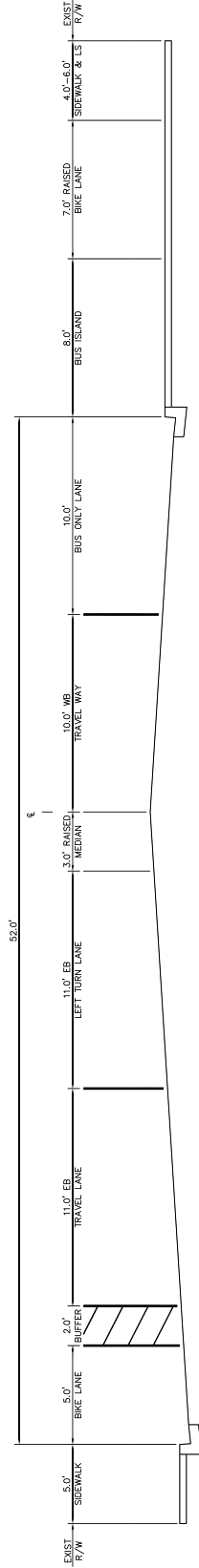
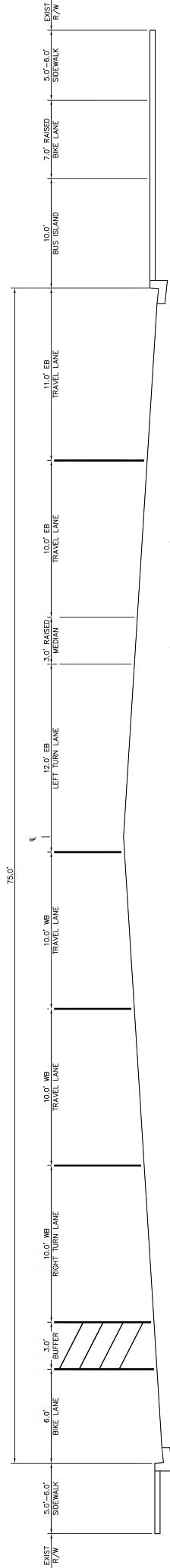


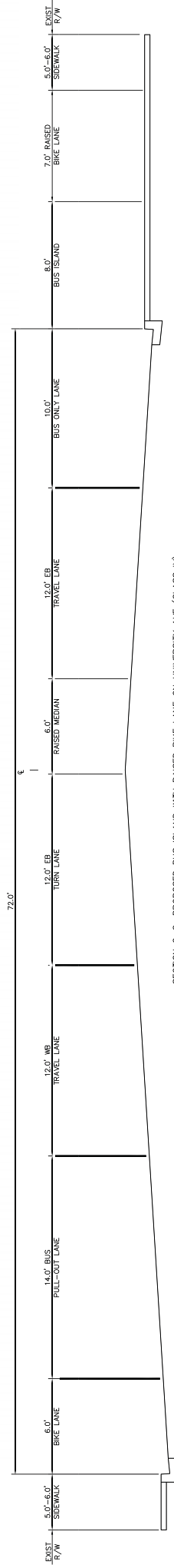
## **APPENDIX A: TYPICAL CROSS SECTIONS**



SECTION A-A: PROPOSED BUFFERED BIKE LANE ON UNIVERSITY AVE (CLASS II WITH 2 LANES)



SECTION B-B: PROPOSED BUS ISLAND WITH RAISED BIKE LANE ON UNIVERSITY AVE (CLASS II WITH 4 LANES)



SECTION C-C: PROPOSED BUS ISLAND WITH RAISED BIKE LANE ON UNIVERSITY AVE (CLASS IV)

## **APPENDIX B: TRAFFIC COUNTS**

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** Polk Ave @ Estrella Ave

**Date of Count:** Wednesday, May 10, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667



# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Winona Ave

**Date of Count:** Wednesday, May 10, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Winona Ave

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	12	11	9	4	148	4	1	20	26	4	84	1	324
7:15 AM	15	12	9	1	168	2	3	12	12	11	91	3	339
7:30 AM	10	9	8	2	136	5	8	21	21	11	78	5	314
7:45 AM	13	16	18	3	143	0	5	19	19	10	100	2	348
8:00 AM	16	23	9	4	147	2	6	13	20	11	98	4	353
8:15 AM	24	10	13	4	154	8	5	19	30	16	129	11	423
8:30 AM	18	8	18	15	160	5	7	12	23	7	141	10	424
8:45 AM	19	4	16	7	127	4	5	13	24	11	123	13	366
<b>Total</b>	<b>127</b>	<b>93</b>	<b>100</b>	<b>40</b>	<b>1,183</b>	<b>30</b>	<b>40</b>	<b>129</b>	<b>175</b>	<b>81</b>	<b>844</b>	<b>49</b>	<b>2,891</b>

AM Intersection Peak Hour : **8:00 AM - 9:00 AM**

Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	77	45	56	30	588	19	23	57	97	45	491	38	1,566
PHF	0.80	0.49	0.78	0.50	0.92	0.59	0.82	0.75	0.81	0.70	0.87	0.73	0.92
Movement PHF	0.93			0.88			0.82			0.91			0.92

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	13	12	17	5	136	3	1	11	15	16	202	11	442
4:15 PM	15	9	26	8	163	4	8	12	16	15	200	8	484
4:30 PM	11	10	25	9	171	4	7	6	27	21	189	11	491
4:45 PM	15	15	29	7	170	2	8	7	15	14	194	34	510
5:00 PM	18	13	29	8	171	5	12	11	21	8	237	12	545
5:15 PM	5	20	20	11	167	3	11	12	23	22	199	6	499
5:30 PM	14	13	36	10	164	5	9	14	22	17	216	13	533
5:45 PM	13	16	29	4	135	4	9	10	15	8	190	13	446
<b>Total</b>	<b>104</b>	<b>108</b>	<b>211</b>	<b>62</b>	<b>1,277</b>	<b>30</b>	<b>65</b>	<b>83</b>	<b>154</b>	<b>121</b>	<b>1,627</b>	<b>108</b>	<b>3,950</b>

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	52	61	114	36	672	15	40	44	81	61	846	65	2087
PHF	0.72	0.763	0.792	0.818	0.982	0.75	0.833	0.786	0.88	0.693	0.892	0.478	0.96
Movement PHF	0.90			0.98			0.90			0.95			0.96

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocontrols.com  
 (619) 987-5136



**Location:** University Ave @ 50th St

**Date of Count:** Wednesday, May 10, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 50th St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	2	0	0	7	165	8	2	0	0	7	80	0	271
7:15 AM	2	0	0	4	172	5	5	0	0	6	87	0	281
7:30 AM	1	0	0	4	165	5	5	0	0	2	92	0	274
7:45 AM	1	0	0	2	154	11	9	0	0	7	113	0	297
8:00 AM	0	0	0	3	163	5	5	0	0	4	120	0	300
8:15 AM	6	0	0	7	183	17	9	0	0	6	137	0	365
8:30 AM	3	0	0	6	163	11	8	0	0	9	147	0	347
8:45 AM	1	0	0	2	136	12	5	0	0	12	118	0	286
<b>Total</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>1,301</b>	<b>74</b>	<b>48</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>894</b>	<b>0</b>	<b>2,421</b>

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.90**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	10	0	0	18	663	44	31	0	0	26	517	0	1,309
PHF	0.42	#####	#####	0.64	0.91	0.65	0.86	#####	#####	0.72	0.88	#####	0.90
Movement PHF		0.42			0.88			0.86			0.87		0.90

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	5	144	10	7	0	0	12	180	0	358
4:15 PM	1	0	0	7	196	22	4	0	0	11	209	0	450
4:30 PM	1	0	0	3	169	5	3	0	0	18	182	0	381
4:45 PM	0	0	0	5	182	11	4	0	0	17	194	0	413
5:00 PM	2	0	0	5	174	15	4	0	0	17	207	0	424
5:15 PM	1	0	0	5	176	12	5	0	0	14	191	0	404
5:30 PM	1	0	0	5	172	16	5	0	0	13	218	0	430
5:45 PM	1	0	0	1	136	12	6	0	0	12	198	0	366
<b>Total</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>36</b>	<b>1,349</b>	<b>103</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>114</b>	<b>1,579</b>	<b>0</b>	<b>3,226</b>

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	4	0	0	20	704	54	18	0	0	61	810	0	1671
PHF	0.50	#####	#####	1	0.967	0.844	0.9	#####	#####	0.897	0.929	#####	0.97
Movement PHF		0.50			0.98			0.90			0.94		0.97



# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ 52nd St

**Date of Count:** Wednesday, May 10, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 52nd St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	6	9	7	14	159	11	27	22	15	5	77	10	362
7:15 AM	8	7	8	21	166	5	12	8	7	4	82	13	341
7:30 AM	8	8	13	17	156	5	15	15	10	5	89	14	355
7:45 AM	6	12	13	30	151	7	22	12	10	5	136	6	410
8:00 AM	11	8	12	25	149	21	29	14	11	2	103	15	400
8:15 AM	19	10	20	30	180	8	29	14	8	11	135	12	476
8:30 AM	17	6	29	31	157	2	23	13	6	9	139	16	448
8:45 AM	14	7	14	18	126	4	21	11	10	6	115	10	356
<b>Total</b>	<b>89</b>	<b>67</b>	<b>116</b>	<b>186</b>	<b>1,244</b>	<b>63</b>	<b>178</b>	<b>109</b>	<b>77</b>	<b>47</b>	<b>876</b>	<b>96</b>	<b>3,148</b>

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.91**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	53	36	74	116	637	38	103	53	35	27	513	49	1,734
PHF	0.70	0.75	0.64	0.94	0.88	0.45	0.89	0.95	0.80	0.61	0.92	0.77	0.91
Movement PHF	0.78			0.91			0.88			0.90			0.91

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	9	8	30	22	139	14	28	14	11	10	167	16	468
4:15 PM	11	10	23	27	208	9	18	12	6	9	226	9	568
4:30 PM	8	7	29	24	156	18	19	6	13	3	195	13	491
4:45 PM	14	14	24	20	178	13	24	11	6	10	204	12	530
5:00 PM	15	13	24	34	176	13	21	14	3	3	211	4	531
5:15 PM	19	7	23	27	164	15	18	6	10	14	174	14	491
5:30 PM	7	16	20	20	172	15	19	11	14	8	192	12	506
5:45 PM	7	9	19	21	138	7	18	15	4	8	221	15	482
<b>Total</b>	<b>90</b>	<b>84</b>	<b>192</b>	<b>195</b>	<b>1,331</b>	<b>104</b>	<b>165</b>	<b>89</b>	<b>67</b>	<b>65</b>	<b>1,590</b>	<b>95</b>	<b>4,067</b>

PM Intersection Peak Hour : **4:15 PM - 5:15 PM**

Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	48	44	100	105	718	53	82	43	28	25	836	38	2120
PHF	0.80	0.786	0.862	0.772	0.863	0.736	0.854	0.768	0.538	0.625	0.925	0.731	0.93
Movement PHF	0.92			0.90			0.93			0.92			0.93

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Shiloh Rd

**Date of Count:** Wednesday, May 10, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Shiloh Rd

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	1	0	1	7	172	17	16	0	3	0	114	3	334
7:15 AM	1	0	0	1	204	9	17	0	4	1	94	2	333
7:30 AM	0	0	0	1	164	17	9	0	3	3	110	4	311
7:45 AM	2	0	1	7	197	24	9	0	3	3	133	6	385
8:00 AM	3	0	3	11	196	31	8	0	2	3	154	7	418
8:15 AM	2	0	0	15	205	28	14	0	1	1	150	14	430
8:30 AM	1	0	1	8	190	23	13	0	6	3	199	11	455
8:45 AM	3	0	2	7	158	15	16	0	4	2	147	11	365
<b>Total</b>	<b>13</b>	<b>0</b>	<b>8</b>	<b>57</b>	<b>1,486</b>	<b>164</b>	<b>102</b>	<b>0</b>	<b>26</b>	<b>16</b>	<b>1,101</b>	<b>58</b>	<b>3,031</b>

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	8	0	5	41	788	106	44	0	12	10	636	38	1,688
PHF	0.67	#####	0.42	0.68	0.96	0.85	0.79	#####	0.50	0.83	0.80	0.68	0.93
Movement PHF		0.54			0.94			0.74			0.80		0.93

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	1	0	2	1	198	21	12	0	1	2	192	1	431
4:15 PM	2	0	1	2	252	19	11	0	2	3	223	2	517
4:30 PM	1	1	2	1	208	20	8	0	1	1	208	4	455
4:45 PM	3	0	3	3	259	18	7	0	4	4	204	2	507
5:00 PM	2	0	2	2	229	17	8	0	2	2	235	3	502
5:15 PM	5	0	2	2	217	25	8	0	2	5	177	3	446
5:30 PM	6	0	2	2	201	35	12	0	2	1	269	8	538
5:45 PM	2	2	1	2	180	24	9	0	1	2	255	8	486
<b>Total</b>	<b>22</b>	<b>3</b>	<b>15</b>	<b>15</b>	<b>1,744</b>	<b>179</b>	<b>75</b>	<b>0</b>	<b>15</b>	<b>20</b>	<b>1,763</b>	<b>31</b>	<b>3,882</b>

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	16	0	9	9	906	95	35	0	10	12	885	16	1993
PHF	0.67	#####	0.75	0.75	0.875	0.679	0.729	#####	0.625	0.6	0.822	0.5	0.93
Movement PHF		0.78			0.90			0.80			0.82		0.93

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ 54th St

**Date of Count:** Wednesday, May 10, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 54th St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	34	109	34	99	130	17	18	199	48	17	63	51	819
7:15 AM	26	111	40	107	119	15	15	173	45	23	68	20	762
7:30 AM	26	102	44	106	100	13	8	198	71	16	75	28	787
7:45 AM	33	85	50	92	111	11	8	210	74	38	80	25	817
8:00 AM	48	86	67	97	112	16	9	188	77	20	104	41	865
8:15 AM	47	67	62	107	121	15	15	181	79	35	94	35	858
8:30 AM	27	96	72	81	120	15	11	188	71	46	140	27	894
8:45 AM	20	94	62	73	98	10	6	142	69	33	107	25	739
<b>Total</b>	<b>261</b>	<b>750</b>	<b>431</b>	<b>762</b>	<b>911</b>	<b>112</b>	<b>90</b>	<b>1,479</b>	<b>534</b>	<b>228</b>	<b>731</b>	<b>252</b>	<b>6,541</b>

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	155	334	251	377	464	57	43	767	301	139	418	128	3,434
PHF	0.81	0.87	0.87	0.88	0.96	0.89	0.72	0.91	0.95	0.76	0.75	0.78	0.96
Movement PHF	0.92			0.92			0.95			0.80			0.96

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	48	163	119	62	161	23	14	100	49	51	130	25	945
4:15 PM	38	171	130	65	163	27	7	92	67	56	148	31	995
4:30 PM	30	201	114	79	155	25	13	126	63	61	136	21	1,024
4:45 PM	26	191	141	59	161	29	12	95	77	61	125	28	1,005
5:00 PM	30	187	111	48	140	26	6	95	75	65	152	28	963
5:15 PM	28	181	144	66	157	24	11	105	67	55	118	14	970
5:30 PM	33	181	136	53	146	24	14	94	67	44	215	24	1,031
5:45 PM	27	175	111	55	111	21	6	106	56	73	174	18	933
<b>Total</b>	<b>260</b>	<b>1450</b>	<b>1006</b>	<b>487</b>	<b>1,194</b>	<b>199</b>	<b>83</b>	<b>813</b>	<b>521</b>	<b>466</b>	<b>1,198</b>	<b>189</b>	<b>7,866</b>

PM Intersection Peak Hour : **4:15 PM - 5:15 PM**

Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	124	750	496	251	619	107	38	408	282	243	561	108	3987
PHF	0.82	0.933	0.879	0.794	0.949	0.922	0.731	0.81	0.916	0.935	0.923	0.871	0.97
Movement PHF	0.96			0.94			0.90			0.93			0.97

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ University Square Dwy

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ University Square Dwy

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	0	226	3	4	0	19	8	136	0	396
7:15 AM	0	0	0	0	220	14	2	0	14	17	165	0	432
7:30 AM	0	0	0	0	240	9	1	0	19	19	176	0	464
7:45 AM	0	0	0	0	237	16	2	0	22	25	149	0	451
8:00 AM	0	0	0	0	233	26	3	0	25	25	155	0	467
8:15 AM	0	0	0	0	217	19	3	0	30	23	211	0	503
8:30 AM	0	0	0	0	201	12	8	0	25	36	188	0	470
8:45 AM	0	0	0	0	134	16	4	0	34	28	163	0	379
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,708</b>	<b>115</b>	<b>27</b>	<b>0</b>	<b>188</b>	<b>181</b>	<b>1,343</b>	<b>0</b>	<b>3,562</b>

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	888	73	16	0	102	109	703	0	1,891
PHF	#####	#####	#####	#####	0.94	0.70	0.50	#####	0.85	0.76	0.83	#####	0.94
Movement PHF	#DIV/0!				0.93			0.89			0.87		0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	0	159	52	16	0	60	36	264	0	587
4:15 PM	0	0	0	0	162	38	16	0	48	36	240	0	540
4:30 PM	0	0	0	0	167	40	22	0	44	36	237	0	546
4:45 PM	0	0	0	0	167	40	11	0	48	33	197	0	496
5:00 PM	0	0	0	0	173	51	13	0	55	37	236	0	565
5:15 PM	0	0	0	0	156	27	16	0	37	30	252	0	518
5:30 PM	0	0	0	0	150	33	13	0	65	41	244	0	546
5:45 PM	0	0	0	0	133	53	21	0	32	57	220	0	516
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,267</b>	<b>334</b>	<b>128</b>	<b>0</b>	<b>389</b>	<b>306</b>	<b>1,890</b>	<b>0</b>	<b>4,314</b>

PM Intersection Peak Hour : **4:00 PM - 5:00 PM**

Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	0	0	655	170	65	0	200	141	938	0	2169
PHF	#####	#####	#####	#####	0.981	0.817	0.739	#####	0.833	0.979	0.888	#####	0.92
Movement PHF	#DIV/0!				0.98			0.87			0.90		0.92



# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ 60th St

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 60th St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	6	0	0	0	187	4	8	1	23	6	127	2	364
7:15 AM	8	1	5	2	182	3	18	1	26	2	121	4	373
7:30 AM	2	3	9	4	198	7	19	4	30	8	153	3	440
7:45 AM	2	3	3	1	217	5	13	1	19	2	130	2	398
8:00 AM	5	3	7	4	220	7	12	1	23	9	131	2	424
8:15 AM	1	4	1	0	193	10	15	1	27	11	164	3	430
8:30 AM	0	3	1	1	177	8	12	1	26	3	188	1	421
8:45 AM	2	2	6	4	127	8	12	2	7	6	156	3	335
<b>Total</b>	<b>26</b>	<b>19</b>	<b>32</b>	<b>16</b>	<b>1,501</b>	<b>52</b>	<b>109</b>	<b>12</b>	<b>181</b>	<b>47</b>	<b>1,170</b>	<b>20</b>	<b>3,185</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	10	13	20	9	828	29	59	7	99	30	578	10	1,692
PHF	0.50	0.81	0.56	0.56	0.94	0.73	0.78	0.44	0.83	0.68	0.88	0.83	0.96
Movement PHF	0.72			0.94			0.78			0.87			0.96

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	3	5	0	188	30	25	1	11	19	248	7	537
4:15 PM	0	1	3	0	177	21	13	1	13	16	232	1	478
4:30 PM	1	2	4	0	184	19	12	1	10	8	236	5	482
4:45 PM	4	0	3	0	171	20	12	0	13	10	237	6	476
5:00 PM	4	0	2	0	194	19	17	2	13	9	207	2	469
5:15 PM	3	0	6	0	154	23	15	0	12	13	240	4	470
5:30 PM	1	0	3	0	166	26	5	0	3	17	242	4	467
5:45 PM	1	0	3	0	163	24	11	1	12	19	222	5	461
<b>Total</b>	<b>14</b>	<b>6</b>	<b>29</b>	<b>0</b>	<b>1,397</b>	<b>182</b>	<b>110</b>	<b>6</b>	<b>87</b>	<b>111</b>	<b>1,864</b>	<b>34</b>	<b>3,840</b>

PM Intersection Peak Hour : **4:00 PM - 5:00 PM**

Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	5	6	15	0	720	90	62	3	47	53	953	19	1973
PHF	0.31	0.5	0.75	#####	0.957	0.75	0.62	0.75	0.904	0.697	0.961	0.679	0.92
Movement PHF	0.81			0.93			0.76			0.94			0.92

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ College Ave

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ College Ave

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	25	56	16	41	11	21	22	208	59	17	70	46	592
7:15 AM	40	64	22	30	11	25	20	228	40	13	80	44	617
7:30 AM	40	75	27	24	148	26	28	216	48	28	125	34	819
7:45 AM	29	68	21	35	138	40	40	217	49	17	95	35	784
8:00 AM	36	86	25	34	122	31	26	206	51	20	90	43	770
8:15 AM	30	63	21	36	109	40	27	153	47	29	108	49	712
8:30 AM	37	70	11	33	111	21	39	167	36	31	130	40	726
8:45 AM	38	93	32	24	65	31	35	126	31	34	95	41	645
<b>Total</b>	<b>275</b>	<b>575</b>	<b>175</b>	<b>257</b>	<b>715</b>	<b>235</b>	<b>237</b>	<b>1,521</b>	<b>361</b>	<b>189</b>	<b>793</b>	<b>332</b>	<b>5,665</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	135	292	94	129	517	137	121	792	195	94	418	161	3,085
PHF	0.84	0.85	0.87	0.90	0.87	0.86	0.76	0.91	0.96	0.81	0.84	0.82	0.94
Movement PHF	0.89			0.92			0.91			0.90			0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	49	152	40	28	131	50	46	123	51	52	188	64	974
4:15 PM	54	177	41	28	124	43	35	124	41	53	145	55	920
4:30 PM	49	157	46	25	120	49	46	102	42	55	176	52	919
4:45 PM	57	167	50	25	104	41	55	140	32	62	146	53	932
5:00 PM	56	179	59	28	123	41	41	123	30	53	140	48	921
5:15 PM	44	170	50	19	94	50	43	145	39	49	178	43	924
5:30 PM	43	162	51	27	96	49	46	109	34	52	143	51	863
5:45 PM	57	170	55	24	94	66	45	145	30	49	120	63	918
<b>Total</b>	<b>409</b>	<b>1334</b>	<b>392</b>	<b>204</b>	<b>886</b>	<b>389</b>	<b>357</b>	<b>1,011</b>	<b>299</b>	<b>425</b>	<b>1,236</b>	<b>429</b>	<b>7,371</b>

PM Intersection Peak Hour : **4:00 PM - 5:00 PM**

Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	209	653	177	106	479	183	182	489	166	222	655	224	3745
PHF	0.92	0.922	0.885	0.946	0.914	0.915	0.827	0.873	0.814	0.895	0.871	0.875	0.96
Movement PHF	0.95			0.92			0.92			0.91			0.96

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Cartagena Dr

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Cartagena Dr

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	5	0	1	2	116	3	1	0	1	4	85	3	221
7:15 AM	5	0	1	0	108	5	0	0	0	6	107	1	233
7:30 AM	3	0	0	2	209	2	0	0	0	1	183	4	404
7:45 AM	4	0	2	2	214	3	1	1	0	3	147	6	383
8:00 AM	4	0	1	3	201	2	4	0	2	3	137	4	361
8:15 AM	5	0	3	3	183	7	5	0	1	3	140	5	355
8:30 AM	7	0	0	0	148	5	7	0	0	4	152	6	329
8:45 AM	6	0	1	2	118	2	4	1	5	7	154	9	309
<b>Total</b>	<b>39</b>	<b>0</b>	<b>9</b>	<b>14</b>	<b>1,297</b>	<b>29</b>	<b>22</b>	<b>2</b>	<b>9</b>	<b>31</b>	<b>1,105</b>	<b>38</b>	<b>2,595</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	16	0	6	10	807	14	10	1	3	10	607	19	1,503
PHF	0.80	#####	0.50	0.83	0.94	0.50	0.50	0.25	0.38	0.83	0.83	0.79	0.93
Movement PHF		0.69			0.95			0.58			0.85		0.93

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	7	0	0	3	158	0	5	0	6	5	249	8	441
4:15 PM	9	0	2	1	173	0	3	0	8	1	213	14	424
4:30 PM	4	0	0	0	172	4	4	0	7	1	263	5	460
4:45 PM	7	0	2	3	161	2	7	0	4	6	257	2	451
5:00 PM	4	0	2	3	181	5	5	0	4	2	235	9	450
5:15 PM	6	0	3	5	153	0	3	0	5	4	253	12	444
5:30 PM	2	0	1	1	180	0	1	0	1	1	213	9	409
5:45 PM	9	0	1	2	178	3	4	0	2	1	202	17	419
<b>Total</b>	<b>48</b>	<b>0</b>	<b>11</b>	<b>18</b>	<b>1,356</b>	<b>14</b>	<b>32</b>	<b>0</b>	<b>37</b>	<b>21</b>	<b>1,885</b>	<b>76</b>	<b>3,498</b>

PM Intersection Peak Hour : **4:30 PM - 5:30 PM**

Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	21	0	7	11	667	11	19	0	20	13	1008	28	1805
PHF	0.75	#####	0.583	0.55	0.921	0.55	0.679	#####	0.714	0.542	0.958	0.583	0.98
Movement PHF		0.78			0.91			0.89			0.97		0.98

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Bonillo Dr

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Bonillo Dr

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	1	1	1	1	127	4	2	0	8	3	80	2	230
7:15 AM	13	1	1	3	116	0	5	0	5	2	104	0	250
7:30 AM	17	0	2	2	165	0	12	0	8	2	176	1	385
7:45 AM	11	0	0	4	179	0	8	0	10	6	158	3	379
8:00 AM	9	0	2	3	173	1	3	0	3	6	118	4	322
8:15 AM	11	1	2	1	154	2	2	0	4	4	156	4	341
8:30 AM	15	0	3	4	128	0	7	1	7	1	168	2	336
8:45 AM	6	0	4	1	100	0	5	0	4	3	146	5	274
<b>Total</b>	<b>83</b>	<b>3</b>	<b>15</b>	<b>19</b>	<b>1,142</b>	<b>7</b>	<b>44</b>	<b>1</b>	<b>49</b>	<b>27</b>	<b>1,106</b>	<b>21</b>	<b>2,517</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.93**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	48	1	6	10	671	3	25	0	25	18	608	12	1,427
PHF	0.71	0.25	0.75	0.63	0.94	0.38	0.52	#####	0.63	0.75	0.86	0.75	0.93
Movement PHF		0.72			0.93			0.63			0.89		0.93

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	5	0	3	3	142	6	4	0	7	3	246	3	422
4:15 PM	2	0	4	2	138	4	4	0	7	7	211	5	384
4:30 PM	4	0	5	4	148	6	9	0	8	8	223	3	418
4:45 PM	4	0	1	4	133	3	1	0	2	7	248	7	410
5:00 PM	5	0	2	3	152	4	2	0	8	3	242	7	428
5:15 PM	5	0	0	5	125	3	7	0	6	13	236	6	406
5:30 PM	3	2	1	6	150	2	7	0	7	7	198	10	393
5:45 PM	7	0	3	2	152	5	3	0	6	7	225	3	413
<b>Total</b>	<b>35</b>	<b>2</b>	<b>19</b>	<b>29</b>	<b>1,140</b>	<b>33</b>	<b>37</b>	<b>0</b>	<b>51</b>	<b>55</b>	<b>1,829</b>	<b>44</b>	<b>3,274</b>

PM Intersection Peak Hour : **4:30 PM - 5:30 PM**

Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	18	0	8	16	558	16	19	0	24	31	949	23	1662
PHF	0.90	#####	0.4	0.8	0.918	0.667	0.528	#####	0.75	0.596	0.957	0.821	0.97
Movement PHF		0.72			0.93			0.63			0.96		0.97



# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Aragon Dr

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Aragon Dr

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	4	0	5	111	5	5	7	9	3	85	0	234
7:15 AM	0	8	0	4	125	6	11	7	16	2	96	1	276
7:30 AM	2	5	2	4	132	10	13	26	17	1	167	0	379
7:45 AM	0	3	1	5	149	3	15	18	25	3	113	0	335
8:00 AM	0	12	1	7	130	9	9	25	25	8	113	1	340
8:15 AM	0	2	0	5	134	6	18	16	11	3	109	4	308
8:30 AM	0	3	3	5	109	4	18	19	13	4	154	3	335
8:45 AM	0	8	3	4	89	5	12	15	7	6	120	2	271
<b>Total</b>	<b>2</b>	<b>45</b>	<b>10</b>	<b>39</b>	<b>979</b>	<b>48</b>	<b>101</b>	<b>133</b>	<b>123</b>	<b>30</b>	<b>957</b>	<b>11</b>	<b>2,478</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.90**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	2	22	4	21	545	28	55	85	78	15	502	5	1,362
PHF	0.25	0.46	0.50	0.75	0.91	0.70	0.76	0.82	0.78	0.47	0.75	0.31	0.90
Movement PHF		0.54			0.95			0.92			0.78		0.90

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	4	0	2	131	13	12	3	8	19	207	3	402
4:15 PM	0	5	2	1	152	9	11	8	7	21	189	3	408
4:30 PM	0	6	0	1	128	13	13	9	12	24	209	1	416
4:45 PM	0	15	5	0	131	10	21	8	8	21	196	0	415
5:00 PM	0	9	5	5	156	10	14	11	13	17	199	2	441
5:15 PM	0	12	5	1	114	9	18	10	15	18	214	5	421
5:30 PM	0	6	3	6	145	11	18	10	15	11	181	1	407
5:45 PM	0	7	1	2	171	14	15	7	6	9	178	1	411
<b>Total</b>	<b>0</b>	<b>64</b>	<b>21</b>	<b>18</b>	<b>1,128</b>	<b>89</b>	<b>122</b>	<b>66</b>	<b>84</b>	<b>140</b>	<b>1,573</b>	<b>16</b>	<b>3,321</b>

PM Intersection Peak Hour : **4:30 PM - 5:30 PM**

Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	42	15	7	529	42	66	38	48	80	818	8	1693
PHF	#####	0.7	0.75	0.35	0.848	0.808	0.786	0.864	0.8	0.833	0.956	0.4	0.96
Movement PHF		0.71			0.85			0.88			0.96		0.96

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Alamo Dr

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Alamo Dr

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	10	0	4	3	108	0	0	0	0	0	90	0	215
7:15 AM	6	0	3	3	130	1	0	0	0	0	101	6	250
7:30 AM	6	0	6	4	141	1	0	0	0	0	174	8	340
7:45 AM	9	0	3	6	156	0	0	0	0	0	118	11	303
8:00 AM	17	0	4	2	130	0	0	0	0	0	112	11	276
8:15 AM	12	0	2	4	140	1	0	0	0	0	117	10	286
8:30 AM	7	0	0	5	117	0	0	0	0	0	159	16	304
8:45 AM	8	0	7	2	90	2	0	0	0	0	128	7	244
<b>Total</b>	<b>75</b>	<b>0</b>	<b>29</b>	<b>29</b>	<b>1,012</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>999</b>	<b>69</b>	<b>2,218</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.89**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	44	0	15	16	567	2	0	0	0	0	521	40	1,205
PHF	0.65	#####	0.63	0.67	0.91	0.50	#####	#####	#####	#####	0.75	0.91	0.89
Movement PHF		0.70			0.90			#DIV/0!			0.77		0.89

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	7	0	6	7	144	0	0	0	0	0	211	8	383
4:15 PM	6	0	6	8	159	0	0	0	0	0	191	11	381
4:30 PM	14	0	5	5	134	0	0	0	0	0	214	8	380
4:45 PM	4	0	6	6	144	0	0	0	0	0	208	14	382
5:00 PM	7	0	3	8	165	0	0	0	0	0	196	22	401
5:15 PM	4	0	10	4	119	0	0	0	0	0	215	22	374
5:30 PM	5	0	15	2	158	2	0	0	0	0	193	9	384
5:45 PM	11	0	7	9	179	0	0	0	0	0	182	12	400
<b>Total</b>	<b>58</b>	<b>0</b>	<b>58</b>	<b>49</b>	<b>1,202</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,610</b>	<b>106</b>	<b>3,085</b>

PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	27	0	35	23	621	2	0	0	0	0	786	65	1559
PHF	0.61	#####	0.583	0.639	0.867	0.25	#####	#####	#####	#####	0.914	0.739	0.97
Movement PHF		0.78			0.86			#DIV/0!			0.90		0.97

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ Salvation Dwy

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ Salvation Dwy

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	0	107	10	3	0	4	2	92	0	218
7:15 AM	3	0	1	2	126	5	2	0	7	4	100	0	250
7:30 AM	1	0	0	0	142	10	2	0	7	6	174	0	342
7:45 AM	1	0	0	0	158	11	5	0	4	5	116	0	300
8:00 AM	0	0	0	0	134	11	3	0	7	7	109	0	271
8:15 AM	1	0	0	0	135	13	14	0	13	12	107	0	295
8:30 AM	1	0	0	0	114	13	5	0	7	8	151	0	299
8:45 AM	0	0	0	0	89	8	4	0	5	13	122	0	241
<b>Total</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1,005</b>	<b>81</b>	<b>38</b>	<b>0</b>	<b>54</b>	<b>57</b>	<b>971</b>	<b>0</b>	<b>2,216</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.88**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	3	0	0	0	569	45	24	0	31	30	506	0	1,208
PHF	0.75	#####	#####	#####	0.90	0.87	0.43	#####	0.60	0.63	0.73	#####	0.88
Movement PHF		0.75			0.91			0.51			0.74		0.88

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	1	138	16	4	0	12	10	207	0	388
4:15 PM	1	0	0	1	168	33	11	0	10	15	182	0	421
4:30 PM	2	0	0	0	133	34	14	0	15	12	207	0	417
4:45 PM	1	0	0	1	140	28	9	0	14	14	200	0	407
5:00 PM	1	0	0	1	180	22	11	0	9	12	187	0	423
5:15 PM	1	0	0	0	97	96	9	0	5	22	203	0	433
5:30 PM	0	0	0	0	143	25	24	0	25	22	186	0	425
5:45 PM	0	0	0	0	183	15	17	0	17	12	110	67	421
<b>Total</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1,182</b>	<b>269</b>	<b>99</b>	<b>0</b>	<b>107</b>	<b>119</b>	<b>1,482</b>	<b>67</b>	<b>3,335</b>

PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	2	0	0	1	603	158	61	0	56	68	686	67	1702
PHF	0.50	#####	#####	0.25	0.824	0.411	0.635	#####	0.56	0.773	0.845	0.25	0.98
Movement PHF		0.50			0.94			0.60			0.91		0.98

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ 68th St

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 68th St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	1	0	3	0	115	0	0	0	0	0	96	3	218
7:15 AM	2	0	1	1	125	0	0	0	0	0	90	4	223
7:30 AM	1	0	3	2	140	0	0	0	0	0	145	1	292
7:45 AM	7	0	2	3	176	0	0	0	0	0	125	3	316
8:00 AM	2	0	1	2	139	0	0	0	0	0	115	2	261
8:15 AM	1	0	3	4	133	0	0	0	0	0	114	3	258
8:30 AM	2	0	4	1	119	0	0	0	0	0	147	3	276
8:45 AM	3	0	3	1	104	0	0	0	0	0	123	1	235
<b>Total</b>	<b>19</b>	<b>0</b>	<b>20</b>	<b>14</b>	<b>1,051</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>955</b>	<b>20</b>	<b>2,079</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.89**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	11	0	9	11	588	0	0	0	0	0	499	9	1,127
PHF	0.39	#####	0.75	0.69	0.84	#####	#####	#####	#####	#####	0.86	0.75	0.89
Movement PHF		0.56			0.84		#DIV/0!				0.87		0.89

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	1	0	3	3	152	0	0	0	0	0	213	8	380
4:15 PM	1	0	2	7	190	0	0	0	0	0	180	6	386
4:30 PM	2	0	3	8	150	0	0	0	0	0	218	3	384
4:45 PM	3	0	1	9	173	0	0	0	0	0	213	4	403
5:00 PM	3	0	0	5	198	0	0	0	0	0	218	5	429
5:15 PM	0	0	3	4	173	0	0	0	0	0	195	11	386
5:30 PM	3	0	3	3	157	0	0	0	0	0	224	12	402
5:45 PM	0	0	4	3	184	0	0	0	0	0	148	6	345
<b>Total</b>	<b>13</b>	<b>0</b>	<b>19</b>	<b>42</b>	<b>1,377</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,609</b>	<b>55</b>	<b>3,115</b>

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	9	0	7	21	701	0	0	0	0	0	850	32	1620
PHF	0.75	#####	0.583	0.583	0.885	#####	#####	#####	#####	#####	0.949	0.667	0.94
Movement PHF		0.67			0.89		#DIV/0!				0.93		0.94



# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ 69th St

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 69th St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	0	0	0	105	15	6	0	9	4	95	0	234
7:15 AM	0	0	0	0	117	7	8	0	2	1	90	0	225
7:30 AM	0	0	0	0	138	14	8	0	5	4	144	0	313
7:45 AM	0	0	1	1	161	21	10	0	11	5	121	1	332
8:00 AM	0	0	0	1	131	16	14	0	8	4	112	0	286
8:15 AM	0	0	0	0	129	16	5	0	9	2	115	0	276
8:30 AM	0	0	0	0	112	17	6	0	8	2	148	1	294
8:45 AM	2	0	1	0	94	6	5	0	5	5	121	0	239
<b>Total</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>987</b>	<b>112</b>	<b>62</b>	<b>0</b>	<b>57</b>	<b>27</b>	<b>946</b>	<b>2</b>	<b>2,199</b>

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.91**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	0	1	2	559	67	37	0	33	15	492	1	1,207
PHF	#####	#####	0.25	0.50	0.87	0.80	0.66	#####	0.75	0.75	0.85	0.25	0.91
Movement PHF		0.25			0.86			0.80			0.86		0.91

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	0	0	0	147	29	9	0	6	12	204	0	407
4:15 PM	0	0	0	0	186	16	14	0	11	10	172	0	409
4:30 PM	0	0	1	0	144	22	4	0	6	12	209	0	398
4:45 PM	2	0	0	1	171	31	12	0	9	18	196	0	440
5:00 PM	2	0	0	0	182	16	3	0	12	12	205	1	433
5:15 PM	0	0	0	0	168	33	13	0	8	5	193	0	420
5:30 PM	0	0	0	0	155	28	9	0	5	17	210	0	424
5:45 PM	0	0	0	0	178	24	14	0	7	7	144	1	375
<b>Total</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1,331</b>	<b>199</b>	<b>78</b>	<b>0</b>	<b>64</b>	<b>93</b>	<b>1,533</b>	<b>2</b>	<b>3,306</b>

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.98**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	4	0	0	1	676	108	37	0	34	52	804	1	1717
PHF	0.50	#####	#####	0.25	0.929	0.818	0.712	#####	0.708	0.722	0.957	0.25	0.98
Movement PHF		0.50			0.97			0.85			0.94		0.98

# Turn Count Summary

Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** University Ave @ 70th St

**Date of Count:** Thursday, May 11, 2017

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 17-0667





**Location:** University Ave @ 70th St

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	25	8	49	115	92	1	0	34	3	1	59	33	420
7:15 AM	39	13	79	149	92	1	8	21	4	3	63	33	505
7:30 AM	41	9	84	137	122	4	4	28	5	4	120	51	609
7:45 AM	47	8	59	165	138	3	2	50	7	5	75	42	601
8:00 AM	53	18	52	153	96	2	4	44	6	12	79	48	567
8:15 AM	44	15	70	109	98	2	3	28	9	5	75	47	505
8:30 AM	46	15	68	103	77	4	1	36	4	5	102	48	509
8:45 AM	39	5	67	122	69	3	4	18	6	4	88	48	473
<b>Total</b>	<b>334</b>	<b>91</b>	<b>528</b>	<b>1,053</b>	<b>784</b>	<b>20</b>	<b>26</b>	<b>259</b>	<b>44</b>	<b>39</b>	<b>661</b>	<b>350</b>	<b>4,189</b>

AM Intersection Peak Hour : **7:15 AM - 8:15 AM**

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	180	48	274	604	448	10	18	143	22	24	337	174	2,282
PHF	0.85	0.67	0.82	0.92	0.81	0.63	0.56	0.72	0.79	0.50	0.70	0.85	0.94
Movement PHF	0.94			0.87			0.78			0.76			0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	65	24	104	104	114	6	2	18	7	8	142	81	675
4:15 PM	73	25	127	102	118	6	3	29	11	7	97	55	653
4:30 PM	63	24	111	91	116	1	3	24	5	11	154	52	655
4:45 PM	66	21	135	112	122	5	3	20	5	9	142	51	691
5:00 PM	70	19	119	107	105	6	2	19	2	9	123	78	659
5:15 PM	61	30	131	108	116	9	2	26	4	12	137	52	688
5:30 PM	64	22	127	129	101	4	5	33	7	14	137	63	706
5:45 PM	67	36	115	102	103	7	2	20	14	8	131	50	655
<b>Total</b>	<b>529</b>	<b>201</b>	<b>969</b>	<b>855</b>	<b>895</b>	<b>44</b>	<b>22</b>	<b>189</b>	<b>55</b>	<b>78</b>	<b>1,063</b>	<b>482</b>	<b>5,382</b>

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.97**

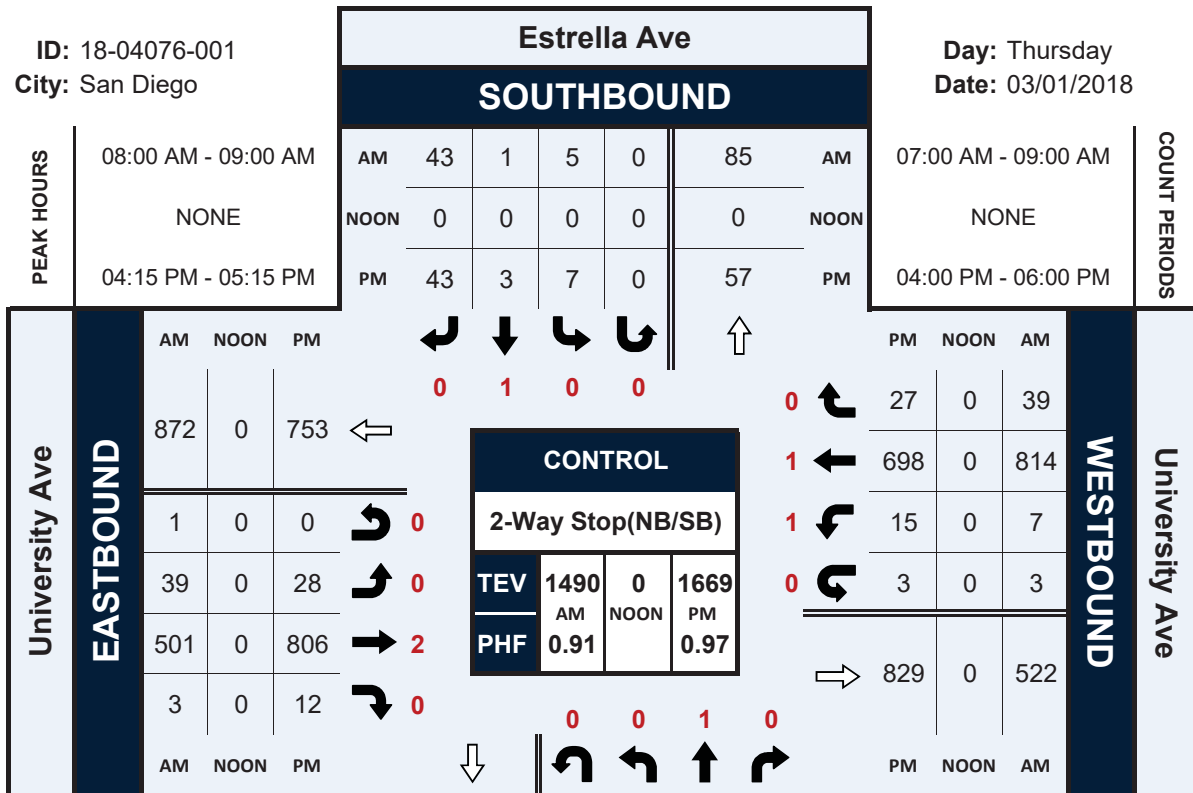
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	261	92	512	456	444	24	12	98	18	44	539	244	2744
PHF	0.93	0.767	0.948	0.884	0.91	0.667	0.6	0.742	0.643	0.786	0.949	0.782	0.97
Movement PHF	0.97			0.97			0.71			0.97			0.97

# Estrella Ave & University Ave

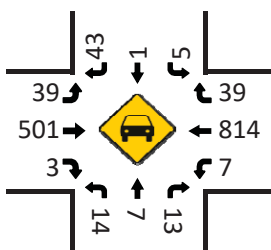
## Peak Hour Turning Movement Count

ID: 18-04076-001  
City: San Diego

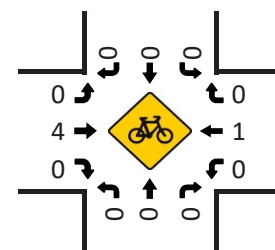
Day: Thursday  
Date: 03/01/2018



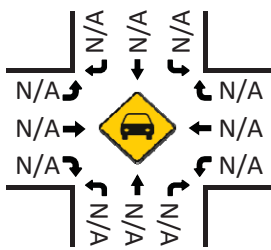
Total Vehicles (AM)



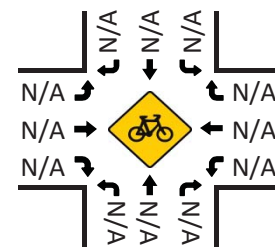
Bikes (AM)



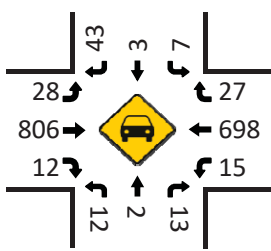
Total Vehicles (Noon)



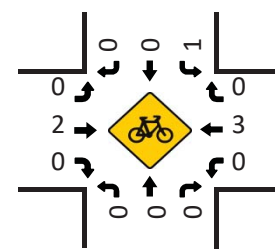
Bikes (NOON)



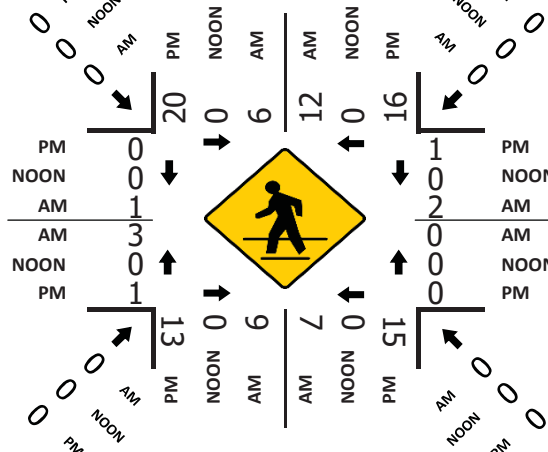
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)

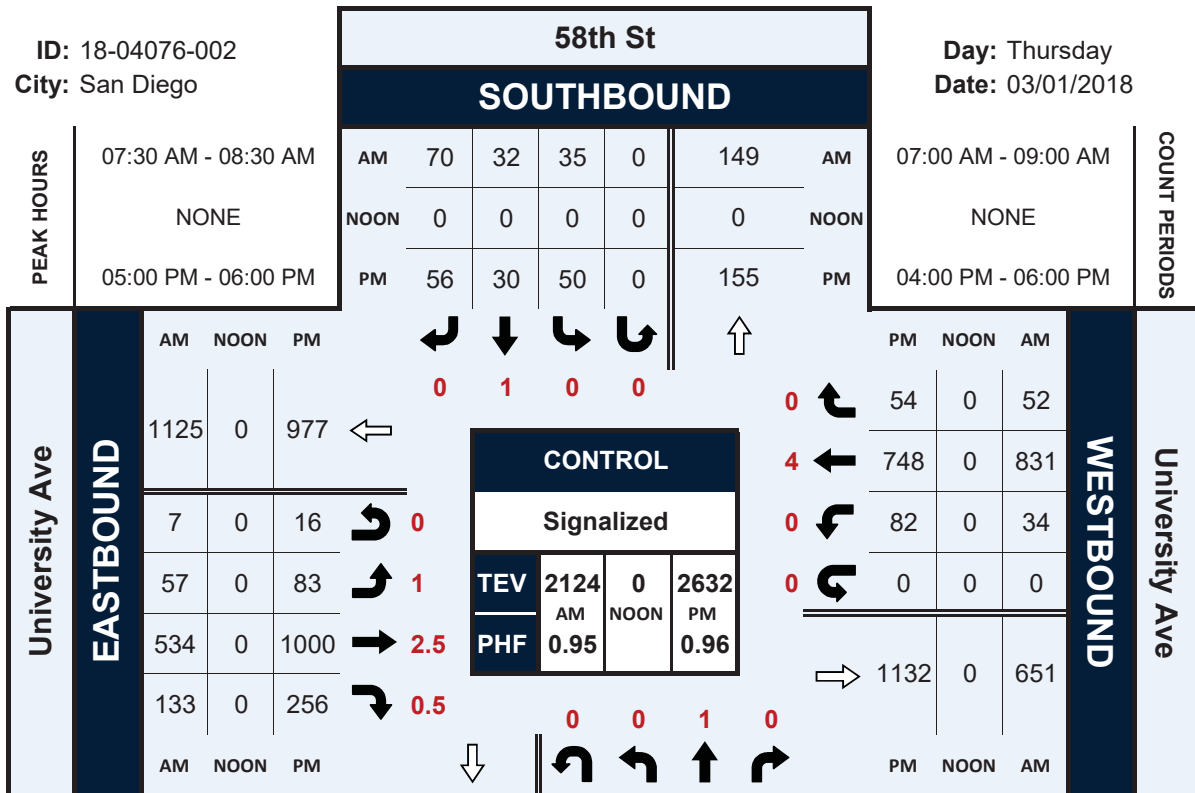


# 58th St & University Ave

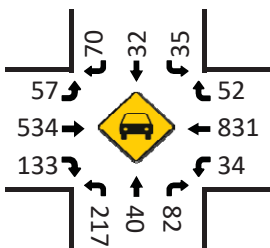
## Peak Hour Turning Movement Count

ID: 18-04076-002  
City: San Diego

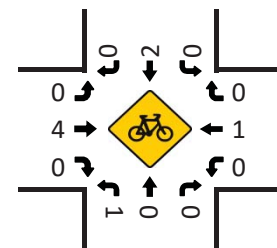
Day: Thursday  
Date: 03/01/2018



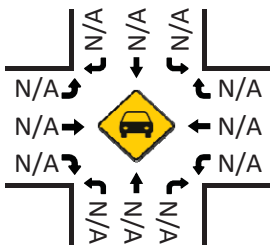
Total Vehicles (AM)



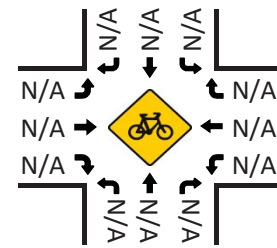
Bikes (AM)



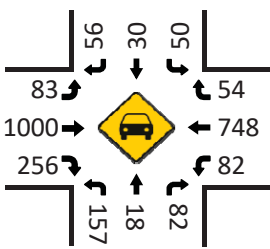
Total Vehicles (Noon)



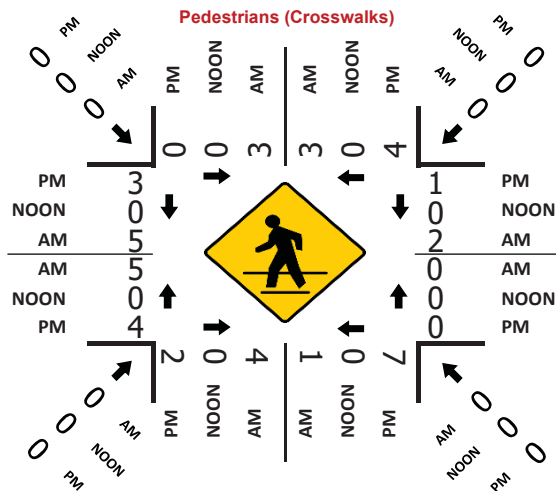
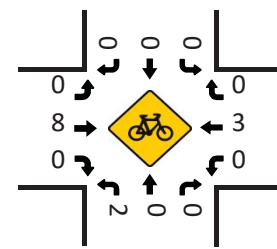
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)





# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

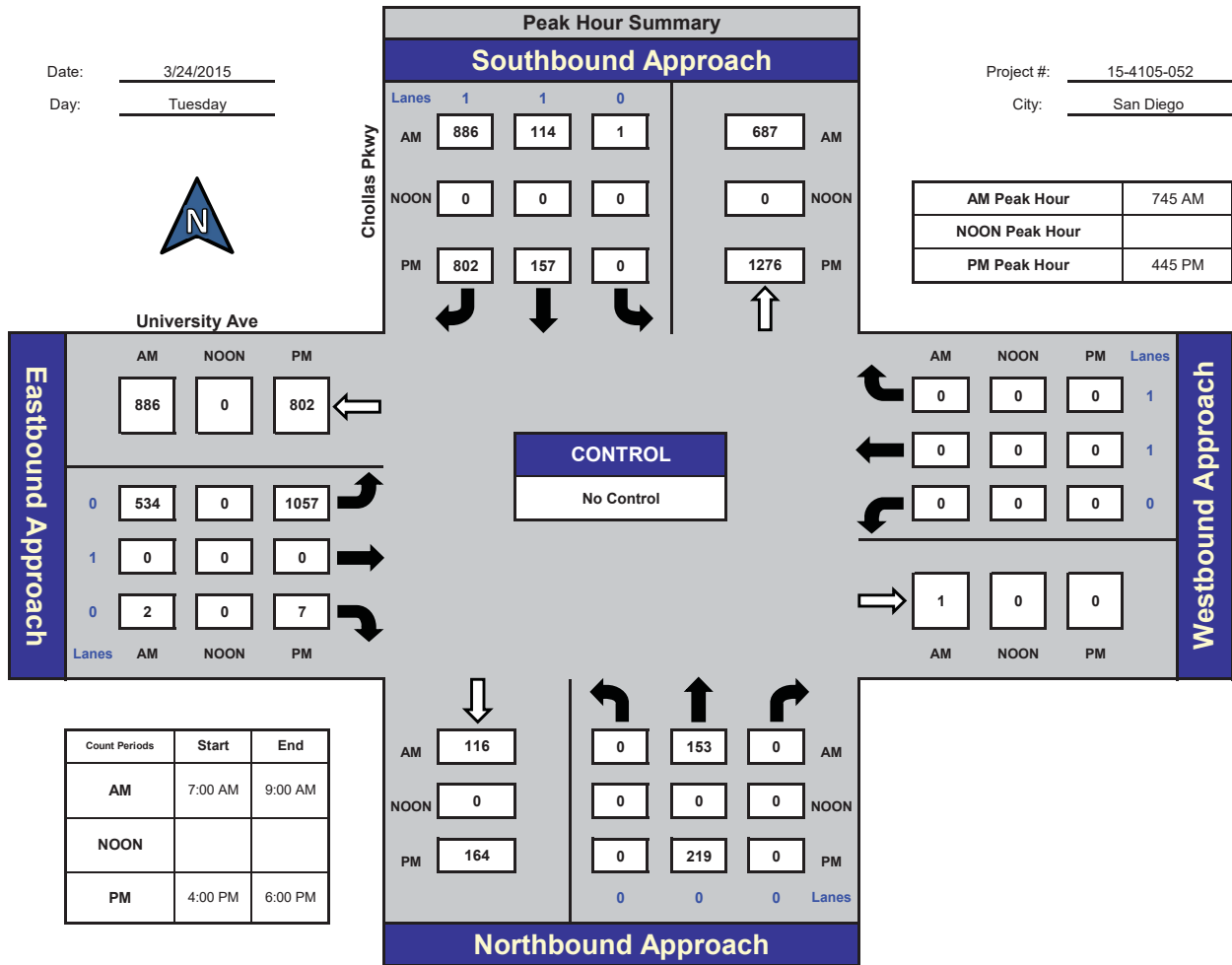
## Chollas Pkwy and University Ave., San Diego

Date: 3/24/2015

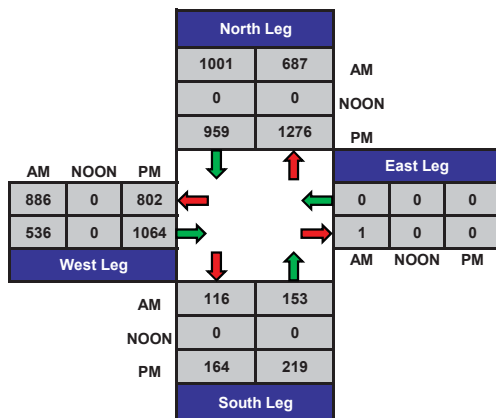
Day: Tuesday

Project #: 15-4105-052

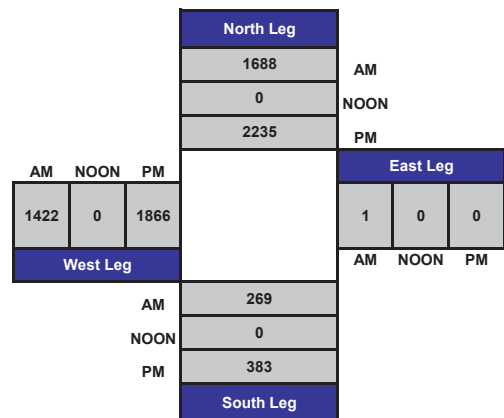
City: San Diego



### Total Ins & Outs



### Total Volume Per Leg





# 3-Day Segment Counts Summary

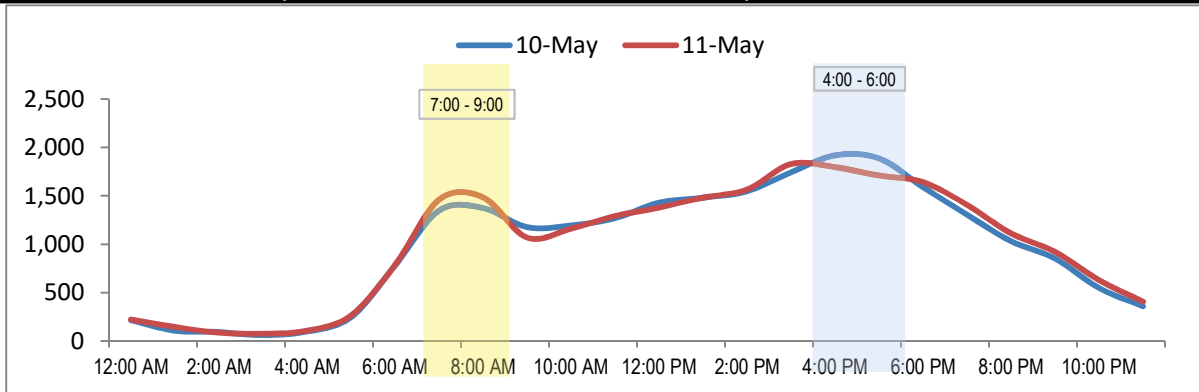


Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 1. University Ave btwn University Square Dwy and 60th St  
**Orientation:** East-West  
**Day 1** Wednesday, May 10, 2017  
**Day 2** Thursday, May 11, 2017  
**AVC Proj. No:** 17-0667

		<b>Average Daily Traffic</b>	<b>23,838</b>
		<b>Highest Daily Traffic</b>	<b>24,027</b>
Time	Hourly Volume		
	10-May	11-May	
12:00 AM - 1:00 AM	213	222	
1:00 AM - 2:00 AM	106	144	
2:00 AM - 3:00 AM	92	85	
3:00 AM - 4:00 AM	60	75	
4:00 AM - 5:00 AM	99	106	
5:00 AM - 6:00 AM	245	263	
6:00 AM - 7:00 AM	780	786	
7:00 AM - 8:00 AM	1,348	1,460	
8:00 AM - 9:00 AM	1,374	1,485	
9:00 AM - 10:00 AM	1,177	1,068	
10:00 AM - 11:00 AM	1,193	1,161	
11:00 AM - 12:00 PM	1,269	1,292	
12:00 PM - 1:00 PM	1,430	1,379	
1:00 PM - 2:00 PM	1,481	1,482	
2:00 PM - 3:00 PM	1,547	1,565	
3:00 PM - 4:00 PM	1,743	1,829	
4:00 PM - 5:00 PM	1,919	1,797	
5:00 PM - 6:00 PM	1,888	1,710	
6:00 PM - 7:00 PM	1,590	1,642	
7:00 PM - 8:00 PM	1,305	1,407	
8:00 PM - 9:00 PM	1,031	1,112	
9:00 PM - 10:00 PM	852	921	
10:00 PM - 11:00 PM	547	629	
11:00 PM - 12:00 AM	359	407	
<b>Total</b>	<b>23,648</b>	<b>24,027</b>	



# 24 Hour Segment Count



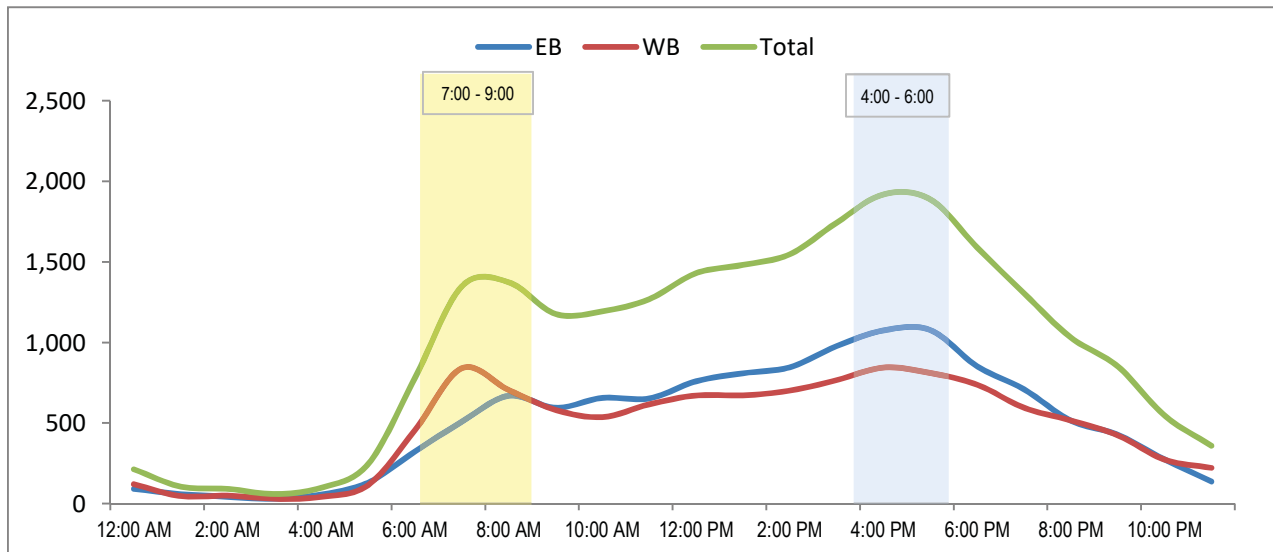
Accurate Video Counts Inc  
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 (619) 987-5136



**Location:** 1. University Ave btwn University Square Dwy and 60th St  
**Orientation:** East-West  
**Date of Count:** Wednesday, May 10, 2017  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 17-0667

24 Hour Segment Volume					23,648			
Time	Hourly Volume			Time	Hourly Volume			
	EB	WB	Total		EB	WB	Total	
12:00 AM - 1:00 AM	92	121	213	12:00 PM - 1:00 PM	759	671	1,430	
1:00 AM - 2:00 AM	59	47	106	1:00 PM - 2:00 PM	809	672	1,481	
2:00 AM - 3:00 AM	42	50	92	2:00 PM - 3:00 PM	846	701	1,547	
3:00 AM - 4:00 AM	30	30	60	3:00 PM - 4:00 PM	977	766	1,743	
4:00 AM - 5:00 AM	57	42	99	4:00 PM - 5:00 PM	1,075	844	1,919	
5:00 AM - 6:00 AM	130	115	245	5:00 PM - 6:00 PM	1,077	811	1,888	
6:00 AM - 7:00 AM	324	456	780	6:00 PM - 7:00 PM	852	738	1,590	
7:00 AM - 8:00 AM	508	840	1,348	7:00 PM - 8:00 PM	710	595	1,305	
8:00 AM - 9:00 AM	669	705	1,374	8:00 PM - 9:00 PM	515	516	1,031	
9:00 AM - 10:00 AM	595	582	1,177	9:00 PM - 10:00 PM	428	424	852	
10:00 AM - 11:00 AM	656	537	1,193	10:00 PM - 11:00 PM	274	273	547	
11:00 AM - 12:00 PM	653	616	1,269	11:00 PM - 12:00 AM	137	222	359	
<b>Total</b>	<b>3,815</b>	<b>4,141</b>	<b>7,956</b>	<b>Total</b>	<b>8,459</b>	<b>7,233</b>	<b>15,692</b>	

**24-Hour EB Volume 12,274**      **24-Hour WB Volume 11,374**



# 24 Hour Segment Count



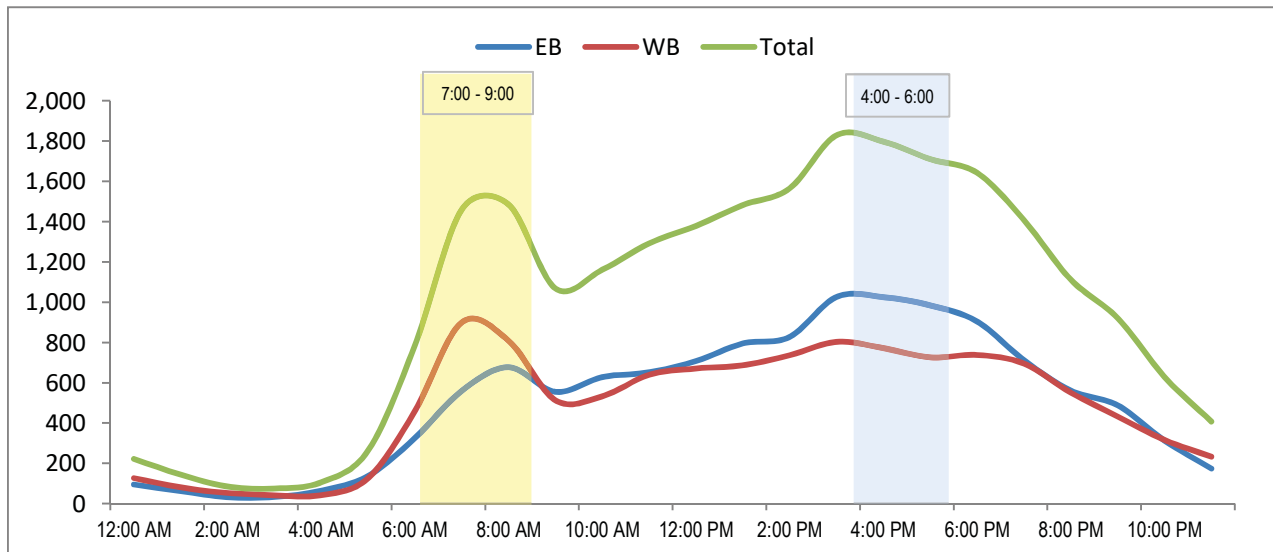
Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 1. University Ave btwn University Square Dwy and 60th St  
**Orientation:** East-West  
**Date of Count:** Thursday, May 11, 2017  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 17-0667

24 Hour Segment Volume					24,027			
Time	Hourly Volume			Time	Hourly Volume			
	EB	WB	Total		EB	WB	Total	
12:00 AM - 1:00 AM	95	127	222	12:00 PM - 1:00 PM	708	671	1,379	
1:00 AM - 2:00 AM	63	81	144	1:00 PM - 2:00 PM	795	687	1,482	
2:00 AM - 3:00 AM	32	53	85	2:00 PM - 3:00 PM	828	737	1,565	
3:00 AM - 4:00 AM	33	42	75	3:00 PM - 4:00 PM	1,026	803	1,829	
4:00 AM - 5:00 AM	64	42	106	4:00 PM - 5:00 PM	1,025	772	1,797	
5:00 AM - 6:00 AM	137	126	263	5:00 PM - 6:00 PM	984	726	1,710	
6:00 AM - 7:00 AM	326	460	786	6:00 PM - 7:00 PM	904	738	1,642	
7:00 AM - 8:00 AM	560	900	1,460	7:00 PM - 8:00 PM	712	695	1,407	
8:00 AM - 9:00 AM	677	808	1,485	8:00 PM - 9:00 PM	561	551	1,112	
9:00 AM - 10:00 AM	555	513	1,068	9:00 PM - 10:00 PM	488	433	921	
10:00 AM - 11:00 AM	628	533	1,161	10:00 PM - 11:00 PM	313	316	629	
11:00 AM - 12:00 PM	652	640	1,292	11:00 PM - 12:00 AM	174	233	407	
<b>Total</b>	<b>3,822</b>	<b>4,325</b>	<b>8,147</b>	<b>Total</b>	<b>8,518</b>	<b>7,362</b>	<b>15,880</b>	

**24-Hour EB Volume 12,340**      **24-Hour WB Volume 11,687**



# 3-Day Segment Counts Summary

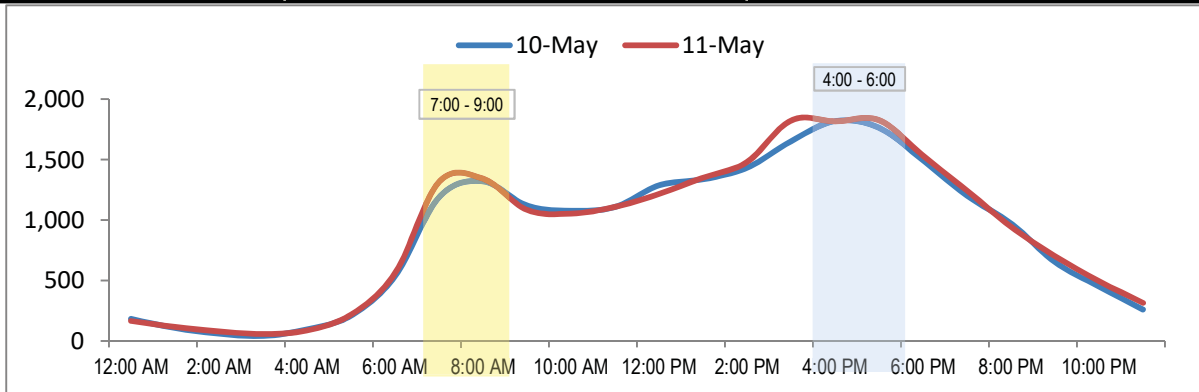


Accurate Video Counts Inc  
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**Location:** 2. University Ave btwn Rolando Blvd & Aragon Dr  
**Orientation:** East-West  
**Day 1** Wednesday, May 10, 2017  
**Day 2** Thursday, May 11, 2017  
**AVC Proj. No:** 17-0667

		<b>Average Daily Traffic</b>	<b>21,645</b>
		<b>Highest Daily Traffic</b>	<b>21,928</b>
<b>Time</b>	<b>Hourly Volume</b>		
	<b>10-May</b>	<b>11-May</b>	
12:00 AM - 1:00 AM	182	165	
1:00 AM - 2:00 AM	107	115	
2:00 AM - 3:00 AM	60	80	
3:00 AM - 4:00 AM	41	57	
4:00 AM - 5:00 AM	96	87	
5:00 AM - 6:00 AM	209	218	
6:00 AM - 7:00 AM	535	560	
7:00 AM - 8:00 AM	1,189	1,315	
8:00 AM - 9:00 AM	1,320	1,342	
9:00 AM - 10:00 AM	1,120	1,084	
10:00 AM - 11:00 AM	1,077	1,053	
11:00 AM - 12:00 PM	1,108	1,109	
12:00 PM - 1:00 PM	1,287	1,215	
1:00 PM - 2:00 PM	1,338	1,350	
2:00 PM - 3:00 PM	1,432	1,480	
3:00 PM - 4:00 PM	1,652	1,824	
4:00 PM - 5:00 PM	1,818	1,816	
5:00 PM - 6:00 PM	1,763	1,826	
6:00 PM - 7:00 PM	1,493	1,533	
7:00 PM - 8:00 PM	1,201	1,243	
8:00 PM - 9:00 PM	972	945	
9:00 PM - 10:00 PM	652	701	
10:00 PM - 11:00 PM	450	495	
11:00 PM - 12:00 AM	260	315	
<b>Total</b>	<b>21,362</b>	<b>21,928</b>	



# 24 Hour Segment Count



Accurate Video Counts Inc  
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 (619) 987-5136



**Location:** 2. University Ave btwn Rolando Blvd & Aragon Dr

**Orientation:** East-West

**Date of Count:** Wednesday, May 10, 2017

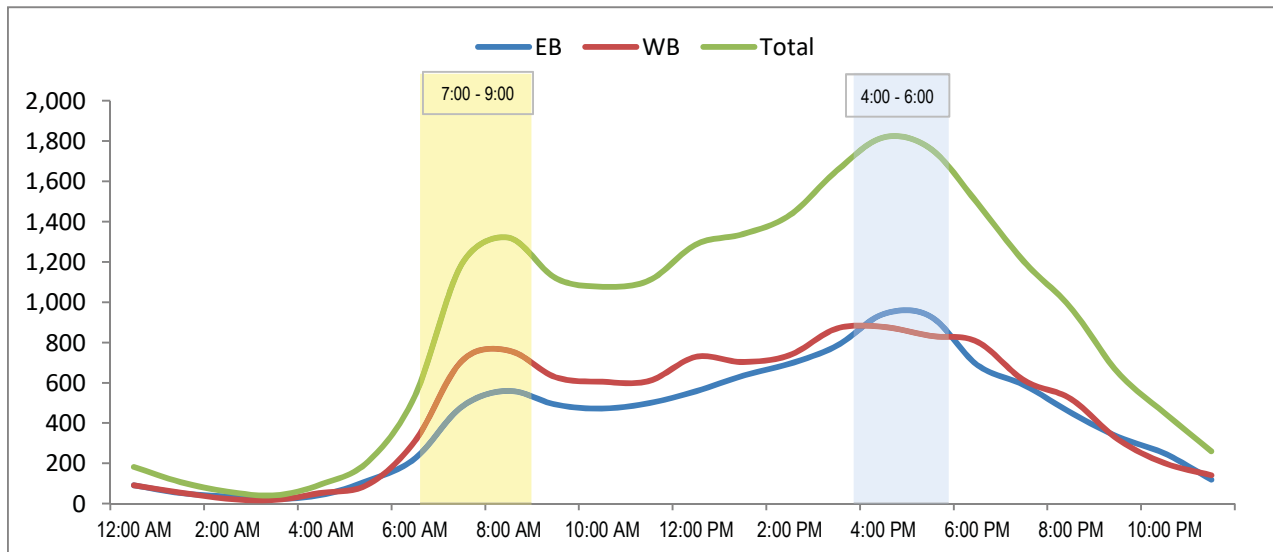
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 17-0667

24 Hour Segment Volume					21,362				
Time	Hourly Volume			Time	Hourly Volume				
	EB	WB	Total		EB	WB	Total		
12:00 AM - 1:00 AM	91	91	182	12:00 PM - 1:00 PM	558	729	1,287		
1:00 AM - 2:00 AM	52	55	107	1:00 PM - 2:00 PM	635	703	1,338		
2:00 AM - 3:00 AM	36	24	60	2:00 PM - 3:00 PM	695	737	1,432		
3:00 AM - 4:00 AM	23	18	41	3:00 PM - 4:00 PM	783	869	1,652		
4:00 AM - 5:00 AM	43	53	96	4:00 PM - 5:00 PM	941	877	1,818		
5:00 AM - 6:00 AM	114	95	209	5:00 PM - 6:00 PM	930	833	1,763		
6:00 AM - 7:00 AM	224	311	535	6:00 PM - 7:00 PM	689	804	1,493		
7:00 AM - 8:00 AM	481	708	1,189	7:00 PM - 8:00 PM	589	612	1,201		
8:00 AM - 9:00 AM	560	760	1,320	8:00 PM - 9:00 PM	452	520	972		
9:00 AM - 10:00 AM	492	628	1,120	9:00 PM - 10:00 PM	332	320	652		
10:00 AM - 11:00 AM	472	605	1,077	10:00 PM - 11:00 PM	249	201	450		
11:00 AM - 12:00 PM	499	609	1,108	11:00 PM - 12:00 AM	119	141	260		
<b>Total</b>	<b>3,087</b>	<b>3,957</b>	<b>7,044</b>	<b>Total</b>	<b>6,972</b>	<b>7,346</b>	<b>14,318</b>		

**24-Hour EB Volume 10,059**      **24-Hour WB Volume 11,303**



# 24 Hour Segment Count



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 (619) 987-5136



**Location:** 2. University Ave btwn Rolando Blvd & Aragon Dr

**Orientation:** East-West

**Date of Count:** Thursday, May 11, 2017

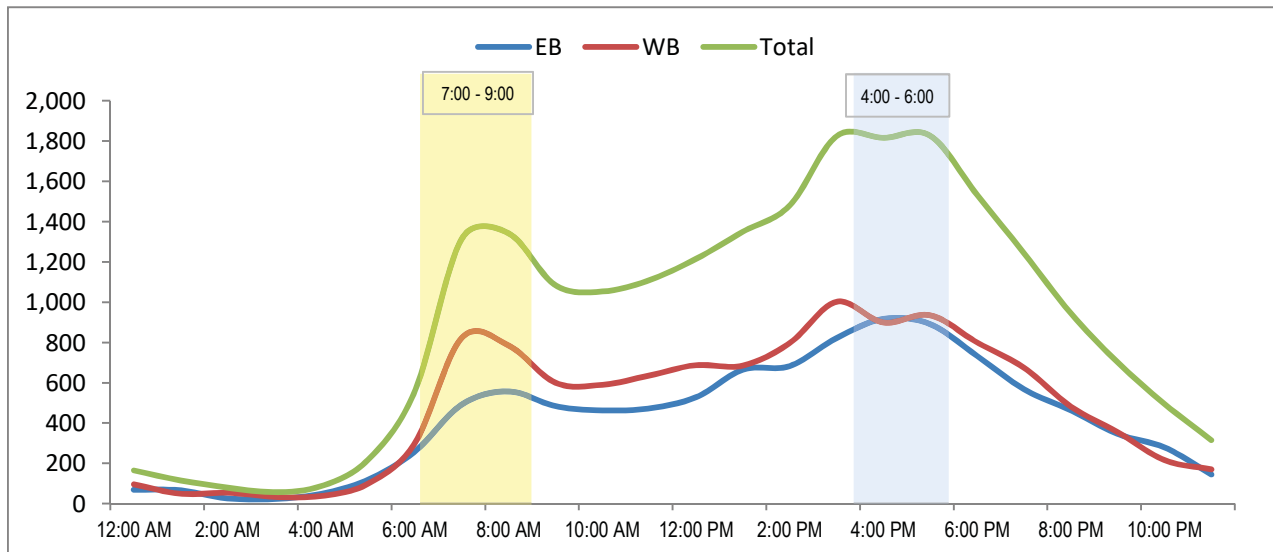
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 17-0667

24 Hour Segment Volume					21,928				
Time	Hourly Volume			Time	Hourly Volume				
	EB	WB	Total		EB	WB	Total		
12:00 AM - 1:00 AM	69	96	165	12:00 PM - 1:00 PM	528	687	1,215		
1:00 AM - 2:00 AM	66	49	115	1:00 PM - 2:00 PM	665	685	1,350		
2:00 AM - 3:00 AM	26	54	80	2:00 PM - 3:00 PM	683	797	1,480		
3:00 AM - 4:00 AM	23	34	57	3:00 PM - 4:00 PM	822	1,002	1,824		
4:00 AM - 5:00 AM	49	38	87	4:00 PM - 5:00 PM	917	899	1,816		
5:00 AM - 6:00 AM	119	99	218	5:00 PM - 6:00 PM	891	935	1,826		
6:00 AM - 7:00 AM	259	301	560	6:00 PM - 7:00 PM	733	800	1,533		
7:00 AM - 8:00 AM	492	823	1,315	7:00 PM - 8:00 PM	568	675	1,243		
8:00 AM - 9:00 AM	557	785	1,342	8:00 PM - 9:00 PM	463	482	945		
9:00 AM - 10:00 AM	484	600	1,084	9:00 PM - 10:00 PM	346	355	701		
10:00 AM - 11:00 AM	463	590	1,053	10:00 PM - 11:00 PM	279	216	495		
11:00 AM - 12:00 PM	473	636	1,109	11:00 PM - 12:00 AM	145	170	315		
<b>Total</b>	<b>3,080</b>	<b>4,105</b>	<b>7,185</b>	<b>Total</b>	<b>7,040</b>	<b>7,703</b>	<b>14,743</b>		

**24-Hour EB Volume 10,120**      **24-Hour WB Volume 11,808**



# 3-Day Segment Counts Summary

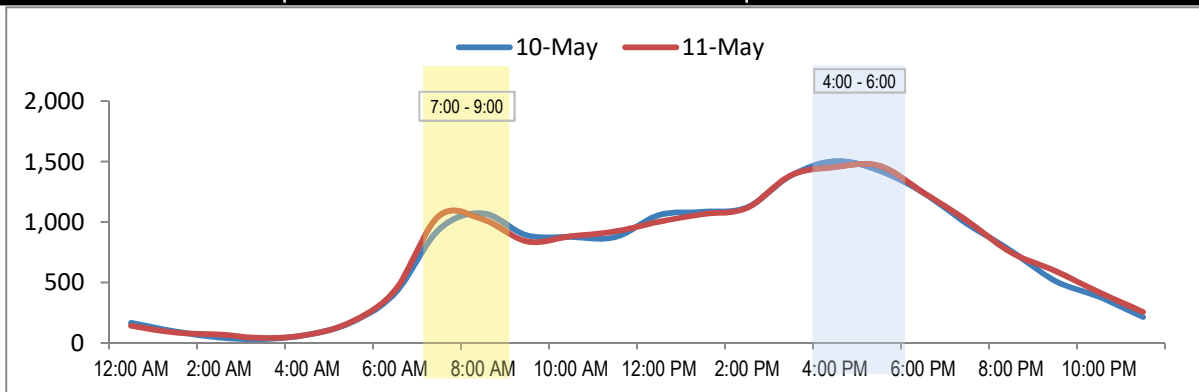


Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 3. University Ave btwn Alamo Dr & Salvation Dwy  
**Orientation:** East-West  
**Day 1** Wednesday, May 10, 2017  
**Day 2** Thursday, May 11, 2017  
**AVC Proj. No:** 17-0667

		<b>Average Daily Traffic</b>	<b>17,411</b>
		<b>Highest Daily Traffic</b>	<b>17,504</b>
Time	Hourly Volume		
	10-May	11-May	
12:00 AM - 1:00 AM	166	141	
1:00 AM - 2:00 AM	96	86	
2:00 AM - 3:00 AM	45	70	
3:00 AM - 4:00 AM	32	41	
4:00 AM - 5:00 AM	67	67	
5:00 AM - 6:00 AM	169	174	
6:00 AM - 7:00 AM	411	436	
7:00 AM - 8:00 AM	939	1,052	
8:00 AM - 9:00 AM	1,071	1,022	
9:00 AM - 10:00 AM	890	839	
10:00 AM - 11:00 AM	877	883	
11:00 AM - 12:00 PM	875	922	
12:00 PM - 1:00 PM	1,058	1,003	
1:00 PM - 2:00 PM	1,084	1,065	
2:00 PM - 3:00 PM	1,121	1,117	
3:00 PM - 4:00 PM	1,385	1,387	
4:00 PM - 5:00 PM	1,503	1,454	
5:00 PM - 6:00 PM	1,427	1,467	
6:00 PM - 7:00 PM	1,244	1,246	
7:00 PM - 8:00 PM	986	1,011	
8:00 PM - 9:00 PM	763	748	
9:00 PM - 10:00 PM	514	597	
10:00 PM - 11:00 PM	381	419	
11:00 PM - 12:00 AM	214	257	
<b>Total</b>	<b>17,318</b>	<b>17,504</b>	



# 24 Hour Segment Count



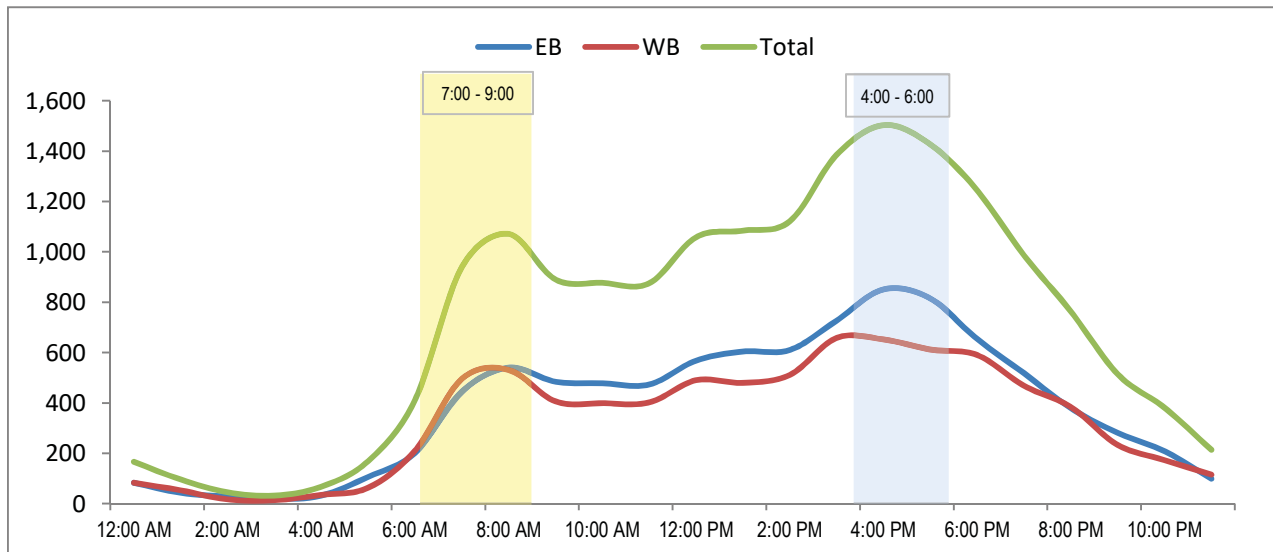
Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 3. University Ave btwn Alamo Dr & Salvation Dwy  
**Orientation:** East-West  
**Date of Count:** Wednesday, May 10, 2017  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 17-0667

24 Hour Segment Volume					17,318		
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	83	83	166	12:00 PM - 1:00 PM	568	490	1,058
1:00 AM - 2:00 AM	43	53	96	1:00 PM - 2:00 PM	604	480	1,084
2:00 AM - 3:00 AM	28	17	45	2:00 PM - 3:00 PM	610	511	1,121
3:00 AM - 4:00 AM	18	14	32	3:00 PM - 4:00 PM	727	658	1,385
4:00 AM - 5:00 AM	32	35	67	4:00 PM - 5:00 PM	851	652	1,503
5:00 AM - 6:00 AM	106	63	169	5:00 PM - 6:00 PM	815	612	1,427
6:00 AM - 7:00 AM	201	210	411	6:00 PM - 7:00 PM	654	590	1,244
7:00 AM - 8:00 AM	444	495	939	7:00 PM - 8:00 PM	518	468	986
8:00 AM - 9:00 AM	540	531	1,071	8:00 PM - 9:00 PM	379	384	763
9:00 AM - 10:00 AM	484	406	890	9:00 PM - 10:00 PM	281	233	514
10:00 AM - 11:00 AM	478	399	877	10:00 PM - 11:00 PM	208	173	381
11:00 AM - 12:00 PM	473	402	875	11:00 PM - 12:00 AM	99	115	214
<b>Total</b>	<b>2,930</b>	<b>2,708</b>	<b>5,638</b>	<b>Total</b>	<b>6,314</b>	<b>5,366</b>	<b>11,680</b>

**24-Hour EB Volume 9,244**      **24-Hour WB Volume 8,074**





# 24 Hour Segment Count



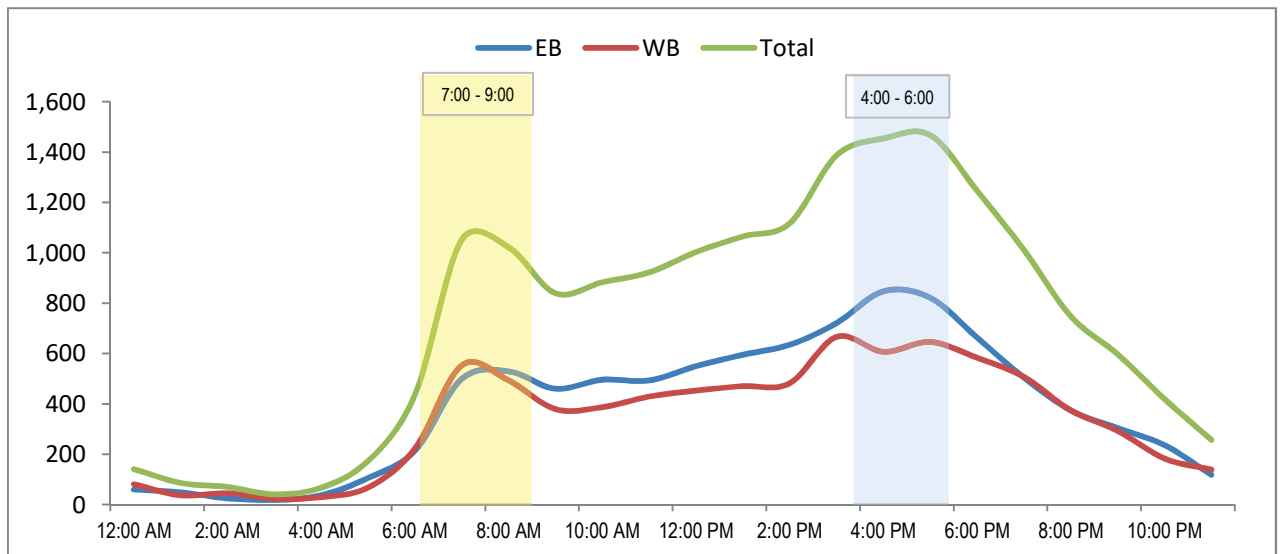
Accurate Video Counts Inc  
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 (619) 987-5136



**Location:** 3. University Ave btwn Alamo Dr & Salvation Dwy  
**Orientation:** East-West  
**Date of Count:** Thursday, May 11, 2017  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 17-0667

24 Hour Segment Volume					17,504				
Time	Hourly Volume			Time	Hourly Volume				
	EB	WB	Total		EB	WB	Total		
12:00 AM - 1:00 AM	60	81	141	12:00 PM - 1:00 PM	550	453	1,003		
1:00 AM - 2:00 AM	49	37	86	1:00 PM - 2:00 PM	595	470	1,065		
2:00 AM - 3:00 AM	25	45	70	2:00 PM - 3:00 PM	635	482	1,117		
3:00 AM - 4:00 AM	18	23	41	3:00 PM - 4:00 PM	721	666	1,387		
4:00 AM - 5:00 AM	37	30	67	4:00 PM - 5:00 PM	847	607	1,454		
5:00 AM - 6:00 AM	106	68	174	5:00 PM - 6:00 PM	821	646	1,467		
6:00 AM - 7:00 AM	214	222	436	6:00 PM - 7:00 PM	663	583	1,246		
7:00 AM - 8:00 AM	499	553	1,052	7:00 PM - 8:00 PM	504	507	1,011		
8:00 AM - 9:00 AM	529	493	1,022	8:00 PM - 9:00 PM	374	374	748		
9:00 AM - 10:00 AM	460	379	839	9:00 PM - 10:00 PM	304	293	597		
10:00 AM - 11:00 AM	496	387	883	10:00 PM - 11:00 PM	236	183	419		
11:00 AM - 12:00 PM	493	429	922	11:00 PM - 12:00 AM	118	139	257		
<b>Total</b>	<b>2,986</b>	<b>2,747</b>	<b>5,733</b>	<b>Total</b>	<b>6,368</b>	<b>5,403</b>	<b>11,771</b>		

**24-Hour EB Volume 9,354**      **24-Hour WB Volume 8,150**



# 3-Day Segment Counts Summary

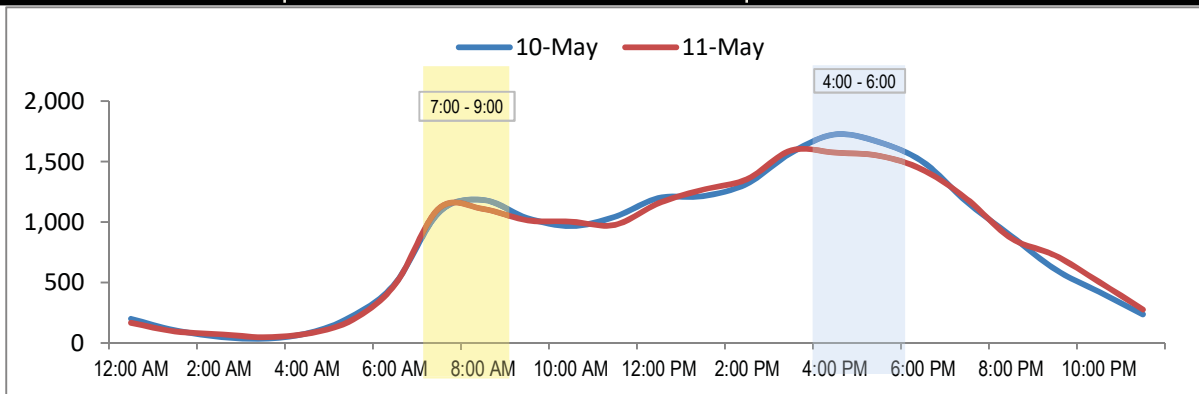


Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 4. University Ave btwn 69th St & 70th St  
**Orientation:** East-West  
**Day 1** Wednesday, May 10, 2017  
**Day 2** Thursday, May 11, 2017  
**AVC Proj. No:** 17-0667

		<b>Average Daily Traffic</b>	<b>19,910</b>
		<b>Highest Daily Traffic</b>	<b>19,989</b>
Time	Hourly Volume		
	10-May	11-May	
12:00 AM - 1:00 AM	200	166	
1:00 AM - 2:00 AM	104	95	
2:00 AM - 3:00 AM	51	73	
3:00 AM - 4:00 AM	36	48	
4:00 AM - 5:00 AM	79	77	
5:00 AM - 6:00 AM	216	185	
6:00 AM - 7:00 AM	490	483	
7:00 AM - 8:00 AM	1,080	1,114	
8:00 AM - 9:00 AM	1,183	1,108	
9:00 AM - 10:00 AM	1,034	1,015	
10:00 AM - 11:00 AM	967	1,003	
11:00 AM - 12:00 PM	1,044	977	
12:00 PM - 1:00 PM	1,200	1,157	
1:00 PM - 2:00 PM	1,214	1,268	
2:00 PM - 3:00 PM	1,317	1,354	
3:00 PM - 4:00 PM	1,572	1,592	
4:00 PM - 5:00 PM	1,725	1,574	
5:00 PM - 6:00 PM	1,661	1,548	
6:00 PM - 7:00 PM	1,497	1,432	
7:00 PM - 8:00 PM	1,164	1,189	
8:00 PM - 9:00 PM	887	867	
9:00 PM - 10:00 PM	610	724	
10:00 PM - 11:00 PM	422	505	
11:00 PM - 12:00 AM	236	276	
<b>Total</b>	<b>19,989</b>	<b>19,830</b>	



# 24 Hour Segment Count



Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 4. University Ave btwn 69th St & 70th St

**Orientation:** East-West

**Date of Count:** Wednesday, May 10, 2017

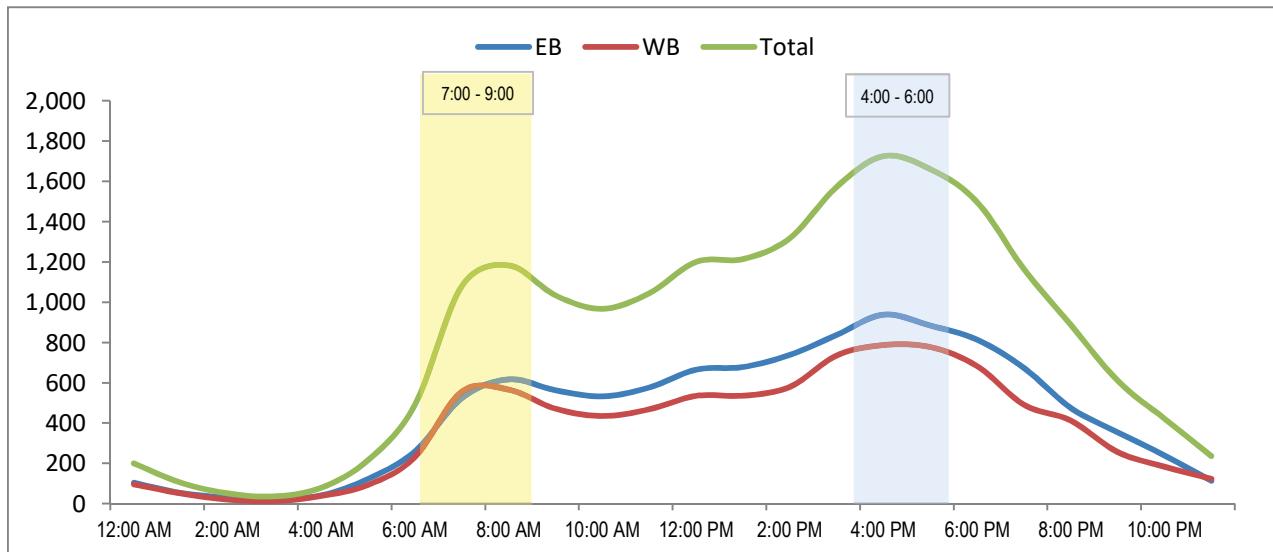
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 17-0667

24 Hour Segment Volume					19,989				
Time	Hourly Volume			Time	Hourly Volume				
	EB	WB	Total		EB	WB	Total		
12:00 AM - 1:00 AM	104	96	200	12:00 PM - 1:00 PM	665	535	1,200		
1:00 AM - 2:00 AM	53	51	104	1:00 PM - 2:00 PM	678	536	1,214		
2:00 AM - 3:00 AM	31	20	51	2:00 PM - 3:00 PM	738	579	1,317		
3:00 AM - 4:00 AM	23	13	36	3:00 PM - 4:00 PM	837	735	1,572		
4:00 AM - 5:00 AM	41	38	79	4:00 PM - 5:00 PM	938	787	1,725		
5:00 AM - 6:00 AM	123	93	216	5:00 PM - 6:00 PM	884	777	1,661		
6:00 AM - 7:00 AM	259	231	490	6:00 PM - 7:00 PM	814	683	1,497		
7:00 AM - 8:00 AM	524	556	1,080	7:00 PM - 8:00 PM	673	491	1,164		
8:00 AM - 9:00 AM	617	566	1,183	8:00 PM - 9:00 PM	475	412	887		
9:00 AM - 10:00 AM	563	471	1,034	9:00 PM - 10:00 PM	354	256	610		
10:00 AM - 11:00 AM	532	435	967	10:00 PM - 11:00 PM	239	183	422		
11:00 AM - 12:00 PM	576	468	1,044	11:00 PM - 12:00 AM	113	123	236		
<b>Total</b>	<b>3,446</b>	<b>3,038</b>	<b>6,484</b>	<b>Total</b>	<b>7,408</b>	<b>6,097</b>	<b>13,505</b>		

**24-Hour EB Volume 10,854**      **24-Hour WB Volume 9,135**



# 24 Hour Segment Count



Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 4. University Ave btwn 69th St & 70th St

**Orientation:** East-West

**Date of Count:** Thursday, May 11, 2017

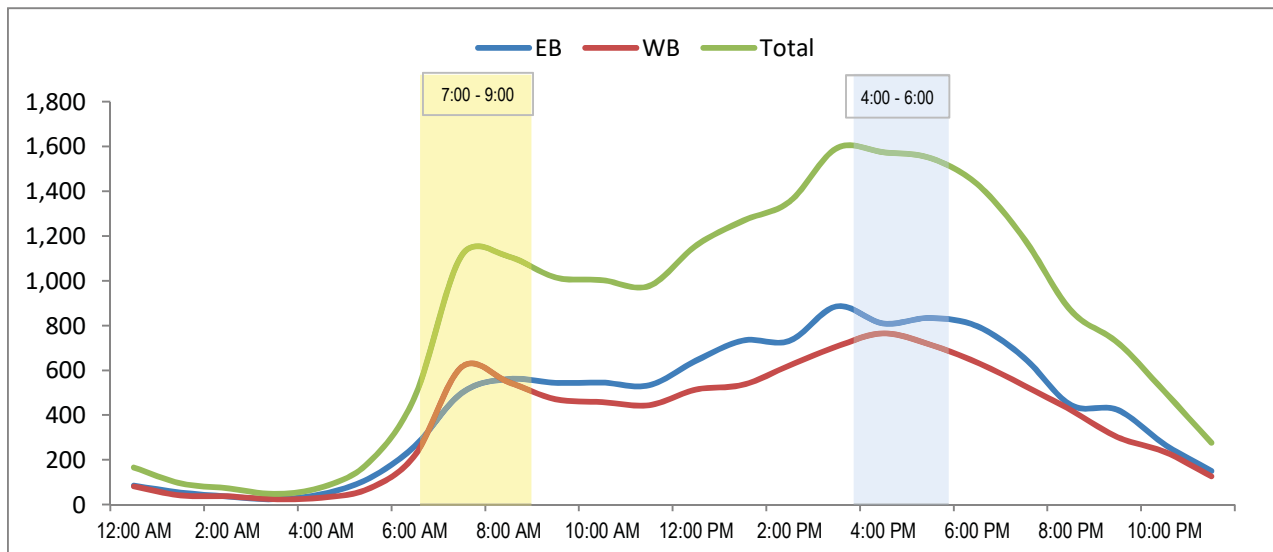
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 17-0667

24 Hour Segment Volume					19,830		
Time	Hourly Volume			Time	Hourly Volume		
	EB	WB	Total		EB	WB	Total
12:00 AM - 1:00 AM	85	81	166	12:00 PM - 1:00 PM	643	514	1,157
1:00 AM - 2:00 AM	54	41	95	1:00 PM - 2:00 PM	733	535	1,268
2:00 AM - 3:00 AM	36	37	73	2:00 PM - 3:00 PM	732	622	1,354
3:00 AM - 4:00 AM	24	24	48	3:00 PM - 4:00 PM	886	706	1,592
4:00 AM - 5:00 AM	46	31	77	4:00 PM - 5:00 PM	809	765	1,574
5:00 AM - 6:00 AM	115	70	185	5:00 PM - 6:00 PM	834	714	1,548
6:00 AM - 7:00 AM	262	221	483	6:00 PM - 7:00 PM	797	635	1,432
7:00 AM - 8:00 AM	499	615	1,114	7:00 PM - 8:00 PM	657	532	1,189
8:00 AM - 9:00 AM	561	547	1,108	8:00 PM - 9:00 PM	445	422	867
9:00 AM - 10:00 AM	544	471	1,015	9:00 PM - 10:00 PM	423	301	724
10:00 AM - 11:00 AM	545	458	1,003	10:00 PM - 11:00 PM	269	236	505
11:00 AM - 12:00 PM	533	444	977	11:00 PM - 12:00 AM	150	126	276
<b>Total</b>	<b>3,304</b>	<b>3,040</b>	<b>6,344</b>	<b>Total</b>	<b>7,378</b>	<b>6,108</b>	<b>13,486</b>

**24-Hour EB Volume 10,682**      **24-Hour WB Volume 9,148**



MACHINE COUNT TRAFFIC VOLUMES  
FROM 01/01/2005 - 09/22/2016

CITY OF SAN DIEGO - TRAFFIC ENGINEERING		LIMITS	ALL	NORTH	SOUTH	EAST	WEST	TOTAL	FILE NO.	DATE
ULRIC ST	FRIARS RD - S/O FRIARS RD		16,725	13,080				29,805	0438-09	06/30/09
ULRIC ST	FRIARS RD - SD 163		9,195	4,280				13,475	0538-10	06/29/10
ULRIC ST	FRIARS RD - SD 163		9,299	7,256				16,555	0631-13	10/23/13
ULRIC ST	LINDA VISTA RD - MORLEY ST		3,398	2,694				6,092	1011-15	10/28/15
ULRIC ST	MORLEY ST - EASTMAN ST		3,260	2,860				6,120	0586-05	10/04/05
ULRIC ST	MORLEY ST - EASTMAN ST		2,830	2,530				5,360	0554-08	10/30/08
ULRIC ST	MORLEY ST - EASTMAN ST		2,890	2,565				5,455	1168-11	12/01/11
ULRIC ST	MORLEY ST - EASTMAN ST		3,198	2,618				5,816	1073-14	12/17/14
ULRIC ST	MORLEY ST - EASTMAN ST		2,788	2,807				5,595	0863-15	10/22/15
ULRIC ST	SD 163 R-J - LINBROOK DR		9,090	10,030				19,120	0496-06	11/14/06
ULRIC ST	SD 163 R-J - LINBROOK DR		9,315	9,885				19,200	0730-09	11/05/09
ULRIC ST	SD 163 R-J - LINBROOK DR		9,350	10,141				19,491	0821-12	09/27/12
UNIVERSITY AV	46TH ST - MENLO AV				10,297	11,047		21,344	0108-16	05/12/16
UNIVERSITY AV	58TH ST - UNIVERSITY SQ.DY				12,360	12,065		24,425	0107-16	05/12/16
UNIVERSITY AV	01 AV - 03 AV				5,240	6,510		11,750	0135-07	03/07/07
UNIVERSITY AV	01 AV - 03 AV				6,760	7,130		13,890	0112-10	03/09/10
UNIVERSITY AV	01 AV - 03 AV				5,033	5,092		10,125	0165-13	02/21/13
UNIVERSITY AV	04 AV - 05 AV				7,230	8,970		16,200	0109-05	04/05/05
UNIVERSITY AV	04 AV - 05 AV				8,910	9,510		18,420	0150-08	03/25/08
UNIVERSITY AV	04 AV - 05 AV				8,840	9,855		18,695	0337-11	05/24/11
UNIVERSITY AV	04 AV - 05 AV				6,952	8,630		15,582	1183-14	10/02/14
UNIVERSITY AV	04 AV - 05 AV				8,412	9,349		17,761	1074-14	12/04/14
UNIVERSITY AV	05 AV - 06 AV				14,325	14,015		28,340	0194-09	03/17/09
UNIVERSITY AV	05 AV - 06 AV				14,467	14,544		29,011	0278-12	03/27/12
UNIVERSITY AV	05 AV - 06 AV				9,539	11,521		21,060	1184-14	10/02/14
UNIVERSITY AV	05 AV - 06 AV				6,909	7,895		14,804	0303-15	05/21/15
UNIVERSITY AV	06 AV - 07 AV				13,545	12,345		25,890	0195-09	03/17/09
UNIVERSITY AV	06 AV - 07 AV				13,285	12,017		25,302	0279-12	03/27/12
UNIVERSITY AV	06 AV - 07 AV				13,589	12,256		25,845	0304-15	05/21/15
UNIVERSITY AV	08 AV - 09 AV				11,630	13,470		25,100	0137-07	03/07/07
UNIVERSITY AV	08 AV - 09 AV				11,075	13,305		24,380	0113-10	03/16/10
UNIVERSITY AV	08 AV - 09 AV				9,498	11,722		21,220	0281-13	03/21/13
UNIVERSITY AV	10 AV - VERMONT ST				10,585	11,165		21,750	0098-09	03/04/09
UNIVERSITY AV	10 AV - VERMONT ST				10,640	11,315		21,955	0173-12	02/23/12
UNIVERSITY AV	10 AV - VERMONT ST				8,771	10,007		18,778	0173-15	04/23/15
UNIVERSITY AV	31 ST - IOWA ST				12,370	9,770		22,140	0135-06	04/19/06
UNIVERSITY AV	31 ST - IOWA ST				12,070	9,210		21,280	0276-09	04/29/09
UNIVERSITY AV	31 ST - IOWA ST				12,681	8,914		21,595	0382-12	05/01/12
UNIVERSITY AV	31 ST - IOWA ST				11,789	8,362		20,151	0407-15	06/09/15
UNIVERSITY AV	31 ST - IOWA ST				11,281	8,235		19,516	0082-16	04/05/16
UNIVERSITY AV	33 ST - WABASH AV				14,389	12,450		26,839	2505-06	05/04/06
UNIVERSITY AV	33 ST - WABASH AV				14,551	10,298		24,849	0408-15	06/09/15
UNIVERSITY AV	33 ST - WABASH BL				14,390	12,450		26,840	0213-06	05/04/06
UNIVERSITY AV	33 ST - WABASH BL				14,560	10,370		24,930	0215-07	04/04/07

MACHINE COUNT TRAFFIC VOLUMES  
FROM 01/01/2005 - 09/22/2016

CITY OF SAN DIEGO - TRAFFIC ENGINEERING	LIMITS	ALL	NORTH	SOUTH	EAST	WEST	TOTAL	FILE NO.	DATE
UNIVERSITY AV	33 ST - WABASH BL				16,015	11,720	27,735	0322-09	05/07/09
UNIVERSITY AV	33 ST - WABASH BL				14,075	10,595	24,670	0240-10	05/29/10
UNIVERSITY AV	33 ST - WABASH BL				14,478	11,190	25,668	0383-12	05/01/12
UNIVERSITY AV	33 ST - WABASH BL				14,161	10,447	24,608	0519-13	05/14/13
UNIVERSITY AV	33RD ST - WABASH BL				9,542	12,590	22,132	0104-16	05/05/16
UNIVERSITY AV	36 ST - CHEROKEE AV				8,410	7,440	15,850	0215-05	04/13/05
UNIVERSITY AV	36 ST - CHEROKEE AV				7,510	7,160	14,670	0203-08	05/15/08
UNIVERSITY AV	36 ST - CHEROKEE AV				7,140	6,665	13,805	0394-11	06/16/11
UNIVERSITY AV	36 ST - CHEROKEE AV				7,852	7,471	15,323	1075-14	12/04/14
UNIVERSITY AV	38 ST - ALLEY E/O 38 ST				9,335	9,875	19,210	0482-09	07/07/09
UNIVERSITY AV	38 ST - ALLEY E/O 38 ST				8,800	8,635	17,435	0503-12	06/12/12
UNIVERSITY AV	38 ST - ALLEY E/O 38 ST				8,527	8,288	16,815	0529-15	06/24/15
UNIVERSITY AV	38 ST - ALLEY W/O 38 ST				9,345	9,105	18,450	0483-09	07/07/09
UNIVERSITY AV	38 ST - ALLEY W/O 38 ST				7,983	8,623	16,606	0504-12	06/12/12
UNIVERSITY AV	38 ST - ALLEY W/O 38 ST				8,534	8,590	17,124	0530-15	06/25/15
UNIVERSITY AV	39 ST - 38 ST				8,994	10,072	19,066	1017-15	10/29/15
UNIVERSITY AV	40 ST - 39 ST				11,571	8,398	19,969	1018-15	10/29/15
UNIVERSITY AV	41 ST - MARLBOROUGH AV				14,110	13,010	27,120	0249-07	04/04/07
UNIVERSITY AV	41 ST - MARLBOROUGH AV				14,500	13,120	27,620	0254-10	04/20/10
UNIVERSITY AV	41 ST - MARLBOROUGH AV				11,324	10,633	21,957	0286-13	03/21/13
UNIVERSITY AV	41 ST - MARLBOROUGH ST				10,143	10,078	20,221	1219-13	12/05/13
UNIVERSITY AV	42 ST - ALLEY E/O 42 ST				13,135	13,155	26,290	0242-09	04/15/09
UNIVERSITY AV	42 ST - ALLEY E/O 42 ST				12,545	11,190	23,735	0283-12	03/27/12
UNIVERSITY AV	42 ST - ALLEY E/O 42 ST				9,549	10,156	19,705	0305-15	05/19/15
UNIVERSITY AV	42 ST - ALLEY W/O 42 ST				13,420	13,995	27,415	0241-09	04/15/09
UNIVERSITY AV	42 ST - ALLEY W/O 42 ST				12,804	11,648	24,452	0282-12	05/27/12
UNIVERSITY AV	42 ST - ALLEY W/O 42 ST				13,528	11,606	25,134	0463-15	06/16/15
UNIVERSITY AV	42 ST - VAN DYKE AV				12,670	10,695	23,365	0540-10	06/17/10
UNIVERSITY AV	42 ST - VAN DYKE AV				11,372	11,287	22,659	0542-13	10/22/13
UNIVERSITY AV	43 ST - ALLEY W/O 43 ST				13,525	13,090	26,615	1040-10	11/17/10
UNIVERSITY AV	43 ST - ALLEY W/O 43 ST				10,935	11,996	22,931	1119-13	01/28/14
UNIVERSITY AV	43 ST - FAIRMOUNT AV				17,120	11,250	28,370	0238-05	04/19/05
UNIVERSITY AV	43 ST - FAIRMOUNT AV				12,680	12,970	25,650	0219-08	05/14/08
UNIVERSITY AV	43 ST - FAIRMOUNT AV				11,945	9,765	21,710	0207-10	03/30/10
UNIVERSITY AV	43 ST - FAIRMOUNT AV				12,490	11,085	23,575	1039-10	11/17/10
UNIVERSITY AV	43 ST - FAIRMOUNT AV				11,093	11,146	22,239	0285-13	03/14/13
UNIVERSITY AV	43 ST - FAIRMOUNT AV				11,192	10,527	21,719	1120-13	01/30/14
UNIVERSITY AV	46 ST - MENLO AV				10,800	11,380	22,180	0222-06	05/04/06
UNIVERSITY AV	46 ST - MENLO AV				10,800	11,383	22,183	3313-06	05/04/06
UNIVERSITY AV	46 ST - MENLO AV				10,010	10,390	20,400	0248-07	04/04/07
UNIVERSITY AV	46 ST - MENLO AV				9,740	10,745	20,485	0326-09	05/20/09
UNIVERSITY AV	46 ST - MENLO AV				9,830	12,230	22,060	0253-10	04/20/10
UNIVERSITY AV	46 ST - MENLO AV				9,743	10,445	20,188	0385-12	04/10/12
UNIVERSITY AV	46 ST - MENLO AV				9,784	10,674	20,458	0287-13	04/19/13

MACHINE COUNT TRAFFIC VOLUMES  
FROM 01/01/2005 - 09/22/2016

CITY OF SAN DIEGO - TRAFFIC ENGINEERING	LIMITS	ALL	NORTH	SOUTH	EAST	WEST	TOTAL	FILE NO.	DATE
UNIVERSITY AV	46 ST - MENLO AV	●			8,344	8,210	16,554	1236-13	12/04/13
UNIVERSITY AV	46 ST - MENLO AV	●			9,906	11,020	20,926	0346-15	05/27/15
UNIVERSITY AV	49 ST - WINONA AV	●			9,725	9,865	19,590	0186-12	03/07/12
UNIVERSITY AV	49 ST - WINONA AV	●			9,459	10,520	19,979	0222-15	05/14/15
UNIVERSITY AV	50 ST - 52 ST				10,335	9,965	20,300	0101-09	03/05/09
UNIVERSITY AV	50 ST - 52 ST				9,960	9,900	19,860	0177-12	02/22/12
UNIVERSITY AV	50 ST - 52 ST				8,593	9,130	17,723	1220-13	12/05/13
UNIVERSITY AV	50 ST - 52 ST			10,329	9,621	19,950	0141-15	04/09/15	
UNIVERSITY AV	50 ST - 52 ST			8,978	8,234	17,212	0632-15	04/16/15	
UNIVERSITY AV	50 ST - WINONA AV			9,790	9,670	19,460	0185-12	03/07/12	
UNIVERSITY AV	50 ST - WINONA AV			10,241	9,590	19,831	0223-15	05/14/15	
UNIVERSITY AV	52 ST - EUCLID AV			9,219	9,686	18,905	0422-13	05/24/11	
UNIVERSITY AV	52 ST - EUCLID AV			11,357	9,858	21,215	1076-14	12/04/14	
UNIVERSITY AV	52 ST - SHILOH RD			11,600	10,860	22,460	0236-05	04/26/05	
UNIVERSITY AV	52 ST - SHILOH RD			9,920	9,890	19,810	0218-08	05/27/08	
UNIVERSITY AV	52 ST - SHILOH RD			5,060	4,960	10,020	0412-11	06/14/11	
UNIVERSITY AV	52 ST - SHILOH RD			11,171	9,942	21,113	1077-14	12/16/14	
UNIVERSITY AV	54 ST - CHOLLAS PY			11,610	11,970	23,580	0237-05	04/26/05	
UNIVERSITY AV	54 ST - CHOLLAS PY			10,875	11,675	22,550	0123-09	03/04/09	
UNIVERSITY AV	54 ST - CHOLLAS PY			10,420	10,590	21,010	0174-12	02/22/12	
UNIVERSITY AV	54 ST - CHOLLAS PY			11,358	11,295	22,653	0142-15	04/09/15	
UNIVERSITY AV	54 ST - E/O UNIVERSITY AV			11,116	12,010	23,126	0428-13	11/30/10	
UNIVERSITY AV	54 ST - W/O UNIVERSITY AV			11,278	16,083	27,361	0427-13	11/30/10	
UNIVERSITY AV	58 ST - 60 ST			11,154	11,492	22,646	3312-06	05/04/06	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			11,150	11,490	22,640	0221-06	05/04/06	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			11,550	10,890	22,440	0247-07	04/10/07	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			12,265	11,005	23,270	0235-09	05/27/09	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			12,270	12,080	24,350	0271-10	04/22/10	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			11,185	10,490	21,675	0429-13	11/30/10	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			12,033	11,558	23,591	0405-12	05/10/12	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			11,207	10,845	22,052	0411-13	04/25/13	
UNIVERSITY AV	58 ST - UNIVERSITY SQ DY			10,553	10,463	21,016	0429-15	06/10/15	
UNIVERSITY AV	60 ST - COLLEGE AV			12,440	10,275	22,715	0245-09	04/15/09	
UNIVERSITY AV	60 ST - COLLEGE AV			12,417	10,600	23,017	0284-12	03/27/12	
UNIVERSITY AV	60 ST - COLLEGE AV			11,180	10,512	21,692	0306-15	05/21/15	
UNIVERSITY AV	ALAMO DR - 68 ST					-	16501-06	06/21/06	
UNIVERSITY AV	ARAGON DR - 69 ST			8,300	7,080	15,380	0601-06	12/07/06	
UNIVERSITY AV	ARAGON DR - 69 ST			7,865	6,935	14,800	0816-09	12/17/09	
UNIVERSITY AV	ARAGON DR - 69 ST			7,703	6,659	14,362	0905-12	12/06/12	
UNIVERSITY AV	BANCROFT ST - BOUNDARY ST			21,060	10,660	31,720	0113-05	04/05/05	
UNIVERSITY AV	BANCROFT ST - BOUNDARY ST			16,600	6,050	22,650	0154-08	03/26/08	
UNIVERSITY AV	BANCROFT ST - BOUNDARY ST			13,520	9,170	22,690	0357-11	06/15/11	
UNIVERSITY AV	BANCROFT ST - BOUNDARY ST			14,178	10,166	24,344	1078-14	12/04/14	
UNIVERSITY AV	CENTRE ST - PARK BL			10,830	11,250	22,080	0111-05	04/05/05	

MACHINE COUNT TRAFFIC VOLUMES  
FROM 01/01/2005 - 09/22/2016

CITY OF SAN DIEGO - TRAFFIC ENGINEERING	LIMITS	ALL	NORTH	SOUTH	EAST	WEST	TOTAL	FILE NO.	DATE
UNIVERSITY AV	CENTRE ST - PARK BL				10,030	11,030	21,060	0152-08	03/26/08
UNIVERSITY AV	CENTRE ST - PARK BL				9,825	9,180	19,005	0355-11	06/07/11
UNIVERSITY AV	CENTRE ST - PARK BL				6,644	7,000	13,644	1246-13	01/07/14
UNIVERSITY AV	CENTRE ST - PARK BL				8,940	9,258	18,198	1079-14	12/04/14
UNIVERSITY AV	CHOLLAS PKWY - 58TH ST				14,611	14,255	28,866	0109-16	05/12/16
UNIVERSITY AV	CHOLLAS PY - 58 ST				12,690	12,780	25,470	0223-06	05/04/06
UNIVERSITY AV	CHOLLAS PY - 58 ST				12,690	12,776	25,466	3316-06	05/04/06
UNIVERSITY AV	CHOLLAS PY - 58 ST				13,190	12,570	25,760	025-070	04/10/07
UNIVERSITY AV	CHOLLAS PY - 58 ST				14,390	13,225	27,615	0327-09	05/07/09
UNIVERSITY AV	CHOLLAS PY - 58 ST				13,620	12,710	26,330	0272-10	04/22/10
UNIVERSITY AV	CHOLLAS PY - 58 ST				13,852	12,765	26,617	0384-12	04/12/12
UNIVERSITY AV	CHOLLAS PY - 58 ST				13,366	12,818	26,184	0412-13	04/25/13
UNIVERSITY AV	CHOLLAS PY - 58 ST				12,639	12,916	25,555	0359-15	06/03/15
UNIVERSITY AV	COLLEGE AV - CARTAGENA DR				9,690	8,910	18,600	0332-05	04/26/05
UNIVERSITY AV	COLLEGE AV - CARTAGENA DR				9,130	7,840	16,970	0242-08	06/05/08
UNIVERSITY AV	COLLEGE AV - CARTAGENA DR				9,197	8,213	17,410	0430-13	11/30/10
UNIVERSITY AV	COLLEGE AV - CARTAGENA DR				8,850	8,115	16,965	0561-11	06/21/11
UNIVERSITY AV	COLLEGE AV - CARTAGENA DR				9,796	9,677	19,473	1080-14	12/04/14
UNIVERSITY AV	EAGLE ST - DOVE ST				6,030	6,860	12,890	0173-06	03/22/06
UNIVERSITY AV	EAGLE ST - DOVE ST				5,745	6,495	12,240	0173-09	03/24/09
UNIVERSITY AV	EAGLE ST - DOVE ST				4,662	5,816	10,478	0280-12	03/13/12
UNIVERSITY AV	EAGLE ST - DOVE ST				5,120	5,931	11,051	0264-15	05/12/15
UNIVERSITY AV	EAGLE ST - DOVE ST		5,652	5,976			11,628	0049-16	03/01/16
UNIVERSITY AV	FAIRMOUNT AV - ALLEY E/O FAIRMOUNT				11,615	9,685	21,300	0208-10	03/16/10
UNIVERSITY AV	FAIRMOUNT AV - ALLEY E/O FAIRMOUNT				11,041	10,212	21,253	0282-13	03/14/13
UNIVERSITY AV	FLORIDA ST - ALABAMA ST				7,383	8,393	15,776	1258-13	01/07/14
UNIVERSITY AV	HAWK ST - GOLDFINCH ST		4,720	4,950			9,670	0136-07	03/21/07
UNIVERSITY AV	HAWK ST - GOLDFINCH ST		4,700	4,720			9,420	0178-10	03/16/10
UNIVERSITY AV	HAWK ST - GOLDFINCH ST		4,456	4,443			8,899	0283-13	03/21/13
UNIVERSITY AV	HERBERT ST - NORMAL ST				10,250	10,315	20,565	0839-09	01/14/10
UNIVERSITY AV	HERBERT ST - NORMAL ST				9,563	8,722	18,285	0018-13	01/31/13
UNIVERSITY AV	MISSISSIPPI ST - LOUISIANA ST				10,340	9,070	19,410	0174-06	03/14/06
UNIVERSITY AV	MISSISSIPPI ST - LOUISIANA ST				10,270	10,020	20,290	0156-09	03/26/09
UNIVERSITY AV	MISSISSIPPI ST - LOUISIANA ST				9,645	9,489	19,134	0281-12	03/27/12
UNIVERSITY AV	MISSISSIPPI ST - LOUISIANA ST				7,418	8,901	16,319	0307-15	05/20/15
UNIVERSITY AV	MISSISSIPPI ST - LOUISIANA ST				9,082	9,349	18,431	0032-16	03/03/16
UNIVERSITY AV	NORMAL ST - RICHMOND ST				10,365	10,215	20,580	0840-09	01/14/10
UNIVERSITY AV	NORMAL ST - RICHMOND ST				9,480	8,955	18,435	0019-13	01/31/13
UNIVERSITY AV	PARK BL - FLORIDA ST				9,600	9,560	19,160	0112-05	04/05/05
UNIVERSITY AV	PARK BL - FLORIDA ST				8,900	9,430	18,330	0153-08	03/26/08
UNIVERSITY AV	PARK BL - FLORIDA ST				10,235	9,870	20,105	0356-11	06/14/11
UNIVERSITY AV	PARK BL - FLORIDA ST				10,346	8,236	18,582	1081-14	12/04/14
UNIVERSITY AV	PERSHING AV - IDAHO ST				9,730	9,245	18,975	0539-10	06/23/10
UNIVERSITY AV	RICHMOND ST - NORMAL ST				11,640	10,370	22,010	0138-07	03/07/07



MACHINE COUNT TRAFFIC VOLUMES  
FROM 01/01/2005 - 09/22/2016

CITY OF SAN DIEGO - TRAFFIC ENGINEERING	LIMITS	ALL	NORTH	SOUTH	EAST	WEST	TOTAL	FILE NO.	DATE
UNIVERSITY AV	RICHMOND ST - NORMAL ST				10,455	10,095	20,550	0114-10	03/16/10
UNIVERSITY AV	RICHMOND ST - NORMAL ST				9,706	9,105	18,811	0284-13	03/21/13
UNIVERSITY AV	ROLANDO BL - ARAGON DR				7,660	6,990	14,650	0270-07	04/10/07
UNIVERSITY AV	ROLANDO BL - ARAGON DR				7,835	7,025	14,860	0278-10	04/22/10
UNIVERSITY AV	ROLANDO BL - ARAGON DR				8,560	7,129	15,689	0431-13	11/30/10
UNIVERSITY AV	ROLANDO BL - ARAGON DR				7,817	6,948	14,765	0413-13	04/25/13
UNIVERSITY AV	SD 015 NB - 38 ST				11,796	13,408	25,204	0174-15	04/23/15
UNIVERSITY AV	SD 015 NB - 39 ST				9,830	9,905	19,735	0095-09	03/05/09
UNIVERSITY AV	SD 015 NB - 39 ST				9,935	10,355	20,290	0176-12	02/23/12
UNIVERSITY AV	SD 015 NB - SD 015 SB				14,115	13,670	27,785	0094-09	03/04/09
UNIVERSITY AV	SD 015 NB - SD 015 SB				13,775	12,725	26,500	0172-12	03/01/12
UNIVERSITY AV	SD 015 NB - SD 015 SB				21,061	20,624	41,685	0204-15	05/14/15
UNIVERSITY AV	SHILOH RD - 54 ST				10,379	9,953	20,332	1247-13	12/05/13
UNIVERSITY AV	SWIFT AV - 35 ST				8,220	7,370	15,590	0206-05	04/27/05
UNIVERSITY AV	SWIFT AV - 35 ST				7,345	6,955	14,300	0833-11	08/11/11
UNIVERSITY AV	SWIFT AV - 35 ST				8,021	7,790	15,811	1082-14	12/04/14
UNIVERSITY AV	UTAH ST - GRANADA AV				9,010	8,100	17,110	0139-07	03/07/07
UNIVERSITY AV	UTAH ST - GRANADA AV				9,965	9,725	19,690	0115-10	03/11/10
UNIVERSITY AV	UTAH ST - GRANADA AV				8,968	8,839	17,807	0166-13	02/12/13
UNIVERSITY AV	VERMONT ST - RICHMOND ST				12,620	13,820	26,440	0110-05	04/05/05
UNIVERSITY AV	VERMONT ST - RICHMOND ST				13,150	12,030	25,180	0151-08	03/25/08
UNIVERSITY AV	VERMONT ST - RICHMOND ST				11,420	11,705	23,125	0338-11	05/12/11
UNIVERSITY AV	VERMONT ST - RICHMOND ST				10,254	9,726	19,980	1083-14	12/04/14
UNIVERSITY AV	WINONA AV - 50 ST				9,092	8,349	17,441	0631-15	04/16/15
UPAS ST	03 AV - 04 AV				720	640	1,360	1190-14	10/02/14
UPAS ST	04 AV - 05 AV				1,011	1,087	2,098	1166-14	09/16/14
UPAS ST	06 AV - 05 AV				1,988	2,097	4,085	1167-14	09/16/14
UPAS ST	28 ST - UTAH ST				4,880	4,510	9,390	0167-06	03/09/06
UPAS ST	28 ST - UTAH ST				4,915	4,960	9,875	0541-10	06/22/10
UPAS ST	28 ST - UTAH ST				5,931	4,596	10,527	0566-13	09/17/13
UPAS ST	28 ST - UTAH ST				5,062	5,049	10,111	0027-16	03/30/16
UPAS ST	30 ST - 30 ST				4,770	8,400	13,170	0168-06	03/09/06
UPAS ST	30 ST - 30 ST				6,040	6,805	12,845	0151-09	03/31/09
UPAS ST	30 ST - 30 ST				5,931	6,630	12,561	0285-12	03/27/12
UPAS ST	30 ST - 30 ST				3,243	10,952	14,195	0308-15	05/21/15
UPAS ST	31 ST - HERMAN AV				2,340	1,990	4,330	0127-07	03/07/07
UPAS ST	31 ST - HERMAN AV				2,360	2,040	4,400	0110-10	03/11/10
UPAS ST	31 ST - HERMAN AV				2,395	1,925	4,320	0168-13	02/14/13
UPAS ST	BANCROFT ST - 33 ST				1,085	1,545	2,630	0542-10	06/22/10
UPAS ST	FRONT ST - 01 AV				61	75	136	1191-14	10/02/14
UPAS ST	GRANADA AV - 29 ST				4,004	3,997	8,001	0126-07	03/07/07
UPAS ST	GRANADA AV - 29 ST				4,835	4,305	9,140	0109-10	03/10/10
UPAS ST	GRANADA AV - 29 ST				5,023	4,581	9,604	0167-13	02/14/13
UPAS ST	HERBERT ST - PARK BL				-	-	-	16524-06	06/20/06

**APPENDIX C: CITY OF SAN DIEGO ROADWAY SEGMENT ANALYSIS  
CRITERIA**

**TABLE 2**  
**Roadway Classifications, Levels of Service (LOS)**  
**and Average Daily Traffic (ADT)**

STREET CLASSIFICATION	LANES	CROSS SECTIONS	LEVEL OF SERVICE				
			A	B	C	D	E
Freeway	8 lanes		60,000	84,000	120,000	140,000	150,000
Freeway	6 lanes		45,000	63,000	90,000	110,000	120,000
Freeway	4 lanes		30,000	42,000	60,000	70,000	80,000
Expressway	6 lanes	102/122	30,000	42,000	60,000	70,000	80,000
Primary Arterial	6 lanes	102/122	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 lanes	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 lanes	78/98	15,000	21,000	30,000	35,000	40,000
Collector	4 lanes	72/92	10,000	14,000	20,000	25,000	30,000
Collector (no center lane) continuous left-turn lane)	4 lanes 2 lanes	64/84 50/70	5,000	7,000	10,000	13,000	15,000
Collector (no fronting property)	2 lanes	40/60	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2 lanes	50/70	2,500	3,500	5,000	6,500	8,000
Collector (multifamily)	2 lanes	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2 lanes	36/56	—	—	2,200	—	—

**LEGEND:**

XXX/XXX = Curb to curb width (feet)/right-of-way width (feet): based on the City of San Diego Street Design Manual

XX/XXX= Approximate recommended ADT based on the City of San Diego Street Design Manual.

**NOTES:**

1. The volumes and the average daily level of service listed above are only intended as a general planning guideline.
2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

**APPENDIX D: LEVEL OF SERVICE CALCULATION SHEETS**

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	18	27	6	0	0	0	0	67	14	19	43	0
Future Vol, veh/h	18	27	6	0	0	0	0	67	14	19	43	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	32	7	0	0	0	0	80	17	23	51	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.5	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	35%	31%
Vol Thru, %	83%	53%	69%
Vol Right, %	17%	12%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	81	51	62
LT Vol	0	18	19
Through Vol	67	27	43
RT Vol	14	6	0
Lane Flow Rate	96	61	74
Geometry Grp	1	1	1
Degree of Util (X)	0.107	0.071	0.086
Departure Headway (Hd)	3.993	4.227	4.176
Convergence, Y/N	Yes	Yes	Yes
Cap	892	837	853
Service Time	2.044	2.305	2.228
HCM Lane V/C Ratio	0.108	0.073	0.087
HCM Control Delay	7.5	7.6	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.2	0.3

Intersection														
Int Delay, s/veh	2.2													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕↕			↕	↕			↕			↕	
Traffic Vol, veh/h	1	39	501	3	3	7	814	39	14	7	13	5	1	43
Future Vol, veh/h	1	39	501	3	3	7	814	39	14	7	13	5	1	43
Conflicting Peds, #/hr	4	22	0	20	2	18	0	20	20	0	18	20	0	22
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	43	551	3	3	8	895	43	15	8	14	5	1	47

Major/Minor	Major1			Major2			Minor1			Minor2				
Conflicting Flow All	936	959	0	0	553	574	0	0	1637	1641	317	1340	1622	960
Stage 1	-	-	-	-	-	-	-	-	660	660	-	953	960	-
Stage 2	-	-	-	-	-	-	-	-	977	981	-	387	662	-
Critical Hdwy	-	4.13	-	-	6.93	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	-	2.219	-	-	3.119	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	-	715	-	-	501	997	-	-	73	100	680	120	102	310
Stage 1	-	-	-	-	-	-	-	-	419	459	-	310	334	-
Stage 2	-	-	-	-	-	-	-	-	301	327	-	609	458	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	~ -42	~ -42	-	-	754	754	-	-	58	96	654	106	98	297
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	58	96	-	106	98	-
Stage 1	-	-	-	-	-	-	-	-	419	450	-	310	327	-
Stage 2	-	-	-	-	-	-	-	-	247	320	-	574	449	-






















Approach	EB	WB	NB	SB
HCM Control Delay, s		0.1	59.4	24.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	102	+	-	-	754	-	-	242
HCM Lane V/C Ratio	0.366	-	-	-	0.015	-	-	0.223
HCM Control Delay (s)	59.4	-	-	-	9.8	-	-	24.1
HCM Lane LOS	F	-	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.5	-	-	-	0	-	-	0.8

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

HCM 2010 Signalized Intersection Summary  
 3: Winona Ave & University Ave

Existing Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						 			 	
Traffic Volume (veh/h)	38	491	45	19	588	30	97	57	23	56	45	77
Future Volume (veh/h)	38	491	45	19	588	30	97	57	23	56	45	77
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.97	0.96		0.97	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.89	1.00	1.00	0.89
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	41	534	35	21	639	29	105	62	16	61	49	38
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	52	1502	98	344	1069	49	193	102	23	148	111	71
Arrive On Green	0.03	0.45	0.45	0.19	0.62	0.62	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	3353	219	1774	1730	79	659	505	111	466	547	350
Grp Volume(v), veh/h	41	281	288	21	0	668	183	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1803	1774	0	1809	1275	0	0	1364	0	0
Q Serve(g_s), s	2.2	9.8	9.9	0.9	0.0	21.0	3.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	9.8	9.9	0.9	0.0	21.0	12.6	0.0	0.0	8.8	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.04	0.57		0.09	0.41		0.26
Lane Grp Cap(c), veh/h	52	793	808	344	0	1117	318	0	0	330	0	0
V/C Ratio(X)	0.79	0.35	0.36	0.06	0.00	0.60	0.58	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	172	793	808	344	0	1117	449	0	0	466	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.3	17.0	17.1	30.9	0.0	10.9	34.8	0.0	0.0	33.3	0.0	0.0
Incr Delay (d2), s/veh	9.7	1.2	1.2	0.0	0.0	2.4	0.6	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	5.0	5.2	0.4	0.0	11.1	4.5	0.0	0.0	3.4	0.0	0.0
LnGrp Delay(d),s/veh	55.0	18.3	18.3	30.9	0.0	13.3	35.4	0.0	0.0	33.7	0.0	0.0
LnGrp LOS	E	B	B	C		B	D			C		
Approach Vol, veh/h		610			689			183			148	
Approach Delay, s/veh		20.7			13.8			35.4			33.7	
Approach LOS		C			B			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.1	47.0		23.9	7.1	63.0		23.9				
Change Period (Y+Rc), s	4.9	* 4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	9.1	* 42		28.6	9.1	42.1		28.6				
Max Q Clear Time (g_c+I1), s	2.9	11.9		10.8	4.2	23.0		14.6				
Green Ext Time (p_c), s	2.4	3.9		1.3	0.0	4.7		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				20.6								
HCM 2010 LOS				C								
<b>Notes</b>												

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↑	↑				↑			↑
Traffic Vol, veh/h	0	517	26	44	663	18	0	0	31	0	0	10
Future Vol, veh/h	0	517	26	44	663	18	0	0	31	0	0	10
Conflicting Peds, #/hr	0	0	75	42	0	25	0	0	42	0	0	58
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	574	29	49	737	20	0	0	34	0	0	11

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	678	0	0	-	-	419	-	-	830
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.13	-	-	-	-	6.93	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	912	-	-	0	0	584	0	0	369
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	876	-	-	-	-	521	-	-	340
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-





















Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0.6		12.4		15.9	
HCM LOS					B		C	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	521	-	-	876	-	-	340
HCM Lane V/C Ratio	0.066	-	-	0.056	-	-	0.033
HCM Control Delay (s)	12.4	-	-	9.4	-	-	15.9
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-	-	0.1



HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Existing Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	513	27	38	637	116	35	53	103	74	36	53
Future Volume (veh/h)	49	513	27	38	637	116	35	53	103	74	36	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	0.96		0.95	0.96		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	54	564	22	42	700	98	38	58	23	81	40	12
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	2021	79	53	1221	171	155	215	355	273	123	355
Arrive On Green	0.21	0.58	0.58	0.03	0.39	0.39	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3467	135	1774	3094	433	430	912	1503	884	519	1503
Grp Volume(v), veh/h	54	288	298	42	400	398	96	0	23	121	0	12
Grp Sat Flow(s),veh/h/ln	1774	1770	1832	1774	1770	1757	1341	0	1503	1403	0	1503
Q Serve(g_s), s	2.3	7.6	7.6	2.2	16.6	16.7	1.3	0.0	1.1	0.0	0.0	0.6
Cycle Q Clear(g_c), s	2.3	7.6	7.6	2.2	16.6	16.7	8.3	0.0	1.1	7.0	0.0	0.6
Prop In Lane	1.00		0.07	1.00		0.25	0.40		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	378	1032	1068	53	698	694	370	0	355	395	0	355
V/C Ratio(X)	0.14	0.28	0.28	0.79	0.57	0.57	0.26	0.00	0.06	0.31	0.00	0.03
Avail Cap(c_a), veh/h	378	1032	1068	172	698	694	529	0	505	539	0	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.0	9.8	9.8	45.3	22.3	22.3	29.7	0.0	27.9	29.9	0.0	27.6
Incr Delay (d2), s/veh	0.1	0.7	0.7	9.4	3.4	3.4	0.1	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.9	4.0	1.2	8.8	8.7	2.1	0.0	0.5	2.6	0.0	0.2
LnGrp Delay(d),s/veh	30.1	10.4	10.4	54.7	25.6	25.7	29.9	0.0	27.9	30.1	0.0	27.7
LnGrp LOS	C	B	B	D	C	C	C		C	C		C
Approach Vol, veh/h		640			840			119			133	
Approach Delay, s/veh		12.1			27.1			29.5			29.9	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	59.7		27.1	24.9	42.0		27.1				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.9	* 4.9		4.9				
Max Green Setting (Gmax), s	9.1	39.1		31.6	11.1	* 37		31.6				
Max Q Clear Time (g_c+I1), s	4.2	9.6		9.0	4.3	18.7		10.3				
Green Ext Time (p_c), s	0.0	7.7		0.9	1.9	7.3		0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.9									
HCM 2010 LOS			C									
<b>Notes</b>												

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕			↕	
Traffic Vol, veh/h	38	636	10	106	788	41	12	0	44	5	0	8
Future Vol, veh/h	38	636	10	106	788	41	12	0	44	5	0	8
Conflicting Peds, #/hr	18	0	37	41	0	22	37	0	41	22	0	18
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	80	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	684	11	114	847	44	13	0	47	5	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	913	0	0	736	0	0	1501	1953	429	1584	1936	505
Stage 1	-	-	-	-	-	-	812	812	-	1119	1119	-
Stage 2	-	-	-	-	-	-	689	1141	-	465	817	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	742	-	-	865	-	-	84	63	574	73	65	512
Stage 1	-	-	-	-	-	-	339	390	-	220	280	-
Stage 2	-	-	-	-	-	-	402	274	-	547	388	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	716	-	-	831	-	-	66	48	530	54	50	484
Mov Cap-2 Maneuver	-	-	-	-	-	-	66	48	-	54	50	-
Stage 1	-	-	-	-	-	-	307	353	-	203	237	-
Stage 2	-	-	-	-	-	-	329	231	-	451	351	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			1.1			28.7			39.2		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	211	716	-	-	831	-	-	119
HCM Lane V/C Ratio	0.285	0.057	-	-	0.137	-	-	0.117
HCM Control Delay (s)	28.7	10.3	-	-	10	-	-	39.2
HCM Lane LOS	D	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	1.1	0.2	-	-	0.5	-	-	0.4

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Existing Conditions  
AM Peak Hour

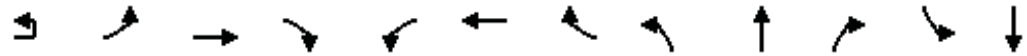


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	418	139	57	464	377	301	767	43	251	334	155
Future Volume (vph)	128	418	139	57	464	377	301	767	43	251	334	155
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3352	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3352	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	133	435	145	59	483	393	314	799	45	261	348	161
RTOR Reduction (vph)	0	0	65	0	0	231	0	0	29	0	25	0
Lane Group Flow (vph)	133	435	80	59	483	162	314	799	16	261	484	0
Confl. Peds. (#/hr)												5
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	15.2	33.3	33.3	7.9	25.6	25.6	31.5	42.3	42.3	15.2	25.2	
Effective Green, g (s)	15.2	33.3	33.3	7.9	25.6	25.6	31.5	42.3	42.3	15.2	25.2	
Actuated g/C Ratio	0.13	0.28	0.28	0.07	0.22	0.22	0.27	0.36	0.36	0.13	0.21	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1	
Vehicle Extension (s)	2.0	3.8	3.8	2.0	3.3	3.3	2.0	4.0	4.0	2.0	3.2	
Lane Grp Cap (vph)	228	1001	447	118	769	344	473	1271	568	443	717	
v/s Ratio Prot	c0.08	0.12		0.03	c0.14		c0.18	c0.23		0.08	c0.14	
v/s Ratio Perm			0.05			0.10			0.01			
v/c Ratio	0.58	0.43	0.18	0.50	0.63	0.47	0.66	0.63	0.03	0.59	0.67	
Uniform Delay, d1	48.3	34.5	31.9	53.0	41.7	40.2	38.4	31.2	24.4	48.3	42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.4	0.4	0.2	1.2	1.7	1.1	2.7	1.1	0.0	1.3	2.6	
Delay (s)	50.7	34.9	32.1	54.2	43.4	41.3	41.1	32.3	24.4	49.6	45.0	
Level of Service	D	C	C	D	D	D	D	C	C	D	D	
Approach Delay (s)		37.3			43.2			34.4			46.6	
Approach LOS		D			D			C			D	

Intersection Summary		
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.65	D
Actuated Cycle Length (s)	117.7	Sum of lost time (s)
Intersection Capacity Utilization	69.0%	20.2
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		C

HCM Signalized Intersection Capacity Analysis  
8: 58th St & University Ave

Existing Conditions  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↘	↗↗↗	↗	↘	↗↗	↗		↕			↕
Traffic Volume (vph)	7	57	534	133	34	831	52	217	40	82	35	32
Future Volume (vph)	7	57	534	133	34	831	52	217	40	82	35	32
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	0.96	1.00	1.00	0.96		1.00			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.97			0.93
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.99
Satd. Flow (prot)		1770	5085	1524	1770	3539	1524		1733			1693
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.71			0.87
Satd. Flow (perm)		1770	5085	1524	1770	3539	1524		1276			1493
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	60	562	140	36	875	55	228	42	86	37	34
RTOR Reduction (vph)	0	0	0	56	0	0	30	0	15	0	0	47
Lane Group Flow (vph)	0	67	562	84	36	875	25	0	341	0	0	98
Confl. Peds. (#/hr)				5			6	10		2	2	
Confl. Bikes (#/hr)				4			1			1		
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA
Protected Phases	5	5	2		1	6			8			4
Permitted Phases				2			6	8			4	
Actuated Green, G (s)		6.5	43.6	43.6	4.4	41.5	41.5		27.4			27.4
Effective Green, g (s)		6.5	43.6	43.6	4.4	41.5	41.5		27.4			27.4
Actuated g/C Ratio		0.07	0.48	0.48	0.05	0.46	0.46		0.30			0.30
Clearance Time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9
Vehicle Extension (s)		2.0	5.5	5.5	2.0	3.3	3.3		2.0			2.0
Lane Grp Cap (vph)		127	2463	738	86	1631	702		388			454
v/s Ratio Prot		c0.04	0.11		0.02	c0.25						
v/s Ratio Perm				0.06			0.02		c0.27			0.07
v/c Ratio		0.53	0.23	0.11	0.42	0.54	0.04		0.88			0.22
Uniform Delay, d1		40.3	13.4	12.7	41.6	17.4	13.3		29.7			23.3
Progression Factor		1.00	1.00	1.00	1.12	0.92	2.60		1.00			1.00
Incremental Delay, d2		1.8	0.2	0.3	1.2	1.2	0.1		19.2			0.1
Delay (s)		42.1	13.7	13.0	47.6	17.3	34.7		48.9			23.4
Level of Service		D	B	B	D	B	C		D			C
Approach Delay (s)			16.0			19.4			48.9			23.4
Approach LOS			B			B			D			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.2									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			90.0									Sum of lost time (s) 14.6
Intersection Capacity Utilization			64.6%									ICU Level of Service C
Analysis Period (min)			15									

c Critical Lane Group

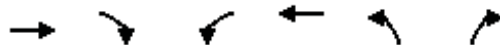


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	70
Future Volume (vph)	70
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	74
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Existing Conditions  
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↖	↑↑	↖	↗
Traffic Volume (vph)	703	109	73	888	102	16
Future Volume (vph)	703	109	73	888	102	16
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1518	1770	3539	1770	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1518	1770	3539	1770	1566
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	748	116	78	945	109	17
RTOR Reduction (vph)	0	44	0	0	0	13
Lane Group Flow (vph)	748	72	78	945	109	4
Confl. Peds. (#/hr)		9				5
Confl. Bikes (#/hr)		1				1
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	55.5	55.5	7.2	67.1	12.7	19.9
Effective Green, g (s)	55.5	55.5	7.2	67.1	12.7	19.9
Actuated g/C Ratio	0.62	0.62	0.08	0.75	0.14	0.22
Clearance Time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Vehicle Extension (s)	3.3	3.3	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	3135	936	141	2638	249	346
v/s Ratio Prot	0.15		c0.04	c0.27	c0.06	0.00
v/s Ratio Perm		0.05				0.00
v/c Ratio	0.24	0.08	0.55	0.36	0.44	0.01
Uniform Delay, d1	7.8	6.9	39.9	4.0	35.4	27.4
Progression Factor	0.66	0.40	0.78	1.17	1.00	1.00
Incremental Delay, d2	0.2	0.2	2.6	0.4	0.4	0.0
Delay (s)	5.3	2.9	33.8	5.0	35.8	27.4
Level of Service	A	A	C	A	D	C
Approach Delay (s)	5.0			7.2	34.7	
Approach LOS	A			A	C	

### Intersection Summary

HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

Existing Conditions  
AM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑	↗		↖	↗		↕	
Traffic Volume (vph)	10	578	30	29	828	9	99	7	59	20	13	10
Future Volume (vph)	10	578	30	29	828	9	99	7	59	20	13	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	5.3	4.4	5.3	5.3		4.9	4.9		4.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00		1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.98	
Satd. Flow (prot)	1770	5085	1540	1770	3539	1583		1770	1563		1758	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.71	1.00		0.84	
Satd. Flow (perm)	1770	5085	1540	1770	3539	1583		1309	1563		1512	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	602	31	30	862	9	103	7	61	21	14	10
RTOR Reduction (vph)	0	0	11	0	0	3	0	0	52	0	8	0
Lane Group Flow (vph)	10	602	20	30	863	6	0	110	9	0	37	0
Confl. Peds. (#/hr)			4				8		1	1		8
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	1.2	57.2	57.2	4.2	60.2	60.2		14.0	14.0		14.0	
Effective Green, g (s)	1.2	57.2	57.2	4.2	60.2	60.2		14.0	14.0		14.0	
Actuated g/C Ratio	0.01	0.64	0.64	0.05	0.67	0.67		0.16	0.16		0.16	
Clearance Time (s)	4.4	5.3	5.3	4.4	5.3	5.3		4.9	4.9		4.9	
Vehicle Extension (s)	2.0	4.8	4.8	2.0	4.4	4.4		2.0	2.0		2.0	
Lane Grp Cap (vph)	23	3231	978	82	2367	1058		203	243		235	
v/s Ratio Prot	0.01	0.12		c0.02	c0.24							
v/s Ratio Perm			0.01			0.00		c0.08	0.01		0.02	
v/c Ratio	0.43	0.19	0.02	0.37	0.36	0.01		0.54	0.04		0.16	
Uniform Delay, d1	44.1	6.8	6.1	41.6	6.5	5.0		35.0	32.3		32.9	
Progression Factor	0.74	1.03	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	4.7	0.1	0.0	1.0	0.4	0.0		1.6	0.0		0.1	
Delay (s)	37.3	7.1	6.1	42.6	7.0	5.0		36.6	32.3		33.0	
Level of Service	D	A	A	D	A	A		D	C		C	
Approach Delay (s)		7.5			8.1			35.1			33.0	
Approach LOS		A			A			D			C	

Intersection Summary

HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 11: College Ave & University Ave

Existing Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	418	94	137	517	129	195	792	121	94	292	135
Future Volume (vph)	161	418	94	137	517	129	195	792	121	94	292	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1558	1770	3539	1520	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1558	1770	3539	1520	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	171	445	100	146	550	137	207	843	129	100	311	144
RTOR Reduction (vph)	0	0	67	0	0	60	0	0	48	0	0	56
Lane Group Flow (vph)	171	445	33	146	550	77	207	843	81	100	311	88
Confl. Peds. (#/hr)			3			6						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	19.0	30.7	30.7	16.7	28.6	28.6	23.6	42.0	42.0	13.0	30.1	30.1
Effective Green, g (s)	19.0	30.7	30.7	16.7	28.6	28.6	23.6	42.0	42.0	13.0	30.1	30.1
Actuated g/C Ratio	0.16	0.25	0.25	0.14	0.24	0.24	0.19	0.35	0.35	0.11	0.25	0.25
Clearance Time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5
Vehicle Extension (s)	2.0	3.7	3.7	2.0	3.7	3.7	2.0	3.2	3.2	2.0	3.6	3.6
Lane Grp Cap (vph)	276	894	393	243	833	357	343	1223	547	189	876	392
v/s Ratio Prot	c0.10	0.13		0.08	c0.16		c0.12	c0.24		0.06	0.09	
v/s Ratio Perm			0.02			0.05			0.05			0.06
v/c Ratio	0.62	0.50	0.08	0.60	0.66	0.21	0.60	0.69	0.15	0.53	0.36	0.23
Uniform Delay, d1	47.9	38.8	34.7	49.3	42.1	37.4	44.7	34.1	27.4	51.4	37.7	36.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.5	0.1	2.9	2.1	0.4	2.1	1.7	0.1	1.2	0.3	0.4
Delay (s)	50.8	39.4	34.8	52.1	44.2	37.8	46.7	35.8	27.6	52.6	38.0	36.8
Level of Service	D	D	C	D	D	D	D	D	C	D	D	D
Approach Delay (s)		41.4			44.5			36.8			40.3	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			40.4								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			121.5							20.4		
Intersection Capacity Utilization			67.4%								ICU Level of Service	C
Analysis Period (min)			15									

c Critical Lane Group



Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗	↖		↔			↔	
Traffic Vol, veh/h	19	607	10	14	807	10	3	1	10	6	0	16
Future Vol, veh/h	19	607	10	14	807	10	3	1	10	6	0	16
Conflicting Peds, #/hr	4	0	7	10	0	7	7	0	10	7	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	125	-	80	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	653	11	15	868	11	3	1	11	6	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	875	0	0	673	0	0	1180	1614	352	1283	1619	448
Stage 1	-	-	-	-	-	-	709	709	-	905	905	-
Stage 2	-	-	-	-	-	-	471	905	-	378	714	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	767	-	-	914	-	-	146	103	644	122	102	558
Stage 1	-	-	-	-	-	-	391	435	-	298	353	-
Stage 2	-	-	-	-	-	-	542	353	-	616	433	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	762	-	-	905	-	-	135	97	632	113	96	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	97	-	113	96	-
Stage 1	-	-	-	-	-	-	377	420	-	288	345	-
Stage 2	-	-	-	-	-	-	513	345	-	583	418	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.2			18.1			19.7		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	290	762	-	-	905	-	-	268
HCM Lane V/C Ratio	0.052	0.027	-	-	0.017	-	-	0.088
HCM Control Delay (s)	18.1	9.9	-	-	9	-	-	19.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.1	-	-	0.3

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	608	18	3	671	10	25	0	25	6	1	48
Future Vol, veh/h	12	608	18	3	671	10	25	0	25	6	1	48
Conflicting Peds, #/hr	1	0	3	3	0	1	3	0	3	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	100	90	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	654	19	3	722	11	27	0	27	6	1	52

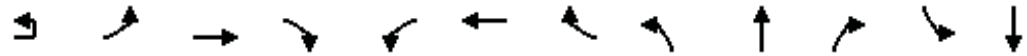
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	723	0	0	657	0	0	1054	1412	333	1085	1412	365
Stage 1	-	-	-	-	-	-	683	683	-	729	729	-
Stage 2	-	-	-	-	-	-	371	729	-	356	683	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	875	-	-	926	-	-	180	137	663	171	137	632
Stage 1	-	-	-	-	-	-	405	447	-	380	426	-
Stage 2	-	-	-	-	-	-	622	426	-	634	447	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	873	-	-	923	-	-	161	134	659	161	134	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	134	-	161	134	-
Stage 1	-	-	-	-	-	-	398	439	-	374	424	-
Stage 2	-	-	-	-	-	-	566	424	-	597	439	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			22.5			14.1		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	873	-	-	923	-	-	455
HCM Lane V/C Ratio	0.208	0.015	-	-	0.003	-	-	0.13
HCM Control Delay (s)	22.5	9.2	-	-	8.9	-	-	14.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.4

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Existing Conditions  
 AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Traffic Volume (vph)	2	51	492	35	13	607	28	83	47	19	35	36	
Future Volume (vph)	2	51	492	35	13	607	28	83	47	19	35	36	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes		1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00			1.00	
Frt		1.00	0.99		1.00	0.99			0.98			0.95	
Flt Protected		0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)		1770	3497		1770	3512			1776			1738	
Flt Permitted		0.95	1.00		0.95	1.00			0.76			0.86	
Satd. Flow (perm)		1770	3497		1770	3512			1379			1525	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	2	54	523	37	14	646	30	88	50	20	37	38	
RTOR Reduction (vph)	0	0	3	0	0	2	0	0	7	0	0	27	
Lane Group Flow (vph)	0	56	557	0	14	674	0	0	151	0	0	87	
Confl. Peds. (#/hr)				12				3		2	2		
Confl. Bikes (#/hr)				4			1						
Turn Type	Prot	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	5	2		1	6			8			4	
Permitted Phases								8			4		
Actuated Green, G (s)		6.4	58.3		1.3	53.2			16.2			16.2	
Effective Green, g (s)		6.4	58.3		1.3	53.2			16.2			16.2	
Actuated g/C Ratio		0.07	0.65		0.01	0.59			0.18			0.18	
Clearance Time (s)		4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)		2.0	3.6		2.0	3.6			2.0			2.0	
Lane Grp Cap (vph)		125	2265		25	2075			248			274	
v/s Ratio Prot		c0.03	0.16		0.01	c0.19							
v/s Ratio Perm									c0.11			0.06	
v/c Ratio		0.45	0.25		0.56	0.32			0.61			0.32	
Uniform Delay, d1		40.1	6.6		44.1	9.3			34.0			32.1	
Progression Factor		1.00	1.00		1.12	0.68			1.00			1.00	
Incremental Delay, d2		0.9	0.3		15.7	0.4			2.9			0.2	
Delay (s)		41.0	6.9		65.3	6.8			36.8			32.3	
Level of Service		D	A		E	A			D			C	
Approach Delay (s)			10.0			8.0			36.8			32.3	
Approach LOS			B			A			D			C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			13.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	14.2
Intersection Capacity Utilization			46.9%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	37
Future Volume (vph)	37
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	39
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
 15: Aragon Dr & University Ave

Existing Conditions  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘		↕	
Traffic Volume (vph)	5	502	15	28	545	21	78	85	55	4	22	2
Future Volume (vph)	5	502	15	28	545	21	78	85	55	4	22	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94			0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1517	1770	3539	1509	1767	1742			1831	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00			0.96	
Satd. Flow (perm)	1770	3539	1517	1770	3539	1509	1372	1742			1767	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	558	17	31	606	23	87	94	61	4	24	2
RTOR Reduction (vph)	0	0	6	0	0	7	0	34	0	0	2	0
Lane Group Flow (vph)	6	558	11	31	606	16	87	121	0	0	28	0
Confl. Peds. (#/hr)			11			2	2		4	4		2
Confl. Bikes (#/hr)						1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	1.1	58.1	58.1	4.2	60.9	60.9	13.5	13.5			13.5	
Effective Green, g (s)	1.1	58.1	58.1	4.2	60.9	60.9	13.5	13.5			13.5	
Actuated g/C Ratio	0.01	0.65	0.65	0.05	0.68	0.68	0.15	0.15			0.15	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Vehicle Extension (s)	2.0	5.1	5.1	2.0	3.9	3.9	2.0	2.0			2.0	
Lane Grp Cap (vph)	21	2284	979	82	2394	1021	205	261			265	
v/s Ratio Prot	0.00	0.16		c0.02	c0.17			c0.07				
v/s Ratio Perm			0.01			0.01	0.06				0.02	
v/c Ratio	0.29	0.24	0.01	0.38	0.25	0.02	0.42	0.46			0.11	
Uniform Delay, d1	44.1	6.7	5.7	41.6	5.7	4.8	34.7	34.9			33.0	
Progression Factor	1.13	0.69	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	2.7	0.3	0.0	1.1	0.3	0.0	0.5	0.5			0.1	
Delay (s)	52.3	4.9	5.7	42.7	5.9	4.8	35.2	35.4			33.1	
Level of Service	D	A	A	D	A	A	D	D			C	
Approach Delay (s)		5.4			7.6			35.4			33.1	
Approach LOS		A			A			D			C	

**Intersection Summary**

HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	521	567	16	15	44
Future Vol, veh/h	40	521	567	16	15	44
Conflicting Peds, #/hr	3	0	0	5	5	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	585	637	18	17	49

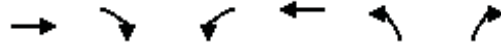
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	642	0	-	0	1030 327
Stage 1	-	-	-	-	642 -
Stage 2	-	-	-	-	388 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	939	-	-	-	229 669
Stage 1	-	-	-	-	486 -
Stage 2	-	-	-	-	655 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	936	-	-	-	216 664
Mov Cap-2 Maneuver	-	-	-	-	344 -
Stage 1	-	-	-	-	484 -
Stage 2	-	-	-	-	621 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	936	-	-	-	537
HCM Lane V/C Ratio	0.048	-	-	-	0.123
HCM Control Delay (s)	9	-	-	-	12.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Existing Conditions  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	506	30	45	569	31	24
Future Volume (vph)	506	30	45	569	31	24
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1534	1770	3539	1765	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1534	1770	3539	1765	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	575	34	51	647	35	27
RTOR Reduction (vph)	0	16	0	0	0	24
Lane Group Flow (vph)	575	18	51	647	35	3
Confl. Peds. (#/hr)		10			5	
Confl. Bikes (#/hr)		1				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	25.4	25.4	2.4	32.1	6.1	6.1
Effective Green, g (s)	25.4	25.4	2.4	32.1	6.1	6.1
Actuated g/C Ratio	0.53	0.53	0.05	0.67	0.13	0.13
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	3.0	3.0
Lane Grp Cap (vph)	1864	808	88	2356	223	200
v/s Ratio Prot	c0.16		c0.03	0.18		
v/s Ratio Perm		0.01			c0.02	0.00
v/c Ratio	0.31	0.02	0.58	0.27	0.16	0.02
Uniform Delay, d1	6.4	5.5	22.4	3.3	18.8	18.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0	5.6	0.2	0.3	0.0
Delay (s)	6.6	5.5	28.0	3.4	19.1	18.5
Level of Service	A	A	C	A	B	B
Approach Delay (s)	6.6			5.2	18.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	14.3
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	9	499	588	11	9	11
Future Vol, veh/h	9	499	588	11	9	11
Conflicting Peds, #/hr	12	0	0	11	11	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	55	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	561	661	12	10	12

**Major/Minor**

	Major1	Major2	Minor2		
Conflicting Flow All	673	0	0	985	354
Stage 1	-	-	-	673	-
Stage 2	-	-	-	312	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	914	-	-	245	642
Stage 1	-	-	-	468	-
Stage 2	-	-	-	715	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	904	-	-	237	627
Mov Cap-2 Maneuver	-	-	-	355	-
Stage 1	-	-	-	463	-
Stage 2	-	-	-	699	-

**Approach**

	EB	WB	SB
HCM Control Delay, s	0.2	0	13.1
HCM LOS			B

**Minor Lane/Major Mvmt**

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	904	-	-	-	466
HCM Lane V/C Ratio	0.011	-	-	-	0.048
HCM Control Delay (s)	9	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	492	15	67	559	33	37
Future Vol, veh/h	492	15	67	559	33	37
Conflicting Peds, #/hr	0	12	9	0	12	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	541	16	74	614	36	41

























Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	553	0	1019
Stage 1	-	-	-	-	553
Stage 2	-	-	-	-	466
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1013	-	233
Stage 1	-	-	-	-	540
Stage 2	-	-	-	-	598
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1004	-	211
Mov Cap-2 Maneuver	-	-	-	-	343
Stage 1	-	-	-	-	534
Stage 2	-	-	-	-	548

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	468	-	-	1004	-
HCM Lane V/C Ratio	0.164	-	-	0.073	-
HCM Control Delay (s)	14.2	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

HCM 2010 Signalized Intersection Summary  
 20: Lois St/70th St & University Ave

Existing Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	337	24	10	448	604	22	143	18	274	48	180
Future Volume (veh/h)	174	337	24	10	448	604	22	143	18	274	48	180
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	185	359	6	11	477	129	23	152	13	327	0	38
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	1706	758	19	1411	631	199	190	16	441	0	197
Arrive On Green	0.09	0.48	0.48	0.01	0.40	0.40	0.11	0.11	0.11	0.12	0.00	0.12
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1692	145	3548	0	1583
Grp Volume(v), veh/h	185	359	6	11	477	129	23	0	165	327	0	38
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1837	1774	0	1583
Q Serve(g_s), s	8.0	5.0	0.2	0.5	8.0	4.5	1.0	0.0	7.4	7.6	0.0	1.8
Cycle Q Clear(g_c), s	8.0	5.0	0.2	0.5	8.0	4.5	1.0	0.0	7.4	7.6	0.0	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	167	1706	758	19	1411	631	199	0	206	441	0	197
V/C Ratio(X)	1.11	0.21	0.01	0.58	0.34	0.20	0.12	0.00	0.80	0.74	0.00	0.19
Avail Cap(c_a), veh/h	167	1706	758	167	1411	631	250	0	259	918	0	410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.5	12.7	11.4	41.8	17.8	16.7	33.9	0.0	36.8	35.9	0.0	33.4
Incr Delay (d2), s/veh	101.5	0.3	0.0	9.8	0.7	0.7	0.3	0.0	13.1	2.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	2.5	0.1	0.3	4.0	2.1	0.5	0.0	4.5	3.8	0.0	0.8
LnGrp Delay(d),s/veh	140.0	13.0	11.5	51.6	18.4	17.5	34.2	0.0	49.9	38.4	0.0	33.9
LnGrp LOS	F	B	B	D	B	B	C		D	D		C
Approach Vol, veh/h		550			617			188			365	
Approach Delay, s/veh		55.7			18.8			48.0			37.9	
Approach LOS		E			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		16.6	5.9	47.0		15.5	13.0	39.9				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		22.0	8.0	20.0		12.0	8.0	20.0				
Max Q Clear Time (g_c+I1), s		9.6	2.5	7.0		9.4	10.0	10.0				
Green Ext Time (p_c), s		1.0	0.0	6.3		0.2	0.0	5.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			37.8									
HCM 2010 LOS			D									
<b>Notes</b>												

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	19	48	13	0	0	0	0	46	6	21	36	0
Future Vol, veh/h	19	48	13	0	0	0	0	46	6	21	36	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	50	14	0	0	0	0	48	6	22	38	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	24%	37%
Vol Thru, %	88%	60%	63%
Vol Right, %	12%	16%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	52	80	57
LT Vol	0	19	21
Through Vol	46	48	36
RT Vol	6	13	0
Lane Flow Rate	54	83	59
Geometry Grp	1	1	1
Degree of Util (X)	0.061	0.094	0.069
Departure Headway (Hd)	4.056	4.08	4.195
Convergence, Y/N	Yes	Yes	Yes
Cap	877	872	848
Service Time	2.11	2.135	2.247
HCM Lane V/C Ratio	0.062	0.095	0.07
HCM Control Delay	7.4	7.6	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.2

Intersection													
Int Delay, s/veh	2.3												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔			↔↔			↔↔	
Traffic Vol, veh/h	28	806	12	3	15	698	27	12	2	13	7	3	43
Future Vol, veh/h	28	806	12	3	15	698	27	12	2	13	7	3	43
Conflicting Peds, #/hr	37	0	29	1	29	0	37	29	0	29	37	0	37
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	831	12	3	15	720	28	12	2	13	7	3	44






















Major/Minor	Major1		Major2		Minor1		Minor2						
Conflicting Flow All	784	0	0	842	872	0	0	1749	1746	488	1312	1738	808
Stage 1	-	-	-	-	-	-	-	924	924	-	801	808	-
Stage 2	-	-	-	-	-	-	-	825	822	-	511	930	-
Critical Hdwy	4.13	-	-	6.93	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	3.119	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	832	-	-	322	771	-	-	61	86	526	126	87	380
Stage 1	-	-	-	-	-	-	-	291	347	-	377	393	-
Stage 2	-	-	-	-	-	-	-	366	387	-	514	345	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	803	-	-	606	606	-	-	46	75	493	106	76	354
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	46	75	-	106	76	-
Stage 1	-	-	-	-	-	-	-	264	314	-	339	379	-
Stage 2	-	-	-	-	-	-	-	306	373	-	447	313	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.3	65.7	25
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	803	-	-	606	-	-	234
HCM Lane V/C Ratio	0.324	0.036	-	-	0.031	-	-	0.234
HCM Control Delay (s)	65.7	9.7	0.3	-	11.1	-	-	25
HCM Lane LOS	F	A	A	-	B	-	-	D
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.1	-	-	0.9

HCM 2010 Signalized Intersection Summary  
3: Winona Ave & University Ave

Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						 				 
Traffic Volume (veh/h)	65	846	61	15	672	36	81	44	40	114	61	52
Future Volume (veh/h)	65	846	61	15	672	36	81	44	40	114	61	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	0.95		0.94	0.96		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.89	1.00	1.00	0.89
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	68	881	54	16	700	34	84	46	25	119	64	38
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	2160	132	25	1042	51	173	87	40	182	86	45
Arrive On Green	0.05	0.64	0.64	0.01	0.61	0.61	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	3374	207	1774	1723	84	571	417	190	617	413	214
Grp Volume(v), veh/h	68	462	473	16	0	734	155	0	0	221	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1812	1774	0	1806	1178	0	0	1244	0	0
Q Serve(g_s), s	3.9	13.2	13.2	0.9	0.0	28.1	0.0	0.0	0.0	5.4	0.0	0.0
Cycle Q Clear(g_c), s	3.9	13.2	13.2	0.9	0.0	28.1	12.4	0.0	0.0	17.9	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.05	0.54		0.16	0.54		0.17
Lane Grp Cap(c), veh/h	87	1133	1160	25	0	1093	300	0	0	313	0	0
V/C Ratio(X)	0.78	0.41	0.41	0.63	0.00	0.67	0.52	0.00	0.00	0.71	0.00	0.00
Avail Cap(c_a), veh/h	172	1133	1160	172	0	1093	412	0	0	427	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.9	9.1	9.1	51.0	0.0	13.7	37.2	0.0	0.0	39.5	0.0	0.0
Incr Delay (d2), s/veh	5.5	1.1	1.1	9.4	0.0	3.3	0.5	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.8	6.9	0.5	0.0	14.9	4.1	0.0	0.0	6.2	0.0	0.0
LnGrp Delay(d),s/veh	54.4	10.2	10.2	60.3	0.0	17.0	37.7	0.0	0.0	41.0	0.0	0.0
LnGrp LOS	D	B	B	E		B	D			D		
Approach Vol, veh/h		1003			750			155			221	
Approach Delay, s/veh		13.2			17.9			37.7			41.0	
Approach LOS		B			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	71.5		26.7	9.5	67.8		26.7				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	10.1	48.6		31.1	10.1	48.6		31.1				
Max Q Clear Time (g_c+I1), s	2.9	15.2		19.9	5.9	30.1		14.4				
Green Ext Time (p_c), s	0.0	15.8		1.3	0.0	11.3		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				19.5								
HCM 2010 LOS				B								

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↑	↑				↑			↑
Traffic Vol, veh/h	0	810	61	54	704	20	0	0	18	0	0	4
Future Vol, veh/h	0	810	61	54	704	20	0	0	18	0	0	4
Conflicting Peds, #/hr	0	0	137	59	0	30	0	0	59	0	0	108
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	835	63	56	726	21	0	0	19	0	0	4





















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1035	0	0	-	-	645	-	-	874
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.13	-	-	-	-	6.93	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	669	-	-	0	0	416	0	0	348
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	631	-	-	-	-	341	-	-	303
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.8			16.2			17		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	341	-	-	631	-	-	303
HCM Lane V/C Ratio	0.054	-	-	0.088	-	-	0.014
HCM Control Delay (s)	16.2	-	-	11.3	-	-	17
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	-	0

HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	836	25	53	718	105	28	43	82	100	44	48
Future Volume (veh/h)	38	836	25	53	718	105	28	43	82	100	44	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	0.96		0.93	0.96		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	41	899	23	57	772	93	30	46	17	108	47	11
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	52	2037	52	73	1868	225	119	163	358	254	101	358
Arrive On Green	0.03	0.58	0.58	0.04	0.59	0.59	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3520	90	1774	3163	381	291	671	1471	803	414	1469
Grp Volume(v), veh/h	41	452	470	57	432	433	76	0	17	155	0	11
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1770	1774	962	0	1471	1217	0	1469
Q Serve(g_s), s	2.4	15.0	15.0	3.3	13.7	13.8	0.9	0.0	0.9	0.0	0.0	0.6
Cycle Q Clear(g_c), s	2.4	15.0	15.0	3.3	13.7	13.8	14.4	0.0	0.9	13.5	0.0	0.6
Prop In Lane	1.00		0.05	1.00		0.21	0.39		1.00	0.70		1.00
Lane Grp Cap(c), veh/h	52	1024	1065	73	1045	1048	283	0	358	355	0	358
V/C Ratio(X)	0.79	0.44	0.44	0.78	0.41	0.41	0.27	0.00	0.05	0.44	0.00	0.03
Avail Cap(c_a), veh/h	172	1024	1065	172	1045	1048	431	0	496	490	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	12.4	12.4	49.4	11.5	11.5	32.3	0.0	30.1	34.6	0.0	30.0
Incr Delay (d2), s/veh	9.3	1.4	1.3	6.4	1.2	1.2	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	7.7	8.0	1.7	7.1	7.1	2.0	0.0	0.4	4.0	0.0	0.2
LnGrp Delay(d),s/veh	59.5	13.8	13.7	55.8	12.7	12.7	32.5	0.0	30.1	34.9	0.0	30.0
LnGrp LOS	E	B	B	E	B	B	C		C	C		C
Approach Vol, veh/h		963			922			93			166	
Approach Delay, s/veh		15.7			15.4			32.1			34.6	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	65.1		30.2	7.5	66.3		30.2				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	10.1	44.6		35.1	10.1	44.6		35.1				
Max Q Clear Time (g_c+I1), s	5.3	17.0		15.5	4.4	15.8		16.4				
Green Ext Time (p_c), s	0.0	21.2		0.9	0.0	22.0		0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				17.7								
HCM 2010 LOS				B								

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Traffic Vol, veh/h	16	885	12	95	906	9	10	0	35	9	0	16
Future Vol, veh/h	16	885	12	95	906	9	10	0	35	9	0	16
Conflicting Peds, #/hr	16	0	16	18	0	18	16	0	18	18	0	16
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	80	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	952	13	102	974	10	11	0	38	10	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1002	0	0	983	0	0	1717	2216	518	1729	2218	526
Stage 1	-	-	-	-	-	-	1010	1010	-	1201	1201	-
Stage 2	-	-	-	-	-	-	707	1206	-	528	1017	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	687	-	-	698	-	-	58	43	502	57	43	496
Stage 1	-	-	-	-	-	-	257	316	-	196	256	-
Stage 2	-	-	-	-	-	-	392	255	-	502	313	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	677	-	-	686	-	-	47	34	485	44	34	480
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	34	-	44	34	-
Stage 1	-	-	-	-	-	-	246	303	-	188	214	-
Stage 2	-	-	-	-	-	-	317	213	-	444	300	-

























Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			1.1			37.5			50.7		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	677	-	-	686	-	-	105
HCM Lane V/C Ratio	0.306	0.025	-	-	0.149	-	-	0.256
HCM Control Delay (s)	37.5	10.5	-	-	11.2	-	-	50.7
HCM Lane LOS	E	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.5	-	-	0.9



HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Existing Conditions  
PM Peak Hour

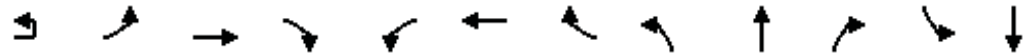
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	561	243	107	619	251	282	408	38	496	750	124
Future Volume (vph)	108	561	243	107	619	251	282	408	38	496	750	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3464	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3464	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	111	578	251	110	638	259	291	421	39	511	773	128
RTOR Reduction (vph)	0	0	91	0	0	136	0	0	26	0	6	0
Lane Group Flow (vph)	111	578	160	110	638	123	291	421	13	511	895	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	14.1	33.5	33.5	14.0	33.0	33.0	30.7	45.7	45.7	29.2	43.4	
Effective Green, g (s)	14.1	33.5	33.5	14.0	33.0	33.0	30.7	45.7	45.7	29.2	43.4	
Actuated g/C Ratio	0.10	0.24	0.24	0.10	0.23	0.23	0.22	0.32	0.32	0.21	0.31	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1	
Vehicle Extension (s)	2.0	3.8	3.8	2.0	3.3	3.3	2.0	4.0	4.0	2.0	3.2	
Lane Grp Cap (vph)	176	838	375	175	825	369	384	1143	511	708	1063	
v/s Ratio Prot	c0.06	0.16		0.06	c0.18		c0.16	0.12		0.15	c0.26	
v/s Ratio Perm			0.10			0.08			0.01			
v/c Ratio	0.63	0.69	0.43	0.63	0.77	0.33	0.76	0.37	0.02	0.72	0.84	
Uniform Delay, d1	61.1	49.2	45.8	61.2	50.7	45.0	51.9	36.8	32.6	52.3	45.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.3	2.5	1.0	5.0	4.6	0.6	7.4	0.3	0.0	3.1	6.2	
Delay (s)	66.5	51.8	46.8	66.2	55.3	45.6	59.3	37.0	32.7	55.4	52.0	
Level of Service	E	D	D	E	E	D	E	D	C	E	D	
Approach Delay (s)		52.2			54.0			45.4			53.2	
Approach LOS		D			D			D			D	

Intersection Summary		
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.78	D
Actuated Cycle Length (s)	141.4	Sum of lost time (s)
Intersection Capacity Utilization	80.2%	20.2
Analysis Period (min)	15	ICU Level of Service
		D

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: 58th St & University Ave

Existing Conditions  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↘	↗↗↗	↗	↘	↗↗	↗		↕			↕
Traffic Volume (vph)	16	83	1000	256	82	748	54	157	18	82	50	30
Future Volume (vph)	16	83	1000	256	82	748	54	157	18	82	50	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	0.96	1.00	1.00	0.96		1.00			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.96			0.94
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.98
Satd. Flow (prot)		1770	5085	1516	1770	3539	1518		1714			1712
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.70			0.82
Satd. Flow (perm)		1770	5085	1516	1770	3539	1518		1244			1423
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	86	1042	267	85	779	56	164	19	85	52	31
RTOR Reduction (vph)	0	0	0	49	0	0	26	0	18	0	0	27
Lane Group Flow (vph)	0	103	1042	218	85	779	30	0	250	0	0	114
Confl. Peds. (#/hr)				5			6	10		2	2	
Confl. Bikes (#/hr)				8			3			2		
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA
Protected Phases	5	5	2		1	6			8			4
Permitted Phases				2			6	8			4	
Actuated Green, G (s)		9.8	56.8	56.8	8.0	55.0	55.0		24.6			24.6
Effective Green, g (s)		9.8	56.8	56.8	8.0	55.0	55.0		24.6			24.6
Actuated g/C Ratio		0.09	0.55	0.55	0.08	0.53	0.53		0.24			0.24
Clearance Time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9
Vehicle Extension (s)		2.0	5.5	5.5	2.0	3.3	3.3		2.0			2.0
Lane Grp Cap (vph)		166	2777	827	136	1871	802		294			336
v/s Ratio Prot		c0.06	0.20		0.05	c0.22						
v/s Ratio Perm				0.14			0.02		c0.20			0.08
v/c Ratio		0.62	0.38	0.26	0.62	0.42	0.04		0.85			0.34
Uniform Delay, d1		45.3	13.5	12.5	46.5	14.8	11.8		37.9			32.9
Progression Factor		1.00	1.00	1.00	1.08	0.77	0.64		1.00			1.00
Incremental Delay, d2		5.1	0.4	0.8	6.1	0.7	0.1		19.2			0.2
Delay (s)		50.4	13.9	13.3	56.5	12.0	7.6		57.1			33.2
Level of Service		D	B	B	E	B	A		E			C
Approach Delay (s)			16.4			15.9			57.1			33.2
Approach LOS			B			B			E			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.1									C
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			104.0						14.6			
Intersection Capacity Utilization			60.1%									B
Analysis Period (min)			15									

c Critical Lane Group

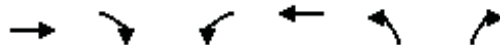


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	56
Future Volume (vph)	56
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	58
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Existing Conditions  
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	938	141	170	655	200	65
Future Volume (vph)	938	141	170	655	200	65
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.93	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1470	1770	3539	1770	1551
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1470	1770	3539	1770	1551
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1020	153	185	712	217	71
RTOR Reduction (vph)	0	46	0	0	0	11
Lane Group Flow (vph)	1020	107	185	712	217	60
Confl. Peds. (#/hr)		19				25
Confl. Bikes (#/hr)		1				2
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	55.9	55.9	14.2	74.5	19.3	33.5
Effective Green, g (s)	55.9	55.9	14.2	74.5	19.3	33.5
Actuated g/C Ratio	0.54	0.54	0.14	0.72	0.19	0.32
Clearance Time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Vehicle Extension (s)	3.3	3.3	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	2733	790	241	2535	328	499
v/s Ratio Prot	c0.20		c0.10	0.20	c0.12	0.02
v/s Ratio Perm		0.07				0.02
v/c Ratio	0.37	0.14	0.77	0.28	0.66	0.12
Uniform Delay, d1	13.9	12.0	43.3	5.2	39.3	24.9
Progression Factor	0.34	0.05	1.07	0.48	1.00	1.00
Incremental Delay, d2	0.4	0.3	12.1	0.3	3.9	0.0
Delay (s)	5.1	0.9	58.6	2.8	43.2	24.9
Level of Service	A	A	E	A	D	C
Approach Delay (s)	4.6			14.3	38.7	
Approach LOS	A			B	D	

### Intersection Summary

HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

Existing Conditions  
PM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↗	↙	↑↑	↗		↙	↗		↕	
Traffic Volume (vph)	19	953	53	90	720	0	47	3	62	15	6	5
Future Volume (vph)	19	953	53	90	720	0	47	3	62	15	6	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	5.3	4.4	5.3			4.9	4.9		4.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	5085	1499	1770	3539			1761	1562		1759	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.72	1.00		0.83	
Satd. Flow (perm)	1770	5085	1499	1770	3539			1323	1562		1502	
Peak-hour factor, PHF	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)	21	1036	58	98	783	0	51	3	67	16	7	5
RTOR Reduction (vph)	0	0	19	0	0	0	0	0	59	0	4	0
Lane Group Flow (vph)	21	1036	39	98	783	0	0	54	8	0	24	0
Confl. Peds. (#/hr)			15				12		2	2		12
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	2.8	69.3	69.3	8.1	74.6			12.0	12.0		12.0	
Effective Green, g (s)	2.8	69.3	69.3	8.1	74.6			12.0	12.0		12.0	
Actuated g/C Ratio	0.03	0.67	0.67	0.08	0.72			0.12	0.12		0.12	
Clearance Time (s)	4.4	5.3	5.3	4.4	5.3			4.9	4.9		4.9	
Vehicle Extension (s)	2.0	4.8	4.8	2.0	4.4			2.0	2.0		2.0	
Lane Grp Cap (vph)	47	3388	998	137	2538			152	180		173	
v/s Ratio Prot	0.01	0.20		c0.06	c0.22							
v/s Ratio Perm			0.03					c0.04	0.00		0.02	
v/c Ratio	0.45	0.31	0.04	0.72	0.31			0.36	0.04		0.14	
Uniform Delay, d1	49.8	7.3	5.9	46.8	5.3			42.4	40.9		41.3	
Progression Factor	0.66	2.01	4.60	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.3	0.2	0.1	13.7	0.3			0.5	0.0		0.1	
Delay (s)	35.4	14.8	27.4	60.5	5.7			43.0	40.9		41.5	
Level of Service	D	B	C	E	A			D	D		D	
Approach Delay (s)		15.8			11.8			41.8			41.5	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 11: College Ave & University Ave

Existing Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	655	222	183	479	106	166	489	182	177	653	209
Future Volume (vph)	224	655	222	183	479	106	166	489	182	177	653	209
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1528	1770	3539	1583	1770	3539	1557
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1528	1770	3539	1583	1770	3539	1557
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	233	682	231	191	499	110	173	509	190	184	680	218
RTOR Reduction (vph)	0	0	174	0	0	87	0	0	131	0	0	112
Lane Group Flow (vph)	233	682	57	191	499	23	173	509	59	184	680	106
Confl. Peds. (#/hr)	3											
Confl. Bikes (#/hr)	7											
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	15.9	24.6	24.6	11.6	20.5	20.5	10.6	31.2	31.2	13.5	32.8	32.8
Effective Green, g (s)	15.9	24.6	24.6	11.6	20.5	20.5	10.6	31.2	31.2	13.5	32.8	32.8
Actuated g/C Ratio	0.16	0.25	0.25	0.12	0.20	0.20	0.11	0.31	0.31	0.14	0.33	0.33
Clearance Time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5
Vehicle Extension (s)	2.0	3.7	3.7	2.0	3.7	3.7	2.0	3.2	3.2	2.0	3.6	3.6
Lane Grp Cap (vph)	281	870	389	205	725	313	187	1104	493	238	1160	510
v/s Ratio Prot	c0.13	c0.19		0.11	0.14		c0.10	0.14		0.10	c0.19	
v/s Ratio Perm			0.04			0.01			0.04			0.07
v/c Ratio	0.83	0.78	0.15	0.93	0.69	0.07	0.93	0.46	0.12	0.77	0.59	0.21
Uniform Delay, d1	40.7	35.2	29.5	43.8	36.8	32.1	44.3	27.6	24.6	41.8	28.0	24.2
Progression Factor	1.00	1.00	1.00	1.01	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.2	4.9	0.2	43.2	2.9	0.1	44.1	1.4	0.5	13.2	2.2	0.9
Delay (s)	57.9	40.1	29.7	87.3	38.5	32.2	88.4	29.0	25.1	55.0	30.1	25.1
Level of Service	E	D	C	F	D	C	F	C	C	E	C	C
Approach Delay (s)		41.6			49.3			40.0			33.4	
Approach LOS		D			D			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			40.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				20.4				
Intersection Capacity Utilization			72.5%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	1008	13	11	667	11	20	0	19	7	0	21
Future Vol, veh/h	28	1008	13	11	667	11	20	0	19	7	0	21
Conflicting Peds, #/hr	7	0	9	16	0	14	9	0	16	14	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	125	-	80	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1029	13	11	681	11	20	0	19	7	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	1058	0	0	1480	1825	553	1304	1832	363
Stage 1	-	-	-	-	-	-	1108	1108	-	717	717	-
Stage 2	-	-	-	-	-	-	372	717	-	587	1115	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	897	-	-	654	-	-	87	76	477	118	75	634
Stage 1	-	-	-	-	-	-	224	284	-	387	432	-
Stage 2	-	-	-	-	-	-	621	432	-	463	282	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	889	-	-	644	-	-	79	70	463	106	69	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	70	-	106	69	-
Stage 1	-	-	-	-	-	-	213	271	-	369	419	-
Stage 2	-	-	-	-	-	-	584	419	-	423	269	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			43.2			19.3		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	133	889	-	-	644	-	-	280
HCM Lane V/C Ratio	0.299	0.032	-	-	0.017	-	-	0.102
HCM Control Delay (s)	43.2	9.2	-	-	10.7	-	-	19.3
HCM Lane LOS	E	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.1	-	-	0.3

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	949	31	16	558	16	24	0	19	8	0	18
Future Vol, veh/h	23	949	31	16	558	16	24	0	19	8	0	18
Conflicting Peds, #/hr	5	0	6	7	0	6	6	0	7	6	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	100	90	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	978	32	16	575	16	25	0	20	8	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	581	0	0	985	0	0	1360	1647	503	1158	1647	300
Stage 1	-	-	-	-	-	-	1033	1033	-	614	614	-
Stage 2	-	-	-	-	-	-	327	614	-	544	1033	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	989	-	-	697	-	-	107	98	514	151	98	696
Stage 1	-	-	-	-	-	-	249	308	-	446	481	-
Stage 2	-	-	-	-	-	-	660	481	-	491	308	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	983	-	-	692	-	-	99	92	507	138	92	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	99	92	-	138	92	-
Stage 1	-	-	-	-	-	-	241	298	-	433	467	-
Stage 2	-	-	-	-	-	-	624	467	-	457	298	-

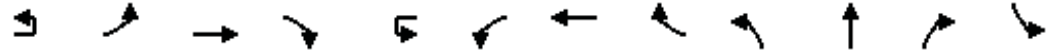
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			37.6			17.8		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	154	983	-	-	692	-	-	309
HCM Lane V/C Ratio	0.288	0.024	-	-	0.024	-	-	0.087
HCM Control Delay (s)	37.6	8.8	-	-	10.3	-	-	17.8
HCM Lane LOS	E	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	0.3



HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Existing Conditions  
 PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	6	53	783	66	3	17	572	23	52	38	32	47
Future Volume (vph)	6	53	783	66	3	17	572	23	52	38	32	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9				4.4	4.9		4.9		
Lane Util. Factor		1.00	0.95				1.00	0.95		1.00		
Frbp, ped/bikes		1.00	1.00				1.00	1.00		1.00		
Flpb, ped/bikes		1.00	1.00				1.00	1.00		1.00		
Frt		1.00	0.99				1.00	0.99		0.96		
Flt Protected		0.95	1.00				0.95	1.00		0.98		
Satd. Flow (prot)		1770	3491				1770	3515		1752		
Flt Permitted		0.95	1.00				0.95	1.00		0.73		
Satd. Flow (perm)		1770	3491				1770	3515		1299		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	55	807	68	3	18	590	24	54	39	33	48
RTOR Reduction (vph)	0	0	4	0	0	0	2	0	0	16	0	0
Lane Group Flow (vph)	0	61	871	0	0	21	612	0	0	110	0	0
Confl. Peds. (#/hr)				7				3	1			
Confl. Bikes (#/hr)				1							1	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		6.7	67.9				2.8	64.0		15.1		
Effective Green, g (s)		6.7	67.9				2.8	64.0		15.1		
Actuated g/C Ratio		0.07	0.68				0.03	0.64		0.15		
Clearance Time (s)		4.4	4.9				4.4	4.9		4.9		
Vehicle Extension (s)		2.0	3.6				2.0	3.6		2.0		
Lane Grp Cap (vph)		118	2370				49	2249		196		
v/s Ratio Prot		c0.03	c0.25				0.01	0.17				
v/s Ratio Perm										0.08		
v/c Ratio		0.52	0.37				0.43	0.27		0.56		
Uniform Delay, d1		45.1	6.9				47.8	7.8		39.4		
Progression Factor		1.31	0.33				1.15	0.71		1.00		
Incremental Delay, d2		1.3	0.4				2.2	0.3		2.2		
Delay (s)		60.2	2.6				57.1	5.9		41.6		
Level of Service		E	A				E	A		D		
Approach Delay (s)			6.4				7.6			41.6		
Approach LOS			A				A			D		

Intersection Summary		
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.42	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	48.9%	14.2
Analysis Period (min)	15	ICU Level of Service
		A

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Existing Conditions  
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations	↕	
Traffic Volume (vph)	51	43
Future Volume (vph)	51	43
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.98	
Satd. Flow (prot)	1750	
Flt Permitted	0.83	
Satd. Flow (perm)	1471	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	53	44
RTOR Reduction (vph)	20	0
Lane Group Flow (vph)	125	0
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	15.1	
Effective Green, g (s)	15.1	
Actuated g/C Ratio	0.15	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	222	
v/s Ratio Prot		
v/s Ratio Perm	c0.09	
v/c Ratio	0.57	
Uniform Delay, d1	39.4	
Progression Factor	1.00	
Incremental Delay, d2	2.0	
Delay (s)	41.4	
Level of Service	D	
Approach Delay (s)	41.4	
Approach LOS	D	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
15: Aragon Dr & University Ave

Existing Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘		↕	
Traffic Volume (vph)	8	818	80	42	529	7	48	38	66	15	42	0
Future Volume (vph)	8	818	80	42	529	7	48	38	66	15	42	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1515	1770	3539	1473	1767	1669			1837	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.79	1.00			0.90	
Satd. Flow (perm)	1770	3539	1515	1770	3539	1473	1469	1669			1670	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	852	83	44	551	7	50	40	69	16	44	0
RTOR Reduction (vph)	0	0	21	0	0	2	0	61	0	0	0	0
Lane Group Flow (vph)	8	852	62	44	551	5	50	48	0	0	60	0
Confl. Peds. (#/hr)			10			8	2		4	4		2
Confl. Bikes (#/hr)			2			1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	1.2	68.9	68.9	4.9	72.3	72.3	12.0	12.0			12.0	
Effective Green, g (s)	1.2	68.9	68.9	4.9	72.3	72.3	12.0	12.0			12.0	
Actuated g/C Ratio	0.01	0.69	0.69	0.05	0.72	0.72	0.12	0.12			0.12	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Vehicle Extension (s)	2.0	5.1	5.1	2.0	3.9	3.9	2.0	2.0			2.0	
Lane Grp Cap (vph)	21	2438	1043	86	2558	1064	176	200			200	
v/s Ratio Prot	0.00	c0.24		c0.02	c0.16			0.03				
v/s Ratio Perm			0.04			0.00	0.03				c0.04	
v/c Ratio	0.38	0.35	0.06	0.51	0.22	0.00	0.28	0.24			0.30	
Uniform Delay, d1	49.0	6.4	5.0	46.4	4.5	3.8	40.1	39.9			40.2	
Progression Factor	0.95	0.68	0.54	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	4.0	0.4	0.1	2.1	0.2	0.0	0.3	0.2			0.3	
Delay (s)	50.8	4.7	2.8	48.5	4.7	3.9	40.4	40.1			40.5	
Level of Service	D	A	A	D	A	A	D	D			D	
Approach Delay (s)		4.9			7.9			40.2			40.5	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	65	786	621	23	35	27
Future Vol, veh/h	65	786	621	23	35	27
Conflicting Peds, #/hr	11	0	0	11	11	11
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	810	640	24	36	28

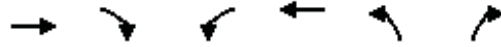
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	651	0	0	1201	342
Stage 1	-	-	-	651	-
Stage 2	-	-	-	550	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	931	-	-	177	654
Stage 1	-	-	-	481	-
Stage 2	-	-	-	542	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	921	-	-	161	640
Mov Cap-2 Maneuver	-	-	-	295	-
Stage 1	-	-	-	476	-
Stage 2	-	-	-	497	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	921	-	-	-	385
HCM Lane V/C Ratio	0.073	-	-	-	0.166
HCM Control Delay (s)	9.2	-	-	-	16.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Existing Conditions  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	686	68	158	603	56	61
Future Volume (vph)	686	68	158	603	56	61
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1542	1770	3539	1760	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1542	1770	3539	1760	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	700	69	161	615	57	62
RTOR Reduction (vph)	0	38	0	0	0	53
Lane Group Flow (vph)	700	31	161	615	57	9
Confl. Peds. (#/hr)		4			9	
Confl. Bikes (#/hr)		2				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	21.8	21.8	10.3	36.4	7.5	7.5
Effective Green, g (s)	21.8	21.8	10.3	36.4	7.5	7.5
Actuated g/C Ratio	0.40	0.40	0.19	0.68	0.14	0.14
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	2.0	2.0
Lane Grp Cap (vph)	1431	623	338	2389	244	220
v/s Ratio Prot	c0.20		c0.09	0.17		
v/s Ratio Perm		0.02			c0.03	0.01
v/c Ratio	0.49	0.05	0.48	0.26	0.23	0.04
Uniform Delay, d1	11.9	9.8	19.4	3.4	20.6	20.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.4	0.1	0.2	0.0
Delay (s)	12.5	9.8	19.8	3.6	20.8	20.1
Level of Service	B	A	B	A	C	C
Approach Delay (s)	12.2			6.9	20.5	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	53.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	850	701	21	7	9
Future Vol, veh/h	32	850	701	21	7	9
Conflicting Peds, #/hr	13	0	0	13	13	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	55	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	904	746	22	7	10

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	759	0	-	0	1292 399
Stage 1	-	-	-	-	759 -
Stage 2	-	-	-	-	533 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	848	-	-	-	155 601
Stage 1	-	-	-	-	423 -
Stage 2	-	-	-	-	553 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	838	-	-	-	145 586
Mov Cap-2 Maneuver	-	-	-	-	277 -
Stage 1	-	-	-	-	418 -
Stage 2	-	-	-	-	524 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	838	-	-	-	394
HCM Lane V/C Ratio	0.041	-	-	-	0.043
HCM Control Delay (s)	9.5	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	804	52	108	676	34	37
Future Vol, veh/h	804	52	108	676	34	37
Conflicting Peds, #/hr	0	9	7	0	9	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	820	53	110	690	35	38

























Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	829	0	1403
Stage 1	-	-	-	-	829
Stage 2	-	-	-	-	574
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	798	-	131
Stage 1	-	-	-	-	389
Stage 2	-	-	-	-	527
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	793	-	111
Mov Cap-2 Maneuver	-	-	-	-	240
Stage 1	-	-	-	-	386
Stage 2	-	-	-	-	450

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	343	-	-	793	-
HCM Lane V/C Ratio	0.211	-	-	0.139	-
HCM Control Delay (s)	18.3	-	-	10.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.5	-

HCM 2010 Signalized Intersection Summary  
 20: Lois St/70th St & University Ave

Existing Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	539	44	24	444	456	18	98	12	512	92	261
Future Volume (veh/h)	244	539	44	24	444	456	18	98	12	512	92	261
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	252	556	9	25	458	191	19	101	8	596	0	54
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	1366	607	38	864	386	166	159	13	762	0	340
Arrive On Green	0.16	0.39	0.39	0.02	0.24	0.24	0.09	0.09	0.09	0.21	0.00	0.21
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1704	135	3548	0	1581
Grp Volume(v), veh/h	252	556	9	25	458	191	19	0	109	596	0	54
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1839	1774	0	1581
Q Serve(g_s), s	11.2	9.2	0.3	1.1	9.1	8.4	0.8	0.0	4.6	12.8	0.0	2.2
Cycle Q Clear(g_c), s	11.2	9.2	0.3	1.1	9.1	8.4	0.8	0.0	4.6	12.8	0.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	289	1366	607	38	864	386	166	0	172	762	0	340
V/C Ratio(X)	0.87	0.41	0.01	0.66	0.53	0.49	0.11	0.00	0.63	0.78	0.00	0.16
Avail Cap(c_a), veh/h	307	1366	607	307	1314	588	790	0	819	1581	0	704
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.0	18.1	15.3	39.3	26.5	26.3	33.6	0.0	35.3	29.9	0.0	25.8
Incr Delay (d2), s/veh	20.6	0.3	0.0	7.2	0.7	1.4	0.3	0.0	3.8	1.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	4.5	0.1	0.6	4.5	3.8	0.4	0.0	2.5	6.5	0.0	1.0
LnGrp Delay(d),s/veh	53.6	18.4	15.3	46.4	27.2	27.7	33.9	0.0	39.1	31.7	0.0	26.0
LnGrp LOS	D	B	B	D	C	C	C		D	C		C
Approach Vol, veh/h		817			674			128			650	
Approach Delay, s/veh		29.2			28.1			38.4			31.3	
Approach LOS		C			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.4	6.7	37.2		13.5	18.2	25.7				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		36.0	14.0	30.0		36.0	14.0	30.0				
Max Q Clear Time (g_c+I1), s		14.8	3.1	11.2		6.6	13.2	11.1				
Green Ext Time (p_c), s		2.3	0.0	9.6		0.6	0.0	8.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			30.0									
HCM 2010 LOS			C									
<b>Notes</b>												



Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	18	27	6	0	0	0	0	67	14	19	43	0
Future Vol, veh/h	18	27	6	0	0	0	0	67	14	19	43	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	32	7	0	0	0	0	80	17	23	51	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.5	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	35%	31%
Vol Thru, %	83%	53%	69%
Vol Right, %	17%	12%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	81	51	62
LT Vol	0	18	19
Through Vol	67	27	43
RT Vol	14	6	0
Lane Flow Rate	96	61	74
Geometry Grp	1	1	1
Degree of Util (X)	0.107	0.071	0.086
Departure Headway (Hd)	3.993	4.227	4.176
Convergence, Y/N	Yes	Yes	Yes
Cap	892	837	853
Service Time	2.044	2.305	2.228
HCM Lane V/C Ratio	0.108	0.073	0.087
HCM Control Delay	7.5	7.6	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.2	0.3

Intersection													
Int Delay, s/veh	1.7												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖	↑	↗		↕				↗
Traffic Vol, veh/h	0	521	9	3	7	814	39	14	7	13	0	0	49
Future Vol, veh/h	0	521	9	3	7	814	39	14	7	13	0	0	49
Conflicting Peds, #/hr	22	0	20	2	18	0	20	20	0	18	20	0	22
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	-	50	-	50	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	573	10	3	8	895	43	15	8	14	0	0	54

Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	572	593	0	0	1525	1529	611	-	-	937
Stage 1	-	-	-	-	-	-	-	593	593	-	-	-	-
Stage 2	-	-	-	-	-	-	-	932	936	-	-	-	-
Critical Hdwy	-	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	983	-	-	96	117	494	0	0	321
Stage 1	0	-	-	-	-	-	-	492	493	-	0	0	-
Stage 2	0	-	-	-	-	-	-	320	344	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	~ -3	~ -3	-	-	76	113	476	-	-	308
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	76	113	-	-	-	-
Stage 1	-	-	-	-	-	-	-	492	484	-	-	-	-
Stage 2	-	-	-	-	-	-	-	259	337	-	-	-	-





















Approach	EB	WB	NB	SB
HCM Control Delay, s	0		46.1	19.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	124	-	-	+	-	-	308
HCM Lane V/C Ratio	0.301	-	-	-	-	-	0.175
HCM Control Delay (s)	46.1	-	-	-	-	-	19.1
HCM Lane LOS	E	-	-	-	-	-	C
HCM 95th %tile Q(veh)	1.2	-	-	-	-	-	0.6

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

HCM 2010 Signalized Intersection Summary  
3: Winona Ave & University Ave

Existing Plus Project  
AM Peak Hour

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	10	48	491	45	19	588	30	97	57	23	56	45
Future Volume (veh/h)	10	48	491	45	19	588	30	97	57	23	56	45
Number		5	2	12	1	6	16	3	8	18	7	4
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.92	1.00		0.97	0.96		0.95	0.97	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.89	1.00	1.00
Adj Sat Flow, veh/h/ln		1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863
Adj Flow Rate, veh/h		52	534	35	21	639	29	105	62	16	61	49
Adj No. of Lanes		1	1	1	1	1	1	0	1	0	0	1
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
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		67	834	655	343	1135	916	193	102	22	148	110
Arrive On Green		0.04	0.45	0.45	0.39	1.00	1.00	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h		1774	1863	1464	1774	1863	1504	657	504	111	463	545
Grp Volume(v), veh/h		52	534	35	21	639	29	183	0	0	148	0
Grp Sat Flow(s),veh/h/ln		1774	1863	1464	1774	1863	1504	1272	0	0	1356	0
Q Serve(g_s), s		2.7	20.9	1.3	0.7	0.0	0.0	3.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s		2.7	20.9	1.3	0.7	0.0	0.0	12.6	0.0	0.0	8.9	0.0
Prop In Lane		1.00		1.00	1.00		1.00	0.57		0.09	0.41	
Lane Grp Cap(c), veh/h		67	834	655	343	1135	916	318	0	0	328	0
V/C Ratio(X)		0.78	0.64	0.05	0.06	0.56	0.03	0.58	0.00	0.00	0.45	0.00
Avail Cap(c_a), veh/h		172	834	655	343	1135	916	448	0	0	463	0
HCM Platoon Ratio		1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		44.9	20.1	14.7	23.5	0.0	0.0	34.8	0.0	0.0	33.3	0.0
Incr Delay (d2), s/veh		7.2	3.8	0.2	0.0	2.0	0.1	0.6	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		1.5	11.5	0.5	0.3	0.6	0.0	4.5	0.0	0.0	3.4	0.0
LnGrp Delay(d),s/veh		52.1	23.8	14.8	23.5	2.0	0.1	35.4	0.0	0.0	33.7	0.0
LnGrp LOS		D	C	B	C	A	A	D			C	
Approach Vol, veh/h			621			689			183			148
Approach Delay, s/veh			25.7			2.6			35.4			33.7
Approach LOS			C			A			D			C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.1	47.0		23.9	7.9	62.2		23.9				
Change Period (Y+Rc), s	4.9	* 4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	9.1	* 42		28.6	9.1	42.1		28.6				
Max Q Clear Time (g_c+I1), s	2.7	22.9		10.9	4.7	2.0		14.6				
Green Ext Time (p_c), s	2.4	3.6		1.3	0.0	5.4		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			17.8									
HCM 2010 LOS			B									
<b>Notes</b>												

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	77
Future Volume (veh/h)	77
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.95
Parking Bus, Adj	0.89
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	38
Adj No. of Lanes	0
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	70
Arrive On Green	0.20
Sat Flow, veh/h	348
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.26
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↗	↖			↗			↗
Traffic Vol, veh/h	0	517	26	44	663	18	0	0	31	0	0	10
Future Vol, veh/h	0	517	26	44	663	18	0	0	31	0	0	10
Conflicting Peds, #/hr	0	0	75	42	0	25	0	0	42	0	0	58
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	574	29	49	737	20	0	0	34	0	0	11























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	649	0	0	-	-	691	-	-	830
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	937	-	-	0	0	445	0	0	370
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	900	-	-	-	-	397	-	-	341
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.6			14.9			15.9		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	397	-	-	900	-	-	341
HCM Lane V/C Ratio	0.087	-	-	0.054	-	-	0.033
HCM Control Delay (s)	14.9	-	-	9.2	-	-	15.9
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-	-	0.1

HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Existing Plus Project  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	513	27	38	632	115	40	54	103	74	36	53
Future Volume (veh/h)	49	513	27	38	632	115	40	54	103	74	36	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	0.94		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	54	564	6	42	695	39	44	59	113	81	40	58
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	1074	877	53	735	591	161	195	352	269	121	352
Arrive On Green	0.41	1.00	1.00	0.03	0.39	0.39	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	1863	1520	1774	1863	1498	437	805	1453	848	500	1453
Grp Volume(v), veh/h	54	564	6	42	695	39	103	0	113	121	0	58
Grp Sat Flow(s),veh/h/ln	1774	1863	1520	1774	1863	1498	1242	0	1453	1348	0	1453
Q Serve(g_s), s	1.8	0.0	0.0	2.2	33.9	1.5	2.2	0.0	6.0	0.0	0.0	3.0
Cycle Q Clear(g_c), s	1.8	0.0	0.0	2.2	33.9	1.5	9.6	0.0	6.0	7.4	0.0	3.0
Prop In Lane	1.00		1.00	1.00		1.00	0.43		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	367	1074	877	53	735	591	356	0	352	390	0	352
V/C Ratio(X)	0.15	0.52	0.01	0.79	0.95	0.07	0.29	0.00	0.32	0.31	0.00	0.16
Avail Cap(c_a), veh/h	367	1074	877	172	735	591	498	0	488	523	0	488
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.4	0.0	0.0	45.3	27.5	17.7	30.1	0.0	29.3	29.6	0.0	28.1
Incr Delay (d2), s/veh	0.1	1.8	0.0	9.4	22.2	0.2	0.2	0.0	0.2	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.5	0.0	1.2	21.9	0.7	2.3	0.0	2.4	2.6	0.0	1.2
LnGrp Delay(d),s/veh	22.5	1.8	0.0	54.7	49.7	17.9	30.3	0.0	29.5	29.8	0.0	28.2
LnGrp LOS	C	A	A	D	D	B	C		C	C		C
Approach Vol, veh/h		624			776			216			179	
Approach Delay, s/veh		3.6			48.4			29.8			29.3	
Approach LOS		A			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	59.1		27.7	24.3	42.0		27.7				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.9	* 4.9		4.9				
Max Green Setting (Gmax), s	9.1	39.1		31.6	11.1	* 37		31.6				
Max Q Clear Time (g_c+I1), s	4.2	2.0		9.4	3.8	35.9		11.6				
Green Ext Time (p_c), s	0.0	8.9		1.3	2.4	0.8		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			28.7									
HCM 2010 LOS			C									
<b>Notes</b>												

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑		↖	↗				↗			↗
Traffic Vol, veh/h	38	636	10	106	794	41	0	0	50	0	0	8
Future Vol, veh/h	38	636	10	106	794	41	0	0	50	0	0	8
Conflicting Peds, #/hr	18	0	37	41	0	22	37	0	41	22	0	18
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	80	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	684	11	114	854	44	0	0	54	0	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	920	0	0	736	0	0	-	-	771	-	-	916
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	742	-	-	870	-	-	0	0	400	0	0	330
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	729	-	-	836	-	-	-	-	369	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			1.1			16.4			16.6		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	369	729	-	-	836	-	-	318
HCM Lane V/C Ratio	0.146	0.056	-	-	0.136	-	-	0.027
HCM Control Delay (s)	16.4	10.2	-	-	10	-	-	16.6
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.5	-	-	0.1

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Existing Plus Project  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↖	↗	↘	↙	↗	↘	↖	↗	↘		↖
Traffic Volume (vph)	6	127	414	138	173	464	377	301	767	198	1	255
Future Volume (vph)	6	127	414	138	173	464	377	301	767	198	1	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4	4.4	5.3	4.4	4.4	5.3	4.4		4.4
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.97
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Peak-hour factor, PHF	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96
Adj. Flow (vph)	7	132	431	144	180	483	393	314	799	206	1	266
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	139	431	144	180	483	393	314	799	206	0	267
Confl. Peds. (#/hr)												
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Prot	NA	custom	Prot	Prot
Protected Phases	5	5	2 9	9	1	6 11	11	3	8 12	12	7	7
Permitted Phases												
Actuated Green, G (s)		19.0	61.2	23.1	22.8	64.6	47.3	29.1	51.5	27.8		18.8
Effective Green, g (s)		19.0	56.8	23.1	22.8	60.2	47.3	29.1	47.1	27.8		18.8
Actuated g/C Ratio		0.11	0.33	0.13	0.13	0.35	0.27	0.17	0.27	0.16		0.11
Clearance Time (s)		4.4		4.4	4.4		4.4	4.4		4.4		4.4
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lane Grp Cap (vph)		194	1159	211	232	1229	432	297	961	253		372
v/s Ratio Prot		0.08	c0.12	0.09	c0.10	0.14	c0.25	c0.18	c0.23	0.13		0.08
v/s Ratio Perm												
v/c Ratio		0.72	0.37	0.68	0.78	0.39	0.91	1.06	0.83	0.81		0.72
Uniform Delay, d1		74.5	44.6	71.6	72.8	42.7	60.9	72.1	59.4	70.3		74.7
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		10.0	0.3	7.1	13.7	0.2	22.2	68.1	6.5	17.0		5.4
Delay (s)		84.5	44.9	78.7	86.5	43.0	83.2	140.2	65.9	87.3		80.1
Level of Service		F	D	E	F	D	F	F	E	F		F
Approach Delay (s)			59.4			65.4			86.9			
Approach LOS			E			E			F			
<b>Intersection Summary</b>												
HCM 2000 Control Delay			73.1			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			173.3			Sum of lost time (s)			29.0			
Intersection Capacity Utilization			74.6%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

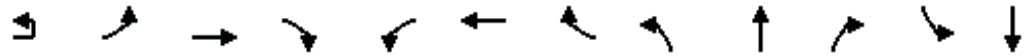
Existing Plus Project  
AM Peak Hour



Movement	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	335	155
Future Volume (vph)	335	155
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.1	4.4
Lane Util. Factor	0.95	1.00
Frbp, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1583
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	349	161
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	349	161
Confl. Peds. (#/hr)		5
Turn Type	NA	custom
Protected Phases	4 10	10
Permitted Phases		
Actuated Green, G (s)	40.4	23.1
Effective Green, g (s)	36.0	23.1
Actuated g/C Ratio	0.21	0.13
Clearance Time (s)		4.4
Vehicle Extension (s)		2.0
Lane Grp Cap (vph)	735	211
v/s Ratio Prot	0.10	c0.10
v/s Ratio Perm		
v/c Ratio	0.47	0.76
Uniform Delay, d1	60.3	72.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	13.6
Delay (s)	60.9	86.1
Level of Service	E	F
Approach Delay (s)	72.7	
Approach LOS	E	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
8: 58th St & University Ave

Existing Plus Project  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↖	↗	↖	↖	↗	↖		↕			↕
Traffic Volume (vph)	7	57	534	133	34	831	52	217	40	82	35	32
Future Volume (vph)	7	57	534	133	34	831	52	217	40	82	35	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.3	4.4	4.4	5.3	4.4		4.9			4.9
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.97			0.93
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.99
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583		1733			1693
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.71			0.87
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583		1276			1493
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	60	562	140	36	875	55	228	42	86	37	34
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	15	0	0	47
Lane Group Flow (vph)	0	67	562	140	36	875	55	0	341	0	0	98
Confl. Peds. (#/hr)				5			6	10		2	2	
Confl. Bikes (#/hr)				4			1			1		
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Perm	NA		Perm	NA
Protected Phases	5	5	2 9	9	1	6 10	10		8			4
Permitted Phases								8				4
Actuated Green, G (s)		6.5	43.6	10.4	4.4	41.5	11.1		27.4			27.4
Effective Green, g (s)		6.5	39.2	10.4	4.4	37.1	11.1		27.4			27.4
Actuated g/C Ratio		0.07	0.44	0.12	0.05	0.41	0.12		0.30			0.30
Clearance Time (s)		4.4		4.4	4.4		4.4		4.9			4.9
Vehicle Extension (s)		2.0		2.0	2.0		2.0		2.0			2.0
Lane Grp Cap (vph)		127	1541	182	86	1458	195		388			454
v/s Ratio Prot		c0.04	c0.16	c0.09	0.02	c0.25	0.03					
v/s Ratio Perm									c0.27			0.07
v/c Ratio		0.53	0.36	0.77	0.42	0.60	0.28		0.88			0.22
Uniform Delay, d1		40.3	17.0	38.6	41.6	20.7	35.8		29.7			23.3
Progression Factor		1.00	1.00	1.00	1.12	0.92	1.23		1.00			1.00
Incremental Delay, d2		1.8	0.1	16.0	1.2	0.5	0.3		19.2			0.1
Delay (s)		42.1	17.1	54.6	47.7	19.5	44.2		48.9			23.4
Level of Service		D	B	D	D	B	D		D			C
Approach Delay (s)			26.1			21.9			48.9			23.4
Approach LOS			C			C			D			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			64.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

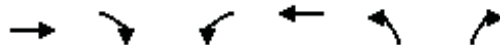


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	70
Future Volume (vph)	70
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	74
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Existing Plus Project  
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	703	109	73	888	102	16
Future Volume (vph)	703	109	73	888	102	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	4.4	4.4	5.3	4.9	4.4
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3518	1770	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	1770	3518	1770	1566
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	748	116	78	945	109	17
RTOR Reduction (vph)	0	55	0	0	0	13
Lane Group Flow (vph)	748	61	78	945	109	4
Confl. Peds. (#/hr)		9				5
Confl. Bikes (#/hr)		1				1
Bus Blockages (#/hr)	0	0	0	3	0	0
Turn Type	NA	custom	Prot	NA	Prot	pm+ov
Protected Phases	2 9	9	1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	55.5	6.8	7.2	67.1	12.7	19.9
Effective Green, g (s)	51.1	6.8	7.2	67.1	12.7	19.9
Actuated g/C Ratio	0.57	0.08	0.08	0.75	0.14	0.22
Clearance Time (s)		4.4	4.4	5.3	4.9	4.4
Vehicle Extension (s)		2.0	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	2009	119	141	2622	249	346
v/s Ratio Prot	0.21	0.04	c0.04	c0.27	c0.06	0.00
v/s Ratio Perm						0.00
v/c Ratio	0.37	0.52	0.55	0.36	0.44	0.01
Uniform Delay, d1	10.7	40.0	39.9	4.0	35.4	27.4
Progression Factor	0.66	1.21	0.78	1.17	1.00	1.00
Incremental Delay, d2	0.0	1.5	2.6	0.4	0.4	0.0
Delay (s)	7.1	49.8	33.8	5.0	35.8	27.4
Level of Service	A	D	C	A	D	C
Approach Delay (s)	12.8			7.2	34.7	
Approach LOS	B			A	C	

### Intersection Summary

HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

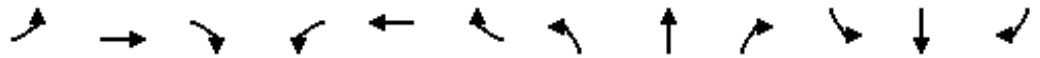
Existing Plus Project  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	578	30	29	828	9	99	7	59	20	13	10
Future Volume (vph)	10	578	30	29	828	9	99	7	59	20	13	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	4.4	4.4	5.3	4.4		4.9	4.9		4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1770	1563		1758	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.71	1.00		0.84	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1309	1563		1512	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	602	31	30	862	9	103	7	61	21	14	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	52	0	8	0
Lane Group Flow (vph)	10	602	31	30	863	9	0	110	9	0	37	0
Confl. Peds. (#/hr)			4				8		1	1		8
Turn Type	Prot	NA	custom	Prot	NA	custom	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2 9	9	1	6 10	10		8				4
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.2	57.2	5.2	4.2	60.2	9.3		14.0	14.0		14.0	
Effective Green, g (s)	1.2	52.8	5.2	4.2	55.8	9.3		14.0	14.0		14.0	
Actuated g/C Ratio	0.01	0.59	0.06	0.05	0.62	0.10		0.16	0.16		0.16	
Clearance Time (s)	4.4		4.4	4.4		4.4		4.9	4.9		4.9	
Vehicle Extension (s)	2.0		2.0	2.0		2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)	23	2076	91	82	2194	163		203	243		235	
v/s Ratio Prot	0.01	0.17	0.02	c0.02	c0.24	0.01						
v/s Ratio Perm								c0.08	0.01		0.02	
v/c Ratio	0.43	0.29	0.34	0.37	0.39	0.06		0.54	0.04		0.16	
Uniform Delay, d1	44.1	9.3	40.8	41.6	8.6	36.4		35.0	32.3		32.9	
Progression Factor	1.02	0.99	0.50	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	4.6	0.0	0.8	1.0	0.0	0.1		1.6	0.0		0.1	
Delay (s)	49.6	9.2	21.1	42.6	8.6	36.4		36.6	32.3		33.0	
Level of Service	D	A	C	D	A	D		D	C		C	
Approach Delay (s)		10.4			10.0			35.1			33.0	
Approach LOS		B			B			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.2								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	19.0
Intersection Capacity Utilization			46.5%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
11: College Ave & University Ave

Existing Plus Project  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	161	418	94	137	519	130	195	792	121	94	292	135	
Future Volume (vph)	161	418	94	137	519	130	195	792	121	94	292	135	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.1	4.4	4.4	4.9	4.4	4.4	5.2	5.2	4.4	6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1583	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	171	445	100	146	552	138	207	843	129	100	311	144	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	66	0	0	73	
Lane Group Flow (vph)	171	445	100	146	552	138	207	843	63	100	311	71	
Confl. Peds. (#/hr)			3			6							
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0	
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	5	2 9	9	1	6 10	10	3	8		7	4		
Permitted Phases									8			4	
Actuated Green, G (s)	22.4	71.0	21.3	20.0	68.8	52.5	26.5	50.9	50.9	15.1	38.2	38.2	
Effective Green, g (s)	22.4	66.6	21.3	20.0	64.4	52.5	26.5	50.9	50.9	15.1	38.2	38.2	
Actuated g/C Ratio	0.13	0.38	0.12	0.11	0.37	0.30	0.15	0.29	0.29	0.09	0.22	0.22	
Clearance Time (s)	4.4		4.4	4.4		4.4	4.4	5.2	5.2	4.4	6.5	6.5	
Vehicle Extension (s)	2.0		2.0	2.0		2.0	2.0	3.2	3.2	2.0	3.6	3.6	
Lane Grp Cap (vph)	225	1338	191	201	681	462	266	1022	457	151	767	343	
v/s Ratio Prot	c0.10	0.13	0.06	0.08	c0.30	0.09	c0.12	c0.24		0.06	0.09		
v/s Ratio Perm									0.04			0.04	
v/c Ratio	0.76	0.33	0.52	0.73	0.81	0.30	0.78	0.82	0.14	0.66	0.41	0.21	
Uniform Delay, d1	74.3	38.9	72.6	75.4	50.4	47.6	72.0	58.4	46.3	78.0	59.2	56.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.7	0.2	1.2	10.5	7.5	0.1	12.3	5.6	0.1	8.2	0.4	0.4	
Delay (s)	86.9	39.1	73.8	85.9	57.9	47.7	84.2	64.0	46.5	86.2	59.6	56.9	
Level of Service	F	D	E	F	E	D	F	E	D	F	E	E	
Approach Delay (s)		55.4			61.1			65.6			63.7		
Approach LOS		E			E			E			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			61.9									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.82										
Actuated Cycle Length (s)			176.1									Sum of lost time (s)	24.8
Intersection Capacity Utilization			79.1%									ICU Level of Service	D
Analysis Period (min)			15										

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↔	↔	↑	↔			↔			↔
Traffic Vol, veh/h	19	613	10	14	811	11	0	0	14	0	0	16
Future Vol, veh/h	19	613	10	14	811	11	0	0	14	0	0	16
Conflicting Peds, #/hr	4	0	7	10	0	7	7	0	10	7	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	30	125	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	659	11	15	872	12	0	0	15	0	0	17

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	879	0	0	669	0	0	-	-	679	-	-	883
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	769	-	-	921	-	-	0	0	452	0	0	345
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	766	-	-	912	-	-	-	-	443	-	-	341
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	13.4	16.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	443	766	-	-	912	-	-	341
HCM Lane V/C Ratio	0.034	0.027	-	-	0.017	-	-	0.05
HCM Control Delay (s)	13.4	9.8	-	-	9	-	-	16.1
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-	-	0.2

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑	↗			↗			↗
Traffic Vol, veh/h	0	617	18	4	699	15	0	0	50	0	0	48
Future Vol, veh/h	0	617	18	4	699	15	0	0	50	0	0	48
Conflicting Peds, #/hr	1	0	3	3	0	1	3	0	3	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	90	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	663	19	4	752	16	0	0	54	0	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	666	0	0	-	-	669	-	-	754
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	923	-	-	0	0	458	0	0	409
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	920	-	-	-	-	455	-	-	408
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

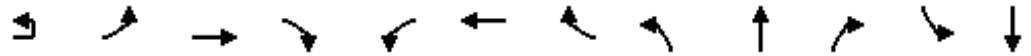
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			14			15.1		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	455	-	-	920	-	-	408
HCM Lane V/C Ratio	0.118	-	-	0.005	-	-	0.127
HCM Control Delay (s)	14	-	-	8.9	-	-	15.1
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	0	-	-	0.4



HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Existing Plus Project  
 AM Peak Hour



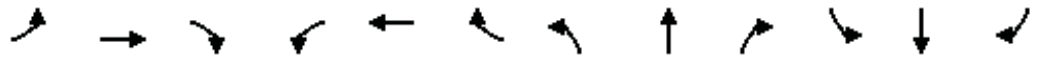
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↖	↗	↖	↖	↖	↖		↕			↕
Traffic Volume (vph)	35	58	481	34	13	607	28	83	47	19	46	37
Future Volume (vph)	35	58	481	34	13	607	28	83	47	19	46	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4	4.4	4.9	4.4		4.9			4.9
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.98			0.96
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.98
Satd. Flow (prot)		1770	1863	1583	1770	1863	1583		1773			1735
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.74			0.82
Satd. Flow (perm)		1770	1863	1583	1770	1863	1583		1349			1457
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	37	62	512	36	14	646	30	88	50	20	49	39
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	7	0	0	23
Lane Group Flow (vph)	0	99	512	36	14	646	30	0	151	0	0	104
Confl. Peds. (#/hr)				12				3		2	2	
Confl. Bikes (#/hr)				4			1					
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Perm	NA		Perm	NA
Protected Phases	5	5	2 9	9	1	6 10	10		8			4
Permitted Phases								8				4
Actuated Green, G (s)		5.6	58.2	9.8	1.3	53.9	14.6		16.3			16.3
Effective Green, g (s)		5.6	53.8	9.8	1.3	49.5	14.6		16.3			16.3
Actuated g/C Ratio		0.06	0.60	0.11	0.01	0.55	0.16		0.18			0.18
Clearance Time (s)		4.4		4.4	4.4		4.4		4.9			4.9
Vehicle Extension (s)		2.0		2.0	2.0		2.0		2.0			2.0
Lane Grp Cap (vph)		110	1113	172	25	1024	256		244			263
v/s Ratio Prot		c0.06	c0.27	0.02	0.01	c0.35	0.02					
v/s Ratio Perm									c0.11			0.07
v/c Ratio		0.90	0.46	0.21	0.56	0.63	0.12		0.62			0.40
Uniform Delay, d1		41.9	10.0	36.6	44.1	14.0	32.2		34.0			32.5
Progression Factor		1.00	1.00	1.00	1.05	0.96	1.26		1.00			1.00
Incremental Delay, d2		54.6	0.1	0.2	14.8	0.9	0.1		3.2			0.4
Delay (s)		96.5	10.2	36.8	61.0	14.3	40.6		37.2			32.9
Level of Service		F	B	D	E	B	D		D			C
Approach Delay (s)			24.8			16.4			37.2			32.9
Approach LOS			C			B			D			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			62.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	37
Future Volume (vph)	37
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	39
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
15: Aragon Dr & University Ave

Existing Plus Project  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗			↕	
Traffic Volume (vph)	5	502	15	28	545	21	78	85	55	4	22	2
Future Volume (vph)	5	502	15	28	545	21	78	85	55	4	22	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	5.2	5.2	4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94			0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1509	1765	1735			1830	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00			0.96	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1509	1370	1735			1766	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	558	17	31	606	23	87	94	61	4	24	2
RTOR Reduction (vph)	0	0	16	0	0	7	0	34	0	0	2	0
Lane Group Flow (vph)	6	558	1	31	606	16	87	121	0	0	28	0
Confl. Peds. (#/hr)			11			2	2		4	4		2
Confl. Bikes (#/hr)						1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2	9	1	6			4				8
Permitted Phases						6	4			8		
Actuated Green, G (s)	1.1	58.0	7.2	4.2	60.8	60.8	13.6	13.6			13.6	
Effective Green, g (s)	1.1	53.6	7.2	4.2	60.8	60.8	13.6	13.6			13.6	
Actuated g/C Ratio	0.01	0.60	0.08	0.05	0.68	0.68	0.15	0.15			0.15	
Clearance Time (s)	4.4		4.4	4.4	5.2	5.2	4.9	4.9			4.9	
Vehicle Extension (s)	2.0		2.0	2.0	3.9	3.9	2.0	2.0			2.0	
Lane Grp Cap (vph)	21	1109	126	82	1258	1019	207	262			266	
v/s Ratio Prot	0.00	0.30	0.00	c0.02	c0.33			c0.07				
v/s Ratio Perm						0.01	0.06				0.02	
v/c Ratio	0.29	0.50	0.01	0.38	0.48	0.02	0.42	0.46			0.11	
Uniform Delay, d1	44.1	10.5	38.1	41.6	7.0	4.8	34.6	34.9			33.0	
Progression Factor	1.04	0.96	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	2.6	0.1	0.0	1.1	1.3	0.0	0.5	0.5			0.1	
Delay (s)	48.5	10.2	38.1	42.7	8.3	4.8	35.1	35.3			33.0	
Level of Service	D	B	D	D	A	A	D	D			C	
Approach Delay (s)		11.4			9.8			35.3			33.0	
Approach LOS		B			A			D			C	

Intersection Summary		
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.51	B
Actuated Cycle Length (s)	90.0	Sum of lost time (s)
Intersection Capacity Utilization	49.9%	18.6
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		A

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘↗	
Traffic Vol, veh/h	40	521	567	16	15	44
Future Vol, veh/h	40	521	567	16	15	44
Conflicting Peds, #/hr	3	0	0	5	5	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	585	637	18	17	49

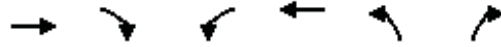
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	642	0	-	0	1322 645
Stage 1	-	-	-	-	642 -
Stage 2	-	-	-	-	680 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	943	-	-	-	173 472
Stage 1	-	-	-	-	524 -
Stage 2	-	-	-	-	503 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	940	-	-	-	163 468
Mov Cap-2 Maneuver	-	-	-	-	302 -
Stage 1	-	-	-	-	522 -
Stage 2	-	-	-	-	477 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	940	-	-	-	411
HCM Lane V/C Ratio	0.048	-	-	-	0.161
HCM Control Delay (s)	9	-	-	-	15.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Existing Plus Project  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (vph)	506	30	45	569	31	24
Future Volume (vph)	506	30	45	569	31	24
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1532	1770	1863	1760	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1532	1770	1863	1760	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	575	34	51	647	35	27
RTOR Reduction (vph)	0	3	0	0	0	24
Lane Group Flow (vph)	575	31	51	647	35	3
Confl. Peds. (#/hr)		10			5	
Confl. Bikes (#/hr)		1				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	31.7	31.7	3.5	39.5	5.8	5.8
Effective Green, g (s)	31.7	31.7	3.5	39.5	5.8	5.8
Actuated g/C Ratio	0.57	0.57	0.06	0.71	0.10	0.10
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	3.0	3.0
Lane Grp Cap (vph)	1067	878	112	1330	184	166
v/s Ratio Prot	c0.31		0.03	c0.35		
v/s Ratio Perm		0.02			c0.02	0.00
v/c Ratio	0.54	0.03	0.46	0.49	0.19	0.02
Uniform Delay, d1	7.3	5.1	25.0	3.5	22.6	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.0	1.1	0.7	0.5	0.0
Delay (s)	8.3	5.2	26.1	4.1	23.1	22.2
Level of Service	A	A	C	A	C	C
Approach Delay (s)	8.1			5.7	22.7	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	499	588	11	9	11
Future Vol, veh/h	9	499	588	11	9	11
Conflicting Peds, #/hr	12	0	0	11	11	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	561	661	12	10	12

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	673	0	-	0	1265 685
Stage 1	-	-	-	-	673 -
Stage 2	-	-	-	-	592 -
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	918	-	-	-	187 448
Stage 1	-	-	-	-	507 -
Stage 2	-	-	-	-	553 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	908	-	-	-	181 438
Mov Cap-2 Maneuver	-	-	-	-	320 -
Stage 1	-	-	-	-	501 -
Stage 2	-	-	-	-	541 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	908	-	-	-	376
HCM Lane V/C Ratio	0.011	-	-	-	0.06
HCM Control Delay (s)	9	-	-	-	15.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	492	15	67	559	33	37
Future Vol, veh/h	492	15	67	559	33	37
Conflicting Peds, #/hr	0	12	9	0	12	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	30	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	541	16	74	614	36	41

























Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	553	0	1327 291
Stage 1	-	-	-	-	553 -
Stage 2	-	-	-	-	774 -
Critical Hdwy	-	-	4.13	-	6.63 6.93
Critical Hdwy Stg 1	-	-	-	-	5.83 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	-	-	2.219	-	3.519 3.319
Pot Cap-1 Maneuver	-	-	1015	-	159 706
Stage 1	-	-	-	-	541 -
Stage 2	-	-	-	-	454 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1006	-	144 692
Mov Cap-2 Maneuver	-	-	-	-	278 -
Stage 1	-	-	-	-	535 -
Stage 2	-	-	-	-	416 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	407	-	-	1006	-
HCM Lane V/C Ratio	0.189	-	-	0.073	-
HCM Control Delay (s)	15.9	-	-	8.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

HCM 2010 Signalized Intersection Summary  
 20: Lois St/70th St & University Ave

Existing Plus Project  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	337	24	10	448	604	22	143	18	274	48	180
Future Volume (veh/h)	174	337	24	10	448	604	22	143	18	274	48	180
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	185	359	6	11	477	129	23	152	19	327	0	38
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	1690	751	19	1395	624	212	194	24	432	0	193
Arrive On Green	0.09	0.48	0.48	0.01	0.39	0.39	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1624	203	3548	0	1583
Grp Volume(v), veh/h	185	359	6	11	477	129	23	0	171	327	0	38
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1827	1774	0	1583
Q Serve(g_s), s	8.0	5.0	0.2	0.5	8.0	4.6	1.0	0.0	7.7	7.6	0.0	1.8
Cycle Q Clear(g_c), s	8.0	5.0	0.2	0.5	8.0	4.6	1.0	0.0	7.7	7.6	0.0	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	167	1690	751	19	1395	624	212	0	218	432	0	193
V/C Ratio(X)	1.11	0.21	0.01	0.58	0.34	0.21	0.11	0.00	0.78	0.76	0.00	0.20
Avail Cap(c_a), veh/h	167	1690	751	167	1395	624	355	0	365	710	0	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.5	12.9	11.6	41.8	18.0	17.0	33.4	0.0	36.4	36.1	0.0	33.6
Incr Delay (d2), s/veh	101.5	0.3	0.0	9.8	0.7	0.7	0.2	0.0	6.1	2.7	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	2.5	0.1	0.3	4.0	2.1	0.5	0.0	4.3	3.9	0.0	0.8
LnGrp Delay(d),s/veh	140.0	13.2	11.7	51.6	18.7	17.7	33.6	0.0	42.5	38.8	0.0	34.1
LnGrp LOS	F	B	B	D	B	B	C		D	D		C
Approach Vol, veh/h		550			617			194			365	
Approach Delay, s/veh		55.8			19.1			41.4			38.3	
Approach LOS		E			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		16.4	5.9	46.6		16.1	13.0	39.5				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		17.0	8.0	20.0		17.0	8.0	20.0				
Max Q Clear Time (g_c+I1), s		9.6	2.5	7.0		9.7	10.0	10.0				
Green Ext Time (p_c), s		0.8	0.0	6.2		0.5	0.0	5.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			37.4									
HCM 2010 LOS			D									
<b>Notes</b>												



Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	19	48	13	0	0	0	0	46	6	21	36	0
Future Vol, veh/h	19	48	13	0	0	0	0	46	6	21	36	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	50	14	0	0	0	0	48	6	22	38	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	24%	37%
Vol Thru, %	88%	60%	63%
Vol Right, %	12%	16%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	52	80	57
LT Vol	0	19	21
Through Vol	46	48	36
RT Vol	6	13	0
Lane Flow Rate	54	83	59
Geometry Grp	1	1	1
Degree of Util (X)	0.061	0.094	0.069
Departure Headway (Hd)	4.056	4.08	4.195
Convergence, Y/N	Yes	Yes	Yes
Cap	877	872	848
Service Time	2.11	2.135	2.247
HCM Lane V/C Ratio	0.062	0.095	0.07
HCM Control Delay	7.4	7.6	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.2

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖	↑	↗		↕			↕	
Traffic Vol, veh/h	0	820	12	3	15	710	36	12	2	13	0	0	53
Future Vol, veh/h	0	820	12	3	15	710	36	12	2	13	0	0	53
Conflicting Peds, #/hr	37	0	29	1	29	0	37	29	0	29	37	0	37
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	-	50	-	50	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	845	12	3	15	732	37	12	2	13	0	0	55

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	-	0	0	845	874	0	0	1701	1680	911	1690	1680	806
Stage 1	-	-	-	-	-	-	-	874	874	-	800	806	-
Stage 2	-	-	-	-	-	-	-	827	806	-	890	874	-
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	-	-	-	772	-	-	73	95	332	74	95	382
Stage 1	0	-	-	-	-	-	-	344	367	-	379	395	-
Stage 2	0	-	-	-	-	-	-	366	395	-	337	367	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-6	-6	-	58	89	311	65	89	356
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	58	89	-	65	89	-
Stage 1	-	-	-	-	-	-	-	344	357	-	379	381	-
Stage 2	-	-	-	-	-	-	-	299	381	-	309	357	-





















Approach	EB	WB	NB	SB
HCM Control Delay, s	0		54.3	16.9
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	100	-	-	+	-	-	356
HCM Lane V/C Ratio	0.278	-	-	-	-	-	0.153
HCM Control Delay (s)	54.3	-	-	-	-	-	16.9
HCM Lane LOS	F	-	-	-	-	-	C
HCM 95th %tile Q(veh)	1	-	-	-	-	-	0.5

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

HCM 2010 Signalized Intersection Summary  
3: Winona Ave & University Ave

Existing Plus Project  
PM Peak Hour

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	7	72	846	61	15	672	36	81	44	40	114	61
Future Volume (veh/h)	7	72	846	61	15	672	36	81	44	40	114	61
Number		5	2	12	1	6	16	3	8	18	7	4
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.94	1.00		0.96	0.95		0.90	0.94	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00
Adj Sat Flow, veh/h/ln		1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863
Adj Flow Rate, veh/h		75	881	54	16	700	34	84	46	25	119	64
Adj No. of Lanes		1	1	1	1	1	1	0	1	0	0	1
Peak Hour Factor		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		96	1192	956	25	1118	910	172	87	40	180	85
Arrive On Green		0.05	0.64	0.64	0.03	1.00	1.00	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h		1774	1863	1493	1774	1863	1517	569	415	189	606	407
Grp Volume(v), veh/h		75	881	54	16	700	34	155	0	0	221	0
Grp Sat Flow(s),veh/h/ln		1774	1863	1493	1774	1863	1517	1172	0	0	1224	0
Q Serve(g_s), s		4.3	33.6	1.4	0.9	0.0	0.0	0.0	0.0	0.0	5.8	0.0
Cycle Q Clear(g_c), s		4.3	33.6	1.4	0.9	0.0	0.0	12.5	0.0	0.0	18.2	0.0
Prop In Lane		1.00		1.00	1.00		1.00	0.54		0.16	0.54	
Lane Grp Cap(c), veh/h		96	1192	956	25	1118	910	299	0	0	309	0
V/C Ratio(X)		0.78	0.74	0.06	0.63	0.63	0.04	0.52	0.00	0.00	0.71	0.00
Avail Cap(c_a), veh/h		172	1192	956	78	1118	910	357	0	0	367	0
HCM Platoon Ratio		1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		48.6	12.8	7.0	50.3	0.0	0.0	37.2	0.0	0.0	39.7	0.0
Incr Delay (d2), s/veh		5.1	4.1	0.1	9.4	2.7	0.1	0.5	0.0	0.0	3.8	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		2.3	18.5	0.6	0.5	0.8	0.0	4.1	0.0	0.0	6.5	0.0
LnGrp Delay(d),s/veh		53.6	16.9	7.1	59.6	2.7	0.1	37.7	0.0	0.0	43.5	0.0
LnGrp LOS		D	B	A	E	A	A	D			D	
Approach Vol, veh/h			1010			750			155			221
Approach Delay, s/veh			19.1			3.8			37.7			43.5
Approach LOS			B			A			D			D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	71.5		26.6	10.0	67.3		26.6				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	4.6	58.6		26.6	10.1	53.1		26.6				
Max Q Clear Time (g_c+I1), s	2.9	35.6		20.2	6.3	2.0		14.5				
Green Ext Time (p_c), s	0.0	13.6		0.9	0.0	20.1		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			17.6									
HCM 2010 LOS			B									
<b>Notes</b>												

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	52
Future Volume (veh/h)	52
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.88
Parking Bus, Adj	0.89
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	38
Adj No. of Lanes	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	2
Cap, veh/h	44
Arrive On Green	0.21
Sat Flow, veh/h	210
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.17
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↗	↖			↗			↗
Traffic Vol, veh/h	0	810	61	54	704	20	0	0	18	0	0	4
Future Vol, veh/h	0	810	61	54	704	20	0	0	18	0	0	4
Conflicting Peds, #/hr	0	0	137	59	0	30	0	0	59	0	0	108
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	835	63	56	726	21	0	0	19	0	0	4























Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	972	0	0	-	-	1031	-	-	874
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	709	-	-	0	0	283	0	0	349
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	669	-	-	-	-	232	-	-	304
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	21.9	17
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	232	-	-	669	-	-	304
HCM Lane V/C Ratio	0.08	-	-	0.083	-	-	0.014
HCM Control Delay (s)	21.9	-	-	10.9	-	-	17
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.3	-	-	0

HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Existing Plus Project  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	836	25	53	714	104	32	44	82	100	44	48
Future Volume (veh/h)	38	836	25	53	714	104	32	44	82	100	44	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	0.94		0.88	0.94		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	41	899	5	57	768	41	34	47	88	108	47	52
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	52	1073	856	73	1096	888	123	151	344	252	100	343
Arrive On Green	0.06	1.00	1.00	0.04	0.59	0.59	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	1863	1486	1774	1863	1510	300	616	1397	786	405	1395
Grp Volume(v), veh/h	41	899	5	57	768	41	81	0	88	155	0	52
Grp Sat Flow(s),veh/h/ln	1774	1863	1486	1774	1863	1510	916	0	1397	1192	0	1395
Q Serve(g_s), s	2.4	0.0	0.0	3.3	30.0	1.2	1.6	0.0	5.3	0.0	0.0	3.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0	3.3	30.0	1.2	15.2	0.0	5.3	13.6	0.0	3.0
Prop In Lane	1.00		1.00	1.00		1.00	0.42		1.00	0.70		1.00
Lane Grp Cap(c), veh/h	52	1073	856	73	1096	888	274	0	344	352	0	343
V/C Ratio(X)	0.79	0.84	0.01	0.78	0.70	0.05	0.30	0.00	0.26	0.44	0.00	0.15
Avail Cap(c_a), veh/h	172	1073	856	172	1096	888	413	0	471	480	0	471
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	0.0	49.4	15.0	9.1	33.4	0.0	31.5	34.4	0.0	30.7
Incr Delay (d2), s/veh	9.5	7.8	0.0	6.4	3.7	0.1	0.2	0.0	0.1	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.3	0.0	1.7	16.5	0.5	2.1	0.0	2.1	3.9	0.0	1.2
LnGrp Delay(d),s/veh	58.1	7.8	0.0	55.8	18.8	9.2	33.7	0.0	31.7	34.7	0.0	30.8
LnGrp LOS	E	A	A	E	B	A	C		C	C		C
Approach Vol, veh/h		945			866			169			207	
Approach Delay, s/veh		10.0			20.7			32.6			33.7	
Approach LOS		A			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	64.8		30.5	7.4	66.1		30.5				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	10.1	44.6		35.1	10.1	44.6		35.1				
Max Q Clear Time (g_c+I1), s	5.3	2.0		15.6	4.4	32.0		17.2				
Green Ext Time (p_c), s	0.0	31.9		1.2	0.0	11.2		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.2									
HCM 2010 LOS			B									

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗			↖			↗
Traffic Vol, veh/h	16	885	12	95	911	9	0	0	40	0	0	16
Future Vol, veh/h	16	885	12	95	911	9	0	0	40	0	0	16
Conflicting Peds, #/hr	16	0	16	18	0	18	16	0	18	18	0	16
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	30	80	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	952	13	102	980	10	0	0	43	0	0	17

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	1007	0	0	970	0	0	-	-	988	-	-	1018
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	688	-	-	710	-	-	0	0	300	0	0	288
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	678	-	-	698	-	-	-	-	290	-	-	279
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	19.6	18.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	290	678	-	-	698	-	-	279
HCM Lane V/C Ratio	0.148	0.025	-	-	0.146	-	-	0.062
HCM Control Delay (s)	19.6	10.4	-	-	11	-	-	18.7
HCM Lane LOS	C	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.5	-	-	0.2

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Existing Plus Project  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↖	↗	↘	↖	↗	↘	↖	↗	↘		↖
Traffic Volume (vph)	5	107	555	241	266	619	251	282	408	260	1	502
Future Volume (vph)	5	107	555	241	266	619	251	282	408	260	1	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4	4.4	5.3	4.4	4.4	5.3	4.4		4.4
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.97
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Peak-hour factor, PHF	0.92	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.92	0.97
Adj. Flow (vph)	5	110	572	248	274	638	259	291	421	268	1	518
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	115	572	248	274	638	259	291	421	268	0	519
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Prot	NA	custom	Prot	Prot
Protected Phases	5	5	2 9	9	1	6 11	11	3	8 12	12	7	7
Permitted Phases												
Actuated Green, G (s)		16.0	45.6	27.2	25.8	55.0	33.4	26.7	49.5	30.3		28.8
Effective Green, g (s)		16.0	41.2	27.2	25.8	50.6	33.4	26.7	45.1	30.3		28.8
Actuated g/C Ratio		0.09	0.24	0.16	0.15	0.30	0.20	0.16	0.27	0.18		0.17
Clearance Time (s)		4.4		4.4	4.4		4.4	4.4		4.4		4.4
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lane Grp Cap (vph)		167	864	255	270	1061	313	280	946	284		586
v/s Ratio Prot		0.06	0.16	c0.16	c0.15	c0.18	0.16	c0.16	0.12	c0.17		c0.15
v/s Ratio Perm												
v/c Ratio		0.69	0.66	0.97	1.01	0.60	0.83	1.04	0.45	0.94		0.89
Uniform Delay, d1		73.9	57.5	70.4	71.4	50.4	64.9	71.0	51.4	68.4		68.3
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		9.0	2.1	48.2	58.6	1.0	15.5	64.4	0.5	37.9		14.5
Delay (s)		83.0	59.5	118.6	130.1	51.4	80.4	135.4	51.8	106.3		82.9
Level of Service		F	E	F	F	D	F	F	D	F		F
Approach Delay (s)			78.1			76.2			91.5			
Approach LOS			E			E			F			
<b>Intersection Summary</b>												
HCM 2000 Control Delay			77.7			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			168.7			Sum of lost time (s)				29.0		
Intersection Capacity Utilization			83.0%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Existing Plus Project  
PM Peak Hour

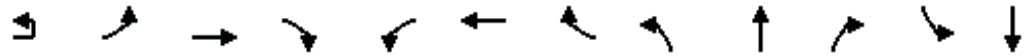


Movement	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	752	124
Future Volume (vph)	752	124
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.1	4.4
Lane Util. Factor	0.95	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1583
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	775	128
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	775	128
Turn Type	NA	custom
Protected Phases	4 10	10
Permitted Phases		
Actuated Green, G (s)	50.8	33.2
Effective Green, g (s)	46.4	33.2
Actuated g/C Ratio	0.28	0.20
Clearance Time (s)		4.4
Vehicle Extension (s)		2.0
Lane Grp Cap (vph)	973	311
v/s Ratio Prot	0.22	0.08
v/s Ratio Perm		
v/c Ratio	0.80	0.41
Uniform Delay, d1	56.8	59.2
Progression Factor	1.00	1.00
Incremental Delay, d2	4.6	0.3
Delay (s)	61.4	59.5
Level of Service	E	E
Approach Delay (s)	69.1	
Approach LOS	E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
8: 58th St & University Ave

Existing Plus Project  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↘	↕	↗	↘	↕	↗		↕			↕	
Traffic Volume (vph)	16	83	1000	256	82	748	54	157	18	82	50	30	
Future Volume (vph)	16	83	1000	256	82	748	54	157	18	82	50	30	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.4	5.3	4.4	4.4	5.3	4.4		4.9			4.9	
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.96			0.94	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.98	
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583		1714			1712	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.70			0.82	
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583		1244			1423	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	17	86	1042	267	85	779	56	164	19	85	52	31	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	18	0	0	27	
Lane Group Flow (vph)	0	103	1042	267	85	779	56	0	250	0	0	114	
Confl. Peds. (#/hr)				5			6	10		2	2		
Confl. Bikes (#/hr)				8			3			2			
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Perm	NA		Perm	NA	
Protected Phases	5	5	2 9	9	1	6 10	10		8			4	
Permitted Phases								8				4	
Actuated Green, G (s)		9.8	56.8	19.7	8.0	55.0	17.4		24.6			24.6	
Effective Green, g (s)		9.8	52.4	19.7	8.0	50.6	17.4		24.6			24.6	
Actuated g/C Ratio		0.09	0.50	0.19	0.08	0.49	0.17		0.24			0.24	
Clearance Time (s)		4.4		4.4	4.4		4.4		4.9			4.9	
Vehicle Extension (s)		2.0		2.0	2.0		2.0		2.0			2.0	
Lane Grp Cap (vph)		166	1783	299	136	1721	264		294			336	
v/s Ratio Prot		c0.06	c0.29	c0.17	0.05	0.22	0.04						
v/s Ratio Perm									c0.20			0.08	
v/c Ratio		0.62	0.58	0.89	0.62	0.45	0.21		0.85			0.34	
Uniform Delay, d1		45.3	18.1	41.1	46.5	17.6	37.4		37.9			32.9	
Progression Factor		1.00	1.00	1.00	1.08	0.76	1.02		1.00			1.00	
Incremental Delay, d2		5.1	0.3	26.1	6.1	0.1	0.1		19.2			0.2	
Delay (s)		50.4	18.5	67.2	56.5	13.5	38.4		57.1			33.2	
Level of Service		D	B	E	E	B	D		E			C	
Approach Delay (s)			30.0			19.0			57.1			33.2	
Approach LOS			C			B			E			C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			29.1									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			104.0									Sum of lost time (s)	19.0
Intersection Capacity Utilization			66.1%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group

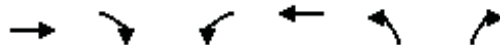


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	56
Future Volume (vph)	56
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	58
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Existing Plus Project  
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	938	141	170	655	200	65
Future Volume (vph)	938	141	170	655	200	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	4.4	4.4	5.3	4.9	4.4
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3518	1770	1551
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	1770	3518	1770	1551
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1020	153	185	712	217	71
RTOR Reduction (vph)	0	45	0	0	0	11
Lane Group Flow (vph)	1020	108	185	712	217	60
Confl. Peds. (#/hr)		19				25
Confl. Bikes (#/hr)		1				2
Bus Blockages (#/hr)	0	0	0	3	0	0
Turn Type	NA	custom	Prot	NA	Prot	pm+ov
Protected Phases	2 9	9	1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	55.9	12.2	14.2	74.5	19.3	33.5
Effective Green, g (s)	51.5	12.2	14.2	74.5	19.3	33.5
Actuated g/C Ratio	0.50	0.12	0.14	0.72	0.19	0.32
Clearance Time (s)		4.4	4.4	5.3	4.9	4.4
Vehicle Extension (s)		2.0	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	1752	185	241	2520	328	499
v/s Ratio Prot	c0.29	0.07	c0.10	0.20	c0.12	0.02
v/s Ratio Perm						0.02
v/c Ratio	0.58	0.58	0.77	0.28	0.66	0.12
Uniform Delay, d1	18.6	43.5	43.3	5.2	39.3	24.9
Progression Factor	0.33	1.17	1.07	0.48	1.00	1.00
Incremental Delay, d2	0.3	2.6	12.1	0.3	3.9	0.0
Delay (s)	6.4	53.5	58.6	2.8	43.2	24.9
Level of Service	A	D	E	A	D	C
Approach Delay (s)	12.5			14.3	38.7	
Approach LOS	B			B	D	

### Intersection Summary

HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

Existing Plus Project  
PM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↖	↗		↕	↘
Traffic Volume (vph)	19	953	53	90	720	0	47	3	62	15	6	5
Future Volume (vph)	19	953	53	90	720	0	47	3	62	15	6	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	4.4	4.4	5.3			4.9	4.9		4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	3539	1583	1770	3539			1761	1562		1759	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.72	1.00		0.83	
Satd. Flow (perm)	1770	3539	1583	1770	3539			1323	1562		1502	
Peak-hour factor, PHF	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)	21	1036	58	98	783	0	51	3	67	16	7	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	59	0	4	0
Lane Group Flow (vph)	21	1036	58	98	783	0	0	54	8	0	24	0
Confl. Peds. (#/hr)			15				12		2	2		12
Turn Type	Prot	NA	custom	Prot	NA	custom	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2 9	9	1	6 10	10		8				4
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.8	69.3	14.4	8.1	74.6			12.0	12.0		12.0	
Effective Green, g (s)	2.8	64.9	14.4	8.1	70.2			12.0	12.0		12.0	
Actuated g/C Ratio	0.03	0.62	0.14	0.08	0.68			0.12	0.12		0.12	
Clearance Time (s)	4.4		4.4	4.4				4.9	4.9		4.9	
Vehicle Extension (s)	2.0		2.0	2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	47	2208	219	137	2388			152	180		173	
v/s Ratio Prot	0.01	c0.29	0.04	c0.06	0.22							
v/s Ratio Perm								c0.04	0.00		0.02	
v/c Ratio	0.45	0.47	0.26	0.72	0.33			0.36	0.04		0.14	
Uniform Delay, d1	49.8	10.4	40.1	46.8	7.1			42.4	40.9		41.3	
Progression Factor	0.60	1.93	0.83	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.2	0.1	0.2	13.7	0.0			0.5	0.0		0.1	
Delay (s)	32.0	20.1	33.4	60.5	7.1			43.0	40.9		41.5	
Level of Service	C	C	C	E	A			D	D		D	
Approach Delay (s)		21.0			13.0			41.8			41.5	
Approach LOS		C			B			D			D	

Intersection Summary		
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.48	B
Actuated Cycle Length (s)	104.0	Sum of lost time (s)
Intersection Capacity Utilization	58.7%	19.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		B

HCM Signalized Intersection Capacity Analysis  
 11: College Ave & University Ave

Existing Plus Project  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	655	222	183	479	106	166	489	182	177	653	209
Future Volume (vph)	224	655	222	183	479	106	166	489	182	177	653	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	4.4	4.4	4.9	4.4	4.4	5.2	5.2	4.4	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1555
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1555
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	233	682	231	191	499	110	173	509	190	184	680	218
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	102	0	0	102
Lane Group Flow (vph)	233	682	231	191	499	110	173	509	88	184	680	116
Confl. Peds. (#/hr)	3											
Confl. Bikes (#/hr)	7											
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2 9	9	1	6 10	10	3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	16.6	44.3	16.6	12.6	40.5	13.8	10.6	32.4	32.4	11.6	32.1	32.1
Effective Green, g (s)	16.6	39.9	16.6	12.6	36.1	13.8	10.6	32.4	32.4	11.6	32.1	32.1
Actuated g/C Ratio	0.14	0.33	0.14	0.10	0.30	0.12	0.09	0.27	0.27	0.10	0.27	0.27
Clearance Time (s)	4.4		4.4	4.4		4.4	4.4	5.2	5.2	4.4	6.5	6.5
Vehicle Extension (s)	2.0		2.0	2.0		2.0	2.0	3.2	3.2	2.0	3.6	3.6
Lane Grp Cap (vph)	244	1176	218	185	560	178	156	955	427	171	946	415
v/s Ratio Prot	c0.13	0.19	c0.15	0.11	c0.27	0.07	0.10	0.14		c0.10	c0.19	
v/s Ratio Perm									0.06			0.07
v/c Ratio	0.95	0.58	1.06	1.03	0.89	0.62	1.11	0.53	0.21	1.08	0.72	0.28
Uniform Delay, d1	51.3	33.1	51.7	53.7	40.1	50.6	54.7	37.3	33.9	54.2	39.9	34.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	44.5	0.8	77.6	74.9	16.6	4.4	104.3	2.1	1.1	90.5	4.7	1.7
Delay (s)	95.8	33.9	129.3	128.6	56.7	55.0	159.0	39.5	34.9	144.7	44.5	36.5
Level of Service	F	C	F	F	E	E	F	D	C	F	D	D
Approach Delay (s)		65.7			73.6			62.2			60.0	
Approach LOS		E			E			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			65.0			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			24.8			
Intersection Capacity Utilization			81.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖			↖			↖
Traffic Vol, veh/h	28	1008	13	11	667	11	0	0	39	0	0	21
Future Vol, veh/h	28	1008	13	11	667	11	0	0	39	0	0	21
Conflicting Peds, #/hr	7	0	9	16	0	14	9	0	16	14	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	30	125	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1029	13	11	681	11	0	0	40	0	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	1045	0	0	-	-	1061	-	-	702
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	901	-	-	666	-	-	0	0	272	0	0	438
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	895	-	-	656	-	-	-	-	264	-	-	429
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			21			13.8		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	264	895	-	-	656	-	-	429
HCM Lane V/C Ratio	0.151	0.032	-	-	0.017	-	-	0.05
HCM Control Delay (s)	21	9.2	-	-	10.6	-	-	13.8
HCM Lane LOS	C	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.1	-	-	0.2

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑	↗			↗			↗
Traffic Vol, veh/h	23	965	31	16	582	26	0	0	43	0	0	18
Future Vol, veh/h	23	965	31	16	582	26	0	0	43	0	0	18
Conflicting Peds, #/hr	5	0	6	7	0	6	6	0	7	6	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	90	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	995	32	16	600	27	0	0	44	0	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	606	0	0	1002	0	0	-	-	1009	-	-	611
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	972	-	-	691	-	-	0	0	292	0	0	494
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	967	-	-	686	-	-	-	-	288	-	-	489
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

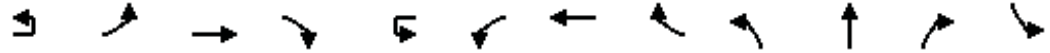
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			19.8			12.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	288	967	-	-	686	-	-	489
HCM Lane V/C Ratio	0.154	0.025	-	-	0.024	-	-	0.038
HCM Control Delay (s)	19.8	8.8	-	-	10.4	-	-	12.7
HCM Lane LOS	C	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.1	-	-	0.1



HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Existing Plus Project  
 PM Peak Hour

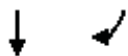


Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	40	66	768	65	3	17	572	23	52	38	32	61
Future Volume (vph)	40	66	768	65	3	17	572	23	52	38	32	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4		4.4	4.9	4.4		4.9		
Lane Util. Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00		
Frbp, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		0.99		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00		
Frt		1.00	1.00	0.85		1.00	1.00	0.85		0.96		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.98		
Satd. Flow (prot)		1770	1863	1583		1770	1863	1583		1748		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.74		
Satd. Flow (perm)		1770	1863	1583		1770	1863	1583		1323		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	68	792	67	3	18	590	24	54	39	33	63
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	16	0	0
Lane Group Flow (vph)	0	109	792	67	0	21	590	24	0	110	0	0
Confl. Peds. (#/hr)				7				3	1			
Confl. Bikes (#/hr)				1							1	
Turn Type	Prot	Prot	NA	custom	Prot	Prot	NA	custom	Perm	NA		Perm
Protected Phases	5	5	2 9	9	1	1	6 10	10		8		
Permitted Phases									8			4
Actuated Green, G (s)		4.6	66.6	21.2		2.8	64.8	19.6		16.4		
Effective Green, g (s)		4.6	62.2	21.2		2.8	60.4	19.6		16.4		
Actuated g/C Ratio		0.05	0.62	0.21		0.03	0.60	0.20		0.16		
Clearance Time (s)		4.4		4.4		4.4		4.4		4.9		
Vehicle Extension (s)		2.0		2.0		2.0		2.0		2.0		
Lane Grp Cap (vph)		81	1158	335		49	1125	310		216		
v/s Ratio Prot		c0.06	c0.43	0.04		0.01	0.32	0.02				
v/s Ratio Perm										0.08		
v/c Ratio		1.35	0.68	0.20		0.43	0.52	0.08		0.51		
Uniform Delay, d1		47.7	12.4	32.4		47.8	11.5	32.8		38.1		
Progression Factor		1.00	1.00	1.00		0.90	1.37	1.25		1.00		
Incremental Delay, d2		217.4	1.3	0.1		2.1	0.2	0.0		0.7		
Delay (s)		265.1	13.8	32.5		45.3	15.9	41.0		38.8		
Level of Service		F	B	C		D	B	D		D		
Approach Delay (s)			43.4				17.8			38.8		
Approach LOS			D				B			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			18.6		
Intersection Capacity Utilization			67.0%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

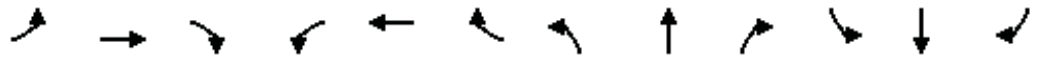
Existing Plus Project  
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations	↔	
Traffic Volume (vph)	52	43
Future Volume (vph)	52	43
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.98	
Satd. Flow (prot)	1749	
Flt Permitted	0.79	
Satd. Flow (perm)	1414	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	54	44
RTOR Reduction (vph)	17	0
Lane Group Flow (vph)	144	0
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	16.4	
Effective Green, g (s)	16.4	
Actuated g/C Ratio	0.16	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	231	
v/s Ratio Prot		
v/s Ratio Perm	c0.10	
v/c Ratio	0.62	
Uniform Delay, d1	38.9	
Progression Factor	1.00	
Incremental Delay, d2	3.8	
Delay (s)	42.7	
Level of Service	D	
Approach Delay (s)	42.7	
Approach LOS	D	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
15: Aragon Dr & University Ave

Existing Plus Project  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	818	80	42	529	7	48	38	66	15	42	0
Future Volume (vph)	8	818	80	42	529	7	48	38	66	15	42	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	5.2	5.2	4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1473	1764	1658			1836	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.79	1.00			0.90	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1473	1468	1658			1669	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	852	83	44	551	7	50	40	69	16	44	0
RTOR Reduction (vph)	0	0	72	0	0	2	0	61	0	0	0	0
Lane Group Flow (vph)	8	852	11	44	551	5	50	48	0	0	60	0
Confl. Peds. (#/hr)			10			8	2		4	4		2
Confl. Bikes (#/hr)			2			1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2	9	1	6			4			8	
Permitted Phases						6	4			8		
Actuated Green, G (s)	1.2	68.9	13.2	4.9	72.3	72.3	12.0	12.0			12.0	
Effective Green, g (s)	1.2	64.5	13.2	4.9	72.3	72.3	12.0	12.0			12.0	
Actuated g/C Ratio	0.01	0.64	0.13	0.05	0.72	0.72	0.12	0.12			0.12	
Clearance Time (s)	4.4		4.4	4.4	5.2	5.2	4.9	4.9			4.9	
Vehicle Extension (s)	2.0		2.0	2.0	3.9	3.9	2.0	2.0			2.0	
Lane Grp Cap (vph)	21	1201	208	86	1346	1064	176	198			200	
v/s Ratio Prot	0.00	c0.46	0.01	c0.02	c0.30			0.03				
v/s Ratio Perm						0.00	0.03				c0.04	
v/c Ratio	0.38	0.71	0.05	0.51	0.41	0.00	0.28	0.24			0.30	
Uniform Delay, d1	49.0	11.6	37.9	46.4	5.4	3.8	40.1	39.9			40.2	
Progression Factor	1.29	0.38	3.45	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	3.5	1.3	0.0	2.1	0.9	0.0	0.3	0.2			0.3	
Delay (s)	66.8	5.8	131.0	48.5	6.4	3.9	40.4	40.1			40.5	
Level of Service	E	A	F	D	A	A	D	D			D	
Approach Delay (s)		17.3			9.4			40.2			40.5	
Approach LOS		B			A			D			D	

Intersection Summary		
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.63	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	62.0%	18.6
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		B

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	65	786	621	23	35	27
Future Vol, veh/h	65	786	621	23	35	27
Conflicting Peds, #/hr	11	0	0	11	11	11
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	810	640	24	36	28

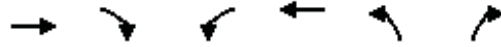
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	651	0	-	0	1606 662
Stage 1	-	-	-	-	651 -
Stage 2	-	-	-	-	955 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	935	-	-	-	116 462
Stage 1	-	-	-	-	519 -
Stage 2	-	-	-	-	374 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	925	-	-	-	105 452
Mov Cap-2 Maneuver	-	-	-	-	233 -
Stage 1	-	-	-	-	514 -
Stage 2	-	-	-	-	343 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	925	-	-	-	295
HCM Lane V/C Ratio	0.072	-	-	-	0.217
HCM Control Delay (s)	9.2	-	-	-	20.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Existing Plus Project  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	686	68	158	603	56	61
Future Volume (vph)	686	68	158	603	56	61
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1538	1770	1863	1744	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1538	1770	1863	1744	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	700	69	161	615	57	62
RTOR Reduction (vph)	0	3	0	0	0	56
Lane Group Flow (vph)	700	66	161	615	57	6
Confl. Peds. (#/hr)		4			9	
Confl. Bikes (#/hr)		2				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	49.5	49.5	12.7	66.5	8.6	8.6
Effective Green, g (s)	49.5	49.5	12.7	66.5	8.6	8.6
Actuated g/C Ratio	0.58	0.58	0.15	0.78	0.10	0.10
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	2.0	2.0
Lane Grp Cap (vph)	1083	894	264	1455	176	159
v/s Ratio Prot	c0.38		c0.09	0.33		
v/s Ratio Perm		0.04			c0.03	0.00
v/c Ratio	0.65	0.07	0.61	0.42	0.32	0.04
Uniform Delay, d1	11.9	7.8	33.9	3.0	35.5	34.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	2.7	0.5	0.4	0.0
Delay (s)	13.8	7.9	36.6	3.5	35.9	34.6
Level of Service	B	A	D	A	D	C
Approach Delay (s)	13.3			10.4	35.2	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	14.3
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	850	701	21	7	9
Future Vol, veh/h	32	850	701	21	7	9
Conflicting Peds, #/hr	13	0	0	13	13	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	904	746	22	7	10

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	759	0	-	0	1744 772
Stage 1	-	-	-	-	759 -
Stage 2	-	-	-	-	985 -
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	852	-	-	-	95 400
Stage 1	-	-	-	-	462 -
Stage 2	-	-	-	-	362 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	841	-	-	-	89 390
Mov Cap-2 Maneuver	-	-	-	-	218 -
Stage 1	-	-	-	-	456 -
Stage 2	-	-	-	-	343 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	841	-	-	-	290
HCM Lane V/C Ratio	0.04	-	-	-	0.059
HCM Control Delay (s)	9.5	-	-	-	18.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	804	52	108	676	34	37
Future Vol, veh/h	804	52	108	676	34	37
Conflicting Peds, #/hr	0	9	7	0	9	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	30	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	820	53	110	690	35	38

























Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	829	0	1748 426
Stage 1	-	-	-	-	829 -
Stage 2	-	-	-	-	919 -
Critical Hdwy	-	-	4.13	-	6.63 6.93
Critical Hdwy Stg 1	-	-	-	-	5.83 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	-	-	2.219	-	3.519 3.319
Pot Cap-1 Maneuver	-	-	800	-	85 578
Stage 1	-	-	-	-	390 -
Stage 2	-	-	-	-	388 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	795	-	72 569
Mov Cap-2 Maneuver	-	-	-	-	195 -
Stage 1	-	-	-	-	387 -
Stage 2	-	-	-	-	331 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	21
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	297	-	-	795	-
HCM Lane V/C Ratio	0.244	-	-	0.139	-
HCM Control Delay (s)	21	-	-	10.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.5	-

HCM 2010 Signalized Intersection Summary  
20: Lois St/70th St & University Ave

Existing Plus Project  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	539	44	24	444	456	18	98	12	512	92	261
Future Volume (veh/h)	244	539	44	24	444	456	18	98	12	512	92	261
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	252	556	9	25	458	94	19	101	12	596	0	54
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	295	1400	623	38	887	397	167	154	18	719	0	320
Arrive On Green	0.17	0.40	0.40	0.02	0.25	0.25	0.09	0.09	0.09	0.20	0.00	0.20
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1634	194	3548	0	1581
Grp Volume(v), veh/h	252	556	9	25	458	94	19	0	113	596	0	54
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1828	1774	0	1581
Q Serve(g_s), s	11.1	9.1	0.3	1.1	9.0	3.8	0.8	0.0	4.8	12.9	0.0	2.3
Cycle Q Clear(g_c), s	11.1	9.1	0.3	1.1	9.0	3.8	0.8	0.0	4.8	12.9	0.0	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	295	1400	623	38	887	397	167	0	172	719	0	320
V/C Ratio(X)	0.85	0.40	0.01	0.66	0.52	0.24	0.11	0.00	0.66	0.83	0.00	0.17
Avail Cap(c_a), veh/h	673	2444	1086	99	1321	591	772	0	796	905	0	403
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.6	17.4	14.8	39.0	25.9	24.0	33.3	0.0	35.1	30.7	0.0	26.5
Incr Delay (d2), s/veh	2.8	0.3	0.0	7.2	0.7	0.4	0.3	0.0	4.2	5.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.5	0.1	0.6	4.5	1.7	0.4	0.0	2.6	6.8	0.0	1.0
LnGrp Delay(d),s/veh	35.3	17.7	14.8	46.2	26.6	24.4	33.6	0.0	39.3	36.0	0.0	26.7
LnGrp LOS	D	B	B	D	C	C	C		D	D		C
Approach Vol, veh/h		817			577			132			650	
Approach Delay, s/veh		23.1			27.1			38.5			35.2	
Approach LOS		C			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		22.3	6.7	37.8		13.6	18.4	26.2				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		20.5	4.5	55.5		35.0	30.5	30.0				
Max Q Clear Time (g_c+I1), s		14.9	3.1	11.1		6.8	13.1	11.0				
Green Ext Time (p_c), s		1.3	0.0	13.1		0.6	0.3	9.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			28.7									
HCM 2010 LOS			C									
<b>Notes</b>												



Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	20	30	10	0	0	0	0	70	20	20	50	0
Future Vol, veh/h	20	30	10	0	0	0	0	70	20	20	50	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	36	12	0	0	0	0	83	24	24	60	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.7	7.6	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	33%	29%
Vol Thru, %	78%	50%	71%
Vol Right, %	22%	17%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	60	70
LT Vol	0	20	20
Through Vol	70	30	50
RT Vol	20	10	0
Lane Flow Rate	107	71	83
Geometry Grp	1	1	1
Degree of Util (X)	0.119	0.084	0.097
Departure Headway (Hd)	3.988	4.226	4.197
Convergence, Y/N	Yes	Yes	Yes
Cap	890	836	847
Service Time	2.05	2.315	2.26
HCM Lane V/C Ratio	0.12	0.085	0.098
HCM Control Delay	7.6	7.7	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.3	0.3

Intersection														
Int Delay, s/veh	5.9													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕↕			↕	↕			↕			↕	
Traffic Vol, veh/h	10	50	520	10	10	10	850	50	20	10	20	10	10	50
Future Vol, veh/h	10	50	520	10	10	10	850	50	20	10	20	10	10	50
Conflicting Peds, #/hr	4	22	0	20	2	18	0	20	20	0	18	20	0	22
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	55	571	11	11	11	934	55	22	11	22	11	11	55

Major/Minor	Major1			Major2			Minor1			Minor2				
Conflicting Flow All	988	1011	0	0	581	602	0	0	1767	1784	331	1449	1761	1006
Stage 1	-	-	-	-	-	-	-	-	729	729	-	1006	1027	-
Stage 2	-	-	-	-	-	-	-	-	1038	1055	-	443	734	-
Critical Hdwy	-	4.13	-	-	6.93	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	-	2.219	-	-	3.119	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	-	684	-	-	480	973	-	-	59	81	666	100	84	292
Stage 1	-	-	-	-	-	-	-	-	381	427	-	290	311	-
Stage 2	-	-	-	-	-	-	-	-	278	302	-	564	425	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	~ -6	~ -6	-	-	625	625	-	-	41	78	641	83	81	280
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	41	78	-	83	81	-
Stage 1	-	-	-	-	-	-	-	-	381	419	-	290	304	-
Stage 2	-	-	-	-	-	-	-	-	211	296	-	520	417	-



















Approach	EB	WB	NB	SB
HCM Control Delay, s		0.2	125.7	44.2
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	77	+	-	-	625	-	-	166
HCM Lane V/C Ratio	0.714	-	-	-	0.035	-	-	0.463
HCM Control Delay (s)	125.7	-	-	-	11	-	-	44.2
HCM Lane LOS	F	-	-	-	B	-	-	E
HCM 95th %tile Q(veh)	3.4	-	-	-	0.1	-	-	2.2

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

HCM 2010 Signalized Intersection Summary  
3: Winona Ave & University Ave

Baseline 2022  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	510	50	20	610	40	110	60	30	60	50	80
Future Volume (veh/h)	40	510	50	20	610	40	110	60	30	60	50	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.97	0.97		0.97	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.89	1.00	1.00	0.89
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	43	554	40	22	663	39	120	65	24	65	54	41
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	1490	107	318	1026	60	201	99	31	153	118	75
Arrive On Green	0.03	0.45	0.45	0.18	0.60	0.60	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	3327	240	1774	1704	100	649	456	143	457	546	345
Grp Volume(v), veh/h	43	294	300	22	0	702	209	0	0	160	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1797	1774	0	1804	1248	0	0	1347	0	0
Q Serve(g_s), s	2.3	10.3	10.4	1.0	0.0	23.8	5.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	10.3	10.4	1.0	0.0	23.8	14.9	0.0	0.0	9.7	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.06	0.57		0.11	0.41		0.26
Lane Grp Cap(c), veh/h	54	793	805	318	0	1086	330	0	0	345	0	0
V/C Ratio(X)	0.79	0.37	0.37	0.07	0.00	0.65	0.63	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	172	793	805	318	0	1086	442	0	0	462	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.3	17.2	17.2	32.0	0.0	12.2	34.6	0.0	0.0	32.5	0.0	0.0
Incr Delay (d2), s/veh	9.1	1.3	1.3	0.0	0.0	3.0	0.8	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	5.4	5.5	0.5	0.0	12.6	5.2	0.0	0.0	3.7	0.0	0.0
LnGrp Delay(d),s/veh	54.4	18.5	18.5	32.1	0.0	15.2	35.4	0.0	0.0	32.8	0.0	0.0
LnGrp LOS	D	B	B	C		B	D			C		
Approach Vol, veh/h		637			724			209			160	
Approach Delay, s/veh		20.9			15.7			35.4			32.8	
Approach LOS		C			B			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.8	47.0		25.2	7.3	61.5		25.2				
Change Period (Y+Rc), s	4.9	* 4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	9.1	* 42		28.6	9.1	42.1		28.6				
Max Q Clear Time (g_c+I1), s	3.0	12.4		11.7	4.3	25.8		16.9				
Green Ext Time (p_c), s	2.5	4.1		1.5	0.0	4.7		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				21.6								
HCM 2010 LOS				C								
<b>Notes</b>												

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↑	↑				↑			↑
Traffic Vol, veh/h	0	540	30	50	690	20	0	0	40	0	0	20
Future Vol, veh/h	0	540	30	50	690	20	0	0	40	0	0	20
Conflicting Peds, #/hr	0	0	75	42	0	25	0	0	42	0	0	58
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	600	33	56	767	22	0	0	44	0	0	22























Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	708	0	0	-	-	434	-	-	861
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.13	-	-	-	-	6.93	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	889	-	-	0	0	571	0	0	354
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	853	-	-	-	-	509	-	-	326
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	12.7	16.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	509	-	-	853	-	-	326
HCM Lane V/C Ratio	0.087	-	-	0.065	-	-	0.068
HCM Control Delay (s)	12.7	-	-	9.5	-	-	16.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-	-	0.2

HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Baseline 2022  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	60	540	30	40	670	130	40	60	110	80	40	60
Future Volume (veh/h)	60	540	30	40	670	130	40	60	110	80	40	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	0.96		0.95	0.97		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	66	593	25	44	736	114	44	66	31	88	44	20
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	1976	83	56	1202	186	151	206	369	269	122	369
Arrive On Green	0.20	0.57	0.57	0.03	0.39	0.39	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3454	145	1774	3046	472	398	839	1506	834	498	1506
Grp Volume(v), veh/h	66	303	315	44	427	423	110	0	31	132	0	20
Grp Sat Flow(s),veh/h/ln	1774	1770	1830	1774	1770	1748	1238	0	1506	1332	0	1506
Q Serve(g_s), s	2.9	8.3	8.3	2.3	18.1	18.1	2.2	0.0	1.5	0.0	0.0	1.0
Cycle Q Clear(g_c), s	2.9	8.3	8.3	2.3	18.1	18.1	10.7	0.0	1.5	8.5	0.0	1.0
Prop In Lane	1.00		0.08	1.00		0.27	0.40		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	361	1013	1047	56	698	690	357	0	369	391	0	369
V/C Ratio(X)	0.18	0.30	0.30	0.79	0.61	0.61	0.31	0.00	0.08	0.34	0.00	0.05
Avail Cap(c_a), veh/h	361	1013	1047	172	698	690	501	0	506	521	0	506
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	10.4	10.4	45.2	22.7	22.7	30.1	0.0	27.3	29.8	0.0	27.1
Incr Delay (d2), s/veh	0.1	0.8	0.7	8.9	4.0	4.0	0.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.3	4.4	1.3	9.6	9.5	2.5	0.0	0.6	2.9	0.0	0.4
LnGrp Delay(d),s/veh	31.0	11.1	11.1	54.1	26.7	26.7	30.3	0.0	27.4	30.0	0.0	27.2
LnGrp LOS	C	B	B	D	C	C	C		C	C		C
Approach Vol, veh/h		684			894			141			152	
Approach Delay, s/veh		13.1			28.1			29.7			29.6	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	58.7		28.0	24.0	42.0		28.0				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.9	* 4.9		4.9				
Max Green Setting (Gmax), s	9.1	39.1		31.6	11.1	* 37		31.6				
Max Q Clear Time (g_c+I1), s	4.3	10.3		10.5	4.9	20.1		12.7				
Green Ext Time (p_c), s	0.0	8.2		1.0	1.2	7.4		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				22.8								
HCM 2010 LOS				C								
<b>Notes</b>												

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕			↕	
Traffic Vol, veh/h	40	660	20	110	820	50	20	0	50	10	0	10
Future Vol, veh/h	40	660	20	110	820	50	20	0	50	10	0	10
Conflicting Peds, #/hr	18	0	37	41	0	22	37	0	41	22	0	18
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	80	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	710	22	118	882	54	22	0	54	11	0	11

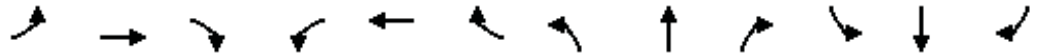
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	957	0	0	772	0	0	1561	2041	448	1649	2025	527
Stage 1	-	-	-	-	-	-	847	847	-	1167	1167	-
Stage 2	-	-	-	-	-	-	714	1194	-	482	858	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	714	-	-	839	-	-	76	56	558	65	57	496
Stage 1	-	-	-	-	-	-	323	376	-	206	266	-
Stage 2	-	-	-	-	-	-	388	258	-	534	372	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	689	-	-	806	-	-	58	42	515	46	43	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	42	-	46	43	-
Stage 1	-	-	-	-	-	-	291	339	-	189	222	-
Stage 2	-	-	-	-	-	-	312	216	-	431	335	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			1.1			47			62		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	689	-	-	806	-	-	84
HCM Lane V/C Ratio	0.476	0.062	-	-	0.147	-	-	0.256
HCM Control Delay (s)	47	10.6	-	-	10.2	-	-	62
HCM Lane LOS	E	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.2	0.2	-	-	0.5	-	-	0.9

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Baseline 2022  
AM Peak Hour

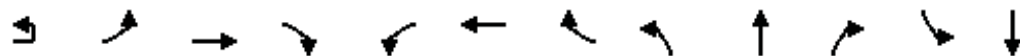


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	140	440	150	60	490	400	320	800	50	270	350	170	
Future Volume (vph)	140	440	150	60	490	400	320	800	50	270	350	170	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3345		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3345		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	146	458	156	62	510	417	333	833	52	281	365	177	
RTOR Reduction (vph)	0	0	67	0	0	233	0	0	33	0	27	0	
Lane Group Flow (vph)	146	458	89	63	510	184	333	833	19	281	515	0	
Confl. Peds. (#/hr)												5	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6			8				
Actuated Green, G (s)	16.8	33.8	33.8	9.8	26.4	26.4	32.2	44.0	44.0	16.5	27.5		
Effective Green, g (s)	16.8	33.8	33.8	9.8	26.4	26.4	32.2	44.0	44.0	16.5	27.5		
Actuated g/C Ratio	0.14	0.27	0.27	0.08	0.21	0.21	0.26	0.36	0.36	0.13	0.22		
Clearance Time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1		
Vehicle Extension (s)	2.0	3.8	3.8	2.0	3.3	3.3	2.0	4.0	4.0	2.0	3.2		
Lane Grp Cap (vph)	241	971	434	140	758	339	462	1264	565	460	747		
v/s Ratio Prot	c0.08	0.13		0.04	c0.14		c0.19	c0.24		0.08	c0.15		
v/s Ratio Perm			0.06			0.12			0.01				
v/c Ratio	0.61	0.47	0.20	0.45	0.67	0.54	0.72	0.66	0.03	0.61	0.69		
Uniform Delay, d1	50.0	37.2	34.3	54.1	44.4	43.0	41.4	33.2	25.7	50.3	43.9		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	2.9	0.5	0.3	0.8	2.4	1.9	4.7	1.4	0.0	1.7	2.7		
Delay (s)	53.0	37.7	34.6	54.9	46.8	44.9	46.0	34.6	25.7	52.0	46.6		
Level of Service	D	D	C	D	D	D	D	C	C	D	D		
Approach Delay (s)		40.0			46.5			37.4			48.4		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			42.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			123.1									Sum of lost time (s)	20.2
Intersection Capacity Utilization			72.3%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 8: 58th St & University Ave

Baseline 2022  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Traffic Volume (vph)	10	60	560	140	40	870	60	230	50	90	40	40	
Future Volume (vph)	10	60	560	140	40	870	60	230	50	90	40	40	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95	1.00		1.00			1.00	
Frbp, ped/bikes		1.00	1.00	0.96	1.00	1.00	0.96		1.00			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.97			0.93	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.99	
Satd. Flow (prot)		1770	5085	1523	1770	3539	1524		1735			1697	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.70			0.86	
Satd. Flow (perm)		1770	5085	1523	1770	3539	1524		1253			1480	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	11	63	589	147	42	916	63	242	53	95	42	42	
RTOR Reduction (vph)	0	0	0	59	0	0	36	0	14	0	0	43	
Lane Group Flow (vph)	0	74	589	88	42	916	27	0	376	0	0	125	
Confl. Peds. (#/hr)				5			6	10		2	2		
Confl. Bikes (#/hr)				4			1			1			
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	5	2		1	6			8			4	
Permitted Phases				2			6	8			4		
Actuated Green, G (s)		6.6	41.0	41.0	4.6	39.0	39.0		29.8			29.8	
Effective Green, g (s)		6.6	41.0	41.0	4.6	39.0	39.0		29.8			29.8	
Actuated g/C Ratio		0.07	0.46	0.46	0.05	0.43	0.43		0.33			0.33	
Clearance Time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9	
Vehicle Extension (s)		2.0	5.5	5.5	2.0	3.3	3.3		2.0			2.0	
Lane Grp Cap (vph)		129	2316	693	90	1533	660		414			490	
v/s Ratio Prot		c0.04	0.12		0.02	c0.26							
v/s Ratio Perm				0.06			0.02		c0.30			0.08	
v/c Ratio		0.57	0.25	0.13	0.47	0.60	0.04		0.91			0.25	
Uniform Delay, d1		40.3	15.1	14.2	41.5	19.5	14.7		28.8			22.0	
Progression Factor		1.00	1.00	1.00	1.14	0.91	2.06		1.00			1.00	
Incremental Delay, d2		3.8	0.3	0.4	1.3	1.6	0.1		22.7			0.1	
Delay (s)		44.1	15.4	14.5	48.6	19.3	30.4		51.5			22.1	
Level of Service		D	B	B	D	B	C		D			C	
Approach Delay (s)			17.8			21.2			51.5			22.1	
Approach LOS			B			C			D			C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			25.1									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			67.7%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group



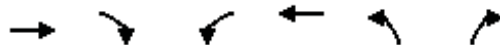


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	80
Future Volume (vph)	80
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	84
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Baseline 2022  
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	730	120	80	930	110	20
Future Volume (vph)	730	120	80	930	110	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1518	1770	3539	1770	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1518	1770	3539	1770	1566
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	777	128	85	989	117	21
RTOR Reduction (vph)	0	49	0	0	0	16
Lane Group Flow (vph)	777	79	85	989	117	5
Confl. Peds. (#/hr)		9				5
Confl. Bikes (#/hr)		1				1
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	55.0	55.0	7.4	66.8	13.0	20.4
Effective Green, g (s)	55.0	55.0	7.4	66.8	13.0	20.4
Actuated g/C Ratio	0.61	0.61	0.08	0.74	0.14	0.23
Clearance Time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Vehicle Extension (s)	3.3	3.3	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	3107	927	145	2626	255	354
v/s Ratio Prot	0.15		c0.05	c0.28	c0.07	0.00
v/s Ratio Perm		0.05				0.00
v/c Ratio	0.25	0.09	0.59	0.38	0.46	0.01
Uniform Delay, d1	8.0	7.2	39.8	4.2	35.3	27.0
Progression Factor	0.65	0.36	0.79	1.02	1.00	1.00
Incremental Delay, d2	0.2	0.2	3.7	0.4	0.5	0.0
Delay (s)	5.4	2.7	35.1	4.6	35.8	27.0
Level of Service	A	A	D	A	D	C
Approach Delay (s)	5.0			7.0	34.4	
Approach LOS	A			A	C	

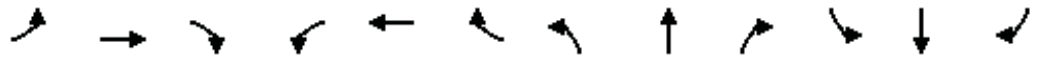
### Intersection Summary

HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

Baseline 2022  
AM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	600	40	40	860	10	110	10	70	30	20	20
Future Volume (vph)	20	600	40	40	860	10	110	10	70	30	20	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	5.3	4.4	5.3	5.3		4.9	4.9		4.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00		1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.98	
Satd. Flow (prot)	1770	5085	1540	1770	3539	1583		1772	1563		1744	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.84	
Satd. Flow (perm)	1770	5085	1540	1770	3539	1583		1375	1563		1495	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	625	42	42	896	10	115	10	73	31	21	21
RTOR Reduction (vph)	0	0	16	0	0	4	0	0	60	0	17	0
Lane Group Flow (vph)	21	625	26	42	896	6	0	125	13	0	56	0
Confl. Peds. (#/hr)			4				8		1	1		8
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	2.7	54.8	54.8	4.4	56.5	56.5		16.2	16.2		16.2	
Effective Green, g (s)	2.7	54.8	54.8	4.4	56.5	56.5		16.2	16.2		16.2	
Actuated g/C Ratio	0.03	0.61	0.61	0.05	0.63	0.63		0.18	0.18		0.18	
Clearance Time (s)	4.4	5.3	5.3	4.4	5.3	5.3		4.9	4.9		4.9	
Vehicle Extension (s)	2.0	4.8	4.8	2.0	4.4	4.4		2.0	2.0		2.0	
Lane Grp Cap (vph)	53	3096	937	86	2221	993		247	281		269	
v/s Ratio Prot	0.01	0.12		c0.02	c0.25							
v/s Ratio Perm			0.02			0.00		c0.09	0.01		0.04	
v/c Ratio	0.40	0.20	0.03	0.49	0.40	0.01		0.51	0.05		0.21	
Uniform Delay, d1	42.8	7.8	7.0	41.7	8.3	6.3		33.3	30.5		31.4	
Progression Factor	0.75	1.05	3.80	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	1.7	0.1	0.1	1.6	0.5	0.0		0.6	0.0		0.1	
Delay (s)	34.0	8.4	26.7	43.3	8.9	6.3		33.9	30.5		31.6	
Level of Service	C	A	C	D	A	A		C	C		C	
Approach Delay (s)		10.3			10.4			32.7			31.6	
Approach LOS		B			B			C			C	

Intersection Summary		
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.44	B
Actuated Cycle Length (s)	90.0	Sum of lost time (s)
Intersection Capacity Utilization	54.4%	14.6
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		A

HCM Signalized Intersection Capacity Analysis  
 11: College Ave & University Ave

Baseline 2022  
 AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	180	450	110	150	560	140	210	850	130	110	320	150	
Future Volume (vph)	180	450	110	150	560	140	210	850	130	110	320	150	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1557	1770	3539	1519	1770	3539	1583	1770	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1557	1770	3539	1519	1770	3539	1583	1770	3539	1583	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	191	479	117	160	596	149	223	904	138	117	340	160	
RTOR Reduction (vph)	0	0	73	0	0	61	0	0	47	0	0	56	
Lane Group Flow (vph)	191	479	44	160	596	88	223	904	91	117	340	104	
Confl. Peds. (#/hr)			3			6							
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6			8			4	
Actuated Green, G (s)	21.7	34.7	34.7	18.8	32.0	32.0	27.7	49.6	49.6	15.0	35.6	35.6	
Effective Green, g (s)	21.7	34.7	34.7	18.8	32.0	32.0	27.7	49.6	49.6	15.0	35.6	35.6	
Actuated g/C Ratio	0.16	0.25	0.25	0.14	0.23	0.23	0.20	0.36	0.36	0.11	0.26	0.26	
Clearance Time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5	
Vehicle Extension (s)	2.0	3.7	3.7	2.0	3.7	3.7	2.0	3.2	3.2	2.0	3.6	3.6	
Lane Grp Cap (vph)	279	895	393	242	825	354	357	1279	572	193	918	410	
v/s Ratio Prot	c0.11	c0.14		0.09	c0.17		c0.13	c0.26		0.07	0.10		
v/s Ratio Perm			0.03			0.06			0.06			0.07	
v/c Ratio	0.68	0.54	0.11	0.66	0.72	0.25	0.62	0.71	0.16	0.61	0.37	0.25	
Uniform Delay, d1	54.5	44.3	39.4	56.2	48.5	42.8	50.0	37.6	29.7	58.3	41.6	40.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.4	0.7	0.2	5.2	3.3	0.5	2.4	1.8	0.1	3.7	0.3	0.4	
Delay (s)	60.0	45.0	39.6	61.3	51.8	43.3	52.5	39.4	29.8	61.9	41.9	40.7	
Level of Service	E	D	D	E	D	D	D	D	C	E	D	D	
Approach Delay (s)		47.8			52.1			40.7			45.4		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			45.9									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			137.2									Sum of lost time (s)	20.4
Intersection Capacity Utilization			71.9%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	650	20	20	870	20	10	10	20	10	0	20
Future Vol, veh/h	30	650	20	20	870	20	10	10	20	10	0	20
Conflicting Peds, #/hr	4	0	7	10	0	7	7	0	10	7	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	125	-	80	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	699	22	22	935	22	11	11	22	11	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	942	0	0	730	0	0	1302	1769	380	1414	1780	482
Stage 1	-	-	-	-	-	-	784	784	-	985	985	-
Stage 2	-	-	-	-	-	-	518	985	-	429	795	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	724	-	-	870	-	-	118	83	618	98	81	530
Stage 1	-	-	-	-	-	-	352	402	-	266	324	-
Stage 2	-	-	-	-	-	-	509	324	-	574	398	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	719	-	-	862	-	-	105	76	606	79	74	523
Mov Cap-2 Maneuver	-	-	-	-	-	-	105	76	-	79	74	-
Stage 1	-	-	-	-	-	-	333	380	-	252	314	-
Stage 2	-	-	-	-	-	-	472	314	-	509	377	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.2			37.2			29		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	154	719	-	-	862	-	-	182
HCM Lane V/C Ratio	0.279	0.045	-	-	0.025	-	-	0.177
HCM Control Delay (s)	37.2	10.2	-	-	9.3	-	-	29
HCM Lane LOS	E	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	0.6

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	650	20	10	720	20	30	0	30	10	10	60
Future Vol, veh/h	20	650	20	10	720	20	30	0	30	10	10	60
Conflicting Peds, #/hr	1	0	3	3	0	1	3	0	3	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	100	90	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	699	22	11	774	22	32	0	32	11	11	65

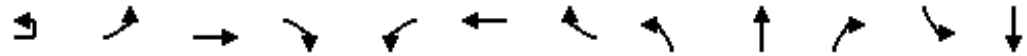
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	775	0	0	702	0	0	1162	1542	355	1192	1542	391
Stage 1	-	-	-	-	-	-	745	745	-	797	797	-
Stage 2	-	-	-	-	-	-	417	797	-	395	745	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	837	-	-	891	-	-	150	114	641	143	114	608
Stage 1	-	-	-	-	-	-	372	419	-	346	397	-
Stage 2	-	-	-	-	-	-	584	397	-	602	419	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	835	-	-	888	-	-	120	109	637	131	109	606
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	109	-	131	109	-
Stage 1	-	-	-	-	-	-	361	407	-	337	392	-
Stage 2	-	-	-	-	-	-	500	392	-	555	407	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			31			21.8		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	202	835	-	-	888	-	-	300
HCM Lane V/C Ratio	0.319	0.026	-	-	0.012	-	-	0.287
HCM Control Delay (s)	31	9.4	-	-	9.1	-	-	21.8
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	1.2

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Baseline 2022  
 AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Traffic Volume (vph)	10	60	530	40	20	650	30	90	60	30	40	40	
Future Volume (vph)	10	60	530	40	20	650	30	90	60	30	40	40	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes		1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00			1.00	
Frt		1.00	0.99		1.00	0.99			0.98			0.95	
Flt Protected		0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)		1770	3494		1770	3513			1770			1739	
Flt Permitted		0.95	1.00		0.95	1.00			0.76			0.84	
Satd. Flow (perm)		1770	3494		1770	3513			1374			1477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	11	64	564	43	21	691	32	96	64	32	43	43	
RTOR Reduction (vph)	0	0	4	0	0	3	0	0	10	0	0	26	
Lane Group Flow (vph)	0	75	603	0	21	720	0	0	182	0	0	103	
Confl. Peds. (#/hr)				12				3		2	2		
Confl. Bikes (#/hr)				4			1						
Turn Type	Prot	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	5	2		1	6			8			4	
Permitted Phases								8			4		
Actuated Green, G (s)		6.9	55.4		2.7	51.2			17.7			17.7	
Effective Green, g (s)		6.9	55.4		2.7	51.2			17.7			17.7	
Actuated g/C Ratio		0.08	0.62		0.03	0.57			0.20			0.20	
Clearance Time (s)		4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)		2.0	3.6		2.0	3.6			2.0			2.0	
Lane Grp Cap (vph)		135	2150		53	1998			270			290	
v/s Ratio Prot		c0.04	c0.17		0.01	c0.21							
v/s Ratio Perm									c0.13			0.07	
v/c Ratio		0.56	0.28		0.40	0.36			0.67			0.36	
Uniform Delay, d1		40.1	8.0		42.8	10.5			33.5			31.2	
Progression Factor		1.00	1.00		1.10	0.72			1.00			1.00	
Incremental Delay, d2		2.8	0.3		1.7	0.5			5.1			0.3	
Delay (s)		42.9	8.4		48.7	8.0			38.6			31.5	
Level of Service		D	A		D	A			D			C	
Approach Delay (s)			12.2			9.2			38.6			31.5	
Approach LOS			B			A			D			C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			15.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	14.2
Intersection Capacity Utilization			50.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

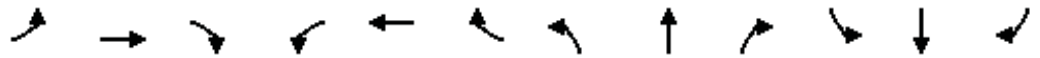


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	40
Future Volume (vph)	40
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	43
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	



HCM Signalized Intersection Capacity Analysis  
 15: Aragon Dr & University Ave

Baseline 2022  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	540	20	30	590	30	90	100	60	10	30	10
Future Volume (vph)	10	540	20	30	590	30	90	100	60	10	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1517	1770	3539	1509	1767	1747			1789	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.83	1.00			0.92	
Satd. Flow (perm)	1770	3539	1517	1770	3539	1509	1545	1747			1669	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	600	22	33	656	33	100	111	67	11	33	11
RTOR Reduction (vph)	0	0	8	0	0	11	0	32	0	0	9	0
Lane Group Flow (vph)	11	600	14	33	656	22	100	146	0	0	46	0
Confl. Peds. (#/hr)			11			2	2		4	4		2
Confl. Bikes (#/hr)						1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	1.3	57.0	57.0	4.3	59.7	59.7	14.5	14.5			14.5	
Effective Green, g (s)	1.3	57.0	57.0	4.3	59.7	59.7	14.5	14.5			14.5	
Actuated g/C Ratio	0.01	0.63	0.63	0.05	0.66	0.66	0.16	0.16			0.16	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Vehicle Extension (s)	2.0	5.1	5.1	2.0	3.9	3.9	2.0	2.0			2.0	
Lane Grp Cap (vph)	25	2241	960	84	2347	1000	248	281			268	
v/s Ratio Prot	0.01	0.17		c0.02	c0.19			c0.08				
v/s Ratio Perm			0.01			0.01	0.06				0.03	
v/c Ratio	0.44	0.27	0.01	0.39	0.28	0.02	0.40	0.52			0.17	
Uniform Delay, d1	44.0	7.3	6.1	41.6	6.3	5.2	33.9	34.6			32.6	
Progression Factor	1.05	0.73	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	4.3	0.3	0.0	1.1	0.3	0.0	0.4	0.8			0.1	
Delay (s)	50.6	5.6	6.1	42.7	6.6	5.2	34.3	35.4			32.7	
Level of Service	D	A	A	D	A	A	C	D			C	
Approach Delay (s)		6.4			8.1			35.0			32.7	
Approach LOS		A			A			C			C	

Intersection Summary		
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.34	B
Actuated Cycle Length (s)	90.0	Sum of lost time (s)
Intersection Capacity Utilization	46.8%	14.5
Analysis Period (min)	15	ICU Level of Service
		A
c Critical Lane Group		

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	50	560	610	20	20	50
Future Vol, veh/h	50	560	610	20	20	50
Conflicting Peds, #/hr	3	0	0	5	5	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	629	685	22	22	56

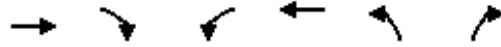
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	690	0	-	0	1122 351
Stage 1	-	-	-	-	690 -
Stage 2	-	-	-	-	432 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	900	-	-	-	200 645
Stage 1	-	-	-	-	459 -
Stage 2	-	-	-	-	622 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	897	-	-	-	186 640
Mov Cap-2 Maneuver	-	-	-	-	316 -
Stage 1	-	-	-	-	457 -
Stage 2	-	-	-	-	580 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	897	-	-	-	495
HCM Lane V/C Ratio	0.063	-	-	-	0.159
HCM Control Delay (s)	9.3	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Baseline 2022  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	540	40	50	610	40	30
Future Volume (vph)	540	40	50	610	40	30
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1534	1770	3539	1765	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1534	1770	3539	1765	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	614	45	57	693	45	34
RTOR Reduction (vph)	0	23	0	0	0	30
Lane Group Flow (vph)	614	22	57	693	45	4
Confl. Peds. (#/hr)		10			5	
Confl. Bikes (#/hr)		1				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	24.0	24.0	3.8	32.1	6.1	6.1
Effective Green, g (s)	24.0	24.0	3.8	32.1	6.1	6.1
Actuated g/C Ratio	0.50	0.50	0.08	0.67	0.13	0.13
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	3.0	3.0
Lane Grp Cap (vph)	1762	763	139	2356	223	200
v/s Ratio Prot	c0.17		0.03	c0.20		
v/s Ratio Perm		0.01			c0.03	0.00
v/c Ratio	0.35	0.03	0.41	0.29	0.20	0.02
Uniform Delay, d1	7.4	6.2	21.1	3.3	18.9	18.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.7	0.2	0.4	0.0
Delay (s)	7.6	6.2	21.9	3.5	19.3	18.5
Level of Service	A	A	C	A	B	B
Approach Delay (s)	7.5			4.9	19.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	14.3
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	10	540	630	20	10	20
Future Vol, veh/h	10	540	630	20	10	20
Conflicting Peds, #/hr	12	0	0	11	11	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	55	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	607	708	22	11	22

**Major/Minor**

	Major1	Major2	Minor2		
Conflicting Flow All	720	0	0	1057	378
Stage 1	-	-	-	720	-
Stage 2	-	-	-	337	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	877	-	-	220	620
Stage 1	-	-	-	443	-
Stage 2	-	-	-	695	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	867	-	-	212	606
Mov Cap-2 Maneuver	-	-	-	332	-
Stage 1	-	-	-	438	-
Stage 2	-	-	-	678	-

**Approach**

	EB	WB	SB
HCM Control Delay, s	0.2	0	13.2
HCM LOS			B

**Minor Lane/Major Mvmt**

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	867	-	-	-	475
HCM Lane V/C Ratio	0.013	-	-	-	0.071
HCM Control Delay (s)	9.2	-	-	-	13.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	530	20	80	600	40	40
Future Vol, veh/h	530	20	80	600	40	40
Conflicting Peds, #/hr	0	12	9	0	12	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	582	22	88	659	44	44

























Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	594	0	1111
Stage 1	-	-	-	-	594
Stage 2	-	-	-	-	517
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	978	-	203
Stage 1	-	-	-	-	514
Stage 2	-	-	-	-	563
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	970	-	180
Mov Cap-2 Maneuver	-	-	-	-	314
Stage 1	-	-	-	-	508
Stage 2	-	-	-	-	506

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	428	-	-	970	-
HCM Lane V/C Ratio	0.205	-	-	0.091	-
HCM Control Delay (s)	15.6	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.3	-

HCM 2010 Signalized Intersection Summary  
 20: Lois St/70th St & University Ave

Baseline 2022  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	360	30	20	480	650	30	160	20	300	60	200
Future Volume (veh/h)	190	360	30	20	480	650	30	160	20	300	60	200
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	202	383	6	21	511	138	32	170	15	365	0	43
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	1600	711	33	1332	596	218	208	18	482	0	215
Arrive On Green	0.09	0.45	0.45	0.02	0.38	0.38	0.12	0.12	0.12	0.14	0.00	0.14
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1688	149	3548	0	1583
Grp Volume(v), veh/h	202	383	6	21	511	138	32	0	185	365	0	43
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1836	1774	0	1583
Q Serve(g_s), s	8.0	5.7	0.2	1.0	8.9	5.1	1.4	0.0	8.4	8.4	0.0	2.1
Cycle Q Clear(g_c), s	8.0	5.7	0.2	1.0	8.9	5.1	1.4	0.0	8.4	8.4	0.0	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	167	1600	711	33	1332	596	218	0	226	482	0	215
V/C Ratio(X)	1.21	0.24	0.01	0.64	0.38	0.23	0.15	0.00	0.82	0.76	0.00	0.20
Avail Cap(c_a), veh/h	167	1600	711	167	1332	596	250	0	259	918	0	410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.5	14.3	12.8	41.4	19.3	18.1	33.3	0.0	36.3	35.4	0.0	32.6
Incr Delay (d2), s/veh	137.2	0.4	0.0	7.6	0.8	0.9	0.3	0.0	16.5	2.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	2.8	0.1	0.6	4.5	2.4	0.7	0.0	5.3	4.3	0.0	0.9
LnGrp Delay(d),s/veh	175.7	14.7	12.8	49.1	20.2	19.0	33.6	0.0	52.9	37.8	0.0	33.1
LnGrp LOS	F	B	B	D	C	B	C		D	D		C
Approach Vol, veh/h		591			670			217			408	
Approach Delay, s/veh		69.7			20.8			50.0			37.3	
Approach LOS		E			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		17.5	6.6	44.4		16.5	13.0	38.0				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		22.0	8.0	20.0		12.0	8.0	20.0				
Max Q Clear Time (g_c+I1), s		10.4	3.0	7.7		10.4	10.0	10.9				
Green Ext Time (p_c), s		1.1	0.0	6.4		0.2	0.0	5.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			43.1									
HCM 2010 LOS			D									
<b>Notes</b>												

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	20	50	20	0	0	0	0	50	10	30	40	0
Future Vol, veh/h	20	50	20	0	0	0	0	50	10	30	40	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	52	21	0	0	0	0	52	10	31	42	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.4	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	22%	43%
Vol Thru, %	83%	56%	57%
Vol Right, %	17%	22%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	60	90	70
LT Vol	0	20	30
Through Vol	50	50	40
RT Vol	10	20	0
Lane Flow Rate	62	94	73
Geometry Grp	1	1	1
Degree of Util (X)	0.07	0.106	0.086
Departure Headway (Hd)	4.054	4.079	4.232
Convergence, Y/N	Yes	Yes	Yes
Cap	875	870	840
Service Time	2.118	2.146	2.291
HCM Lane V/C Ratio	0.071	0.108	0.087
HCM Control Delay	7.4	7.6	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.4	0.3

Intersection													
Int Delay, s/veh	6.9												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔			↔↔			↔↔	
Traffic Vol, veh/h	30	840	20	10	20	730	30	20	10	20	10	10	50
Future Vol, veh/h	30	840	20	10	20	730	30	20	10	20	10	10	50
Conflicting Peds, #/hr	37	0	29	1	29	0	37	29	0	29	37	0	37
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	866	21	10	21	753	31	21	10	21	10	10	52

Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	821	0	0	885	916	0	0	1844	1849	509	1383	1844	842
Stage 1	-	-	-	-	-	-	-	967	967	-	846	867	-
Stage 2	-	-	-	-	-	-	-	877	882	-	537	977	-
Critical Hdwy	4.13	-	-	6.93	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	3.119	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	806	-	-	301	742	-	-	52	74	510	112	75	363
Stage 1	-	-	-	-	-	-	-	274	332	-	356	369	-
Stage 2	-	-	-	-	-	-	-	342	363	-	496	328	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	778	-	-	479	479	-	-	34	64	478	82	65	338
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	34	64	-	82	65	-
Stage 1	-	-	-	-	-	-	-	245	297	-	316	356	-
Stage 2	-	-	-	-	-	-	-	272	350	-	407	294	-



















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.5	166.8	42.8
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	64	778	-	-	479	-	-	165
HCM Lane V/C Ratio	0.805	0.04	-	-	0.065	-	-	0.437
HCM Control Delay (s)	166.8	9.8	0.4	-	13	-	-	42.8
HCM Lane LOS	F	A	A	-	B	-	-	E
HCM 95th %tile Q(veh)	3.7	0.1	-	-	0.2	-	-	2



HCM 2010 Signalized Intersection Summary  
 3: Winona Ave & University Ave

Baseline 2022  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	880	70	20	700	40	90	50	50	120	70	60
Future Volume (veh/h)	70	880	70	20	700	40	90	50	50	120	70	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	0.98		0.95	0.97		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.89	1.00	1.00	0.89
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	73	917	63	21	729	38	94	52	35	125	73	46
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	2072	142	31	1002	52	176	91	51	183	94	52
Arrive On Green	0.05	0.62	0.62	0.02	0.58	0.58	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	3345	230	1774	1716	89	543	401	226	578	414	230
Grp Volume(v), veh/h	73	485	495	21	0	767	181	0	0	244	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1806	1774	0	1805	1170	0	0	1222	0	0
Q Serve(g_s), s	4.2	14.9	14.9	1.2	0.0	32.0	0.0	0.0	0.0	5.5	0.0	0.0
Cycle Q Clear(g_c), s	4.2	14.9	14.9	1.2	0.0	32.0	14.7	0.0	0.0	20.2	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.05	0.52		0.19	0.51		0.19
Lane Grp Cap(c), veh/h	94	1096	1118	31	0	1054	318	0	0	329	0	0
V/C Ratio(X)	0.78	0.44	0.44	0.68	0.00	0.73	0.57	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	172	1096	1118	172	0	1054	409	0	0	421	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.7	10.4	10.4	50.8	0.0	15.6	36.5	0.0	0.0	38.9	0.0	0.0
Incr Delay (d2), s/veh	5.2	1.3	1.3	9.2	0.0	4.4	0.6	0.0	0.0	3.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	7.7	7.8	0.7	0.0	17.1	4.8	0.0	0.0	7.1	0.0	0.0
LnGrp Delay(d),s/veh	53.8	11.7	11.6	60.0	0.0	20.0	37.1	0.0	0.0	42.3	0.0	0.0
LnGrp LOS	D	B	B	E		C	D			D		
Approach Vol, veh/h		1053			788			181			244	
Approach Delay, s/veh		14.6			21.1			37.1			42.3	
Approach LOS		B			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	69.3		28.5	9.9	65.7		28.5				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	10.1	48.6		31.1	10.1	48.6		31.1				
Max Q Clear Time (g_c+I1), s	3.2	16.9		22.2	6.2	34.0		16.7				
Green Ext Time (p_c), s	0.0	16.4		1.3	0.0	10.0		1.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				21.6								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↑	↑				↑			↑
Traffic Vol, veh/h	0	850	70	60	740	30	0	0	20	0	0	10
Future Vol, veh/h	0	850	70	60	740	30	0	0	20	0	0	10
Conflicting Peds, #/hr	0	0	137	59	0	30	0	0	59	0	0	108
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	876	72	62	763	31	0	0	21	0	0	10





















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1085	0	0	-	-	670	-	-	916
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.13	-	-	-	-	6.93	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	641	-	-	0	0	400	0	0	329
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	605	-	-	-	-	328	-	-	287
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.8			16.7			18		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	328	-	-	605	-	-	287
HCM Lane V/C Ratio	0.063	-	-	0.102	-	-	0.036
HCM Control Delay (s)	16.7	-	-	11.6	-	-	18
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	-	0.1

HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Baseline 2022  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	870	30	60	750	110	30	50	90	110	50	50
Future Volume (veh/h)	40	870	30	60	750	110	30	50	90	110	50	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	0.97		0.93	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	43	935	28	65	806	98	32	54	26	118	54	13
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	1976	59	84	1834	223	102	153	371	241	100	371
Arrive On Green	0.03	0.56	0.56	0.05	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3501	105	1774	3159	384	218	607	1474	726	397	1472
Grp Volume(v), veh/h	43	473	490	65	452	452	86	0	26	172	0	13
Grp Sat Flow(s),veh/h/ln	1774	1770	1836	1774	1770	1773	825	0	1474	1123	0	1472
Q Serve(g_s), s	2.5	16.5	16.5	3.8	14.9	14.9	1.2	0.0	1.4	0.0	0.0	0.7
Cycle Q Clear(g_c), s	2.5	16.5	16.5	3.8	14.9	14.9	17.8	0.0	1.4	16.6	0.0	0.7
Prop In Lane	1.00		0.06	1.00		0.22	0.37		1.00	0.69		1.00
Lane Grp Cap(c), veh/h	55	999	1036	84	1028	1030	255	0	371	341	0	371
V/C Ratio(X)	0.78	0.47	0.47	0.78	0.44	0.44	0.34	0.00	0.07	0.50	0.00	0.04
Avail Cap(c_a), veh/h	172	999	1036	172	1028	1030	392	0	497	464	0	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.1	13.5	13.5	49.0	12.3	12.3	32.5	0.0	29.6	34.9	0.0	29.4
Incr Delay (d2), s/veh	8.8	1.6	1.5	5.7	1.4	1.4	0.3	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	8.5	8.8	2.0	7.7	7.7	2.3	0.0	0.6	4.5	0.0	0.3
LnGrp Delay(d),s/veh	58.9	15.1	15.0	54.7	13.6	13.6	32.8	0.0	29.7	35.4	0.0	29.4
LnGrp LOS	E	B	B	D	B	B	C		C	D		C
Approach Vol, veh/h		1006			969			112			185	
Approach Delay, s/veh		16.9			16.4			32.1			34.9	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	63.6		31.1	7.6	65.3		31.1				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	10.1	44.6		35.1	10.1	44.6		35.1				
Max Q Clear Time (g_c+I1), s	5.8	18.5		18.6	4.5	16.9		19.8				
Green Ext Time (p_c), s	0.0	21.0		1.0	0.0	22.0		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.9									
HCM 2010 LOS			B									

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕			↕	
Traffic Vol, veh/h	20	920	20	100	940	10	20	0	40	10	0	20
Future Vol, veh/h	20	920	20	100	940	10	20	0	40	10	0	20
Conflicting Peds, #/hr	16	0	16	18	0	18	16	0	18	18	0	16
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	80	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	989	22	108	1011	11	22	0	43	11	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1040	0	0	1029	0	0	1797	2316	541	1805	2321	545
Stage 1	-	-	-	-	-	-	1061	1061	-	1249	1249	-
Stage 2	-	-	-	-	-	-	736	1255	-	556	1072	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	664	-	-	671	-	-	50	37	485	50	37	482
Stage 1	-	-	-	-	-	-	239	299	-	183	243	-
Stage 2	-	-	-	-	-	-	377	241	-	483	295	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	654	-	-	659	-	-	39	29	469	37	29	467
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	29	-	37	29	-
Stage 1	-	-	-	-	-	-	227	284	-	174	200	-
Stage 2	-	-	-	-	-	-	296	198	-	417	280	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			1.1			90.9			60.4		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	100	654	-	-	659	-	-	96
HCM Lane V/C Ratio	0.645	0.033	-	-	0.163	-	-	0.336
HCM Control Delay (s)	90.9	10.7	-	-	11.5	-	-	60.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	3.2	0.1	-	-	0.6	-	-	1.3

# HCM Signalized Intersection Capacity Analysis

## 7: 54th St & University Ave

Baseline 2022  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	590	260	120	650	270	300	430	40	520	780	130
Future Volume (vph)	120	590	260	120	650	270	300	430	40	520	780	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3463	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3463	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	608	268	124	670	278	309	443	41	536	804	134
RTOR Reduction (vph)	0	0	92	0	0	139	0	0	28	0	7	0
Lane Group Flow (vph)	124	608	176	124	670	139	309	443	13	536	931	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	15.6	35.9	35.9	15.6	35.5	35.5	30.7	47.6	47.6	30.7	46.8	
Effective Green, g (s)	15.6	35.9	35.9	15.6	35.5	35.5	30.7	47.6	47.6	30.7	46.8	
Actuated g/C Ratio	0.10	0.24	0.24	0.10	0.24	0.24	0.21	0.32	0.32	0.21	0.31	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.3	5.3	4.4	5.3	5.3	4.4	6.1	
Vehicle Extension (s)	2.0	3.8	3.8	2.0	3.3	3.3	2.0	4.0	4.0	2.0	3.2	
Lane Grp Cap (vph)	185	853	381	185	844	377	365	1132	506	708	1089	
v/s Ratio Prot	c0.07	0.17		0.07	c0.19		c0.17	0.13		0.16	c0.27	
v/s Ratio Perm			0.11			0.09			0.01			
v/c Ratio	0.67	0.71	0.46	0.67	0.79	0.37	0.85	0.39	0.03	0.76	0.86	
Uniform Delay, d1	64.1	51.7	48.2	64.1	53.2	47.3	56.8	39.3	34.7	55.5	47.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	3.0	1.1	7.3	5.3	0.7	15.8	0.3	0.0	4.1	6.8	
Delay (s)	71.4	54.7	49.4	71.4	58.5	48.0	72.6	39.6	34.7	59.7	54.6	
Level of Service	E	D	D	E	E	D	E	D	C	E	D	
Approach Delay (s)		55.4			57.3			52.2			56.4	
Approach LOS		E			E			D			E	

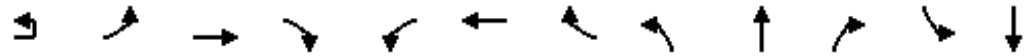
### Intersection Summary

HCM 2000 Control Delay	55.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	148.8	Sum of lost time (s)	20.2
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: 58th St & University Ave

Baseline 2022  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↘	↗↗↗	↗	↘	↗↗	↗		↕			↕	
Traffic Volume (vph)	20	90	1040	270	90	780	60	170	20	90	60	40	
Future Volume (vph)	20	90	1040	270	90	780	60	170	20	90	60	40	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95	1.00		1.00			1.00	
Frbp, ped/bikes		1.00	1.00	0.96	1.00	1.00	0.96		0.99			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.96			0.95	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.98	
Satd. Flow (prot)		1770	5085	1516	1770	3539	1518		1714			1721	
Flt Permitted		0.33	1.00	1.00	0.95	1.00	1.00		0.68			0.80	
Satd. Flow (perm)		616	5085	1516	1770	3539	1518		1207			1404	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	21	94	1083	281	94	812	62	177	21	94	62	42	
RTOR Reduction (vph)	0	0	0	51	0	0	32	0	19	0	0	23	
Lane Group Flow (vph)	0	115	1083	230	94	813	31	0	273	0	0	145	
Confl. Peds. (#/hr)				5			6	10		2	2		
Confl. Bikes (#/hr)				8			3			2			
Turn Type	custom	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		5	2		1	6			8			4	
Permitted Phases	5			2			6	8			4		
Actuated Green, G (s)		12.1	54.5	54.5	8.3	50.7	50.7		26.6			26.6	
Effective Green, g (s)		12.1	54.5	54.5	8.3	50.7	50.7		26.6			26.6	
Actuated g/C Ratio		0.12	0.52	0.52	0.08	0.49	0.49		0.26			0.26	
Clearance Time (s)		4.4	5.3	5.3	4.4	5.3	5.3		4.9			4.9	
Vehicle Extension (s)		2.0	5.5	5.5	2.0	3.3	3.3		2.0			2.0	
Lane Grp Cap (vph)		71	2664	794	141	1725	740		308			359	
v/s Ratio Prot			c0.21		0.05	c0.23							
v/s Ratio Perm		c0.19		0.15			0.02		c0.23			0.10	
v/c Ratio		1.62	0.41	0.29	0.67	0.47	0.04		0.89			0.40	
Uniform Delay, d1		46.0	15.0	13.9	46.5	17.7	13.9		37.3			32.1	
Progression Factor		1.00	1.00	1.00	1.09	0.80	0.70		1.00			1.00	
Incremental Delay, d2		334.2	0.5	0.9	8.6	0.9	0.1		24.4			0.3	
Delay (s)		380.1	15.4	14.8	59.4	15.1	9.9		61.7			32.4	
Level of Service		F	B	B	E	B	A		E			C	
Approach Delay (s)			43.7			19.1			61.7			32.4	
Approach LOS			D			B			E			C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			36.6									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			104.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			62.8%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

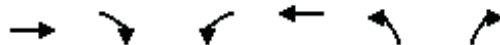


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	60
Future Volume (vph)	60
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	62
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Baseline 2022  
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	980	150	180	680	210	70
Future Volume (vph)	980	150	180	680	210	70
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.93	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1470	1770	3539	1770	1551
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1470	1770	3539	1770	1551
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1065	163	196	739	228	76
RTOR Reduction (vph)	0	48	0	0	0	9
Lane Group Flow (vph)	1065	115	196	739	228	67
Confl. Peds. (#/hr)		19				25
Confl. Bikes (#/hr)		1				2
Turn Type	NA	Perm	Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2				8
Actuated Green, G (s)	54.9	54.9	14.7	74.0	19.8	34.5
Effective Green, g (s)	54.9	54.9	14.7	74.0	19.8	34.5
Actuated g/C Ratio	0.53	0.53	0.14	0.71	0.19	0.33
Clearance Time (s)	5.3	5.3	4.4	5.3	4.9	4.4
Vehicle Extension (s)	3.3	3.3	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	2684	775	250	2518	336	514
v/s Ratio Prot	c0.21		c0.11	0.21	c0.13	0.02
v/s Ratio Perm		0.08				0.02
v/c Ratio	0.40	0.15	0.78	0.29	0.68	0.13
Uniform Delay, d1	14.7	12.6	43.1	5.5	39.1	24.3
Progression Factor	0.35	0.05	1.06	0.54	1.00	1.00
Incremental Delay, d2	0.4	0.4	13.4	0.3	4.2	0.0
Delay (s)	5.6	1.0	59.3	3.3	43.4	24.3
Level of Service	A	A	E	A	D	C
Approach Delay (s)	5.0			15.0	38.6	
Approach LOS	A			B	D	

### Intersection Summary

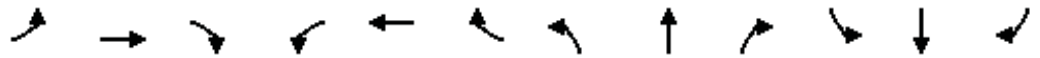
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

Baseline 2022  
PM Peak Hour

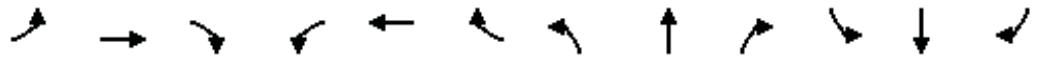


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	990	60	100	750	0	50	10	70	20	10	10
Future Volume (vph)	20	990	60	100	750	0	50	10	70	20	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	5.3	4.4	5.3			4.9	4.9		4.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00			1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1770	5085	1499	1770	3539			1774	1562		1745	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.79	1.00		0.83	
Satd. Flow (perm)	1770	5085	1499	1770	3539			1451	1562		1490	
Peak-hour factor, PHF	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)	22	1076	65	109	815	0	54	11	76	22	11	11
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	67	0	10	0
Lane Group Flow (vph)	22	1076	42	109	815	0	0	65	9	0	34	0
Confl. Peds. (#/hr)			15				12		2	2		12
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	2.8	67.4	67.4	9.6	74.2			12.4	12.4		12.4	
Effective Green, g (s)	2.8	67.4	67.4	9.6	74.2			12.4	12.4		12.4	
Actuated g/C Ratio	0.03	0.65	0.65	0.09	0.71			0.12	0.12		0.12	
Clearance Time (s)	4.4	5.3	5.3	4.4	5.3			4.9	4.9		4.9	
Vehicle Extension (s)	2.0	4.8	4.8	2.0	4.4			2.0	2.0		2.0	
Lane Grp Cap (vph)	47	3295	971	163	2524			173	186		177	
v/s Ratio Prot	0.01	0.21		c0.06	c0.23							
v/s Ratio Perm			0.03					c0.04	0.01		0.02	
v/c Ratio	0.47	0.33	0.04	0.67	0.32			0.38	0.05		0.19	
Uniform Delay, d1	49.9	8.2	6.6	45.7	5.5			42.2	40.6		41.3	
Progression Factor	0.64	2.10	4.44	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.5	0.3	0.1	7.8	0.3			0.5	0.0		0.2	
Delay (s)	34.4	17.4	29.5	53.5	5.9			42.7	40.6		41.5	
Level of Service	C	B	C	D	A			D	D		D	
Approach Delay (s)		18.4			11.5			41.6			41.5	
Approach LOS		B			B			D			D	

Intersection Summary		
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.38	B
Actuated Cycle Length (s)	104.0	Sum of lost time (s)
Intersection Capacity Utilization	52.7%	14.6
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		A

HCM Signalized Intersection Capacity Analysis  
 11: College Ave & University Ave

Baseline 2022  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	700	240	200	520	120	180	530	200	190	700	230
Future Volume (vph)	240	700	240	200	520	120	180	530	200	190	700	230
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1528	1770	3539	1583	1770	3539	1557
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1528	1770	3539	1583	1770	3539	1557
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	729	250	208	542	125	188	552	208	198	729	240
RTOR Reduction (vph)	0	0	187	0	0	99	0	0	146	0	0	114
Lane Group Flow (vph)	250	729	64	208	542	26	188	552	62	198	729	126
Confl. Peds. (#/hr)	3											
Confl. Bikes (#/hr)	7											
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	16.4	25.4	25.4	11.6	20.8	20.8	10.6	29.9	29.9	14.0	32.0	32.0
Effective Green, g (s)	16.4	25.4	25.4	11.6	20.8	20.8	10.6	29.9	29.9	14.0	32.0	32.0
Actuated g/C Ratio	0.16	0.25	0.25	0.12	0.21	0.21	0.11	0.30	0.30	0.14	0.32	0.32
Clearance Time (s)	4.4	5.1	5.1	4.4	4.9	4.9	4.4	5.2	5.2	4.4	6.5	6.5
Vehicle Extension (s)	2.0	3.7	3.7	2.0	3.7	3.7	2.0	3.2	3.2	2.0	3.6	3.6
Lane Grp Cap (vph)	290	898	402	205	736	317	187	1058	473	247	1132	498
v/s Ratio Prot	c0.14	c0.21		c0.12	0.15		c0.11	0.16		0.11	c0.21	
v/s Ratio Perm			0.04			0.02			0.04			0.08
v/c Ratio	0.86	0.81	0.16	1.01	0.74	0.08	1.01	0.52	0.13	0.80	0.64	0.25
Uniform Delay, d1	40.7	35.1	29.0	44.2	37.0	31.9	44.7	29.1	25.6	41.7	29.1	25.2
Progression Factor	1.00	1.00	1.00	0.99	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.5	5.8	0.2	66.3	4.0	0.1	67.2	1.8	0.6	16.0	2.8	1.2
Delay (s)	62.2	40.9	29.2	109.9	40.4	32.0	111.9	31.0	26.2	57.6	31.9	26.4
Level of Service	E	D	C	F	D	C	F	C	C	E	C	C
Approach Delay (s)	42.9				55.7		46.0				35.2	
Approach LOS	D				E		D				D	

Intersection Summary		
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.81	D
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	76.8%	20.4
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		D

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↖		↕			↕	
Traffic Vol, veh/h	30	1080	20	20	720	20	30	0	30	10	0	30
Future Vol, veh/h	30	1080	20	20	720	20	30	0	30	10	0	30
Conflicting Peds, #/hr	7	0	9	16	0	14	9	0	16	14	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	125	-	80	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	1102	20	20	735	20	31	0	31	10	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	749	0	0	1138	0	0	1606	1979	593	1418	1990	390
Stage 1	-	-	-	-	-	-	1189	1189	-	790	790	-
Stage 2	-	-	-	-	-	-	417	790	-	628	1200	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	856	-	-	610	-	-	70	61	449	97	60	609
Stage 1	-	-	-	-	-	-	199	260	-	350	400	-
Stage 2	-	-	-	-	-	-	584	400	-	437	256	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	849	-	-	601	-	-	61	55	435	83	54	596
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	55	-	83	54	-
Stage 1	-	-	-	-	-	-	189	247	-	333	382	-
Stage 2	-	-	-	-	-	-	531	382	-	385	243	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			76.3			23.6		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	107	849	-	-	601	-	-	234
HCM Lane V/C Ratio	0.572	0.036	-	-	0.034	-	-	0.174
HCM Control Delay (s)	76.3	9.4	-	-	11.2	-	-	23.6
HCM Lane LOS	F	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	2.7	0.1	-	-	0.1	-	-	0.6

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	1020	40	20	600	20	30	0	30	10	0	20
Future Vol, veh/h	30	1020	40	20	600	20	30	0	30	10	0	20
Conflicting Peds, #/hr	5	0	6	7	0	6	6	0	7	6	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	100	90	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	1052	41	21	619	21	31	0	31	10	0	21

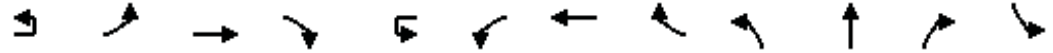
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	625	0	0	1059	0	0	1477	1786	540	1261	1786	321
Stage 1	-	-	-	-	-	-	1120	1120	-	666	666	-
Stage 2	-	-	-	-	-	-	357	666	-	595	1120	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	952	-	-	653	-	-	88	81	486	127	81	675
Stage 1	-	-	-	-	-	-	220	280	-	415	456	-
Stage 2	-	-	-	-	-	-	633	456	-	458	280	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	947	-	-	649	-	-	80	75	480	112	75	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	75	-	112	75	-
Stage 1	-	-	-	-	-	-	211	269	-	399	439	-
Stage 2	-	-	-	-	-	-	590	439	-	412	269	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			51.3			21.3		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	137	947	-	-	649	-	-	252
HCM Lane V/C Ratio	0.452	0.033	-	-	0.032	-	-	0.123
HCM Control Delay (s)	51.3	8.9	-	-	10.7	-	-	21.3
HCM Lane LOS	F	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	2	0.1	-	-	0.1	-	-	0.4

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Baseline 2022  
 PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↖	↗			↖	↗			↕		
Traffic Volume (vph)	10	60	840	80	10	20	620	30	60	50	40	60
Future Volume (vph)	10	60	840	80	10	20	620	30	60	50	40	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9				4.4	4.9			4.9	
Lane Util. Factor		1.00	0.95				1.00	0.95			1.00	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.99				1.00	0.99			0.96	
Flt Protected		0.95	1.00				0.95	1.00			0.98	
Satd. Flow (prot)		1770	3485				1770	3511			1754	
Flt Permitted		0.95	1.00				0.95	1.00			0.72	
Satd. Flow (perm)		1770	3485				1770	3511			1281	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	62	866	82	10	21	639	31	62	52	41	62
RTOR Reduction (vph)	0	0	4	0	0	0	2	0	0	16	0	0
Lane Group Flow (vph)	0	72	944	0	0	31	668	0	0	139	0	0
Confl. Peds. (#/hr)				7				3	1			
Confl. Bikes (#/hr)				1								1
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	5	5	2		1	1	6			8		
Permitted Phases									8			4
Actuated Green, G (s)		7.1	64.6				4.4	61.9			16.8	
Effective Green, g (s)		7.1	64.6				4.4	61.9			16.8	
Actuated g/C Ratio		0.07	0.65				0.04	0.62			0.17	
Clearance Time (s)		4.4	4.9				4.4	4.9			4.9	
Vehicle Extension (s)		2.0	3.6				2.0	3.6			2.0	
Lane Grp Cap (vph)		125	2251				77	2173			215	
v/s Ratio Prot		c0.04	c0.27				0.02	0.19				
v/s Ratio Perm											0.11	
v/c Ratio		0.58	0.42				0.40	0.31			0.65	
Uniform Delay, d1		45.0	8.6				46.5	9.0			38.8	
Progression Factor		1.31	0.37				1.14	0.73			1.00	
Incremental Delay, d2		3.2	0.5				1.2	0.4			4.9	
Delay (s)		61.9	3.6				54.1	6.9			43.8	
Level of Service		E	A				D	A			D	
Approach Delay (s)			7.7				9.0				43.8	
Approach LOS			A				A				D	

Intersection Summary		
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.49	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	53.3%	14.2
Analysis Period (min)	15	ICU Level of Service
		A

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

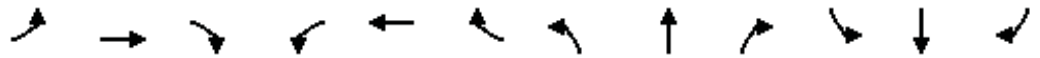
Baseline 2022  
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations	↔	
Traffic Volume (vph)	60	50
Future Volume (vph)	60	50
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.98	
Satd. Flow (prot)	1751	
Flt Permitted	0.78	
Satd. Flow (perm)	1383	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	62	52
RTOR Reduction (vph)	19	0
Lane Group Flow (vph)	157	0
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	16.8	
Effective Green, g (s)	16.8	
Actuated g/C Ratio	0.17	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	232	
v/s Ratio Prot		
v/s Ratio Perm	c0.11	
v/c Ratio	0.68	
Uniform Delay, d1	39.0	
Progression Factor	1.00	
Incremental Delay, d2	6.0	
Delay (s)	45.1	
Level of Service	D	
Approach Delay (s)	45.1	
Approach LOS	D	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
15: Aragon Dr & University Ave

Baseline 2022  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	880	90	50	570	10	60	50	80	20	50	0
Future Volume (vph)	10	880	90	50	570	10	60	50	80	20	50	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1515	1770	3539	1473	1767	1675			1835	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00			0.86	
Satd. Flow (perm)	1770	3539	1515	1770	3539	1473	1369	1675			1592	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	917	94	52	594	10	62	52	83	21	52	0
RTOR Reduction (vph)	0	0	23	0	0	3	0	73	0	0	0	0
Lane Group Flow (vph)	10	917	71	52	594	7	63	62	0	0	73	0
Confl. Peds. (#/hr)			10			8	2		4	4		2
Confl. Bikes (#/hr)			2			1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases			2			6	4			8		
Actuated Green, G (s)	1.3	66.8	66.8	6.5	71.7	71.7	12.5	12.5			12.5	
Effective Green, g (s)	1.3	66.8	66.8	6.5	71.7	71.7	12.5	12.5			12.5	
Actuated g/C Ratio	0.01	0.67	0.67	0.06	0.72	0.72	0.12	0.12			0.12	
Clearance Time (s)	4.4	4.9	4.9	4.4	5.2	5.2	4.9	4.9			4.9	
Vehicle Extension (s)	2.0	5.1	5.1	2.0	3.9	3.9	2.0	2.0			2.0	
Lane Grp Cap (vph)	23	2364	1012	115	2537	1056	171	209			199	
v/s Ratio Prot	0.01	c0.26		c0.03	0.17			0.04				
v/s Ratio Perm			0.05			0.00	c0.05				0.05	
v/c Ratio	0.43	0.39	0.07	0.45	0.23	0.01	0.37	0.30			0.37	
Uniform Delay, d1	49.0	7.4	5.8	45.0	4.8	4.0	40.1	39.8			40.1	
Progression Factor	0.93	0.77	0.85	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	4.5	0.5	0.1	1.0	0.2	0.0	0.5	0.3			0.4	
Delay (s)	50.2	6.2	5.0	46.1	5.0	4.0	40.6	40.1			40.5	
Level of Service	D	A	A	D	A	A	D	D			D	
Approach Delay (s)		6.5			8.3			40.2			40.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	70	840	670	30	40	30
Future Vol, veh/h	70	840	670	30	40	30
Conflicting Peds, #/hr	11	0	0	11	11	11
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	866	691	31	41	31

**Major/Minor**

	Major1	Major2	Minor2		
Conflicting Flow All	702	0	0	1290	367
Stage 1	-	-	-	702	-
Stage 2	-	-	-	588	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	891	-	-	155	630
Stage 1	-	-	-	453	-
Stage 2	-	-	-	518	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	882	-	-	139	617
Mov Cap-2 Maneuver	-	-	-	273	-
Stage 1	-	-	-	448	-
Stage 2	-	-	-	471	-

**Approach**

	EB	WB	SB
HCM Control Delay, s	0.7	0	17.5
HCM LOS			C

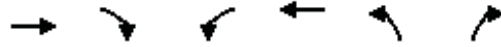
**Minor Lane/Major Mvmt**

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	882	-	-	-	359
HCM Lane V/C Ratio	0.082	-	-	-	0.201
HCM Control Delay (s)	9.4	-	-	-	17.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7



HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Baseline 2022  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	740	80	170	650	60	70
Future Volume (vph)	740	80	170	650	60	70
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1541	1770	3539	1759	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1541	1770	3539	1759	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	755	82	173	663	61	71
RTOR Reduction (vph)	0	41	0	0	0	61
Lane Group Flow (vph)	755	41	173	663	61	10
Confl. Peds. (#/hr)		4			9	
Confl. Bikes (#/hr)		2				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	22.7	22.7	11.1	38.1	7.6	7.6
Effective Green, g (s)	22.7	22.7	11.1	38.1	7.6	7.6
Actuated g/C Ratio	0.41	0.41	0.20	0.68	0.14	0.14
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	2.0	2.0
Lane Grp Cap (vph)	1442	628	352	2420	240	215
v/s Ratio Prot	c0.21		c0.10	0.19		
v/s Ratio Perm		0.03			c0.03	0.01
v/c Ratio	0.52	0.06	0.49	0.27	0.25	0.05
Uniform Delay, d1	12.4	10.0	19.8	3.4	21.5	20.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.4	0.1	0.2	0.0
Delay (s)	13.1	10.1	20.2	3.6	21.7	20.9
Level of Service	B	B	C	A	C	C
Approach Delay (s)	12.8			7.0	21.3	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	14.3
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	910	750	30	10	10
Future Vol, veh/h	40	910	750	30	10	10
Conflicting Peds, #/hr	13	0	0	13	13	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	55	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	968	798	32	11	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	811	0	-	0	1393 425
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	582 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	811	-	-	-	133 578
Stage 1	-	-	-	-	397 -
Stage 2	-	-	-	-	522 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	801	-	-	-	123 564
Mov Cap-2 Maneuver	-	-	-	-	254 -
Stage 1	-	-	-	-	392 -
Stage 2	-	-	-	-	488 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	801	-	-	-	350
HCM Lane V/C Ratio	0.053	-	-	-	0.061
HCM Control Delay (s)	9.7	-	-	-	16
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	860	60	120	730	40	40
Future Vol, veh/h	860	60	120	730	40	40
Conflicting Peds, #/hr	0	9	7	0	9	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	878	61	122	745	41	41

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	887	0	1513
Stage 1	-	-	-	-	887
Stage 2	-	-	-	-	626
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	759	-	111
Stage 1	-	-	-	-	363
Stage 2	-	-	-	-	495
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	754	-	91
Mov Cap-2 Maneuver	-	-	-	-	216
Stage 1	-	-	-	-	360
Stage 2	-	-	-	-	411

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	20.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	-	-	754	-
HCM Lane V/C Ratio	0.264	-	-	0.162	-
HCM Control Delay (s)	20.8	-	-	10.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1	-	-	0.6	-

HCM 2010 Signalized Intersection Summary  
20: Lois St/70th St & University Ave

Baseline 2022  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	580	50	30	480	490	20	110	20	550	100	280
Future Volume (veh/h)	270	580	50	30	480	490	20	110	20	550	100	280
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	278	598	16	31	495	226	21	113	17	641	0	74
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	1348	599	43	853	382	175	156	24	803	0	358
Arrive On Green	0.16	0.38	0.38	0.02	0.24	0.24	0.10	0.10	0.10	0.23	0.00	0.23
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1583	238	3548	0	1581
Grp Volume(v), veh/h	278	598	16	31	495	226	21	0	130	641	0	74
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1821	1774	0	1581
Q Serve(g_s), s	13.3	10.7	0.5	1.5	10.5	10.8	0.9	0.0	5.9	14.6	0.0	3.2
Cycle Q Clear(g_c), s	13.3	10.7	0.5	1.5	10.5	10.8	0.9	0.0	5.9	14.6	0.0	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	291	1348	599	43	853	382	175	0	180	803	0	358
V/C Ratio(X)	0.95	0.44	0.03	0.72	0.58	0.59	0.12	0.00	0.72	0.80	0.00	0.21
Avail Cap(c_a), veh/h	291	1348	599	291	1245	557	749	0	768	1497	0	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	19.7	16.5	41.3	28.6	28.7	35.1	0.0	37.3	31.2	0.0	26.8
Incr Delay (d2), s/veh	40.2	0.3	0.0	7.9	0.9	2.1	0.3	0.0	5.4	1.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	5.3	0.2	0.8	5.3	4.9	0.5	0.0	3.2	7.3	0.0	1.4
LnGrp Delay(d),s/veh	75.6	20.0	16.5	49.3	29.4	30.7	35.4	0.0	42.7	33.0	0.0	27.1
LnGrp LOS	E	C	B	D	C	C	D		D	C		C
Approach Vol, veh/h		892			752			151			715	
Approach Delay, s/veh		37.3			30.7			41.7			32.4	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		25.3	7.1	38.5		14.4	19.0	26.6				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		36.0	14.0	30.0		36.0	14.0	30.0				
Max Q Clear Time (g_c+I1), s		16.6	3.5	12.7		7.9	15.3	12.8				
Green Ext Time (p_c), s		2.6	0.0	9.9		0.8	0.0	7.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			34.2									
HCM 2010 LOS			C									
<b>Notes</b>												

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	20	30	10	0	0	0	0	70	20	20	50	0
Future Vol, veh/h	20	30	10	0	0	0	0	70	20	20	50	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	36	12	0	0	0	0	83	24	24	60	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.7	7.6	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	33%	29%
Vol Thru, %	78%	50%	71%
Vol Right, %	22%	17%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	60	70
LT Vol	0	20	20
Through Vol	70	30	50
RT Vol	20	10	0
Lane Flow Rate	107	71	83
Geometry Grp	1	1	1
Degree of Util (X)	0.119	0.084	0.097
Departure Headway (Hd)	3.988	4.226	4.197
Convergence, Y/N	Yes	Yes	Yes
Cap	890	836	847
Service Time	2.05	2.315	2.26
HCM Lane V/C Ratio	0.12	0.085	0.098
HCM Control Delay	7.6	7.7	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.3	0.3

Intersection													
Int Delay, s/veh	3.3												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖	↑	↗		↕				↗
Traffic Vol, veh/h	0	560	20	10	10	870	60	20	10	20	0	0	70
Future Vol, veh/h	0	560	20	10	10	870	60	20	10	20	0	0	70
Conflicting Peds, #/hr	22	0	20	2	18	0	20	20	0	18	20	0	22
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	-	50	-	50	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	615	22	11	11	956	66	22	11	22	0	0	77

Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	615	635	0	0	1635	1655	653	-	-	998
Stage 1	-	-	-	-	-	-	-	635	635	-	-	-	-
Stage 2	-	-	-	-	-	-	-	1000	1020	-	-	-	-
Critical Hdwy	-	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	948	-	-	81	98	467	0	0	296
Stage 1	0	-	-	-	-	-	-	467	472	-	0	0	-
Stage 2	0	-	-	-	-	-	-	293	314	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	~	~	-	-	57	94	450	-	-	284
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	57	94	-	-	-	-
Stage 1	-	-	-	-	-	-	-	467	463	-	-	-	-
Stage 2	-	-	-	-	-	-	-	209	308	-	-	-	-





















Approach	EB	WB	NB	SB
HCM Control Delay, s	0		78.1	22.3
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	100	-	-	~	-	-	284
HCM Lane V/C Ratio	0.549	-	-	~	-	-	0.271
HCM Control Delay (s)	78.1	-	-	-	-	-	22.3
HCM Lane LOS	F	-	-	-	-	-	C
HCM 95th %tile Q(veh)	2.5	-	-	~	-	-	1.1

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

HCM 2010 Signalized Intersection Summary  
3: Winona Ave & University Ave

Baseline Plus Project  
AM Peak Hour

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	40	50	510	50	20	610	40	110	60	30	60	50
Future Volume (veh/h)	40	50	510	50	20	610	40	110	60	30	60	50
Number		5	2	12	1	6	16	3	8	18	7	4
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.92	1.00		0.97	0.97		0.95	0.97	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.89	1.00	1.00
Adj Sat Flow, veh/h/ln		1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863
Adj Flow Rate, veh/h		54	554	40	22	663	39	120	65	24	65	54
Adj No. of Lanes		1	1	1	1	1	1	0	1	0	0	1
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
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		69	834	655	318	1105	892	200	98	31	152	118
Arrive On Green		0.04	0.45	0.45	0.36	1.00	1.00	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h		1774	1863	1464	1774	1863	1503	647	455	143	454	543
Grp Volume(v), veh/h		54	554	40	22	663	39	209	0	0	160	0
Grp Sat Flow(s),veh/h/ln		1774	1863	1464	1774	1863	1503	1245	0	0	1340	0
Q Serve(g_s), s		2.8	22.0	1.5	0.8	0.0	0.0	5.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s		2.8	22.0	1.5	0.8	0.0	0.0	15.0	0.0	0.0	9.7	0.0
Prop In Lane		1.00		1.00	1.00		1.00	0.57		0.11	0.41	
Lane Grp Cap(c), veh/h		69	834	655	318	1105	892	330	0	0	344	0
V/C Ratio(X)		0.78	0.66	0.06	0.07	0.60	0.04	0.63	0.00	0.00	0.46	0.00
Avail Cap(c_a), veh/h		172	834	655	318	1105	892	441	0	0	460	0
HCM Platoon Ratio		1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		44.8	20.4	14.7	25.0	0.0	0.0	34.6	0.0	0.0	32.5	0.0
Incr Delay (d2), s/veh		6.9	4.2	0.2	0.0	2.4	0.1	0.8	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		1.5	12.2	0.6	0.4	0.7	0.0	5.2	0.0	0.0	3.7	0.0
LnGrp Delay(d),s/veh		51.7	24.5	14.9	25.0	2.4	0.1	35.4	0.0	0.0	32.8	0.0
LnGrp LOS		D	C	B	C	A	A	D			C	
Approach Vol, veh/h			648			724			209			160
Approach Delay, s/veh			26.2			3.0			35.4			32.8
Approach LOS			C			A			D			C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.7	47.0		25.3	8.1	60.7		25.3				
Change Period (Y+Rc), s	4.9	* 4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	9.1	* 42		28.6	9.1	42.1		28.6				
Max Q Clear Time (g_c+I1), s	2.8	24.0		11.7	4.8	2.0		17.0				
Green Ext Time (p_c), s	2.5	3.7		1.5	0.0	5.7		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									
<b>Notes</b>												

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	80
Future Volume (veh/h)	80
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.95
Parking Bus, Adj	0.89
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	41
Adj No. of Lanes	0
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	74
Arrive On Green	0.22
Sat Flow, veh/h	343
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.26
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	



Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↗	↖			↗			↗
Traffic Vol, veh/h	0	540	30	50	690	20	0	0	40	0	0	20
Future Vol, veh/h	0	540	30	50	690	20	0	0	40	0	0	20
Conflicting Peds, #/hr	0	0	75	42	0	25	0	0	42	0	0	58
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	600	33	56	767	22	0	0	44	0	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	675	0	0	-	-	717	-	-	861
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	916	-	-	0	0	430	0	0	355
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	879	-	-	-	-	383	-	-	327
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.6			15.6			16.8		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	383	-	-	879	-	-	327
HCM Lane V/C Ratio	0.116	-	-	0.063	-	-	0.068
HCM Control Delay (s)	15.6	-	-	9.4	-	-	16.8
HCM Lane LOS	C	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-	-	0.2

HCM 2010 Signalized Intersection Summary  
5: 52nd St & University Ave

Baseline Plus Project  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	540	30	40	660	130	50	60	110	80	40	60
Future Volume (veh/h)	60	540	30	40	660	130	50	60	110	80	40	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	0.94		0.92	0.95		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	66	593	25	44	725	114	55	66	121	88	44	66
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	349	1053	859	56	735	591	165	179	368	269	122	368
Arrive On Green	0.39	1.00	1.00	0.03	0.39	0.39	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	1863	1519	1774	1863	1498	434	709	1458	812	484	1458
Grp Volume(v), veh/h	66	593	25	44	725	114	121	0	121	132	0	66
Grp Sat Flow(s),veh/h/ln	1774	1863	1519	1774	1863	1498	1142	0	1458	1296	0	1458
Q Serve(g_s), s	2.3	0.0	0.0	2.3	36.3	4.7	3.7	0.0	6.4	0.0	0.0	3.3
Cycle Q Clear(g_c), s	2.3	0.0	0.0	2.3	36.3	4.7	12.3	0.0	6.4	8.6	0.0	3.3
Prop In Lane	1.00		1.00	1.00		1.00	0.45		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	349	1053	859	56	735	591	344	0	368	391	0	368
V/C Ratio(X)	0.19	0.56	0.03	0.79	0.99	0.19	0.35	0.00	0.33	0.34	0.00	0.18
Avail Cap(c_a), veh/h	349	1053	859	172	735	591	469	0	490	509	0	490
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	0.0	45.2	28.2	18.6	31.0	0.0	28.6	29.2	0.0	27.5
Incr Delay (d2), s/veh	0.1	2.2	0.1	8.9	30.0	0.7	0.2	0.0	0.2	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.6	0.0	1.3	24.7	2.1	2.8	0.0	2.6	2.9	0.0	1.4
LnGrp Delay(d),s/veh	23.7	2.2	0.1	54.1	58.2	19.4	31.2	0.0	28.8	29.4	0.0	27.6
LnGrp LOS	C	A	A	D	E	B	C		C	C		C
Approach Vol, veh/h		684			883			242			198	
Approach Delay, s/veh		4.2			53.0			30.0			28.8	
Approach LOS		A			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	58.0		28.6	23.4	42.0		28.6				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.9	* 4.9		4.9				
Max Green Setting (Gmax), s	9.1	39.1		31.6	11.1	* 37		31.6				
Max Q Clear Time (g_c+I1), s	4.3	2.0		10.6	4.3	38.3		14.3				
Green Ext Time (p_c), s	0.0	9.7		1.4	1.7	0.0		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			31.2									
HCM 2010 LOS			C									
<b>Notes</b>												

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑		↖	↗				↖			↖
Traffic Vol, veh/h	40	660	20	110	820	50	0	0	60	0	0	10
Future Vol, veh/h	40	660	20	110	820	50	0	0	60	0	0	10
Conflicting Peds, #/hr	18	0	37	41	0	22	37	0	41	22	0	18
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	80	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	710	22	118	882	54	0	0	65	0	0	11

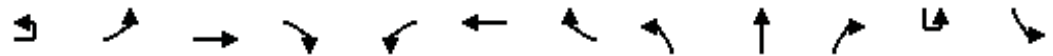
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	957	0	0	772	0	0	-	-	802	-	-	949
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	719	-	-	843	-	-	0	0	384	0	0	316
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	707	-	-	810	-	-	-	-	355	-	-	304
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			1.1			17.4			17.3		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	355	707	-	-	810	-	-	304
HCM Lane V/C Ratio	0.182	0.061	-	-	0.146	-	-	0.035
HCM Control Delay (s)	17.4	10.4	-	-	10.2	-	-	17.3
HCM Lane LOS	C	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.5	-	-	0.1

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Baseline Plus Project  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↖	↗	↘	↙	↗	↘	↖	↗	↘		↖
Traffic Volume (vph)	10	138	334	148	180	490	400	320	800	210	2	276
Future Volume (vph)	10	138	334	148	180	490	400	320	800	210	2	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4	4.4	5.3	4.4	4.4	5.3	4.4		4.4
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.97
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Peak-hour factor, PHF	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96
Adj. Flow (vph)	11	144	348	154	188	510	417	333	833	219	2	288
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	155	348	154	188	510	417	333	833	219	0	290
Confl. Peds. (#/hr)												
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Prot	NA	custom	Prot	Prot
Protected Phases	5	5	2 9	9	1	6 10	10	3	8 12	12	7	7
Permitted Phases												
Actuated Green, G (s)		20.9	63.1	23.1	22.8	64.6	47.2	30.4	54.1	27.8		20.2
Effective Green, g (s)		20.9	58.7	23.1	22.8	60.2	47.2	30.4	49.7	27.8		20.2
Actuated g/C Ratio		0.12	0.33	0.13	0.13	0.34	0.26	0.17	0.28	0.16		0.11
Clearance Time (s)		4.4		4.4	4.4		4.4	4.4		4.4		4.4
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lane Grp Cap (vph)		206	1159	204	225	1188	416	300	981	245		386
v/s Ratio Prot		0.09	0.10	0.10	c0.11	c0.14	c0.26	c0.19	0.24	c0.14		0.08
v/s Ratio Perm												
v/c Ratio		0.75	0.30	0.75	0.84	0.43	1.00	1.11	0.85	0.89		0.75
Uniform Delay, d1		76.6	44.9	75.3	76.4	46.2	66.0	74.4	61.2	74.3		77.1
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		12.9	0.2	13.1	21.8	0.3	44.7	84.8	7.2	30.3		7.2
Delay (s)		89.5	45.1	88.4	98.2	46.4	110.7	159.2	68.4	104.6		84.2
Level of Service		F	D	F	F	D	F	F	E	F		F
Approach Delay (s)			65.7			79.2			96.0			
Approach LOS			E			E			F			
<b>Intersection Summary</b>												
HCM 2000 Control Delay			82.0			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			179.2			Sum of lost time (s)				29.0		
Intersection Capacity Utilization			78.4%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

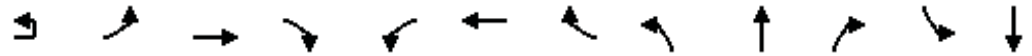
Baseline Plus Project  
AM Peak Hour



Movement	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	352	170
Future Volume (vph)	352	170
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.1	4.4
Lane Util. Factor	0.95	1.00
Frbp, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1583
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	367	177
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	367	177
Confl. Peds. (#/hr)		5
Turn Type	NA	custom
Protected Phases	4 11	11
Permitted Phases		
Actuated Green, G (s)	43.1	25.7
Effective Green, g (s)	38.7	25.7
Actuated g/C Ratio	0.22	0.14
Clearance Time (s)		4.4
Vehicle Extension (s)		2.0
Lane Grp Cap (vph)	764	227
v/s Ratio Prot	0.10	c0.11
v/s Ratio Perm		
v/c Ratio	0.48	0.78
Uniform Delay, d1	61.5	74.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	14.2
Delay (s)	62.0	88.3
Level of Service	E	F
Approach Delay (s)	75.3	
Approach LOS	E	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
8: 58th St & University Ave

Baseline Plus Project  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	60	560	140	40	870	60	230	50	90	40	40
Future Volume (vph)	10	60	560	140	40	870	60	230	50	90	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.3	4.4	4.4	5.3	4.4		4.9			4.9
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.97			0.93
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.99
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583		1735			1697
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.70			0.86
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583		1253			1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	589	147	42	916	63	242	53	95	42	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	14	0	0	43
Lane Group Flow (vph)	0	74	589	147	42	916	63	0	376	0	0	125
Confl. Peds. (#/hr)				5			6	10		2	2	
Confl. Bikes (#/hr)				4			1			1		
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Perm	NA		Perm	NA
Protected Phases	5	5	2 9	9	1	6 10	10		8			4
Permitted Phases								8				4
Actuated Green, G (s)		6.6	41.0	10.6	4.6	39.0	11.2		29.8			29.8
Effective Green, g (s)		6.6	36.6	10.6	4.6	34.6	11.2		29.8			29.8
Actuated g/C Ratio		0.07	0.41	0.12	0.05	0.38	0.12		0.33			0.33
Clearance Time (s)		4.4		4.4	4.4		4.4		4.9			4.9
Vehicle Extension (s)		2.0		2.0	2.0		2.0		2.0			2.0
Lane Grp Cap (vph)		129	1439	186	90	1360	196		414			490
v/s Ratio Prot		c0.04	c0.17	c0.09	0.02	c0.26	0.04					
v/s Ratio Perm									c0.30			0.08
v/c Ratio		0.57	0.41	0.79	0.47	0.67	0.32		0.91			0.25
Uniform Delay, d1		40.3	19.0	38.6	41.5	23.0	35.9		28.8			22.0
Progression Factor		1.00	1.00	1.00	1.15	0.90	1.15		1.00			1.00
Incremental Delay, d2		3.8	0.1	18.8	1.3	1.0	0.3		22.7			0.1
Delay (s)		44.1	19.1	57.5	49.0	21.8	41.6		51.5			22.1
Level of Service		D	B	E	D	C	D		D			C
Approach Delay (s)			28.3			24.1			51.5			22.1
Approach LOS			C			C			D			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			29.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			67.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

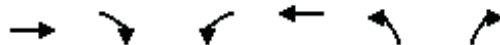


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	80
Future Volume (vph)	80
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	84
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Baseline Plus Project  
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	730	120	80	930	110	20
Future Volume (vph)	730	120	80	930	110	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	4.5	4.4	5.3	4.9	4.4
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3518	1770	1566
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	1770	3518	1770	1566
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	777	128	85	989	117	21
RTOR Reduction (vph)	0	52	0	0	0	16
Lane Group Flow (vph)	777	76	85	989	117	5
Confl. Peds. (#/hr)		9				5
Confl. Bikes (#/hr)		1				1
Bus Blockages (#/hr)	0	0	0	3	0	0
Turn Type	NA	custom	Prot	NA	Prot	pm+ov
Protected Phases	2 9	9	1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	55.0	13.6	7.4	66.8	13.0	20.4
Effective Green, g (s)	50.5	13.6	7.4	66.8	13.0	20.4
Actuated g/C Ratio	0.56	0.15	0.08	0.74	0.14	0.23
Clearance Time (s)		4.5	4.4	5.3	4.9	4.4
Vehicle Extension (s)		3.0	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	1985	239	145	2611	255	354
v/s Ratio Prot	0.22	0.05	c0.05	c0.28	c0.07	0.00
v/s Ratio Perm						0.00
v/c Ratio	0.39	0.32	0.59	0.38	0.46	0.01
Uniform Delay, d1	11.1	34.1	39.8	4.2	35.3	27.0
Progression Factor	0.65	0.71	0.79	1.02	1.00	1.00
Incremental Delay, d2	0.1	0.7	3.7	0.4	0.5	0.0
Delay (s)	7.3	24.9	35.1	4.6	35.8	27.0
Level of Service	A	C	D	A	D	C
Approach Delay (s)	9.8			7.0	34.4	
Approach LOS	A			A	C	

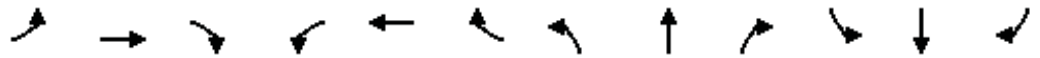
### Intersection Summary

HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
10: 60th St & University Ave

Baseline Plus Project  
AM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	600	40	40	860	10	110	10	70	30	20	20
Future Volume (vph)	20	600	40	40	860	10	110	10	70	30	20	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	4.4	4.4	5.3	4.4		4.9	4.9		4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1772	1563		1744	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.84	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1375	1563		1495	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	625	42	42	896	10	115	10	73	31	21	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	60	0	17	0
Lane Group Flow (vph)	21	625	42	42	896	10	0	125	13	0	56	0
Confl. Peds. (#/hr)			4				8		1	1		8
Turn Type	Prot	NA	custom	Prot	NA	custom	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2 9	9	1	6 10	10		8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.7	54.8	5.2	4.4	56.5	9.8		16.2	16.2		16.2	
Effective Green, g (s)	2.7	50.4	5.2	4.4	52.1	9.8		16.2	16.2		16.2	
Actuated g/C Ratio	0.03	0.56	0.06	0.05	0.58	0.11		0.18	0.18		0.18	
Clearance Time (s)	4.4		4.4	4.4		4.4		4.9	4.9		4.9	
Vehicle Extension (s)	2.0		2.0	2.0		2.0		2.0	2.0		2.0	
Lane Grp Cap (vph)	53	1981	91	86	2048	172		247	281		269	
v/s Ratio Prot	0.01	c0.18	0.03	c0.02	c0.25	0.01						
v/s Ratio Perm								c0.09	0.01		0.04	
v/c Ratio	0.40	0.32	0.46	0.49	0.44	0.06		0.51	0.05		0.21	
Uniform Delay, d1	42.8	10.6	41.0	41.7	10.7	36.0		33.3	30.5		31.4	
Progression Factor	1.02	1.00	0.52	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	1.7	0.0	1.3	1.6	0.1	0.1		0.6	0.0		0.1	
Delay (s)	45.6	10.6	22.7	43.3	10.7	36.0		33.9	30.5		31.6	
Level of Service	D	B	C	D	B	D		C	C		C	
Approach Delay (s)		12.4			12.4			32.7			31.6	
Approach LOS		B			B			C			C	

Intersection Summary		
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.46	B
Actuated Cycle Length (s)	90.0	Sum of lost time (s)
Intersection Capacity Utilization	54.4%	19.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		A

HCM Signalized Intersection Capacity Analysis  
 11: College Ave & University Ave

Baseline Plus Project  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	450	110	150	560	140	210	850	130	110	320	150
Future Volume (vph)	180	450	110	150	560	140	210	850	130	110	320	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	4.4	4.4	4.9	4.4	4.4	5.2	5.2	4.4	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	191	479	117	160	596	149	223	904	138	117	340	160
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	66	0	0	72
Lane Group Flow (vph)	191	479	117	160	596	149	223	904	72	117	340	88
Confl. Peds. (#/hr)			3			6						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2 9	9	1	6 10	10	3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	25.0	77.6	23.5	21.8	74.6	58.1	29.2	56.4	56.4	17.5	43.4	43.4
Effective Green, g (s)	25.0	73.2	23.5	21.8	70.2	58.1	29.2	56.4	56.4	17.5	43.4	43.4
Actuated g/C Ratio	0.13	0.38	0.12	0.11	0.36	0.30	0.15	0.29	0.29	0.09	0.23	0.23
Clearance Time (s)	4.4		4.4	4.4		4.4	4.4	5.2	5.2	4.4	6.5	6.5
Vehicle Extension (s)	2.0		2.0	2.0		2.0	2.0	3.2	3.2	2.0	3.6	3.6
Lane Grp Cap (vph)	229	1346	193	200	679	468	268	1037	464	160	798	357
v/s Ratio Prot	c0.11	0.14	c0.07	0.09	c0.32	0.10	c0.13	c0.26		0.07	0.10	
v/s Ratio Perm									0.05			0.06
v/c Ratio	0.83	0.36	0.61	0.80	0.88	0.32	0.83	0.87	0.16	0.73	0.43	0.25
Uniform Delay, d1	81.7	42.7	80.1	83.2	57.1	51.9	79.2	64.6	50.4	85.2	63.8	61.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.3	0.2	3.7	19.0	12.6	0.1	18.5	8.3	0.2	13.7	0.4	0.4
Delay (s)	103.0	42.9	83.7	102.2	69.7	52.0	97.8	72.8	50.5	98.9	64.3	61.5
Level of Service	F	D	F	F	E	D	F	E	D	F	E	E
Approach Delay (s)		63.6			72.5			74.8			70.1	
Approach LOS		E			E			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			70.9									E
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			192.4						24.8			
Intersection Capacity Utilization			84.8%									E
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘			↘			↘
Traffic Vol, veh/h	30	650	20	20	880	30	0	0	40	0	0	20
Future Vol, veh/h	30	650	20	20	880	30	0	0	40	0	0	20
Conflicting Peds, #/hr	4	0	7	10	0	7	7	0	10	7	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	30	125	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	699	22	22	946	32	0	0	43	0	0	22

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	953	0	0	709	0	0	-	-	719	-	-	957
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	721	-	-	890	-	-	0	0	428	0	0	313
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	718	-	-	882	-	-	-	-	420	-	-	310
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.4		0.2		14.5		17.5	
HCM LOS					B		C	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	420	718	-	-	882	-	-	310
HCM Lane V/C Ratio	0.102	0.045	-	-	0.024	-	-	0.069
HCM Control Delay (s)	14.5	10.2	-	-	9.2	-	-	17.5
HCM Lane LOS	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑	↗			↗			↗
Traffic Vol, veh/h	0	680	20	20	770	30	0	0	60	0	0	60
Future Vol, veh/h	0	680	20	20	770	30	0	0	60	0	0	60
Conflicting Peds, #/hr	1	0	3	3	0	1	3	0	3	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	90	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	731	22	22	828	32	0	0	65	0	0	65

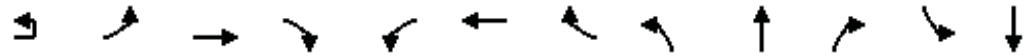
Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	-	0	0	734
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	2.218
Pot Cap-1 Maneuver	0	-	-	871
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	869
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	15.2	16.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	416	-	-	869	-	-	369
HCM Lane V/C Ratio	0.155	-	-	0.025	-	-	0.175
HCM Control Delay (s)	15.2	-	-	9.2	-	-	16.8
HCM Lane LOS	C	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-	-	0.6

HCM Signalized Intersection Capacity Analysis  
14: Rolando Blvd & University Ave

Baseline Plus Project  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	60	70	530	40	20	650	30	90	60	30	59	41
Future Volume (vph)	60	70	530	40	20	650	30	90	60	30	59	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4	4.4	4.9	4.4		4.9			4.9
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.98			0.96
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.98			0.98
Satd. Flow (prot)		1770	1863	1583	1770	1863	1583		1767			1728
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.72			0.78
Satd. Flow (perm)		1770	1863	1583	1770	1863	1583		1313			1377
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	64	74	564	43	21	691	32	96	64	32	63	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	10	0	0	25
Lane Group Flow (vph)	0	138	564	43	21	691	32	0	182	0	0	135
Confl. Peds. (#/hr)				12				3		2	2	
Confl. Bikes (#/hr)				4			1					
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Perm	NA		Perm	NA
Protected Phases	5	5	2 9	9	1	6 10	10		8			4
Permitted Phases								8				4
Actuated Green, G (s)		5.6	55.4	10.2	2.7	52.5	14.7		17.7			17.7
Effective Green, g (s)		5.6	51.0	10.2	2.7	48.1	14.7		17.7			17.7
Actuated g/C Ratio		0.06	0.57	0.11	0.03	0.53	0.16		0.20			0.20
Clearance Time (s)		4.4		4.4	4.4		4.4		4.9			4.9
Vehicle Extension (s)		2.0		2.0	2.0		2.0		2.0			2.0
Lane Grp Cap (vph)		110	1055	179	53	995	258		258			270
v/s Ratio Prot		c0.08	c0.30	0.03	0.01	c0.37	0.02					
v/s Ratio Perm									c0.14			0.10
v/c Ratio		1.25	0.53	0.24	0.40	0.69	0.12		0.70			0.50
Uniform Delay, d1		42.2	12.1	36.4	42.8	15.5	32.2		33.7			32.2
Progression Factor		1.00	1.00	1.00	1.02	0.96	1.26		1.00			1.00
Incremental Delay, d2		169.2	0.3	0.3	1.6	1.5	0.1		6.9			0.5
Delay (s)		211.4	12.4	36.6	45.3	16.4	40.6		40.6			32.7
Level of Service		F	B	D	D	B	D		D			C
Approach Delay (s)			50.6			18.3			40.6			32.7
Approach LOS			D			B			D			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			68.3%			ICU Level of Service			C			
Analysis Period (min)			15									

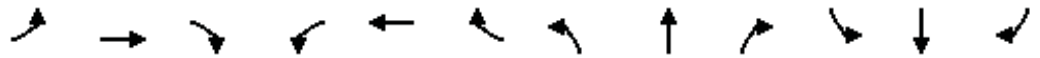
c Critical Lane Group



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	50
Future Volume (vph)	50
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	53
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
15: Aragon Dr & University Ave

Baseline Plus Project  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	540	20	30	590	30	90	100	60	10	30	10
Future Volume (vph)	10	540	20	30	590	30	90	100	60	10	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	5.2		4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1847		1765	1741			1785	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.83	1.00			0.92	
Satd. Flow (perm)	1770	1863	1583	1770	1847		1543	1741			1665	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	600	22	33	656	33	100	111	67	11	33	11
RTOR Reduction (vph)	0	0	20	0	1	0	0	32	0	0	9	0
Lane Group Flow (vph)	11	600	2	33	688	0	100	146	0	0	46	0
Confl. Peds. (#/hr)			11				2	2	4	4		2
Confl. Bikes (#/hr)						1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2 9	9	1	6			4				8
Permitted Phases							4			8		
Actuated Green, G (s)	1.3	57.0	7.2	4.3	59.7		14.5	14.5				14.5
Effective Green, g (s)	1.3	52.6	7.2	4.3	59.7		14.5	14.5				14.5
Actuated g/C Ratio	0.01	0.58	0.08	0.05	0.66		0.16	0.16				0.16
Clearance Time (s)	4.4		4.4	4.4	5.2		4.9	4.9				4.9
Vehicle Extension (s)	2.0		2.0	2.0	3.9		2.0	2.0				2.0
Lane Grp Cap (vph)	25	1088	126	84	1225		248	280				268
v/s Ratio Prot	0.01	0.32	0.00	c0.02	c0.37			c0.08				
v/s Ratio Perm							0.06					0.03
v/c Ratio	0.44	0.55	0.01	0.39	0.56		0.40	0.52				0.17
Uniform Delay, d1	44.0	11.5	38.1	41.6	8.1		33.9	34.6				32.6
Progression Factor	0.98	0.99	1.00	1.00	1.00		1.00	1.00				1.00
Incremental Delay, d2	4.0	0.3	0.0	1.1	1.9		0.4	0.8				0.1
Delay (s)	47.2	11.6	38.1	42.7	10.0		34.3	35.4				32.7
Level of Service	D	B	D	D	A		C	D				C
Approach Delay (s)		13.2			11.5			35.0				32.7
Approach LOS		B			B			C				C

**Intersection Summary**

HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	560	610	20	20	50
Future Vol, veh/h	50	560	610	20	20	50
Conflicting Peds, #/hr	3	0	0	5	5	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	629	685	22	22	56

**Major/Minor**

	Major1	Major2	Minor2		
Conflicting Flow All	690	0	0	1437	693
Stage 1	-	-	-	690	-
Stage 2	-	-	-	747	-
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	905	-	-	147	443
Stage 1	-	-	-	498	-
Stage 2	-	-	-	468	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	902	-	-	137	440
Mov Cap-2 Maneuver	-	-	-	274	-
Stage 1	-	-	-	496	-
Stage 2	-	-	-	437	-

**Approach**

	EB	WB	SB
HCM Control Delay, s	0.8	0	17.1
HCM LOS			C

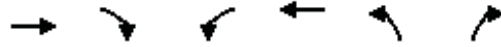
**Minor Lane/Major Mvmt**

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	902	-	-	-	375
HCM Lane V/C Ratio	0.062	-	-	-	0.21
HCM Control Delay (s)	9.3	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8



HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Baseline Plus Project  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (vph)	540	40	50	610	40	30
Future Volume (vph)	540	40	50	610	40	30
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1531	1770	1863	1760	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1531	1770	1863	1760	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	614	45	57	693	45	34
RTOR Reduction (vph)	0	4	0	0	0	30
Lane Group Flow (vph)	614	41	57	693	45	4
Confl. Peds. (#/hr)		10			5	
Confl. Bikes (#/hr)		1				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	34.1	34.1	3.7	42.1	6.0	6.0
Effective Green, g (s)	34.1	34.1	3.7	42.1	6.0	6.0
Actuated g/C Ratio	0.59	0.59	0.06	0.72	0.10	0.10
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	3.0	3.0
Lane Grp Cap (vph)	1093	898	112	1349	181	163
v/s Ratio Prot	c0.33		0.03	c0.37		
v/s Ratio Perm		0.03			c0.03	0.00
v/c Ratio	0.56	0.05	0.51	0.51	0.25	0.02
Uniform Delay, d1	7.4	5.1	26.3	3.5	24.0	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0	1.3	0.7	0.7	0.1
Delay (s)	8.5	5.1	27.6	4.3	24.7	23.5
Level of Service	A	A	C	A	C	C
Approach Delay (s)	8.3			6.0	24.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	14.3
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	10	540	630	20	10	20
Future Vol, veh/h	10	540	630	20	10	20
Conflicting Peds, #/hr	12	0	0	11	11	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	607	708	22	11	22

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	720	0	-	0	1360 732
Stage 1	-	-	-	-	720 -
Stage 2	-	-	-	-	640 -
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	882	-	-	-	164 421
Stage 1	-	-	-	-	482 -
Stage 2	-	-	-	-	525 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	872	-	-	-	158 411
Mov Cap-2 Maneuver	-	-	-	-	297 -
Stage 1	-	-	-	-	476 -
Stage 2	-	-	-	-	512 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	872	-	-	-	364
HCM Lane V/C Ratio	0.013	-	-	-	0.093
HCM Control Delay (s)	9.2	-	-	-	15.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	530	20	80	600	40	40
Future Vol, veh/h	530	20	80	600	40	40
Conflicting Peds, #/hr	0	12	9	0	12	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	30	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	582	22	88	659	44	44

























Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	594	0	1441
Stage 1	-	-	-	-	594
Stage 2	-	-	-	-	847
Critical Hdwy	-	-	4.13	-	6.63
Critical Hdwy Stg 1	-	-	-	-	5.83
Critical Hdwy Stg 2	-	-	-	-	5.43
Follow-up Hdwy	-	-	2.219	-	3.519
Pot Cap-1 Maneuver	-	-	980	-	134
Stage 1	-	-	-	-	515
Stage 2	-	-	-	-	419
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	972	-	119
Mov Cap-2 Maneuver	-	-	-	-	250
Stage 1	-	-	-	-	509
Stage 2	-	-	-	-	377

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	364	-	-	972	-
HCM Lane V/C Ratio	0.242	-	-	0.09	-
HCM Control Delay (s)	18	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0.3	-

HCM 2010 Signalized Intersection Summary  
20: Lois St/70th St & University Ave

Baseline Plus Project  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	360	30	20	480	650	30	160	20	300	60	200
Future Volume (veh/h)	190	360	30	20	480	650	30	160	20	300	60	200
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	202	383	6	21	511	3	32	170	21	365	0	43
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	1588	706	33	1320	590	224	206	25	482	0	215
Arrive On Green	0.09	0.45	0.45	0.02	0.37	0.37	0.13	0.13	0.13	0.14	0.00	0.14
Sat Flow, veh/h	1774	3539	1573	1774	3539	1583	1774	1626	201	3548	0	1583
Grp Volume(v), veh/h	202	383	6	21	511	3	32	0	191	365	0	43
Grp Sat Flow(s),veh/h/ln	1774	1770	1573	1774	1770	1583	1774	0	1827	1774	0	1583
Q Serve(g_s), s	8.0	5.7	0.2	1.0	9.0	0.1	1.4	0.0	8.7	8.4	0.0	2.1
Cycle Q Clear(g_c), s	8.0	5.7	0.2	1.0	9.0	0.1	1.4	0.0	8.7	8.4	0.0	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	167	1588	706	33	1320	590	224	0	231	482	0	215
V/C Ratio(X)	1.21	0.24	0.01	0.64	0.39	0.01	0.14	0.00	0.83	0.76	0.00	0.20
Avail Cap(c_a), veh/h	167	1588	706	167	1320	590	250	0	258	918	0	410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.5	14.5	13.0	41.4	19.5	16.7	33.0	0.0	36.2	35.4	0.0	32.6
Incr Delay (d2), s/veh	137.2	0.4	0.0	7.6	0.9	0.0	0.3	0.0	17.9	2.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	2.8	0.1	0.6	4.6	0.0	0.7	0.0	5.5	4.3	0.0	0.9
LnGrp Delay(d),s/veh	175.7	14.8	13.0	49.1	20.4	16.8	33.3	0.0	54.1	37.8	0.0	33.1
LnGrp LOS	F	B	B	D	C	B	C		D	D		C
Approach Vol, veh/h		591			535			223			408	
Approach Delay, s/veh		69.8			21.5			51.1			37.3	
Approach LOS		E			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		17.5	6.6	44.1		16.8	13.0	37.7				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		22.0	8.0	20.0		12.0	8.0	20.0				
Max Q Clear Time (g_c+I1), s		10.4	3.0	7.7		10.7	10.0	11.0				
Green Ext Time (p_c), s		1.1	0.0	5.9		0.1	0.0	4.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			45.2									
HCM 2010 LOS			D									
<b>Notes</b>												

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↔			↕	
Traffic Vol, veh/h	20	50	20	0	0	0	0	50	10	30	40	0
Future Vol, veh/h	20	50	20	0	0	0	0	50	10	30	40	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	52	21	0	0	0	0	52	10	31	42	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.4	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	22%	43%
Vol Thru, %	83%	56%	57%
Vol Right, %	17%	22%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	60	90	70
LT Vol	0	20	30
Through Vol	50	50	40
RT Vol	10	20	0
Lane Flow Rate	62	94	73
Geometry Grp	1	1	1
Degree of Util (X)	0.07	0.106	0.086
Departure Headway (Hd)	4.054	4.079	4.232
Convergence, Y/N	Yes	Yes	Yes
Cap	875	870	840
Service Time	2.118	2.146	2.291
HCM Lane V/C Ratio	0.071	0.108	0.087
HCM Control Delay	7.4	7.6	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.4	0.3

Intersection													
Int Delay, s/veh	3.5												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖	↑	↗		↕				↗
Traffic Vol, veh/h	0	865	30	10	20	730	37	20	10	20	0	0	70
Future Vol, veh/h	0	865	30	10	20	730	37	20	10	20	0	0	70
Conflicting Peds, #/hr	37	0	29	1	29	0	37	29	0	29	37	0	37
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	-	50	-	50	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	892	31	10	21	753	38	21	10	21	0	0	72

Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	891	921	0	0	1752	1772	950	-	-	827
Stage 1	-	-	-	-	-	-	-	921	921	-	-	-	-
Stage 2	-	-	-	-	-	-	-	831	851	-	-	-	-
Critical Hdwy	-	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	741	-	-	67	83	315	0	0	371
Stage 1	0	-	-	-	-	-	-	324	349	-	0	0	-
Stage 2	0	-	-	-	-	-	-	364	376	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	~ -3	~ -3	-	-	50	78	298	-	-	345
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	50	78	-	-	-	-
Stage 1	-	-	-	-	-	-	-	324	339	-	-	-	-
Stage 2	-	-	-	-	-	-	-	278	363	-	-	-	-





















Approach	EB	WB	NB	SB
HCM Control Delay, s	0		100.2	18.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	84	-	-	+	-	-	345
HCM Lane V/C Ratio	0.614	-	-	-	-	-	0.209
HCM Control Delay (s)	100.2	-	-	-	-	-	18.2
HCM Lane LOS	F	-	-	-	-	-	C
HCM 95th %tile Q(veh)	2.8	-	-	-	-	-	0.8

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

HCM 2010 Signalized Intersection Summary  
 3: Winona Ave & University Ave

Baseline Plus Project  
 PM Peak Hour

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	7	78	880	70	20	700	40	90	50	50	120	70
Future Volume (veh/h)	7	78	880	70	20	700	40	90	50	50	120	70
Number		5	2	12	1	6	16	3	8	18	7	4
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.94	1.00		0.96	0.98		0.91	0.95	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00
Adj Sat Flow, veh/h/ln		1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863
Adj Flow Rate, veh/h		81	917	63	21	729	38	94	52	35	125	73
Adj No. of Lanes		1	1	1	1	1	1	0	1	0	0	1
Peak Hour Factor		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		103	1157	926	31	1081	879	174	90	51	180	92
Arrive On Green		0.06	0.62	0.62	0.02	0.77	0.77	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h		1774	1863	1492	1774	1863	1515	540	399	225	569	408
Grp Volume(v), veh/h		81	917	63	21	729	38	181	0	0	244	0
Grp Sat Flow(s),veh/h/ln		1774	1863	1492	1774	1863	1515	1164	0	0	1204	0
Q Serve(g_s), s		4.7	38.2	1.7	1.2	19.4	0.6	0.0	0.0	0.0	5.8	0.0
Cycle Q Clear(g_c), s		4.7	38.2	1.7	1.2	19.4	0.6	14.8	0.0	0.0	20.6	0.0
Prop In Lane		1.00		1.00	1.00		1.00	0.52		0.19	0.51	
Lane Grp Cap(c), veh/h		103	1157	926	31	1081	879	314	0	0	323	0
V/C Ratio(X)		0.78	0.79	0.07	0.68	0.67	0.04	0.58	0.00	0.00	0.76	0.00
Avail Cap(c_a), veh/h		172	1157	926	78	1081	879	353	0	0	362	0
HCM Platoon Ratio		1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		48.3	14.7	7.8	50.5	7.2	5.1	36.7	0.0	0.0	39.2	0.0
Incr Delay (d2), s/veh		4.8	5.6	0.1	9.2	3.4	0.1	0.8	0.0	0.0	6.5	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		2.4	21.2	0.8	0.7	10.8	0.3	4.8	0.0	0.0	7.4	0.0
LnGrp Delay(d),s/veh		53.1	20.3	7.9	59.7	10.6	5.1	37.5	0.0	0.0	45.7	0.0
LnGrp LOS		D	C	A	E	B	A	D			D	
Approach Vol, veh/h			1061			788			181			244
Approach Delay, s/veh			22.1			11.6			37.5			45.7
Approach LOS			C			B			D			D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	69.5		28.3	10.5	65.2		28.3				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	4.6	58.6		26.6	10.1	53.1		26.6				
Max Q Clear Time (g_c+I1), s	3.2	40.2		22.6	6.7	21.4		16.8				
Green Ext Time (p_c), s	0.0	12.3		0.8	0.0	17.5		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			22.2									
HCM 2010 LOS			C									
<b>Notes</b>												

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	60
Future Volume (veh/h)	60
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.89
Parking Bus, Adj	0.89
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	46
Adj No. of Lanes	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	2
Cap, veh/h	51
Arrive On Green	0.22
Sat Flow, veh/h	227
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.19
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	



**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↗				↗			↗
Traffic Vol, veh/h	0	850	70	60	740	30	0	0	20	0	0	10
Future Vol, veh/h	0	850	70	60	740	30	0	0	20	0	0	10
Conflicting Peds, #/hr	0	0	137	59	0	30	0	0	59	0	0	108
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	140	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	876	72	62	763	31	0	0	21	0	0	10

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	-	0	0	1013
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	2.218
Pot Cap-1 Maneuver	0	-	-	684
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	646
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	23	18
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	220	-	-	646	-	-	288
HCM Lane V/C Ratio	0.094	-	-	0.096	-	-	0.036
HCM Control Delay (s)	23	-	-	11.2	-	-	18
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.3	-	-	0.1

# HCM 2010 Signalized Intersection Summary 5: 52nd St & University Ave

# Baseline Plus Project PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	870	30	60	740	110	40	50	90	110	50	50
Future Volume (veh/h)	40	870	30	60	740	110	40	50	90	110	50	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	0.94		0.89	0.94		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	43	935	28	65	796	98	43	54	97	118	54	54
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	1048	836	84	1079	874	122	136	355	249	104	355
Arrive On Green	0.06	1.00	1.00	0.05	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	1863	1485	1774	1863	1510	284	534	1402	751	409	1399
Grp Volume(v), veh/h	43	935	28	65	796	98	97	0	97	172	0	54
Grp Sat Flow(s),veh/h/ln	1774	1863	1485	1774	1863	1510	819	0	1402	1160	0	1399
Q Serve(g_s), s	2.5	0.0	0.0	3.8	32.7	3.0	3.1	0.0	5.8	0.0	0.0	3.1
Cycle Q Clear(g_c), s	2.5	0.0	0.0	3.8	32.7	3.0	18.2	0.0	5.8	15.1	0.0	3.1
Prop In Lane	1.00		1.00	1.00		1.00	0.44		1.00	0.69		1.00
Lane Grp Cap(c), veh/h	55	1048	836	84	1079	874	258	0	355	352	0	355
V/C Ratio(X)	0.79	0.89	0.03	0.78	0.74	0.11	0.38	0.00	0.27	0.49	0.00	0.15
Avail Cap(c_a), veh/h	172	1048	836	172	1079	874	384	0	473	471	0	472
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.5	0.0	0.0	49.0	16.1	9.8	35.6	0.0	31.1	34.3	0.0	30.1
Incr Delay (d2), s/veh	9.0	11.5	0.1	5.7	4.5	0.3	0.3	0.0	0.2	0.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.3	0.0	2.0	17.9	1.3	2.6	0.0	2.2	4.4	0.0	1.2
LnGrp Delay(d),s/veh	57.4	11.5	0.1	54.7	20.6	10.1	35.9	0.0	31.3	34.7	0.0	30.2
LnGrp LOS	E	B	A	D	C	B	D		C	C		C
Approach Vol, veh/h		1006			959			194			226	
Approach Delay, s/veh		13.1			21.8			33.6			33.6	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	63.4		31.3	7.6	65.1		31.3				
Change Period (Y+Rc), s	4.4	4.9		4.9	4.4	4.9		4.9				
Max Green Setting (Gmax), s	10.1	44.6		35.1	10.1	44.6		35.1				
Max Q Clear Time (g_c+I1), s	5.8	2.0		17.1	4.5	34.7		20.2				
Green Ext Time (p_c), s	0.0	33.8		1.4	0.0	9.2		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			20.2									
HCM 2010 LOS			C									

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗			↖			↗
Traffic Vol, veh/h	20	920	20	100	950	10	0	0	50	0	0	20
Future Vol, veh/h	20	920	20	100	950	10	0	0	50	0	0	20
Conflicting Peds, #/hr	16	0	16	18	0	18	16	0	18	18	0	16
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	30	80	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	989	22	108	1022	11	0	0	54	0	0	22

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1050	0	0	1007
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	663	-	-	688
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	653	-	-	676
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

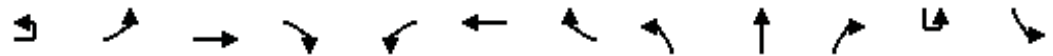
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	21.2	19.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	653	-	-	676	-	-	263
HCM Lane V/C Ratio	0.196	0.033	-	-	0.159	-	-	0.082
HCM Control Delay (s)	21.2	10.7	-	-	11.3	-	-	19.9
HCM Lane LOS	C	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.6	-	-	0.3

# HCM Signalized Intersection Capacity Analysis

## 7: 54th St & University Ave

Baseline Plus Project  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↖	↗	↘	↙	↗	↘	↖	↗	↘		↖
Traffic Volume (vph)	10	119	584	257	280	650	270	300	430	270	1	526
Future Volume (vph)	10	119	584	257	280	650	270	300	430	270	1	526
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4	4.4	5.3	4.4	4.4	5.3	4.4		4.4
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.97
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583	1770	3539	1583		3433
Peak-hour factor, PHF	0.92	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.92	0.97
Adj. Flow (vph)	11	123	602	265	289	670	278	309	443	278	1	542
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	134	602	265	289	670	278	309	443	278	0	543
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Prot	NA	custom	Prot	Prot
Protected Phases	5	5	2 9	9	1	6 10	10	3	8 12	12	7	7
Permitted Phases												
Actuated Green, G (s)		17.5	46.0	27.3	25.8	53.9	33.9	26.4	50.1	30.3		28.8
Effective Green, g (s)		17.5	41.6	27.3	25.8	49.5	33.9	26.4	45.7	30.3		28.8
Actuated g/C Ratio		0.10	0.25	0.16	0.15	0.29	0.20	0.16	0.27	0.18		0.17
Clearance Time (s)		4.4		4.4	4.4		4.4	4.4		4.4		4.4
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lane Grp Cap (vph)		182	867	254	269	1032	316	275	953	282		582
v/s Ratio Prot		0.08	0.17	c0.17	c0.16	c0.19	0.18	c0.17	0.13	c0.18		c0.16
v/s Ratio Perm												
v/c Ratio		0.74	0.69	1.04	1.07	0.65	0.88	1.12	0.46	0.99		0.93
Uniform Delay, d1		73.9	58.3	71.2	71.9	52.5	65.9	71.6	51.8	69.5		69.5
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		12.5	2.6	68.2	76.0	1.5	22.5	91.7	0.5	49.2		21.8
Delay (s)		86.4	60.8	139.4	148.0	54.0	88.5	163.4	52.3	118.6		91.3
Level of Service		F	E	F	F	D	F	F	D	F		F
Approach Delay (s)			85.1			83.7			103.5			
Approach LOS			F			F			F			
<b>Intersection Summary</b>												
HCM 2000 Control Delay			84.9			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			169.7			Sum of lost time (s)			29.0			
Intersection Capacity Utilization			86.4%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: 54th St & University Ave

Baseline Plus Project  
PM Peak Hour

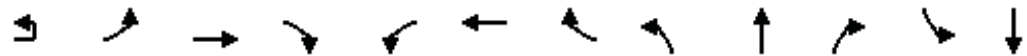


Movement	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	783	130
Future Volume (vph)	783	130
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.1	4.4
Lane Util. Factor	0.95	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1583
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	807	134
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	807	134
Turn Type	NA	custom
Protected Phases	4 11	11
Permitted Phases		
Actuated Green, G (s)	51.7	33.5
Effective Green, g (s)	47.3	33.5
Actuated g/C Ratio	0.28	0.20
Clearance Time (s)		4.4
Vehicle Extension (s)		2.0
Lane Grp Cap (vph)	986	312
v/s Ratio Prot	c0.23	0.08
v/s Ratio Perm		
v/c Ratio	0.82	0.43
Uniform Delay, d1	57.2	59.7
Progression Factor	1.00	1.00
Incremental Delay, d2	5.4	0.3
Delay (s)	62.6	60.1
Level of Service	E	E
Approach Delay (s)	72.9	
Approach LOS	E	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 8: 58th St & University Ave

Baseline Plus Project  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↘	↕	↗	↘	↕	↗		↕			↕
Traffic Volume (vph)	20	90	1040	270	90	780	60	170	20	90	60	40
Future Volume (vph)	20	90	1040	270	90	780	60	170	20	90	60	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.3	4.4	4.4	5.3	4.4		4.9			4.9
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		0.99			0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		0.96			0.95
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.98
Satd. Flow (prot)		1770	3539	1583	1770	3539	1583		1714			1721
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.68			0.80
Satd. Flow (perm)		1770	3539	1583	1770	3539	1583		1207			1404
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	94	1083	281	94	812	62	177	21	94	62	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	19	0	0	23
Lane Group Flow (vph)	0	115	1083	281	94	813	63	0	273	0	0	145
Confl. Peds. (#/hr)				5			6	10		2	2	
Confl. Bikes (#/hr)				8			3			2		
Turn Type	Prot	Prot	NA	custom	Prot	NA	custom	Perm	NA		Perm	NA
Protected Phases	5	5	2 9	9	1	6 10	10		8			4
Permitted Phases								8				4
Actuated Green, G (s)		10.2	54.5	20.1	8.3	52.6	18.0		26.6			26.6
Effective Green, g (s)		10.2	50.1	20.1	8.3	48.2	18.0		26.6			26.6
Actuated g/C Ratio		0.10	0.48	0.19	0.08	0.46	0.17		0.26			0.26
Clearance Time (s)		4.4		4.4	4.4		4.4		4.9			4.9
Vehicle Extension (s)		2.0		2.0	2.0		2.0		2.0			2.0
Lane Grp Cap (vph)		173	1704	305	141	1640	273		308			359
v/s Ratio Prot		c0.06	c0.31	c0.18	0.05	0.23	0.04					
v/s Ratio Perm									c0.23			0.10
v/c Ratio		0.66	0.64	0.92	0.67	0.50	0.23		0.89			0.40
Uniform Delay, d1		45.3	20.1	41.2	46.5	19.4	37.0		37.3			32.1
Progression Factor		1.00	1.00	1.00	1.10	0.79	1.02		1.00			1.00
Incremental Delay, d2		7.2	0.6	31.4	8.6	0.1	0.2		24.4			0.3
Delay (s)		52.5	20.7	72.5	59.7	15.4	37.9		61.7			32.4
Level of Service		D	C	E	E	B	D		E			C
Approach Delay (s)			33.0			21.1			61.7			32.4
Approach LOS			C			C			E			C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			104.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			68.9%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

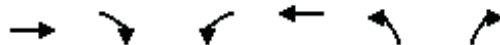


Movement	SBR
Lane Configurations	
Traffic Volume (vph)	60
Future Volume (vph)	60
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	62
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 9: University Square Dwy & University Ave

Baseline Plus Project  
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑	↵	↑
Traffic Volume (vph)	980	150	180	680	210	70
Future Volume (vph)	980	150	180	680	210	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	4.4	4.4	5.3	4.9	4.4
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	1770	3518	1770	1551
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	1770	3518	1770	1551
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1065	163	196	739	228	76
RTOR Reduction (vph)	0	47	0	0	0	9
Lane Group Flow (vph)	1065	116	196	739	228	67
Confl. Peds. (#/hr)		19				25
Confl. Bikes (#/hr)		1				2
Bus Blockages (#/hr)	0	0	0	3	0	0
Turn Type	NA	custom	Prot	NA	Prot	pm+ov
Protected Phases	2 9	9	1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	54.9	5.1	14.7	74.0	19.8	34.5
Effective Green, g (s)	50.5	5.1	14.7	74.0	19.8	34.5
Actuated g/C Ratio	0.49	0.05	0.14	0.71	0.19	0.33
Clearance Time (s)		4.4	4.4	5.3	4.9	4.4
Vehicle Extension (s)		2.0	2.0	3.2	2.0	2.0
Lane Grp Cap (vph)	1718	77	250	2503	336	514
v/s Ratio Prot	c0.30	c0.07	c0.11	0.21	c0.13	0.02
v/s Ratio Perm						0.02
v/c Ratio	0.62	1.51	0.78	0.30	0.68	0.13
Uniform Delay, d1	19.7	49.5	43.1	5.5	39.1	24.3
Progression Factor	0.33	1.66	1.06	0.54	1.00	1.00
Incremental Delay, d2	0.4	277.2	13.4	0.3	4.2	0.0
Delay (s)	6.8	359.6	59.3	3.3	43.4	24.3
Level of Service	A	F	E	A	D	C
Approach Delay (s)	53.6			15.0	38.6	
Approach LOS	D			B	D	

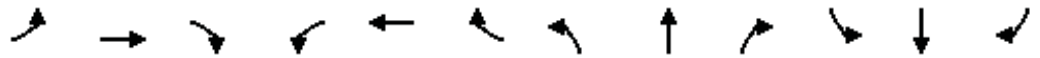
### Intersection Summary

HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
 10: 60th St & University Ave

Baseline Plus Project  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	990	60	100	750	0	50	10	70	20	10	10
Future Volume (vph)	20	990	60	100	750	0	50	10	70	20	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	4.4	4.4	5.3			4.9	4.9		4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539			1774	1562		1745	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.79	1.00		0.83	
Satd. Flow (perm)	1770	3539	1583	1770	3539			1451	1562		1490	
Peak-hour factor, PHF	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)	22	1076	65	109	815	0	54	11	76	22	11	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	67	0	10	0
Lane Group Flow (vph)	22	1076	65	109	815	0	0	65	9	0	34	0
Confl. Peds. (#/hr)			15				12		2	2		12
Turn Type	Prot	NA	custom	Prot	NA	custom	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2 9	9	1	6 10	10		8				4
Permitted Phases							8		8	4		
Actuated Green, G (s)	2.8	67.4	15.0	9.6	74.2			12.4	12.4		12.4	
Effective Green, g (s)	2.8	63.0	15.0	9.6	69.8			12.4	12.4		12.4	
Actuated g/C Ratio	0.03	0.61	0.14	0.09	0.67			0.12	0.12		0.12	
Clearance Time (s)	4.4		4.4	4.4				4.9	4.9		4.9	
Vehicle Extension (s)	2.0		2.0	2.0				2.0	2.0		2.0	
Lane Grp Cap (vph)	47	2143	228	163	2375			173	186		177	
v/s Ratio Prot	0.01	c0.30	0.04	c0.06	0.23							
v/s Ratio Perm								c0.04	0.01		0.02	
v/c Ratio	0.47	0.50	0.29	0.67	0.34			0.38	0.05		0.19	
Uniform Delay, d1	49.9	11.6	39.7	45.7	7.3			42.2	40.6		41.3	
Progression Factor	0.58	1.99	0.81	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.3	0.1	0.2	7.8	0.0			0.5	0.0		0.2	
Delay (s)	31.5	23.1	32.2	53.5	7.3			42.7	40.6		41.5	
Level of Service	C	C	C	D	A			D	D		D	
Approach Delay (s)		23.8			12.8			41.6			41.5	
Approach LOS		C			B			D			D	

Intersection Summary		
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.50	
Actuated Cycle Length (s)	104.0	Sum of lost time (s) 19.0
Intersection Capacity Utilization	60.9%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

# HCM Signalized Intersection Capacity Analysis

## 11: College Ave & University Ave

Baseline Plus Project  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	240	700	240	200	520	120	180	530	200	190	700	230	
Future Volume (vph)	240	700	240	200	520	120	180	530	200	190	700	230	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.4	5.1	4.4	4.4	4.9	4.4	4.4	5.2	5.2	4.4	6.5	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1555	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1552	1770	3539	1583	1770	3539	1555	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	250	729	250	208	542	125	188	552	208	198	729	240	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	105	0	0	103	
Lane Group Flow (vph)	250	729	250	208	542	125	188	552	103	198	729	137	
Confl. Peds. (#/hr)							3						
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0	
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	5	2 9	9	1	6 10	10	3	8		7	4		
Permitted Phases								8				4	
Actuated Green, G (s)	16.6	45.7	16.6	12.6	41.9	13.8	10.6	31.0	31.0	11.6	30.7	30.7	
Effective Green, g (s)	16.6	41.3	16.6	12.6	37.5	13.8	10.6	31.0	31.0	11.6	30.7	30.7	
Actuated g/C Ratio	0.14	0.34	0.14	0.10	0.31	0.12	0.09	0.26	0.26	0.10	0.26	0.26	
Clearance Time (s)	4.4		4.4	4.4		4.4	4.4	5.2	5.2	4.4	6.5	6.5	
Vehicle Extension (s)	2.0		2.0	2.0		2.0	2.0	3.2	3.2	2.0	3.6	3.6	
Lane Grp Cap (vph)	244	1218	218	185	582	178	156	914	408	171	905	397	
v/s Ratio Prot	c0.14	0.21	c0.16	0.12	c0.29	0.08	0.11	0.16		c0.11	c0.21		
v/s Ratio Perm									0.07			0.09	
v/c Ratio	1.02	0.60	1.15	1.12	0.93	0.70	1.21	0.60	0.25	1.16	0.81	0.34	
Uniform Delay, d1	51.7	32.5	51.7	53.7	40.0	51.1	54.7	39.1	35.3	54.2	41.9	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	64.1	0.9	106.2	103.5	22.1	9.8	137.7	3.0	1.5	117.7	7.6	2.4	
Delay (s)	115.8	33.4	157.9	157.2	62.1	60.9	192.4	42.1	36.8	171.9	49.4	38.8	
Level of Service	F	C	F	F	E	E	F	D	D	F	D	D	
Approach Delay (s)		75.5			84.5			70.7			68.0		
Approach LOS		E			F			E			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			74.2									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.99										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	24.8
Intersection Capacity Utilization			86.8%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗	↘						↘
Traffic Vol, veh/h	30	1080	20	20	750	20	0	0	60	0	0	30
Future Vol, veh/h	30	1080	20	20	750	20	0	0	60	0	0	30
Conflicting Peds, #/hr	7	0	9	16	0	14	9	0	16	14	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	30	125	-	30	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	1102	20	20	765	20	0	0	61	0	0	31

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	779	0	0	1118	0	0	-	-	786
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318
Pot Cap-1 Maneuver	838	-	-	625	-	-	0	0	392
Stage 1	-	-	-	-	-	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	832	-	-	625	-	-	-	0	384
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0.3	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	832	-	-	625	-	-	384
HCM Lane V/C Ratio	0.037	-	-	0.033	-	-	0.08
HCM Control Delay (s)	9.5	-	-	11	-	-	15.2
HCM Lane LOS	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	0.3

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑	↗			↗			↗
Traffic Vol, veh/h	0	1070	40	20	660	35	0	0	60	0	0	20
Future Vol, veh/h	0	1070	40	20	660	35	0	0	60	0	0	20
Conflicting Peds, #/hr	5	0	6	7	0	6	6	0	7	6	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	30	90	-	30	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1103	41	21	680	36	0	0	62	0	0	21

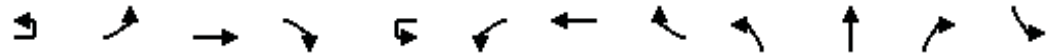
Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	-	0	0	1110
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.218	-
Pot Cap-1 Maneuver	0	-	-	629
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	625
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	24.2	13.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	-	-	625	-	-	440
HCM Lane V/C Ratio	0.248	-	-	0.033	-	-	0.047
HCM Control Delay (s)	24.2	-	-	11	-	-	13.6
HCM Lane LOS	C	-	-	B	-	-	B
HCM 95th %tile Q(veh)	1	-	-	0.1	-	-	0.1

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

Baseline Plus Project  
 PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	70	75	822	78	10	20	620	30	60	50	40	78
Future Volume (vph)	70	75	822	78	10	20	620	30	60	50	40	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	4.9	4.4		4.4	4.9	4.4		4.9		
Lane Util. Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00		
Frbp, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		0.99		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00		
Frt		1.00	1.00	0.85		1.00	1.00	0.85		0.96		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.98		
Satd. Flow (prot)		1770	1863	1583		1770	1863	1583		1750		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.74		
Satd. Flow (perm)		1770	1863	1583		1770	1863	1583		1314		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	77	847	80	10	21	639	31	62	52	41	80
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	16	0	0
Lane Group Flow (vph)	0	149	847	80	0	31	639	31	0	139	0	0
Confl. Peds. (#/hr)				7				3	1			
Confl. Bikes (#/hr)				1							1	
Turn Type	Prot	Prot	NA	custom	Prot	Prot	NA	custom	Perm	NA		Perm
Protected Phases	5	5	2 9	9	1	1	6 10	10		8		
Permitted Phases									8			4
Actuated Green, G (s)		5.1	63.0	21.2		4.4	62.3	21.3		18.4		
Effective Green, g (s)		5.1	58.6	21.2		4.4	57.9	21.3		18.4		
Actuated g/C Ratio		0.05	0.59	0.21		0.04	0.58	0.21		0.18		
Clearance Time (s)		4.4		4.4		4.4		4.4		4.9		
Vehicle Extension (s)		2.0		2.0		2.0		2.0		2.0		
Lane Grp Cap (vph)		90	1091	335		77	1078	337		241		
v/s Ratio Prot		c0.08	c0.45	0.05		0.02	0.34	0.02				
v/s Ratio Perm										0.11		
v/c Ratio		1.66	0.78	0.24		0.40	0.59	0.09		0.58		
Uniform Delay, d1		47.5	15.7	32.7		46.5	13.5	31.6		37.3		
Progression Factor		1.00	1.00	1.00		0.90	1.26	1.24		1.00		
Incremental Delay, d2		339.0	3.2	0.1		1.2	0.6	0.0		2.1		
Delay (s)		386.4	18.9	32.8		42.9	17.6	39.1		39.4		
Level of Service		F	B	C		D	B	D		D		
Approach Delay (s)			70.9				19.7			39.4		
Approach LOS			E				B			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay			49.5				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			18.6		
Intersection Capacity Utilization			72.8%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: Rolando Blvd & University Ave

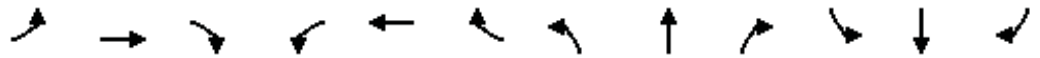
Baseline Plus Project  
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	62	50
Future Volume (vph)	62	50
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.98	
Satd. Flow (prot)	1750	
Flt Permitted	0.76	
Satd. Flow (perm)	1349	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	64	52
RTOR Reduction (vph)	16	0
Lane Group Flow (vph)	180	0
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	18.4	
Effective Green, g (s)	18.4	
Actuated g/C Ratio	0.18	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	248	
v/s Ratio Prot		
v/s Ratio Perm	c0.13	
v/c Ratio	0.73	
Uniform Delay, d1	38.4	
Progression Factor	1.00	
Incremental Delay, d2	8.7	
Delay (s)	47.1	
Level of Service	D	
Approach Delay (s)	47.1	
Approach LOS	D	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
15: Aragon Dr & University Ave

Baseline Plus Project  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	880	90	50	570	10	60	50	80	20	50	0
Future Volume (vph)	10	880	90	50	570	10	60	50	80	20	50	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9	4.4	4.4	5.2		4.9	4.9			4.9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.91			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1857		1765	1664			1834	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.74	1.00			0.86	
Satd. Flow (perm)	1770	1863	1583	1770	1857		1367	1664			1591	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	917	94	52	594	10	62	52	83	21	52	0
RTOR Reduction (vph)	0	0	55	0	0	0	0	73	0	0	0	0
Lane Group Flow (vph)	10	917	39	52	604	0	63	62	0	0	73	0
Confl. Peds. (#/hr)			10			8	2		4	4		2
Confl. Bikes (#/hr)			2			1						
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Turn Type	Prot	NA	custom	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2 9	9	1	6			4				8
Permitted Phases							4			8		
Actuated Green, G (s)	1.3	66.8	41.3	6.5	71.7		12.5	12.5			12.5	
Effective Green, g (s)	1.3	62.4	41.3	6.5	71.7		12.5	12.5			12.5	
Actuated g/C Ratio	0.01	0.62	0.41	0.06	0.72		0.12	0.12			0.12	
Clearance Time (s)	4.4		4.4	4.4	5.2		4.9	4.9			4.9	
Vehicle Extension (s)	2.0		2.0	2.0	3.9		2.0	2.0			2.0	
Lane Grp Cap (vph)	23	1162	653	115	1331		170	208			198	
v/s Ratio Prot	0.01	c0.49	0.02	c0.03	0.33			0.04				
v/s Ratio Perm							c0.05				0.05	
v/c Ratio	0.43	0.79	0.06	0.45	0.45		0.37	0.30			0.37	
Uniform Delay, d1	49.0	13.9	17.7	45.0	5.9		40.1	39.8			40.1	
Progression Factor	1.22	0.37	1.93	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.7	2.6	0.0	1.0	1.1		0.5	0.3			0.4	
Delay (s)	63.3	7.7	34.0	46.1	7.1		40.6	40.1			40.6	
Level of Service	E	A	C	D	A		D	D			D	
Approach Delay (s)		10.7			10.1			40.2			40.6	
Approach LOS		B			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			73.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	70	840	670	30	40	30
Future Vol, veh/h	70	840	670	30	40	30
Conflicting Peds, #/hr	11	0	0	11	11	11
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	866	691	31	41	31

**Major/Minor**

	Major1	Major2	Minor2		
Conflicting Flow All	702	0	0	1723	713
Stage 1	-	-	-	702	-
Stage 2	-	-	-	1021	-
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	895	-	-	98	432
Stage 1	-	-	-	491	-
Stage 2	-	-	-	348	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	886	-	-	88	423
Mov Cap-2 Maneuver	-	-	-	213	-
Stage 1	-	-	-	486	-
Stage 2	-	-	-	316	-

**Approach**

	EB	WB	SB
HCM Control Delay, s	0.7	0	23
HCM LOS			C

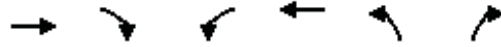
**Minor Lane/Major Mvmt**

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	886	-	-	-	271
HCM Lane V/C Ratio	0.081	-	-	-	0.266
HCM Control Delay (s)	9.4	-	-	-	23
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1



HCM Signalized Intersection Capacity Analysis  
 17: Salvation Driveway & University Ave

Baseline Plus Project  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (vph)	740	80	170	650	60	70
Future Volume (vph)	740	80	170	650	60	70
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.98	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1537	1770	1863	1741	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1537	1770	1863	1741	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	755	82	173	663	61	71
RTOR Reduction (vph)	0	3	0	0	0	64
Lane Group Flow (vph)	755	79	173	663	61	7
Confl. Peds. (#/hr)		4			9	
Confl. Bikes (#/hr)		2				
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			8	8
Actuated Green, G (s)	55.9	55.9	13.4	73.6	8.9	8.9
Effective Green, g (s)	55.9	55.9	13.4	73.6	8.9	8.9
Actuated g/C Ratio	0.60	0.60	0.14	0.80	0.10	0.10
Clearance Time (s)	5.0	5.0	4.4	5.1	4.9	4.9
Vehicle Extension (s)	5.1	5.1	2.0	5.4	2.0	2.0
Lane Grp Cap (vph)	1125	928	256	1482	167	152
v/s Ratio Prot	c0.41		c0.10	0.36		
v/s Ratio Perm		0.05			c0.04	0.00
v/c Ratio	0.67	0.09	0.68	0.45	0.37	0.04
Uniform Delay, d1	12.2	7.6	37.5	3.0	39.2	37.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.1	5.5	0.5	0.5	0.0
Delay (s)	14.3	7.7	42.9	3.5	39.6	38.0
Level of Service	B	A	D	A	D	D
Approach Delay (s)	13.6			11.7	38.8	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	14.3
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	910	750	30	10	10
Future Vol, veh/h	40	910	750	30	10	10
Conflicting Peds, #/hr	13	0	0	13	13	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	30	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	968	798	32	11	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	811	0	-	0	1877 824
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	1066 -
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	815	-	-	-	79 373
Stage 1	-	-	-	-	437 -
Stage 2	-	-	-	-	331 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	805	-	-	-	73 364
Mov Cap-2 Maneuver	-	-	-	-	197 -
Stage 1	-	-	-	-	432 -
Stage 2	-	-	-	-	309 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	20.3
HCM LOS			C
























Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	805	-	-	-	256
HCM Lane V/C Ratio	0.053	-	-	-	0.083
HCM Control Delay (s)	9.7	-	-	-	20.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	860	60	120	730	40	40
Future Vol, veh/h	860	60	120	730	40	40
Conflicting Peds, #/hr	0	9	7	0	9	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	30	90	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	878	61	122	745	41	41

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	887	0	1886 455
Stage 1	-	-	-	-	887 -
Stage 2	-	-	-	-	999 -
Critical Hdwy	-	-	4.13	-	6.63 6.93
Critical Hdwy Stg 1	-	-	-	-	5.83 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	-	-	2.219	-	3.519 3.319
Pot Cap-1 Maneuver	-	-	761	-	69 553
Stage 1	-	-	-	-	364 -
Stage 2	-	-	-	-	355 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	756	-	57 545
Mov Cap-2 Maneuver	-	-	-	-	174 -
Stage 1	-	-	-	-	361 -
Stage 2	-	-	-	-	295 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	24.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	264	-	-	756	-
HCM Lane V/C Ratio	0.309	-	-	0.162	-
HCM Control Delay (s)	24.6	-	-	10.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.3	-	-	0.6	-

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	580	50	30	480	490	20	110	20	550	100	280
Future Volume (veh/h)	270	580	50	30	480	490	20	110	20	550	100	280
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	278	598	11	31	495	259	21	113	21	641	0	58
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	2	0	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	316	1484	660	42	938	419	178	153	28	729	0	325
Arrive On Green	0.18	0.42	0.42	0.02	0.26	0.26	0.10	0.10	0.10	0.21	0.00	0.21
Sat Flow, veh/h	1774	3539	1574	1774	3539	1583	1774	1529	284	3548	0	1581
Grp Volume(v), veh/h	278	598	11	31	495	259	21	0	134	641	0	58
Grp Sat Flow(s),veh/h/ln	1774	1770	1574	1774	1770	1583	1774	0	1813	1774	0	1581
Q Serve(g_s), s	14.0	10.8	0.4	1.6	10.9	13.2	1.0	0.0	6.6	16.0	0.0	2.8
Cycle Q Clear(g_c), s	14.0	10.8	0.4	1.6	10.9	13.2	1.0	0.0	6.6	16.0	0.0	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	316	1484	660	42	938	419	178	0	182	729	0	325
V/C Ratio(X)	0.88	0.40	0.02	0.73	0.53	0.62	0.12	0.00	0.74	0.88	0.00	0.18
Avail Cap(c_a), veh/h	591	2146	954	87	1160	519	678	0	693	795	0	354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.7	18.6	15.5	44.4	28.7	29.6	37.5	0.0	40.0	35.3	0.0	30.0
Incr Delay (d2), s/veh	3.2	0.3	0.0	8.8	0.7	2.1	0.3	0.0	5.8	10.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	5.3	0.2	0.9	5.4	6.0	0.5	0.0	3.6	8.9	0.0	1.2
LnGrp Delay(d),s/veh	39.8	18.8	15.6	53.1	29.4	31.7	37.8	0.0	45.8	45.8	0.0	30.2
LnGrp LOS	D	B	B	D	C	C	D		D	D		C
Approach Vol, veh/h		887			785			155			699	
Approach Delay, s/veh		25.4			31.1			44.7			44.5	
Approach LOS		C			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		24.8	7.2	44.4		15.2	21.3	30.2				
Change Period (Y+Rc), s		6.0	5.0	6.0		6.0	5.0	6.0				
Max Green Setting (Gmax), s		20.5	4.5	55.5		35.0	30.5	30.0				
Max Q Clear Time (g_c+I1), s		18.0	3.6	12.8		8.6	16.0	15.2				
Green Ext Time (p_c), s		0.8	0.0	16.0		0.8	0.3	9.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			33.6									
HCM 2010 LOS			C									
<b>Notes</b>												

**APPENDIX E: ROADWAY SEGMENT VOLUME GROWTH CALCULATIONS**

**UNIVERSITY AVE ANNUAL GROWTH RATE CALCULATION**

SANDAG SERIES 13 MODEL - ADT

Roadway	2012	2035	CAGR	
University	Estrella to Winona	14800	17600	-0.8%
	54th to E of 54th	14700	17300	-0.7%
	58th to Univ Sq Dr	20600	24000	-0.7%
	60th to College	17300	21000	-0.8%
		<b>67400</b>	<b>79900</b>	<b>-0.7%</b>
	College to Cartagena	13300	17200	-1.1%
	Alamo to Salvation	10000	14100	-1.5%
	69th to 70th	10500	14500	-1.4%
	<b>TOTAL</b>	<b>33800</b>	<b>45800</b>	<b>-1.3%</b>

## **APPENDIX F: SYNCHRO 9.0 ARTERIAL ANALYSIS**

Table F-1  
Roadway Segment Analysis LOS Results

ID	Study Segments	Existing (2017) Conditions				Existing Plus Project Conditions				Baseline (2022) Conditions				Baseline Plus Project Conditions			
		Roadway Classification (# of Lanes)	ADT	V/C <sup>2</sup>	LOS <sup>3,4</sup>	Roadway Classification (# of Lanes)	ADT	V/C <sup>2</sup>	LOS <sup>3,4</sup>	Roadway Classification (# of Lanes)	ADT	V/C <sup>2</sup>	LOS <sup>3,4</sup>	Roadway Classification (# of Lanes)	ADT	V/C <sup>2</sup>	LOS <sup>3,4</sup>
1	Euclid Ave	4C/3C w/CITL	20,276	0.90	E	4C/3C w/CITL	20,276	1.35	F	4C/3C w/CITL	21,017	0.93	E	4C/3C w/CITL	21,017	1.40	F
2	Winona Ave	3/4M	20,246	0.67	C	2M	20,246	1.01	F	3/4M	20,987	0.70	C	2M	20,987	1.05	F
3	52nd St	4M	21,583	0.54	C	2M	21,583	1.08	F	4M	22,367	0.56	C	2M	22,367	1.12	F
4	54th St	4M	22,989	0.57	C	4M	22,989	0.57	C	4M	23,830	0.60	C	4M	23,830	0.60	C
5	Chollas Pkwy	4M	29,080	0.73	C	4M	29,080	0.73	D	4M	30,152	0.75	D	4M	30,152	0.75	D
6	58th St	5M	21,328	0.43	B	4M	21,328	0.53	C	5M	22,108	0.44	B	4M	22,108	0.55	C
7	University Square Dwy	5M	23,838	0.48	B	4M	23,838	0.60	C	5M	24,722	0.49	B	4M	24,722	0.62	C
8	60th St	4/5M	22,014	0.55	C	4M	22,014	0.55	C	4/5M	22,819	0.57	C	4M	22,819	0.57	C
9	College Ave	4M	20,250	0.51	B	2C w/CITL	20,250	1.35	F	4M	21,585	0.54	C	2C w/CITL	21,585	1.44	F
10	Rolando Blvd	4M	21,645	0.54	C	2C w/CITL	21,645	1.44	F	4M	23,084	0.58	C	2C w/CITL	23,084	1.54	F
11	Aragon Dr	4M	17,411	0.44	B	2M	17,411	0.87	D	4M	18,569	0.46	B	2M	18,569	0.98	E
12	Salvation Dwy	4M	19,910	0.50	B	2M	19,910	1.00	E	4M	21,233	0.53	C	2M	21,233	1.06	F

Source: Fehr & Peers, 2018

Notes:

- 2C w/CITL = 2-lane collector with center left-turn lane  
3C w/CITL = 3-lane collector (2 lanes in one direction and 1 in opposing direction) with center left-turn lane; capacity is assumed to be 150% of 2C w/CITL capacity  
4C = 4-lane collector  
2M = 2-lane major arterial (1 lane in each direction with a raised median and left turn pockets); capacity is assumed to be 50% of 4M capacity  
3M = 3-lane major arterial (2 lanes in one direction and 1 in opposing direction); capacity is assumed to be 75% of 4M capacity  
4M = 4-lane major arterial  
5M = 5-lane major arterial (3 lanes in one direction and 2 in opposing direction); capacity is assumed to be 125% of 4M capacity  
2 Volume-to-capacity ratio. Worst-case is shown on segments with multiple classifications  
3 LOS calculations performed using City of San Diego Traffic Impact Study Manual (1998)  
4 Unacceptable ADT volumes per segment and LOS highlighted in bold.



**Table F-2**  
**Part 2: Roadway Segment Analysis for Existing Without and With Project**

Study Segments	Peak Hour Speed-Based LOS										Change in Vehicle Travel Time (sec) <sup>1</sup>		Consistent with Community Plan?						
	ID	University Avenue To/From	Peak Hour Intersection LOS	Direction	Existing Without Project		Existing With Project		AM Peak	PM Peak	Change in Speed	Meets Criterion in AM?		Meets Criterion in PM?	AM Peak	PM Peak			
				Speed	LOS	Speed	LOS	Speed	LOS	Change in Speed	Speed	LOS	Change in Speed	LOS	Change in Speed	LOS	Change in Speed	LOS	
1	Euclid Ave	Winona Ave	Winona Avenue meets the City standard in AM and PM (LOS D or better). Euclid Ave is outside of the project.	EB	20.6	D	20.9	D	18.1	D	-2.5	D	17.9	D	-3.0	D	+1.0	+7.5	No
				WB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	Winona Ave	52nd St	Meets the City standard in AM and PM for both intersections (LOS D or better).	EB	25.7	C	23.4	C	24.0	C	-1.7	C	18.8	D	-4.6	D	+2.9	+10.1	No
				WB	22.7	C	18.8	D	22.9	C	+0.2	C	19.6	D	0.8	D	-0.3	-0.4	
3	52nd St	54th St	52nd St meets the City standard in AM and PM (LOS D or better). 54th St does not meet the City standard in AM or PM (LOS E).	EB	13.2	E	10.4	F	12.2	F	-1.0	F	10.2	F	-0.2	F	+5.4	+1.3	No
				WB	21.3	D	22.3	C	18.6	D	-2.7	D	19.4	D	-2.9	D	+6.1	+5.8	
9	College Ave	Rolando Blvd	Rolando Blvd meets the City standard in AM and PM (LOS D or better). College Ave does not meet the City standard in AM or PM (LOS E).	EB	28.6	B	31.4	B	27.1	C	-1.5	C	24.8	C	-6.6	C	+2.9	+12.2	No
				WB	15.3	E	16.8	E	14.3	E	-1.0	E	16.0	E	-0.8	E	-1.4	+5.8	
10	Rolando Blvd	Aragon Dr	Meets the City standard in AM and PM for both intersections (LOS D or better).	EB	23.2	C	22.6	C	19.7	D	-3.5	D	21.4	D	-1.2	D	+5.5	+3.5	No
				WB	21.8	D	22.2	C	17.9	D	-3.9	D	17.5	D	-4.7	D	+6.3	+8.6	
12	Salvation Dwy	70th St/Lois St	Meets the City standard in AM and PM for both intersections (LOS D or better).	EB	19.3	D	17.4	D	19.5	D	+0.2	D	17.0	D	-0.4	D	+0.7	+1.2	No
				WB	25.8	C	26.1	C	25.0	C	-0.8	C	26.0	C	-0.1	C	+1.2	+0.1	

Source: Appendix F (Synchro 9.0 Arterial Analysis)

1. Existing With Project Travel Time minus Existing Without Project Travel Time

**Table F-3**  
**Part 2: Roadway Segment Analysis for Future Without and With Project**

Study Segments	Peak Hour Intersection LOS	Direction	Future Without Project						Future With Project						Peak Hour Speed-Based Performance	Change in Vehicle Travel Time (sec) <sup>1</sup>	Consistent with Community Plan?		
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour							
			Speed	LOS	Change in Speed	Speed	LOS	Change in Speed	Speed	LOS	Change in Speed	Speed	LOS	Change in Speed				Meets Criterion in AM?	Meets Criterion in PM?
1	Winona Ave Euclid Ave	Winona Avenue meets the City standard in AM and PM (LOS D or better). Euclid Ave is outside of the project.	EB	20.0	D	-2.6	17.4	D	-3.2	17.0	D	-	-	-	Yes	Yes	+1.4	+8.7	No
2	Winona Ave 52nd St	Meets the City standard in AM and PM for both intersections (LOS D or better).	EB	25.5	C	-2.0	23.5	C	-4.7	18.2	D	-	-	Yes	Yes	+3.4	+11.0	No	
3	52nd St 54th St	52nd St meets the City standard in AM and PM (LOS D or better). 54th St does not meet the City standard in AM or PM (LOS F).	EB	12.7	F	-0.5	12.2	F	0.1	10.1	F	-	-	Yes	Yes	+2.8	-0.4	No	
9	College Ave Rolando Blvd	Rolando Blvd meets the City standard in AM and PM (LOS D or better). College Ave does not meet the City standard in AM or PM (LOS E).	EB	27.5	C	-1.8	25.7	C	-8.0	22.9	C	-	-	Yes	Yes	+4.0	+16.1	No	
10	Rolando Blvd Aragon Dr	Meets the City standard in AM and PM for both intersections (LOS D or better).	EB	22.7	C	-3.8	18.9	D	-1.9	20.3	D	-	-	Yes	Yes	+6.5	+5.6	No	
11	Aragon Dr Salvation Dwy	Meets the City standard in AM and PM for both intersections (LOS D or better).	WB	21.1	D	-3.9	17.2	D	-5.0	16.9	D	-	-	Yes	Yes	+7.7	+9.2	No	
12	Salvation Dwy 70th St/Lois St	Meets the City standard in AM and PM for both intersections (LOS D or better).	EB	17.9	D	-0.6	17.3	D	-1.0	14.4	E	-	-	Yes	Yes	+1.1	+2.5	No	
			WB	20.6	D	-3.1	17.5	D	-2.2	19.6	D	-	-	Yes	Yes	+4.7	+2.8	No	
			EB	18.3	D	+0.3	18.6	D	+0.4	17.5	D	-	-	Yes	Yes	-0.8	-1.4	No	
			WB	25.8	C	-0.8	25.0	C	-0.2	26.0	C	-	-	Yes	Yes	+1.3	+0.3	No	

Source: Appendix F (Synchro 9.0 Arterial Analysis)  
 1. Future With Project After Mitigation Travel Time minus Future Without Project Travel Time

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	26.0	10.4	36.4	0.21	20.6	D
52nd St	II	35	31.1	5.5	36.6	0.26	25.7	C
54th St	II	35	28.8	37.3	66.1	0.24	13.2	E
58th St	II	40	41.0	15.2	56.2	0.43	27.6	C
University Square Dw	II	40	18.1	7.2	25.3	0.16	22.4	C
60th St	II	40	27.5	9.8	37.3	0.25	24.1	C
College Ave	II	40	17.0	43.8	60.8	0.15	8.7	F
Rolando Blvd	II	35	39.8	8.0	47.8	0.38	28.6	B
Aragon Dr	II	35	26.5	6.4	32.9	0.21	23.2	C
Salvation Driveway	II	35	19.1	10.0	29.1	0.15	18.9	D
Lois St	II	35	32.0	18.2	50.2	0.27	19.3	D
Total	II		306.9	171.8	478.7	2.71	20.4	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	37.0	71.0	0.31	15.7	E
Salvation Driveway	II	34	32.0	5.5	37.5	0.27	25.8	C
Aragon Dr	II	35	19.1	7.2	26.3	0.15	20.9	D
	II	35	26.5	8.4	34.9	0.21	21.8	D
College Ave	II	35	39.8	49.3	89.1	0.38	15.3	E
60th St	II	40	17.0	8.9	25.9	0.15	20.5	D
University Square Dw	II	40	27.5	7.3	34.8	0.25	25.9	C
	II	40	18.1	19.2	37.3	0.16	15.2	E
54th St	II	35	44.9	48.1	93.0	0.43	16.7	E
52nd St	II	35	28.8	12.1	40.9	0.24	21.3	D
Winona Ave	II	35	31.1	10.4	41.5	0.26	22.7	C
Total	II		318.8	213.4	532.2	2.81	19.0	D

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	27.7	12.3	40.0	0.23	20.9	D
52nd St	II	35	31.1	9.1	40.2	0.26	23.4	C
54th St	II	35	28.8	55.4	84.2	0.24	10.4	F
58th St	II	40	40.6	15.7	56.3	0.42	27.1	C
University Square Dw	II	40	18.6	5.9	24.5	0.16	23.7	C
60th St	II	40	27.5	19.8	47.3	0.25	19.0	D
College Ave	II	40	17.0	41.9	58.9	0.15	9.0	F
Rolando Blvd	II	35	39.4	3.7	43.1	0.38	31.4	B
Aragon Dr	II	35	26.9	7.3	34.2	0.21	22.6	C
Salvation Driveway	II	35	19.1	16.1	35.2	0.15	15.7	E
Lois St	II	35	32.0	23.7	55.7	0.27	17.4	D
Total	II		308.7	210.9	519.6	2.73	18.9	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	41.8	75.8	0.31	14.7	E
Salvation Driveway	II	34	32.0	5.1	37.1	0.27	26.1	C
Aragon Dr	II	35	19.1	6.0	25.1	0.15	21.9	D
	II	35	26.9	7.9	34.8	0.21	22.2	C
College Ave	II	35	39.4	40.8	80.2	0.38	16.8	E
60th St	II	40	17.0	7.9	24.9	0.15	21.4	D
University Square Dw	II	40	27.5	3.3	30.8	0.25	29.2	B
	II	40	18.6	14.6	33.2	0.16	17.5	D
54th St	II	35	44.4	59.2	103.6	0.42	14.7	E
52nd St	II	35	28.8	10.3	39.1	0.24	22.3	C
Winona Ave	II	35	31.1	19.0	50.1	0.26	18.8	D
Total	II		318.8	215.9	534.7	2.81	18.9	D

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	23.5	13.9	37.4	0.19	18.1	D
52nd St	II	35	31.3	8.2	39.5	0.26	24.0	C
54th St	II	35	28.8	42.7	71.5	0.24	12.2	F
58th St	II	40	40.7	16.5	57.2	0.43	27.0	C
University Square Dw	II	40	17.7	8.1	25.8	0.15	21.5	D
60th St	II	40	27.5	10.3	37.8	0.25	23.8	C
College Ave	II	40	17.0	38.5	55.5	0.15	9.6	F
Rolando Blvd	II	35	40.1	10.6	50.7	0.38	27.1	C
Aragon Dr	II	35	26.1	12.1	38.2	0.21	19.7	D
Salvation Driveway	II	35	19.1	12.4	31.5	0.15	17.5	D
Lois St	II	35	32.0	17.6	49.6	0.27	19.5	D
Total	II		303.8	190.9	494.7	2.69	19.6	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	25.7	59.7	0.31	18.7	D
Salvation Driveway	II	34	32.0	6.7	38.7	0.27	25.0	C
Aragon Dr	II	35	19.1	10.4	29.5	0.15	18.7	D
	II	35	26.1	15.8	41.9	0.21	17.9	D
College Ave	II	35	40.1	55.9	96.0	0.38	14.3	E
60th St	II	40	17.0	8.9	25.9	0.15	20.5	D
University Square Dw	II	40	27.5	7.4	34.9	0.25	25.8	C
	II	40	17.7	19.1	36.8	0.15	15.1	E
54th St	II	35	44.6	42.2	86.8	0.43	17.8	D
52nd St	II	35	28.8	18.2	47.0	0.24	18.6	D
Winona Ave	II	35	31.3	10.0	41.3	0.26	22.9	C
Total	II		318.2	220.3	538.5	2.81	18.8	D

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	28.2	19.3	47.5	0.24	17.9	D
52nd St	II	35	31.3	19.0	50.3	0.26	18.8	D
54th St	II	35	28.8	56.7	85.5	0.24	10.2	F
58th St	II	40	41.3	18.6	59.9	0.44	26.2	C
University Square Dw	II	40	17.8	6.9	24.7	0.15	22.5	C
60th St	II	40	27.5	22.3	49.8	0.25	18.1	D
College Ave	II	40	17.0	30.7	47.7	0.15	11.1	F
Rolando Blvd	II	35	39.9	15.4	55.3	0.38	24.8	C
Aragon Dr	II	35	26.3	9.2	35.5	0.21	21.4	D
Salvation Driveway	II	35	19.1	18.5	37.6	0.15	14.7	E
Lois St	II	35	32.0	24.9	56.9	0.27	17.0	D
Total	II		309.2	241.5	550.7	2.74	17.9	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	42.1	76.1	0.31	14.6	E
Salvation Driveway	II	34	32.0	5.2	37.2	0.27	26.0	C
Aragon Dr	II	35	19.1	8.3	27.4	0.15	20.1	D
	II	35	26.3	17.1	43.4	0.21	17.5	D
College Ave	II	35	39.9	45.7	85.6	0.38	16.0	E
60th St	II	40	17.0	7.9	24.9	0.15	21.4	D
University Square Dw	II	40	27.5	3.4	30.9	0.25	29.1	B
	II	40	17.8	13.4	31.2	0.15	17.8	D
54th St	II	35	45.3	50.1	95.4	0.44	16.4	E
52nd St	II	35	28.8	16.1	44.9	0.24	19.4	D
Winona Ave	II	35	31.3	17.1	48.4	0.26	19.6	D
Total	II		319.0	226.4	545.4	2.82	18.6	D

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	26.0	11.5	37.5	0.21	20.0	D
52nd St	II	35	31.1	5.8	36.9	0.26	25.5	C
54th St	II	35	28.8	40.0	68.8	0.24	12.7	F
58th St	II	40	41.0	16.7	57.7	0.43	26.9	C
University Square Dw	II	40	18.1	7.3	25.4	0.16	22.3	C
60th St	II	40	27.5	10.7	38.2	0.25	23.6	C
College Ave	II	40	17.0	49.0	66.0	0.15	8.1	F
Rolando Blvd	II	35	39.8	9.8	49.6	0.38	27.5	C
Aragon Dr	II	35	26.5	7.1	33.6	0.21	22.7	C
Salvation Driveway	II	35	19.1	11.6	30.7	0.15	17.9	D
Lois St	II	35	32.0	20.8	52.8	0.27	18.3	D
Total	II		306.9	190.3	497.2	2.71	19.6	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	39.3	73.3	0.31	15.2	E
Salvation Driveway	II	34	32.0	5.5	37.5	0.27	25.8	C
Aragon Dr	II	35	19.1	7.7	26.8	0.15	20.6	D
	II	35	26.5	9.6	36.1	0.21	21.1	D
College Ave	II	35	39.8	56.6	96.4	0.38	14.2	E
60th St	II	40	17.0	11.1	28.1	0.15	18.9	D
University Square Dw	II	40	27.5	6.6	34.1	0.25	26.4	C
	II	40	18.1	21.0	39.1	0.16	14.5	E
54th St	II	35	44.9	50.8	95.7	0.43	16.2	E
52nd St	II	35	28.8	12.7	41.5	0.24	21.0	D
Winona Ave	II	35	31.1	12.6	43.7	0.26	21.6	D
Total	II		318.8	233.5	552.3	2.81	18.3	D

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	27.7	13.7	41.4	0.23	20.2	D
52nd St	II	35	31.1	10.1	41.2	0.26	22.9	C
54th St	II	35	28.8	58.2	87.0	0.24	10.0	F
58th St	II	40	40.6	17.2	57.8	0.42	26.4	C
University Square Dw	II	40	18.6	6.3	24.9	0.16	23.4	C
60th St	II	40	27.5	21.9	49.4	0.25	18.2	D
College Ave	II	40	17.0	42.8	59.8	0.15	8.9	F
Rolando Blvd	II	35	39.4	4.3	43.7	0.38	30.9	B
Aragon Dr	II	35	26.9	8.0	34.9	0.21	22.2	C
Salvation Driveway	II	35	19.1	16.7	35.8	0.15	15.4	E
Lois St	II	35	32.0	24.6	56.6	0.27	17.1	D
Total	II		308.7	223.8	532.5	2.73	18.5	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	44.5	78.5	0.31	14.2	E
Salvation Driveway	II	34	32.0	5.0	37.0	0.27	26.2	C
Aragon Dr	II	35	19.1	6.2	25.3	0.15	21.8	D
	II	35	26.9	8.4	35.3	0.21	21.9	D
College Ave	II	35	39.4	42.8	82.2	0.38	16.4	E
60th St	II	40	17.0	8.1	25.1	0.15	21.2	D
University Square Dw	II	40	27.5	3.9	31.4	0.25	28.7	B
	II	40	18.6	16.3	34.9	0.16	16.7	E
54th St	II	35	44.4	62.3	106.7	0.42	14.3	E
52nd St	II	35	28.8	11.0	39.8	0.24	21.9	D
Winona Ave	II	35	31.1	21.9	53.0	0.26	17.8	D
Total	II		318.8	230.4	549.2	2.81	18.4	D



## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	23.5	15.4	38.9	0.19	17.4	D
52nd St	II	35	31.3	9.0	40.3	0.26	23.5	C
54th St	II	35	28.8	42.8	71.6	0.24	12.2	F
58th St	II	40	40.7	18.2	58.9	0.43	26.2	C
University Square Dw	II	40	17.7	8.2	25.9	0.15	21.4	D
60th St	II	40	27.5	11.2	38.7	0.25	23.3	C
College Ave	II	40	17.0	42.0	59.0	0.15	9.0	F
Rolando Blvd	II	35	40.1	13.5	53.6	0.38	25.7	C
Aragon Dr	II	35	26.1	13.7	39.8	0.21	18.9	D
Salvation Driveway	II	35	19.1	12.7	31.8	0.15	17.3	D
Lois St	II	35	32.0	20.0	52.0	0.27	18.6	D
Total	II		303.8	206.7	510.5	2.69	18.9	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	26.3	60.3	0.31	18.5	D
Salvation Driveway	II	34	32.0	6.8	38.8	0.27	25.0	C
Aragon Dr	II	35	19.1	12.4	31.5	0.15	17.5	D
	II	35	26.1	17.7	43.8	0.21	17.2	D
College Ave	II	35	40.1	64.6	104.7	0.38	13.1	E
60th St	II	40	17.0	11.1	28.1	0.15	18.9	D
University Square Dw	II	40	27.5	6.7	34.2	0.25	26.3	C
	II	40	17.7	20.9	38.6	0.15	14.4	E
54th St	II	35	44.6	45.6	90.2	0.43	17.1	D
52nd St	II	35	28.8	19.5	48.3	0.24	18.1	D
Winona Ave	II	35	31.3	13.9	45.2	0.26	21.0	D
Total	II		318.2	245.5	563.7	2.81	17.9	D

## Arterial Level of Service: EB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Winona Ave	II	35	28.2	21.9	50.1	0.24	17.0	D
52nd St	II	35	31.3	20.9	52.2	0.26	18.2	D
54th St	II	35	28.8	57.8	86.6	0.24	10.1	F
58th St	II	40	41.3	20.6	61.9	0.44	25.3	C
University Square Dw	II	40	17.8	7.4	25.2	0.15	22.1	C
60th St	II	40	27.5	24.4	51.9	0.25	17.3	D
College Ave	II	40	17.0	30.4	47.4	0.15	11.2	F
Rolando Blvd	II	35	39.9	19.9	59.8	0.38	22.9	C
Aragon Dr	II	35	26.3	11.1	37.4	0.21	20.3	D
Salvation Driveway	II	35	19.1	19.2	38.3	0.15	14.4	E
Lois St	II	35	32.0	23.2	55.2	0.27	17.5	D
Total	II		309.2	256.8	566.0	2.74	17.4	D

## Arterial Level of Service: WB University Ave

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
70th St	II	35	34.0	41.5	75.5	0.31	14.7	E
Salvation Driveway	II	34	32.0	5.3	37.3	0.27	26.0	C
Aragon Dr	II	35	19.1	9.0	28.1	0.15	19.6	D
	II	35	26.3	18.6	44.9	0.21	16.9	E
College Ave	II	35	39.9	47.9	87.8	0.38	15.6	E
60th St	II	40	17.0	8.1	25.1	0.15	21.2	D
University Square Dw	II	40	27.5	3.9	31.4	0.25	28.7	B
	II	40	17.8	15.3	33.1	0.15	16.8	E
54th St	II	35	45.3	52.4	97.7	0.44	16.0	E
52nd St	II	35	28.8	17.6	46.4	0.24	18.8	D
Winona Ave	II	35	31.3	21.6	52.9	0.26	17.9	D
Total	II		319.0	241.2	560.2	2.82	18.1	D

## **APPENDIX G: QUEUEING ANALYSIS AND WORKSHEETS**

**INTERSECTION QUEUEING ANALYSIS**

Intersection	Peak Hour	Movement	Available Storage (feet)	50 <sup>th</sup> Percentile Queue (feet) <sup>1,2</sup>			95 <sup>th</sup> Percentile Queue (feet) <sup>1,2</sup>		
				Existing Conditions	Existing plus Project Conditions	Project Queue Beyond Capacity	Existing Conditions	Existing plus Project Conditions	Project Queue Beyond Capacity
7. 54th St & University Ave	AM	EBL	160	94	150	-10	<b>187</b>	<b>276</b>	<b>116</b>
		EBT	550	142	186	-364	227	271	-279
		EBR	275	30	154	-121	<b>96</b>	<b>282</b>	<b>7</b>
		WBL	300	42	194	-106	102	<b>438</b>	<b>138</b>
		WBT	2184	173	206	-1978	277	320	-1864
		WBR	420	62	419	-1	<b>203</b>	<b>876</b>	<b>456</b>
		NBL	230	210	<b>363</b>	<b>133</b>	<b>388</b>	<b>812</b>	<b>582</b>
		NBT	573	257	423	-150	412	<b>633</b>	<b>60</b>
		NBR	120	0	<b>221</b>	<b>101</b>	11	<b>499</b>	<b>379</b>
	SBL	345	95	148	-197	167	244	-101	
	SBT	1482	172	174	-1308	277	262	-1220	
	SBR	100		<b>172</b>	<b>72</b>		<b>337</b>	<b>237</b>	
	PM	EBL	160	99	119	-41	<b>194</b>	<b>224</b>	<b>64</b>
		EBT	550	254	283	-267	384	391	-159
		EBR	275	104	262	-13	<b>227</b>	<b>587</b>	<b>312</b>
		WBL	300	98	292	-8	192	<b>646</b>	<b>346</b>
		WBT	2184	287	296	-1888	431	435	-1749
		WBR	420	60	261	-159	171	547	<b>127</b>
NBL		230	<b>252</b>	<b>323</b>	<b>93</b>	<b>532</b>	<b>693</b>	<b>463</b>	
NBT		573	158	189	-384	239	283	-290	
NBR		120	0	<b>280</b>	<b>160</b>	13	<b>613</b>	<b>493</b>	
SBL	345	224	276	-69	<b>388</b>	<b>512</b>	<b>167</b>		
SBT	1482	403	387	-1095	565	545	-937		
SBR	100		117		17	235	135		
8. 58th St & University Ave	AM	EBL	100	37	37	-63	77	77	-23
		EBT	2198	69	105	-2093	112	174	-2024
		EBR	175	10	78	-97	50	166	-9
		WBL	120	19	19	-101	51	51	-69
		WBT	750	117	116	-634	255	254	-496
		WBR	180	1	28	-152	31	73	-107
		NBT	575	178	178	-397	265	265	-310
	SBT	560	31	31	-529	68	68	-492	
	PM	EBL	100	67	67	-33	<b>120</b>	<b>120</b>	<b>20</b>
		EBT	2198	142	231	-1967	224	373	-1825
		EBR	175	53	174	-1	135	<b>319</b>	<b>144</b>
		WBL	120	50	49	-71	108	109	-11
		WBT	750	125	124	-626	164	160	-590
		WBR	180	2	27	-153	8	77	-103
NBT		575	157	157	-418	228	228	-347	
SBT	560	58	58	-502	101	101	-459		
9. University Square Dwy & University Ave	AM	EBT	750	27	40	-710	175	274	-476
		EBR	90	0	40	-50	53	<b>91</b>	<b>1</b>
		WBL	425	43	43	-382	60	60	-365
		WBT	1240	112	112	-1128	331	332	-908
		NBL	364	60	60	-304	77	77	-287
	NBR	364	0	0	-364	9	9	-355	
	PM	EBT	750	30	41	-709	109	227	-523
		EBR	90	1	51	-39	1	<b>140</b>	<b>50</b>
		WBL	425	120	120	-305	16	169	-256
		WBT	1240	87	87	-1153	27	27	-1213
NBL		364	139	139	-225	176	176	-188	
NBR	364	24	24	-340	39	39	-325		

**INTERSECTION QUEUEING ANALYSIS**

Intersection	Peak Hour	Movement	Available Storage (feet)	50 <sup>th</sup> Percentile Queue (feet) <sup>1,2</sup>			95 <sup>th</sup> Percentile Queue (feet) <sup>1,2</sup>		
				Existing Conditions	Existing plus Project Conditions	Project Queue Beyond Capacity	Existing Conditions	Existing plus Project Conditions	Project Queue Beyond Capacity
10. 60th St & University Ave	AM	EBL	130	4	4	-126	8	11	-119
		EBT	1240	92	140	-1100	169	251	-989
		EBR	130	0	17	-113	28	34	-96
		WBL	125	17	17	-108	43	43	-82
		WBT	700	66	66	-634	271	271	-429
		WBR	125		5	-120		19	-106
		NBT	569	60	60	-509	79	79	-490
		NBR	569	0	0	-569	17	0	-569
	PM	SBT	540	18	18	-522	34	34	-506
		EBL	175	13	13	-162	39	26	-149
		EBT	1240	118	237	-1003	314	455	-785
		EBR	130	0	36	-94	63	78	-52
		WBL	175	63	63	-112	117	117	-58
		WBT	700	46	46	-654	241	241	-459
		WBR	125		0	-125		0	-125
		NBT	569	35	35	-534	54	54	-515
11. College Ave & University Ave	AM	NBR	569	0	0	-569	28	0	-569
		SBT	540	15	15	-525	30	30	-510
		EBL	225	126	197	-28	<b>255</b>	<b>406</b>	<b>181</b>
		EBT	700	15	188	-512	274	285	-415
		EBR	200	6	114	-86	58	<b>213</b>	<b>13</b>
		WBL	200	109	171	-29	<b>225</b>	<b>296</b>	<b>96</b>
		WBT	665	205	578	-87	351	<b>812</b>	<b>147</b>
		WBR	180	36	125	-55	117	<b>233</b>	<b>53</b>
	PM	NBL	160	147	<b>237</b>	<b>77</b>	<b>301</b>	<b>462</b>	<b>302</b>
		NBT	1140	296	490	-650	471	722	-418
		NBR	100	30	31	-69	91	<b>107</b>	<b>7</b>
		SBL	175	75	117	-58	167	<b>218</b>	<b>43</b>
		SBT	722	106	170	-552	182	259	-463
		SBR	50	44	50	0	<b>119</b>	<b>137</b>	<b>87</b>
		EBL	225	142	182	-43	<b>254</b>	<b>341</b>	<b>116</b>
		EBT	700	211	208	-492	268	259	-441
PM	EBR	200	0	196	-4	55	<b>357</b>	<b>157</b>	
	WBL	200	124	158	-42	<b>262</b>	<b>308</b>	<b>108</b>	
	WBT	665	165	338	-327	219	462	-203	
	WBR	180	0	82	-98	15	153	-27	
	NBL	160	111	153	-7	<b>239</b>	<b>298</b>	<b>138</b>	
	NBT	1140	141	181	-959	201	244	-896	
	NBR	100	0	30	-70	39	96	-4	
	SBL	175	113	159	-16	<b>197</b>	<b>305</b>	<b>130</b>	
14. Rolando Blvd & University Ave	AM	SBT	722	191	257	-465	261	336	-386
		SBR	50	23	49	-1	<b>83</b>	<b>125</b>	<b>75</b>
		EBL	120	31	57	-63	67	<b>153</b>	<b>33</b>
		EBT	456	42	87	-369	154	342	-114
		EBR	120		19	-101		48	-72
		WBL	120	8	8	-112	30	20	-100
		WBT	1038	73	136	-902	93	331	-707
		WBR	180		14	-166		40	-140
	PM	NBT	632	81	82	-550	111	112	-520
		SBT	342	42	52	-290	69	80	-262
		EBL	120	41	91	-29	66	<b>201</b>	<b>81</b>
		EBT	456	12	170	-286	68	<b>723</b>	<b>267</b>
		EBR	120		35	-85		74	-46
		WBL	120	14	13	-107	40	36	-84
		WBT	1038	64	144	-894	83	448	-590
		WBR	180		13	-167		39	-141
PM	NBT	632	66	65	-567	99	97	-535	
	SBT	342	76	87	-255	109	122	-220	

### INTERSECTION QUEUEING ANALYSIS

Intersection	Peak Hour	Movement	Available Storage (feet)	50 <sup>th</sup> Percentile Queue (feet) <sup>1,2</sup>			95 <sup>th</sup> Percentile Queue (feet) <sup>1,2</sup>		
				Existing Conditions	Existing plus Project Conditions	Project Queue Beyond Capacity	Existing Conditions	Existing plus Project Conditions	Project Queue Beyond Capacity
15. Aragon Dr & University Ave	AM	EBL	100	3	3	-97	16	10	-90
		EBT	1038	45	104	-934	73	262	-776
		EBR	100	0	0	-100	0	0	-100
		WBL	100	17	17	-83	44	44	-56
		WBT	212	38	91	-121	164	<b>418</b>	<b>206</b>
		WBR	60	0	0	-60	0	0	-60
		NBL	75	47	47	-28	70	70	-5
		NBT	483	63	63	-420	92	92	-391
	SBT	532	15	15	-517	29	29	-503	
	PM	EBL	100	5	5	-95	15	11	-89
		EBT	1038	74	306	-732	116	789	-249
		EBR	100	2	0	-100	7	28	-72
		WBL	100	27	27	-73	61	61	-39
		WBT	212	29	67	-145	146	<b>360</b>	<b>148</b>
		WBR	60	0	0	-60	0	0	-60
		NBL	75	31	31	-44	51	51	-24
NBT		483	24	24	-459	58	58	-425	
SBT	532	37	37	-495	58	58	-474		

Source: Fehr & Peers, 2018

1. Calculated using Synchro 9.0.
2. **Bold** results indicate queue exceeds available storage

Queues  
7: 54th St & University Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	133	435	145	59	483	393	314	799	45	261	509
v/c Ratio	0.58	0.43	0.28	0.42	0.65	0.70	0.66	0.62	0.07	0.59	0.68
Control Delay	60.7	37.3	16.3	64.9	48.1	19.2	48.9	35.1	2.4	55.5	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	37.3	16.3	64.9	48.1	19.2	48.9	35.1	2.4	55.5	45.5
Queue Length 50th (ft)	94	142	30	42	173	62	210	257	0	95	172
Queue Length 95th (ft)	187	227	96	102	277	203	388	412	11	167	277
Internal Link Dist (ft)		314			2198			573			1482
Turn Bay Length (ft)	270		115	310		200	230		120	345	
Base Capacity (vph)	928	2795	1269	464	1855	970	476	1880	875	899	1770
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.16	0.11	0.13	0.26	0.41	0.66	0.42	0.05	0.29	0.29

Intersection Summary

Queues  
8: 58th St & University Ave

Existing Conditions  
AM Peak Hour



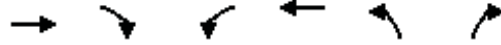
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	67	562	140	36	875	55	356	145
v/c Ratio	0.47	0.22	0.17	0.29	0.52	0.07	0.88	0.29
Control Delay	49.4	15.2	6.5	49.3	19.2	7.9	50.8	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	15.2	6.5	49.3	19.2	7.9	50.8	13.0
Queue Length 50th (ft)	37	69	10	19	117	1	178	31
Queue Length 95th (ft)	77	112	50	51	255	31	265	68
Internal Link Dist (ft)		2198			750		575	560
Turn Bay Length (ft)	115		40	120		100		
Base Capacity (vph)	178	2561	821	178	1667	758	504	617
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	0.38	0.22	0.17	0.20	0.52	0.07	0.71	0.24

Intersection Summary



Queues  
9: University Square Dwy & University Ave

Existing Conditions  
AM Peak Hour



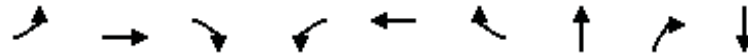
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	748	116	78	945	109	17
v/c Ratio	0.23	0.11	0.49	0.35	0.40	0.04
Control Delay	7.2	1.7	39.9	7.3	35.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	1.7	39.9	7.3	35.8	6.4
Queue Length 50th (ft)	27	0	43	112	60	0
Queue Length 95th (ft)	175	m53	60	331	77	9
Internal Link Dist (ft)	750			1240	364	
Turn Bay Length (ft)		90	425			
Base Capacity (vph)	3297	1024	218	2717	662	435
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.11	0.36	0.35	0.16	0.04

Intersection Summary

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

Queues  
10: 60th St & University Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	10	602	31	30	863	9	110	61	45
v/c Ratio	0.10	0.17	0.03	0.25	0.33	0.01	0.50	0.18	0.17
Control Delay	31.6	9.8	5.6	44.4	8.9	0.0	38.7	4.3	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	9.8	5.6	44.4	8.9	0.0	38.7	4.3	23.6
Queue Length 50th (ft)	4	92	0	17	66	0	60	0	18
Queue Length 95th (ft)	8	169	28	43	271	0	79	17	34
Internal Link Dist (ft)		1240			700		569		540
Turn Bay Length (ft)	175		130	175		125			
Base Capacity (vph)	159	3447	1068	159	2583	1176	505	652	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.17	0.03	0.19	0.33	0.01	0.22	0.09	0.08

Intersection Summary

Queues  
11: College Ave & University Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	171	445	100	146	550	137	207	843	129	100	311	144
v/c Ratio	0.62	0.50	0.22	0.61	0.67	0.33	0.61	0.69	0.22	0.53	0.36	0.32
Control Delay	62.8	43.8	12.0	65.2	49.3	22.8	57.4	39.1	15.7	68.2	40.8	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	43.8	12.0	65.2	49.3	22.8	57.4	39.1	15.7	68.2	40.8	22.6
Queue Length 50th (ft)	126	156	6	109	205	36	147	296	30	75	106	44
Queue Length 95th (ft)	255	274	58	225	351	117	301	471	91	167	182	119
Internal Link Dist (ft)		700			665			1140			722	
Turn Bay Length (ft)	275		180	200		100	160		100	175		75
Base Capacity (vph)	910	2689	1200	455	1820	814	455	1860	866	455	1820	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.17	0.08	0.32	0.30	0.17	0.45	0.45	0.15	0.22	0.17	0.17

Intersection Summary

Queues  
14: Rolando Blvd & University Ave

Existing Conditions  
AM Peak Hour

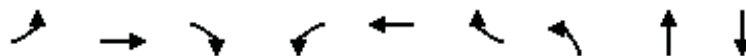


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	56	560	14	676	158	114
v/c Ratio	0.39	0.23	0.14	0.32	0.62	0.38
Control Delay	46.6	8.0	47.5	8.4	40.7	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	8.0	47.5	8.4	40.7	24.1
Queue Length 50th (ft)	31	42	8	73	81	42
Queue Length 95th (ft)	67	154	30	93	111	69
Internal Link Dist (ft)		456		1038	632	342
Turn Bay Length (ft)	120		120			
Base Capacity (vph)	198	2401	198	2113	512	582
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.23	0.07	0.32	0.31	0.20

Intersection Summary

Queues  
15: Aragon Dr & University Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	6	558	17	31	606	23	87	155	30
v/c Ratio	0.06	0.24	0.02	0.26	0.24	0.02	0.42	0.52	0.11
Control Delay	46.6	6.4	0.0	44.4	7.2	0.0	37.8	30.1	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	6.4	0.0	44.4	7.2	0.0	37.8	30.1	27.6
Queue Length 50th (ft)	3	45	0	17	38	0	47	63	15
Queue Length 95th (ft)	m16	73	0	44	164	0	70	92	29
Internal Link Dist (ft)		1038			212			483	532
Turn Bay Length (ft)	90		75	100		75	75		
Base Capacity (vph)	198	2351	1033	198	2529	1100	489	647	631
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.24	0.02	0.16	0.24	0.02	0.18	0.24	0.05

Intersection Summary

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

Queues  
7: 54th St & University Ave

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	111	578	251	110	638	259	291	421	39	511	901
v/c Ratio	0.63	0.69	0.54	0.63	0.78	0.51	0.76	0.37	0.07	0.72	0.85
Control Delay	81.0	55.4	30.1	81.1	59.2	20.0	68.8	39.1	3.2	61.5	54.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	55.4	30.1	81.1	59.2	20.0	68.8	39.1	3.2	61.5	54.5
Queue Length 50th (ft)	99	254	104	98	287	60	252	158	0	224	403
Queue Length 95th (ft)	194	384	227	192	431	171	#532	239	13	#388	565
Internal Link Dist (ft)		314			2155			573			1482
Turn Bay Length (ft)	270		115	310		200	230		120	345	
Base Capacity (vph)	382	1540	756	382	1530	785	382	1550	727	742	1503
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.38	0.33	0.29	0.42	0.33	0.76	0.27	0.05	0.69	0.60

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
8: 58th St & University Ave

Existing Conditions  
PM Peak Hour

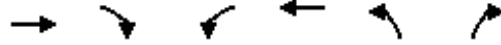


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	103	1042	267	85	779	56	268	141
v/c Ratio	0.62	0.37	0.30	0.55	0.42	0.07	0.86	0.39
Control Delay	60.9	15.7	10.7	61.6	13.5	2.5	58.8	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	15.7	10.7	61.6	13.5	2.5	58.8	25.8
Queue Length 50th (ft)	67	142	53	50	125	2	157	58
Queue Length 95th (ft)	120	224	135	108	164	8	228	101
Internal Link Dist (ft)		2155			773		567	574
Turn Bay Length (ft)	115		40	120		110		
Base Capacity (vph)	205	2818	886	205	1870	833	430	498
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	0.50	0.37	0.30	0.41	0.42	0.07	0.62	0.28

Intersection Summary

Queues  
9: University Square Dwy & University Ave

Existing Conditions  
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1020	153	185	712	217	71
v/c Ratio	0.37	0.18	0.76	0.28	0.66	0.14
Control Delay	5.9	0.8	66.0	3.3	47.6	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	0.8	66.0	3.3	47.6	14.6
Queue Length 50th (ft)	30	1	120	87	139	24
Queue Length 95th (ft)	109	1	169	27	176	39
Internal Link Dist (ft)	773			1240	364	
Turn Bay Length (ft)		90	425			
Base Capacity (vph)	2729	834	291	2533	624	561
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.18	0.64	0.28	0.35	0.13

Intersection Summary



Queues  
10: 60th St & University Ave

Existing Conditions  
PM Peak Hour



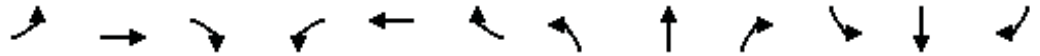
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	21	1036	58	98	783	54	67	28
v/c Ratio	0.21	0.29	0.05	0.62	0.29	0.33	0.26	0.15
Control Delay	35.4	19.8	15.8	62.6	7.9	42.7	9.6	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	19.8	15.8	62.6	7.9	42.7	9.6	31.7
Queue Length 50th (ft)	13	118	0	63	46	35	0	15
Queue Length 95th (ft)	m39	314	63	117	241	54	28	30
Internal Link Dist (ft)		1240			700	569		540
Turn Bay Length (ft)	175		130	175				
Base Capacity (vph)	154	3532	1061	188	2697	441	567	504
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	0.14	0.29	0.05	0.52	0.29	0.12	0.12	0.06

Intersection Summary

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

Queues  
11: College Ave & University Ave

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	233	682	231	191	499	110	173	509	190	184	680	218
v/c Ratio	0.83	0.78	0.41	0.93	0.69	0.22	0.93	0.46	0.30	0.77	0.59	0.35
Control Delay	64.7	41.9	6.2	92.9	41.0	3.0	94.8	30.7	4.2	62.7	31.1	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	41.9	6.2	92.9	41.0	3.0	94.8	30.7	4.2	62.7	31.1	9.4
Queue Length 50th (ft)	142	211	0	124	165	0	111	141	0	113	191	23
Queue Length 95th (ft)	#254	268	55	#262	219	15	#239	201	39	#197	261	83
Internal Link Dist (ft)		700			665			1140			722	
Turn Bay Length (ft)	275		180	200		100	160		100	175		75
Base Capacity (vph)	311	987	608	205	782	516	187	1102	641	276	1160	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.69	0.38	0.93	0.64	0.21	0.93	0.46	0.30	0.67	0.59	0.35

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
14: Rolando Blvd & University Ave

Existing Conditions  
PM Peak Hour



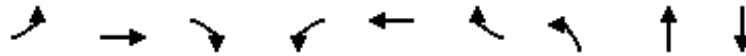
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	61	875	21	614	126	145
v/c Ratio	0.46	0.36	0.21	0.27	0.59	0.60
Control Delay	65.9	3.1	55.6	7.4	42.8	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	3.1	55.6	7.4	42.8	41.5
Queue Length 50th (ft)	41	12	14	64	66	76
Queue Length 95th (ft)	m66	68	40	83	99	109
Internal Link Dist (ft)		436		1055	575	358
Turn Bay Length (ft)	120		120			
Base Capacity (vph)	178	2464	178	2282	443	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.36	0.12	0.27	0.28	0.29

Intersection Summary

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

Queues  
15: Aragon Dr & University Ave

Existing Conditions  
PM Peak Hour



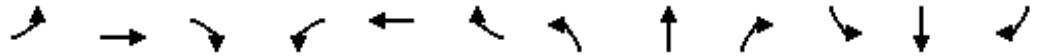
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	8	852	83	44	551	7	50	109	60
v/c Ratio	0.09	0.34	0.08	0.36	0.21	0.01	0.28	0.42	0.30
Control Delay	44.9	6.2	2.2	51.7	6.0	0.0	40.1	20.0	40.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	6.2	2.2	51.7	6.0	0.0	40.1	20.0	40.2
Queue Length 50th (ft)	5	74	2	27	29	0	31	24	37
Queue Length 95th (ft)	m15	116	7	61	146	0	51	58	58
Internal Link Dist (ft)		1055			212			483	532
Turn Bay Length (ft)	90		75	100		75	75		
Base Capacity (vph)	267	2499	1089	249	2682	1132	471	582	535
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.34	0.08	0.18	0.21	0.01	0.11	0.19	0.11

Intersection Summary

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

Queues  
7: 54th St & University Ave

Existing Plus Project  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	139	431	144	180	483	393	314	799	206	267	349	161
v/c Ratio	0.72	0.35	0.69	0.78	0.37	0.91	1.06	0.76	0.81	0.72	0.42	0.77
Control Delay	97.9	42.7	91.2	95.9	42.2	87.2	134.9	62.1	95.4	88.4	58.7	97.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.9	42.7	91.2	95.9	42.2	87.2	134.9	62.1	95.4	88.4	58.7	97.9
Queue Length 50th (ft)	150	186	154	194	206	419	~363	423	221	148	174	172
Queue Length 95th (ft)	276	271	282	#438	320	#876	#812	633	#499	244	262	#337
Internal Link Dist (ft)		314			2184			573			1482	
Turn Bay Length (ft)	160		275	300		420	230		120	345		100
Base Capacity (vph)	465	1389	596	232	1612	431	296	1260	253	541	1092	264
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.31	0.24	0.78	0.30	0.91	1.06	0.63	0.81	0.49	0.32	0.61

Intersection Summary

~ 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.

Queues  
8: 58th St & University Ave

Existing Plus Project  
AM Peak Hour



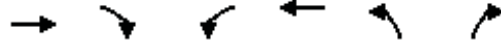
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	67	562	140	36	875	55	356	145
v/c Ratio	0.47	0.32	0.77	0.29	0.52	0.28	0.88	0.29
Control Delay	49.4	16.5	66.2	49.4	19.1	48.1	50.8	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	16.5	66.2	49.4	19.1	48.1	50.8	13.0
Queue Length 50th (ft)	37	105	78	19	116	28	178	31
Queue Length 95th (ft)	77	174	#166	51	254	73	265	68
Internal Link Dist (ft)		2184			734		622	587
Turn Bay Length (ft)	100		175	120		100		
Base Capacity (vph)	178	1731	196	178	1631	196	504	617
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	0.38	0.32	0.71	0.20	0.54	0.28	0.71	0.24

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
9: University Square Dwy & University Ave

Existing Plus Project  
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	748	116	78	945	109	17
v/c Ratio	0.33	0.67	0.49	0.35	0.40	0.04
Control Delay	8.1	45.0	39.9	7.4	35.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	45.0	39.9	7.4	35.8	6.4
Queue Length 50th (ft)	40	40	43	112	60	0
Queue Length 95th (ft)	274	m#91	60	332	77	9
Internal Link Dist (ft)	734			1240	364	
Turn Bay Length (ft)		90	425			
Base Capacity (vph)	2267	180	218	2701	662	435
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.64	0.36	0.35	0.16	0.04

Intersection Summary

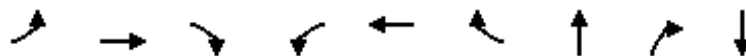
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Queues  
10: 60th St & University Ave

Existing Plus Project  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	10	602	31	30	863	9	110	61	45
v/c Ratio	0.10	0.25	0.34	0.25	0.33	0.06	0.50	0.15	0.17
Control Delay	42.8	10.3	30.2	44.4	8.9	36.6	38.7	0.7	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	10.3	30.2	44.4	8.9	36.6	38.7	0.7	23.6
Queue Length 50th (ft)	4	140	17	17	66	5	60	0	18
Queue Length 95th (ft)	m11	251	34	43	271	19	79	0	34
Internal Link Dist (ft)		1240			700		569		540
Turn Bay Length (ft)	130		175	125		175			
Base Capacity (vph)	159	2358	91	159	2577	179	505	718	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.26	0.34	0.19	0.33	0.05	0.22	0.08	0.08

Intersection Summary

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



Queues  
11: College Ave & University Ave

Existing Plus Project  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	171	445	100	146	552	138	207	843	129	100	311	144
v/c Ratio	0.76	0.31	0.53	0.73	0.76	0.30	0.78	0.83	0.25	0.66	0.41	0.35
Control Delay	99.6	38.5	89.3	101.7	55.9	52.9	95.7	68.6	18.9	105.1	63.4	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.6	38.5	89.3	101.7	55.9	52.9	95.7	68.6	18.9	105.1	63.4	26.4
Queue Length 50th (ft)	197	188	114	171	578	125	237	490	31	117	170	50
Queue Length 95th (ft)	#406	285	213	296	812	233	#462	722	107	218	259	137
Internal Link Dist (ft)		700			294			1140			722	
Turn Bay Length (ft)	225		200	150		150	160		100	175		75
Base Capacity (vph)	255	1460	542	311	879	591	311	1272	628	311	1245	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.30	0.18	0.47	0.63	0.23	0.67	0.66	0.21	0.32	0.25	0.23

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
14: Rolando Blvd & University Ave

Existing Plus Project  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	99	512	36	14	646	30	158	127
v/c Ratio	0.90	0.40	0.21	0.14	0.58	0.12	0.63	0.44
Control Delay	107.2	10.6	39.5	44.3	15.8	41.9	41.2	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.2	10.6	39.5	44.3	15.8	41.9	41.2	27.7
Queue Length 50th (ft)	57	87	19	8	136	14	82	52
Queue Length 95th (ft)	#153	342	48	m20	#331	m41	112	80
Internal Link Dist (ft)		471			1023		612	336
Turn Bay Length (ft)	90		90	90		180		
Base Capacity (vph)	110	1264	179	198	1097	258	501	554
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	0.90	0.41	0.20	0.07	0.59	0.12	0.32	0.23

Intersection Summary

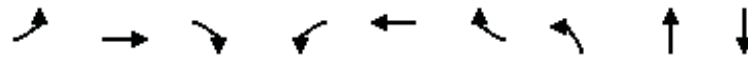
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Queues  
15: Aragon Dr & University Ave

Existing Plus Project  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	6	558	17	31	606	23	87	155	30
v/c Ratio	0.06	0.45	0.07	0.26	0.46	0.02	0.42	0.53	0.12
Control Delay	43.0	12.1	0.5	44.4	10.4	0.0	37.8	30.1	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	12.1	0.5	44.4	10.4	0.0	37.8	30.1	27.9
Queue Length 50th (ft)	3	104	0	17	91	0	47	63	15
Queue Length 95th (ft)	m10	262	m0	44	418	0	70	92	29
Internal Link Dist (ft)		1023			212			483	532
Turn Bay Length (ft)	100		100	100		60	75		
Base Capacity (vph)	198	1237	254	198	1331	1100	488	644	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.45	0.07	0.16	0.46	0.02	0.18	0.24	0.05

Intersection Summary

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

Queues  
7: 54th St & University Ave

Existing Plus Project  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	115	572	248	274	638	259	291	421	268	519	775	128
v/c Ratio	0.68	0.60	0.98	1.01	0.55	0.83	1.04	0.41	0.94	0.89	0.73	0.41
Control Delay	95.8	56.7	118.7	126.8	50.1	86.7	131.4	49.5	107.9	85.6	57.5	66.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.8	56.7	118.7	126.8	50.1	86.7	131.4	49.5	107.9	85.6	57.5	66.1
Queue Length 50th (ft)	119	283	262	292	296	261	~323	189	280	276	387	117
Queue Length 95th (ft)	224	391	#587	#646	435	#547	#693	283	#613	#512	545	235
Internal Link Dist (ft)		314			2218			573			1482	
Turn Bay Length (ft)	160		275	300		420	230		120	345		100
Base Capacity (vph)	249	1340	254	270	1350	318	279	1340	284	585	1351	320
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.43	0.98	1.01	0.47	0.81	1.04	0.31	0.94	0.89	0.57	0.40

Intersection Summary

~ 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.

Queues  
8: 58th St & University Ave

Existing Plus Project  
PM Peak Hour



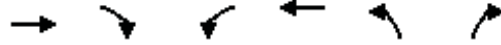
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	103	1042	267	85	779	56	268	141
v/c Ratio	0.62	0.53	0.89	0.55	0.42	0.21	0.86	0.39
Control Delay	60.9	18.6	72.9	61.6	13.4	38.7	58.8	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	18.6	72.9	61.6	13.4	38.7	58.8	25.8
Queue Length 50th (ft)	67	231	174	49	124	27	157	58
Queue Length 95th (ft)	120	373	#319	109	160	77	228	101
Internal Link Dist (ft)		2218			736		492	582
Turn Bay Length (ft)	100		175	120		100		
Base Capacity (vph)	205	1943	307	205	1831	307	430	498
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	0.50	0.54	0.87	0.41	0.43	0.18	0.62	0.28

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
 9: University Square Dwy & University Ave

Existing Plus Project  
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1020	153	185	712	217	71
v/c Ratio	0.54	0.67	0.76	0.28	0.66	0.14
Control Delay	6.9	47.1	66.0	3.4	47.6	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	47.1	66.0	3.4	47.6	14.6
Queue Length 50th (ft)	41	51	120	87	139	24
Queue Length 95th (ft)	227	#140	169	27	176	39
Internal Link Dist (ft)	736			1240	364	
Turn Bay Length (ft)		90	425			
Base Capacity (vph)	1899	230	291	2518	624	561
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.67	0.64	0.28	0.35	0.13

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Queues  
10: 60th St & University Ave

Existing Plus Project  
PM Peak Hour



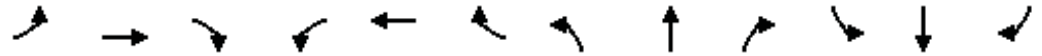
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	21	1036	58	98	783	54	67	28
v/c Ratio	0.21	0.42	0.27	0.62	0.29	0.33	0.20	0.15
Control Delay	32.0	22.3	35.1	62.6	7.9	42.7	1.3	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	22.3	35.1	62.6	7.9	42.7	1.3	31.7
Queue Length 50th (ft)	13	237	36	63	46	35	0	15
Queue Length 95th (ft)	m26	455	m78	117	241	54	0	30
Internal Link Dist (ft)		1240			700	569		540
Turn Bay Length (ft)	130		175	125				
Base Capacity (vph)	154	2458	246	188	2697	441	629	504
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	0.14	0.42	0.24	0.52	0.29	0.12	0.11	0.06

Intersection Summary

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

Queues  
11: College Ave & University Ave

Existing Plus Project  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	233	682	231	191	499	110	173	509	190	184	680	218
v/c Ratio	0.95	0.52	1.06	1.03	0.79	0.62	1.11	0.53	0.36	1.08	0.72	0.42
Control Delay	98.9	30.7	127.1	127.4	45.7	66.5	154.3	40.7	13.5	141.5	45.9	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.9	30.7	127.1	127.4	45.7	66.5	154.3	40.7	13.5	141.5	45.9	17.2
Queue Length 50th (ft)	182	208	~196	~158	338	82	~153	181	30	~159	257	49
Queue Length 95th (ft)	#341	259	#357	#308	462	#153	#298	244	96	#305	336	125
Internal Link Dist (ft)		700			289			1140			722	
Turn Bay Length (ft)	225		200	150		150	160		100	175		75
Base Capacity (vph)	244	1415	218	185	686	178	156	954	529	171	945	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.48	1.06	1.03	0.73	0.62	1.11	0.53	0.36	1.08	0.72	0.42

Intersection Summary

~ 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.



Queues  
14: Rolando Blvd & University Ave

Existing Plus Project  
PM Peak Hour



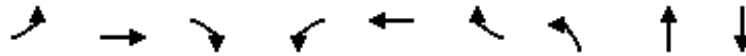
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	109	792	67	21	590	24	126	161
v/c Ratio	1.35	0.61	0.20	0.21	0.49	0.08	0.54	0.65
Control Delay	256.1	15.4	34.4	44.5	17.1	37.8	38.6	44.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	256.1	15.4	34.4	44.5	17.1	37.8	38.6	44.2
Queue Length 50th (ft)	~91	170	35	13	144	13	65	87
Queue Length 95th (ft)	#201	#723	74	m36	448	m39	97	122
Internal Link Dist (ft)		462			1032		526	359
Turn Bay Length (ft)	90		90	90		180		
Base Capacity (vph)	81	1289	335	178	1189	406	450	481
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	1.35	0.61	0.20	0.12	0.50	0.06	0.28	0.33

Intersection Summary

- ~ 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.

Queues  
15: Aragon Dr & University Ave

Existing Plus Project  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	8	852	83	44	551	7	50	109	60
v/c Ratio	0.09	0.65	0.26	0.36	0.39	0.01	0.28	0.42	0.30
Control Delay	59.8	9.2	10.6	51.7	8.3	0.0	40.1	20.1	40.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	9.2	10.6	51.7	8.3	0.0	40.1	20.1	40.2
Queue Length 50th (ft)	5	306	0	27	67	0	31	24	37
Queue Length 95th (ft)	m11	#789	m28	61	360	0	51	58	58
Internal Link Dist (ft)		1032			212			483	532
Turn Bay Length (ft)	100		100	100		60	75		
Base Capacity (vph)	267	1315	317	249	1412	1132	470	579	535
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.65	0.26	0.18	0.39	0.01	0.11	0.19	0.11

Intersection Summary

# 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.

**APPENDIX H: SIGNAL ANALYSIS AT ESTRELLA AVENUE &  
UNIVERSITY AVENUE**

## **SIGNAL ANALYSIS AT ESTRELLA AVENUE & UNIVERSITY AVENUE**

This appendix describes the signal warrant analysis and operational conditions for the project alternative of installing a traffic signal at Estrella Avenue & University Avenue. As shown in the worksheets following this analysis, the intersection does not meet peak hour signal warrants in any scenario. However, due to the connection with the Howard-Orange Bikeway, the safety benefits provided to people walking and biking, and expressed community support, the installation of a signal may still be desired. It is assumed that the signal would be coordinated along University Avenue due to the proximity to the Winona Avenue signal, and that the cycle length would be consistent with that of the project corridor. Due to the configuration of the intersection, the northbound and southbound phases would be split. Synchro 9.0 was then used to calculate the optimum length of each phase and offset timing. The resulting intersection level of service is presented in **Table H-1**. The LOS worksheets are provided following the signal warrants worksheets at the end of this appendix.

**TABLE H-1**  
**INTERSECTION LEVEL OF SERVICE RESULTS FOR EXISTING AND FUTURE CONDITIONS WITHOUT AND WITH A SIGNAL AT ESTRELLA AVENUE**

Intersection	Peak Hour	Traffic Control	Existing Without Signal Conditions		Existing With Signal Conditions		Delay Change (sec/veh) <sup>1</sup>	Future Without Signal Conditions		Future With Signal Conditions		Delay Change (sec/veh) <sup>1</sup>
			Delay (sec/veh) <sup>1</sup>	LOS <sup>2,3</sup>	Delay (sec/veh) <sup>1</sup>	LOS <sup>2,3</sup>		Delay (sec/veh) <sup>1</sup>	LOS <sup>2,3</sup>	Delay (sec/veh) <sup>1</sup>	LOS <sup>2,3</sup>	
2. Estrella Ave & University Ave	AM	SSSC (convert to signal)	59.4	F	7.1	A	-52.3	>100.0	F	11.2	B	-114.5
	PM		65.7	F	15.1	B	-50.6	>100.0	F	12.9	B	-153.9

Source: Fehr & Peers, 2018

Notes:

<sup>1</sup> Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized intersections. Worst movement delay reported for side-street-stop-controlled intersection

<sup>2</sup> LOS calculations performed using the *Highway Capacity Manual (HCM)* method.

<sup>3</sup> Below-standard seconds of delay per vehicle and LOS highlighted in **bold**.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario 2022 Baseline Plus Project  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	60	20
Through	10	10	520	850
Right	20	50	10	50
Total	50	70	590	920

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	95.9
Approach with Worst Case Delay	NB
Total Vehicles on Approach	50

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Serviced (vph)</b>
<b>2022 Baseline Plus Project</b>	<b>1.3</b>	<b>70</b>	<b>1,630</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		



Major Street University Ave  
 Minor Street Estrella Ave

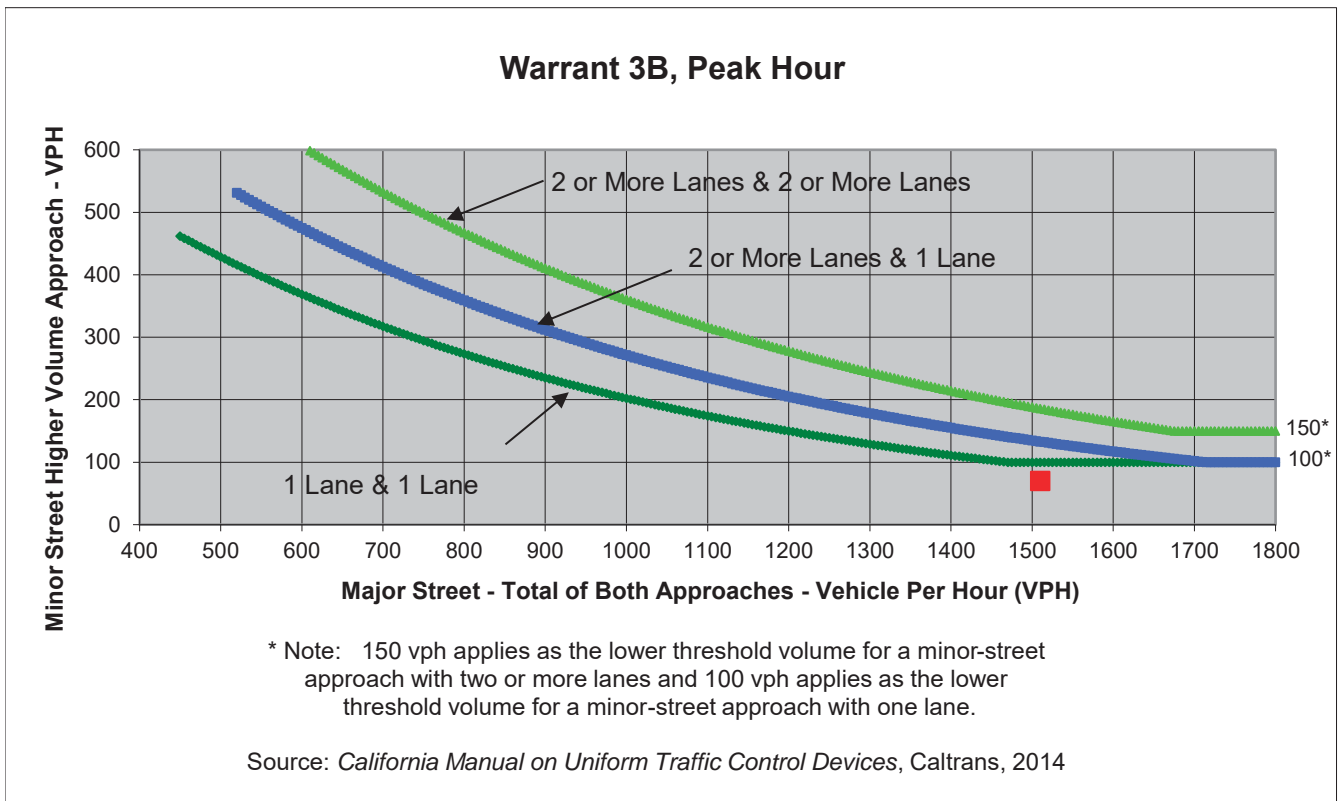
Project University Avenue  
 Scenario 2022 Baseline Plus Project  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	60	20
Through	10	10	520	850
Right	20	50	10	50
Total	50	70	590	920

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
Number of Approach Lanes	1	1	<b>NO</b>
Traffic Volume (VPH) *	1,510	70	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario 2022 Baseline Plus Project  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	30	30
Through	10	10	840	730
Right	20	50	20	30
Total	50	70	890	790

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	140.5
Approach with Worst Case Delay	NB
Total Vehicles on Approach	50

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Serviced (vph)</b>
<b>2022 Baseline Plus Project</b>	<b>2</b>	<b>70</b>	<b>1,800</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		





Major Street University Ave  
 Minor Street Estrella Ave

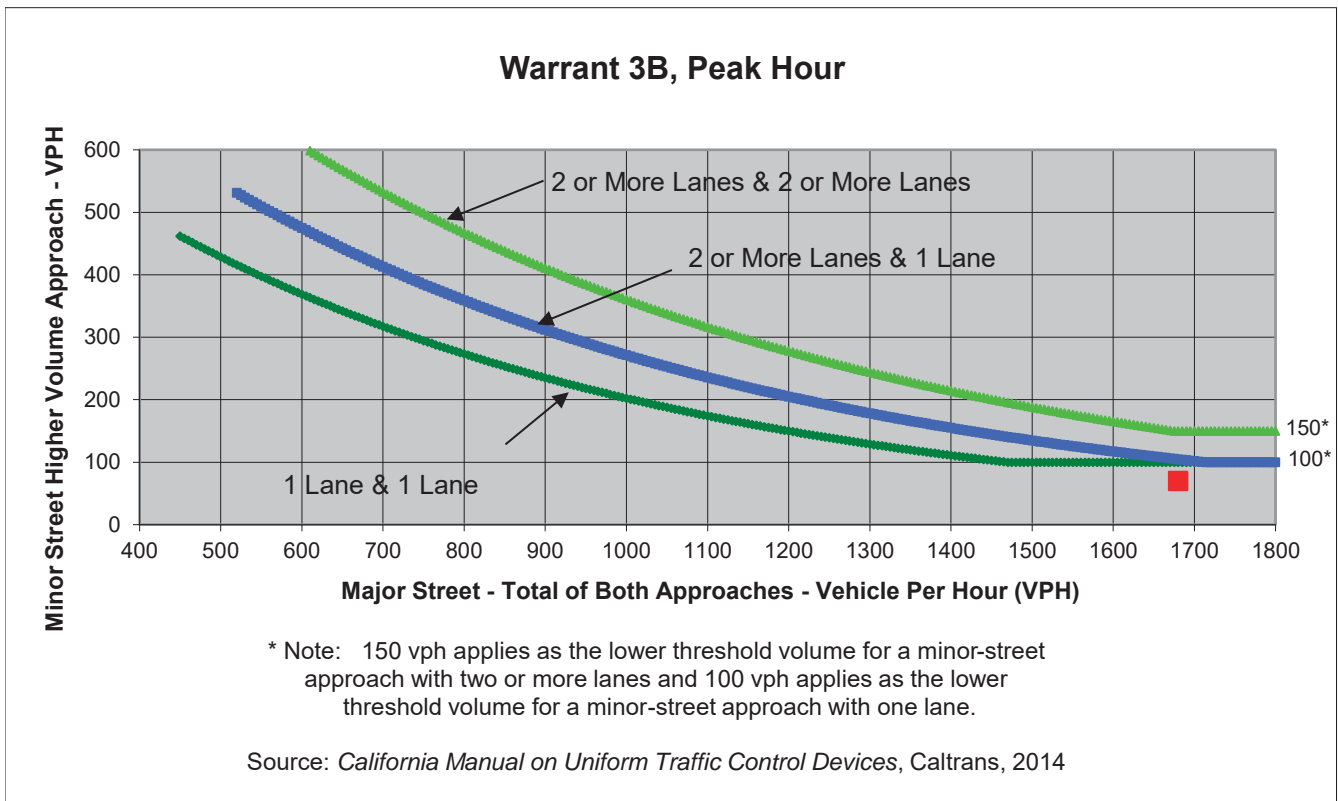
Project University Avenue  
 Scenario 2022 Baseline Plus Project  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	30	30
Through	10	10	840	730
Right	20	50	20	30
Total	50	70	890	790

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
<b>Number of Approach Lanes</b>	<b>1</b>	<b>1</b>	<b><u>NO</u></b>
<b>Traffic Volume (VPH) *</b>	<b>1,680</b>	<b>70</b>	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario 2022 Baseline  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	60	20
Through	10	10	520	850
Right	20	50	10	50
Total	50	70	590	920

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	125.7
Approach with Worst Case Delay	NB
Total Vehicles on Approach	50

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Serviced (vph)</b>
<b>2022 Baseline</b>	<b>1.7</b>	<b>70</b>	<b>1,630</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		



Major Street University Ave  
 Minor Street Estrella Ave

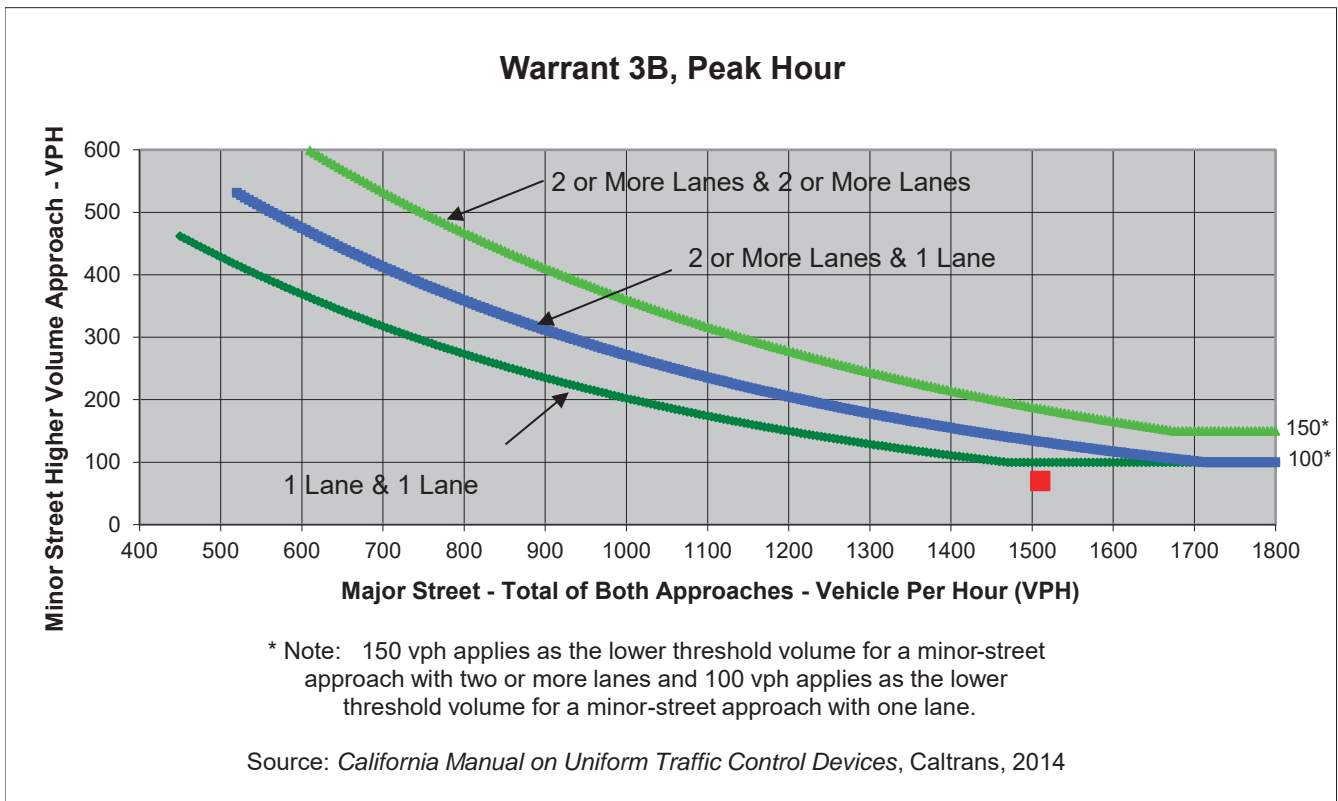
Project University Avenue  
 Scenario 2022 Baseline  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	60	20
Through	10	10	520	850
Right	20	50	10	50
Total	50	70	590	920

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
<b>Number of Approach Lanes</b>	<b>1</b>	<b>1</b>	<b><u>NO</u></b>
<b>Traffic Volume (VPH) *</b>	<b>1,510</b>	<b>70</b>	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario 2022 Baseline  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	30	30
Through	10	10	840	730
Right	20	50	20	30
Total	50	70	890	790

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	166.8
Approach with Worst Case Delay	NB
Total Vehicles on Approach	50

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Serviced (vph)</b>
<b>2022 Baseline</b>	<b>2.3</b>	<b>70</b>	<b>1,800</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		



Major Street University Ave  
 Minor Street Estrella Ave

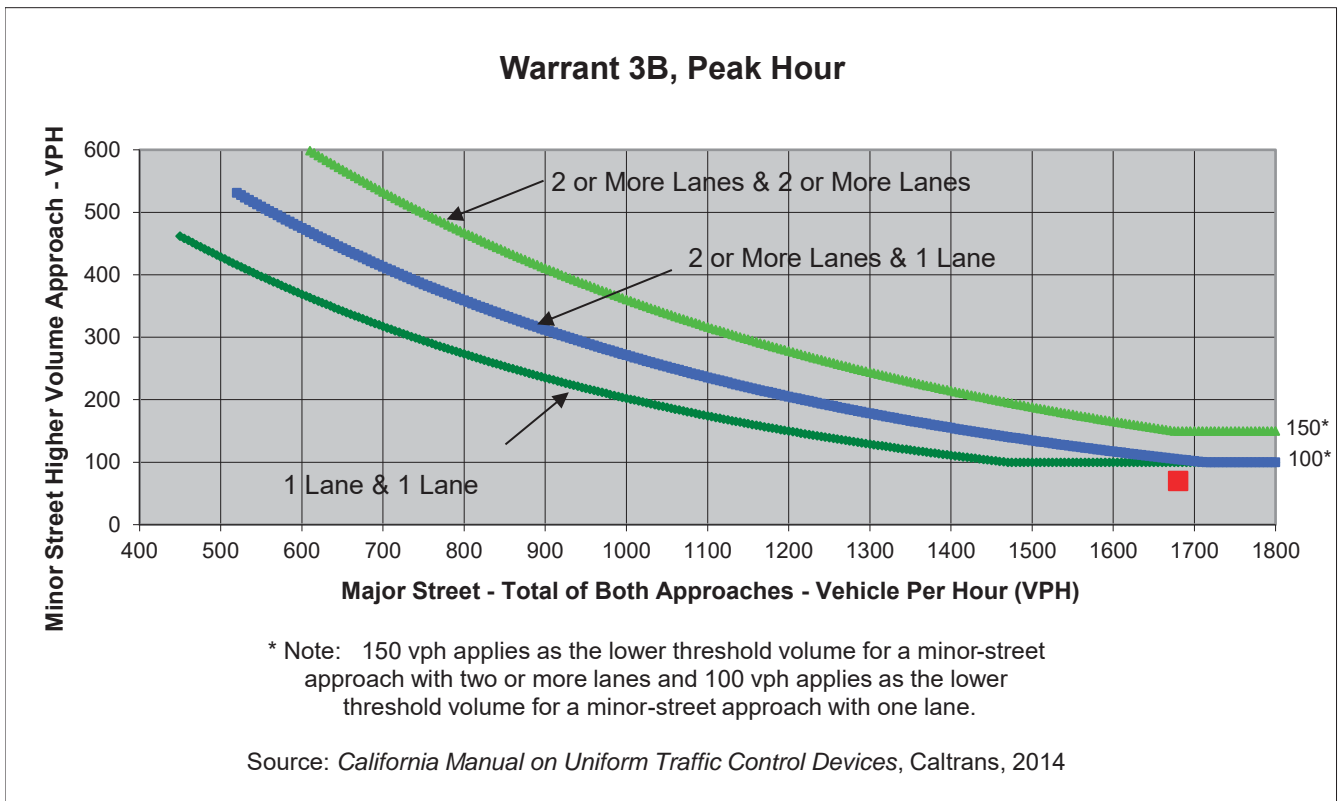
Project University Avenue  
 Scenario 2022 Baseline  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	20	10	30	30
Through	10	10	840	730
Right	20	50	20	30
Total	50	70	890	790

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
Number of Approach Lanes	1	1	<b>NO</b>
Traffic Volume (VPH) *	1,680	70	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario Existing Conditions  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	14	5	40	10
Through	7	1	501	814
Right	13	43	3	39
Total	34	49	544	863

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	59.4
Approach with Worst Case Delay	NB
Total Vehicles on Approach	34

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Served (vph)</b>
<b>Existing Conditions</b>	<b>0.6</b>	<b>49</b>	<b>1,490</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		



Major Street University Ave  
 Minor Street Estrella Ave

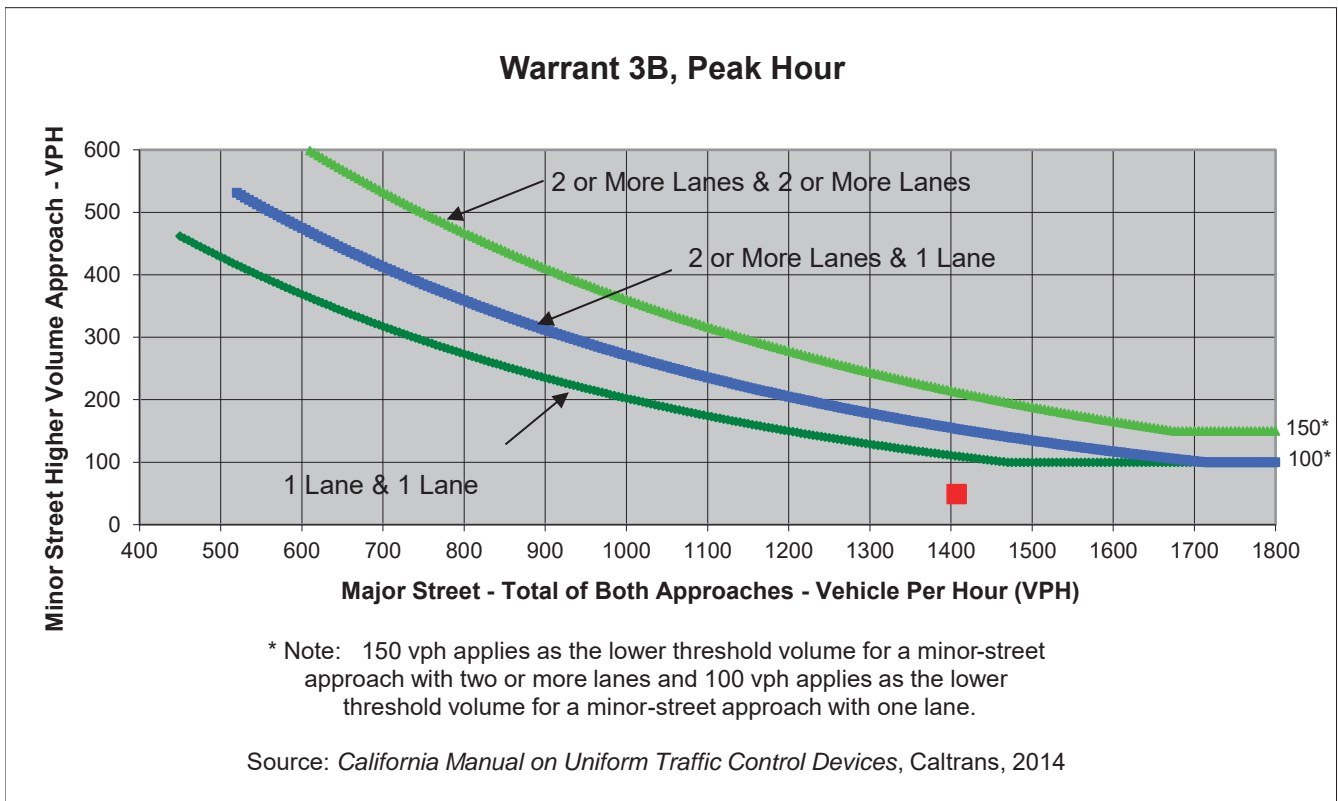
Project University Avenue  
 Scenario Existing Conditions  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	14	5	40	10
Through	7	1	501	814
Right	13	43	3	39
Total	34	49	544	863

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
<b>Number of Approach Lanes</b>	<b>1</b>	<b>1</b>	<b><u>NO</u></b>
<b>Traffic Volume (VPH) *</b>	<b>1,407</b>	<b>49</b>	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario Existing Conditions  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	12	7	28	18
Through	2	3	806	698
Right	13	43	12	27
Total	27	53	846	743

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	65.7
Approach with Worst Case Delay	NB
Total Vehicles on Approach	27

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Serviced (vph)</b>
<b>Existing Conditions</b>	<b>0.5</b>	<b>53</b>	<b>1,669</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		





Major Street University Ave  
 Minor Street Estrella Ave

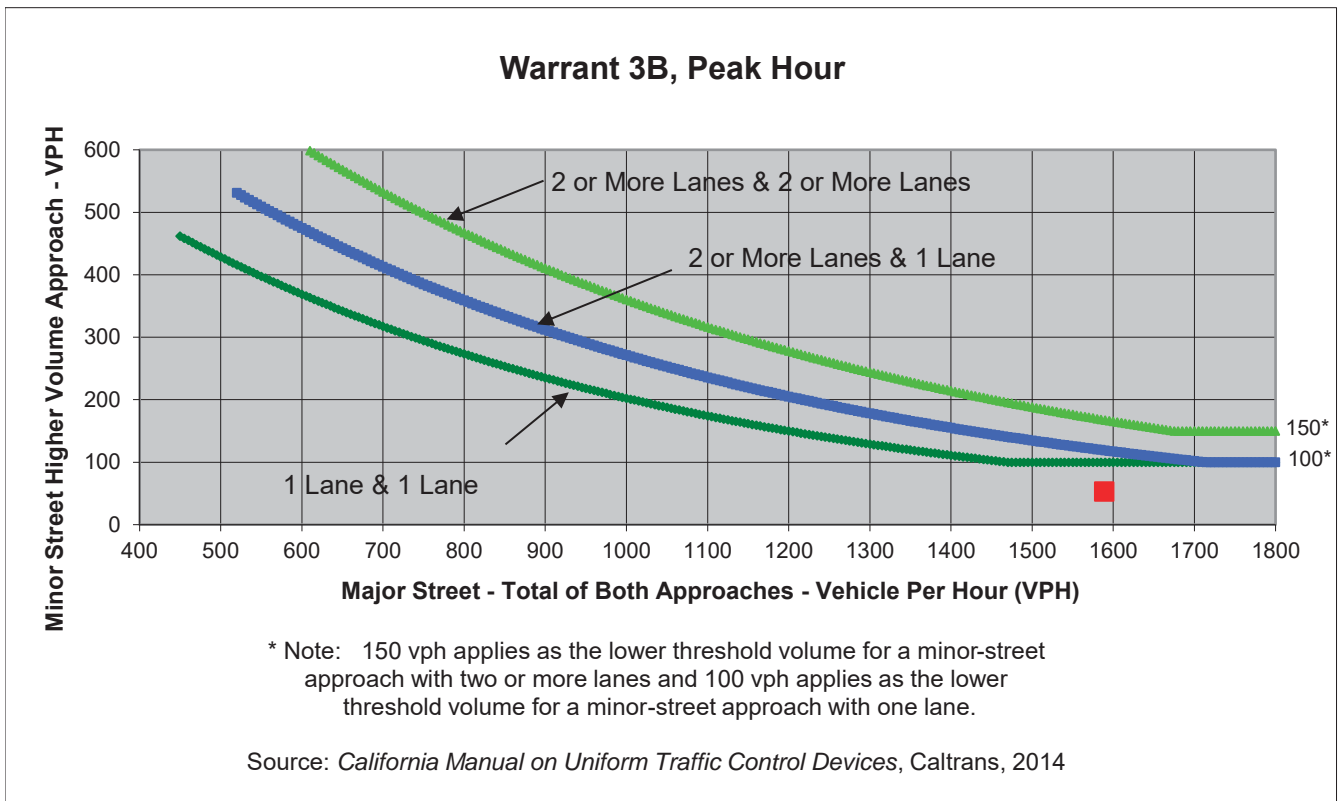
Project University Avenue  
 Scenario Existing Conditions  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	12	7	28	18
Through	2	3	806	698
Right	13	43	12	27
Total	27	53	846	743

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
Number of Approach Lanes	1	1	<b>NO</b>
Traffic Volume (VPH) *	1,589	53	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario Existing Plus Project  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	14	5	40	10
Through	7	1	501	814
Right	13	43	3	39
Total	34	49	544	863

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	51.8
Approach with Worst Case Delay	NB
Total Vehicles on Approach	34

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Served (vph)</b>
<b>Existing Plus Project</b>	<b>0.5</b>	<b>49</b>	<b>1,490</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		



Major Street University Ave  
 Minor Street Estrella Ave

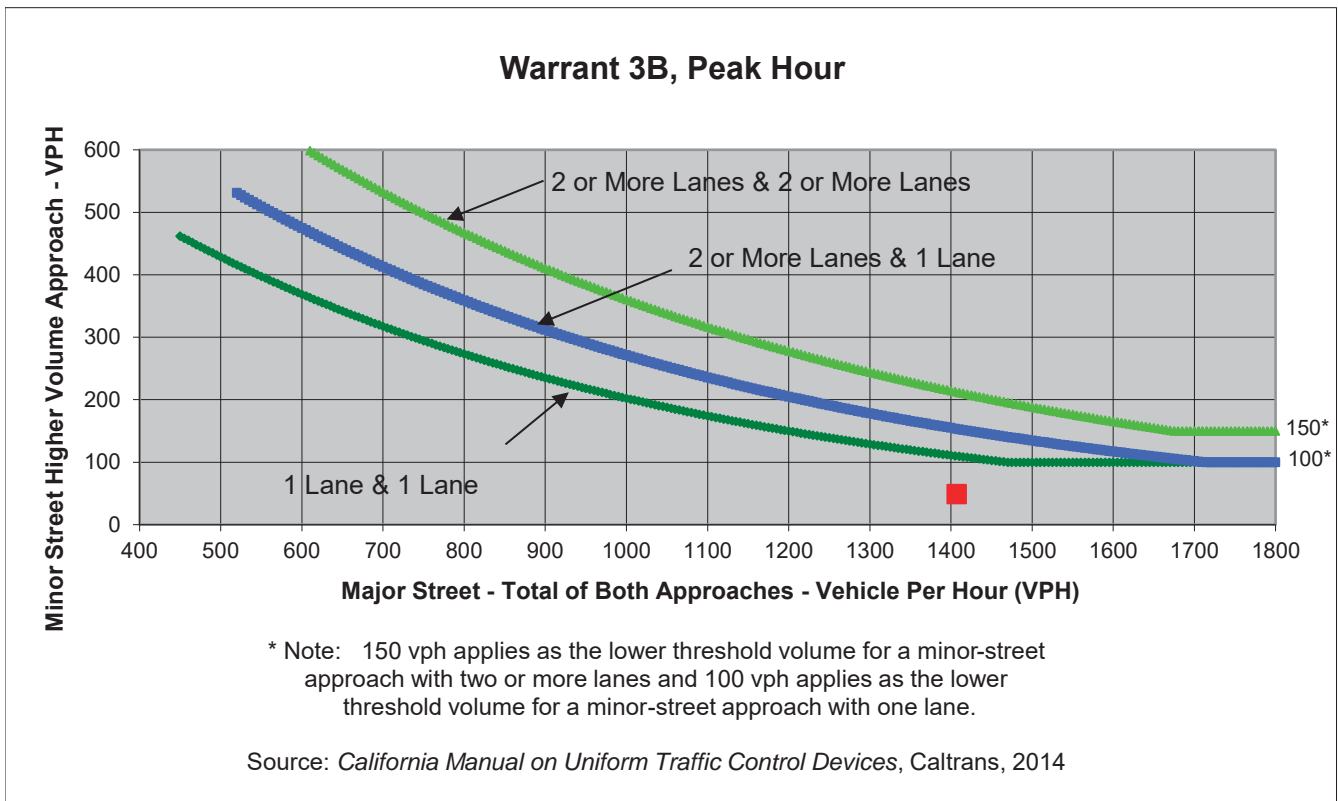
Project University Avenue  
 Scenario Existing Plus Project  
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	14	5	40	10
Through	7	1	501	814
Right	13	43	3	39
Total	34	49	544	863

Major Street Direction

	North/South
X	East/West



	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
<b>Number of Approach Lanes</b>	<b>1</b>	<b>1</b>	<b><u>NO</u></b>
<b>Traffic Volume (VPH) *</b>	<b>1,407</b>	<b>49</b>	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street University Ave  
 Minor Street Estrella Ave

Project University Avenue  
 Scenario Existing Plus Project  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	12	7	28	18
Through	2	3	806	698
Right	13	43	12	27
Total	27	53	846	743

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	61.1
Approach with Worst Case Delay	NB
Total Vehicles on Approach	27

<b>Warrant 3A, Peak Hour</b>			
	<b>Peak Hour Delay on Minor Approach (vehicle-hours)</b>	<b>Peak Hour Volume on Minor Approach (vph)</b>	<b>Peak Hour Entering Volume Serviced (vph)</b>
<b>Existing Plus Project</b>	<b>0.5</b>	<b>53</b>	<b>1,669</b>
<b>Limiting Value</b>	<b>4</b>	<b>100</b>	<b>800</b>
<b>Condition Satisfied?</b>	<b>Not Met</b>	<b>Not Met</b>	<b>Met</b>
<b>Warrant Met</b>	<b><u>NO</u></b>		



Major Street University Ave  
 Minor Street Estrella Ave

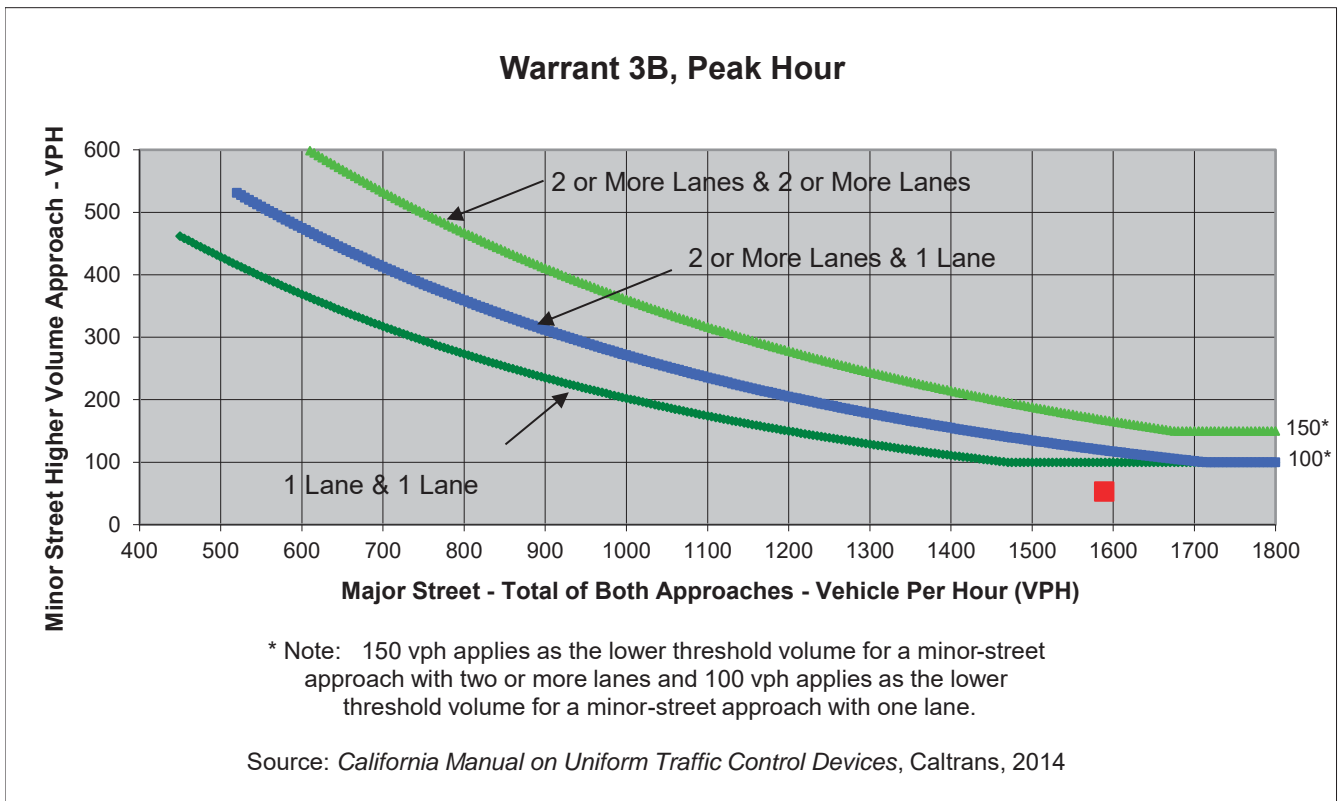
Project University Avenue  
 Scenario Existing Plus Project  
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	12	7	28	18
Through	2	3	806	698
Right	13	43	12	27
Total	27	53	846	743

Major Street Direction

	North/South
X	East/West





















	Major Street	Minor Street	Warrant Met
	University Ave	Estrella Ave	
<b>Number of Approach Lanes</b>	<b>1</b>	<b>1</b>	<b><u>NO</u></b>
<b>Traffic Volume (VPH) *</b>	<b>1,589</b>	<b>53</b>	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.

HCM 2010 Signalized Intersection Summary  
2: University Ave & Estrella Ave

Existing Plus Project  
AM Peak Hour




















												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	39	501	3	3	7	814	39	14	7	13	5
Future Volume (veh/h)	1	39	501	3	3	7	814	39	14	7	13	5
Number		5	2	12		1	6	16	3	8	18	7
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.96		1.00		0.96	1.00		0.87	1.00
Parking Bus, Adj		1.00	1.00	0.98		1.00	1.00	0.98	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln		1900	1863	1863		1863	1863	1863	1900	1863	1900	1900
Adj Flow Rate, veh/h		43	551	3		8	895	43	15	8	14	5
Adj No. of Lanes		0	1	1		1	1	1	0	1	0	0
Peak Hour Factor		0.91	0.91	0.91		0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %		2	2	2		2	2	2	2	2	2	2
Cap, veh/h		92	1091	1002		516	1251	1005	51	27	48	13
Arrive On Green		0.67	0.67	0.67		1.00	1.00	1.00	0.08	0.08	0.08	0.09
Sat Flow, veh/h		76	1625	1492		850	1863	1497	655	349	612	135
Grp Volume(v), veh/h		594	0	3		8	895	43	37	0	0	53
Grp Sat Flow(s),veh/h/ln		1700	0	1492		850	1863	1497	1616	0	0	1434
Q Serve(g_s), s		0.0	0.0	0.1		0.2	0.0	0.0	2.0	0.0	0.0	3.3
Cycle Q Clear(g_c), s		14.5	0.0	0.1		14.7	0.0	0.0	2.0	0.0	0.0	3.3
Prop In Lane		0.07		1.00		1.00		1.00	0.41		0.38	0.09
Lane Grp Cap(c), veh/h		1183	0	1002		516	1251	1005	126	0	0	135
V/C Ratio(X)		0.50	0.00	0.00		0.02	0.72	0.04	0.29	0.00	0.00	0.39
Avail Cap(c_a), veh/h		1183	0	1002		516	1251	1005	395	0	0	351
HCM Platoon Ratio		1.00	1.00	1.00		2.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	0.00	1.00		0.80	0.80	0.80	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh		7.5	0.0	5.1		1.7	0.0	0.0	40.9	0.0	0.0	40.0
Incr Delay (d2), s/veh		1.5	0.0	0.0		0.0	2.8	0.1	0.5	0.0	0.0	0.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		7.8	0.0	0.0		0.1	1.0	0.0	0.9	0.0	0.0	1.3
LnGrp Delay(d),s/veh		9.0	0.0	5.1		1.7	2.8	0.1	41.4	0.0	0.0	40.7
LnGrp LOS		A		A		A	A	A	D			D
Approach Vol, veh/h			597				946			37		
Approach Delay, s/veh			9.0				2.7			41.4		
Approach LOS			A				A			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		68.0		13.8		68.0		12.2				
Change Period (Y+Rc), s		4.9		4.9		4.9		4.9				
Max Green Setting (Gmax), s		33.3		23.0		33.3		23.0				
Max Q Clear Time (g_c+I1), s		16.5		5.3		16.7		4.0				
Green Ext Time (p_c), s		10.6		0.1		10.5		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.1									
HCM 2010 LOS			A									
<b>Notes</b>												



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	1	43
Future Volume (veh/h)	1	43
Number	4	14
Initial Q (Qb), veh	0	0
Ped-Bike Adj(A_pbT)		0.88
Parking Bus, Adj	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900
Adj Flow Rate, veh/h	1	47
Adj No. of Lanes	1	0
Peak Hour Factor	0.91	0.91
Percent Heavy Veh, %	2	2
Cap, veh/h	3	120
Arrive On Green	0.09	0.09
Sat Flow, veh/h	27	1272
Grp Volume(v), veh/h	0	0
Grp Sat Flow(s),veh/h/ln	0	0
Q Serve(g_s), s	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0
Prop In Lane		0.89
Lane Grp Cap(c), veh/h	0	0
V/C Ratio(X)	0.00	0.00
Avail Cap(c_a), veh/h	0	0
HCM Platoon Ratio	1.00	1.00
Upstream Filter(l)	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0
LnGrp LOS		
Approach Vol, veh/h	53	
Approach Delay, s/veh	40.7	
Approach LOS	D	
Timer		

HCM 2010 Signalized Intersection Summary  
2: University Ave & Estrella Ave

Existing Plus Project  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	28	806	12	3	15	698	27	12	2	13	7	3
Future Volume (veh/h)	28	806	12	3	15	698	27	12	2	13	7	3
Number	5	2	12		1	6	16	3	8	18	7	4
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95		1.00		0.95	1.00		0.84	1.00	
Parking Bus, Adj	1.00	1.00	0.96		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863		1863	1863	1863	1900	1863	1900	1900	1863
Adj Flow Rate, veh/h	29	831	12		15	720	28	12	2	13	7	3
Adj No. of Lanes	0	1	1		1	1	1	0	1	0	0	1
Peak Hour Factor	0.97	0.97	0.97		0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2		2	2	2	2	2	2	2	2
Cap, veh/h	58	1152	939		294	1209	957	62	10	67	21	9
Arrive On Green	0.65	0.65	0.65		0.65	0.65	0.65	0.09	0.09	0.09	0.12	0.12
Sat Flow, veh/h	34	1774	1445		650	1863	1475	681	114	738	178	76
Grp Volume(v), veh/h	860	0	12		15	720	28	27	0	0	54	0
Grp Sat Flow(s),veh/h/ln	1808	0	1445		650	1863	1475	1533	0	0	1376	0
Q Serve(g_s), s	2.5	0.0	0.3		1.6	23.0	0.7	1.7	0.0	0.0	3.7	0.0
Cycle Q Clear(g_c), s	31.5	0.0	0.3		33.1	23.0	0.7	1.7	0.0	0.0	3.7	0.0
Prop In Lane	0.03		1.00		1.00		1.00	0.44		0.48	0.13	
Lane Grp Cap(c), veh/h	1209	0	939		294	1209	957	139	0	0	164	0
V/C Ratio(X)	0.71	0.00	0.01		0.05	0.60	0.03	0.19	0.00	0.00	0.33	0.00
Avail Cap(c_a), veh/h	1209	0	939		294	1209	957	339	0	0	304	0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00		0.71	0.71	0.71	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	11.9	0.0	6.5		22.8	10.4	6.5	43.8	0.0	0.0	42.0	0.0
Incr Delay (d2), s/veh	3.6	0.0	0.0		0.2	1.5	0.0	0.3	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	0.0	0.1		0.3	12.1	0.3	0.7	0.0	0.0	1.4	0.0
LnGrp Delay(d),s/veh	15.5	0.0	6.5		23.0	12.0	6.6	44.0	0.0	0.0	42.5	0.0
LnGrp LOS	B		A		C	B	A	D			D	
Approach Vol, veh/h		872				763			27			54
Approach Delay, s/veh		15.3				12.0			44.0			42.5
Approach LOS		B				B			D			D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		72.4		17.3		72.4		14.3				
Change Period (Y+Rc), s		4.9		4.9		4.9		4.9				
Max Green Setting (Gmax), s		43.3		23.0		43.3		23.0				
Max Q Clear Time (g_c+I1), s		33.5		5.7		35.1		3.7				
Green Ext Time (p_c), s		7.2		0.2		6.2		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.1									
HCM 2010 LOS			B									
<b>Notes</b>												



Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	43
Future Volume (veh/h)	43
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.82
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	44
Adj No. of Lanes	0
Peak Hour Factor	0.97
Percent Heavy Veh, %	2
Cap, veh/h	133
Arrive On Green	0.12
Sat Flow, veh/h	1121
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.81
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	

HCM 2010 Signalized Intersection Summary  
2: University Ave & Estrella Ave

Baseline Plus Project  
AM Peak Hour




















Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	10	50	520	10	10	10	850	50	20	10	20	10
Future Volume (veh/h)	10	50	520	10	10	10	850	50	20	10	20	10
Number		5	2	12			1	6	16	3	8	18
Initial Q (Qb), veh		0	0	0			0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		0.96			1.00		0.96	1.00		0.89
Parking Bus, Adj		1.00	1.00	0.98			1.00	1.00	0.98	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln		1900	1863	1863			1863	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h		55	571	11			11	934	55	22	11	22
Adj No. of Lanes		0	1	1			1	1	1	0	1	0
Peak Hour Factor		0.91	0.91	0.91			0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %		2	2	2			2	2	2	2	2	2
Cap, veh/h		101	959	964			422	1204	967	58	29	58
Arrive On Green		0.65	0.65	0.65			0.86	0.86	0.86	0.09	0.09	0.09
Sat Flow, veh/h		92	1484	1491			829	1863	1496	648	324	648
Grp Volume(v), veh/h		626	0	11			11	934	55	55	0	77
Grp Sat Flow(s),veh/h/ln		1576	0	1491			829	1863	1496	1620	0	1517
Q Serve(g_s), s		1.7	0.0	0.2			0.6	19.9	0.5	3.0	0.0	4.5
Cycle Q Clear(g_c), s		21.6	0.0	0.2			22.2	19.9	0.5	3.0	0.0	4.5
Prop In Lane		0.09		1.00			1.00		1.00	0.40		0.40
Lane Grp Cap(c), veh/h		1060	0	964			422	1204	967	144	0	164
V/C Ratio(X)		0.59	0.00	0.01			0.03	0.78	0.06	0.38	0.00	0.47
Avail Cap(c_a), veh/h		1060	0	964			422	1204	967	396	0	371
HCM Platoon Ratio		1.00	1.00	1.00			1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)		1.00	0.00	1.00			0.76	0.76	0.76	1.00	0.00	1.00
Uniform Delay (d), s/veh		8.9	0.0	5.9			8.8	3.7	2.4	40.4	0.0	39.4
Incr Delay (d2), s/veh		2.4	0.0	0.0			0.1	3.8	0.1	0.6	0.0	0.8
Initial Q Delay(d3),s/veh		0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		9.2	0.0	0.1			0.1	10.8	0.2	1.4	0.0	1.9
LnGrp Delay(d),s/veh		11.3	0.0	5.9			8.9	7.5	2.5	41.0	0.0	40.1
LnGrp LOS		B		A			A	A	A	D		D
Approach Vol, veh/h			637				1000			55		
Approach Delay, s/veh			11.2				7.3			41.0		
Approach LOS			B				A			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		65.6		15.1		65.6		13.3				
Change Period (Y+Rc), s		4.9		4.9		4.9		4.9				
Max Green Setting (Gmax), s		33.3		23.0		33.3		23.0				
Max Q Clear Time (g_c+I1), s		23.6		6.5		24.2		5.0				
Green Ext Time (p_c), s		7.3		0.2		6.9		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.2									
HCM 2010 LOS			B									
<b>Notes</b>												



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	10	50
Future Volume (veh/h)	10	50
Number	4	14
Initial Q (Qb), veh	0	0
Ped-Bike Adj(A_pbT)		0.90
Parking Bus, Adj	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900
Adj Flow Rate, veh/h	11	55
Adj No. of Lanes	1	0
Peak Hour Factor	0.91	0.91
Percent Heavy Veh, %	2	2
Cap, veh/h	23	117
Arrive On Green	0.11	0.11
Sat Flow, veh/h	217	1083
Grp Volume(v), veh/h	0	0
Grp Sat Flow(s),veh/h/ln	0	0
Q Serve(g_s), s	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0
Prop In Lane		0.71
Lane Grp Cap(c), veh/h	0	0
V/C Ratio(X)	0.00	0.00
Avail Cap(c_a), veh/h	0	0
HCM Platoon Ratio	1.00	1.00
Upstream Filter(l)	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0
LnGrp LOS		
Approach Vol, veh/h	77	
Approach Delay, s/veh	40.1	
Approach LOS	D	
Timer		

HCM 2010 Signalized Intersection Summary  
 2: University Ave & Estrella Ave

Baseline Plus Project  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	30	840	20	10	20	730	30	20	10	20	10	10
Future Volume (veh/h)	30	840	20	10	20	730	30	20	10	20	10	10
Number	5	2	12		1	6	16	3	8	18	7	4
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95		1.00		0.95	1.00		0.86	1.00	
Parking Bus, Adj	1.00	1.00	0.96		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863		1863	1863	1863	1900	1863	1900	1900	1863
Adj Flow Rate, veh/h	31	866	21		21	753	31	21	10	21	10	10
Adj No. of Lanes	0	1	1		1	1	1	0	1	0	0	1
Peak Hour Factor	0.97	0.97	0.97		0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2		2	2	2	2	2	2	2	2
Cap, veh/h	58	1110	908		240	1171	926	66	31	66	25	25
Arrive On Green	0.63	0.63	0.63		1.00	1.00	1.00	0.10	0.10	0.10	0.13	0.13
Sat Flow, veh/h	36	1765	1444		624	1863	1473	643	306	643	199	199
Grp Volume(v), veh/h	897	0	21		21	753	31	52	0	0	72	0
Grp Sat Flow(s),veh/h/ln	1801	0	1444		624	1863	1473	1593	0	0	1430	0
Q Serve(g_s), s	10.0	0.0	0.6		2.1	0.0	0.0	3.2	0.0	0.0	4.8	0.0
Cycle Q Clear(g_c), s	36.9	0.0	0.6		39.0	0.0	0.0	3.2	0.0	0.0	4.8	0.0
Prop In Lane	0.03		1.00		1.00		1.00	0.40		0.40	0.14	
Lane Grp Cap(c), veh/h	1168	0	908		240	1171	926	163	0	0	182	0
V/C Ratio(X)	0.77	0.00	0.02		0.09	0.64	0.03	0.32	0.00	0.00	0.40	0.00
Avail Cap(c_a), veh/h	1168	0	908		240	1171	926	352	0	0	316	0
HCM Platoon Ratio	1.00	1.00	1.00		2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00		0.63	0.63	0.63	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	13.9	0.0	7.3		11.0	0.0	0.0	43.3	0.0	0.0	41.7	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.0		0.5	1.7	0.0	0.4	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.0	0.0	0.2		0.4	0.6	0.0	1.4	0.0	0.0	1.9	0.0
LnGrp Delay(d),s/veh	18.7	0.0	7.3		11.5	1.7	0.0	43.7	0.0	0.0	42.2	0.0
LnGrp LOS	B		A		B	A	A	D			D	
Approach Vol, veh/h		918				805			52			72
Approach Delay, s/veh		18.5				1.9			43.7			42.2
Approach LOS		B				A			D			D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		70.3		18.1		70.3		15.6				
Change Period (Y+Rc), s		4.9		4.9		4.9		4.9				
Max Green Setting (Gmax), s		43.3		23.0		43.3		23.0				
Max Q Clear Time (g_c+I1), s		38.9		6.8		41.0		5.2				
Green Ext Time (p_c), s		3.7		0.2		2.0		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									
<b>Notes</b>												

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	50
Future Volume (veh/h)	50
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.83
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	52
Adj No. of Lanes	0
Peak Hour Factor	0.97
Percent Heavy Veh, %	2
Cap, veh/h	131
Arrive On Green	0.13
Sat Flow, veh/h	1033
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.72
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(l)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	