	80	197
Future Vol, veh/h	197	106	356	152	172	311
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	242	130	437	187	211	382
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	26.6	81.5	79.5
HCM LOS	D	F	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	65%	36%
Vol Thru, %	70%	0%	64%
Vol Right, %	30%	35%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	508	303	483
LT Vol	0	197	172
Through Vol	356	0	311
RT Vol	152	106	0
Lane Flow Rate	624	372	593
Geometry Grp	1	1	1
Degree of Util (X)	1.066	0.719	1.055
Departure Headway (Hd)	6.371	7.226	6.641
Convergence, Y/N	Yes	Yes	Yes
Cap	574	502	552
Service Time	4.371	5.226	4.641
HCM Lane V/C Ratio	1.087	0.741	1.074
HCM Control Delay	81.5	26.6	79.5
HCM Lane LOS	F	D	F
HCM 95th-tile Q	17.5	5.8	16.6

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

10/03/2019

Intersection						
Intersection Delay, s/veh	6.3					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	25		60		524	
Demand Flow Rate, veh/h	26		61		534	
Vehicles Circulating, veh/h	562		559		79	
Vehicles Exiting, veh/h	40		54		508	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.7		5.5		7.0	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.091	0.909
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	26	0	61	534	54	538
Cap Entry Lane, veh/h	851	851	780	1273	1407	1407
Entry HV Adj Factor	0.962	1.000	0.984	0.980	0.981	0.980
Flow Entry, veh/h	25	0	60	524	53	527
Cap Entry, veh/h	819	851	767	1248	1381	1379
V/C Ratio	0.031	0.000	0.078	0.419	0.038	0.382
Control Delay, s/veh	4.7	4.2	5.5	7.0	2.9	6.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	2	0	2

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	156	48	9	11	11
Future Vol, veh/h	76	252	267	9	53	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	310	328	11	65	31

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	339	0	0	830	334
Stage 1	-	-	-	334	-
Stage 2	-	-	-	496	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1220	-	-	340	708
Stage 1	-	-	-	725	-
Stage 2	-	-	-	612	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1220	-	-	309	708
Mov Cap-2 Maneuver	-	-	-	309	-
Stage 1	-	-	-	658	-
Stage 2	-	-	-	612	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1220	-	-	-	377
HCM Lane V/C Ratio	0.077	-	-	-	0.254
HCM Control Delay (s)	8.2	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	0	0	38	6	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	27	0	65
Stage 1	-	-	-	-	27
Stage 2	-	-	-	-	38
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1587	-	941
Stage 1	-	-	-	-	996
Stage 2	-	-	-	-	984
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1587	-	941
Mov Cap-2 Maneuver	-	-	-	-	941
Stage 1	-	-	-	-	996
Stage 2	-	-	-	-	984

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	941	-	-	1587	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection			
Intersection Delay, s/veh	5.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	322	498	123
Demand Flow Rate, veh/h	333	499	123
Vehicles Circulating, veh/h	73	45	279
Vehicles Exiting, veh/h	471	357	127
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	5.3	6.4	4.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	333	499	123
Cap Entry Lane, veh/h	1281	1318	1038
Entry HV Adj Factor	0.968	0.998	1.000
Flow Entry, veh/h	322	498	123
Cap Entry, veh/h	1234	1301	1038
V/C Ratio	0.261	0.383	0.118
Control Delay, s/veh	5.3	6.4	4.5
LOS	A	A	A
95th %tile Queue, veh	1	2	0

Intersection	
Intersection Delay, s/veh	36.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↕			↕	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	297	18	66	191	0	25	0	46	62	71	168
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	466	28	88	254	0	43	0	80	88	100	237
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	52.4	25.2	14.1	33.3
HCM LOS	F	D	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	35%	0%	26%	21%
Vol Thru, %	0%	94%	74%	24%
Vol Right, %	65%	6%	0%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	315	257	301
LT Vol	25	0	66	62
Through Vol	0	297	191	71
RT Vol	46	18	0	168
Lane Flow Rate	123	494	342	425
Geometry Grp	1	1	1	1
Degree of Util (X)	0.277	0.941	0.69	0.811
Departure Headway (Hd)	8.074	6.849	7.272	6.867
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	448	529	495	523
Service Time	6.074	4.928	5.363	4.946
HCM Lane V/C Ratio	0.275	0.934	0.691	0.813
HCM Control Delay	14.1	52.4	25.2	33.3
HCM Lane LOS	B	F	D	D
HCM 95th-tile Q	1.1	11.8	5.2	7.8

Lanes, Volumes, Timings
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	223	183	177	251	0	0	0	0	141	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.939										
Flt Protected					0.980						0.976	
Satd. Flow (prot)	0	1717	0	0	1844	0	0	0	0	0	3506	0
Flt Permitted					0.386						0.976	
Satd. Flow (perm)	0	1717	0	0	726	0	0	0	0	0	3506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	332	272	217	308	0	0	0	0	210	211	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	604	0	0	525	0	0	0	0	0	421	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		27.0						64.0	64.0	
Total Split (%)		30.0%		20.8%						49.2%	49.2%	
Maximum Green (s)		33.0		21.0						58.0	58.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		70.7			93.7							24.3
Actuated g/C Ratio		0.54			0.72							0.19
v/c Ratio		0.64			0.73							0.64
Control Delay		24.0			28.5							53.4
Queue Delay		0.0			0.7							0.0
Total Delay		24.0			29.2							53.4
LOS		C			C							D
Approach Delay		24.0			29.2							53.4
Approach LOS		C			C							D
Queue Length 50th (ft)		316			183							176
Queue Length 95th (ft)		375			287							180
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		947			720							1618
Starvation Cap Reductn		0			43							0
Spillback Cap Reductn		0			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		0.64			0.78							0.26

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	33.7
Intersection LOS:	C
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
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Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	14.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	256	0	0	1004	348
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	314	0	0	1233	427

Major/Minor	Minor2	Major2
Conflicting Flow All	- 830	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 313	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 313	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	89.6	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	313	-	-
HCM Lane V/C Ratio	1.005	-	-
HCM Control Delay (s)	89.6	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	10.9	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	69	622	152	155	59	134	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96			0.96		0.91	0.92			0.96	0.89
Frt		0.966			0.971			0.896				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3275	0	1676	3130	0	1770	1538	0	0	1818	1583
Flt Permitted	0.950			0.149			0.613				0.874	
Satd. Flow (perm)	1685	3275	0	263	3130	0	1040	1538	0	0	1568	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			36			103				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			139				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	931	268	85	764	187	190	72	165	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	85	951	0	190	237	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	76.0		64.0	64.0		17.0	44.0		27.0	27.0	27.0
Total Split (%)	10.0%	63.3%		53.3%	53.3%		14.2%	36.7%		22.5%	22.5%	22.5%
Maximum Green (s)	6.0	70.0		58.0	58.0		11.0	38.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

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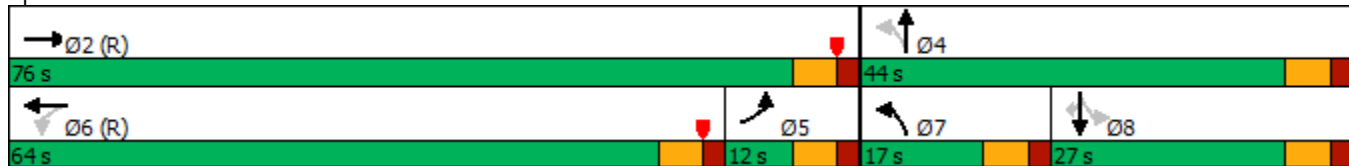


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	72.0		60.0	60.0		39.0	40.0			23.0	23.0
Actuated g/C Ratio	0.07	0.60		0.50	0.50		0.32	0.33			0.19	0.19
v/c Ratio	1.09	0.60		0.65	0.60		0.46	0.41			0.03	0.02
Control Delay	161.9	15.8		46.6	20.5		34.9	19.3			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	161.9	15.8		46.6	20.5		34.9	19.3			39.9	0.0
LOS	F	B		D	C		C	B			D	A
Approach Delay		30.0			22.7			26.3			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	~113	275		42	234		111	76			5	0
Queue Length 95th (ft)	#240	341		#138	293		176	149			19	0
Internal Link Dist (ft)		1427			94			59			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	1987		131	1583		411	581			300	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	1.09	0.60		0.65	0.60		0.46	0.41			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 64 (53%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 26.7 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	39
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	270	138	26	251
Future Vol, veh/h	91	106	375	175	78	312
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	130	461	215	96	383
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	14.7	57.1	25.7
HCM LOS	B	F	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	46%	20%
Vol Thru, %	68%	0%	80%
Vol Right, %	32%	54%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	550	197	390
LT Vol	0	91	78
Through Vol	375	0	312
RT Vol	175	106	0
Lane Flow Rate	676	242	479
Geometry Grp	1	1	1
Degree of Util (X)	0.998	0.439	0.769
Departure Headway (Hd)	5.321	6.534	5.782
Convergence, Y/N	Yes	Yes	Yes
Cap	676	547	623
Service Time	3.391	4.625	3.859
HCM Lane V/C Ratio	1	0.442	0.769
HCM Control Delay	57.1	14.7	25.7
HCM Lane LOS	F	B	D
HCM 95th-tile Q	15.7	2.2	7.1

Intersection						
Intersection Delay, s/veh	5.7					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	25		167		462	
Demand Flow Rate, veh/h	26		170		471	
Vehicles Circulating, veh/h	140		496		79	
Vehicles Exiting, veh/h	40		54		86	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.2		6.6		6.4	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.303	0.697
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	26	0	170	471	54	124
Cap Entry Lane, veh/h	1250	1250	832	1273	1418	1418
Entry HV Adj Factor	0.962	1.000	0.982	0.980	0.981	0.979
Flow Entry, veh/h	25	0	167	462	53	121
Cap Entry, veh/h	1202	1250	817	1248	1391	1387
V/C Ratio	0.021	0.000	0.204	0.370	0.038	0.087
Control Delay, s/veh	3.2	2.9	6.6	6.4	2.9	3.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	0

HCM 6th TWSC
104: Driskill & Rainey St

10/03/2019

Intersection						
Int Delay, s/veh	10.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	327	48	9	14	8
Future Vol, veh/h	76	406	235	9	149	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	499	289	11	183	27

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	300	0	-	0	980 295
Stage 1	-	-	-	-	295 -
Stage 2	-	-	-	-	685 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1261	-	-	-	277 744
Stage 1	-	-	-	-	755 -
Stage 2	-	-	-	-	500 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1261	-	-	-	249 744
Mov Cap-2 Maneuver	-	-	-	-	249 -
Stage 1	-	-	-	-	678 -
Stage 2	-	-	-	-	500 -

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	52
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1261	-	-	-	272
HCM Lane V/C Ratio	0.074	-	-	-	0.772
HCM Control Delay (s)	8.1	0	-	-	52
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	5.8

Intersection						
Int Delay, s/veh	8.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	87	0
Future Vol, veh/h	0	0	0	0	92	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	113	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.111	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection			
Intersection Delay, s/veh	8.8		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	656	275	0
Demand Flow Rate, veh/h	658	275	0
Vehicles Circulating, veh/h	197	0	232
Vehicles Exiting, veh/h	78	232	623
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	10.7	4.3	0.0
Approach LOS	B	A	-
Lane	Left	Left	Left
Designated Moves	R	TR	LT
Assumed Moves	R	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	658	275	0
Cap Entry Lane, veh/h	1129	1380	1089
Entry HV Adj Factor	0.997	1.000	1.000
Flow Entry, veh/h	656	275	0
Cap Entry, veh/h	1113	1380	1084
V/C Ratio	0.589	0.199	0.000
Control Delay, s/veh	10.7	4.3	3.3
LOS	B	A	A
95th %tile Queue, veh	4	1	0

Intersection	
Intersection Delay, s/veh	136.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	76	16	18	175	0	20	0	21	5	134	293
Future Vol, veh/h	0	127	18	66	191	0	25	0	46	62	227	343
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	199	28	88	254	0	43	0	80	88	321	484
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.4	23.9	13.2	226.7
HCM LOS	C	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	35%	0%	26%	10%
Vol Thru, %	0%	88%	74%	36%
Vol Right, %	65%	12%	0%	54%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	145	257	632
LT Vol	25	0	66	62
Through Vol	0	127	191	227
RT Vol	46	18	0	343
Lane Flow Rate	123	228	342	893
Geometry Grp	1	1	1	1
Degree of Util (X)	0.237	0.441	0.643	1.445
Departure Headway (Hd)	7.778	8.137	7.849	5.827
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	464	446	465	625
Service Time	5.778	6.137	5.849	3.89
HCM Lane V/C Ratio	0.265	0.511	0.735	1.429
HCM Control Delay	13.2	17.4	23.9	226.7
HCM Lane LOS	B	C	C	F
HCM 95th-tile Q	0.9	2.2	4.4	41.9

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	46	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	144	92	177	251	0	0	0	0	146	159	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.947										
Flt Protected					0.980						0.977	
Satd. Flow (prot)	0	1738	0	0	1844	0	0	0	0	0	3509	0
Flt Permitted					0.609						0.977	
Satd. Flow (perm)	0	1738	0	0	1143	0	0	0	0	0	3509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	214	137	217	308	0	0	0	0	217	236	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	351	0	0	525	0	0	0	0	0	453	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		55.0		39.0						26.0	26.0	
Total Split (%)		45.8%		32.5%						21.7%	21.7%	
Maximum Green (s)		49.0		33.0						20.0	20.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lag						Lead	Lead	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		64.3			86.0						22.0	
Actuated g/C Ratio		0.54			0.72						0.18	
v/c Ratio		0.37			0.56						0.70	
Control Delay		16.9			10.3						52.7	
Queue Delay		0.0			0.4						0.0	
Total Delay		16.9			10.7						52.7	
LOS		B			B						D	
Approach Delay		16.9			10.7						52.7	
Approach LOS		B			B						D	
Queue Length 50th (ft)		135			174						174	
Queue Length 95th (ft)		184			238						191	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		946			1061						643	
Starvation Cap Reductn		0			173						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.37			0.59						0.70	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	20 (17%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	26.6
Intersection LOS:	C
Intersection Capacity Utilization:	52.2%
ICU Level of Service:	A
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/03/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	165					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	341	0	0	881	58
Future Vol, veh/h	0	555	0	0	1107	245
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	682	0	0	1360	301

Major/Minor	Minor2	Major2
Conflicting Flow All	- 831	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 313	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 313	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	\$ 567	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	313	-	-
HCM Lane V/C Ratio	2.178	-	-
HCM Control Delay (s)	\$ 567	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	51.1	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix
Synchro Reports - Weekend Peak 60/40 Mode Split

Scenario 1a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	98	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.95		0.97	0.95		0.90	0.92			0.95	0.87
Frt		0.967			0.970			0.911				0.850
Flt Protected	0.950			0.950			0.950				0.969	
Satd. Flow (prot)	1770	3257	0	1676	3105	0	1770	1566	0	0	1805	1583
Flt Permitted	0.950			0.203			0.610				0.807	
Satd. Flow (perm)	1667	3257	0	347	3105	0	1018	1566	0	0	1424	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			37			50				117
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			124				358
Travel Time (s)		34.3			4.0			2.8				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.84	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	158	1020	293	103	740	185	199	95	140	9	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1313	0	103	925	0	199	235	0	0	14	13
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	19.0	103.0		84.0	84.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.6%	73.6%		60.0%	60.0%		7.1%	26.4%		19.3%	19.3%	19.3%
Maximum Green (s)	13.0	97.0		78.0	78.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	15.0	99.0		80.0	80.0		32.0	33.0			23.0	23.0
Actuated g/C Ratio	0.11	0.71		0.57	0.57		0.23	0.24			0.16	0.16
v/c Ratio	0.84	0.57		0.52	0.52		0.77	0.58			0.06	0.04
Control Delay	94.7	10.5		30.0	18.7		69.4	43.3			50.3	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	94.7	10.5		30.0	18.7		69.4	43.3			50.3	0.2
LOS	F	B		C	B		E	D			D	A
Approach Delay		19.6			19.8			55.3			26.2	
Approach LOS		B			B			E			C	
Queue Length 50th (ft)	143	265		55	248		159	150			11	0
Queue Length 95th (ft)	#193	281		80	305		#256	168			27	0
Internal Link Dist (ft)		1427			94			44			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	189	2322		198	1790		259	407			233	324
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.84	0.57		0.52	0.52		0.77	0.58			0.06	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 27 (19%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 24.9 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	21.6
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	30	259	160	20	167	211
Peak Hour Factor	0.89	0.85	0.77	0.61	0.75	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	344	235	37	252	277
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	16.4	13.5	29.6
HCM LOS	C	B	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	44%
Vol Thru, %	89%	0%	56%
Vol Right, %	11%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	180	289	378
LT Vol	0	30	167
Through Vol	160	0	211
RT Vol	20	259	0
Lane Flow Rate	272	382	529
Geometry Grp	1	1	1
Degree of Util (X)	0.442	0.59	0.824
Departure Headway (Hd)	5.848	5.558	5.607
Convergence, Y/N	Yes	Yes	Yes
Cap	612	646	645
Service Time	3.924	3.631	3.667
HCM Lane V/C Ratio	0.444	0.591	0.82
HCM Control Delay	13.5	16.4	29.6
HCM Lane LOS	B	C	D
HCM 95th-tile Q	2.3	3.9	8.7

Intersection						
Intersection Delay, s/veh	4.6					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	59		266		145	
Demand Flow Rate, veh/h	60		272		148	
Vehicles Circulating, veh/h	380		136		296	
Vehicles Exiting, veh/h	92		308		144	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.0		5.1		4.9	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.767	0.233	1.000	1.000	0.670	0.330
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	46	14	272	148	236	116
Cap Entry Lane, veh/h	1005	1005	1201	1020	1273	1273
Entry HV Adj Factor	0.978	0.980	0.979	0.981	0.979	0.981
Flow Entry, veh/h	45	14	266	145	231	114
Cap Entry, veh/h	983	985	1176	1001	1246	1249
V/C Ratio	0.046	0.014	0.226	0.145	0.185	0.091
Control Delay, s/veh	4.1	3.8	5.1	4.9	4.5	3.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

10/02/2019

Intersection												
Int Delay, s/veh	138											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	31	104	74	106	126	9	178	47	74	47	11	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	214	111	156	201	18	216	74	103	97	33	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	219	0	0	325	0	0	963	941	270	1020	987	210
Stage 1	-	-	-	-	-	-	410	410	-	522	522	-
Stage 2	-	-	-	-	-	-	553	531	-	498	465	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1350	-	-	1235	-	-	235	263	769	215	247	830
Stage 1	-	-	-	-	-	-	619	595	-	538	531	-
Stage 2	-	-	-	-	-	-	517	526	-	554	563	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1350	-	-	1235	-	-	~ 168	211	769	116	198	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 168	211	-	116	198	-
Stage 1	-	-	-	-	-	-	579	557	-	504	455	-
Stage 2	-	-	-	-	-	-	397	450	-	389	527	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			3.5			\$ 402.3			140.6		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	1350	-	-	1235	-	-	153
HCM Lane V/C Ratio	1.772	0.052	-	-	0.126	-	-	1.032
HCM Control Delay (s)	\$ 402.3	7.8	0	-	8.3	0	-	140.6
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	26.9	0.2	-	-	0.4	-	-	8

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	102	71	173	103	40
Future Vol, veh/h	59	102	93	239	138	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	82	81	92	86	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	141	130	294	181	89

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	780	226	270	0	-	0
Stage 1	226	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	364	813	1293	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	320	813	1293	-	-	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1293	-	522	-	-
HCM Lane V/C Ratio	0.1	-	0.421	-	-
HCM Control Delay (s)	8.1	0	16.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.1	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	172	2	0	104	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	2	0	128	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	213	0	340
Stage 1	-	-	-	-	212
Stage 2	-	-	-	-	128
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1357	-	656
Stage 1	-	-	-	-	823
Stage 2	-	-	-	-	898
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1357	-	656
Mov Cap-2 Maneuver	-	-	-	-	656
Stage 1	-	-	-	-	823
Stage 2	-	-	-	-	898

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1357	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection

Intersection Delay, s/veh	24.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	263	17	26	229	0	31	0	34	33	61	206
Peak Hour Factor	0.25	0.82	0.50	0.75	0.73	0.25	0.62	0.25	0.66	0.62	0.80	0.90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	38	39	354	0	57	0	58	60	86	259
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.7	26.1	13.1	24.8
HCM LOS	D	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	0%	10%	11%
Vol Thru, %	0%	94%	90%	20%
Vol Right, %	52%	6%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	280	255	300
LT Vol	31	0	26	33
Through Vol	0	263	229	61
RT Vol	34	17	0	206
Lane Flow Rate	115	401	394	405
Geometry Grp	1	1	1	1
Degree of Util (X)	0.241	0.743	0.734	0.726
Departure Headway (Hd)	7.567	6.674	6.71	6.458
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	473	541	539	559
Service Time	5.644	4.716	4.752	4.499
HCM Lane V/C Ratio	0.243	0.741	0.731	0.725
HCM Control Delay	13.1	26.7	26.1	24.8
HCM Lane LOS	B	D	D	C
HCM 95th-tile Q	0.9	6.3	6.1	6

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	170	161	177	249	0	0	0	0	97	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.940										
Flt Protected					0.981						0.977	
Satd. Flow (prot)	0	1718	0	0	1845	0	0	0	0	0	3508	0
Flt Permitted					0.508						0.977	
Satd. Flow (perm)	0	1718	0	0	956	0	0	0	0	0	3508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.25	0.74	0.88	0.82	0.71	0.25	0.25	0.25	0.25	0.74	0.82	0.25
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	260	207	244	396	0	0	0	0	148	172	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	0	640	0	0	0	0	0	320	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		35.0						66.0	66.0	
Total Split (%)		27.9%		25.0%						47.1%	47.1%	
Maximum Green (s)		33.0		29.0						60.0	60.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		74.4			105.4							22.6
Actuated g/C Ratio		0.53			0.75							0.16
v/c Ratio		0.50			0.70							0.57
Control Delay		22.1			20.8							58.4
Queue Delay		0.0			2.1							0.0
Total Delay		22.1			22.9							58.4
LOS		C			C							E
Approach Delay		22.1			22.9							58.4
Approach LOS		C			C							E
Queue Length 50th (ft)		246			228							144
Queue Length 95th (ft)		268			226							172
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		925			916							1553
Starvation Cap Reductn		0			151							0
Spillback Cap Reductn		0			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		0.50			0.84							0.21

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	47 (34%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	30.6
Intersection LOS:	C
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

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Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	8.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	223	0	0	926	242
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	315	0	0	1068	338

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	703	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	380	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	380	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	46.8	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	380	-	-
HCM Lane V/C Ratio	0.829	-	-
HCM Control Delay (s)	46.8	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	7.5	-	-

Scenario 1b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	98	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94	0.95		0.97	0.95		0.90	0.92			0.95	0.87
Frt		0.967			0.970			0.911				0.850
Flt Protected	0.950			0.950			0.950				0.969	
Satd. Flow (prot)	1770	3257	0	1676	3105	0	1770	1566	0	0	1805	1583
Flt Permitted	0.950			0.203			0.610				0.807	
Satd. Flow (perm)	1667	3257	0	347	3105	0	1018	1566	0	0	1424	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			37			50				117
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			124				358
Travel Time (s)		34.3			4.0			2.8				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.84	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	158	1020	293	103	740	185	199	95	140	9	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1313	0	103	925	0	199	235	0	0	14	13
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	19.0	103.0		84.0	84.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.6%	73.6%		60.0%	60.0%		7.1%	26.4%		19.3%	19.3%	19.3%
Maximum Green (s)	13.0	97.0		78.0	78.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/02/2019

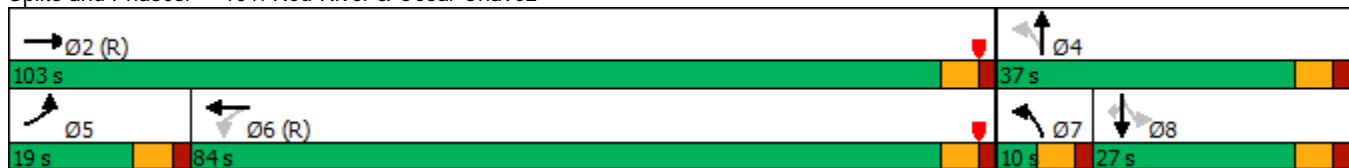


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	15.0	99.0		80.0	80.0		32.0	33.0			23.0	23.0
Actuated g/C Ratio	0.11	0.71		0.57	0.57		0.23	0.24			0.16	0.16
v/c Ratio	0.84	0.57		0.52	0.52		0.77	0.58			0.06	0.04
Control Delay	94.7	10.5		30.0	18.7		69.4	43.3			50.3	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	94.7	10.5		30.0	18.7		69.4	43.3			50.3	0.2
LOS	F	B		C	B		E	D			D	A
Approach Delay		19.6			19.8			55.3			26.2	
Approach LOS		B			B			E			C	
Queue Length 50th (ft)	143	265		55	248		159	150			11	0
Queue Length 95th (ft)	#193	281		80	305		#256	168			27	0
Internal Link Dist (ft)		1427			94			44			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	189	2322		198	1790		259	407			233	324
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.84	0.57		0.52	0.52		0.77	0.58			0.06	0.04

Intersection Summary




Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 27 (19%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 24.9 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	21.6
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	30	259	160	20	167	211
Peak Hour Factor	0.89	0.85	0.77	0.61	0.75	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	344	235	37	252	277
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	16.4	13.5	29.6
HCM LOS	C	B	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	44%
Vol Thru, %	89%	0%	56%
Vol Right, %	11%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	180	289	378
LT Vol	0	30	167
Through Vol	160	0	211
RT Vol	20	259	0
Lane Flow Rate	272	382	529
Geometry Grp	1	1	1
Degree of Util (X)	0.442	0.59	0.824
Departure Headway (Hd)	5.848	5.558	5.607
Convergence, Y/N	Yes	Yes	Yes
Cap	612	646	645
Service Time	3.924	3.631	3.667
HCM Lane V/C Ratio	0.444	0.591	0.82
HCM Control Delay	13.5	16.4	29.6
HCM Lane LOS	B	C	D
HCM 95th-tile Q	2.3	3.9	8.7

HCM 6th Roundabout
 103: Private Drive/Red River & J/Davis St

10/02/2019

Intersection						
Intersection Delay, s/veh	4.6					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	59		266		145	
Demand Flow Rate, veh/h	60		272		148	
Vehicles Circulating, veh/h	380		136		296	
Vehicles Exiting, veh/h	92		308		144	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.0		5.1		4.9	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	TR	L	TR
Assumed Moves	L	TR	LTR	TR	L	TR
RT Channelized						
Lane Util	0.767	0.233	1.000	1.000	0.670	0.330
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	46	14	272	148	236	116
Cap Entry Lane, veh/h	1005	1005	1201	1020	1273	1273
Entry HV Adj Factor	0.978	0.980	0.979	0.981	0.979	0.981
Flow Entry, veh/h	45	14	266	145	231	114
Cap Entry, veh/h	983	985	1176	1001	1246	1249
V/C Ratio	0.046	0.014	0.226	0.145	0.185	0.091
Control Delay, s/veh	4.1	3.8	5.1	4.9	4.5	3.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

10/02/2019

Intersection												
Int Delay, s/veh	138											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	31	104	74	106	126	9	178	47	74	47	11	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	214	111	156	201	18	216	74	103	97	33	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	219	0	0	325	0	0	963	941	270	1020	987	210
Stage 1	-	-	-	-	-	-	410	410	-	522	522	-
Stage 2	-	-	-	-	-	-	553	531	-	498	465	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1350	-	-	1235	-	-	235	263	769	215	247	830
Stage 1	-	-	-	-	-	-	619	595	-	538	531	-
Stage 2	-	-	-	-	-	-	517	526	-	554	563	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1350	-	-	1235	-	-	~ 168	211	769	116	198	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 168	211	-	116	198	-
Stage 1	-	-	-	-	-	-	579	557	-	504	455	-
Stage 2	-	-	-	-	-	-	397	450	-	389	527	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			3.5			\$ 402.3			140.6		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	1350	-	-	1235	-	-	153
HCM Lane V/C Ratio	1.772	0.052	-	-	0.126	-	-	1.032
HCM Control Delay (s)	\$ 402.3	7.8	0	-	8.3	0	-	140.6
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	26.9	0.2	-	-	0.4	-	-	8

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	102	71	173	103	40
Future Vol, veh/h	59	102	93	239	138	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	125	114	294	170	65

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	724	202	234	0	-	0
Stage 1	202	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	393	839	1333	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	353	839	1333	-	-	-
Mov Cap-2 Maneuver	353	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	2.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1333	-	558	-	-
HCM Lane V/C Ratio	0.086	-	0.354	-	-
HCM Control Delay (s)	8	0	15	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.6	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	69	0	0
Future Vol, veh/h	172	2	0	104	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	2	0	128	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	213	0	340
Stage 1	-	-	-	-	212
Stage 2	-	-	-	-	128
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1357	-	656
Stage 1	-	-	-	-	823
Stage 2	-	-	-	-	898
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1357	-	656
Mov Cap-2 Maneuver	-	-	-	-	656
Stage 1	-	-	-	-	823
Stage 2	-	-	-	-	898

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1357	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
110: Rainey St & River St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	49	8	56	40	176	5	26	53	99	34	23
Future Volume (vph)	13	51	8	56	40	265	5	29	53	111	34	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Ped Bike Factor		0.99			0.95			0.93			0.93	
Frt		0.985			0.903			0.928			0.973	
Flt Protected		0.991			0.992			0.995			0.971	
Satd. Flow (prot)	0	1850	0	0	1617	0	0	1636	0	0	1730	0
Flt Permitted		0.880			0.928			0.960			0.741	
Satd. Flow (perm)	0	1637	0	0	1513	0	0	1575	0	0	1250	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			291			72			29	
Link Speed (mph)		30			30			30			20	
Link Distance (ft)		184			135			829			246	
Travel Time (s)		4.2			3.1			18.8			8.4	
Confl. Peds. (#/hr)	35					35	27		77	77		27
Confl. Bikes (#/hr)			1						2			10
Peak Hour Factor	0.65	0.68	0.67	0.82	0.67	0.83	0.42	0.65	0.83	0.85	0.77	0.52
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	4%	0%	0%
Adj. Flow (vph)	23	85	13	77	67	361	13	50	72	148	50	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	505	0	0	135	0	0	248	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Efect Green (s)		19.0			19.0			19.0			19.0	

Lanes, Volumes, Timings
110: Rainey St & River St

10/02/2019

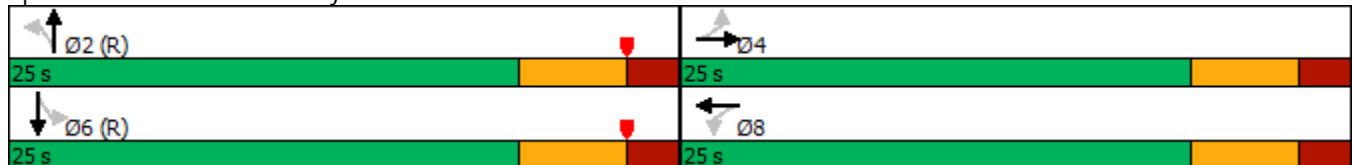


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.38			0.38			0.38			0.38	
v/c Ratio		0.19			0.67			0.21			0.50	
Control Delay		10.4			10.5			6.7			14.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.4			10.5			6.7			14.8	
LOS		B			B			A			B	
Approach Delay		10.4			10.5			6.7			14.8	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)		20			43			11			46	
Queue Length 95th (ft)		34			54			23			79	
Internal Link Dist (ft)		104			55			749			166	
Turn Bay Length (ft)												
Base Capacity (vph)		630			755			643			492	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.19			0.67			0.21			0.50	

Intersection Summary

Area Type: Other
 Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Red
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 11.0
 Intersection LOS: B
 Intersection Capacity Utilization 53.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 110: Rainey St & River St



Intersection

Intersection Delay, s/veh	24.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	263	17	26	229	0	31	0	34	33	61	206
Peak Hour Factor	0.25	0.82	0.50	0.75	0.73	0.25	0.62	0.25	0.66	0.62	0.80	0.90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	38	39	354	0	57	0	58	60	86	259
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.7	26.1	13.1	24.8
HCM LOS	D	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	0%	10%	11%
Vol Thru, %	0%	94%	90%	20%
Vol Right, %	52%	6%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	280	255	300
LT Vol	31	0	26	33
Through Vol	0	263	229	61
RT Vol	34	17	0	206
Lane Flow Rate	115	401	394	405
Geometry Grp	1	1	1	1
Degree of Util (X)	0.241	0.743	0.734	0.726
Departure Headway (Hd)	7.567	6.674	6.71	6.458
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	473	541	539	559
Service Time	5.644	4.716	4.752	4.499
HCM Lane V/C Ratio	0.243	0.741	0.731	0.725
HCM Control Delay	13.1	26.7	26.1	24.8
HCM Lane LOS	B	D	D	C
HCM 95th-tile Q	0.9	6.3	6.1	6

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	170	161	177	249	0	0	0	0	97	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.940										
Flt Protected					0.981						0.977	
Satd. Flow (prot)	0	1718	0	0	1845	0	0	0	0	0	3508	0
Flt Permitted					0.508						0.977	
Satd. Flow (perm)	0	1718	0	0	956	0	0	0	0	0	3508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.25	0.74	0.88	0.82	0.71	0.25	0.25	0.25	0.25	0.74	0.82	0.25
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	260	207	244	396	0	0	0	0	148	172	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	0	640	0	0	0	0	0	320	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		35.0						66.0	66.0	
Total Split (%)		27.9%		25.0%						47.1%	47.1%	
Maximum Green (s)		33.0		29.0						60.0	60.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		74.4			105.4							22.6
Actuated g/C Ratio		0.53			0.75							0.16
v/c Ratio		0.50			0.70							0.57
Control Delay		22.1			20.8							58.4
Queue Delay		0.0			2.1							0.0
Total Delay		22.1			22.9							58.4
LOS		C			C							E
Approach Delay		22.1			22.9							58.4
Approach LOS		C			C							E
Queue Length 50th (ft)		246			228							144
Queue Length 95th (ft)		268			226							172
Internal Link Dist (ft)		57			279			232				197
Turn Bay Length (ft)												
Base Capacity (vph)		925			916							1553
Starvation Cap Reductn		0			151							0
Spillback Cap Reductn		0			0							0
Storage Cap Reductn		0			0							0
Reduced v/c Ratio		0.50			0.84							0.21

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	47 (34%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	30.6
Intersection LOS:	C
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/02/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	8.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	223	0	0	926	242
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	315	0	0	1068	338

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	703	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	380	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	380	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	46.8	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	380	-	-
HCM Lane V/C Ratio	0.829	-	-
HCM Control Delay (s)	46.8	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	7.5	-	-

Scenario 1c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

11/11/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	96	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.97	0.96		0.90	0.93			0.95	0.88
Frt		0.967			0.970			0.911				0.850
Flt Protected	0.950			0.950			0.950				0.969	
Satd. Flow (prot)	1770	3270	0	1676	3115	0	1770	1576	0	0	1805	1583
Flt Permitted	0.950			0.193			0.610				0.812	
Satd. Flow (perm)	1674	3270	0	332	3115	0	1027	1576	0	0	1435	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		64			38			54				126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			139				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.75	0.83	0.84	0.70	0.95	0.93	0.88	0.70	0.79	0.38	0.75	0.42
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	158	1032	293	103	740	185	199	95	137	9	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1325	0	103	925	0	199	232	0	0	14	13
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	17.0	93.0		76.0	76.0		10.0	37.0		27.0	27.0	27.0
Total Split (%)	13.1%	71.5%		58.5%	58.5%		7.7%	28.5%		20.8%	20.8%	20.8%
Maximum Green (s)	11.0	87.0		70.0	70.0		4.0	31.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

11/11/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	13.0	89.0		72.0	72.0		32.0	33.0			23.0	23.0
Actuated g/C Ratio	0.10	0.68		0.55	0.55		0.25	0.25			0.18	0.18
v/c Ratio	0.89	0.59		0.56	0.53		0.71	0.53			0.06	0.04
Control Delay	102.1	11.5		33.4	18.8		58.4	36.6			45.3	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	102.1	11.5		33.4	18.8		58.4	36.6			45.3	0.2
LOS	F	B		C	B		E	D			D	A
Approach Delay		21.1			20.3			46.7			23.6	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	134	268		54	238		143	129			10	0
Queue Length 95th (ft)	#195	282		81	297		#215	149			25	0
Internal Link Dist (ft)		1427			94			59			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	177	2258		183	1742		281	440			253	349
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.89	0.59		0.56	0.53		0.71	0.53			0.06	0.04

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 73 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Red

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15




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

Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	18.7
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	176	127	17	102	175
Future Vol, veh/h	30	259	158	23	130	224
Peak Hour Factor	0.89	0.85	0.77	0.61	0.75	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	344	232	43	196	294
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	15.8	13.3	24.1
HCM LOS	C	B	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	37%
Vol Thru, %	87%	0%	63%
Vol Right, %	13%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	181	289	354
LT Vol	0	30	130
Through Vol	158	0	224
RT Vol	23	259	0
Lane Flow Rate	274	382	490
Geometry Grp	1	1	1
Degree of Util (X)	0.438	0.579	0.758
Departure Headway (Hd)	5.749	5.453	5.568
Convergence, Y/N	Yes	Yes	Yes
Cap	623	658	647
Service Time	3.817	3.517	3.624
HCM Lane V/C Ratio	0.44	0.581	0.757
HCM Control Delay	13.3	15.8	24.1
HCM Lane LOS	B	C	C
HCM 95th-tile Q	2.2	3.7	6.9

HCM 6th Roundabout
 103: Private Drive/Red River & J/Davis St

11/11/2019

Intersection						
Intersection Delay, s/veh	4.7					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	59		266		146	
Demand Flow Rate, veh/h	60		272		149	
Vehicles Circulating, veh/h	398		147		314	
Vehicles Exiting, veh/h	92		316		144	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.2		5.2		5.0	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.686	0.314
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	60	0	272	149	254	116
Cap Entry Lane, veh/h	989	989	1188	1002	1273	1273
Entry HV Adj Factor	0.983	1.000	0.979	0.982	0.980	0.981
Flow Entry, veh/h	59	0	266	146	249	114
Cap Entry, veh/h	972	989	1163	984	1248	1249
V/C Ratio	0.061	0.000	0.229	0.149	0.199	0.091
Control Delay, s/veh	4.2	3.6	5.2	5.0	4.6	3.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	1	0

HCM 6th TWSC
104: Rainey St & Driskill

11/11/2019

Intersection												
Int Delay, s/veh	116.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	69	71	48	9	127	29	65	11	3	8
Future Vol, veh/h	31	75	69	106	126	9	178	49	71	79	3	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	55	75	77	71	56	93	72	81	55	38	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	154	104	156	201	18	216	77	99	162	9	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	219	0	0	258	0	0	887	877	206	956	920	210
Stage 1	-	-	-	-	-	-	346	346	-	522	522	-
Stage 2	-	-	-	-	-	-	541	531	-	434	398	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1350	-	-	1307	-	-	265	287	835	238	271	830
Stage 1	-	-	-	-	-	-	670	635	-	538	531	-
Stage 2	-	-	-	-	-	-	525	526	-	600	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1350	-	-	1307	-	-	~ 212	233	835	~ 135	220	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 212	233	-	~ 135	220	-
Stage 1	-	-	-	-	-	-	629	596	-	505	459	-
Stage 2	-	-	-	-	-	-	429	454	-	432	566	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.7			3.4			265.6			223		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	267	1350	-	-	1307	-	-	156
HCM Lane V/C Ratio	1.469	0.052	-	-	0.119	-	-	1.281
HCM Control Delay (s)	265.6	7.8	0	-	8.1	0	-	223
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	22.3	0.2	-	-	0.4	-	-	11.8

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	57	47	173	103	40
Future Vol, veh/h	58	57	69	239	125	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	82	81	92	86	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	79	96	294	164	89

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	695	209	253	0	0
Stage 1	209	-	-	-	-
Stage 2	486	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	408	831	1312	-	-
Stage 1	826	-	-	-	-
Stage 2	618	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	373	831	1312	-	-
Mov Cap-2 Maneuver	373	-	-	-	-
Stage 1	754	-	-	-	-
Stage 2	618	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1312	-	516	-	-
HCM Lane V/C Ratio	0.073	-	0.303	-	-
HCM Control Delay (s)	8	0	15	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	140	45	0	62	24	0
Future Vol, veh/h	151	45	0	97	24	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	185	55	0	119	29	0

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	240	0	332	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1327	-	663	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1327	-	663	827
Mov Cap-2 Maneuver	-	-	-	-	663	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	906	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	663	-	-	1327	-
HCM Lane V/C Ratio	0.044	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection			
Intersection Delay, s/veh	4.6		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	0	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	0	128	262
Demand Flow Rate, veh/h	0	128	270
Vehicles Circulating, veh/h	50	216	73
Vehicles Exiting, veh/h	294	127	327
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	1.000	1.000	0.995
Approach Delay, s/veh	0.0	4.3	4.7
Approach LOS	-	A	A
Lane	Left	Left	
Designated Moves	TR	LT	
Assumed Moves	TR	LT	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	128	270	
Cap Entry Lane, veh/h	1107	1281	
Entry HV Adj Factor	1.000	0.970	
Flow Entry, veh/h	128	262	
Cap Entry, veh/h	1107	1237	
V/C Ratio	0.116	0.212	
Control Delay, s/veh	4.3	4.7	
LOS	A	A	
95th %tile Queue, veh	0	1	

Intersection	
Intersection Delay, s/veh	24.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻			↻	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	263	17	26	229	0	31	0	34	33	61	206
Peak Hour Factor	0.25	0.82	0.50	0.75	0.73	0.25	0.62	0.25	0.66	0.62	0.80	0.90
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	362	38	39	354	0	57	0	58	60	86	259
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.7	26.1	13.1	24.8
HCM LOS	D	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	0%	10%	11%
Vol Thru, %	0%	94%	90%	20%
Vol Right, %	52%	6%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	280	255	300
LT Vol	31	0	26	33
Through Vol	0	263	229	61
RT Vol	34	17	0	206
Lane Flow Rate	115	401	394	405
Geometry Grp	1	1	1	1
Degree of Util (X)	0.241	0.743	0.734	0.726
Departure Headway (Hd)	7.567	6.674	6.71	6.458
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	473	541	539	559
Service Time	5.644	4.716	4.752	4.499
HCM Lane V/C Ratio	0.243	0.741	0.731	0.725
HCM Control Delay	13.1	26.7	26.1	24.8
HCM Lane LOS	B	D	D	C
HCM 95th-tile Q	0.9	6.3	6.1	6

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	170	161	177	249	0	0	0	0	97	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frnt		0.934										
Flt Protected					0.980						0.979	
Satd. Flow (prot)	0	1705	0	0	1844	0	0	0	0	0	3514	0
Flt Permitted					0.483						0.979	
Satd. Flow (perm)	0	1705	0	0	909	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	253	239	217	306	0	0	0	0	144	186	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	492	0	0	523	0	0	0	0	0	330	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		36.0		29.0						65.0	65.0	
Total Split (%)		27.7%		22.3%						50.0%	50.0%	
Maximum Green (s)		30.0		23.0						59.0	59.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		70.6			95.6						22.4	
Actuated g/C Ratio		0.54			0.74						0.17	
v/c Ratio		0.52			0.62						0.55	
Control Delay		20.0			17.7						52.8	
Queue Delay		0.0			0.8						0.0	
Total Delay		20.0			18.5						52.8	
LOS		C			B						D	
Approach Delay		20.0			18.5						52.8	
Approach LOS		C			B						D	
Queue Length 50th (ft)		235			175						135	
Queue Length 95th (ft)		265			249						151	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		942			848						1648	
Starvation Cap Reductn		0			118						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.52			0.72						0.20	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	91 (70%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	27.5
Intersection LOS:	C
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

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Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	8.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	223	0	0	926	242
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	80	25	25	98	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	315	0	0	1068	338

Major/Minor	Minor2	Major2
Conflicting Flow All	- 703	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 380	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- 380	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	46.8	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	380	-	-
HCM Lane V/C Ratio	0.829	-	-
HCM Control Delay (s)	46.8	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	7.5	-	-

Scenario 1d

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	123	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.95			0.96		0.90	0.92			0.96	0.88
Frt		0.966			0.971			0.898				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3265	0	1676	3121	0	1770	1535	0	0	1818	1583
Flt Permitted	0.950			0.159			0.613				0.874	
Satd. Flow (perm)	1678	3265	0	281	3121	0	1031	1535	0	0	1561	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			35			84				126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			118				358
Travel Time (s)		34.3			4.0			2.7				8.1
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	931	268	79	764	187	190	72	151	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	223	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	14.0	86.0		72.0	72.0		17.0	44.0		27.0	27.0	27.0
Total Split (%)	10.8%	66.2%		55.4%	55.4%		13.1%	33.8%		20.8%	20.8%	20.8%
Maximum Green (s)	8.0	80.0		66.0	66.0		11.0	38.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/02/2019

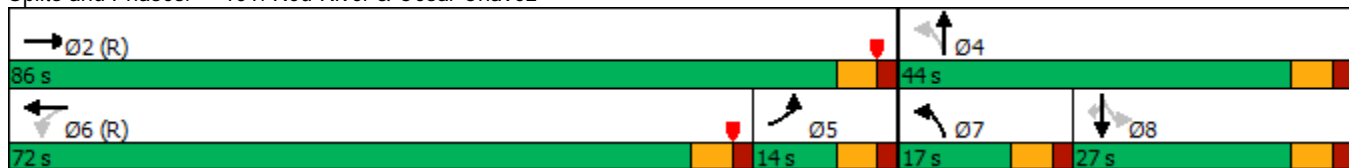


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	10.0	82.0		68.0	68.0		39.0	40.0			23.0	23.0
Actuated g/C Ratio	0.08	0.63		0.52	0.52		0.30	0.31			0.18	0.18
v/c Ratio	0.95	0.58		0.54	0.58		0.50	0.42			0.03	0.02
Control Delay	123.9	14.5		37.5	22.0		41.1	24.5			44.9	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	123.9	14.5		37.5	22.0		41.1	24.5			44.9	0.2
LOS	F	B		D	C		D	C			D	A
Approach Delay		25.2			23.2			32.2			25.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	110	275		43	268		126	91			6	0
Queue Length 95th (ft)	#238	336		109	333		195	167			21	0
Internal Link Dist (ft)		1427			94			38			278	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	136	2079		146	1649		377	530			276	349
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.95	0.58		0.54	0.58		0.50	0.42			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 84 (65%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 25.5
 Intersection LOS: C
 Intersection Capacity Utilization 72.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	116	187	17	102	175
Future Vol, veh/h	30	226	218	23	130	224
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	278	268	28	160	275
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12.9	12.8	17.6
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	12%	37%
Vol Thru, %	90%	0%	63%
Vol Right, %	10%	88%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	241	256	354
LT Vol	0	30	130
Through Vol	218	0	224
RT Vol	23	226	0
Lane Flow Rate	296	314	435
Geometry Grp	1	1	1
Degree of Util (X)	0.445	0.463	0.645
Departure Headway (Hd)	5.41	5.305	5.341
Convergence, Y/N	Yes	Yes	Yes
Cap	663	676	674
Service Time	3.454	3.352	3.38
HCM Lane V/C Ratio	0.446	0.464	0.645
HCM Control Delay	12.8	12.9	17.6
HCM Lane LOS	B	B	C
HCM 95th-tile Q	2.3	2.5	4.7

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

10/02/2019

Intersection						
Intersection Delay, s/veh	4.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	16		186		165	
Demand Flow Rate, veh/h	16		189		168	
Vehicles Circulating, veh/h	299		142		203	
Vehicles Exiting, veh/h	25		229		112	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.5		4.4		4.6	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.640	0.360
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	16	0	189	168	187	105
Cap Entry Lane, veh/h	1082	1082	1194	1122	1379	1379
Entry HV Adj Factor	1.000	1.000	0.983	0.979	0.979	0.983
Flow Entry, veh/h	16	0	186	165	183	103
Cap Entry, veh/h	1082	1082	1174	1099	1350	1356
V/C Ratio	0.015	0.000	0.158	0.150	0.136	0.076
Control Delay, s/veh	3.5	3.3	4.4	4.6	3.8	3.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	0	0

HCM 6th TWSC
104: Rainey St & Driskill /Driskill

10/02/2019

Intersection												
Int Delay, s/veh	12.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	44	69	71	48	9	67	29	65	11	3	8
Future Vol, veh/h	4	75	69	106	126	9	118	49	71	79	3	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	92	85	130	155	11	145	60	87	97	4	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	166	0	0	177	0	0	578	571	135	639	608	161
Stage 1	-	-	-	-	-	-	145	145	-	421	421	-
Stage 2	-	-	-	-	-	-	433	426	-	218	187	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1412	-	-	1399	-	-	427	431	914	389	410	884
Stage 1	-	-	-	-	-	-	858	777	-	610	589	-
Stage 2	-	-	-	-	-	-	601	586	-	784	745	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1412	-	-	1399	-	-	380	385	914	285	367	884
Mov Cap-2 Maneuver	-	-	-	-	-	-	380	385	-	285	367	-
Stage 1	-	-	-	-	-	-	855	774	-	608	529	-
Stage 2	-	-	-	-	-	-	523	526	-	651	742	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			3.4			25.3			22.6		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	462	1412	-	-	1399	-	-	325
HCM Lane V/C Ratio	0.633	0.003	-	-	0.093	-	-	0.374
HCM Control Delay (s)	25.3	7.6	-	-	7.8	0	-	22.6
HCM Lane LOS	D	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	4.3	0	-	-	0.3	-	-	1.7

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	51	36	113	0	0
Future Vol, veh/h	58	51	58	179	22	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	63	71	220	27	16

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	397	35	43	0	0
Stage 1	35	-	-	-	-
Stage 2	362	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	608	1038	1566	-	-
Stage 1	987	-	-	-	-
Stage 2	704	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	576	1038	1566	-	-
Mov Cap-2 Maneuver	576	-	-	-	-
Stage 1	936	-	-	-	-
Stage 2	704	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1566	-	728	-	-
HCM Lane V/C Ratio	0.045	-	0.184	-	-
HCM Control Delay (s)	7.4	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	98	26	0	36	48	0
Future Vol, veh/h	109	28	0	71	48	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	34	0	87	59	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	168	0	238
Stage 1	-	-	-	-	151
Stage 2	-	-	-	-	87
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1410	-	750
Stage 1	-	-	-	-	877
Stage 2	-	-	-	-	936
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1410	-	750
Mov Cap-2 Maneuver	-	-	-	-	750
Stage 1	-	-	-	-	877
Stage 2	-	-	-	-	936

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	750	-	-	1410	-
HCM Lane V/C Ratio	0.079	-	-	-	-
HCM Control Delay (s)	10.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection			
Intersection Delay, s/veh	4.6		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	0	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	0	128	262
Demand Flow Rate, veh/h	0	128	270
Vehicles Circulating, veh/h	50	216	73
Vehicles Exiting, veh/h	294	127	327
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	1.000	1.000	0.995
Approach Delay, s/veh	0.0	4.3	4.7
Approach LOS	-	A	A
Lane	Left	Left	
Designated Moves	TR	LT	
Assumed Moves	TR	LT	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	128	270	
Cap Entry Lane, veh/h	1107	1281	
Entry HV Adj Factor	1.000	0.970	
Flow Entry, veh/h	128	262	
Cap Entry, veh/h	1107	1237	
V/C Ratio	0.116	0.212	
Control Delay, s/veh	4.3	4.7	
LOS	A	A	
95th %tile Queue, veh	0	1	

Intersection	
Intersection Delay, s/veh	25.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↕			↕	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	263	17	26	229	0	31	0	34	33	61	206
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	413	27	35	304	0	54	0	59	47	86	291
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	31.9	21.5	13	26.7
HCM LOS	D	C	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	0%	10%	11%
Vol Thru, %	0%	94%	90%	20%
Vol Right, %	52%	6%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	280	255	300
LT Vol	31	0	26	33
Through Vol	0	263	229	61
RT Vol	34	17	0	206
Lane Flow Rate	113	439	339	424
Geometry Grp	1	1	1	1
Degree of Util (X)	0.237	0.808	0.644	0.756
Departure Headway (Hd)	7.565	6.617	6.844	6.425
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	472	549	525	564
Service Time	5.646	4.646	4.905	4.452
HCM Lane V/C Ratio	0.239	0.8	0.646	0.752
HCM Control Delay	13	31.9	21.5	26.7
HCM Lane LOS	B	D	C	D
HCM 95th-tile Q	0.9	7.9	4.5	6.7

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	170	161	177	249	0	0	0	0	97	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.934										
Flt Protected					0.980						0.979	
Satd. Flow (prot)	0	1705	0	0	1844	0	0	0	0	0	3514	0
Flt Permitted					0.483						0.979	
Satd. Flow (perm)	0	1705	0	0	909	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	253	239	217	306	0	0	0	0	144	186	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	492	0	0	523	0	0	0	0	0	330	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/02/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		36.0		29.0						65.0	65.0	
Total Split (%)		27.7%		22.3%						50.0%	50.0%	
Maximum Green (s)		30.0		23.0						59.0	59.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		70.6			95.6						22.4	
Actuated g/C Ratio		0.54			0.74						0.17	
v/c Ratio		0.52			0.62						0.55	
Control Delay		20.0			16.2						52.8	
Queue Delay		0.0			0.3						0.0	
Total Delay		20.0			16.4						52.8	
LOS		C			B						D	
Approach Delay		20.0			16.4						52.8	
Approach LOS		C			B						D	
Queue Length 50th (ft)		235			151						135	
Queue Length 95th (ft)		265			242						151	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		942			848						1648	
Starvation Cap Reductn		0			49						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.52			0.65						0.20	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	110 (85%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	26.7
Intersection LOS:	C
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/02/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	223	0	0	926	242
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	274	0	0	1137	297

Major/Minor	Minor2	Major2
Conflicting Flow All	- 717	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 372	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- 372	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	37.4	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	372	-	-
HCM Lane V/C Ratio	0.736	-	-
HCM Control Delay (s)	37.4	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	5.7	-	-

Scenario 2a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	64	622	152	155	59	133	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.91	0.92			0.96	0.89
Frt		0.970			0.971			0.896				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1538	0	0	1818	1583
Flt Permitted	0.950			0.158			0.613				0.874	
Satd. Flow (perm)	1685	3304	0	274	3130	0	1040	1538	0	0	1568	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			37			98				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			151				706
Travel Time (s)		34.3			4.0			3.4				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	79	764	187	190	72	163	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	235	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	13.0	79.0		66.0	66.0		14.0	41.0		27.0	27.0	27.0
Total Split (%)	10.8%	65.8%		55.0%	55.0%		11.7%	34.2%		22.5%	22.5%	22.5%
Maximum Green (s)	7.0	73.0		60.0	60.0		8.0	35.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	9.0	75.0		62.0	62.0		36.0	37.0			23.0	23.0
Actuated g/C Ratio	0.08	0.62		0.52	0.52		0.30	0.31			0.19	0.19
v/c Ratio	0.98	0.58		0.56	0.58		0.52	0.43			0.03	0.02
Control Delay	128.3	13.9		38.4	20.9		39.1	21.6			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	128.3	13.9		38.4	20.9		39.1	21.6			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		25.0			22.3			29.4			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	101	255		40	248		115	82			5	0
Queue Length 95th (ft)	#228	315		#110	313		183	158			19	0
Internal Link Dist (ft)		1427			94			71			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	132	2083		141	1635		366	542			300	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.98	0.58		0.56	0.58		0.52	0.43			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 24.7
 Intersection LOS: C
 Intersection Capacity Utilization 72.3%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	25
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	249	138	274	3
Future Vol, veh/h	43	98	351	162	337	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	120	431	199	414	48
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	11.8	31.7	20.7
HCM LOS	B	D	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	30%	90%
Vol Thru, %	68%	0%	10%
Vol Right, %	32%	70%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	513	141	376
LT Vol	0	43	337
Through Vol	351	0	39
RT Vol	162	98	0
Lane Flow Rate	630	173	462
Geometry Grp	1	1	1
Degree of Util (X)	0.869	0.297	0.705
Departure Headway (Hd)	4.966	6.167	5.493
Convergence, Y/N	Yes	Yes	Yes
Cap	731	580	656
Service Time	3.004	4.225	3.536
HCM Lane V/C Ratio	0.862	0.298	0.704
HCM Control Delay	31.7	11.8	20.7
HCM Lane LOS	D	B	C
HCM 95th-tile Q	10.5	1.2	5.8

HCM 6th Roundabout
103: Private Drive/Red River & Davis St

10/03/2019

Intersection										
Intersection Delay, s/veh	6.3									
Intersection LOS	A									
Approach	EB		WB		NB		SB			
Entry Lanes	2		1		1		2			
Conflicting Circle Lanes	1		1		1		1			
Adj Approach Flow, veh/h	16		516		107		75			
Demand Flow Rate, veh/h	16		526		109		76			
Vehicles Circulating, veh/h	72		125		53		21			
Vehicles Exiting, veh/h	25		37		35		630			
Ped Vol Crossing Leg, #/h	0		0		0		0			
Ped Cap Adj	1.000		1.000		1.000		1.000			
Approach Delay, s/veh	2.8		7.5		3.5		2.8			
Approach LOS	A		A		A		A			
Lane	Left		Right		Left		Left		Right	
Designated Moves	L		TR		LTR		TR		L TR	
Assumed Moves	L		TR		LTR		TR		L TR	
RT Channelized										
Lane Util	1.000		0.000		1.000		1.000		0.487 0.513	
Follow-Up Headway, s	2.535		2.535		2.609		2.609		2.535 2.535	
Critical Headway, s	4.544		4.544		4.976		4.976		4.544 4.544	
Entry Flow, veh/h	16		0		526		109		37 39	
Cap Entry Lane, veh/h	1330		1330		1215		1307		1393 1393	
Entry HV Adj Factor	1.000		1.000		0.981		0.980		0.973 0.991	
Flow Entry, veh/h	16		0		516		107		36 39	
Cap Entry, veh/h	1330		1330		1191		1282		1356 1381	
V/C Ratio	0.012		0.000		0.433		0.083		0.027 0.028	
Control Delay, s/veh	2.8		2.7		7.5		3.5		2.9 2.8	
LOS	A		A		A		A		A A	
95th %tile Queue, veh	0		0		2		0		0 0	

HCM 6th TWSC
104: Driskill & Rainey St

10/03/2019

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	395	48	9	14	8
Future Vol, veh/h	43	479	139	9	60	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	588	171	11	74	21

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	182	0	-	0	871 177
Stage 1	-	-	-	-	177 -
Stage 2	-	-	-	-	694 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1393	-	-	-	322 866
Stage 1	-	-	-	-	854 -
Stage 2	-	-	-	-	496 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1393	-	-	-	304 866
Mov Cap-2 Maneuver	-	-	-	-	304 -
Stage 1	-	-	-	-	805 -
Stage 2	-	-	-	-	496 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1393	-	-	-	355
HCM Lane V/C Ratio	0.038	-	-	-	0.266
HCM Control Delay (s)	7.7	0	-	-	18.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

Intersection						
Int Delay, s/veh	11.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	0	0	0	0	317	0
Future Vol, veh/h	0	0	0	0	415	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	510	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	2 1
Stage 1	-	-	-	-	1 -
Stage 2	-	-	-	-	1 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0	0	-	1021 1084
Stage 1	-	0	0	-	1022 -
Stage 2	-	0	0	-	1022 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	1021 1084
Mov Cap-2 Maneuver	-	-	-	-	1021 -
Stage 1	-	-	-	-	1022 -
Stage 2	-	-	-	-	1022 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1021	-	-
HCM Lane V/C Ratio	0.499	-	-
HCM Control Delay (s)	12	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2.9	-	-

Intersection			
Intersection Delay, s/veh	7.6		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	0
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	674	111	0
Demand Flow Rate, veh/h	686	112	0
Vehicles Circulating, veh/h	34	0	117
Vehicles Exiting, veh/h	78	117	603
Ped Vol Crossing Leg, #/h	77	0	0
Ped Cap Adj	0.989	1.000	1.000
Approach Delay, s/veh	8.4	3.3	0.0
Approach LOS	A	A	-
Lane	Left	Left	
Designated Moves	LR	TR	
Assumed Moves	LR	TR	
RT Channelized			
Lane Util	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	
Critical Headway, s	4.976	4.976	
Entry Flow, veh/h	686	112	
Cap Entry Lane, veh/h	1333	1380	
Entry HV Adj Factor	0.983	0.994	
Flow Entry, veh/h	674	111	
Cap Entry, veh/h	1296	1372	
V/C Ratio	0.520	0.081	
Control Delay, s/veh	8.4	3.3	
LOS	A	A	
95th %tile Queue, veh	3	0	

Intersection

Intersection Delay, s/veh 117.4
Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	125	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	150	17	26	229	0	31	0	36	33	160	410
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	235	27	35	304	0	54	0	63	47	226	579
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	19	23.8	13.3	199.2
HCM LOS	C	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	0%	10%	5%
Vol Thru, %	0%	90%	90%	27%
Vol Right, %	54%	10%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	167	255	603
LT Vol	31	0	26	33
Through Vol	0	150	229	160
RT Vol	36	17	0	410
Lane Flow Rate	116	262	339	852
Geometry Grp	1	1	1	1
Degree of Util (X)	0.231	0.508	0.643	1.38
Departure Headway (Hd)	7.966	7.994	7.794	5.832
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	453	453	468	622
Service Time	5.966	5.994	5.794	3.905
HCM Lane V/C Ratio	0.256	0.578	0.724	1.37
HCM Control Delay	13.3	19	23.8	199.2
HCM Lane LOS	B	C	C	F
HCM 95th-tile Q	0.9	2.8	4.4	37.4

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	46	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	96	75	177	249	0	0	0	0	99	137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.941										
Flt Protected					0.980						0.979	
Satd. Flow (prot)	0	1724	0	0	1844	0	0	0	0	0	3514	0
Flt Permitted					0.695						0.979	
Satd. Flow (perm)	0	1724	0	0	1303	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			294	
Travel Time (s)		3.1			8.2			4.7			5.7	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	143	112	217	306	0	0	0	0	147	204	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	523	0	0	0	0	0	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		53.0		41.0						26.0	26.0	
Total Split (%)		44.2%		34.2%						21.7%	21.7%	
Maximum Green (s)		47.0		35.0						20.0	20.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lag						Lead	Lead	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		65.0			86.0						22.0	
Actuated g/C Ratio		0.54			0.72						0.18	
v/c Ratio		0.27			0.51						0.55	
Control Delay		14.0			9.6						48.1	
Queue Delay		0.0			0.4						0.0	
Total Delay		14.0			10.0						48.1	
LOS		B			B						D	
Approach Delay		14.0			10.0						48.1	
Approach LOS		B			B						D	
Queue Length 50th (ft)		83			169						131	
Queue Length 95th (ft)		122			232						149	
Internal Link Dist (ft)		57			279			232			214	
Turn Bay Length (ft)												
Base Capacity (vph)		952			1144						644	
Starvation Cap Reductn		0			240						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.27			0.58						0.55	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	10 (8%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	22.8
Intersection Capacity Utilization	52.2%
Analysis Period (min)	15
Intersection LOS:	C
ICU Level of Service	A

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019

Splits and Phases: 114: I-35 SBFR & River St



Intersection

Int Delay, s/veh 79.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	463	0	0	1021	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	569	0	0	1254	183

Major/Minor	Minor2	Major2
Conflicting Flow All	- 719	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 371	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 371	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	279.7	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	371	-	-
HCM Lane V/C Ratio	1.533	-	-
HCM Control Delay (s)	279.7	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	31.5	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 2b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	64	622	152	155	59	143	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.90	0.92			0.97	0.89
Frt		0.970			0.971			0.894				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1532	0	0	1818	1583
Flt Permitted	0.950			0.161			0.752				0.871	
Satd. Flow (perm)	1685	3304	0	279	3130	0	1258	1532	0	0	1577	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			38			105				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			132				706
Travel Time (s)		34.3			4.0			3.0				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	79	764	187	190	72	176	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	248	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	13.0	80.0		67.0	67.0		13.0	40.0		27.0	27.0	27.0
Total Split (%)	10.8%	66.7%		55.8%	55.8%		10.8%	33.3%		22.5%	22.5%	22.5%
Maximum Green (s)	7.0	74.0		61.0	61.0		7.0	34.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

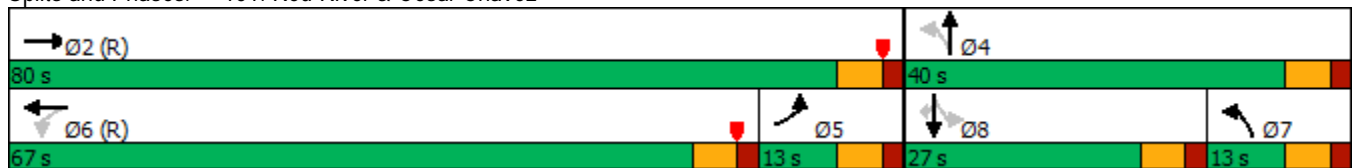
10/03/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	9.0	76.0		63.0	63.0		35.0	36.0			23.0	23.0
Actuated g/C Ratio	0.08	0.63		0.52	0.52		0.29	0.30			0.19	0.19
v/c Ratio	0.98	0.57		0.54	0.57		0.47	0.47			0.03	0.02
Control Delay	128.3	13.3		35.8	20.2		40.3	22.4			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	128.3	13.3		35.8	20.2		40.3	22.4			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		24.4			21.4			30.2			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	101	248		39	243		117	87			5	0
Queue Length 95th (ft)	#228	307		104	306		185	167			19	0
Internal Link Dist (ft)		1427			94			52			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	132	2110		146	1661		401	533			302	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.98	0.57		0.54	0.57		0.47	0.47			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 24.2 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	26.1
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	249	138	274	3
Future Vol, veh/h	45	105	354	162	338	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	129	435	199	415	48
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12.1	33.7	21.3
HCM LOS	B	D	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	30%	90%
Vol Thru, %	69%	0%	10%
Vol Right, %	31%	70%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	516	150	377
LT Vol	0	45	338
Through Vol	354	0	39
RT Vol	162	105	0
Lane Flow Rate	634	184	463
Geometry Grp	1	1	1
Degree of Util (X)	0.883	0.317	0.714
Departure Headway (Hd)	5.018	6.193	5.55
Convergence, Y/N	Yes	Yes	Yes
Cap	723	579	648
Service Time	3.06	4.254	3.596
HCM Lane V/C Ratio	0.877	0.318	0.715
HCM Control Delay	33.7	12.1	21.3
HCM Lane LOS	D	B	C
HCM 95th-tile Q	11	1.4	6

HCM 6th Roundabout
 103: Private Drive/Red River & J/Davis St

10/03/2019

Intersection								
Intersection Delay, s/veh	6.0							
Intersection LOS	A							
Approach	EB		WB		NB		SB	
Entry Lanes	2		1		1		2	
Conflicting Circle Lanes	1		1		1		1	
Adj Approach Flow, veh/h	16		434		205		78	
Demand Flow Rate, veh/h	16		443		209		79	
Vehicles Circulating, veh/h	60		225		53		6	
Vehicles Exiting, veh/h	25		37		23		662	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	2.8		7.6		4.1		2.8	
Approach LOS	A		A		A		A	
Lane	Left	Right	Left	Left	Left	Right	Right	
Designated Moves	L	TR	LTR	LTR	LTR	L	TR	
Assumed Moves	L	TR	LTR	LTR	LTR	L	TR	
RT Channelized								
Lane Util	1.000	0.000	1.000	1.000	1.000	0.468	0.532	
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.609	2.535	2.535	
Critical Headway, s	4.544	4.544	4.976	4.976	4.976	4.544	4.544	
Entry Flow, veh/h	16	0	443	209	209	37	42	
Cap Entry Lane, veh/h	1345	1345	1097	1307	1307	1412	1412	
Entry HV Adj Factor	1.000	1.000	0.980	0.981	0.981	0.973	0.990	
Flow Entry, veh/h	16	0	434	205	205	36	42	
Cap Entry, veh/h	1345	1345	1075	1282	1282	1374	1399	
V/C Ratio	0.012	0.000	0.404	0.160	0.160	0.026	0.030	
Control Delay, s/veh	2.8	2.7	7.6	4.1	4.1	2.8	2.8	
LOS	A	A	A	A	A	A	A	
95th %tile Queue, veh	0	0	2	1	1	0	0	

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	33	395	48	9	14	8
Future Vol, veh/h	33	480	138	9	46	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	590	170	11	57	21

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	180	0	-	0	847 175
Stage 1	-	-	-	-	175 -
Stage 2	-	-	-	-	672 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1396	-	-	-	332 868
Stage 1	-	-	-	-	855 -
Stage 2	-	-	-	-	508 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1396	-	-	-	317 868
Mov Cap-2 Maneuver	-	-	-	-	317 -
Stage 1	-	-	-	-	817 -
Stage 2	-	-	-	-	508 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1396	-	-	-	383
HCM Lane V/C Ratio	0.029	-	-	-	0.202
HCM Control Delay (s)	7.7	-	-	-	16.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection						
Int Delay, s/veh	11					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	0	0	340	0
Future Vol, veh/h	0	0	0	0	349	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	429	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.42	-	-	-	-
HCM Control Delay (s)	11.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	2.1	-	-	0	-

Intersection			
Intersection Delay, s/veh	8.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	12	773	125
Demand Flow Rate, veh/h	12	774	125
Vehicles Circulating, veh/h	117	47	0
Vehicles Exiting, veh/h	704	78	129
Ped Vol Crossing Leg, #/h	27	77	0
Ped Cap Adj	0.996	0.989	1.000
Approach Delay, s/veh	3.0	9.7	3.3
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	12	774	125
Cap Entry Lane, veh/h	1225	1315	1380
Entry HV Adj Factor	1.000	0.999	1.000
Flow Entry, veh/h	12	773	125
Cap Entry, veh/h	1220	1300	1380
V/C Ratio	0.010	0.595	0.091
Control Delay, s/veh	3.0	9.7	3.3
LOS	A	A	A
95th %tile Queue, veh	0	4	0

Intersection	
Intersection Delay, s/veh	102.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↕			↕	
Traffic Vol, veh/h	0	76	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	101	17	26	232	0	31	0	36	33	160	408
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	159	27	35	308	0	54	0	63	47	226	576
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15	21.9	12.4	167
HCM LOS	B	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	0%	10%	5%
Vol Thru, %	0%	86%	90%	27%
Vol Right, %	54%	14%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	118	258	601
LT Vol	31	0	26	33
Through Vol	0	101	232	160
RT Vol	36	17	0	408
Lane Flow Rate	116	185	343	849
Geometry Grp	1	1	1	1
Degree of Util (X)	0.218	0.356	0.627	1.306
Departure Headway (Hd)	7.362	7.747	7.342	5.54
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	490	467	494	654
Service Time	5.362	5.747	5.342	3.59
HCM Lane V/C Ratio	0.237	0.396	0.694	1.298
HCM Control Delay	12.4	15	21.9	167
HCM Lane LOS	B	B	C	F
HCM 95th-tile Q	0.8	1.6	4.3	33.9

Lanes, Volumes, Timings
114: I-35 SBFR & River St

10/03/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	81	70	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	120	99	177	252	0	0	0	0	99	137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.98										
Frt		0.939										
Flt Protected					0.980						0.979	
Satd. Flow (prot)	0	1715	0	0	1844	0	0	0	0	0	3514	0
Flt Permitted					0.608						0.979	
Satd. Flow (perm)	0	1715	0	0	1144	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	178	147	217	310	0	0	0	0	147	204	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	0	0	527	0	0	0	0	0	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		41.0		49.0						60.0	60.0	
Total Split (%)		27.3%		32.7%						40.0%	40.0%	
Maximum Green (s)		35.0		43.0						54.0	54.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		76.4			114.6						23.4	
Actuated g/C Ratio		0.51			0.76						0.16	
v/c Ratio		0.37			0.50						0.64	
Control Delay		23.3			12.6						64.9	
Queue Delay		0.0			0.9						0.0	
Total Delay		23.3			13.5						64.9	
LOS		C			B						E	
Approach Delay		23.3			13.5						64.9	
Approach LOS		C			B						E	
Queue Length 50th (ft)		171			187						173	
Queue Length 95th (ft)		228			279						182	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		886			1135						1311	
Starvation Cap Reductn		0			338						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.37			0.66						0.27	

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	7 (5%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	31.1
Intersection LOS:	C
Intersection Capacity Utilization:	63.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	73.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑↑	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	450	0	0	1032	148
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	553	0	0	1268	182

Major/Minor	Minor2	Major2
Conflicting Flow All	- 725	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 368	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 368	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	266.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	368	-	-
HCM Lane V/C Ratio	1.502	-	-
HCM Control Delay (s)	266.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	30	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	64	622	152	155	59	146	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.90	0.92			0.97	0.89
Frt		0.970			0.971			0.893				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1530	0	0	1818	1583
Flt Permitted	0.950			0.159			0.752				0.871	
Satd. Flow (perm)	1685	3304	0	276	3130	0	1258	1530	0	0	1577	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			38			108				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			127				706
Travel Time (s)		34.3			4.0			2.9				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	79	764	187	190	72	179	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	251	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	79.0		67.0	67.0		14.0	41.0		27.0	27.0	27.0
Total Split (%)	10.0%	65.8%		55.8%	55.8%		11.7%	34.2%		22.5%	22.5%	22.5%
Maximum Green (s)	6.0	73.0		61.0	61.0		8.0	35.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	75.0		63.0	63.0		36.0	37.0			23.0	23.0
Actuated g/C Ratio	0.07	0.62		0.52	0.52		0.30	0.31			0.19	0.19
v/c Ratio	1.09	0.58		0.55	0.57		0.46	0.46			0.03	0.02
Control Delay	161.9	13.9		36.5	20.2		39.1	21.6			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	161.9	13.9		36.5	20.2		39.1	21.6			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		28.3			21.4			29.1			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	~113	255		39	243		115	86			5	0
Queue Length 95th (ft)	#240	315		105	306		183	166			19	0
Internal Link Dist (ft)		1427			94			47			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	2083		144	1661		415	546			302	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	1.09	0.58		0.55	0.57		0.46	0.46			0.03	0.02




Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 60 (50%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 25.9 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	29.5
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	246	187	274	3
Future Vol, veh/h	43	100	343	217	305	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	123	421	267	375	48
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	11.9	40.7	18.5
HCM LOS	B	E	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	30%	89%
Vol Thru, %	61%	0%	11%
Vol Right, %	39%	70%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	560	143	344
LT Vol	0	43	305
Through Vol	343	0	39
RT Vol	217	100	0
Lane Flow Rate	688	176	423
Geometry Grp	1	1	1
Degree of Util (X)	0.933	0.302	0.653
Departure Headway (Hd)	4.885	6.189	5.564
Convergence, Y/N	Yes	Yes	Yes
Cap	743	580	646
Service Time	2.922	4.248	3.607
HCM Lane V/C Ratio	0.926	0.303	0.655
HCM Control Delay	40.7	11.9	18.5
HCM Lane LOS	E	B	C
HCM 95th-tile Q	13.2	1.3	4.8

Intersection						
Intersection Delay, s/veh	7.4					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	15		49		643	
Demand Flow Rate, veh/h	15		50		656	
Vehicles Circulating, veh/h	57		671		52	
Vehicles Exiting, veh/h	25		37		20	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	2.8		6.0		8.1	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.487	0.513
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	15	0	50	656	37	39
Cap Entry Lane, veh/h	1348	1348	696	1309	1412	1412
Entry HV Adj Factor	1.000	1.000	0.980	0.981	0.973	0.991
Flow Entry, veh/h	15	0	49	643	36	39
Cap Entry, veh/h	1348	1348	682	1283	1374	1400
V/C Ratio	0.011	0.000	0.072	0.501	0.026	0.028
Control Delay, s/veh	2.8	2.7	6.0	8.1	2.8	2.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	3	0	0

HCM 6th TWSC
104: Driskill & Rainey St

10/04/2019

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	33	395	48	9	14	8
Future Vol, veh/h	33	453	136	9	98	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	556	167	11	120	15
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	178	0	-	0	811	173
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1398	-	-	-	349	871
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1398	-	-	-	334	871
Mov Cap-2 Maneuver	-	-	-	-	334	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	526	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.5	0	21			
HCM LOS			C			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1398	-	-	-	358	
HCM Lane V/C Ratio	0.029	-	-	-	0.377	
HCM Control Delay (s)	7.7	-	-	-	21	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7	

Intersection						
Int Delay, s/veh	7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	11	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th Roundabout
110: Rainey St & River St

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Intersection				
Intersection Delay, s/veh	10.7			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	0
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	108	889	125	0
Demand Flow Rate, veh/h	108	890	125	0
Vehicles Circulating, veh/h	117	67	96	205
Vehicles Exiting, veh/h	88	154	129	752
Ped Vol Crossing Leg, #/h	27	77	0	35
Ped Cap Adj	0.996	0.989	1.000	1.000
Approach Delay, s/veh	3.7	12.6	3.7	0.0
Approach LOS	A	B	A	-
Lane	Left	Left	Left	
Designated Moves	LTR	LTR	LTR	
Assumed Moves	LTR	LTR	LTR	
RT Channelized				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	
Entry Flow, veh/h	108	890	125	
Cap Entry Lane, veh/h	1225	1289	1251	
Entry HV Adj Factor	1.000	0.999	1.000	
Flow Entry, veh/h	108	889	125	
Cap Entry, veh/h	1220	1274	1251	
V/C Ratio	0.089	0.698	0.100	
Control Delay, s/veh	3.7	12.6	3.7	
LOS	A	B	A	
95th %tile Queue, veh	0	6	0	

Intersection	
Intersection Delay, s/veh	118.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	125	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	150	17	26	232	0	31	0	36	33	160	410
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	235	27	35	308	0	54	0	63	47	226	579
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	19	24.2	13.4	200.9
HCM LOS	C	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	0%	10%	5%
Vol Thru, %	0%	90%	90%	27%
Vol Right, %	54%	10%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	167	258	603
LT Vol	31	0	26	33
Through Vol	0	150	232	160
RT Vol	36	17	0	410
Lane Flow Rate	116	262	343	852
Geometry Grp	1	1	1	1
Degree of Util (X)	0.232	0.509	0.65	1.384
Departure Headway (Hd)	7.995	8.018	7.806	5.848
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	452	453	466	622
Service Time	5.995	6.018	5.806	3.921
HCM Lane V/C Ratio	0.257	0.578	0.736	1.37
HCM Control Delay	13.4	19	24.2	200.9
HCM Lane LOS	B	C	C	F
HCM 95th-tile Q	0.9	2.8	4.5	37.6

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	46	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	96	75	177	252	0	0	0	0	99	137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.941										
Flt Protected					0.980						0.979	
Satd. Flow (prot)	0	1723	0	0	1844	0	0	0	0	0	3514	0
Flt Permitted					0.705						0.979	
Satd. Flow (perm)	0	1723	0	0	1322	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	143	112	217	310	0	0	0	0	147	204	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	527	0	0	0	0	0	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		48.0		39.0						33.0	33.0	
Total Split (%)		40.0%		32.5%						27.5%	27.5%	
Maximum Green (s)		42.0		33.0						27.0	27.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		68.1			85.7						22.3	
Actuated g/C Ratio		0.57			0.71						0.19	
v/c Ratio		0.26			0.52						0.54	
Control Delay		13.5			11.8						47.5	
Queue Delay		0.0			0.3						0.0	
Total Delay		13.5			12.0						47.5	
LOS		B			B						D	
Approach Delay		13.5			12.0						47.5	
Approach LOS		B			B						D	
Queue Length 50th (ft)		77			171						131	
Queue Length 95th (ft)		130			244						146	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		994			1288						849	
Starvation Cap Reductn		0			264						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.26			0.51						0.41	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	74 (62%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	23.4
Intersection LOS:	C
Intersection Capacity Utilization:	52.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	85.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	475	0	0	1021	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	583	0	0	1254	179

Major/Minor	Minor2	Major2
Conflicting Flow All	- 717	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 372	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 372	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	294.8	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	372	-	-
HCM Lane V/C Ratio	1.568	-	-
HCM Control Delay (s)	294.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	33	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 3b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

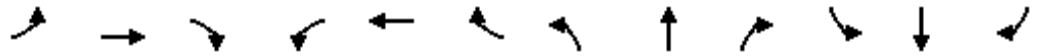
10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	781	195	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	781	195	64	622	152	155	59	146	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96		0.98	0.96		0.91	0.92			0.96	0.89
Frt		0.970			0.971			0.893				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3304	0	1676	3130	0	1770	1530	0	0	1818	1583
Flt Permitted	0.950			0.160			0.613				0.871	
Satd. Flow (perm)	1685	3304	0	278	3130	0	1040	1530	0	0	1564	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			37			107				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			127				706
Travel Time (s)		34.3			4.0			2.9				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	959	240	79	764	187	190	72	179	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	251	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	14.0	80.0		66.0	66.0		13.0	40.0		27.0	27.0	27.0
Total Split (%)	11.7%	66.7%		55.0%	55.0%		10.8%	33.3%		22.5%	22.5%	22.5%
Maximum Green (s)	8.0	74.0		60.0	60.0		7.0	34.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	10.0	76.0		62.0	62.0		35.0	36.0			23.0	23.0
Actuated g/C Ratio	0.08	0.63		0.52	0.52		0.29	0.30			0.19	0.19
v/c Ratio	0.88	0.57		0.55	0.58		0.54	0.47			0.03	0.02
Control Delay	102.2	13.3		37.5	20.9		40.7	22.4			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	102.2	13.3		37.5	20.9		40.7	22.4			39.9	0.0
LOS	F	B		D	C		D	C			D	A
Approach Delay		21.9			22.2			30.3			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	100	248		40	248		117	88			5	0
Queue Length 95th (ft)	#216	307		106	313		185	169			19	0
Internal Link Dist (ft)		1427			94			47			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	147	2110		143	1635		352	533			299	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.88	0.57		0.55	0.58		0.54	0.47			0.03	0.02

Intersection Summary




Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 34 (28%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 23.3 Intersection LOS: C
 Intersection Capacity Utilization 72.3% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection

Intersection Delay, s/veh	29.5
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	246	187	274	3
Future Vol, veh/h	43	100	343	217	305	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	123	421	267	375	48
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	11.9	40.7	18.5
HCM LOS	B	E	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	30%	89%
Vol Thru, %	61%	0%	11%
Vol Right, %	39%	70%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	560	143	344
LT Vol	0	43	305
Through Vol	343	0	39
RT Vol	217	100	0
Lane Flow Rate	688	176	423
Geometry Grp	1	1	1
Degree of Util (X)	0.933	0.302	0.653
Departure Headway (Hd)	4.885	6.189	5.564
Convergence, Y/N	Yes	Yes	Yes
Cap	743	580	646
Service Time	2.922	4.248	3.607
HCM Lane V/C Ratio	0.926	0.303	0.655
HCM Control Delay	40.7	11.9	18.5
HCM Lane LOS	E	B	C
HCM 95th-tile Q	13.2	1.3	4.8

Intersection						
Intersection Delay, s/veh	7.3					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	15		49		641	
Demand Flow Rate, veh/h	15		50		654	
Vehicles Circulating, veh/h	57		669		52	
Vehicles Exiting, veh/h	25		37		20	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	2.8		6.0		8.1	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.487	0.513
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	15	0	50	654	37	39
Cap Entry Lane, veh/h	1348	1348	697	1309	1412	1412
Entry HV Adj Factor	1.000	1.000	0.980	0.981	0.973	0.991
Flow Entry, veh/h	15	0	49	641	36	39
Cap Entry, veh/h	1348	1348	684	1283	1374	1400
V/C Ratio	0.011	0.000	0.072	0.500	0.026	0.028
Control Delay, s/veh	2.8	2.7	6.0	8.1	2.8	2.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	3	0	0

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	395	58	0	14	0
Future Vol, veh/h	33	453	146	0	98	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	556	179	0	120	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	179	0	-	0	817 179
Stage 1	-	-	-	-	179 -
Stage 2	-	-	-	-	638 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1397	-	-	-	346 864
Stage 1	-	-	-	-	852 -
Stage 2	-	-	-	-	526 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1397	-	-	-	331 864
Mov Cap-2 Maneuver	-	-	-	-	331 -
Stage 1	-	-	-	-	816 -
Stage 2	-	-	-	-	526 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	21.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1397	-	-	-	339
HCM Lane V/C Ratio	0.029	-	-	-	0.37
HCM Control Delay (s)	7.7	0	-	-	21.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7

Intersection

Int Delay, s/veh 7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	11	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection			
Intersection Delay, s/veh	6.7		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	73	625	123
Demand Flow Rate, veh/h	76	626	123
Vehicles Circulating, veh/h	117	45	66
Vehicles Exiting, veh/h	554	144	127
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	3.6	7.7	3.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	76	626	123
Cap Entry Lane, veh/h	1225	1318	1290
Entry HV Adj Factor	0.967	0.998	1.000
Flow Entry, veh/h	73	625	123
Cap Entry, veh/h	1178	1302	1290
V/C Ratio	0.062	0.480	0.095
Control Delay, s/veh	3.6	7.7	3.6
LOS	A	A	A
95th %tile Queue, veh	0	3	0

Intersection	
Intersection Delay, s/veh	104.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	76	16	18	175	0	20	0	21	5	134	316
Future Vol, veh/h	0	101	17	26	232	0	31	0	36	33	160	410
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	159	27	35	308	0	54	0	63	47	226	579
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15	21.9	12.4	169.1
HCM LOS	B	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	0%	10%	5%
Vol Thru, %	0%	86%	90%	27%
Vol Right, %	54%	14%	0%	68%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	118	258	603
LT Vol	31	0	26	33
Through Vol	0	101	232	160
RT Vol	36	17	0	410
Lane Flow Rate	116	185	343	852
Geometry Grp	1	1	1	1
Degree of Util (X)	0.218	0.356	0.627	1.311
Departure Headway (Hd)	7.369	7.758	7.352	5.54
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	490	467	494	656
Service Time	5.369	5.758	5.352	3.59
HCM Lane V/C Ratio	0.237	0.396	0.694	1.299
HCM Control Delay	12.4	15	21.9	169.1
HCM Lane LOS	B	B	C	F
HCM 95th-tile Q	0.8	1.6	4.3	34.3

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔	
Traffic Volume (vph)	0	81	70	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	120	99	177	252	0	0	0	0	99	137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.939										
Flt Protected					0.980						0.979	
Satd. Flow (prot)	0	1719	0	0	1844	0	0	0	0	0	3514	0
Flt Permitted					0.634						0.979	
Satd. Flow (perm)	0	1719	0	0	1190	0	0	0	0	0	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	178	147	217	310	0	0	0	0	147	204	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	0	0	527	0	0	0	0	0	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12							8
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		53.0		41.0						26.0	26.0	
Total Split (%)		44.2%		34.2%						21.7%	21.7%	
Maximum Green (s)		47.0		35.0						20.0	20.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lag						Lead	Lead	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		64.8			86.0						22.0	
Actuated g/C Ratio		0.54			0.72						0.18	
v/c Ratio		0.34			0.54						0.55	
Control Delay		15.5			10.0						48.1	
Queue Delay		0.0			0.4						0.0	
Total Delay		15.5			10.4						48.1	
LOS		B			B						D	
Approach Delay		15.5			10.4						48.1	
Approach LOS		B			B						D	
Queue Length 50th (ft)		115			171						131	
Queue Length 95th (ft)		161			234						149	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		947			1094						644	
Starvation Cap Reductn		0			192						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.34			0.58						0.55	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	100 (83%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	22.8
Intersection LOS:	C
Intersection Capacity Utilization:	63.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	85.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↕↗	
Traffic Vol, veh/h	0	333	0	0	881	58
Future Vol, veh/h	0	475	0	0	1021	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	583	0	0	1254	179

Major/Minor	Minor2	Major2
Conflicting Flow All	- 717	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 372	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 372	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	294.8	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	372	-	-
HCM Lane V/C Ratio	1.568	-	-
HCM Control Delay (s)	294.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	33	-	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Scenario 4a

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	116	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96			0.96		0.90	0.93			0.97	0.89
Frt		0.967			0.971			0.900				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3279	0	1676	3130	0	1770	1551	0	0	1818	1583
Flt Permitted	0.950			0.151			0.752				0.877	
Satd. Flow (perm)	1688	3279	0	266	3130	0	1258	1551	0	0	1584	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			38			85				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			141				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	134	964	277	81	791	193	197	75	148	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	1241	0	81	984	0	197	223	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	80.0		68.0	68.0		13.0	40.0		27.0	27.0	27.0
Total Split (%)	10.0%	66.7%		56.7%	56.7%		10.8%	33.3%		22.5%	22.5%	22.5%
Maximum Green (s)	6.0	74.0		62.0	62.0		7.0	34.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	76.0		64.0	64.0		35.0	36.0			23.0	23.0
Actuated g/C Ratio	0.07	0.63		0.53	0.53		0.29	0.30			0.19	0.19
v/c Ratio	1.14	0.59		0.57	0.58		0.49	0.43			0.03	0.02
Control Delay	173.9	13.6		37.5	18.8		40.9	23.2			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	173.9	13.6		37.5	18.8		40.9	23.2			39.9	0.0
LOS	F	B		D	B		D	C			D	A
Approach Delay		29.2			20.3			31.5			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	~121	261		38	233		122	83			5	0
Queue Length 95th (ft)	#250	323		#121	291		191	158			19	0
Internal Link Dist (ft)		1427			94			61			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	2098		141	1687		401	524			303	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	1.14	0.59		0.57	0.58		0.49	0.43			0.03	0.02




Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 80 (67%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 26.2 Intersection LOS: C
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	33.6
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	49	264	138	80	197
Future Vol, veh/h	161	81	329	148	134	263
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	198	99	404	182	165	323
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	17.8	43.8	31.1
HCM LOS	C	E	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	67%	34%
Vol Thru, %	69%	0%	66%
Vol Right, %	31%	33%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	477	242	397
LT Vol	0	161	134
Through Vol	329	0	263
RT Vol	148	81	0
Lane Flow Rate	586	297	488
Geometry Grp	1	1	1
Degree of Util (X)	0.927	0.554	0.822
Departure Headway (Hd)	5.699	6.714	6.068
Convergence, Y/N	Yes	Yes	Yes
Cap	639	538	600
Service Time	3.716	4.76	4.087
HCM Lane V/C Ratio	0.917	0.552	0.813
HCM Control Delay	43.8	17.8	31.1
HCM Lane LOS	E	C	D
HCM 95th-tile Q	12.2	3.3	8.4

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

10/04/2019

Intersection						
Intersection Delay, s/veh	6.1					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	17		51		530	
Demand Flow Rate, veh/h	17		52		541	
Vehicles Circulating, veh/h	501		558		60	
Vehicles Exiting, veh/h	25		43		458	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.2		5.4		6.9	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.083	0.917
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	17	0	52	541	43	476
Cap Entry Lane, veh/h	900	900	781	1298	1410	1410
Entry HV Adj Factor	1.000	1.000	0.981	0.980	0.977	0.979
Flow Entry, veh/h	17	0	51	530	42	466
Cap Entry, veh/h	900	900	766	1272	1377	1381
V/C Ratio	0.019	0.000	0.067	0.417	0.031	0.338
Control Delay, s/veh	4.2	4.0	5.4	6.9	2.8	5.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	2	0	2

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	156	120	9	11	11
Future Vol, veh/h	60	217	255	9	36	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	276	324	11	46	25

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	335	0	-	0	758 330
Stage 1	-	-	-	-	330 -
Stage 2	-	-	-	-	428 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1224	-	-	-	375 712
Stage 1	-	-	-	-	728 -
Stage 2	-	-	-	-	657 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1224	-	-	-	348 712
Mov Cap-2 Maneuver	-	-	-	-	348 -
Stage 1	-	-	-	-	675 -
Stage 2	-	-	-	-	657 -

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1224	-	-	-	426
HCM Lane V/C Ratio	0.062	-	-	-	0.167
HCM Control Delay (s)	8.1	0	-	-	15.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	39	6	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	28	0	67
Stage 1	-	-	-	-	28
Stage 2	-	-	-	-	39
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1585	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	938
Mov Cap-2 Maneuver	-	-	-	-	938
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	983

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1585	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection			
Intersection Delay, s/veh	6.6		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	515	175	435
Demand Flow Rate, veh/h	516	175	451
Vehicles Circulating, veh/h	94	406	75
Vehicles Exiting, veh/h	487	120	535
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	7.0	5.8	6.3
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	516	175	451
Cap Entry Lane, veh/h	1254	912	1278
Entry HV Adj Factor	0.998	1.000	0.965
Flow Entry, veh/h	515	175	435
Cap Entry, veh/h	1238	912	1227
V/C Ratio	0.416	0.192	0.355
Control Delay, s/veh	7.0	5.8	6.3
LOS	A	A	A
95th %tile Queue, veh	2	1	2

Intersection

Intersection Delay, s/veh	20.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	271	17	48	185	0	23	0	36	42	61	160
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	425	27	64	246	0	40	0	63	59	86	226
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.6	17.2	11.8	19.4
HCM LOS	D	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	0%	21%	16%
Vol Thru, %	0%	94%	79%	23%
Vol Right, %	61%	6%	0%	61%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	288	233	263
LT Vol	23	0	48	42
Through Vol	0	271	185	61
RT Vol	36	17	0	160
Lane Flow Rate	103	452	310	371
Geometry Grp	1	1	1	1
Degree of Util (X)	0.198	0.767	0.553	0.635
Departure Headway (Hd)	6.96	6.111	6.429	6.152
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	512	592	558	587
Service Time	5.05	4.173	4.498	4.212
HCM Lane V/C Ratio	0.201	0.764	0.556	0.632
HCM Control Delay	11.8	26.6	17.2	19.4
HCM Lane LOS	B	D	C	C
HCM 95th-tile Q	0.7	7	3.3	4.5

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	189	161	177	227	0	0	0	0	117	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.938										
Flt Protected					0.979						0.976	
Satd. Flow (prot)	0	1716	0	0	1842	0	0	0	0	0	3505	0
Flt Permitted					0.409						0.976	
Satd. Flow (perm)	0	1716	0	0	769	0	0	0	0	0	3505	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	291	248	225	289	0	0	0	0	180	192	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	539	0	0	514	0	0	0	0	0	372	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
114: I-35 SBFR & River St

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		37.0		28.0						55.0	55.0	
Total Split (%)		30.8%		23.3%						45.8%	45.8%	
Maximum Green (s)		31.0		22.0						49.0	49.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		61.4			85.4						22.6	
Actuated g/C Ratio		0.51			0.71						0.19	
v/c Ratio		0.60			0.68						0.57	
Control Delay		22.8			21.8						47.9	
Queue Delay		0.0			0.5						0.0	
Total Delay		22.8			22.2						47.9	
LOS		C			C						D	
Approach Delay		22.8			22.2						47.9	
Approach LOS		C			C						D	
Queue Length 50th (ft)		263			153						140	
Queue Length 95th (ft)		301			228						153	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		895			761						1489	
Starvation Cap Reductn		0			47						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.60			0.72						0.25	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	112 (93%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	29.2
Intersection LOS:	C
Intersection Capacity Utilization:	66.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 114: I-35 SBFR & River St



Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	204	0	0	928	264
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	259	0	0	1180	336

Major/Minor	Minor2	Major2
Conflicting Flow All	- 758	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 350	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- 350	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	39.7	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	350	-	-
HCM Lane V/C Ratio	0.741	-	-
HCM Control Delay (s)	39.7	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	5.7	-	-

Scenario 4b

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	116	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.95		0.98	0.96		0.89	0.92			0.97	0.88
Frt		0.966			0.971			0.900				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3265	0	1676	3121	0	1770	1542	0	0	1818	1583
Flt Permitted	0.950			0.167			0.752				0.876	
Satd. Flow (perm)	1678	3265	0	289	3121	0	1246	1542	0	0	1578	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			36			76				126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			141				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	931	268	79	764	187	190	72	142	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	214	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	15.0	89.0		74.0	74.0		14.0	41.0		27.0	27.0	27.0
Total Split (%)	11.5%	68.5%		56.9%	56.9%		10.8%	31.5%		20.8%	20.8%	20.8%
Maximum Green (s)	9.0	83.0		68.0	68.0		8.0	35.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	11.0	85.0		70.0	70.0		36.0	37.0			23.0	23.0
Actuated g/C Ratio	0.08	0.65		0.54	0.54		0.28	0.28			0.18	0.18
v/c Ratio	0.87	0.56		0.51	0.56		0.50	0.43			0.03	0.02
Control Delay	103.6	12.7		32.5	19.4		45.7	27.1			44.7	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	103.6	12.7		32.5	19.4		45.7	27.1			44.7	0.2
LOS	F	B		C	B		D	C			D	A
Approach Delay		21.5			20.4			35.8			25.6	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	109	255		38	241		130	93			6	0
Queue Length 95th (ft)	#226	311		103	306		202	170			21	0
Internal Link Dist (ft)		1427			94			61			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	149	2155		155	1697		381	493			279	349
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.87	0.56		0.51	0.56		0.50	0.43			0.03	0.02




Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 46 (35%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 23.2 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	31.3
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	49	251	138	80	197
Future Vol, veh/h	161	81	316	148	134	263
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	198	99	388	182	165	323
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	17.6	39.2	30.5
HCM LOS	C	E	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	67%	34%
Vol Thru, %	68%	0%	66%
Vol Right, %	32%	33%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	464	242	397
LT Vol	0	161	134
Through Vol	316	0	263
RT Vol	148	81	0
Lane Flow Rate	570	297	488
Geometry Grp	1	1	1
Degree of Util (X)	0.9	0.551	0.817
Departure Headway (Hd)	5.682	6.671	6.032
Convergence, Y/N	Yes	Yes	Yes
Cap	638	541	605
Service Time	3.698	4.716	4.051
HCM Lane V/C Ratio	0.893	0.549	0.807
HCM Control Delay	39.2	17.6	30.5
HCM Lane LOS	E	C	D
HCM 95th-tile Q	11.2	3.3	8.3

Intersection						
Intersection Delay, s/veh	5.9					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	16		49		496	
Demand Flow Rate, veh/h	16		50		506	
Vehicles Circulating, veh/h	484		522		58	
Vehicles Exiting, veh/h	25		42		442	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.1		5.1		6.6	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.083	0.917
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	16	0	50	506	42	461
Cap Entry Lane, veh/h	914	914	810	1301	1411	1411
Entry HV Adj Factor	1.000	1.000	0.980	0.980	0.976	0.979
Flow Entry, veh/h	16	0	49	496	41	451
Cap Entry, veh/h	914	914	794	1275	1378	1382
V/C Ratio	0.018	0.000	0.062	0.389	0.030	0.327
Control Delay, s/veh	4.1	3.9	5.1	6.6	2.8	5.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	2	0	1

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	33	156	48	9	11	11
Future Vol, veh/h	60	217	183	9	36	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	267	225	11	44	25

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	236	0	0	646	231
Stage 1	-	-	-	231	-
Stage 2	-	-	-	415	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1331	-	-	436	808
Stage 1	-	-	-	807	-
Stage 2	-	-	-	666	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1331	-	-	408	808
Mov Cap-2 Maneuver	-	-	-	408	-
Stage 1	-	-	-	755	-
Stage 2	-	-	-	666	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1331	-	-	-	496
HCM Lane V/C Ratio	0.055	-	-	-	0.139
HCM Control Delay (s)	7.9	0	-	-	13.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	22	0	0	31	0	0
Future Vol, veh/h	22	0	0	31	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	0	0	38	6	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	27	0	65
Stage 1	-	-	-	-	27
Stage 2	-	-	-	-	38
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1587	-	941
Stage 1	-	-	-	-	996
Stage 2	-	-	-	-	984
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1587	-	941
Mov Cap-2 Maneuver	-	-	-	-	941
Stage 1	-	-	-	-	996
Stage 2	-	-	-	-	984

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	941	-	-	1587	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection			
Intersection Delay, s/veh	5.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	322	498	123
Demand Flow Rate, veh/h	333	499	123
Vehicles Circulating, veh/h	73	45	279
Vehicles Exiting, veh/h	471	357	127
Ped Vol Crossing Leg, #/h	35	77	0
Ped Cap Adj	0.995	0.989	1.000
Approach Delay, s/veh	5.3	6.4	4.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	333	499	123
Cap Entry Lane, veh/h	1281	1318	1038
Entry HV Adj Factor	0.968	0.998	1.000
Flow Entry, veh/h	322	498	123
Cap Entry, veh/h	1234	1301	1038
V/C Ratio	0.261	0.383	0.118
Control Delay, s/veh	5.3	6.4	4.5
LOS	A	A	A
95th %tile Queue, veh	1	2	0

Intersection	
Intersection Delay, s/veh	20.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	224	16	18	175	0	20	0	21	5	35	147
Future Vol, veh/h	0	271	17	48	185	0	23	0	36	42	61	160
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	425	27	64	246	0	40	0	63	59	86	226
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.6	17.2	11.8	19.4
HCM LOS	D	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	0%	21%	16%
Vol Thru, %	0%	94%	79%	23%
Vol Right, %	61%	6%	0%	61%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	288	233	263
LT Vol	23	0	48	42
Through Vol	0	271	185	61
RT Vol	36	17	0	160
Lane Flow Rate	103	452	310	371
Geometry Grp	1	1	1	1
Degree of Util (X)	0.198	0.767	0.553	0.635
Departure Headway (Hd)	6.96	6.111	6.429	6.152
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	512	592	558	587
Service Time	5.05	4.173	4.498	4.212
HCM Lane V/C Ratio	0.201	0.764	0.556	0.632
HCM Control Delay	11.8	26.6	17.2	19.4
HCM Lane LOS	B	D	C	C
HCM 95th-tile Q	0.7	7	3.3	4.5

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	131	120	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	189	161	177	227	0	0	0	0	117	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99										
Frt		0.938										
Flt Protected					0.979						0.976	
Satd. Flow (prot)	0	1715	0	0	1842	0	0	0	0	0	3505	0
Flt Permitted					0.460						0.976	
Satd. Flow (perm)	0	1715	0	0	865	0	0	0	0	0	3505	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	281	239	217	279	0	0	0	0	174	186	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	520	0	0	496	0	0	0	0	0	360	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		39.0		27.0						64.0	64.0	
Total Split (%)		30.0%		20.8%						49.2%	49.2%	
Maximum Green (s)		33.0		21.0						58.0	58.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lead						Lag	Lag	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		72.3			95.3						22.7	
Actuated g/C Ratio		0.56			0.73						0.17	
v/c Ratio		0.54			0.62						0.59	
Control Delay		19.7			16.9						53.5	
Queue Delay		0.0			0.6						0.0	
Total Delay		19.7			17.5						53.5	
LOS		B			B						D	
Approach Delay		19.7			17.5						53.5	
Approach LOS		B			B						D	
Queue Length 50th (ft)		246			149						149	
Queue Length 95th (ft)		283			224						161	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		968			806						1617	
Starvation Cap Reductn		0			89						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.54			0.69						0.22	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	27.8
Intersection LOS:	C
Intersection Capacity Utilization	65.3%
ICU Level of Service	C
Analysis Period (min)	15

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114: I-35 SBFR & River St

10/04/2019

Splits and Phases: 114: I-35 SBFR & River St



Intersection

Int Delay, s/veh 5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	118	0	0	810	129
Future Vol, veh/h	0	204	0	0	928	264
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	251	0	0	1140	324

Major/Minor	Minor2	Major2
Conflicting Flow All	- 732	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 364	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- 364	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	34.1	0
HCM LOS	D	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	364	-	-
HCM Lane V/C Ratio	0.688	-	-
HCM Control Delay (s)	34.1	-	-
HCM Lane LOS	D	-	-
HCM 95th %tile Q(veh)	4.9	-	-

Scenario 4c

Lanes, Volumes, Timings
101: Red River & Cesar Chavez

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	758	218	56	622	152	155	59	85	3	3	5
Future Volume (vph)	105	758	218	64	622	152	155	59	116	3	3	5
Ideal Flow (vphpl)	1900	1900	1900	1800	1800	1800	1900	1900	1900	1900	1900	1900
Storage Length (ft)	315		0	250		0	0		0	0		150
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95	0.96			0.96		0.91	0.93			0.96	0.89
Frt		0.966			0.971			0.900				0.850
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1770	3275	0	1676	3130	0	1770	1551	0	0	1818	1583
Flt Permitted	0.950			0.149			0.613				0.879	
Satd. Flow (perm)	1685	3275	0	263	3130	0	1040	1551	0	0	1575	1405
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			36			89				136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1507			174			139				706
Travel Time (s)		34.3			4.0			3.2				16.0
Confl. Peds. (#/hr)	60		60	60		60	60		60	60		60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	129	931	268	79	764	187	190	72	142	4	4	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1199	0	79	951	0	190	214	0	0	8	6
Enter Blocked Intersection	1 veh	1 veh	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.07	1.07	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	5	2			6		7	4				8
Permitted Phases				6			4			8		8
Minimum Split (s)	11.0	27.0		26.0	26.0		10.0	27.0		27.0	27.0	27.0
Total Split (s)	12.0	76.0		64.0	64.0		17.0	44.0		27.0	27.0	27.0
Total Split (%)	10.0%	63.3%		53.3%	53.3%		14.2%	36.7%		22.5%	22.5%	22.5%
Maximum Green (s)	6.0	70.0		58.0	58.0		11.0	38.0		21.0	21.0	21.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-1.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag			Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Walk Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Flash Dont Walk (s)		16.0		15.0	15.0			16.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)		0		0	0			0		0	0	0

Lanes, Volumes, Timings
 101: Red River & Cesar Chavez

10/04/2019

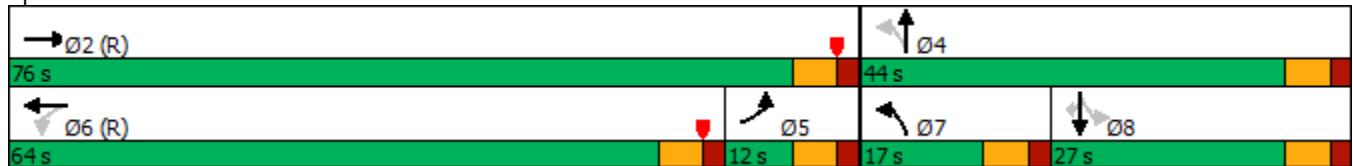


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	8.0	72.0		60.0	60.0		39.0	40.0			23.0	23.0
Actuated g/C Ratio	0.07	0.60		0.50	0.50		0.32	0.33			0.19	0.19
v/c Ratio	1.09	0.60		0.60	0.60		0.46	0.37			0.03	0.02
Control Delay	161.9	15.8		42.8	21.2		34.9	19.4			39.9	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	161.9	15.8		42.8	21.2		34.9	19.4			39.9	0.0
LOS	F	B		D	C		C	B			D	A
Approach Delay		30.0			22.9			26.7			22.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	~113	275		39	240		111	70			5	0
Queue Length 95th (ft)	#240	341		#125	301		176	138			19	0
Internal Link Dist (ft)		1427			94			59			626	
Turn Bay Length (ft)	315			250								150
Base Capacity (vph)	118	1987		131	1583		411	576			301	379
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	1.09	0.60		0.60	0.60		0.46	0.37			0.03	0.02




Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 64 (53%), Referenced to phase 2:EBT and 6:WBTL, Start of Red
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 26.9 Intersection LOS: C
 Intersection Capacity Utilization 72.5% ICU Level of Service C
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Red River & Cesar Chavez



Intersection	
Intersection Delay, s/veh	21.5
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	49	270	138	26	251
Future Vol, veh/h	67	81	335	162	54	287
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	99	411	199	66	353
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	11.9	27.5	16.8
HCM LOS	B	D	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	45%	16%
Vol Thru, %	67%	0%	84%
Vol Right, %	33%	55%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	497	148	341
LT Vol	0	67	54
Through Vol	335	0	287
RT Vol	162	81	0
Lane Flow Rate	610	182	419
Geometry Grp	1	1	1
Degree of Util (X)	0.833	0.309	0.621
Departure Headway (Hd)	4.91	6.126	5.339
Convergence, Y/N	Yes	Yes	Yes
Cap	739	585	674
Service Time	2.945	4.178	3.379
HCM Lane V/C Ratio	0.825	0.311	0.622
HCM Control Delay	27.5	11.9	16.8
HCM Lane LOS	D	B	C
HCM 95th-tile Q	9.3	1.3	4.3

HCM 6th Roundabout
 103: RR Extension/Red River & J/Davis St

10/04/2019

Intersection						
Intersection Delay, s/veh	5.4					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		1		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	16		156		425	
Demand Flow Rate, veh/h	16		159		434	
Vehicles Circulating, veh/h	109		449		58	
Vehicles Exiting, veh/h	25		42		67	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	2.9		6.0		5.9	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Left	Left	Right
Designated Moves	L	TR	LTR	LTR	L	TR
Assumed Moves	L	TR	LTR	LTR	L	TR
RT Channelized						
Lane Util	1.000	0.000	1.000	1.000	0.316	0.684
Follow-Up Headway, s	2.535	2.535	2.609	2.609	2.535	2.535
Critical Headway, s	4.544	4.544	4.976	4.976	4.544	4.544
Entry Flow, veh/h	16	0	159	434	42	91
Cap Entry Lane, veh/h	1286	1286	873	1301	1418	1418
Entry HV Adj Factor	1.000	1.000	0.981	0.980	0.976	0.975
Flow Entry, veh/h	16	0	156	425	41	89
Cap Entry, veh/h	1286	1286	856	1275	1384	1382
V/C Ratio	0.012	0.000	0.182	0.334	0.030	0.064
Control Delay, s/veh	2.9	2.8	6.0	5.9	2.8	3.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	0	0

HCM 6th TWSC
104: Driskill & Rainey St

10/04/2019

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	33	327	48	9	14	8
Future Vol, veh/h	60	376	163	9	95	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	462	200	11	117	21

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	211	0	0	816	206
Stage 1	-	-	-	206	-
Stage 2	-	-	-	610	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1360	-	-	347	835
Stage 1	-	-	-	829	-
Stage 2	-	-	-	542	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1360	-	-	322	835
Mov Cap-2 Maneuver	-	-	-	322	-
Stage 1	-	-	-	768	-
Stage 2	-	-	-	542	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1360	-	-	-	355
HCM Lane V/C Ratio	0.054	-	-	-	0.388
HCM Control Delay (s)	7.8	0	-	-	21.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.8

Intersection						
Int Delay, s/veh	8.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	87	0
Future Vol, veh/h	0	0	0	0	92	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	113	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1622	-
HCM Lane V/C Ratio	0.111	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection			
Intersection Delay, s/veh	8.1		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	656	217	0
Demand Flow Rate, veh/h	658	217	0
Vehicles Circulating, veh/h	139	0	232
Vehicles Exiting, veh/h	78	232	565
Ped Vol Crossing Leg, #/h	77	0	35
Ped Cap Adj	0.989	1.000	0.995
Approach Delay, s/veh	9.6	3.9	0.0
Approach LOS	A	A	-
Lane	Left	Left	Left
Designated Moves	R	TR	LT
Assumed Moves	R	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	658	217	0
Cap Entry Lane, veh/h	1197	1380	1089
Entry HV Adj Factor	0.997	1.000	1.000
Flow Entry, veh/h	656	217	0
Cap Entry, veh/h	1181	1380	1084
V/C Ratio	0.555	0.157	0.000
Control Delay, s/veh	9.6	3.9	3.3
LOS	A	A	A
95th %tile Queue, veh	4	1	0

Intersection	
Intersection Delay, s/veh	78.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↕			↕	
Traffic Vol, veh/h	0	76	16	18	175	0	20	0	21	5	134	293
Future Vol, veh/h	0	109	17	48	185	0	23	0	36	42	193	323
Peak Hour Factor	0.72	0.72	0.72	0.85	0.85	0.85	0.65	0.65	0.65	0.80	0.80	0.80
Heavy Vehicles, %	0	2	6	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	171	27	64	246	0	40	0	63	59	273	456
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.7	18.9	11.7	126.2
HCM LOS	B	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	0%	21%	8%
Vol Thru, %	0%	87%	79%	35%
Vol Right, %	61%	13%	0%	58%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	126	233	558
LT Vol	23	0	48	42
Through Vol	0	109	185	193
RT Vol	36	17	0	323
Lane Flow Rate	103	198	310	788
Geometry Grp	1	1	1	1
Degree of Util (X)	0.189	0.373	0.562	1.205
Departure Headway (Hd)	7.028	7.359	7.137	5.503
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	514	492	508	662
Service Time	5.028	5.359	5.137	3.522
HCM Lane V/C Ratio	0.2	0.402	0.61	1.19
HCM Control Delay	11.7	14.7	18.9	126.2
HCM Lane LOS	B	B	C	F
HCM 95th-tile Q	0.7	1.7	3.4	27.4

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖↗	
Traffic Volume (vph)	0	57	46	177	187	0	0	0	0	65	95	0
Future Volume (vph)	0	113	75	177	227	0	0	0	0	119	137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00							
Frt		0.946										
Flt Protected					0.979						0.977	
Satd. Flow (prot)	0	1735	0	0	1842	0	0	0	0	0	3508	0
Flt Permitted					0.666						0.977	
Satd. Flow (perm)	0	1735	0	0	1249	0	0	0	0	0	3508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35										
Link Speed (mph)		30			30			45			35	
Link Distance (ft)		137			359			312			277	
Travel Time (s)		3.1			8.2			4.7			5.4	
Confl. Peds. (#/hr)	22		7	7		22						
Confl. Bikes (#/hr)			5			5						
Peak Hour Factor	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92	0.76	0.76	0.76
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Heavy Vehicles (%)	0%	2%	3%	1%	1%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	168	112	217	279	0	0	0	0	177	204	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	280	0	0	496	0	0	0	0	0	381	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1					1	1	
Detector Template		Thru		Left	Thru					Left	Thru	
Leading Detector (ft)		100		20	100					20	100	
Trailing Detector (ft)		0		0	0					0	0	
Detector 1 Position(ft)		0		0	0					0	0	
Detector 1 Size(ft)		100		20	100					20	100	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	
Turn Type		NA		D.P+P	NA					Perm	NA	
Protected Phases		12		3	3 12						8	
Permitted Phases				12	12					8	8	

Lanes, Volumes, Timings
 114: I-35 SBFR & River St/Holly St

10/04/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		12		3	3	12				8	8	
Switch Phase												
Minimum Initial (s)		8.0		7.0						20.0	20.0	
Minimum Split (s)		24.0		13.0						26.0	26.0	
Total Split (s)		55.0		39.0						26.0	26.0	
Total Split (%)		45.8%		32.5%						21.7%	21.7%	
Maximum Green (s)		49.0		33.0						20.0	20.0	
Yellow Time (s)		4.0		4.0						4.0	4.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		4.0									4.0	
Lead/Lag				Lag						Lead	Lead	
Lead-Lag Optimize?				Yes						Yes	Yes	
Vehicle Extension (s)		2.5		3.0						2.0	2.0	
Recall Mode		C-Max		None						Min	Min	
Walk Time (s)		7.0								7.0	7.0	
Flash Dont Walk (s)		11.0								11.0	11.0	
Pedestrian Calls (#/hr)		0								0	0	
Act Effct Green (s)		65.6			86.0						22.0	
Actuated g/C Ratio		0.55			0.72						0.18	
v/c Ratio		0.29			0.50						0.59	
Control Delay		14.5			8.7						49.2	
Queue Delay		0.0			0.4						0.0	
Total Delay		14.5			9.1						49.2	
LOS		B			A						D	
Approach Delay		14.5			9.1						49.2	
Approach LOS		B			A						D	
Queue Length 50th (ft)		97			146						143	
Queue Length 95th (ft)		136			201						161	
Internal Link Dist (ft)		57			279			232			197	
Turn Bay Length (ft)												
Base Capacity (vph)		965			1109						643	
Starvation Cap Reductn		0			217						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.29			0.56						0.59	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	20 (17%), Referenced to phase 12:EBWB, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	23.6
Intersection LOS:	C
Intersection Capacity Utilization:	52.2%
ICU Level of Service:	A
Analysis Period (min):	15

Lanes, Volumes, Timings
114: I-35 SBFR & River St/Holly St

10/04/2019

Splits and Phases: 114: I-35 SBFR & River St/Holly St



Intersection

Int Delay, s/veh 86.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	341	0	0	881	58
Future Vol, veh/h	0	471	0	0	1019	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	579	0	0	1252	212

Major/Minor	Minor2	Major2
Conflicting Flow All	- 732	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.94	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.32	- -
Pot Cap-1 Maneuver	0 ~ 364	- -
Stage 1	0 -	- -
Stage 2	0 -	- -
Platoon blocked, %		- -
Mov Cap-1 Maneuver	- ~ 364	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, \$	304.5	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	364	-	-
HCM Lane V/C Ratio	1.589	-	-
HCM Control Delay (s)	\$ 304.5	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	33.3	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix Business Input

How do your employees travel to work?

- Personal Vehicle - 9
- Carpool/vanpool - 1
- Car-share - 2
- Transit - 7
- Personal bike - 7
- Walk - 4
- Ride-hail - 6
- Shared micromobility – 4

About how many of your employees drive to work and park in the area on an average weekday?

- Clive Bar - 2
- Big Fat Greek Gyros - 5
- Craft Pride - 7
- Unbarlievable - 5
- Drafting Room - 4
- Half Step - 3
- Container Bar - 5
- Camden Rainey Street - 9
- Bangers Sausage and Beer Garden - 15

About how many of your employees drive to work and park in the area on an average weekend day?

- Clive Bar - 8
- Big Fat Greek Gyros - 3
- Craft Pride - 7
- Unbarlievable - 7
- Drafting Room - 6
- Half Step - 5
- Container Bar - 15
- Camden Rainey Street - 5
- Bangers Sausage and Beer Garden - 25

If you have employees who drive to work and park in the area, where do they typically park?

- Clive Bar - Eat Holly Street, The Access Road on IH-35, or the MACC
- Big Fat Greek Gyros – Undetermined
- Craft Pride – Holly St
- Unbarlievable - MACC
- Drafting Room – MACC and Holly St
- Half Step – East Ave, Cesar Chavez, and MACC
- Container Bar - Undetermined
- Camden Rainey Street – Parking garage on Driskill Street or maintenance shop on Rainey St
- Bangers Sausage and Beer Garden – Holly St

How do your customers/clients travel to your business? Please check all that apply:

- Personal Vehicle - 8
- Carpool/vanpool - 3
- Car-share - 5

- Transit - 4
- Personal bike -7
- Walk - 9
- Ride-hail - 8
- Shared micromobility - 8

About how many of your customers/clients drive to your business and park in the area on an average weekday?

- Clive Bar – 50%
- Big Fat Greek Gyros – 0
- Craft Pride – Unknown
- Unbarlievable - Unknown
- Drafting Room – 20
- Half Step – Unknown
- Container Bar - Unknown
- Camden Rainey Street – 450
- Bangers Sausage and Beer Garden – 80

About how many of your customers/clients drive to your business and park in the area on an average weekend day?

- Clive Bar – 15%
- Big Fat Greek Gyros – 0
- Craft Pride – Unknown
- Unbarlievable - Unknown
- Drafting Room – 50
- Half Step – Unknown
- Container Bar - Unknown
- Camden Rainey Street – 450
- Bangers Sausage and Beer Garden – 200

If you have customers/clients who drive to work and park in the area, where do they typically park?

- Clive Bar – Parking lots
- Big Fat Greek Gyros – Unknown
- Craft Pride – East Street, Rainey Street, MACC and Holly St
- Unbarlievable - MACC
- Drafting Room – Unknown
- Half Step – Unknown
- Container Bar - Unknown
- Camden Rainey Street – Parking garage off Driskill St
- Bangers Sausage and Beer Garden – Holly St

Does the business have driveways to the back alley?

- Clive Bar – Yes
- Big Fat Greek Gyros – Yes
- Craft Pride – Yes
- Unbarlievable - No
- Drafting Room – Yes
- Half Step – No
- Container Bar - Blank
- Camden Rainey Street – Yes
- Bangers Sausage and Beer Garden – Yes

What are the driveways to the back alley used for?

- Clive Bar – Manager and maintenance parking.
- Big Fat Greek Gyros – Load/unloading and parking.
- Craft Pride – 1 parking spot & Recycling
- Unbarlievable - Unknown
- Drafting Room – Owner parking and loading
- Half Step – Loading/unloading,
- Container Bar - Blank
- Camden Rainey Street – Nothing
- Bangers Sausage and Beer Garden – Owner parking

Does the business have driveways to Rainey Street?

- Clive Bar – No
- Big Fat Greek Gyros – Yes
- Craft Pride – No
- Unbarlievable - Yes
- Drafting Room – No
- Half Step – No
- Container Bar - Blank
- Camden Rainey Street – Yes
- Bangers Sausage and Beer Garden – No

What are the driveways to Rainey Street used for?

- Clive Bar – Blank
- Big Fat Greek Gyros – In and out our trucks
- Craft Pride – Blank
- Unbarlievable – Gated off
- Drafting Room – Blank
- Half Step – Blank
- Container Bar - Blank
- Camden Rainey Street – Large Moving Trucks, Delivery Trucks, Maintenance Parking, Vendor Parking
- Bangers Sausage and Beer Garden – Blank

What hours are the driveways to Rainey Street in use?

- Clive Bar – Blank
- Big Fat Greek Gyros – 9-12 am & 5-8 pm
- Craft Pride – Blank
- Unbarlievable – Never
- Drafting Room – Blank
- Half Step – Blank
- Container Bar - Blank
- Camden Rainey Street – All day/night
- Bangers Sausage and Beer Garden – Blank

Where does your business receive deliveries?

- Clive Bar – Alley
- Big Fat Greek Gyros – N.A.
- Craft Pride – River Street in the 5-minute zone
- Unbarlievable – Yes
- Drafting Room – Rainey and Alley

- Half Step – Rainey Street or the alley behind us
- Container Bar - Blank
- Camden Rainey Street – On Rainey Street Entrance.
- Bangers Sausage and Beer Garden – Rainey Street in loading area in front of our building.

During what days and times does your business receive deliveries?

- Clive Bar – 11 AM - 4 PM
- Big Fat Greek Gyros – N.A.
- Craft Pride – Tuesday, Wednesday & Friday 12 PM - 5 PM
- Unbarlievable – Yes
- Drafting Room – Tuesday thru Friday afternoons
- Half Step – 12 PM – 4 PM ideally, but very often they come later
- Container Bar - Blank
- Camden Rainey Street – 8 AM – 7 PM. 7 days a week.
- Bangers Sausage and Beer Garden – Monday to Friday 9 AM to 3 PM

Do deliveries to your business require a delivery truck?

- Clive Bar – Yes
- Big Fat Greek Gyros – No
- Craft Pride – Yes
- Unbarlievable – Yes
- Drafting Room – No
- Half Step – Yes
- Container Bar - Blank
- Camden Rainey Street – Yes
- Bangers Sausage and Beer Garden – Yes

Where do the delivery trucks park?

- Clive Bar – Alley or drop off zone
- Big Fat Greek Gyros – Blank
- Craft Pride – They put their hazards on in the 5-minute zone on River Streets.
- Unbarlievable – Street
- Drafting Room – Blank
- Half Step – Rainey Street
- Container Bar - Blank
- Camden Rainey Street – At the entrance off Rainey Street
- Bangers Sausage and Beer Garden – Rainey Street in front on Bangers

How long are the delivery trucks parked in this location?

- Clive Bar – Delivery vehicles tend to drop off for several locations. So up to a few hours to hit all the venues.
- Big Fat Greek Gyros – Blank
- Craft Pride – 5 minutes
- Unbarlievable – 20 minutes
- Drafting Room – Blank
- Half Step – Less than 30 minutes if they are only delivering to us, an unknown length of time if they are making multiple deliveries on the street
- Container Bar - Blank
- Camden Rainey Street – 30 minutes to 4 hours
- Bangers Sausage and Beer Garden – 10 to 20 mins

During which days and times is trash picked up?

- Clive Bar – 5 AM overnight, 5 days a week for recycling and 2 days a week (Sunday morning and Thursday morning)
- Big Fat Greek Gyros – Wednesday & Saturday
- Craft Pride – Monday, Tuesday, Thursday & Friday
- Unbarlievable – Friday
- Drafting Room – Friday morning
- Half Step – Monday, Wednesday and Saturday 4 AM to 7 AM
- Container Bar - Blank
- Camden Rainey Street – 7 days a week
- Bangers Sausage and Beer Garden – Unknown

Where are the dumpsters used by your business located?

- Clive Bar – Behind Container Bar in our parking area
- Big Fat Greek Gyros – At the alley
- Craft Pride – The driveway in the Alley
- Unbarlievable – Alley
- Drafting Room – No dumpster. Use COA cans set out on Rainey Street Friday mornings
- Half Step – Inside our property line along the back alley
- Container Bar - Blank
- Camden Rainey Street – Off Rainey Street
- Bangers Sausage and Beer Garden – Back alley

If Rainey Street were to be closed to vehicular traffic during certain days (any time of day), what days would you prefer?

- Monday
- Tuesday
- Wednesday
- Thursday - 4
- Friday - 7
- Saturday - 7
- Sunday - 6
- I do not support closing Rainey Street to vehicular traffic on any day – 1
- All Blank - 1

Please provide any concerns or suggestions you may have regarding closing Rainey Street on the days you selected.

- Clive Bar – There is so much business during the day on Saturday and Sunday that during peak season in the spring and fall we would want street closures early.
- Big Fat Greek Gyros – Blank
- Craft Pride – Since we are located on the corner, I do not have concerns about closing Rainey Street. I think it would be best during high volume for the safety of all as I have seen many individuals and groups walk right out in front of cars without looking.
- Unbarlievable – Blank
- Drafting Room – Closing Friday and Saturday nights and Sunday afternoon
- Half Step – I fully support closing Rainey Street to through-traffic, as long as I can receive deliveries before 6p
- Container Bar - Blank
- Camden Rainey Street – We will not be able to provide parking for moving companies for our residents. We will not be able to provide parking for delivery trucks.
- Bangers Sausage and Beer Garden – Blank

If Rainey Street were to be closed to vehicular traffic during certain times on weekends, what times would you prefer?

- All day
- 11 AM – 3 PM
- 3 PM - 3 AM - 2
- 6 PM - 3 AM - 1
- 9 PM - 3 AM - 3
- I do not support closing Rainey Street to vehicular traffic at any time on weekends – 1
- Blank - 2

Please provide any concerns or suggestions you may have regarding closing Rainey Street during the weekend times you selected.

- Clive Bar – Blank
- Big Fat Greek Gyros – Blank
- Craft Pride – No Concerns
- Unbarlievable – Blank
- Drafting Room – Blank
- Half Step – Again, I fully support this measure, as long as I can receive deliveries before 6p
- Container Bar - Blank
- Camden Rainey Street – Majority of our residents move in/out on the weekends.
- Bangers Sausage and Beer Garden – Blank

If Rainey Street were to be closed to vehicular traffic during certain times during the week, what times would you prefer? Please rank them in order of preference.

- All day
- 11 AM – 3 PM
- 3 PM - 3 AM
- 6 PM - 3 AM
- 9 PM - 3 AM - 4
- I do not support closing Rainey Street to vehicular traffic at any time on weekends – 3
- Blank – 2

Please provide any concerns or suggestions you may have regarding closing Rainey Street during the weekday times you selected.

- Clive Bar – Having the option to close the street for special street wide events would be helpful. But otherwise it is never really busy enough during the week to warrant closure
- Big Fat Greek Gyros – Blank
- Craft Pride – Deliveries, but isn't too big of a concern
- Unbarlievable – Doesn't need to be closed Monday through Wednesday
- Drafting Room – Blank
- Half Step – Again, I fully support this measure, as long as I can receive deliveries before 6 PM
- Container Bar - Blank
- Camden Rainey Street – Our residents will not be able to park their moving trucks to move in/out. We also will not be able to accept deliveries from carriers.
- Bangers Sausage and Beer Garden – Blank

Do you support closing Rainey Street to vehicular traffic altogether?

- Clive Bar – Yes
- Big Fat Greek Gyros – Yes

- Craft Pride – Yes
- Unbarlievable – No
- Drafting Room – No
- Half Step – Yes
- Container Bar - Blank
- Camden Rainey Street – No
- Bangers Sausage and Beer Garden – Yes

Please provide any concerns or suggestions you may have regarding closing Rainey Street to vehicular traffic altogether.

- Clive Bar – As long as deliveries and managers could get to their venues, I would be fine with changing the entire district to a pedestrian only area.
- Big Fat Greek Gyros – Owners must have access to their business all others can walk
- Craft Pride – Blank
- Unbarlievable – The problem does not happen during the day time.
- Drafting Room – Blank
- Half Step – As long as an adequate solution is made for us to receive deliveries, I fully support this measure
- Container Bar - Blank
- Camden Rainey Street – This is going to affect our business and do not have any alternatives to providing parking for large vehicles like moving trucks and delivery trucks.
- Bangers Sausage and Beer Garden – Blank