

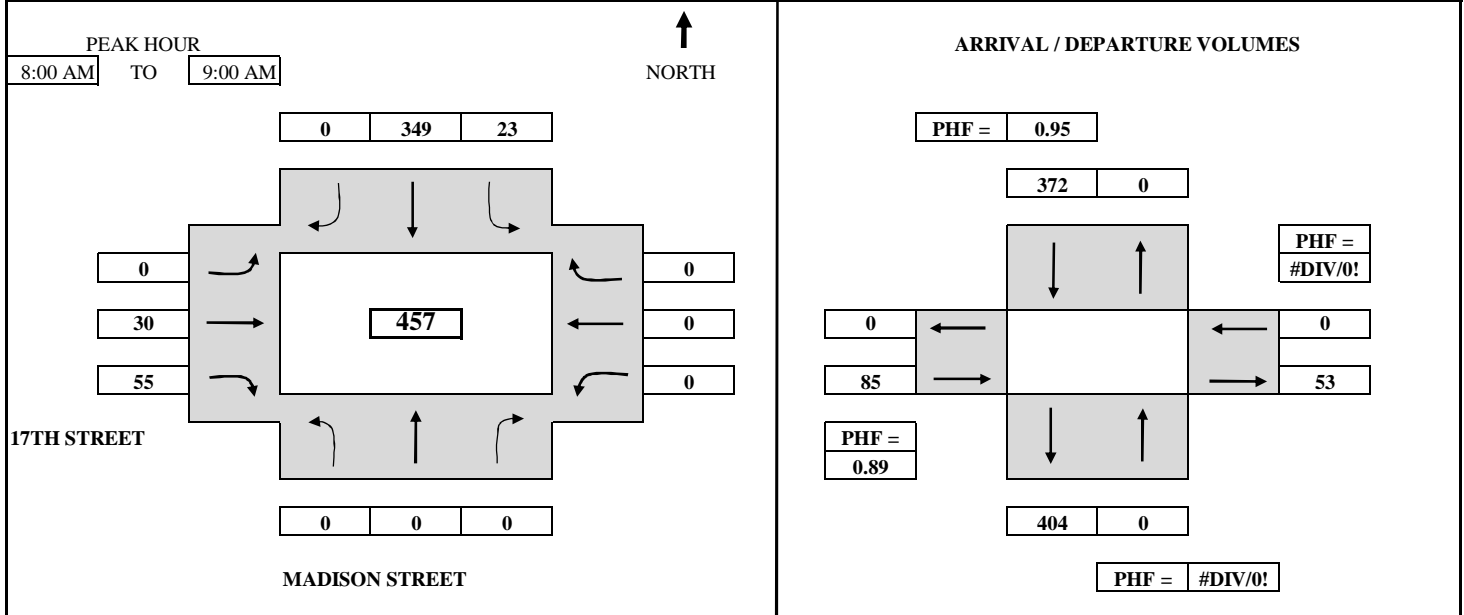
# APPENDIX

# **TURNING MOVEMENT VOLUMES**

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 17TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-1AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA													
7:00 AM	to	7:15 AM				4	34	0	4	7			49
7:15 AM	to	7:30 AM				9	70	0	6	21			106
7:30 AM	to	7:45 AM				11	136	0	9	27			183
7:45 AM	to	8:00 AM				14	199	0	12	37			262
8:00 AM	to	8:15 AM				17	283	0	22	46			368
8:15 AM	to	8:30 AM				18	376	0	32	60			486
8:30 AM	to	8:45 AM				25	462	0	40	74			601
8:45 AM	to	9:00 AM				37	548	0	42	92			719

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	4	34	0	0	4	7	0	0	0	49
7:15 AM	to	7:30 AM	0	0	0	5	36	0	0	2	14	0	0	0	57
7:30 AM	to	7:45 AM	0	0	0	2	66	0	0	3	6	0	0	0	77
7:45 AM	to	8:00 AM	0	0	0	3	63	0	0	3	10	0	0	0	79
8:00 AM	to	8:15 AM	0	0	0	3	84	0	0	10	9	0	0	0	106
8:15 AM	to	8:30 AM	0	0	0	1	93	0	0	10	14	0	0	0	118
8:30 AM	to	8:45 AM	0	0	0	7	86	0	0	8	14	0	0	0	115
8:45 AM	to	9:00 AM	0	0	0	12	86	0	0	2	18	0	0	0	118

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	14	199	0	0	12	37	0	0	0	262
7:15 AM	to	8:15 AM	0	0	0	13	249	0	0	18	39	0	0	0	319
7:30 AM	to	8:30 AM	0	0	0	9	306	0	0	26	39	0	0	0	380
7:45 AM	to	8:45 AM	0	0	0	14	326	0	0	31	47	0	0	0	418
8:00 AM	to	9:00 AM	0	0	0	23	349	0	0	30	55	0	0	0	457

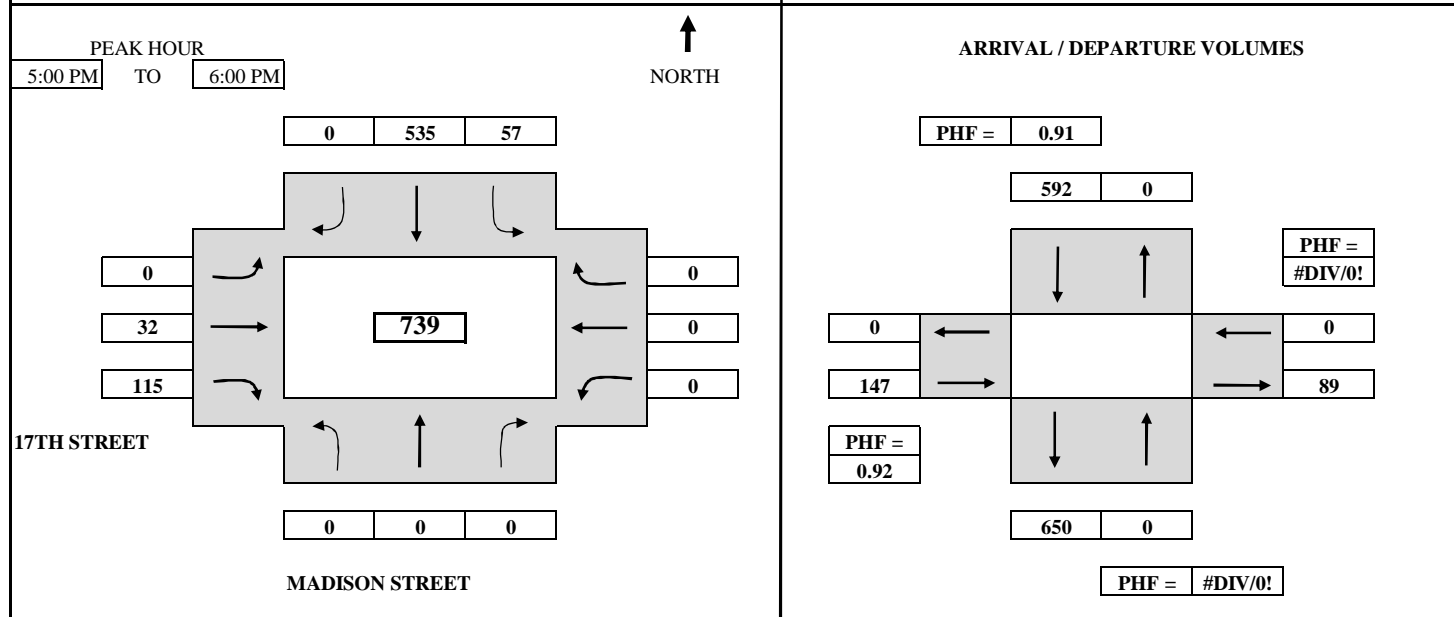
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 17TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-1PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM			9 99			5 20						133	
4:15 PM to 4:30 PM			18 173			16 49						256	
4:30 PM to 4:45 PM			33 265			24 73						395	
4:45 PM to 5:00 PM			43 386			31 93						553	
5:00 PM to 5:15 PM			49 523			38 121						731	
5:15 PM to 5:30 PM			73 641			48 151						913	
5:30 PM to 5:45 PM			82 777			53 181						1093	
5:45 PM to 6:00 PM			100 921			63 208						1292	
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			0 0 0	9 99 0	0 5 20	0 0 0						133	
4:15 PM to 4:30 PM			0 0 0	9 74 0	0 11 29	0 0 0						123	
4:30 PM to 4:45 PM			0 0 0	15 92 0	0 8 24	0 0 0						139	
4:45 PM to 5:00 PM			0 0 0	10 121 0	0 7 20	0 0 0						158	
5:00 PM to 5:15 PM			0 0 0	6 137 0	0 7 28	0 0 0						178	
5:15 PM to 5:30 PM			0 0 0	24 118 0	0 10 30	0 0 0						182	
5:30 PM to 5:45 PM			0 0 0	9 136 0	0 5 30	0 0 0						180	
5:45 PM to 6:00 PM			0 0 0	18 144 0	0 10 27	0 0 0						199	
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			0 0 0	43 386 0	0 31 93	0 0 0						553	
4:15 PM to 5:15 PM			0 0 0	40 424 0	0 33 101	0 0 0						598	
4:30 PM to 5:30 PM			0 0 0	55 468 0	0 32 102	0 0 0						657	
4:45 PM to 5:45 PM			0 0 0	49 512 0	0 29 108	0 0 0						698	
5:00 PM to 6:00 PM			0 0 0	57 535 0	0 32 115	0 0 0						739	

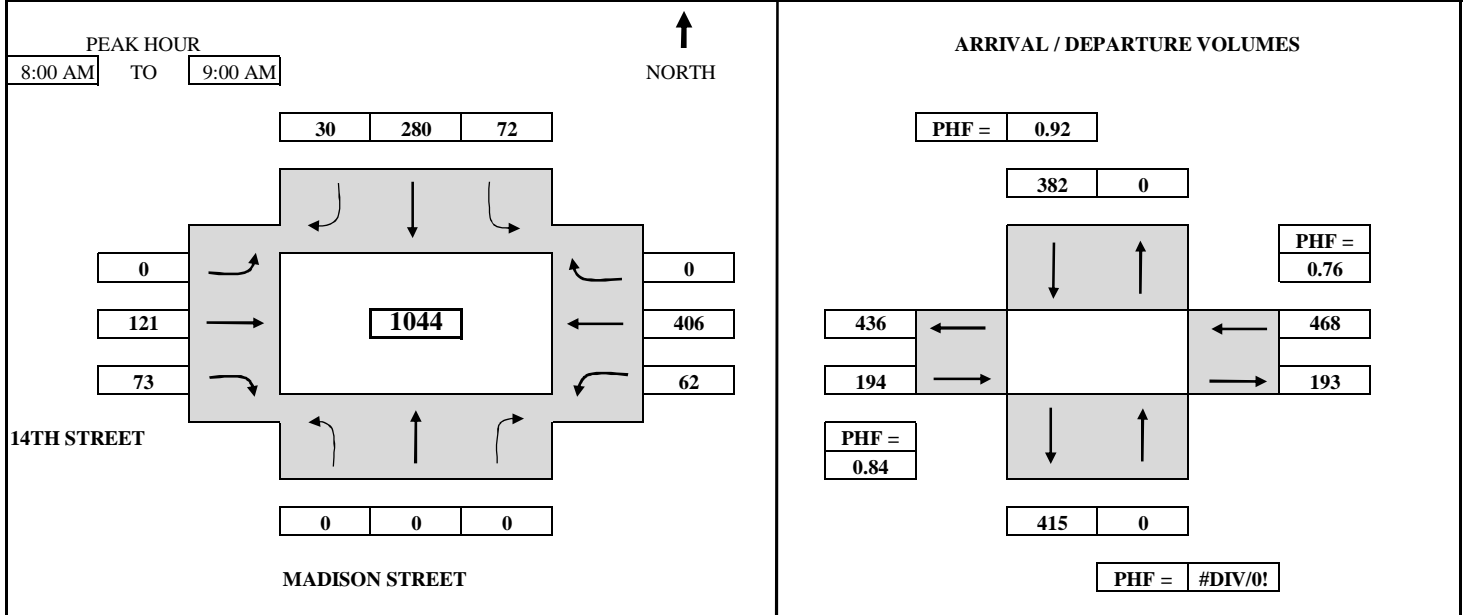
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 14TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-2AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT			
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM		7	51	5	15	7	4	38			127		
7:15 AM	to	7:30 AM		17	100	9	31	15	14	72			258		
7:30 AM	to	7:45 AM		31	167	16	50	34	11	127			436		
7:45 AM	to	8:00 AM		45	236	19	71	45	21	192			629		
8:00 AM	to	8:15 AM		56	304	31	94	67	30	273			855		
8:15 AM	to	8:30 AM		76	377	40	130	89	47	369			1128		
8:30 AM	to	8:45 AM		102	451	44	169	104	66	503			1439		
8:45 AM	to	9:00 AM		117	516	49	192	118	83	598			1673		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	0	0	0	7	51	5	0	15	7	4	38	0	127
7:15 AM	to	7:30 AM	0	0	0	10	49	4	0	16	8	10	34	0	131
7:30 AM	to	7:45 AM	0	0	0	14	67	7	0	19	19	-3	55	0	178
7:45 AM	to	8:00 AM	0	0	0	14	69	3	0	21	11	10	65	0	193
8:00 AM	to	8:15 AM	0	0	0	11	68	12	0	23	22	9	81	0	226
8:15 AM	to	8:30 AM	0	0	0	20	73	9	0	36	22	17	96	0	273
8:30 AM	to	8:45 AM	0	0	0	26	74	4	0	39	15	19	134	0	311
8:45 AM	to	9:00 AM	0	0	0	15	65	5	0	23	14	17	95	0	234
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	0	0	0	45	236	19	0	71	45	21	192	0	629
7:15 AM	to	8:15 AM	0	0	0	49	253	26	0	79	60	26	235	0	728
7:30 AM	to	8:30 AM	0	0	0	59	277	31	0	99	74	33	297	0	870
7:45 AM	to	8:45 AM	0	0	0	71	284	28	0	119	70	55	376	0	1003
8:00 AM	to	9:00 AM	0	0	0	72	280	30	0	121	73	62	406	0	1044

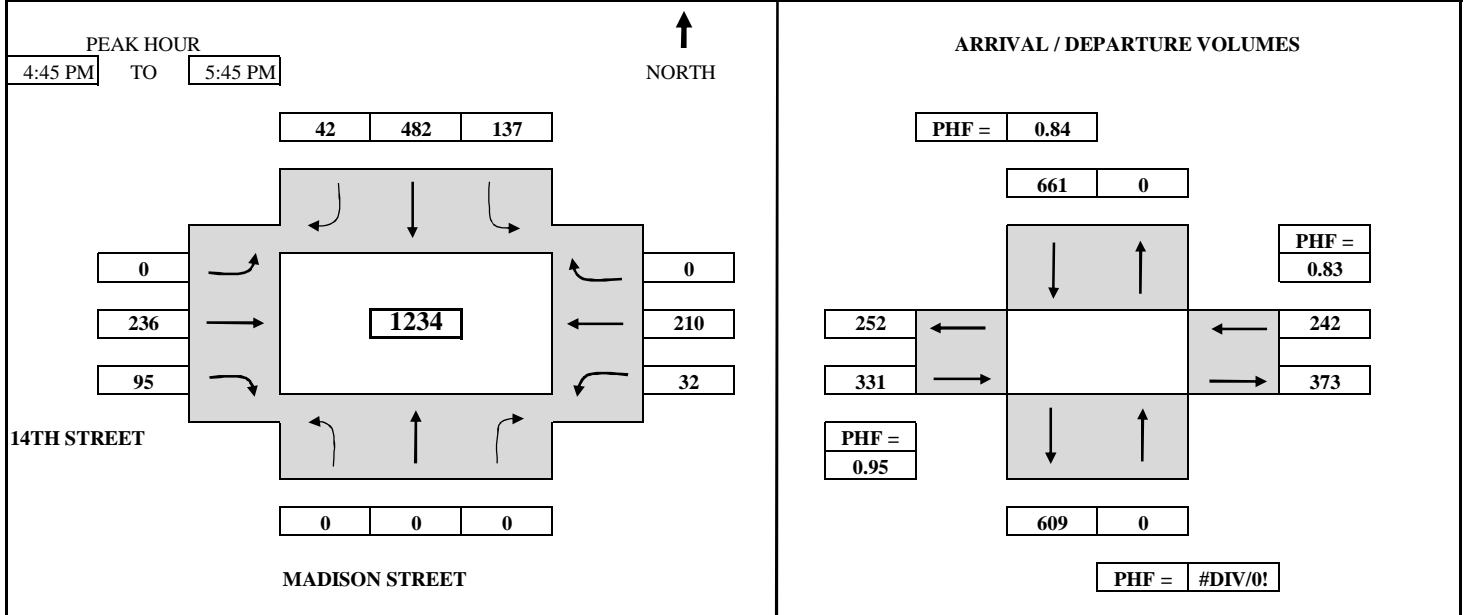
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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 14TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-2PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM				20	76	9	43	16	17	56		237	
4:15 PM to 4:30 PM				35	153	16	97	41	24	120		486	
4:30 PM to 4:45 PM				72	239	31	149	59	30	173		753	
4:45 PM to 5:00 PM				102	356	41	212	82	37	227		1057	
5:00 PM to 5:15 PM				135	507	53	264	108	47	283		1397	
5:15 PM to 5:30 PM				164	616	63	319	135	58	334		1689	
5:30 PM to 5:45 PM				209	721	73	385	154	62	383		1987	
5:45 PM to 6:00 PM				255	814	81	450	176	67	443		2286	
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			0 0 0	20	76	9	0	43	16	17	56	0	237
4:15 PM to 4:30 PM			0 0 0	15	77	7	0	54	25	7	64	0	249
4:30 PM to 4:45 PM			0 0 0	37	86	15	0	52	18	6	53	0	267
4:45 PM to 5:00 PM			0 0 0	30	117	10	0	63	23	7	54	0	304
5:00 PM to 5:15 PM			0 0 0	33	151	12	0	52	26	10	56	0	340
5:15 PM to 5:30 PM			0 0 0	29	109	10	0	55	27	11	51	0	292
5:30 PM to 5:45 PM			0 0 0	45	105	10	0	66	19	4	49	0	298
5:45 PM to 6:00 PM			0 0 0	46	93	8	0	65	22	5	60	0	299
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			0 0 0	102	356	41	0	212	82	37	227	0	1057
4:15 PM to 5:15 PM			0 0 0	115	431	44	0	221	92	30	227	0	1160
4:30 PM to 5:30 PM			0 0 0	129	463	47	0	222	94	34	214	0	1203
4:45 PM to 5:45 PM			0 0 0	137	482	42	0	236	95	32	210	0	1234
5:00 PM to 6:00 PM			0 0 0	153	458	40	0	238	94	30	216	0	1229

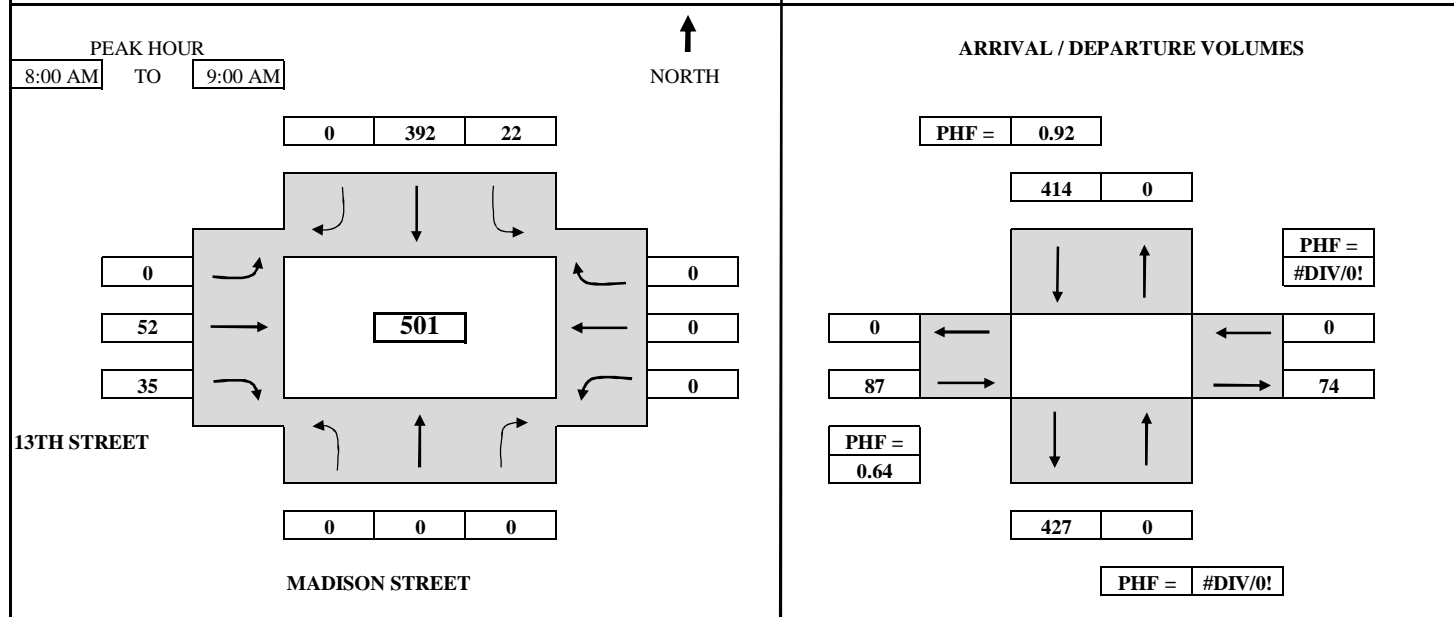
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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 13TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-3AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
7:00 AM to 7:15 AM				1	59		8	5				73	
7:15 AM to 7:30 AM				4	122		18	14				158	
7:30 AM to 7:45 AM				7	202		23	21				253	
7:45 AM to 8:00 AM				13	287		26	27				353	
8:00 AM to 8:15 AM				14	385		34	36				469	
8:15 AM to 8:30 AM				25	486		47	42				600	
8:30 AM to 8:45 AM				29	586		57	49				721	
8:45 AM to 9:00 AM				35	679		78	62				854	
<b>TOTAL BY PERIOD</b>													
7:00 AM to 7:15 AM			0 0 0	1	59	0	0	8	5	0	0	0	73
7:15 AM to 7:30 AM			0 0 0	3	63	0	0	10	9	0	0	0	85
7:30 AM to 7:45 AM			0 0 0	3	80	0	0	5	7	0	0	0	95
7:45 AM to 8:00 AM			0 0 0	6	85	0	0	3	6	0	0	0	100
8:00 AM to 8:15 AM			0 0 0	1	98	0	0	8	9	0	0	0	116
8:15 AM to 8:30 AM			0 0 0	11	101	0	0	13	6	0	0	0	131
8:30 AM to 8:45 AM			0 0 0	4	100	0	0	10	7	0	0	0	121
8:45 AM to 9:00 AM			0 0 0	6	93	0	0	21	13	0	0	0	133
<b>HOURLY TOTALS</b>													
7:00 AM to 8:00 AM			0 0 0	13	287	0	0	26	27	0	0	0	353
7:15 AM to 8:15 AM			0 0 0	13	326	0	0	26	31	0	0	0	396
7:30 AM to 8:30 AM			0 0 0	21	364	0	0	29	28	0	0	0	442
7:45 AM to 8:45 AM			0 0 0	22	384	0	0	34	28	0	0	0	468
8:00 AM to 9:00 AM			0 0 0	22	392	0	0	52	35	0	0	0	501

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY		SURVEY DATE: 5/16/2012		DAY: WEDNESDAY	
N-S APPROACH: MADISON STREET		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH 13TH STREET		JURISDICTION: OAKLAND		FILE: 3205033-3PM	

<p style="text-align: center;">PEAK HOUR 4:30 PM TO 5:30 PM</p> <div style="text-align: center;"> </div> <p style="text-align: center;">NORTH</p> <p style="text-align: center;">MADISON STREET</p>	<p style="text-align: center;">ARRIVAL / DEPARTURE VOLUMES</p> <p style="text-align: center;">PHF = 0.77</p> <div style="text-align: center;"> </div>
---	---

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT			
<b>SURVEY DATA</b>															
4:00 PM	to	4:15 PM		2	107		48	14					171		
4:15 PM	to	4:30 PM		3	212		81	30					326		
4:30 PM	to	4:45 PM		5	321		138	60					524		
4:45 PM	to	5:00 PM		9	464		186	78					737		
5:00 PM	to	5:15 PM		17	651		253	91					1012		
5:15 PM	to	5:30 PM		20	796		344	111					1271		
5:30 PM	to	5:45 PM		30	914		396	122					1462		
5:45 PM	to	6:00 PM		35	1026		439	133					1633		
<b>TOTAL BY PERIOD</b>															
4:00 PM	to	4:15 PM	0	0	0	2	107	0	0	48	14	0	0	0	171
4:15 PM	to	4:30 PM	0	0	0	1	105	0	0	33	16	0	0	0	155
4:30 PM	to	4:45 PM	0	0	0	2	109	0	0	57	30	0	0	0	198
4:45 PM	to	5:00 PM	0	0	0	4	143	0	0	48	18	0	0	0	213
5:00 PM	to	5:15 PM	0	0	0	8	187	0	0	67	13	0	0	0	275
5:15 PM	to	5:30 PM	0	0	0	3	145	0	0	91	20	0	0	0	259
5:30 PM	to	5:45 PM	0	0	0	10	118	0	0	52	11	0	0	0	191
5:45 PM	to	6:00 PM	0	0	0	5	112	0	0	43	11	0	0	0	171
<b>HOURLY TOTALS</b>															
4:00 PM	to	5:00 PM	0	0	0	9	464	0	0	186	78	0	0	0	737
4:15 PM	to	5:15 PM	0	0	0	15	544	0	0	205	77	0	0	0	841
4:30 PM	to	5:30 PM	0	0	0	17	584	0	0	263	81	0	0	0	945
4:45 PM	to	5:45 PM	0	0	0	25	593	0	0	258	62	0	0	0	938
5:00 PM	to	6:00 PM	0	0	0	26	562	0	0	253	55	0	0	0	896

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

N in
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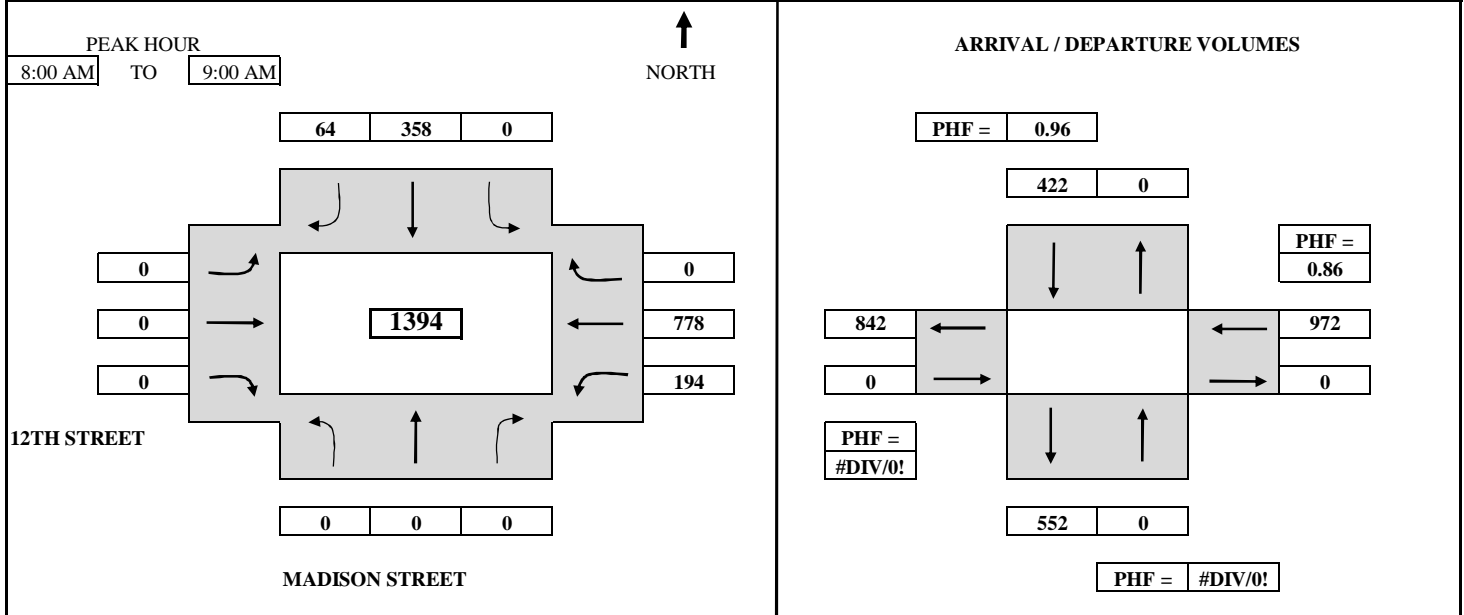
E out
50
34
59
52
75
94
62
48



# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-4AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM to 7:15 AM					53	10			27	89		179			
7:15 AM to 7:30 AM					105	27			65	214		411			
7:30 AM to 7:45 AM					171	47			131	412		761			
7:45 AM to 8:00 AM					244	67			192	607		1110			
8:00 AM to 8:15 AM					331	84			236	760		1411			
8:15 AM to 8:30 AM					428	97			295	983		1803			
8:30 AM to 8:45 AM					514	119			330	1181		2144			
8:45 AM to 9:00 AM					602	131			386	1385		2504			
<b>TOTAL BY PERIOD</b>															
7:00 AM to 7:15 AM			0 0 0		0	53	10		0	0	0	27	89	0	179
7:15 AM to 7:30 AM			0 0 0		0	52	17		0	0	0	38	125	0	232
7:30 AM to 7:45 AM			0 0 0		0	66	20		0	0	0	66	198	0	350
7:45 AM to 8:00 AM			0 0 0		0	73	20		0	0	0	61	195	0	349
8:00 AM to 8:15 AM			0 0 0		0	87	17		0	0	0	44	153	0	301
8:15 AM to 8:30 AM			0 0 0		0	97	13		0	0	0	59	223	0	392
8:30 AM to 8:45 AM			0 0 0		0	86	22		0	0	0	35	198	0	341
8:45 AM to 9:00 AM			0 0 0		0	88	12		0	0	0	56	204	0	360
<b>HOURLY TOTALS</b>															
7:00 AM to 8:00 AM			0 0 0		0	244	67		0	0	0	192	607	0	1110
7:15 AM to 8:15 AM			0 0 0		0	278	74		0	0	0	209	671	0	1232
7:30 AM to 8:30 AM			0 0 0		0	323	70		0	0	0	230	769	0	1392
7:45 AM to 8:45 AM			0 0 0		0	343	72		0	0	0	199	769	0	1383
8:00 AM to 9:00 AM			0 0 0		0	358	64		0	0	0	194	778	0	1394

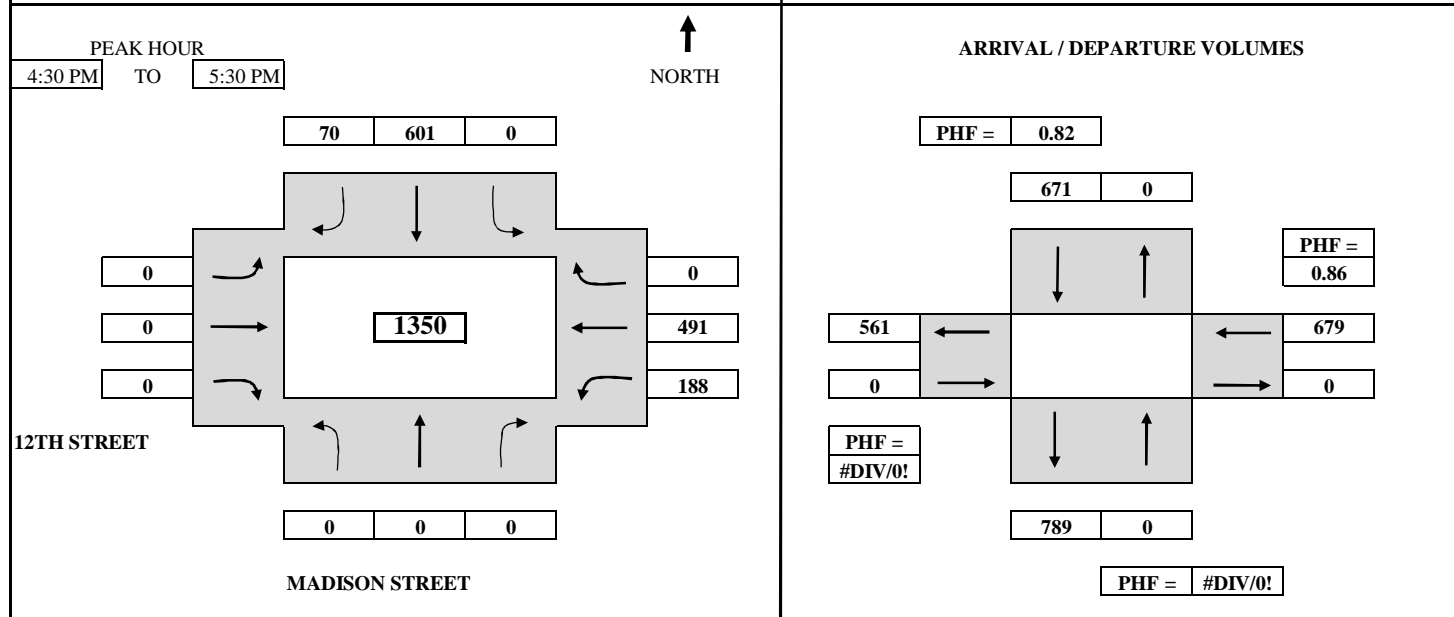
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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-4PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT								
<b>SURVEY DATA</b>															
4:00 PM to 4:15 PM					114	10			26	112		262			
4:15 PM to 4:30 PM					222	23			67	226		538			
4:30 PM to 4:45 PM					345	37			109	347		838			
4:45 PM to 5:00 PM					490	53			155	443		1141			
5:00 PM to 5:15 PM					672	75			218	577		1542			
5:15 PM to 5:30 PM					823	93			255	717		1888			
5:30 PM to 5:45 PM					945	100			275	819		2139			
5:45 PM to 6:00 PM					1060	106			313	926		2405			
<b>TOTAL BY PERIOD</b>															
4:00 PM to 4:15 PM			0 0 0		0	114	10		0	0	0	26	112	0	262
4:15 PM to 4:30 PM			0 0 0		0	108	13		0	0	0	41	114	0	276
4:30 PM to 4:45 PM			0 0 0		0	123	14		0	0	0	42	121	0	300
4:45 PM to 5:00 PM			0 0 0		0	145	16		0	0	0	46	96	0	303
5:00 PM to 5:15 PM			0 0 0		0	182	22		0	0	0	63	134	0	401
5:15 PM to 5:30 PM			0 0 0		0	151	18		0	0	0	37	140	0	346
5:30 PM to 5:45 PM			0 0 0		0	122	7		0	0	0	20	102	0	251
5:45 PM to 6:00 PM			0 0 0		0	115	6		0	0	0	38	107	0	266
<b>HOURLY TOTALS</b>															
4:00 PM to 5:00 PM			0 0 0		0	490	53		0	0	0	155	443	0	1141
4:15 PM to 5:15 PM			0 0 0		0	558	65		0	0	0	192	465	0	1280
4:30 PM to 5:30 PM			0 0 0		0	601	70		0	0	0	188	491	0	1350
4:45 PM to 5:45 PM			0 0 0		0	600	63		0	0	0	166	472	0	1301
5:00 PM to 6:00 PM			0 0 0		0	570	53		0	0	0	158	483	0	1264

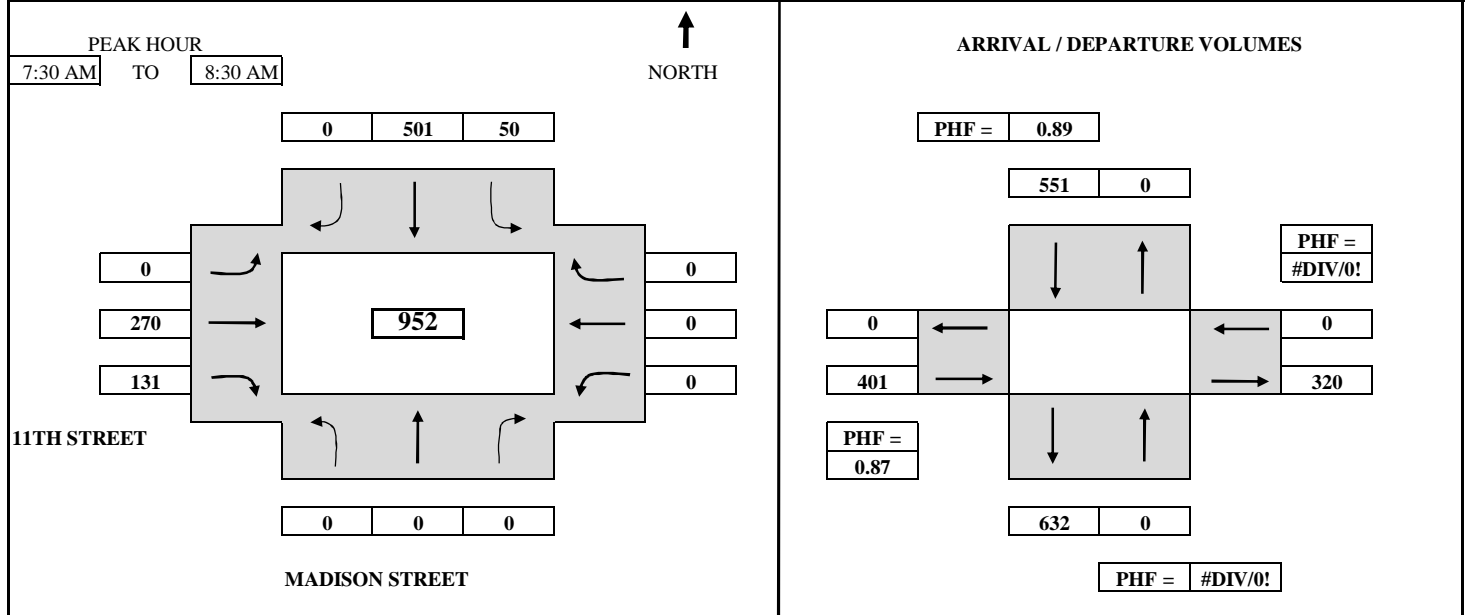
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-5AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
7:00 AM to 7:15 AM				7	75	0	0	26	11	0	0	0	119
7:15 AM to 7:30 AM				11	164	0	0	50	23	0	0	0	248
7:30 AM to 7:45 AM				26	279	0	0	115	46	0	0	0	466
7:45 AM to 8:00 AM				35	404	0	0	193	83	0	0	0	715
8:00 AM to 8:15 AM				51	521	0	0	255	119	0	0	0	946
8:15 AM to 8:30 AM				61	665	0	0	320	154	0	0	0	1200
8:30 AM to 8:45 AM				68	782	0	0	380	180	0	0	0	1410
8:45 AM to 9:00 AM				86	907	0	0	432	200	0	0	0	1625
<b>TOTAL BY PERIOD</b>													
7:00 AM to 7:15 AM			0 0 0	7 75 0	0 26 11	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	119	
7:15 AM to 7:30 AM			0 0 0	4 89 0	0 24 12	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	129	
7:30 AM to 7:45 AM			0 0 0	15 115 0	0 65 23	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	218	
7:45 AM to 8:00 AM			0 0 0	9 125 0	0 78 37	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	249	
8:00 AM to 8:15 AM			0 0 0	16 117 0	0 62 36	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	231	
8:15 AM to 8:30 AM			0 0 0	10 144 0	0 65 35	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	254	
8:30 AM to 8:45 AM			0 0 0	7 117 0	0 60 26	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	210	
8:45 AM to 9:00 AM			0 0 0	18 125 0	0 52 20	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	215	
<b>HOURLY TOTALS</b>													
7:00 AM to 8:00 AM			0 0 0	35 404 0	0 193 83	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	715	
7:15 AM to 8:15 AM			0 0 0	44 446 0	0 229 108	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	827	
7:30 AM to 8:30 AM			0 0 0	50 501 0	0 270 131	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	952	
7:45 AM to 8:45 AM			0 0 0	42 503 0	0 265 134	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	944	
8:00 AM to 9:00 AM			0 0 0	51 503 0	0 239 117	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	910	

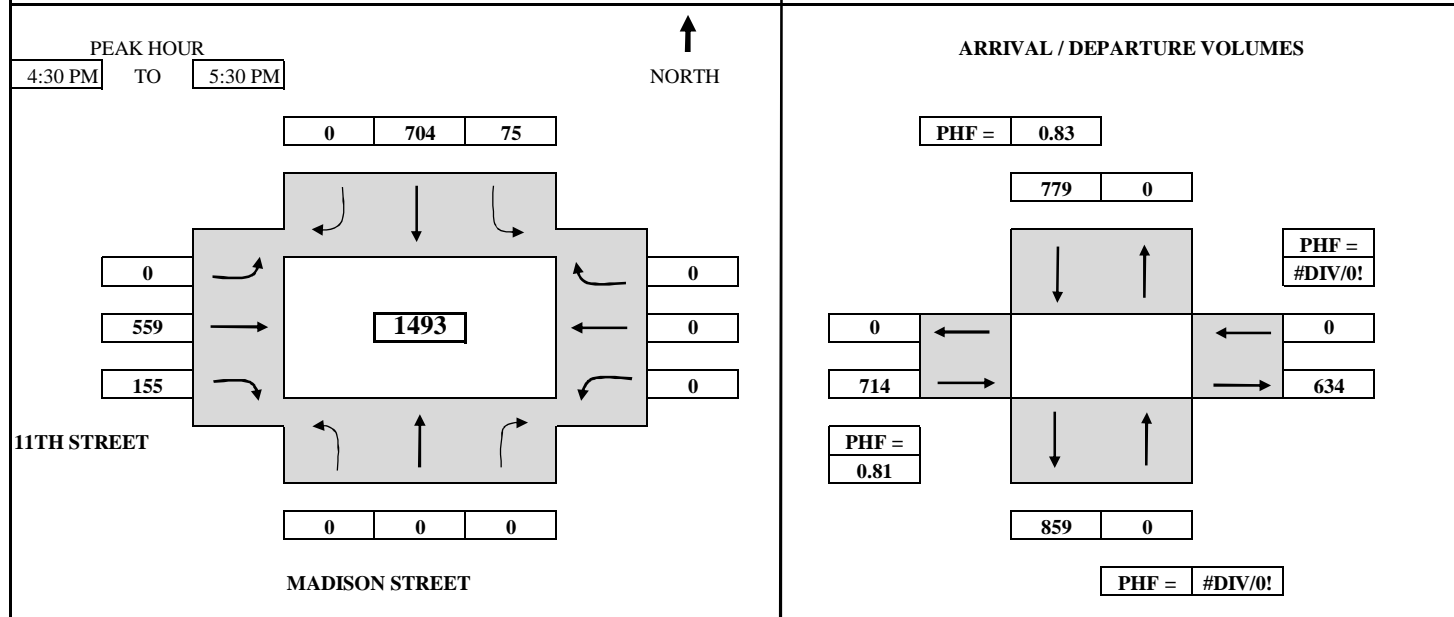
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-5PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM				7	134		109	39				289	
4:15 PM to 4:30 PM				16	274		215	72				577	
4:30 PM to 4:45 PM				34	418		313	115				880	
4:45 PM to 5:00 PM				51	594		423	142				1210	
5:00 PM to 5:15 PM				78	803		592	189				1662	
5:15 PM to 5:30 PM				91	978		774	227				2070	
5:30 PM to 5:45 PM				107	1104		883	261				2355	
5:45 PM to 6:00 PM				115	1247		1031	295				2688	
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			0 0 0	7	134	0	0	109	39	0	0	0	289
4:15 PM to 4:30 PM			0 0 0	9	140	0	0	106	33	0	0	0	288
4:30 PM to 4:45 PM			0 0 0	18	144	0	0	98	43	0	0	0	303
4:45 PM to 5:00 PM			0 0 0	17	176	0	0	110	27	0	0	0	330
5:00 PM to 5:15 PM			0 0 0	27	209	0	0	169	47	0	0	0	452
5:15 PM to 5:30 PM			0 0 0	13	175	0	0	182	38	0	0	0	408
5:30 PM to 5:45 PM			0 0 0	16	126	0	0	109	34	0	0	0	285
5:45 PM to 6:00 PM			0 0 0	8	143	0	0	148	34	0	0	0	333
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			0 0 0	51	594	0	0	423	142	0	0	0	1210
4:15 PM to 5:15 PM			0 0 0	71	669	0	0	483	150	0	0	0	1373
4:30 PM to 5:30 PM			0 0 0	75	704	0	0	559	155	0	0	0	1493
4:45 PM to 5:45 PM			0 0 0	73	686	0	0	570	146	0	0	0	1475
5:00 PM to 6:00 PM			0 0 0	64	653	0	0	608	153	0	0	0	1478

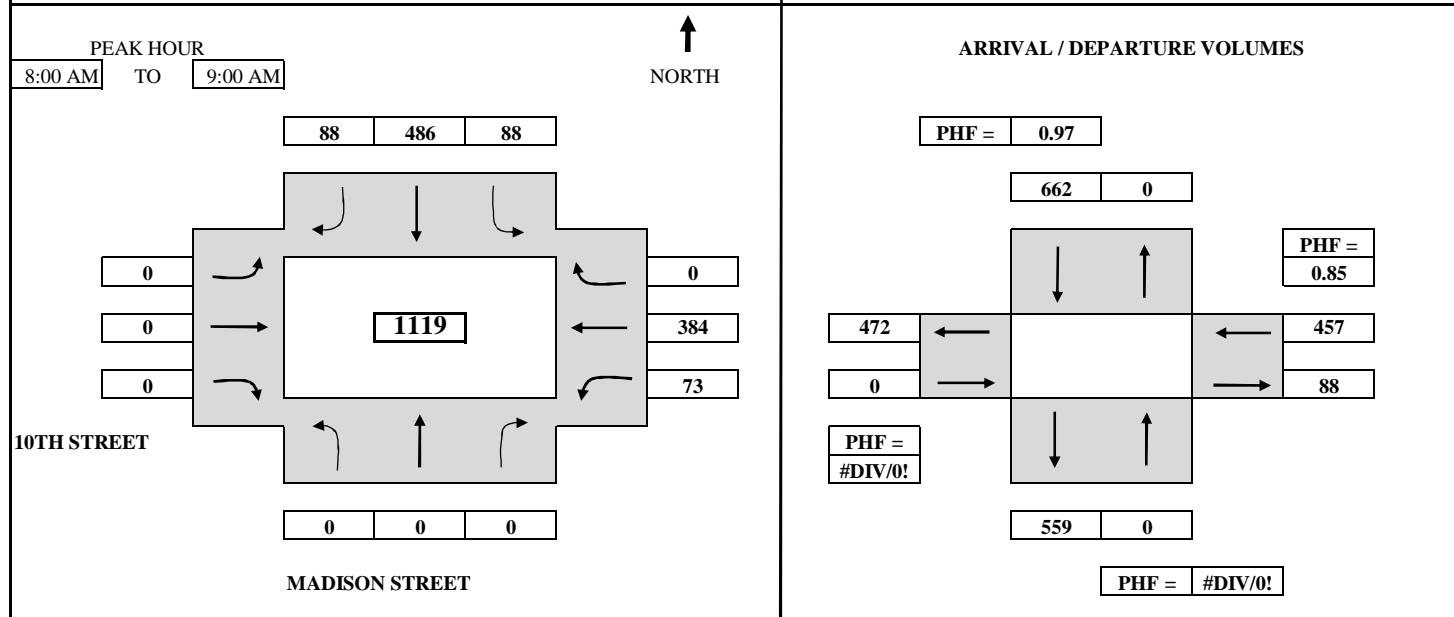
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH</b> 10TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-6AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						
<b>SURVEY DATA</b>													
7:00 AM	to	7:15 AM		13	67	13		5	34			132	
7:15 AM	to	7:30 AM		24	141	24		13	75			277	
7:30 AM	to	7:45 AM		38	244	58		21	113			474	
7:45 AM	to	8:00 AM		59	350	87		37	188			721	
8:00 AM	to	8:15 AM		87	464	115		53	290			1009	
8:15 AM	to	8:30 AM		106	591	134		74	404			1309	
8:30 AM	to	8:45 AM		127	713	155		94	490			1579	
8:45 AM	to	9:00 AM		147	836	175		110	572			1840	
<b>TOTAL BY PERIOD</b>													
7:00 AM	to	7:15 AM	0 0 0	13 67 13	0 0 0	5 34 0						132	
7:15 AM	to	7:30 AM	0 0 0	11 74 11	0 0 0	8 41 0						145	
7:30 AM	to	7:45 AM	0 0 0	14 103 34	0 0 0	8 38 0						197	
7:45 AM	to	8:00 AM	0 0 0	21 106 29	0 0 0	16 75 0						247	
8:00 AM	to	8:15 AM	0 0 0	28 114 28	0 0 0	16 102 0						288	
8:15 AM	to	8:30 AM	0 0 0	19 127 19	0 0 0	21 114 0						300	
8:30 AM	to	8:45 AM	0 0 0	21 122 21	0 0 0	20 86 0						270	
8:45 AM	to	9:00 AM	0 0 0	20 123 20	0 0 0	16 82 0						261	
<b>HOURLY TOTALS</b>													
7:00 AM	to	8:00 AM	0 0 0	59 350 87	0 0 0	37 188 0						721	
7:15 AM	to	8:15 AM	0 0 0	74 397 102	0 0 0	48 256 0						877	
7:30 AM	to	8:30 AM	0 0 0	82 450 110	0 0 0	61 329 0						1032	
7:45 AM	to	8:45 AM	0 0 0	89 469 97	0 0 0	73 377 0						1105	
8:00 AM	to	9:00 AM	0 0 0	88 486 88	0 0 0	73 384 0						1119	

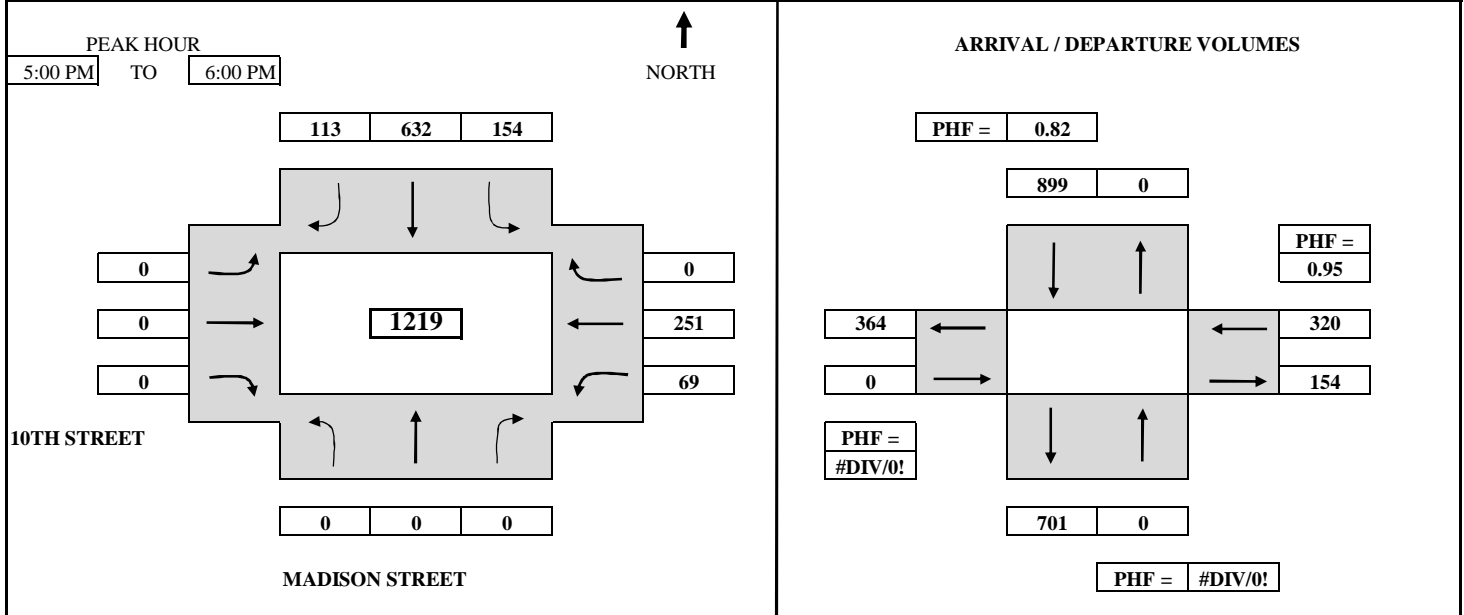
TEL: (510) 232 - 1271

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 10TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-6PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM				24	127	24				14	51		240
4:15 PM to 4:30 PM				46	259	46				22	101		474
4:30 PM to 4:45 PM				71	400	71				30	142		714
4:45 PM to 5:00 PM				100	539	100				45	205		989
5:00 PM to 5:15 PM				144	730	139				58	270		1341
5:15 PM to 5:30 PM				190	870	170				71	341		1642
5:30 PM to 5:45 PM				221	1017	194				98	398		1928
5:45 PM to 6:00 PM				254	1171	213				114	456		2208
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			0 0 0	24	127	24	0 0 0	0 0 0	14	51	0		240
4:15 PM to 4:30 PM			0 0 0	22	132	22	0 0 0	0 0 0	8	50	0		234
4:30 PM to 4:45 PM			0 0 0	25	141	25	0 0 0	0 0 0	8	41	0		240
4:45 PM to 5:00 PM			0 0 0	29	139	29	0 0 0	0 0 0	15	63	0		275
5:00 PM to 5:15 PM			0 0 0	44	191	39	0 0 0	0 0 0	13	65	0		352
5:15 PM to 5:30 PM			0 0 0	46	140	31	0 0 0	0 0 0	13	71	0		301
5:30 PM to 5:45 PM			0 0 0	31	147	24	0 0 0	0 0 0	27	57	0		286
5:45 PM to 6:00 PM			0 0 0	33	154	19	0 0 0	0 0 0	16	58	0		280
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			0 0 0	100	539	100	0 0 0	0 0 0	45	205	0		989
4:15 PM to 5:15 PM			0 0 0	120	603	115	0 0 0	0 0 0	44	219	0		1101
4:30 PM to 5:30 PM			0 0 0	144	611	124	0 0 0	0 0 0	49	240	0		1168
4:45 PM to 5:45 PM			0 0 0	150	617	123	0 0 0	0 0 0	68	256	0		1214
5:00 PM to 6:00 PM			0 0 0	154	632	113	0 0 0	0 0 0	69	251	0		1219

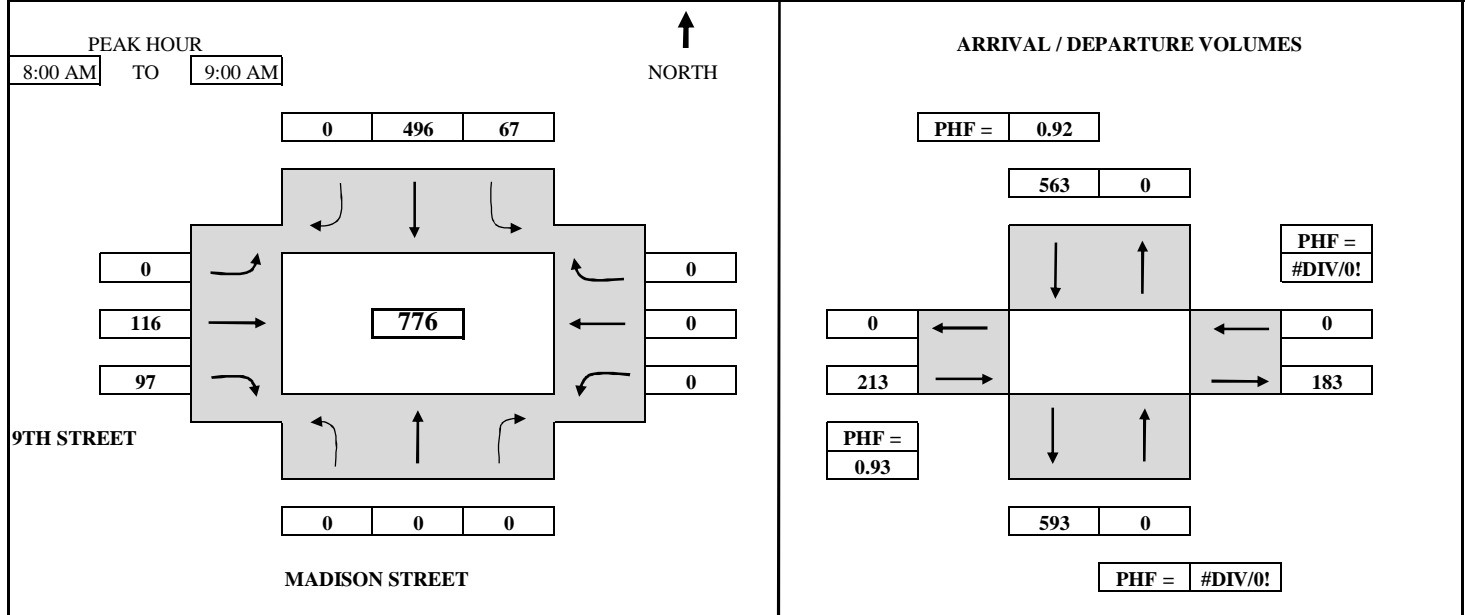
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-7AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
7:00 AM to 7:15 AM				13	63			11	8				95
7:15 AM to 7:30 AM				25	143			27	17				212
7:30 AM to 7:45 AM				38	246			46	30				360
7:45 AM to 8:00 AM				55	356			69	55				535
8:00 AM to 8:15 AM				71	474			102	74				721
8:15 AM to 8:30 AM				96	602			128	105				931
8:30 AM to 8:45 AM				109	733			158	131				1131
8:45 AM to 9:00 AM				122	852			185	152				1311
<b>TOTAL BY PERIOD</b>													
7:00 AM to 7:15 AM			0 0 0	13	63	0	0	11	8	0	0	0	95
7:15 AM to 7:30 AM			0 0 0	12	80	0	0	16	9	0	0	0	117
7:30 AM to 7:45 AM			0 0 0	13	103	0	0	19	13	0	0	0	148
7:45 AM to 8:00 AM			0 0 0	17	110	0	0	23	25	0	0	0	175
8:00 AM to 8:15 AM			0 0 0	16	118	0	0	33	19	0	0	0	186
8:15 AM to 8:30 AM			0 0 0	25	128	0	0	26	31	0	0	0	210
8:30 AM to 8:45 AM			0 0 0	13	131	0	0	30	26	0	0	0	200
8:45 AM to 9:00 AM			0 0 0	13	119	0	0	27	21	0	0	0	180
<b>HOURLY TOTALS</b>													
7:00 AM to 8:00 AM			0 0 0	55	356	0	0	69	55	0	0	0	535
7:15 AM to 8:15 AM			0 0 0	58	411	0	0	91	66	0	0	0	626
7:30 AM to 8:30 AM			0 0 0	71	459	0	0	101	88	0	0	0	719
7:45 AM to 8:45 AM			0 0 0	71	487	0	0	112	101	0	0	0	771
8:00 AM to 9:00 AM			0 0 0	67	496	0	0	116	97	0	0	0	776

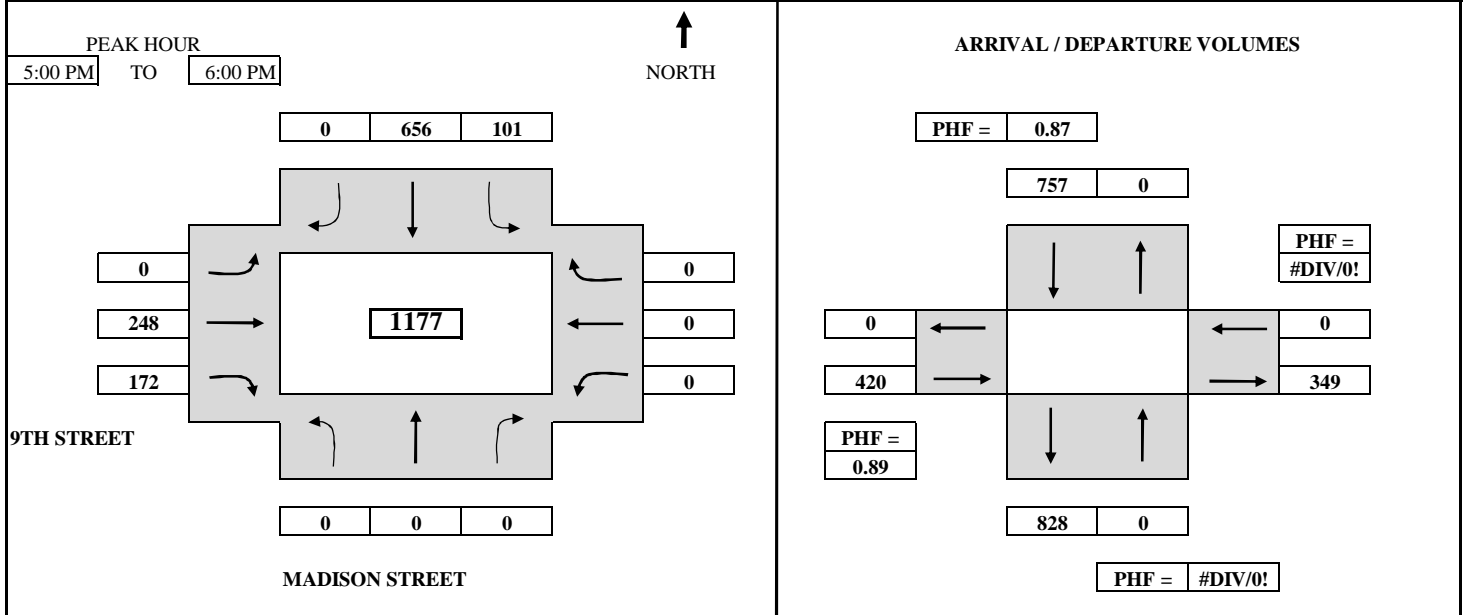
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-7PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

SURVEY DATA												
4:00 PM to 4:15 PM				12	133			39	26			210
4:15 PM to 4:30 PM				31	262			77	53			423
4:30 PM to 4:45 PM				50	419			116	84			669
4:45 PM to 5:00 PM				65	578			168	113			924
5:00 PM to 5:15 PM				93	767			225	156			1241
5:15 PM to 5:30 PM				125	921			293	206			1545
5:30 PM to 5:45 PM				142	1083			348	254			1827
5:45 PM to 6:00 PM				166	1234			416	285			2101

TOTAL BY PERIOD													
4:00 PM to 4:15 PM	0	0	0	12	133	0	0	39	26	0	0	0	210
4:15 PM to 4:30 PM	0	0	0	19	129	0	0	38	27	0	0	0	213
4:30 PM to 4:45 PM	0	0	0	19	157	0	0	39	31	0	0	0	246
4:45 PM to 5:00 PM	0	0	0	15	159	0	0	52	29	0	0	0	255
5:00 PM to 5:15 PM	0	0	0	28	189	0	0	57	43	0	0	0	317
5:15 PM to 5:30 PM	0	0	0	32	154	0	0	68	50	0	0	0	304
5:30 PM to 5:45 PM	0	0	0	17	162	0	0	55	48	0	0	0	282
5:45 PM to 6:00 PM	0	0	0	24	151	0	0	68	31	0	0	0	274

HOURLY TOTALS													
4:00 PM to 5:00 PM	0	0	0	65	578	0	0	168	113	0	0	0	924
4:15 PM to 5:15 PM	0	0	0	81	634	0	0	186	130	0	0	0	1031
4:30 PM to 5:30 PM	0	0	0	94	659	0	0	216	153	0	0	0	1122
4:45 PM to 5:45 PM	0	0	0	92	664	0	0	232	170	0	0	0	1158
5:00 PM to 6:00 PM	0	0	0	101	656	0	0	248	172	0	0	0	1177

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272







# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE:</b> 5/17/2012		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> MADISON STREET		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> 7TH STREET		<b>JURISDICTION:</b> OAKLAND		<b>FILE:</b> 3205033-9AM	

<p style="text-align: center;">PEAK HOUR 8:00 AM TO 9:00 AM</p> <div style="text-align: center;"> </div> <p style="text-align: center;">NORTH</p> <p style="text-align: center;">7TH STREET</p> <p style="text-align: center;">MADISON STREET</p>	<p style="text-align: center;">ARRIVAL / DEPARTURE VOLUMES</p> <p style="text-align: center;">PHF = 0.95</p> <div style="text-align: center;"> </div> <p style="text-align: center;">PHF = #DIV/0!</p>
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TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT			
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM		15	117		42	67					241		
7:15 AM	to	7:30 AM		35	231		101	149					516		
7:30 AM	to	7:45 AM		59	349		169	221					798		
7:45 AM	to	8:00 AM		82	478		239	284					1083		
8:00 AM	to	8:15 AM		115	629		315	341					1400		
8:15 AM	to	8:30 AM		153	764		377	383					1677		
8:30 AM	to	8:45 AM		181	899		481	435					1996		
8:45 AM	to	9:00 AM		203	1056		570	477					2306		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	0	0	0	15	117	0	0	42	67	0	0	0	241
7:15 AM	to	7:30 AM	0	0	0	20	114	0	0	59	82	0	0	0	275
7:30 AM	to	7:45 AM	0	0	0	24	118	0	0	68	72	0	0	0	282
7:45 AM	to	8:00 AM	0	0	0	23	129	0	0	70	63	0	0	0	285
8:00 AM	to	8:15 AM	0	0	0	33	151	0	0	76	57	0	0	0	317
8:15 AM	to	8:30 AM	0	0	0	38	135	0	0	62	42	0	0	0	277
8:30 AM	to	8:45 AM	0	0	0	28	135	0	0	104	52	0	0	0	319
8:45 AM	to	9:00 AM	0	0	0	22	157	0	0	89	42	0	0	0	310
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	0	0	0	82	478	0	0	239	284	0	0	0	1083
7:15 AM	to	8:15 AM	0	0	0	100	512	0	0	273	274	0	0	0	1159
7:30 AM	to	8:30 AM	0	0	0	118	533	0	0	276	234	0	0	0	1161
7:45 AM	to	8:45 AM	0	0	0	122	550	0	0	312	214	0	0	0	1198
8:00 AM	to	9:00 AM	0	0	0	121	578	0	0	331	193	0	0	0	1223

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

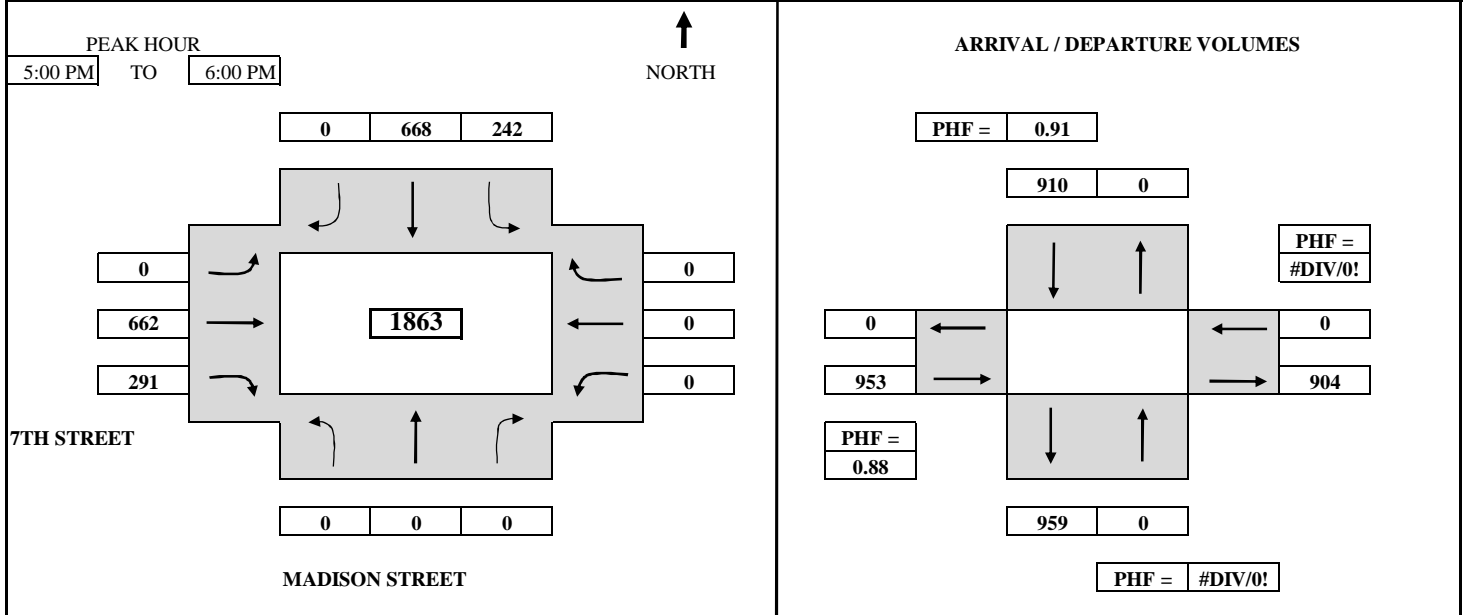
N in
0
0
0
0
0
0
0
0
0

E out
57
79
92
93
109
100
132
111

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-9PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
4:00 PM to 4:15 PM				33	169			127	93			422
4:15 PM to 4:30 PM				69	331			278	184			862
4:30 PM to 4:45 PM				117	516			390	270			1293
4:45 PM to 5:00 PM				155	677			511	333			1676
5:00 PM to 5:15 PM				229	849			698	416			2192
5:15 PM to 5:30 PM				291	1019			863	491			2664
5:30 PM to 5:45 PM				355	1206			1000	584			3145
5:45 PM to 6:00 PM				397	1345			1173	624			3539

TOTAL BY PERIOD												
4:00 PM to 4:15 PM	0	0	0	33	169	0	0	127	93	0	0	422
4:15 PM to 4:30 PM	0	0	0	36	162	0	0	151	91	0	0	440
4:30 PM to 4:45 PM	0	0	0	48	185	0	0	112	86	0	0	431
4:45 PM to 5:00 PM	0	0	0	38	161	0	0	121	63	0	0	383
5:00 PM to 5:15 PM	0	0	0	74	172	0	0	187	83	0	0	516
5:15 PM to 5:30 PM	0	0	0	62	170	0	0	165	75	0	0	472
5:30 PM to 5:45 PM	0	0	0	64	187	0	0	137	93	0	0	481
5:45 PM to 6:00 PM	0	0	0	42	139	0	0	173	40	0	0	394

HOURLY TOTALS												
4:00 PM to 5:00 PM	0	0	0	155	677	0	0	511	333	0	0	1676
4:15 PM to 5:15 PM	0	0	0	196	680	0	0	571	323	0	0	1770
4:30 PM to 5:30 PM	0	0	0	222	688	0	0	585	307	0	0	1802
4:45 PM to 5:45 PM	0	0	0	238	690	0	0	610	314	0	0	1852
5:00 PM to 6:00 PM	0	0	0	242	668	0	0	662	291	0	0	1863

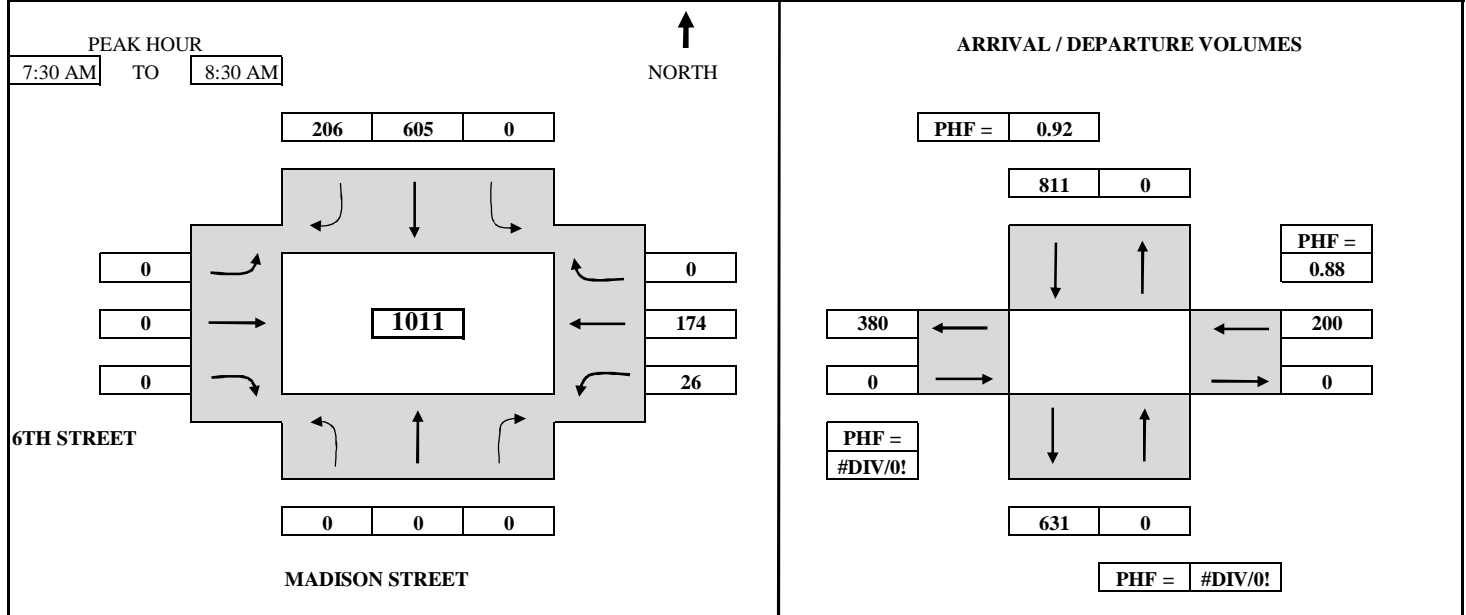
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-10AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
7:00 AM to 7:15 AM					112	60			7	23		202	
7:15 AM to 7:30 AM					251	102			12	66		431	
7:30 AM to 7:45 AM					419	155			23	112		709	
7:45 AM to 8:00 AM					571	202			28	151		952	
8:00 AM to 8:15 AM					721	250			30	200		1201	
8:15 AM to 8:30 AM					856	308			38	240		1442	
8:30 AM to 8:45 AM					1001	350			44	277		1672	
8:45 AM to 9:00 AM					1138	406			50	315		1909	
<b>TOTAL BY PERIOD</b>													
7:00 AM to 7:15 AM			0 0 0	0	112	60	0 0 0	0	0	0	7 23 0	202	
7:15 AM to 7:30 AM			0 0 0	0	139	42	0 0 0	0	0	0	5 43 0	229	
7:30 AM to 7:45 AM			0 0 0	0	168	53	0 0 0	0	0	0	11 46 0	278	
7:45 AM to 8:00 AM			0 0 0	0	152	47	0 0 0	0	0	0	5 39 0	243	
8:00 AM to 8:15 AM			0 0 0	0	150	48	0 0 0	0	0	0	2 49 0	249	
8:15 AM to 8:30 AM			0 0 0	0	135	58	0 0 0	0	0	0	8 40 0	241	
8:30 AM to 8:45 AM			0 0 0	0	145	42	0 0 0	0	0	0	6 37 0	230	
8:45 AM to 9:00 AM			0 0 0	0	137	56	0 0 0	0	0	0	6 38 0	237	
<b>HOURLY TOTALS</b>													
7:00 AM to 8:00 AM			0 0 0	0	571	202	0 0 0	0	0	0	28 151 0	952	
7:15 AM to 8:15 AM			0 0 0	0	609	190	0 0 0	0	0	0	23 177 0	999	
7:30 AM to 8:30 AM			0 0 0	0	605	206	0 0 0	0	0	0	26 174 0	1011	
7:45 AM to 8:45 AM			0 0 0	0	582	195	0 0 0	0	0	0	21 165 0	963	
8:00 AM to 9:00 AM			0 0 0	0	567	204	0 0 0	0	0	0	22 164 0	957	

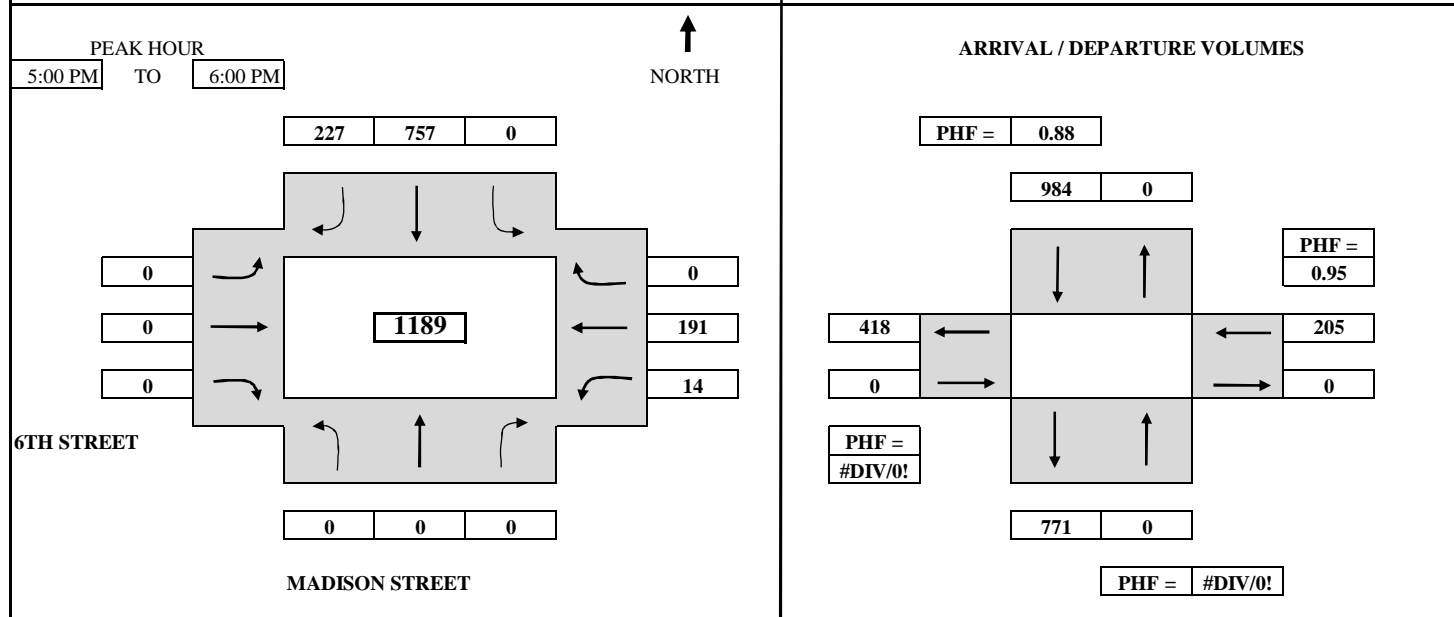
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-10PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA													
4:00 PM	to	4:15 PM					206	50			2	42	300
4:15 PM	to	4:30 PM					401	100			4	84	589
4:30 PM	to	4:45 PM					605	160			5	124	894
4:45 PM	to	5:00 PM					763	205			5	165	1138
5:00 PM	to	5:15 PM					947	257			8	216	1428
5:15 PM	to	5:30 PM					1153	331			12	257	1753
5:30 PM	to	5:45 PM					1346	374			15	307	2042
5:45 PM	to	6:00 PM					1520	432			19	356	2327

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	206	50	0	0	0	2	42	0	300
4:15 PM	to	4:30 PM	0	0	0	0	195	50	0	0	0	2	42	0	289
4:30 PM	to	4:45 PM	0	0	0	0	204	60	0	0	0	1	40	0	305
4:45 PM	to	5:00 PM	0	0	0	0	158	45	0	0	0	0	41	0	244
5:00 PM	to	5:15 PM	0	0	0	0	184	52	0	0	0	3	51	0	290
5:15 PM	to	5:30 PM	0	0	0	0	206	74	0	0	0	4	41	0	325
5:30 PM	to	5:45 PM	0	0	0	0	193	43	0	0	0	3	50	0	289
5:45 PM	to	6:00 PM	0	0	0	0	174	58	0	0	0	4	49	0	285

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	763	205	0	0	0	5	165	0	1138
4:15 PM	to	5:15 PM	0	0	0	0	741	207	0	0	0	6	174	0	1128
4:30 PM	to	5:30 PM	0	0	0	0	752	231	0	0	0	8	173	0	1164
4:45 PM	to	5:45 PM	0	0	0	0	741	214	0	0	0	10	183	0	1148
5:00 PM	to	6:00 PM	0	0	0	0	757	227	0	0	0	14	191	0	1189

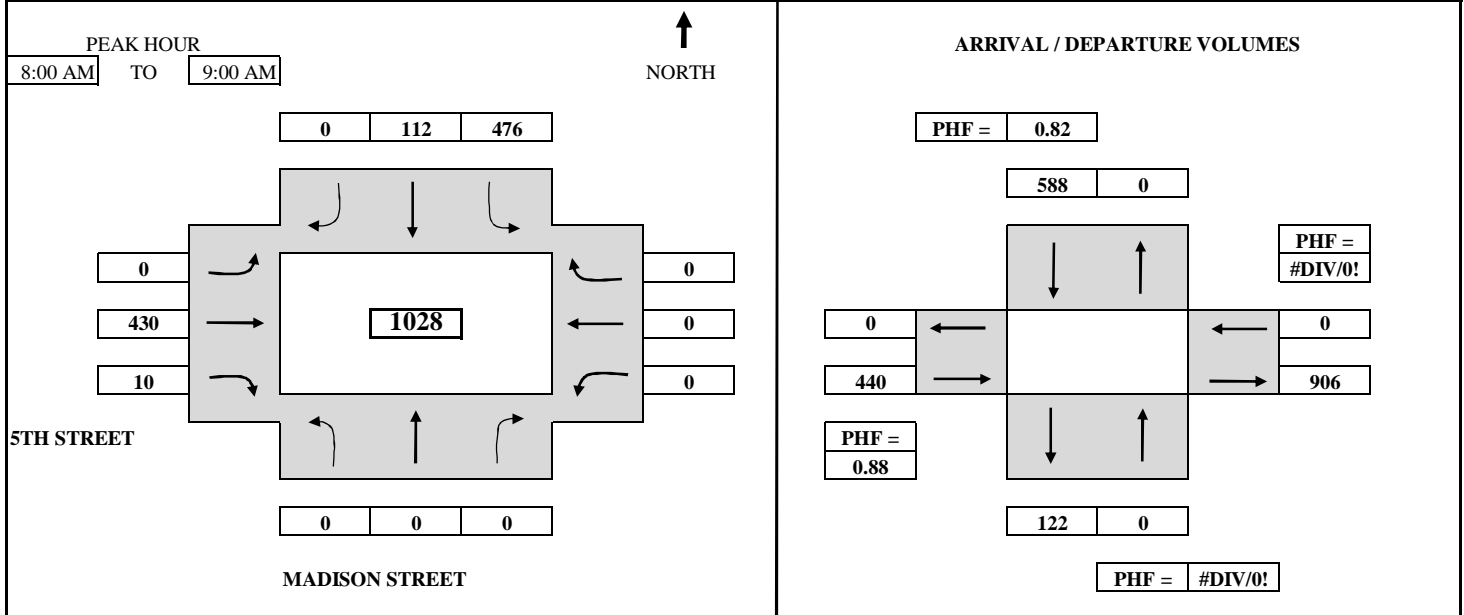
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-11AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						
<b>SURVEY DATA</b>													
7:00 AM to 7:15 AM				100	17		52	4				173	
7:15 AM to 7:30 AM				229	34		112	7				382	
7:30 AM to 7:45 AM				387	55		182	11				635	
7:45 AM to 8:00 AM				524	75		283	12				894	
8:00 AM to 8:15 AM				649	102		380	15				1146	
8:15 AM to 8:30 AM				766	128		474	18				1386	
8:30 AM to 8:45 AM				886	158		590	20				1654	
8:45 AM to 9:00 AM				1000	187		713	22				1922	
<b>TOTAL BY PERIOD</b>													
7:00 AM to 7:15 AM			0 0 0	100	17	0	0	52	4	0	0	0	173
7:15 AM to 7:30 AM			0 0 0	229	34	0	0	60	3	0	0	0	209
7:30 AM to 7:45 AM			0 0 0	387	55	0	0	70	4	0	0	0	253
7:45 AM to 8:00 AM			0 0 0	524	75	0	0	101	1	0	0	0	259
8:00 AM to 8:15 AM			0 0 0	649	102	0	0	97	3	0	0	0	252
8:15 AM to 8:30 AM			0 0 0	766	128	0	0	94	3	0	0	0	240
8:30 AM to 8:45 AM			0 0 0	886	158	0	0	116	2	0	0	0	268
8:45 AM to 9:00 AM			0 0 0	1000	187	0	0	123	2	0	0	0	268
<b>HOURLY TOTALS</b>													
7:00 AM to 8:00 AM			0 0 0	524	75	0	0	283	12	0	0	0	894
7:15 AM to 8:15 AM			0 0 0	549	85	0	0	328	11	0	0	0	973
7:30 AM to 8:30 AM			0 0 0	537	94	0	0	362	11	0	0	0	1004
7:45 AM to 8:45 AM			0 0 0	499	103	0	0	408	9	0	0	0	1019
8:00 AM to 9:00 AM			0 0 0	476	112	0	0	430	10	0	0	0	1028

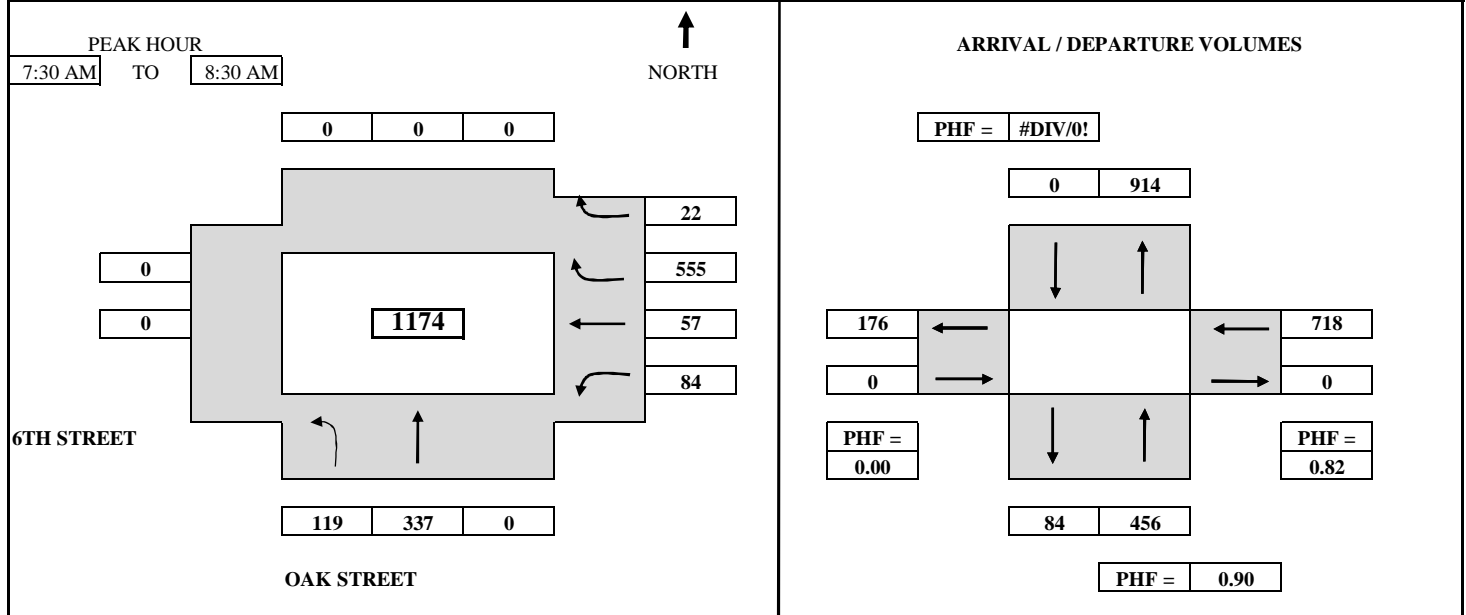
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-12AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			6TH ST RIGHT	WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							

### SURVEY DATA

7:00 AM to 7:15 AM	21	34				5	31	12	100	203
7:15 AM to 7:30 AM	50	105				6	52	27	237	477
7:30 AM to 7:45 AM	96	174				8	70	38	427	813
7:45 AM to 8:00 AM	125	262				13	90	53	558	1101
8:00 AM to 8:15 AM	150	351				19	110	63	678	1371
8:15 AM to 8:30 AM	169	442				28	136	84	792	1651
8:30 AM to 8:45 AM	195	543				37	168	98	936	1977
8:45 AM to 9:00 AM	210	646				41	185	109	1047	2238

### TOTAL BY PERIOD

7:00 AM to 7:15 AM	21	34	0	0	0	0	0	0	5	31	12	100	203
7:15 AM to 7:30 AM	29	71	0	0	0	0	0	0	1	21	15	137	274
7:30 AM to 7:45 AM	46	69	0	0	0	0	0	0	2	18	11	190	336
7:45 AM to 8:00 AM	29	88	0	0	0	0	0	0	5	20	15	131	288
8:00 AM to 8:15 AM	25	89	0	0	0	0	0	0	6	20	10	120	270
8:15 AM to 8:30 AM	19	91	0	0	0	0	0	0	9	26	21	114	280
8:30 AM to 8:45 AM	26	101	0	0	0	0	0	0	9	32	14	144	326
8:45 AM to 9:00 AM	15	103	0	0	0	0	0	0	4	17	11	111	261

### HOURLY TOTALS

7:00 AM to 8:00 AM	125	262	0	0	0	0	0	0	13	90	53	558	1101
7:15 AM to 8:15 AM	129	317	0	0	0	0	0	0	14	79	51	578	1168
7:30 AM to 8:30 AM	119	337	0	0	0	0	0	0	22	84	57	555	1174
7:45 AM to 8:45 AM	99	369	0	0	0	0	0	0	29	98	60	509	1164
8:00 AM to 9:00 AM	85	384	0	0	0	0	0	0	28	95	56	489	1137

TEL: (510) 232 - 1271

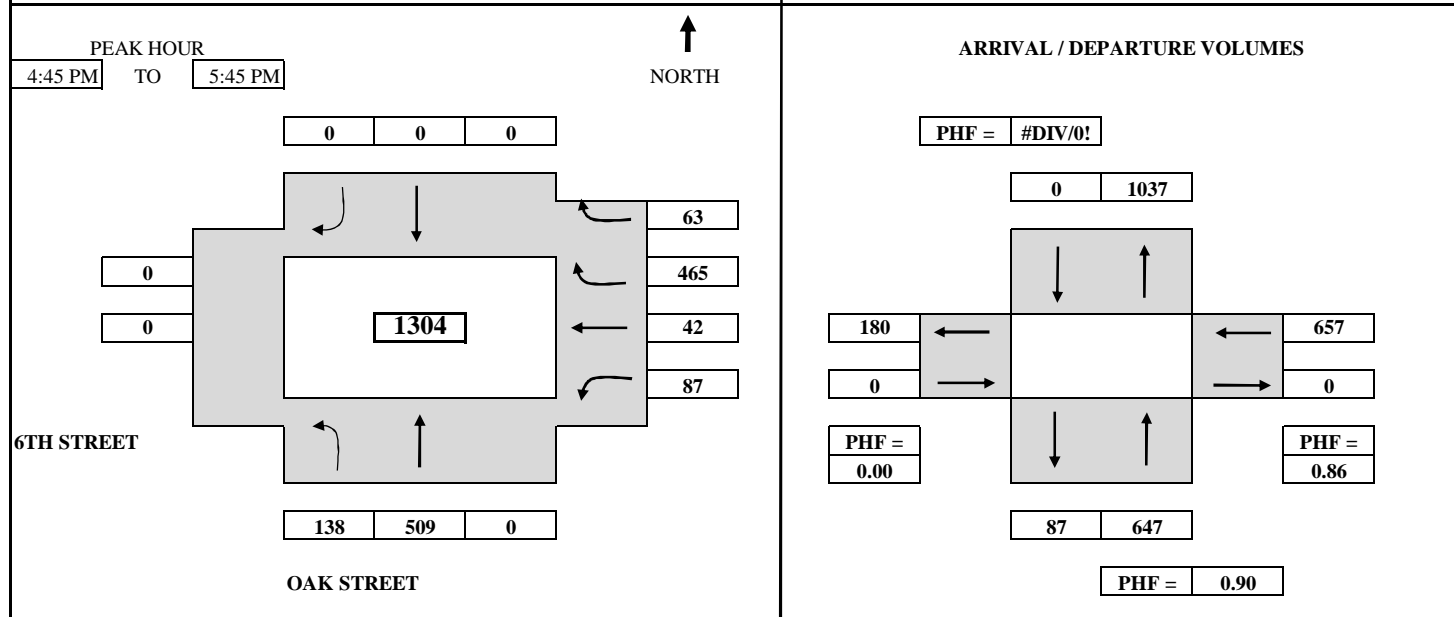
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-12PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			6TH ST RIGHT	WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							

SURVEY DATA														
4:00 PM	to	4:15 PM	44	72						10	10	4	95	235
4:15 PM	to	4:30 PM	79	161						18	28	8	161	455
4:30 PM	to	4:45 PM	115	255						22	46	15	247	700
4:45 PM	to	5:00 PM	148	387						46	70	22	364	1037
5:00 PM	to	5:15 PM	191	512						60	90	32	467	1352
5:15 PM	to	5:30 PM	223	659						72	117	45	618	1734
5:30 PM	to	5:45 PM	253	764						85	133	57	712	2004
5:45 PM	to	6:00 PM	282	874						92	154	70	832	2304

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	44	72	0	0	0	0	0	0	10	10	4	95	235
4:15 PM	to	4:30 PM	35	89	0	0	0	0	0	0	8	18	4	66	220
4:30 PM	to	4:45 PM	36	94	0	0	0	0	0	0	4	18	7	86	245
4:45 PM	to	5:00 PM	33	132	0	0	0	0	0	0	24	24	7	117	337
5:00 PM	to	5:15 PM	43	125	0	0	0	0	0	0	14	20	10	103	315
5:15 PM	to	5:30 PM	32	147	0	0	0	0	0	0	12	27	13	151	382
5:30 PM	to	5:45 PM	30	105	0	0	0	0	0	0	13	16	12	94	270
5:45 PM	to	6:00 PM	29	110	0	0	0	0	0	0	7	21	13	120	300

HOURLY TOTALS															
4:00 PM	to	5:00 PM	148	387	0	0	0	0	0	0	46	70	22	364	1037
4:15 PM	to	5:15 PM	147	440	0	0	0	0	0	0	50	80	28	372	1117
4:30 PM	to	5:30 PM	144	498	0	0	0	0	0	0	54	89	37	457	1279
4:45 PM	to	5:45 PM	138	509	0	0	0	0	0	0	63	87	42	465	1304
5:00 PM	to	6:00 PM	134	487	0	0	0	0	0	0	46	84	48	468	1267

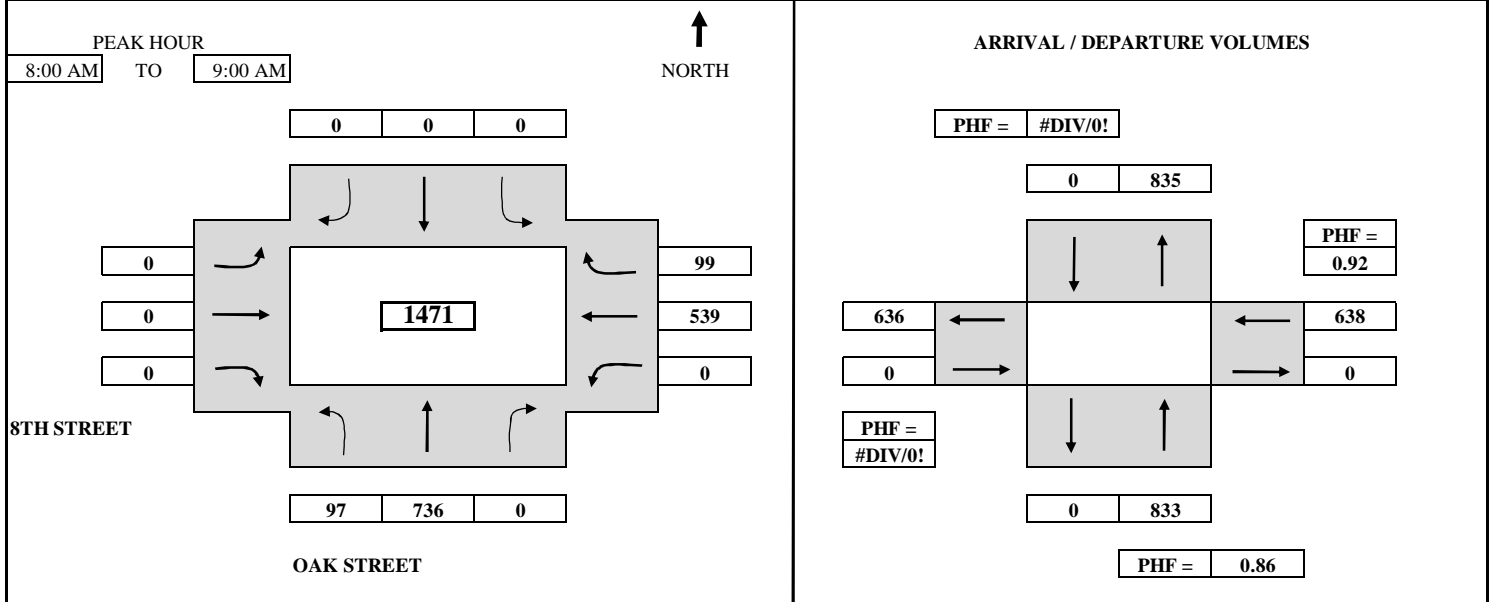
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-13AM



TIME	PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>														
7:00 AM	to 7:15 AM	27	108								88	16	239	
7:15 AM	to 7:30 AM	56	261								165	27	509	
7:30 AM	to 7:45 AM	76	482								263	40	861	
7:45 AM	to 8:00 AM	100	679								374	60	1213	
8:00 AM	to 8:15 AM	119	869								492	84	1564	
8:15 AM	to 8:30 AM	140	1055								621	111	1927	
8:30 AM	to 8:45 AM	163	1264								760	139	2326	
8:45 AM	to 9:00 AM	197	1415								913	159	2684	
<b>TOTAL BY PERIOD</b>														
7:00 AM	to 7:15 AM	27	108	0	0	0	0	0	0	0	88	16	239	
7:15 AM	to 7:30 AM	29	153	0	0	0	0	0	0	0	77	11	270	
7:30 AM	to 7:45 AM	20	221	0	0	0	0	0	0	0	98	13	352	
7:45 AM	to 8:00 AM	24	197	0	0	0	0	0	0	0	111	20	352	
8:00 AM	to 8:15 AM	19	190	0	0	0	0	0	0	0	118	24	351	
8:15 AM	to 8:30 AM	21	186	0	0	0	0	0	0	0	129	27	363	
8:30 AM	to 8:45 AM	23	209	0	0	0	0	0	0	0	139	28	399	
8:45 AM	to 9:00 AM	34	151	0	0	0	0	0	0	0	153	20	358	
<b>HOURLY TOTALS</b>														
7:00 AM	to 8:00 AM	100	679	0	0	0	0	0	0	0	374	60	1213	
7:15 AM	to 8:15 AM	92	761	0	0	0	0	0	0	0	404	68	1325	
7:30 AM	to 8:30 AM	84	794	0	0	0	0	0	0	0	456	84	1418	
7:45 AM	to 8:45 AM	87	782	0	0	0	0	0	0	0	497	99	1465	
8:00 AM	to 9:00 AM	97	736	0	0	0	0	0	0	0	539	99	1471	

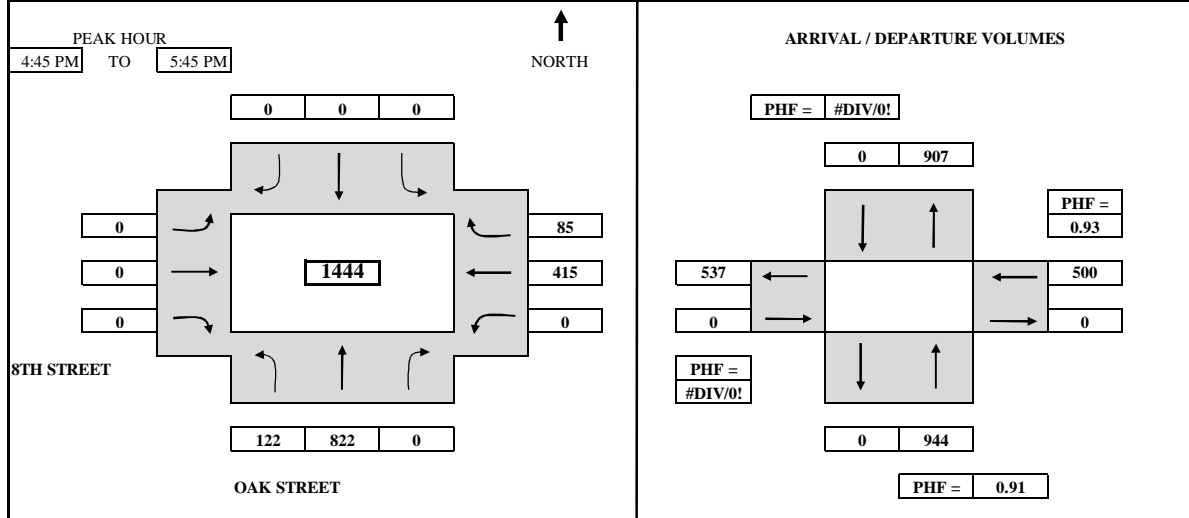
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/17/2012	DAY: THURSDAY
N-S APPROACH: OAK STREET	SURVEY TIME: 4:00 PM	TO 6:00 PM
E-W APPROACH 8TH STREET	JURISDICTION: OAKLAND	FILE: 3205033-13PM



TIME PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>														
4:00 PM	to 4:15 PM	31	159								109	17		316
4:15 PM	to 4:30 PM	70	289								223	36		618
4:30 PM	to 4:45 PM	102	433								325	62		922
4:45 PM	to 5:00 PM	143	644								433	85		1305
5:00 PM	to 5:15 PM	165	857								531	104		1657
5:15 PM	to 5:30 PM	196	1084								634	120		2034
5:30 PM	to 5:45 PM	224	1255								740	147		2366
5:45 PM	to 6:00 PM	259	1428								857	164		2708
<b>TOTAL BY PERIOD</b>														
4:00 PM	to 4:15 PM	31	159	0	0	0	0	0	0	0	109	17		316
4:15 PM	to 4:30 PM	39	130	0	0	0	0	0	0	0	114	19		302
4:30 PM	to 4:45 PM	32	144	0	0	0	0	0	0	0	102	26		304
4:45 PM	to 5:00 PM	41	211	0	0	0	0	0	0	0	108	23		383
5:00 PM	to 5:15 PM	22	213	0	0	0	0	0	0	0	98	19		352
5:15 PM	to 5:30 PM	31	227	0	0	0	0	0	0	0	103	16		377
5:30 PM	to 5:45 PM	28	171	0	0	0	0	0	0	0	106	27		332
5:45 PM	to 6:00 PM	35	173	0	0	0	0	0	0	0	117	17		342
<b>HOURLY TOTALS</b>														
4:00 PM	to 5:00 PM	143	644	0	0	0	0	0	0	0	433	85		1305
4:15 PM	to 5:15 PM	134	698	0	0	0	0	0	0	0	422	87		1341
4:30 PM	to 5:30 PM	126	795	0	0	0	0	0	0	0	411	84		1416
4:45 PM	to 5:45 PM	122	822	0	0	0	0	0	0	0	415	85		1444
5:00 PM	to 6:00 PM	116	784	0	0	0	0	0	0	0	424	79		1403

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

N in
190
169
176
252
235
258
199
208

**1687**

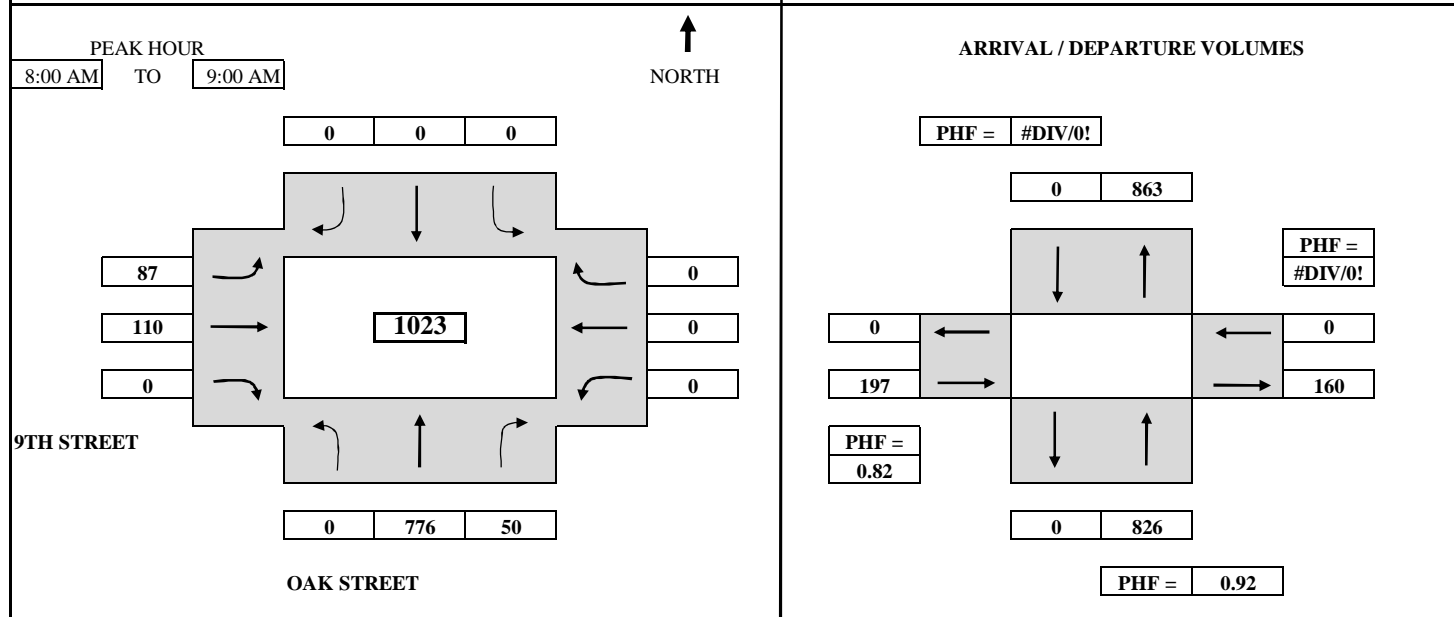
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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-14AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
7:00 AM	to	7:15 AM	134	15				8	16			173
7:15 AM	to	7:30 AM	280	27				18	34			359
7:30 AM	to	7:45 AM	479	36				28	56			599
7:45 AM	to	8:00 AM	660	47				39	83			829
8:00 AM	to	8:15 AM	849	61				59	112			1081
8:15 AM	to	8:30 AM	1064	70				75	145			1354
8:30 AM	to	8:45 AM	1233	84				87	172			1576
8:45 AM	to	9:00 AM	1436	97				126	193			1852

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	134	15	0	0	0	8	16	0	0	0	0	173
7:15 AM	to	7:30 AM	0	146	12	0	0	0	10	18	0	0	0	0	186
7:30 AM	to	7:45 AM	0	199	9	0	0	0	10	22	0	0	0	0	240
7:45 AM	to	8:00 AM	0	181	11	0	0	0	11	27	0	0	0	0	230
8:00 AM	to	8:15 AM	0	189	14	0	0	0	20	29	0	0	0	0	252
8:15 AM	to	8:30 AM	0	215	9	0	0	0	16	33	0	0	0	0	273
8:30 AM	to	8:45 AM	0	169	14	0	0	0	12	27	0	0	0	0	222
8:45 AM	to	9:00 AM	0	203	13	0	0	0	39	21	0	0	0	0	276

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	660	47	0	0	0	39	83	0	0	0	0	829
7:15 AM	to	8:15 AM	0	715	46	0	0	0	51	96	0	0	0	0	908
7:30 AM	to	8:30 AM	0	784	43	0	0	0	57	111	0	0	0	0	995
7:45 AM	to	8:45 AM	0	754	48	0	0	0	59	116	0	0	0	0	977
8:00 AM	to	9:00 AM	0	776	50	0	0	0	87	110	0	0	0	0	1023

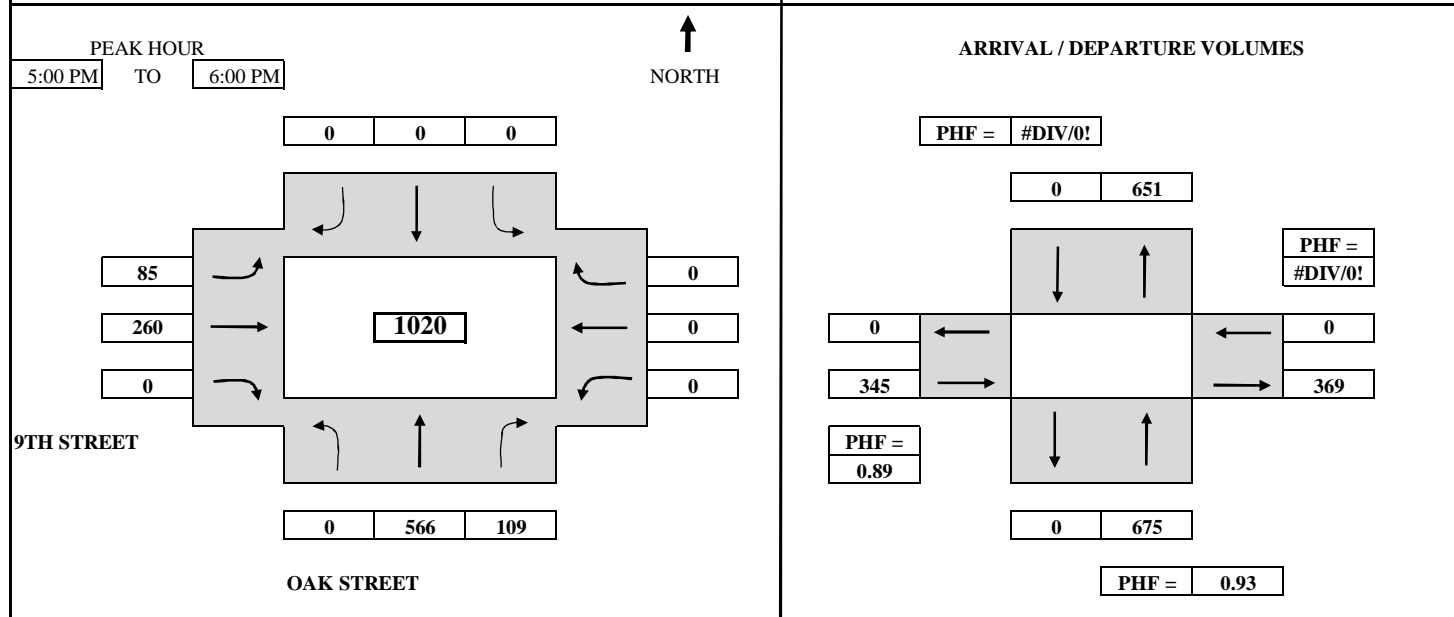
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-14PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
4:00 PM	to	4:15 PM	129	18				10	39			196
4:15 PM	to	4:30 PM	270	34				29	77			410
4:30 PM	to	4:45 PM	409	51				50	116			626
4:45 PM	to	5:00 PM	566	73				67	164			870
5:00 PM	to	5:15 PM	715	106				89	227			1137
5:15 PM	to	5:30 PM	854	134				119	294			1401
5:30 PM	to	5:45 PM	989	155				137	351			1632
5:45 PM	to	6:00 PM	1132	182				152	424			1890

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	129	18	0	0	0	10	39	0	0	0	196
4:15 PM	to	4:30 PM	0	141	16	0	0	0	19	38	0	0	0	214
4:30 PM	to	4:45 PM	0	139	17	0	0	0	21	39	0	0	0	216
4:45 PM	to	5:00 PM	0	157	22	0	0	0	17	48	0	0	0	244
5:00 PM	to	5:15 PM	0	149	33	0	0	0	22	63	0	0	0	267
5:15 PM	to	5:30 PM	0	139	28	0	0	0	30	67	0	0	0	264
5:30 PM	to	5:45 PM	0	135	21	0	0	0	18	57	0	0	0	231
5:45 PM	to	6:00 PM	0	143	27	0	0	0	15	73	0	0	0	258

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	566	73	0	0	0	67	164	0	0	0	870
4:15 PM	to	5:15 PM	0	586	88	0	0	0	79	188	0	0	0	941
4:30 PM	to	5:30 PM	0	584	100	0	0	0	90	217	0	0	0	991
4:45 PM	to	5:45 PM	0	580	104	0	0	0	87	235	0	0	0	1006
5:00 PM	to	6:00 PM	0	566	109	0	0	0	85	260	0	0	0	1020

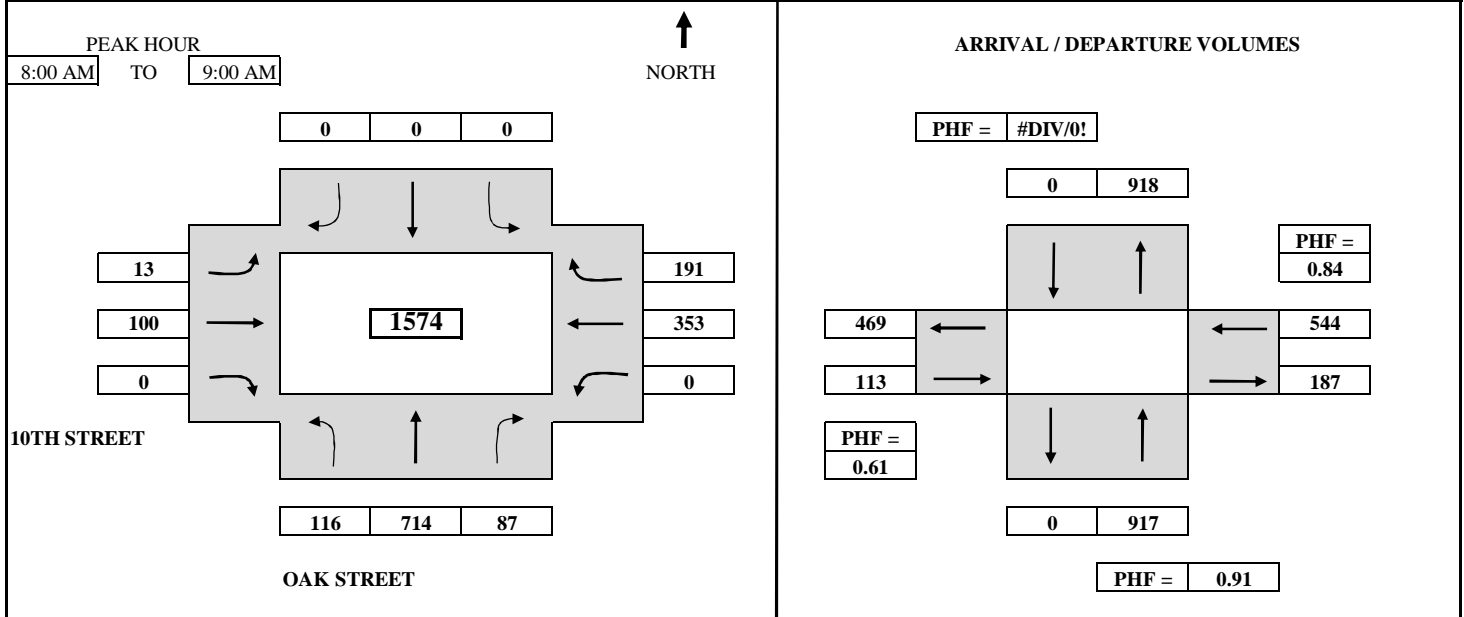
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 10TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-15AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA														
7:00 AM	to	7:15 AM	9	99	16				0	5		34	13	176
7:15 AM	to	7:30 AM	23	225	28				0	16		68	29	389
7:30 AM	to	7:45 AM	29	401	40				1	27		108	71	677
7:45 AM	to	8:00 AM	59	560	64				4	50		168	113	1018
8:00 AM	to	8:15 AM	101	738	85				9	91		244	153	1421
8:15 AM	to	8:30 AM	136	932	109				11	112		344	215	1859
8:30 AM	to	8:45 AM	156	1100	133				12	128		430	257	2216
8:45 AM	to	9:00 AM	175	1274	151				17	150		521	304	2592

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	9	99	16	0	0	0	0	5	0	0	34	13	176
7:15 AM	to	7:30 AM	14	126	12	0	0	0	0	11	0	0	34	16	213
7:30 AM	to	7:45 AM	6	176	12	0	0	0	1	11	0	0	40	42	288
7:45 AM	to	8:00 AM	30	159	24	0	0	0	3	23	0	0	60	42	341
8:00 AM	to	8:15 AM	42	178	21	0	0	0	5	41	0	0	76	40	403
8:15 AM	to	8:30 AM	35	194	24	0	0	0	2	21	0	0	100	62	438
8:30 AM	to	8:45 AM	20	168	24	0	0	0	1	16	0	0	86	42	357
8:45 AM	to	9:00 AM	19	174	18	0	0	0	5	22	0	0	91	47	376

HOURLY TOTALS															
7:00 AM	to	8:00 AM	59	560	64	0	0	0	4	50	0	0	168	113	1018
7:15 AM	to	8:15 AM	92	639	69	0	0	0	9	86	0	0	210	140	1245
7:30 AM	to	8:30 AM	113	707	81	0	0	0	11	96	0	0	276	186	1470
7:45 AM	to	8:45 AM	127	699	93	0	0	0	11	101	0	0	322	186	1539
8:00 AM	to	9:00 AM	116	714	87	0	0	0	13	100	0	0	353	191	1574

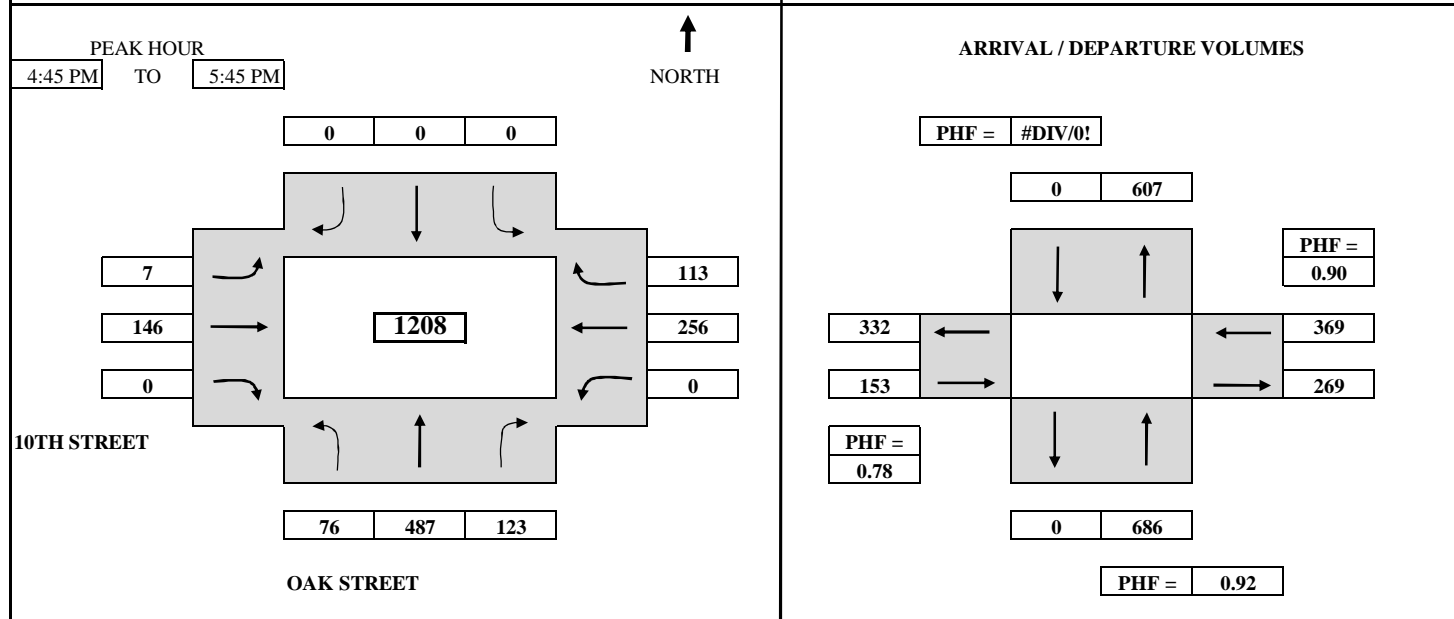
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 10TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-15PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM			20 114 10				6 24			50 24		248	
4:15 PM to 4:30 PM			34 246 32				7 47			94 55		515	
4:30 PM to 4:45 PM			43 348 47				10 67			133 81		729	
4:45 PM to 5:00 PM			61 470 71				12 94			193 105		1006	
5:00 PM to 5:15 PM			78 606 93				13 135			252 135		1312	
5:15 PM to 5:30 PM			104 730 129				15 182			318 162		1640	
5:30 PM to 5:45 PM			119 835 170				17 213			389 194		1937	
5:45 PM to 6:00 PM			140 934 194				17 244			442 223		2194	
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			20 114 10	0 0 0			6 24 0			0 50 24		248	
4:15 PM to 4:30 PM			14 132 22	0 0 0			1 23 0			0 44 31		267	
4:30 PM to 4:45 PM			9 102 15	0 0 0			3 20 0			0 39 26		214	
4:45 PM to 5:00 PM			18 122 24	0 0 0			2 27 0			0 60 24		277	
5:00 PM to 5:15 PM			17 136 22	0 0 0			1 41 0			0 59 30		306	
5:15 PM to 5:30 PM			26 124 36	0 0 0			2 47 0			0 66 27		328	
5:30 PM to 5:45 PM			15 105 41	0 0 0			2 31 0			0 71 32		297	
5:45 PM to 6:00 PM			21 99 24	0 0 0			0 31 0			0 53 29		257	
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			61 470 71	0 0 0			12 94 0			0 193 105		1006	
4:15 PM to 5:15 PM			58 492 83	0 0 0			7 111 0			0 202 111		1064	
4:30 PM to 5:30 PM			70 484 97	0 0 0			8 135 0			0 224 107		1125	
4:45 PM to 5:45 PM			76 487 123	0 0 0			7 146 0			0 256 113		1208	
5:00 PM to 6:00 PM			79 464 123	0 0 0			5 150 0			0 249 118		1188	

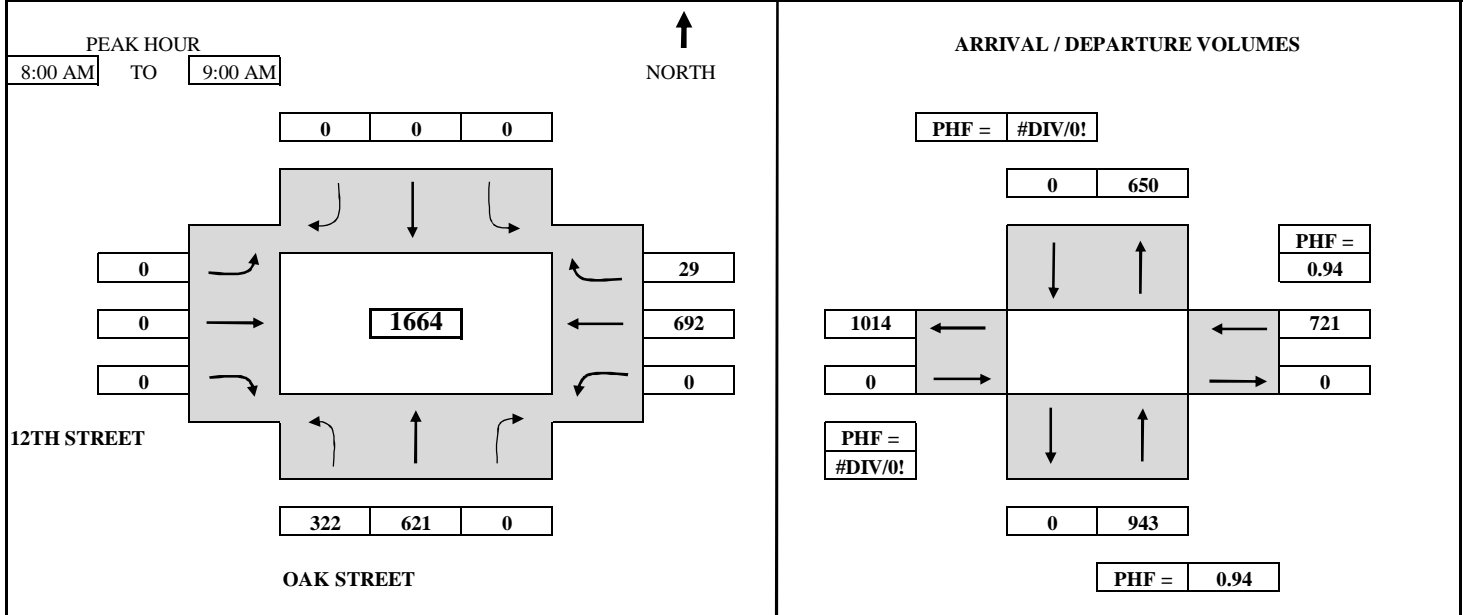
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-16AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA													
7:00 AM	to	7:15 AM	29	99							92	1	221
7:15 AM	to	7:30 AM	82	162							183	4	431
7:30 AM	to	7:45 AM	187	265							325	12	789
7:45 AM	to	8:00 AM	282	400							485	16	1183
8:00 AM	to	8:15 AM	379	554							657	27	1617
8:15 AM	to	8:30 AM	460	722							843	32	2057
8:30 AM	to	8:45 AM	533	873							1007	39	2452
8:45 AM	to	9:00 AM	604	1021							1177	45	2847

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	29	99	0	0	0	0	0	0	0	92	1	221
7:15 AM	to	7:30 AM	53	63	0	0	0	0	0	0	0	91	3	210
7:30 AM	to	7:45 AM	105	103	0	0	0	0	0	0	0	142	8	358
7:45 AM	to	8:00 AM	95	135	0	0	0	0	0	0	0	160	4	394
8:00 AM	to	8:15 AM	97	154	0	0	0	0	0	0	0	172	11	434
8:15 AM	to	8:30 AM	81	168	0	0	0	0	0	0	0	186	5	440
8:30 AM	to	8:45 AM	73	151	0	0	0	0	0	0	0	164	7	395
8:45 AM	to	9:00 AM	71	148	0	0	0	0	0	0	0	170	6	395

HOURLY TOTALS														
7:00 AM	to	8:00 AM	282	400	0	0	0	0	0	0	0	485	16	1183
7:15 AM	to	8:15 AM	350	455	0	0	0	0	0	0	0	565	26	1396
7:30 AM	to	8:30 AM	378	560	0	0	0	0	0	0	0	660	28	1626
7:45 AM	to	8:45 AM	346	608	0	0	0	0	0	0	0	682	27	1663
8:00 AM	to	9:00 AM	322	621	0	0	0	0	0	0	0	692	29	1664

TEL: (510) 232 - 1271

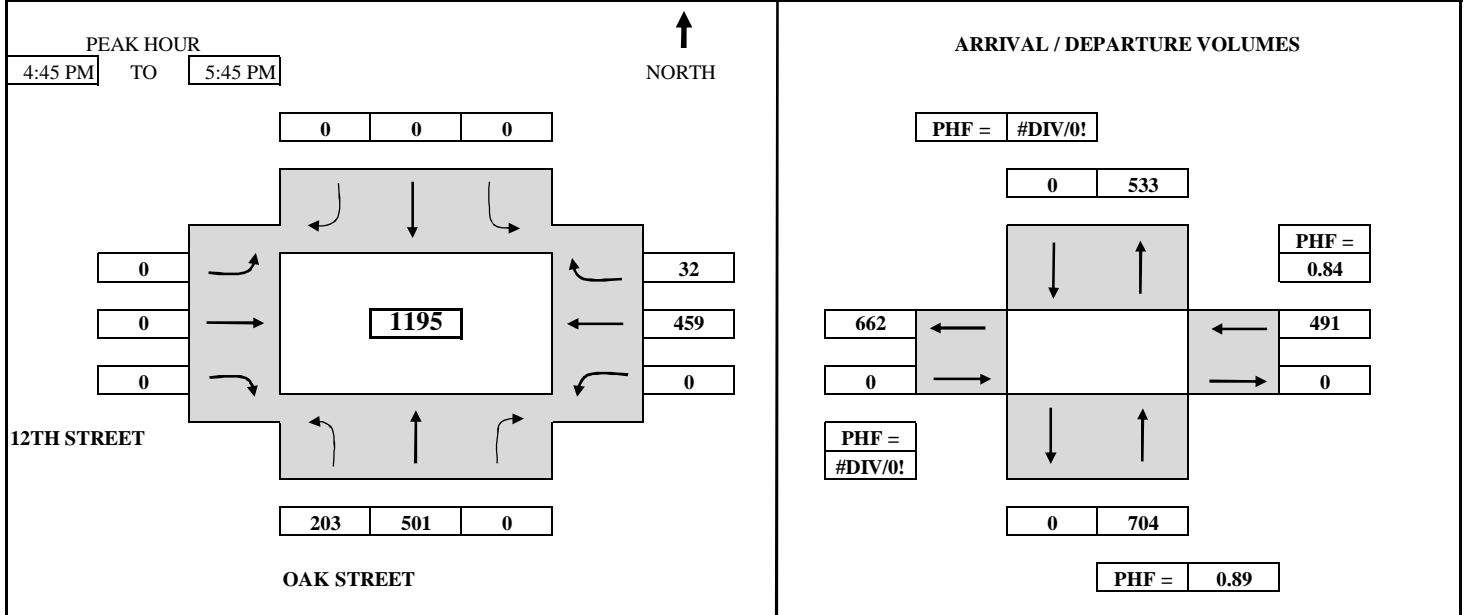
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-16PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
4:00 PM	to	4:15 PM	50	110							77	4	241
4:15 PM	to	4:30 PM	101	237							194	7	539
4:30 PM	to	4:45 PM	142	368							283	15	808
4:45 PM	to	5:00 PM	184	488							386	25	1083
5:00 PM	to	5:15 PM	254	615							492	34	1395
5:15 PM	to	5:30 PM	294	759							634	39	1726
5:30 PM	to	5:45 PM	345	869							742	47	2003
5:45 PM	to	6:00 PM	370	972							802	51	2195

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	50	110	0	0	0	0	0	0	0	77	4	241
4:15 PM	to	4:30 PM	51	127	0	0	0	0	0	0	0	117	3	298
4:30 PM	to	4:45 PM	41	131	0	0	0	0	0	0	0	89	8	269
4:45 PM	to	5:00 PM	42	120	0	0	0	0	0	0	0	103	10	275
5:00 PM	to	5:15 PM	70	127	0	0	0	0	0	0	0	106	9	312
5:15 PM	to	5:30 PM	40	144	0	0	0	0	0	0	0	142	5	331
5:30 PM	to	5:45 PM	51	110	0	0	0	0	0	0	0	108	8	277
5:45 PM	to	6:00 PM	25	103	0	0	0	0	0	0	0	60	4	192

HOURLY TOTALS														
4:00 PM	to	5:00 PM	184	488	0	0	0	0	0	0	0	386	25	1083
4:15 PM	to	5:15 PM	204	505	0	0	0	0	0	0	0	415	30	1154
4:30 PM	to	5:30 PM	193	522	0	0	0	0	0	0	0	440	32	1187
4:45 PM	to	5:45 PM	203	501	0	0	0	0	0	0	0	459	32	1195
5:00 PM	to	6:00 PM	186	484	0	0	0	0	0	0	0	416	26	1112

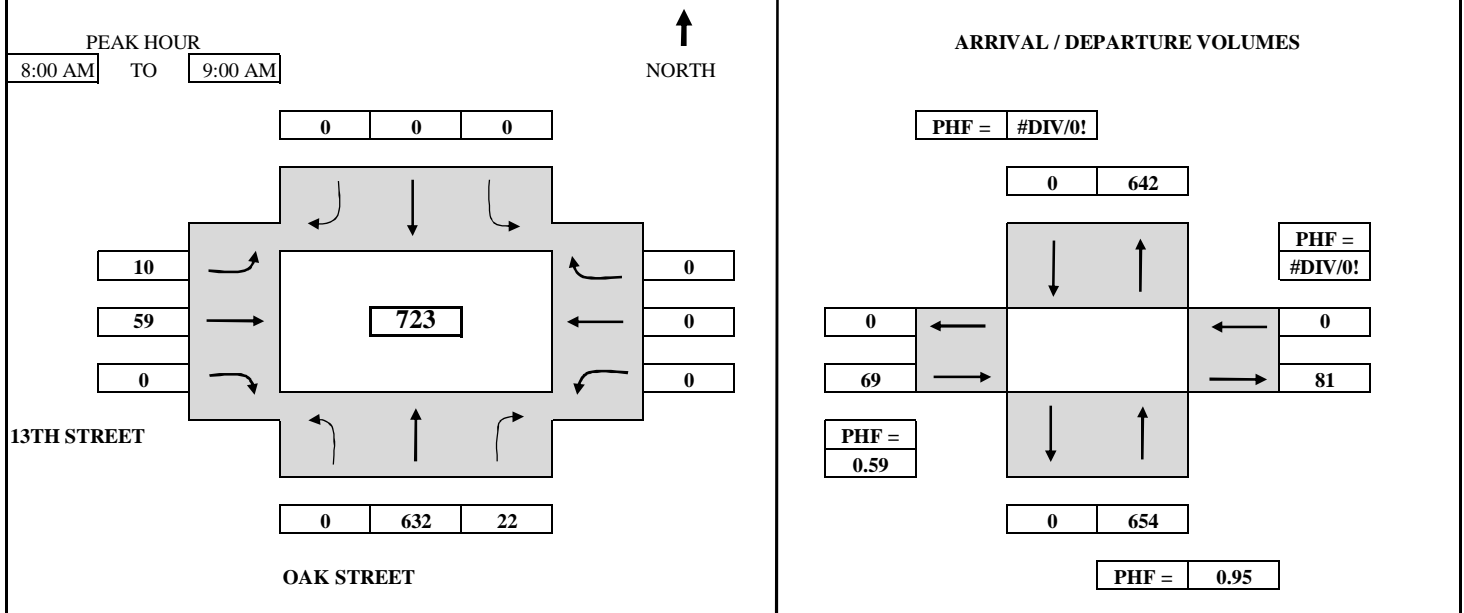
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 13TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-17AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						
<b>SURVEY DATA</b>														
7:00 AM	to	7:15 AM	93	7			0	10				110		
7:15 AM	to	7:30 AM	156	15			1	18				190		
7:30 AM	to	7:45 AM	263	16			1	25				305		
7:45 AM	to	8:00 AM	397	21			3	26				447		
8:00 AM	to	8:15 AM	554	29			6	43				632		
8:15 AM	to	8:30 AM	721	34			8	49				812		
8:30 AM	to	8:45 AM	876	40			10	59				985		
8:45 AM	to	9:00 AM	1029	43			13	85				1170		
<b>TOTAL BY PERIOD</b>														
7:00 AM	to	7:15 AM	0	93	7	0	0	0	0	10	0	0	0	110
7:15 AM	to	7:30 AM	0	63	8	0	0	0	1	8	0	0	0	80
7:30 AM	to	7:45 AM	0	107	1	0	0	0	0	7	0	0	0	115
7:45 AM	to	8:00 AM	0	134	5	0	0	0	2	1	0	0	0	142
8:00 AM	to	8:15 AM	0	157	8	0	0	0	3	17	0	0	0	185
8:15 AM	to	8:30 AM	0	167	5	0	0	0	2	6	0	0	0	180
8:30 AM	to	8:45 AM	0	155	6	0	0	0	2	10	0	0	0	173
8:45 AM	to	9:00 AM	0	153	3	0	0	0	3	26	0	0	0	185
<b>HOURLY TOTALS</b>														
7:00 AM	to	8:00 AM	0	397	21	0	0	0	3	26	0	0	0	447
7:15 AM	to	8:15 AM	0	461	22	0	0	0	6	33	0	0	0	522
7:30 AM	to	8:30 AM	0	565	19	0	0	0	7	31	0	0	0	622
7:45 AM	to	8:45 AM	0	613	24	0	0	0	9	34	0	0	0	680
8:00 AM	to	9:00 AM	0	632	22	0	0	0	10	59	0	0	0	723

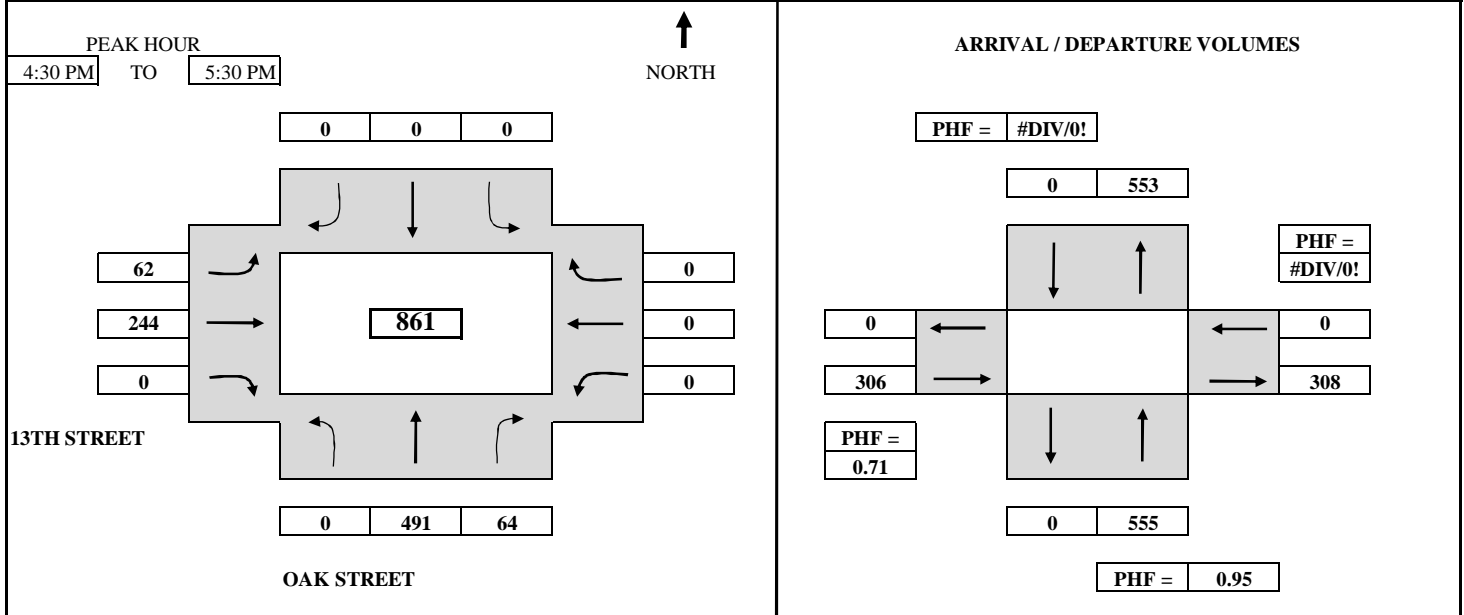
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 13TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-17PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
4:00 PM	to	4:15 PM	107	12				11	39			169
4:15 PM	to	4:30 PM	226	21				17	63			327
4:30 PM	to	4:45 PM	350	37				27	119			533
4:45 PM	to	5:00 PM	472	45				37	166			720
5:00 PM	to	5:15 PM	595	61				54	224			934
5:15 PM	to	5:30 PM	717	85				79	307			1188
5:30 PM	to	5:45 PM	824	93				87	361			1365
5:45 PM	to	6:00 PM	920	109				95	408			1532

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	107	12	0	0	0	11	39	0	0	0	169
4:15 PM	to	4:30 PM	0	119	9	0	0	0	6	24	0	0	0	158
4:30 PM	to	4:45 PM	0	124	16	0	0	0	10	56	0	0	0	206
4:45 PM	to	5:00 PM	0	122	8	0	0	0	10	47	0	0	0	187
5:00 PM	to	5:15 PM	0	123	16	0	0	0	17	58	0	0	0	214
5:15 PM	to	5:30 PM	0	122	24	0	0	0	25	83	0	0	0	254
5:30 PM	to	5:45 PM	0	107	8	0	0	0	8	54	0	0	0	177
5:45 PM	to	6:00 PM	0	96	16	0	0	0	8	47	0	0	0	167

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	472	45	0	0	0	37	166	0	0	0	720
4:15 PM	to	5:15 PM	0	488	49	0	0	0	43	185	0	0	0	765
4:30 PM	to	5:30 PM	0	491	64	0	0	0	62	244	0	0	0	861
4:45 PM	to	5:45 PM	0	474	56	0	0	0	60	242	0	0	0	832
5:00 PM	to	6:00 PM	0	448	64	0	0	0	58	242	0	0	0	812

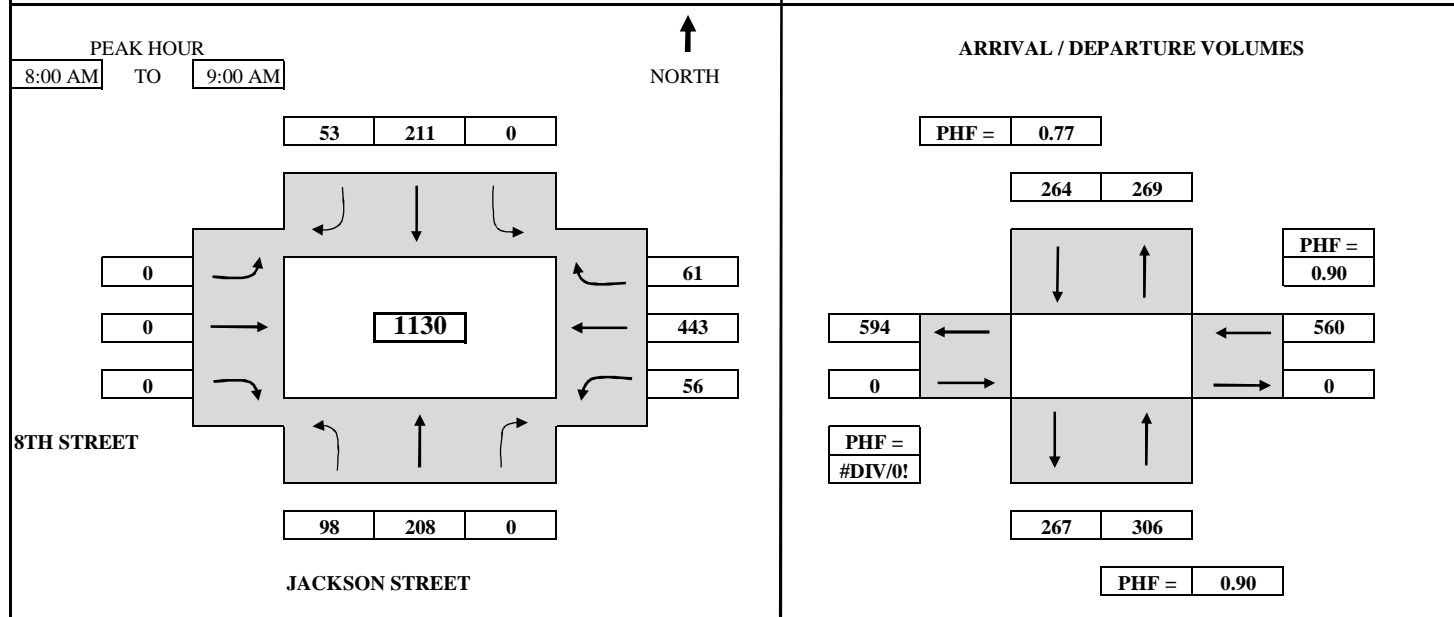
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-18AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	9	17		31	6			7	51	4	125		
7:15 AM	to	7:30 AM	19	44		65	12			16	118	7	281		
7:30 AM	to	7:45 AM	34	82		121	19			23	187	15	481		
7:45 AM	to	8:00 AM	45	109		165	32			32	306	22	711		
8:00 AM	to	8:15 AM	55	162		215	35			44	396	35	942		
8:15 AM	to	8:30 AM	82	220		273	49			63	491	57	1235		
8:30 AM	to	8:45 AM	113	271		312	63			78	616	71	1524		
8:45 AM	to	9:00 AM	143	317		376	85			88	749	83	1841		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	9	17	0	0	31	6	0	0	0	7	51	4	125
7:15 AM	to	7:30 AM	10	27	0	0	34	6	0	0	0	9	67	3	156
7:30 AM	to	7:45 AM	15	38	0	0	56	7	0	0	0	7	69	8	200
7:45 AM	to	8:00 AM	11	27	0	0	44	13	0	0	0	9	119	7	230
8:00 AM	to	8:15 AM	10	53	0	0	50	3	0	0	0	12	90	13	231
8:15 AM	to	8:30 AM	27	58	0	0	58	14	0	0	0	19	95	22	293
8:30 AM	to	8:45 AM	31	51	0	0	39	14	0	0	0	15	125	14	289
8:45 AM	to	9:00 AM	30	46	0	0	64	22	0	0	0	10	133	12	317
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	45	109	0	0	165	32	0	0	0	32	306	22	711
7:15 AM	to	8:15 AM	46	145	0	0	184	29	0	0	0	37	345	31	817
7:30 AM	to	8:30 AM	63	176	0	0	208	37	0	0	0	47	373	50	954
7:45 AM	to	8:45 AM	79	189	0	0	191	44	0	0	0	55	429	56	1043
8:00 AM	to	9:00 AM	98	208	0	0	211	53	0	0	0	56	443	61	1130

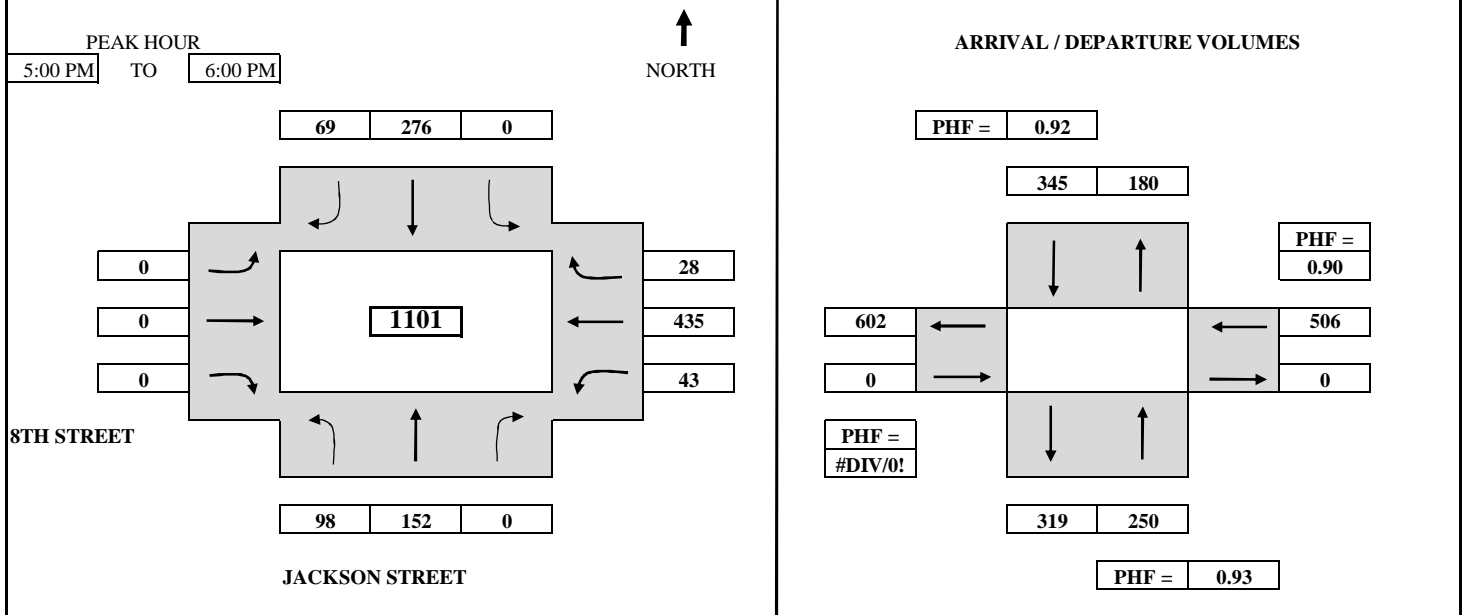
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-18PM



TIME PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT		
<b>SURVEY DATA</b>															
4:00 PM	to	4:15 PM	18	28	0	70	13	0	0	0	11	85	9	234	
4:15 PM	to	4:30 PM	35	44	0	144	28	0	0	0	21	172	16	460	
4:30 PM	to	4:45 PM	60	72	0	207	45	0	0	0	34	271	18	707	
4:45 PM	to	5:00 PM	88	109	0	274	56	0	0	0	44	362	24	957	
5:00 PM	to	5:15 PM	110	154	0	345	73	0	0	0	57	479	34	1252	
5:15 PM	to	5:30 PM	135	185	0	423	89	0	0	0	71	580	36	1519	
5:30 PM	to	5:45 PM	161	226	0	491	109	0	0	0	78	685	44	1794	
5:45 PM	to	6:00 PM	186	261	0	550	125	0	0	0	87	797	52	2058	
<b>TOTAL BY PERIOD</b>															
4:00 PM	to	4:15 PM	18	28	0	0	70	13	0	0	0	11	85	9	234
4:15 PM	to	4:30 PM	17	16	0	0	74	15	0	0	0	10	87	7	226
4:30 PM	to	4:45 PM	25	28	0	0	63	17	0	0	0	13	99	2	247
4:45 PM	to	5:00 PM	28	37	0	0	67	11	0	0	0	10	91	6	250
5:00 PM	to	5:15 PM	22	45	0	0	71	17	0	0	0	13	117	10	295
5:15 PM	to	5:30 PM	25	31	0	0	78	16	0	0	0	14	101	2	267
5:30 PM	to	5:45 PM	26	41	0	0	68	20	0	0	0	7	105	8	275
5:45 PM	to	6:00 PM	25	35	0	0	59	16	0	0	0	9	112	8	264
<b>HOURLY TOTALS</b>															
4:00 PM	to	5:00 PM	88	109	0	0	274	56	0	0	0	44	362	24	957
4:15 PM	to	5:15 PM	92	126	0	0	275	60	0	0	0	46	394	25	1018
4:30 PM	to	5:30 PM	100	141	0	0	279	61	0	0	0	50	408	20	1059
4:45 PM	to	5:45 PM	101	154	0	0	284	64	0	0	0	44	414	26	1087
5:00 PM	to	6:00 PM	98	152	0	0	276	69	0	0	0	43	435	28	1101

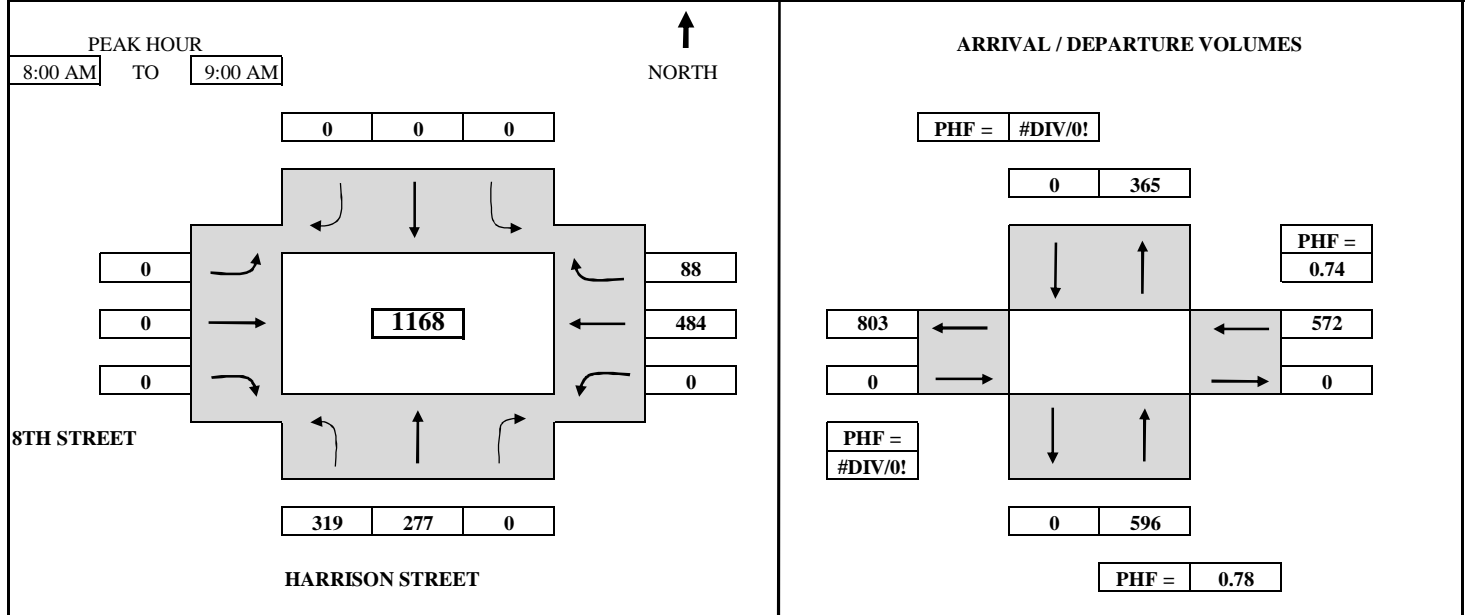
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> HARRISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-19AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
7:00 AM	to	7:15 AM	53	19							52	5	129
7:15 AM	to	7:30 AM	109	48							102	20	279
7:30 AM	to	7:45 AM	190	95							193	34	512
7:45 AM	to	8:00 AM	255	126							305	47	733
8:00 AM	to	8:15 AM	317	201							392	72	982
8:15 AM	to	8:30 AM	363	250							505	85	1203
8:30 AM	to	8:45 AM	467	336							628	102	1533
8:45 AM	to	9:00 AM	574	403							789	135	1901

### TOTAL BY PERIOD

7:00 AM	to	7:15 AM	53	19	0	0	0	0	0	0	0	52	5	129
7:15 AM	to	7:30 AM	56	29	0	0	0	0	0	0	0	50	15	150
7:30 AM	to	7:45 AM	81	47	0	0	0	0	0	0	0	91	14	233
7:45 AM	to	8:00 AM	65	31	0	0	0	0	0	0	0	112	13	221
8:00 AM	to	8:15 AM	62	75	0	0	0	0	0	0	0	87	25	249
8:15 AM	to	8:30 AM	46	49	0	0	0	0	0	0	0	113	13	221
8:30 AM	to	8:45 AM	104	86	0	0	0	0	0	0	0	123	17	330
8:45 AM	to	9:00 AM	107	67	0	0	0	0	0	0	0	161	33	368

### HOURLY TOTALS

7:00 AM	to	8:00 AM	255	126	0	0	0	0	0	0	0	305	47	733
7:15 AM	to	8:15 AM	264	182	0	0	0	0	0	0	0	340	67	853
7:30 AM	to	8:30 AM	254	202	0	0	0	0	0	0	0	403	65	924
7:45 AM	to	8:45 AM	277	241	0	0	0	0	0	0	0	435	68	1021
8:00 AM	to	9:00 AM	319	277	0	0	0	0	0	0	0	484	88	1168

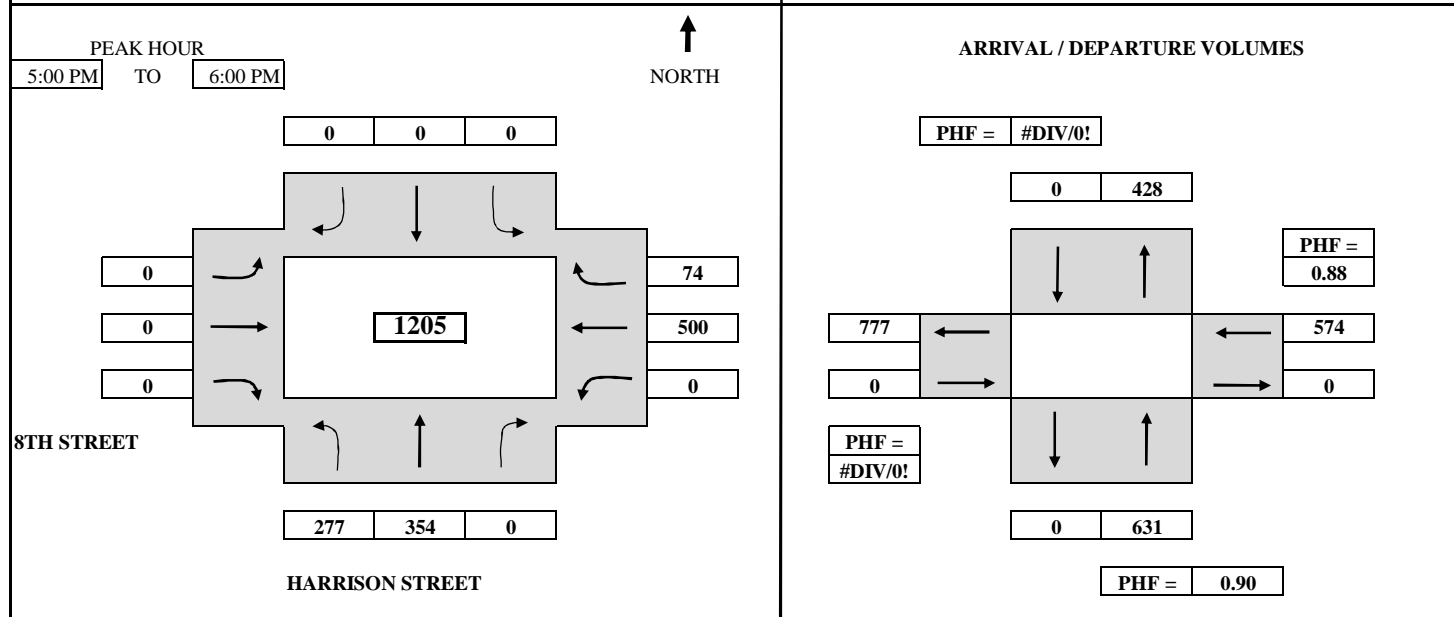
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> HARRISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-19PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
4:00 PM	to	4:15 PM	52	79							80	11	222
4:15 PM	to	4:30 PM	112	161							183	34	490
4:30 PM	to	4:45 PM	181	245							310	47	783
4:45 PM	to	5:00 PM	242	298							422	61	1023
5:00 PM	to	5:15 PM	303	389							535	88	1315
5:15 PM	to	5:30 PM	385	483							656	103	1627
5:30 PM	to	5:45 PM	449	569							773	120	1911
5:45 PM	to	6:00 PM	519	652							922	135	2228

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	52	79	0	0	0	0	0	0	0	80	11	222
4:15 PM	to	4:30 PM	60	82	0	0	0	0	0	0	0	103	23	268
4:30 PM	to	4:45 PM	69	84	0	0	0	0	0	0	0	127	13	293
4:45 PM	to	5:00 PM	61	53	0	0	0	0	0	0	0	112	14	240
5:00 PM	to	5:15 PM	61	91	0	0	0	0	0	0	0	113	27	292
5:15 PM	to	5:30 PM	82	94	0	0	0	0	0	0	0	121	15	312
5:30 PM	to	5:45 PM	64	86	0	0	0	0	0	0	0	117	17	284
5:45 PM	to	6:00 PM	70	83	0	0	0	0	0	0	0	149	15	317

HOURLY TOTALS														
4:00 PM	to	5:00 PM	242	298	0	0	0	0	0	0	0	422	61	1023
4:15 PM	to	5:15 PM	251	310	0	0	0	0	0	0	0	455	77	1093
4:30 PM	to	5:30 PM	273	322	0	0	0	0	0	0	0	473	69	1137
4:45 PM	to	5:45 PM	268	324	0	0	0	0	0	0	0	463	73	1128
5:00 PM	to	6:00 PM	277	354	0	0	0	0	0	0	0	500	74	1205

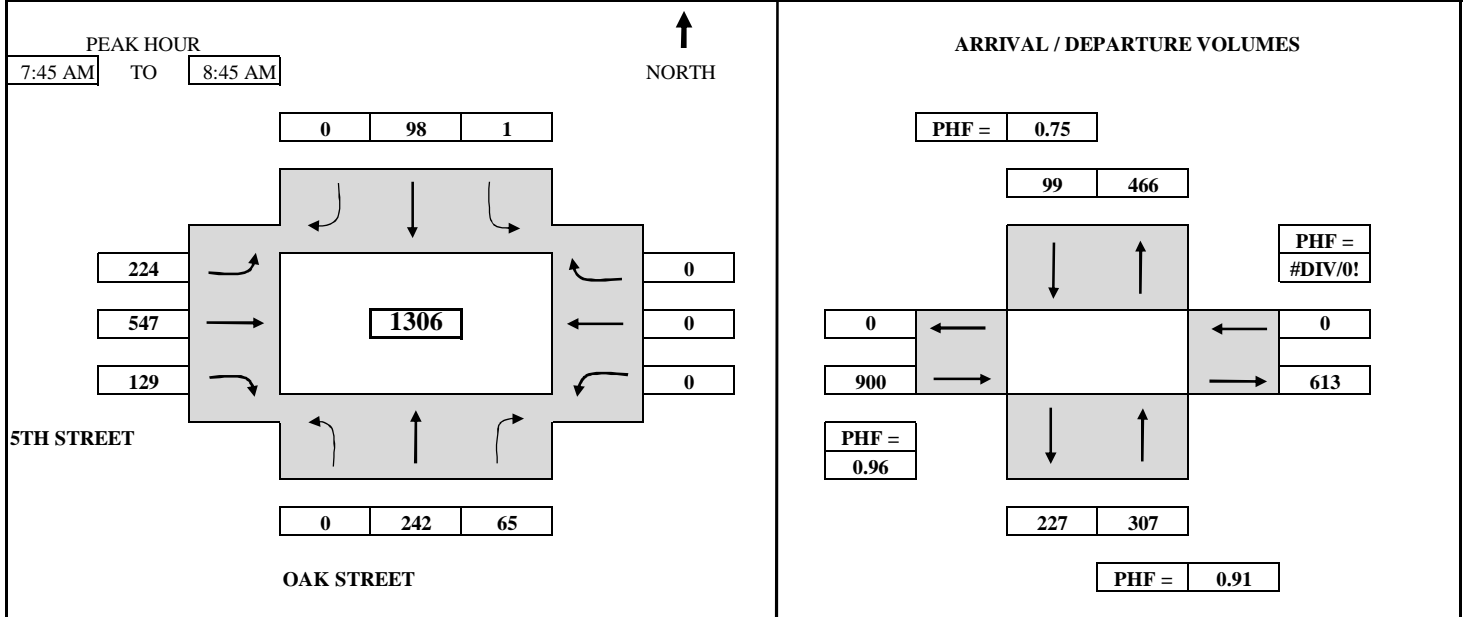
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-20AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
7:00 AM to 7:15 AM			32 18	0 33			23 111 21					238	
7:15 AM to 7:30 AM			97 29	0 54			58 236 39					513	
7:30 AM to 7:45 AM			166 42	0 72			97 394 63					834	
7:45 AM to 8:00 AM			228 52	1 92			152 539 90					1154	
8:00 AM to 8:15 AM			293 69	1 113			201 676 119					1472	
8:15 AM to 8:30 AM			341 90	1 139			263 812 155					1801	
8:30 AM to 8:45 AM			408 107	1 170			321 941 192					2140	
8:45 AM to 9:00 AM			474 122	1 188			373 1048 230					2436	
<b>TOTAL BY PERIOD</b>													
7:00 AM to 7:15 AM			0 32 18	0 33 0			23 111 21	0 0 0				238	
7:15 AM to 7:30 AM			0 65 11	0 21 0			35 125 18	0 0 0				275	
7:30 AM to 7:45 AM			0 69 13	0 18 0			39 158 24	0 0 0				321	
7:45 AM to 8:00 AM			0 62 10	1 20 0			55 145 27	0 0 0				320	
8:00 AM to 8:15 AM			0 65 17	0 21 0			49 137 29	0 0 0				318	
8:15 AM to 8:30 AM			0 48 21	0 26 0			62 136 36	0 0 0				329	
8:30 AM to 8:45 AM			0 67 17	0 31 0			58 129 37	0 0 0				339	
8:45 AM to 9:00 AM			0 66 15	0 18 0			52 107 38	0 0 0				296	
<b>HOURLY TOTALS</b>													
7:00 AM to 8:00 AM			0 228 52	1 92 0			152 539 90	0 0 0				1154	
7:15 AM to 8:15 AM			0 261 51	1 80 0			178 565 98	0 0 0				1234	
7:30 AM to 8:30 AM			0 244 61	1 85 0			205 576 116	0 0 0				1288	
7:45 AM to 8:45 AM			0 242 65	1 98 0			224 547 129	0 0 0				1306	
8:00 AM to 9:00 AM			0 246 70	0 96 0			221 509 140	0 0 0				1282	

TEL: (510) 232 - 1271

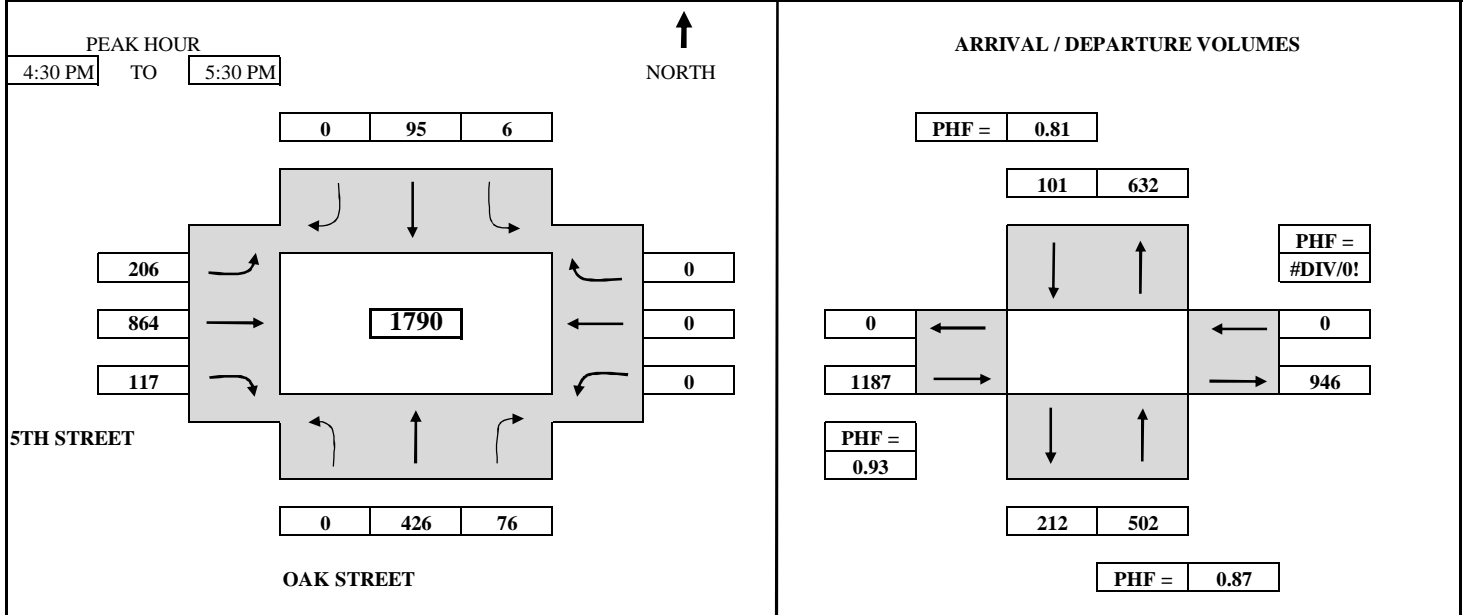
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-20PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA													
4:00 PM	to	4:15 PM	77	18	1	11	39	229	21				396
4:15 PM	to	4:30 PM	160	34	2	29	80	466	46				817
4:30 PM	to	4:45 PM	248	51	5	48	122	683	79				1236
4:45 PM	to	5:00 PM	363	67	5	72	167	894	100				1668
5:00 PM	to	5:15 PM	483	91	6	95	215	1107	137				2134
5:15 PM	to	5:30 PM	586	110	8	124	286	1330	163				2607
5:30 PM	to	5:45 PM	670	125	9	143	339	1527	197				3010
5:45 PM	to	6:00 PM	753	136	9	163	395	1714	223				3393

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	77	18	1	11	0	39	229	21	0	0	0	396
4:15 PM	to	4:30 PM	0	83	16	1	18	0	41	237	25	0	0	0	421
4:30 PM	to	4:45 PM	0	88	17	3	19	0	42	217	33	0	0	0	419
4:45 PM	to	5:00 PM	0	115	16	0	24	0	45	211	21	0	0	0	432
5:00 PM	to	5:15 PM	0	120	24	1	23	0	48	213	37	0	0	0	466
5:15 PM	to	5:30 PM	0	103	19	2	29	0	71	223	26	0	0	0	473
5:30 PM	to	5:45 PM	0	84	15	1	19	0	53	197	34	0	0	0	403
5:45 PM	to	6:00 PM	0	83	11	0	20	0	56	187	26	0	0	0	383

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	363	67	5	72	0	167	894	100	0	0	0	1668
4:15 PM	to	5:15 PM	0	406	73	5	84	0	176	878	116	0	0	0	1738
4:30 PM	to	5:30 PM	0	426	76	6	95	0	206	864	117	0	0	0	1790
4:45 PM	to	5:45 PM	0	422	74	4	95	0	217	844	118	0	0	0	1774
5:00 PM	to	6:00 PM	0	390	69	4	91	0	228	820	123	0	0	0	1725

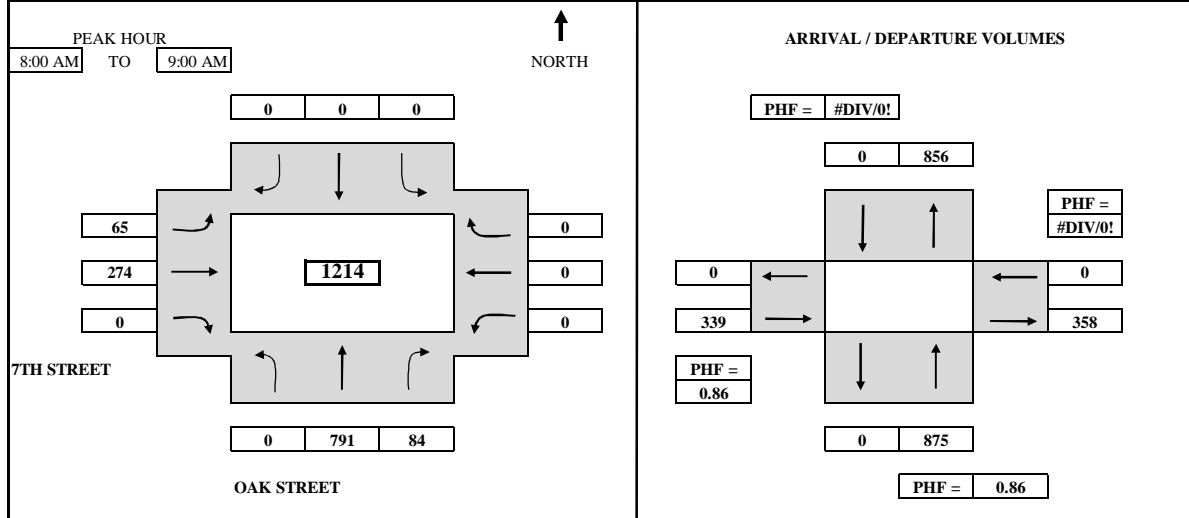
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/17/2012	DAY: THURSDAY
N-S APPROACH: OAK STREET	SURVEY TIME: 7:00 AM	TO 9:00 AM
E-W APPROACH 7TH STREET	JURISDICTION: OAKLAND	FILE: 3205033-21AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT		
<b>SURVEY DATA</b>														
7:00 AM	to	7:15 AM		125	11			10	24				170	
7:15 AM	to	7:30 AM		312	24			16	57				409	
7:30 AM	to	7:45 AM		549	40			35	121				745	
7:45 AM	to	8:00 AM		760	59			46	174				1039	
8:00 AM	to	8:15 AM		959	73			60	244				1336	
8:15 AM	to	8:30 AM		1154	93			74	293				1614	
8:30 AM	to	8:45 AM		1375	113			94	372				1954	
8:45 AM	to	9:00 AM		1551	143			111	448				2253	
<b>TOTAL BY PERIOD</b>														
7:00 AM	to	7:15 AM	0	125	11	0	0	0	10	24	0	0	0	170
7:15 AM	to	7:30 AM	0	187	13	0	0	0	6	33	0	0	0	239
7:30 AM	to	7:45 AM	0	237	16	0	0	0	19	64	0	0	0	336
7:45 AM	to	8:00 AM	0	211	19	0	0	0	11	53	0	0	0	294
8:00 AM	to	8:15 AM	0	199	14	0	0	0	14	70	0	0	0	297
8:15 AM	to	8:30 AM	0	195	20	0	0	0	14	49	0	0	0	278
8:30 AM	to	8:45 AM	0	221	20	0	0	0	20	79	0	0	0	340
8:45 AM	to	9:00 AM	0	176	30	0	0	0	17	76	0	0	0	299
<b>HOURLY TOTALS</b>														
7:00 AM	to	8:00 AM	0	760	59	0	0	0	46	174	0	0	0	1039
7:15 AM	to	8:15 AM	0	834	62	0	0	0	50	220	0	0	0	1166
7:30 AM	to	8:30 AM	0	842	69	0	0	0	58	236	0	0	0	1205
7:45 AM	to	8:45 AM	0	826	73	0	0	0	59	251	0	0	0	1209
8:00 AM	to	9:00 AM	0	791	84	0	0	0	65	274	0	0	0	1214

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N in
136
200
253
230
213
215
241
206

**1694**

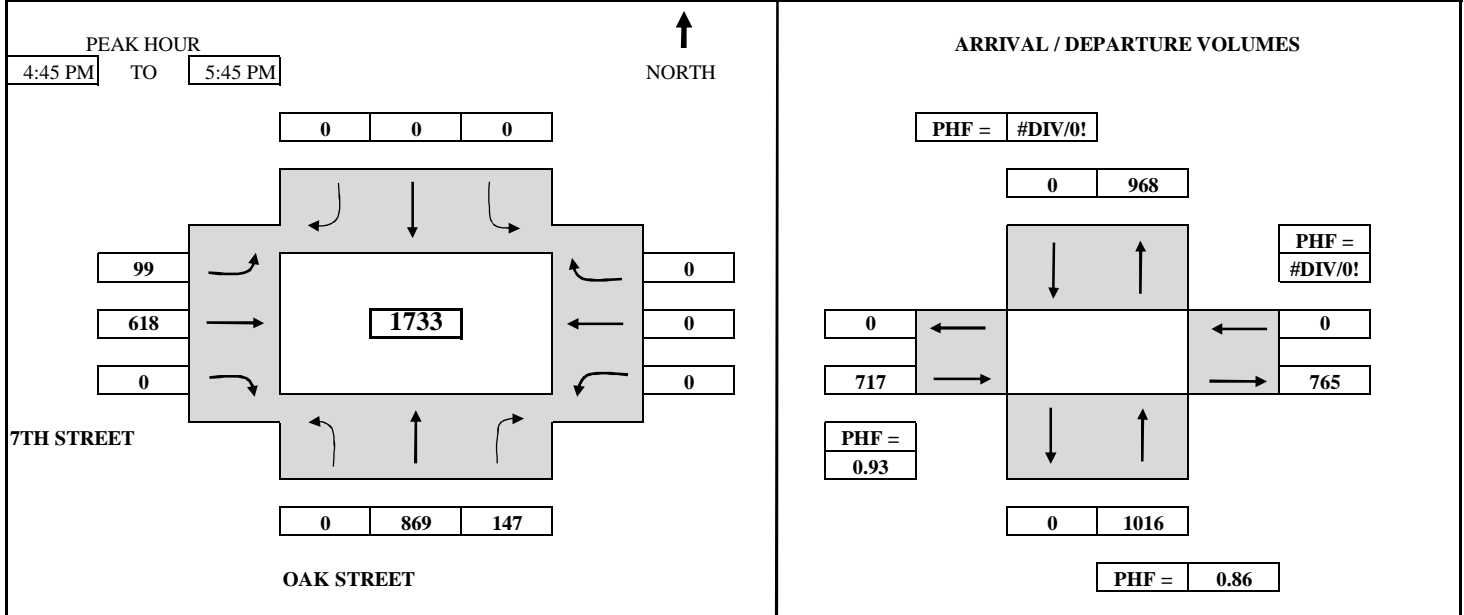
E out
35
46
80
72
84
69
99
106

**591**

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-21PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

SURVEY DATA												
4:00 PM	to	4:15 PM	165	15				26	113			319
4:15 PM	to	4:30 PM	302	41				54	247			644
4:30 PM	to	4:45 PM	453	69				79	366			967
4:45 PM	to	5:00 PM	686	102				104	504			1396
5:00 PM	to	5:15 PM	897	133				128	673			1831
5:15 PM	to	5:30 PM	1151	175				150	824			2300
5:30 PM	to	5:45 PM	1322	216				178	984			2700
5:45 PM	to	6:00 PM	1519	252				202	1134			3107

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	165	15	0	0	0	26	113	0	0	0	319
4:15 PM	to	4:30 PM	0	137	26	0	0	0	28	134	0	0	0	325
4:30 PM	to	4:45 PM	0	151	28	0	0	0	25	119	0	0	0	323
4:45 PM	to	5:00 PM	0	233	33	0	0	0	25	138	0	0	0	429
5:00 PM	to	5:15 PM	0	211	31	0	0	0	24	169	0	0	0	435
5:15 PM	to	5:30 PM	0	254	42	0	0	0	22	151	0	0	0	469
5:30 PM	to	5:45 PM	0	171	41	0	0	0	28	160	0	0	0	400
5:45 PM	to	6:00 PM	0	197	36	0	0	0	24	150	0	0	0	407

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	686	102	0	0	0	104	504	0	0	0	1396
4:15 PM	to	5:15 PM	0	732	118	0	0	0	102	560	0	0	0	1512
4:30 PM	to	5:30 PM	0	849	134	0	0	0	96	577	0	0	0	1656
4:45 PM	to	5:45 PM	0	869	147	0	0	0	99	618	0	0	0	1733
5:00 PM	to	6:00 PM	0	833	150	0	0	0	98	630	0	0	0	1711

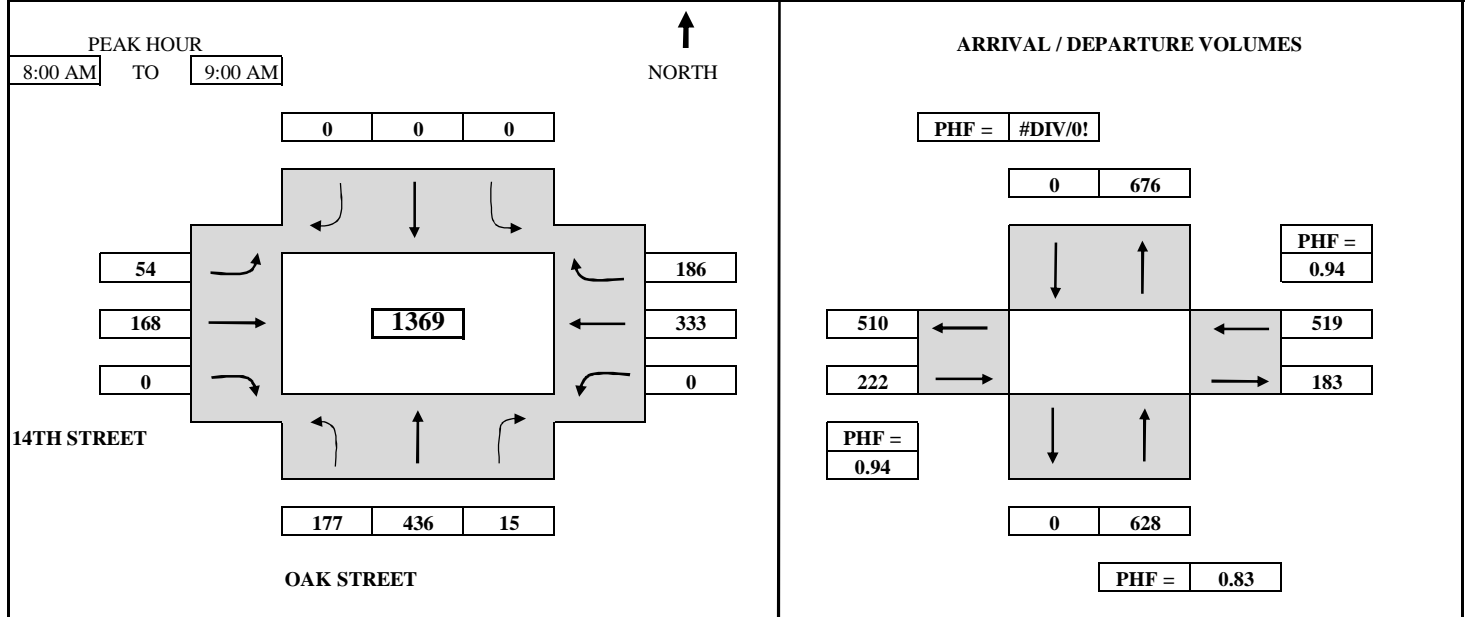
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 14TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-22AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	6	49	1			3	13		25	19	116		
7:15 AM	to	7:30 AM	24	126	2			13	33		56	39	293		
7:30 AM	to	7:45 AM	46	205	4			21	53		102	73	504		
7:45 AM	to	8:00 AM	74	305	6			28	92		163	130	798		
8:00 AM	to	8:15 AM	106	418	9			36	140		236	181	1126		
8:15 AM	to	8:30 AM	148	507	12			49	176		317	231	1440		
8:30 AM	to	8:45 AM	194	615	15			63	220		413	273	1793		
8:45 AM	to	9:00 AM	251	741	21			82	260		496	316	2167		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	6	49	1	0	0	0	3	13	0	0	25	19	116
7:15 AM	to	7:30 AM	18	77	1	0	0	0	10	20	0	0	31	20	177
7:30 AM	to	7:45 AM	22	79	2	0	0	0	8	20	0	0	46	34	211
7:45 AM	to	8:00 AM	28	100	2	0	0	0	7	39	0	0	61	57	294
8:00 AM	to	8:15 AM	32	113	3	0	0	0	8	48	0	0	73	51	328
8:15 AM	to	8:30 AM	42	89	3	0	0	0	13	36	0	0	81	50	314
8:30 AM	to	8:45 AM	46	108	3	0	0	0	14	44	0	0	96	42	353
8:45 AM	to	9:00 AM	57	126	6	0	0	0	19	40	0	0	83	43	374
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	74	305	6	0	0	0	28	92	0	0	163	130	798
7:15 AM	to	8:15 AM	100	369	8	0	0	0	33	127	0	0	211	162	1010
7:30 AM	to	8:30 AM	124	381	10	0	0	0	36	143	0	0	261	192	1147
7:45 AM	to	8:45 AM	148	410	11	0	0	0	42	167	0	0	311	200	1289
8:00 AM	to	9:00 AM	177	436	15	0	0	0	54	168	0	0	333	186	1369

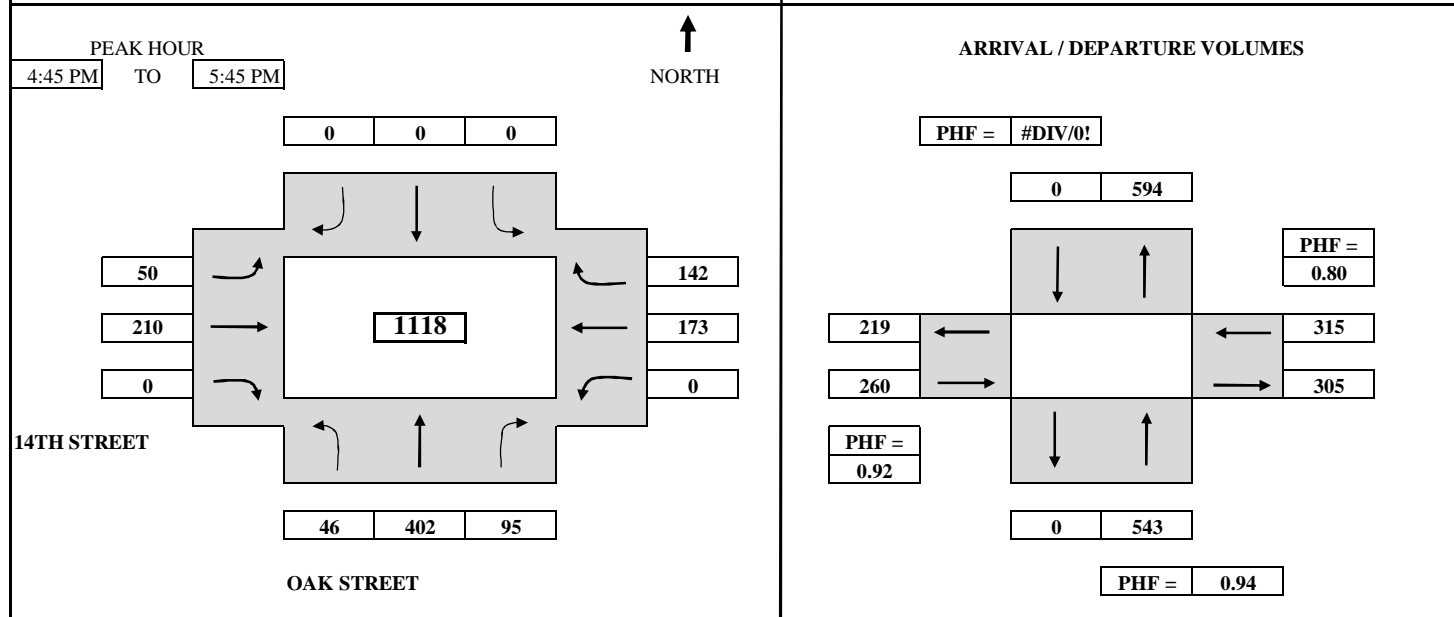
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 14TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-22PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA													
4:00 PM to 4:15 PM	16	89	15				4	36			58	37	255
4:15 PM to 4:30 PM	29	183	34				15	75			103	65	504
4:30 PM to 4:45 PM	39	284	61				25	115			143	100	767
4:45 PM to 5:00 PM	48	383	90				38	173			168	137	1037
5:00 PM to 5:15 PM	62	488	111				49	214			235	168	1327
5:15 PM to 5:30 PM	73	599	133				63	271			278	201	1618
5:30 PM to 5:45 PM	85	686	156				75	325			316	242	1885
5:45 PM to 6:00 PM	94	765	177				90	375			367	270	2138

TOTAL BY PERIOD													
4:00 PM to 4:15 PM	16	89	15	0	0	0	4	36	0	0	58	37	255
4:15 PM to 4:30 PM	13	94	19	0	0	0	11	39	0	0	45	28	249
4:30 PM to 4:45 PM	10	101	27	0	0	0	10	40	0	0	40	35	263
4:45 PM to 5:00 PM	9	99	29	0	0	0	13	58	0	0	25	37	270
5:00 PM to 5:15 PM	14	105	21	0	0	0	11	41	0	0	67	31	290
5:15 PM to 5:30 PM	11	111	22	0	0	0	14	57	0	0	43	33	291
5:30 PM to 5:45 PM	12	87	23	0	0	0	12	54	0	0	38	41	267
5:45 PM to 6:00 PM	9	79	21	0	0	0	15	50	0	0	51	28	253

HOURLY TOTALS													
4:00 PM to 5:00 PM	48	383	90	0	0	0	38	173	0	0	168	137	1037
4:15 PM to 5:15 PM	46	399	96	0	0	0	45	178	0	0	177	131	1072
4:30 PM to 5:30 PM	44	416	99	0	0	0	48	196	0	0	175	136	1114
4:45 PM to 5:45 PM	46	402	95	0	0	0	50	210	0	0	173	142	1118
5:00 PM to 6:00 PM	46	382	87	0	0	0	52	202	0	0	199	133	1101

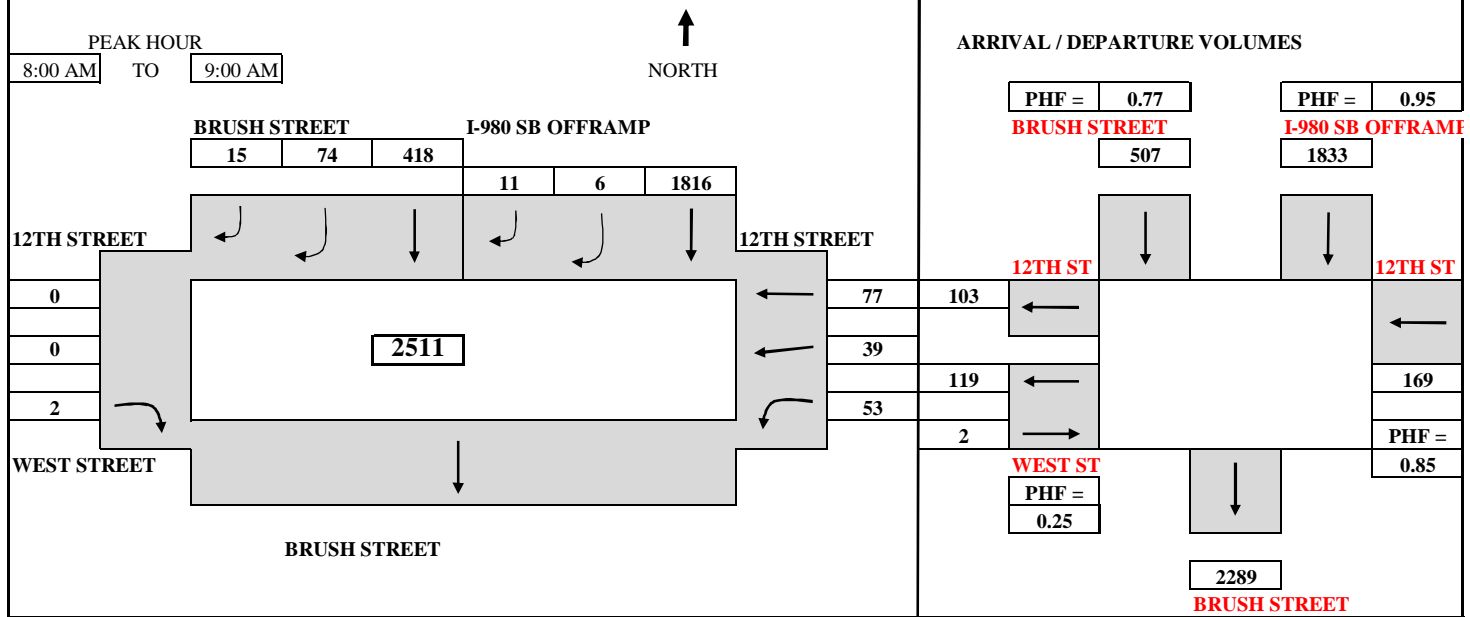
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> BRUSH STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-23AM



TIME PERIOD	SB (I-90 SB OFFRAMP)	SB (BRUSH STREET)	EB (WEST STREET)	WB (12TH STREET)	TOTAL
From To	BRUSH WEST 12TH ST	BRUSH WEST 12TH ST	BRUSH	BRUSH WEST 12TH ST	

SURVEY DATA													
7:00 AM	to	7:15 AM	302	1	1	31	6	1	0	11	2	11	366
7:15 AM	to	7:30 AM	664	2	4	69	18	6	1	20	8	27	819
7:30 AM	to	7:45 AM	1056	2	4	129	30	8	2	28	13	44	1316
7:45 AM	to	8:00 AM	1495	3	8	186	44	9	2	47	23	62	1879
8:00 AM	to	8:15 AM	1974	3	13	248	57	12	2	57	29	82	2477
8:15 AM	to	8:30 AM	2434	5	15	345	74	17	2	66	38	104	3100
8:30 AM	to	8:45 AM	2875	6	16	481	96	23	2	87	48	123	3757
8:45 AM	to	9:00 AM	3311	9	19	604	118	24	4	100	62	139	4390

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	302	1	1	31	6	1	0	0	0	11	2	11	366
7:15 AM	to	7:30 AM	362	1	3	38	12	5	0	0	1	9	6	16	453
7:30 AM	to	7:45 AM	392	0	0	60	12	2	0	0	1	8	5	17	497
7:45 AM	to	8:00 AM	439	1	4	57	14	1	0	0	0	19	10	18	563
8:00 AM	to	8:15 AM	479	0	5	62	13	3	0	0	0	10	6	20	598
8:15 AM	to	8:30 AM	460	2	2	97	17	5	0	0	0	9	9	22	623
8:30 AM	to	8:45 AM	441	1	1	136	22	6	0	0	0	21	10	19	657
8:45 AM	to	9:00 AM	436	3	3	123	22	1	0	0	2	13	14	16	633

HOURLY TOTALS															
7:00 AM	to	8:00 AM	1495	3	8	186	44	9	0	0	2	47	23	62	1879
7:15 AM	to	8:15 AM	1672	2	12	217	51	11	0	0	2	46	27	71	2111
7:30 AM	to	8:30 AM	1770	3	11	276	56	11	0	0	1	46	30	77	2281
7:45 AM	to	8:45 AM	1819	4	12	352	66	15	0	0	0	59	35	79	2441
8:00 AM	to	9:00 AM	1816	6	11	418	74	15	0	0	2	53	39	77	2511

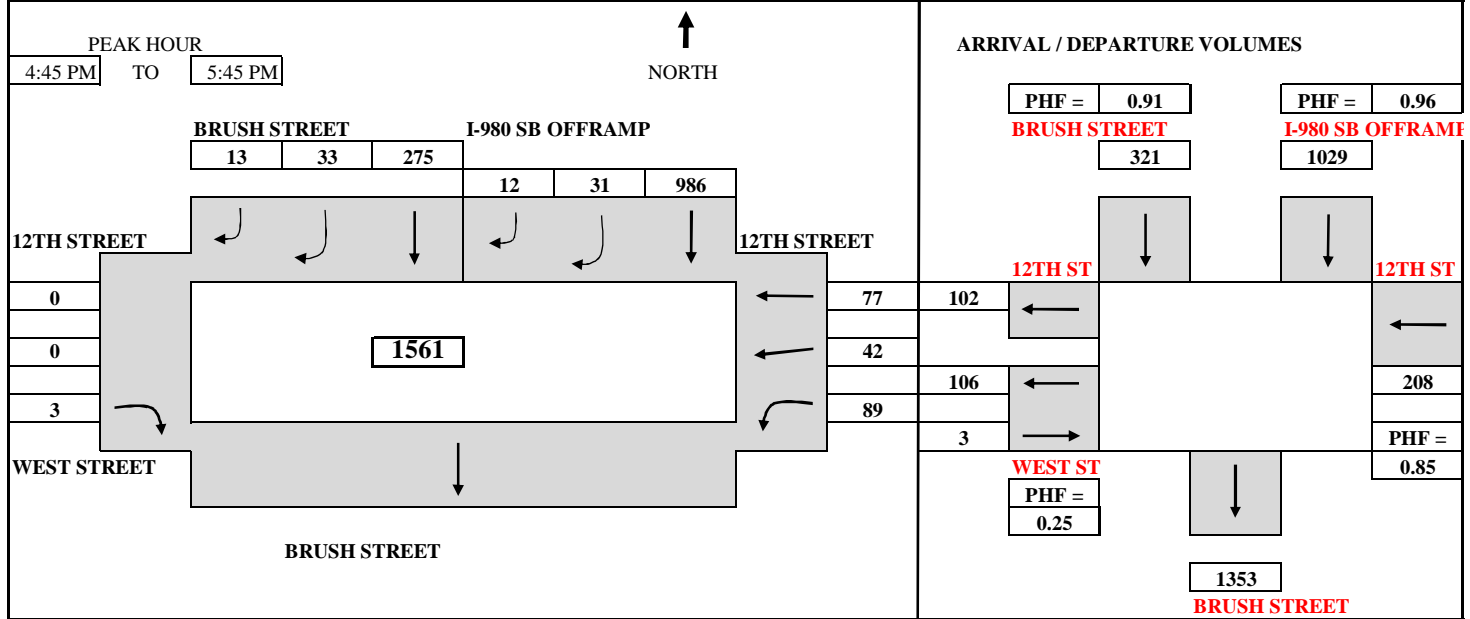
TEL: (510) 232 - 1271

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> BRUSH STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-23PM



TIME PERIOD	SB (I-90 SB OFFRAMP)	SB (BRUSH STREET)	EB (WEST STREET)	WB (12TH STREET)	TOTAL
From To	BRUSH WEST 12TH ST	BRUSH WEST 12TH ST	BRUSH	BRUSH WEST 12TH ST	

SURVEY DATA													
4:00 PM	to	4:15 PM	204	3	3	65	2	3	0	27	12	22	341
4:15 PM	to	4:30 PM	422	4	6	130	9	5	1	53	25	40	695
4:30 PM	to	4:45 PM	659	7	10	192	11	10	1	74	33	51	1048
4:45 PM	to	5:00 PM	912	17	15	248	23	16	1	91	42	66	1431
5:00 PM	to	5:15 PM	1137	22	19	326	32	17	1	120	53	85	1812
5:15 PM	to	5:30 PM	1395	31	20	394	41	22	1	139	65	107	2215
5:30 PM	to	5:45 PM	1645	38	22	467	44	23	4	163	75	128	2609
5:45 PM	to	6:00 PM	1863	44	26	519	53	23	4	181	82	139	2934

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	204	3	3	65	2	3	0	0	0	27	12	22	341
4:15 PM	to	4:30 PM	218	1	3	65	7	2	0	0	1	26	13	18	354
4:30 PM	to	4:45 PM	237	3	4	62	2	5	0	0	0	21	8	11	353
4:45 PM	to	5:00 PM	253	10	5	56	12	6	0	0	0	17	9	15	383
5:00 PM	to	5:15 PM	225	5	4	78	9	1	0	0	0	29	11	19	381
5:15 PM	to	5:30 PM	258	9	1	68	9	5	0	0	0	19	12	22	403
5:30 PM	to	5:45 PM	250	7	2	73	3	1	0	0	3	24	10	21	394
5:45 PM	to	6:00 PM	218	6	4	52	9	0	0	0	0	18	7	11	325

HOURLY TOTALS															
4:00 PM	to	5:00 PM	912	17	15	248	23	16	0	0	1	91	42	66	1431
4:15 PM	to	5:15 PM	933	19	16	261	30	14	0	0	1	93	41	63	1471
4:30 PM	to	5:30 PM	973	27	14	264	32	17	0	0	0	86	40	67	1520
4:45 PM	to	5:45 PM	986	31	12	275	33	13	0	0	3	89	42	77	1561
5:00 PM	to	6:00 PM	951	27	11	271	30	7	0	0	3	90	40	73	1503

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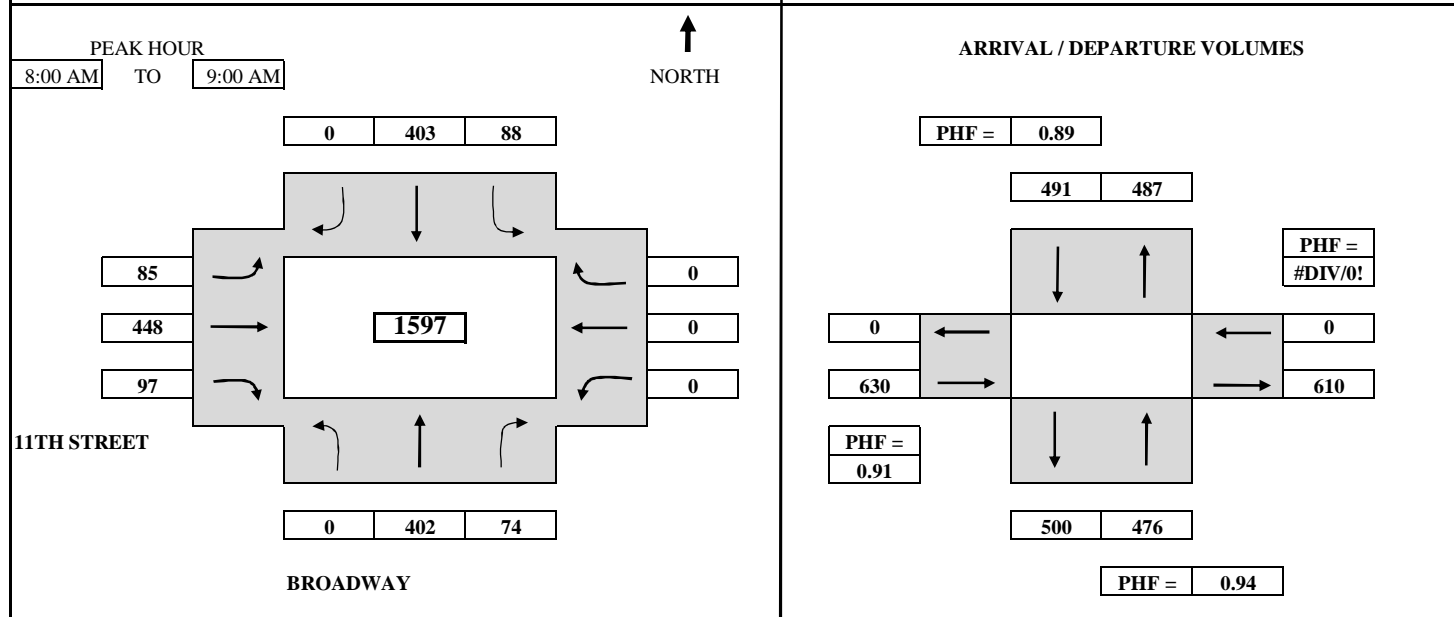




# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> BROADWAY	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-24AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	59	12	11	45	17	74	14				232		
7:15 AM	to	7:30 AM	113	28	27	85	31	152	34				470		
7:30 AM	to	7:45 AM	191	41	46	146	48	241	59				772		
7:45 AM	to	8:00 AM	277	61	69	232	64	352	83				1138		
8:00 AM	to	8:15 AM	374	83	80	332	91	470	107				1537		
8:15 AM	to	8:30 AM	479	105	109	422	113	578	128				1934		
8:30 AM	to	8:45 AM	569	123	137	517	132	678	146				2302		
8:45 AM	to	9:00 AM	679	135	157	635	149	800	180				2735		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	0	59	12	11	45	0	17	74	14	0	0	0	232
7:15 AM	to	7:30 AM	0	54	16	16	40	0	14	78	20	0	0	0	238
7:30 AM	to	7:45 AM	0	78	13	19	61	0	17	89	25	0	0	0	302
7:45 AM	to	8:00 AM	0	86	20	23	86	0	16	111	24	0	0	0	366
8:00 AM	to	8:15 AM	0	97	22	11	100	0	27	118	24	0	0	0	399
8:15 AM	to	8:30 AM	0	105	22	29	90	0	22	108	21	0	0	0	397
8:30 AM	to	8:45 AM	0	90	18	28	95	0	19	100	18	0	0	0	368
8:45 AM	to	9:00 AM	0	110	12	20	118	0	17	122	34	0	0	0	433
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	0	277	61	69	232	0	64	352	83	0	0	0	1138
7:15 AM	to	8:15 AM	0	315	71	69	287	0	74	396	93	0	0	0	1305
7:30 AM	to	8:30 AM	0	366	77	82	337	0	82	426	94	0	0	0	1464
7:45 AM	to	8:45 AM	0	378	82	91	371	0	84	437	87	0	0	0	1530
8:00 AM	to	9:00 AM	0	402	74	88	403	0	85	448	97	0	0	0	1597

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE:</b> 5/23/2012		<b>DAY:</b> WEDNESDAY	
<b>N-S APPROACH: BROADWAY</b>		<b>SURVEY TIME:</b> 4:00 PM		<b>TO</b> 6:00 PM	
<b>E-W APPROACH 11TH STREET</b>		<b>JURISDICTION:</b> OAKLAND		<b>FILE:</b> 3205033-24PM	

<p style="text-align: center;">PEAK HOUR 5:00 PM TO 6:00 PM</p> <div style="text-align: center;"> </div>	<p style="text-align: center;">ARRIVAL / DEPARTURE VOLUMES</p> <p style="text-align: center;">PHF = 0.90</p> <div style="text-align: center;"> </div>
--	---

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL			
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT				
<b>SURVEY DATA</b>																
4:00 PM	to	4:15 PM		105	15		28	171		17	84	33		453		
4:15 PM	to	4:30 PM		205	23		48	312		33	128	62		811		
4:30 PM	to	4:45 PM		313	34		83	470		58	196	92		1246		
4:45 PM	to	5:00 PM		411	54		111	610		79	271	119		1655		
5:00 PM	to	5:15 PM		537	79		141	760		98	371	153		2139		
5:15 PM	to	5:30 PM		659	100		169	926		122	483	196		2655		
5:30 PM	to	5:45 PM		775	119		196	1096		147	597	236		3166		
5:45 PM	to	6:00 PM		868	134		223	1211		174	699	267		3576		
<b>TOTAL BY PERIOD</b>																
4:00 PM	to	4:15 PM		0	105	15	28	171	0	17	84	33	0	0	0	453
4:15 PM	to	4:30 PM		0	100	8	20	141	0	16	44	29	0	0	0	358
4:30 PM	to	4:45 PM		0	108	11	35	158	0	25	68	30	0	0	0	435
4:45 PM	to	5:00 PM		0	98	20	28	140	0	21	75	27	0	0	0	409
5:00 PM	to	5:15 PM		0	126	25	30	150	0	19	100	34	0	0	0	484
5:15 PM	to	5:30 PM		0	122	21	28	166	0	24	112	43	0	0	0	516
5:30 PM	to	5:45 PM		0	116	19	27	170	0	25	114	40	0	0	0	511
5:45 PM	to	6:00 PM		0	93	15	27	115	0	27	102	31	0	0	0	410
<b>HOURLY TOTALS</b>																
4:00 PM	to	5:00 PM		0	411	54	111	610	0	79	271	119	0	0	0	1655
4:15 PM	to	5:15 PM		0	432	64	113	589	0	81	287	120	0	0	0	1686
4:30 PM	to	5:30 PM		0	454	77	121	614	0	89	355	134	0	0	0	1844
4:45 PM	to	5:45 PM		0	462	85	113	626	0	89	401	144	0	0	0	1920
5:00 PM	to	6:00 PM		0	457	80	112	601	0	95	428	148	0	0	0	1921

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N in
120
108
119
118
151
143
135
108

1002

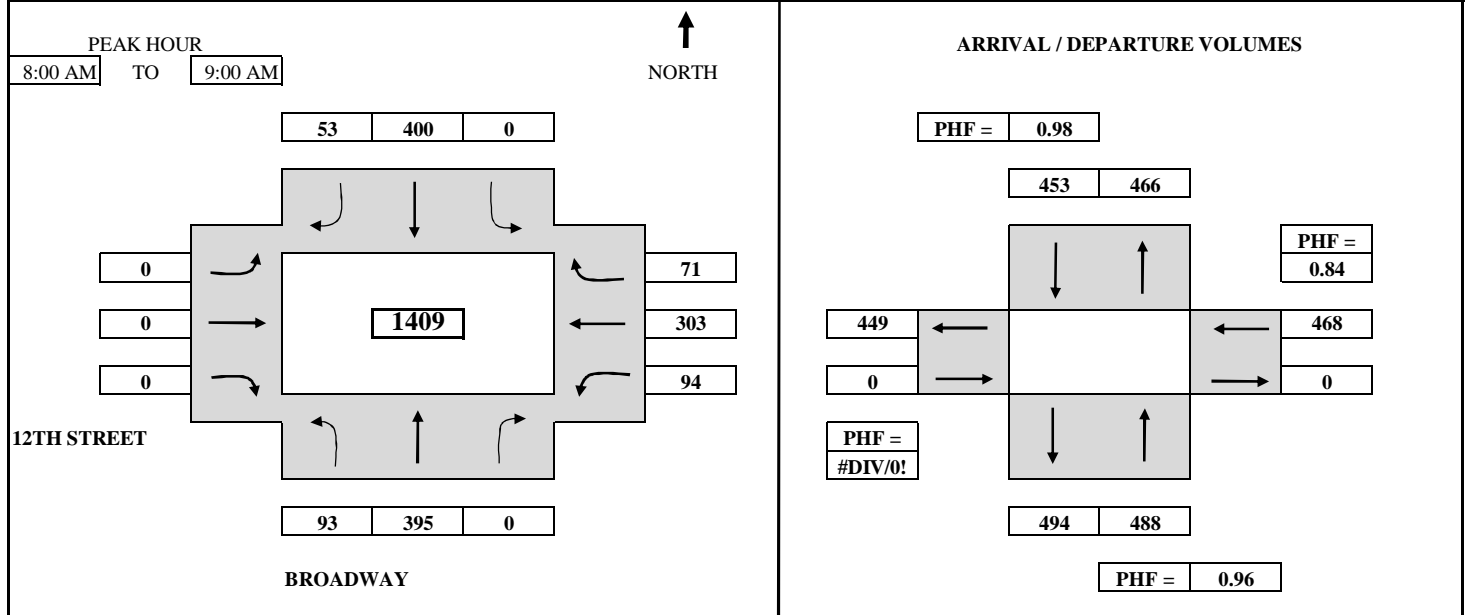
E out
127
72
114
123
155
161
160
144

1056

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: BROADWAY</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-25AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	29	49		41	7			13	32	13	184		
7:15 AM	to	7:30 AM	44	102		87	19			23	67	28	370		
7:30 AM	to	7:45 AM	69	174		153	22			40	131	43	632		
7:45 AM	to	8:00 AM	85	257		247	28			56	203	62	938		
8:00 AM	to	8:15 AM	118	351		346	40			72	256	78	1261		
8:15 AM	to	8:30 AM	135	458		449	52			88	349	90	1621		
8:30 AM	to	8:45 AM	154	553		546	68			114	424	111	1970		
8:45 AM	to	9:00 AM	178	652		647	81			150	506	133	2347		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	29	49	0	0	41	7	0	0	0	13	32	13	184
7:15 AM	to	7:30 AM	15	53	0	0	46	12	0	0	0	10	35	15	186
7:30 AM	to	7:45 AM	25	72	0	0	66	3	0	0	0	17	64	15	262
7:45 AM	to	8:00 AM	16	83	0	0	94	6	0	0	0	16	72	19	306
8:00 AM	to	8:15 AM	33	94	0	0	99	12	0	0	0	16	53	16	323
8:15 AM	to	8:30 AM	17	107	0	0	103	12	0	0	0	16	93	12	360
8:30 AM	to	8:45 AM	19	95	0	0	97	16	0	0	0	26	75	21	349
8:45 AM	to	9:00 AM	24	99	0	0	101	13	0	0	0	36	82	22	377
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	85	257	0	0	247	28	0	0	0	56	203	62	938
7:15 AM	to	8:15 AM	89	302	0	0	305	33	0	0	0	59	224	65	1077
7:30 AM	to	8:30 AM	91	356	0	0	362	33	0	0	0	65	282	62	1251
7:45 AM	to	8:45 AM	85	379	0	0	393	46	0	0	0	74	293	68	1338
8:00 AM	to	9:00 AM	93	395	0	0	400	53	0	0	0	94	303	71	1409

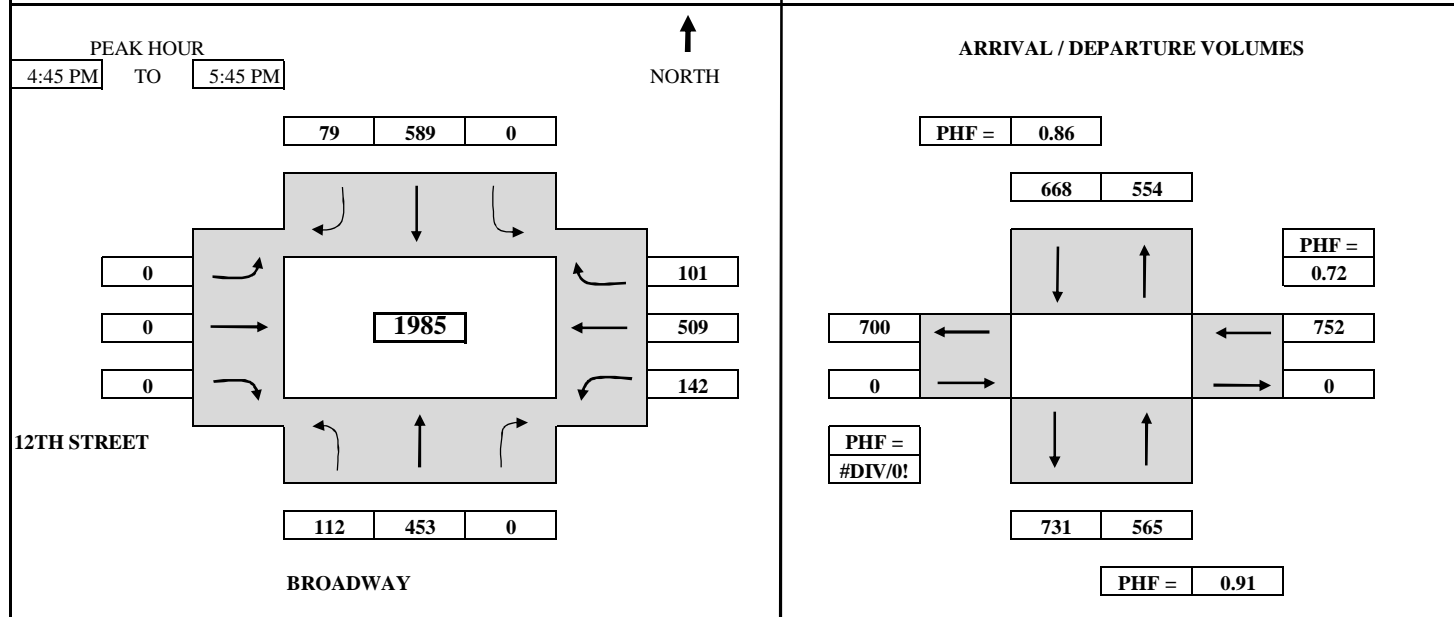
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: BROADWAY</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-25PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

SURVEY DATA												
4:00 PM to 4:15 PM	9	116			161	4			34	104	25	453
4:15 PM to 4:30 PM	22	221			286	11			71	174	40	825
4:30 PM to 4:45 PM	45	329			450	24			94	290	59	1291
4:45 PM to 5:00 PM	67	432			601	41			111	396	87	1735
5:00 PM to 5:15 PM	91	553			732	61			161	512	115	2225
5:15 PM to 5:30 PM	138	661			870	78			217	687	145	2796
5:30 PM to 5:45 PM	157	782			1039	103			236	799	160	3276
5:45 PM to 6:00 PM	182	881			1156	111			264	889	178	3661

TOTAL BY PERIOD													
4:00 PM to 4:15 PM	9	116	0	0	161	4	0	0	0	34	104	25	453
4:15 PM to 4:30 PM	13	105	0	0	125	7	0	0	0	37	70	15	372
4:30 PM to 4:45 PM	23	108	0	0	164	13	0	0	0	23	116	19	466
4:45 PM to 5:00 PM	22	103	0	0	151	17	0	0	0	17	106	28	444
5:00 PM to 5:15 PM	24	121	0	0	131	20	0	0	0	50	116	28	490
5:15 PM to 5:30 PM	47	108	0	0	138	17	0	0	0	56	175	30	571
5:30 PM to 5:45 PM	19	121	0	0	169	25	0	0	0	19	112	15	480
5:45 PM to 6:00 PM	25	99	0	0	117	8	0	0	0	28	90	18	385

HOURLY TOTALS													
4:00 PM to 5:00 PM	67	432	0	0	601	41	0	0	0	111	396	87	1735
4:15 PM to 5:15 PM	82	437	0	0	571	57	0	0	0	127	408	90	1772
4:30 PM to 5:30 PM	116	440	0	0	584	67	0	0	0	146	513	105	1971
4:45 PM to 5:45 PM	112	453	0	0	589	79	0	0	0	142	509	101	1985
5:00 PM to 6:00 PM	115	449	0	0	555	70	0	0	0	153	493	91	1926

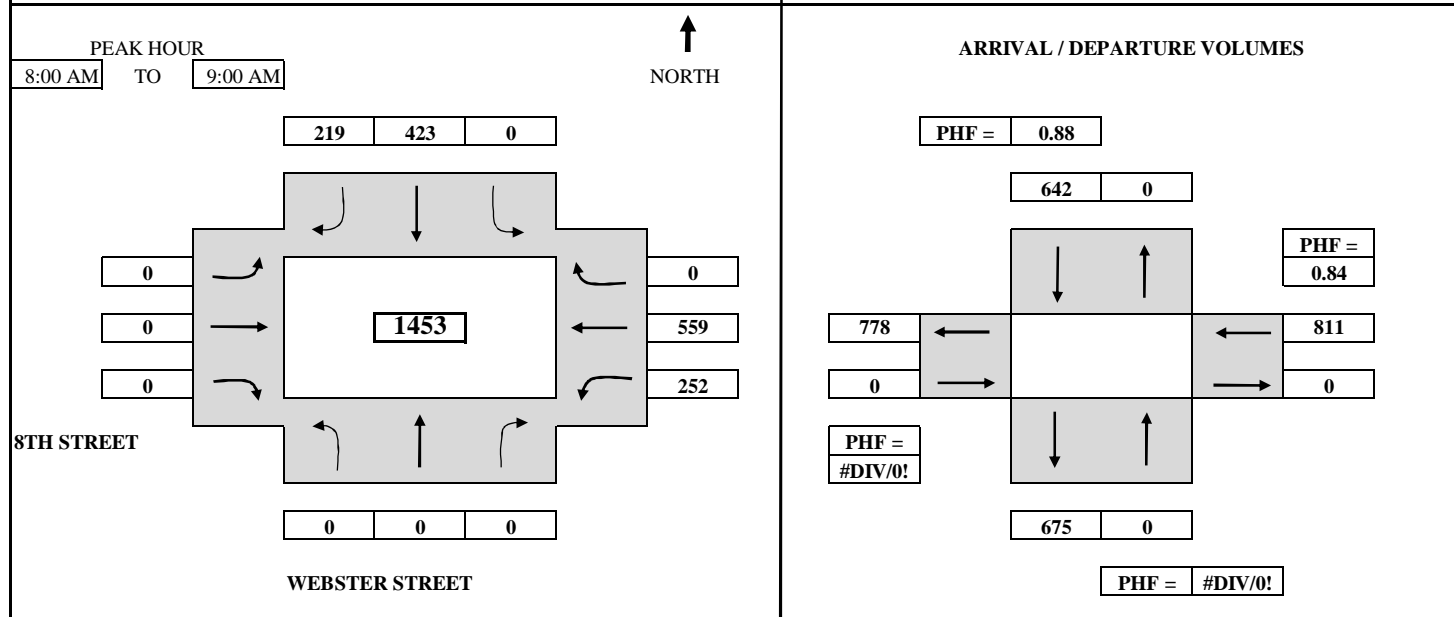
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-26AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
7:00 AM	to	7:15 AM				42	17			31	49	139
7:15 AM	to	7:30 AM				102	36			59	117	314
7:30 AM	to	7:45 AM				172	58			123	209	562
7:45 AM	to	8:00 AM				288	72			190	313	863
8:00 AM	to	8:15 AM				389	122			251	429	1191
8:15 AM	to	8:30 AM				490	174			309	557	1530
8:30 AM	to	8:45 AM				604	215			372	702	1893
8:45 AM	to	9:00 AM				711	291			442	872	2316

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	42	17	0	0	0	31	49	0	139
7:15 AM	to	7:30 AM	0	0	0	0	60	19	0	0	0	28	68	0	175
7:30 AM	to	7:45 AM	0	0	0	0	70	22	0	0	0	64	92	0	248
7:45 AM	to	8:00 AM	0	0	0	0	116	14	0	0	0	67	104	0	301
8:00 AM	to	8:15 AM	0	0	0	0	101	50	0	0	0	61	116	0	328
8:15 AM	to	8:30 AM	0	0	0	0	101	52	0	0	0	58	128	0	339
8:30 AM	to	8:45 AM	0	0	0	0	114	41	0	0	0	63	145	0	363
8:45 AM	to	9:00 AM	0	0	0	0	107	76	0	0	0	70	170	0	423

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	288	72	0	0	0	190	313	0	863
7:15 AM	to	8:15 AM	0	0	0	0	347	105	0	0	0	220	380	0	1052
7:30 AM	to	8:30 AM	0	0	0	0	388	138	0	0	0	250	440	0	1216
7:45 AM	to	8:45 AM	0	0	0	0	432	157	0	0	0	249	493	0	1331
8:00 AM	to	9:00 AM	0	0	0	0	423	219	0	0	0	252	559	0	1453

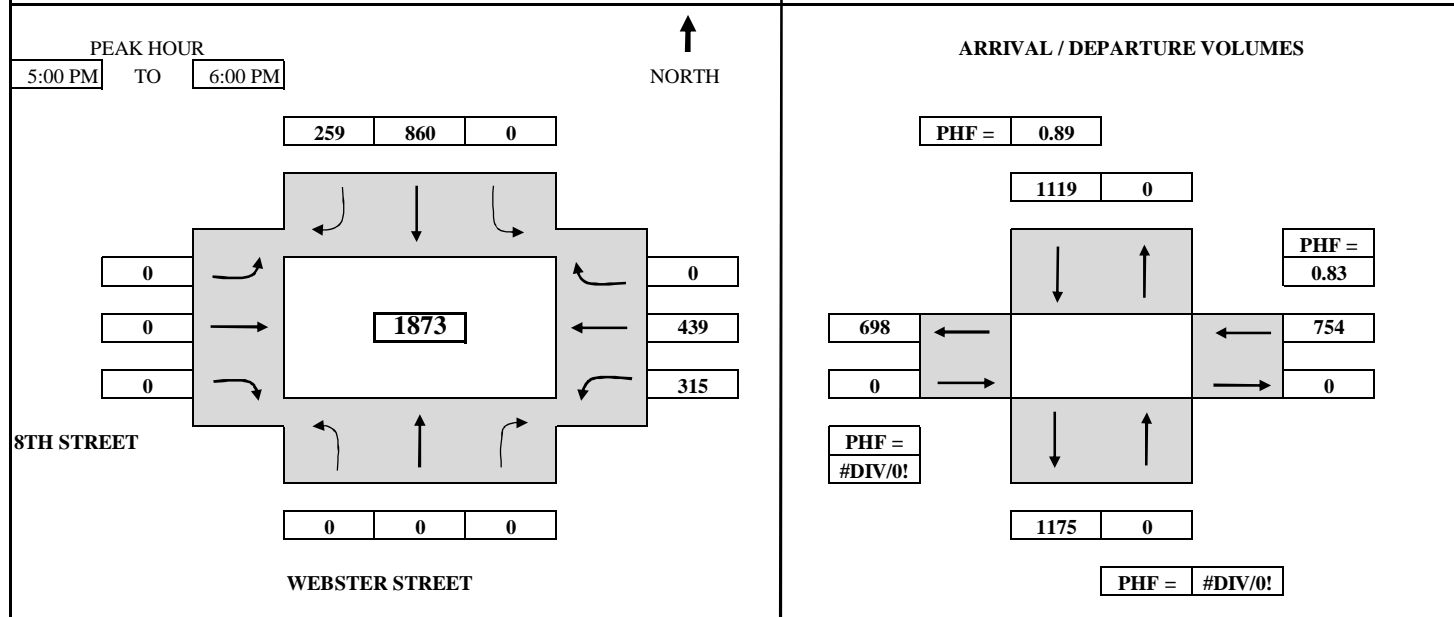
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-26PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA													
4:00 PM	to	4:15 PM					141	78			53	86	358
4:15 PM	to	4:30 PM					296	155			120	175	746
4:30 PM	to	4:45 PM					476	232			182	277	1167
4:45 PM	to	5:00 PM					631	282			243	358	1514
5:00 PM	to	5:15 PM					873	356			348	481	2058
5:15 PM	to	5:30 PM					1085	422			425	601	2533
5:30 PM	to	5:45 PM					1298	483			500	714	2995
5:45 PM	to	6:00 PM					1491	541			558	797	3387

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	141	78	0	0	0	53	86	0	358
4:15 PM	to	4:30 PM	0	0	0	0	155	77	0	0	0	67	89	0	388
4:30 PM	to	4:45 PM	0	0	0	0	180	77	0	0	0	62	102	0	421
4:45 PM	to	5:00 PM	0	0	0	0	155	50	0	0	0	61	81	0	347
5:00 PM	to	5:15 PM	0	0	0	0	242	74	0	0	0	105	123	0	544
5:15 PM	to	5:30 PM	0	0	0	0	212	66	0	0	0	77	120	0	475
5:30 PM	to	5:45 PM	0	0	0	0	213	61	0	0	0	75	113	0	462
5:45 PM	to	6:00 PM	0	0	0	0	193	58	0	0	0	58	83	0	392

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	631	282	0	0	0	243	358	0	1514
4:15 PM	to	5:15 PM	0	0	0	0	732	278	0	0	0	295	395	0	1700
4:30 PM	to	5:30 PM	0	0	0	0	789	267	0	0	0	305	426	0	1787
4:45 PM	to	5:45 PM	0	0	0	0	822	251	0	0	0	318	437	0	1828
5:00 PM	to	6:00 PM	0	0	0	0	860	259	0	0	0	315	439	0	1873

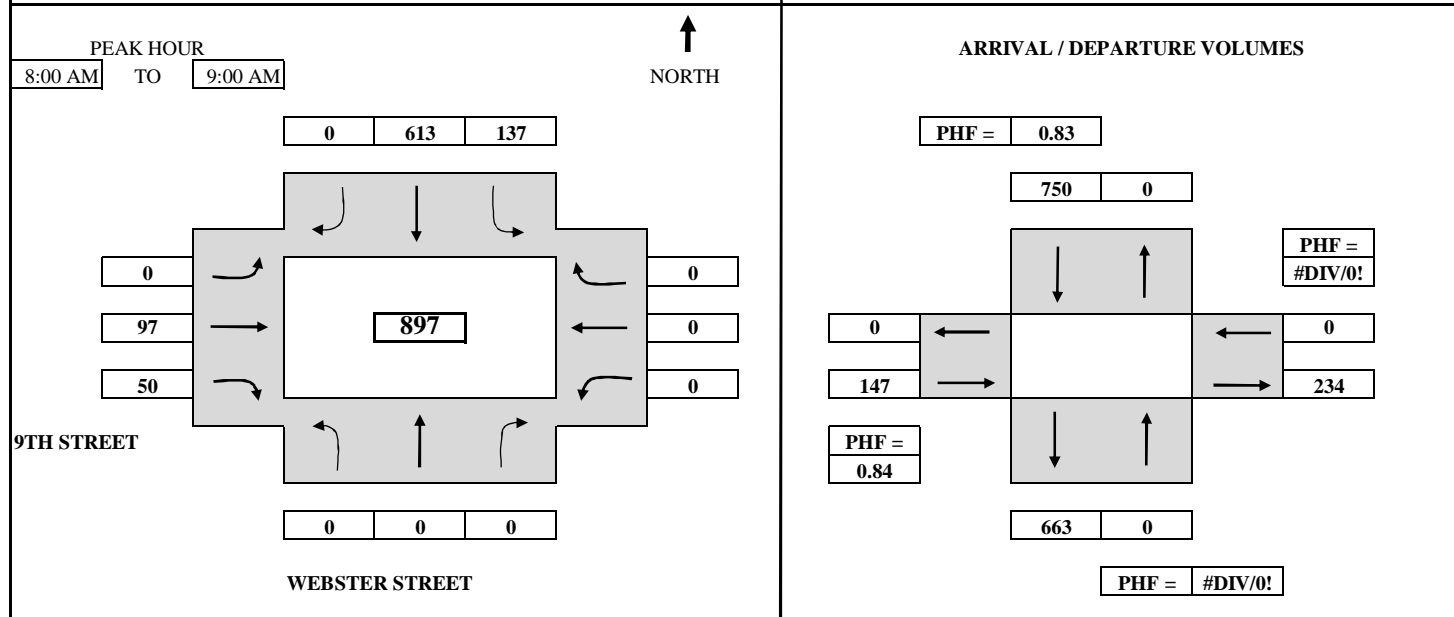
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-27AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

### SURVEY DATA

7:00 AM	to	7:15 AM		22	61		11	4				98
7:15 AM	to	7:30 AM		41	128		18	10				197
7:30 AM	to	7:45 AM		69	215		35	18				337
7:45 AM	to	8:00 AM		100	351		58	31				540
8:00 AM	to	8:15 AM		139	480		88	36				743
8:15 AM	to	8:30 AM		166	625		112	49				952
8:30 AM	to	8:45 AM		198	778		137	68				1181
8:45 AM	to	9:00 AM		237	964		155	81				1437

### TOTAL BY PERIOD

7:00 AM	to	7:15 AM	0	0	0	22	61	0	0	11	4	0	0	0	98
7:15 AM	to	7:30 AM	0	0	0	19	67	0	0	7	6	0	0	0	99
7:30 AM	to	7:45 AM	0	0	0	28	87	0	0	17	8	0	0	0	140
7:45 AM	to	8:00 AM	0	0	0	31	136	0	0	23	13	0	0	0	203
8:00 AM	to	8:15 AM	0	0	0	39	129	0	0	30	5	0	0	0	203
8:15 AM	to	8:30 AM	0	0	0	27	145	0	0	24	13	0	0	0	209
8:30 AM	to	8:45 AM	0	0	0	32	153	0	0	25	19	0	0	0	229
8:45 AM	to	9:00 AM	0	0	0	39	186	0	0	18	13	0	0	0	256

### HOURLY TOTALS

7:00 AM	to	8:00 AM	0	0	0	100	351	0	0	58	31	0	0	0	540
7:15 AM	to	8:15 AM	0	0	0	117	419	0	0	77	32	0	0	0	645
7:30 AM	to	8:30 AM	0	0	0	125	497	0	0	94	39	0	0	0	755
7:45 AM	to	8:45 AM	0	0	0	129	563	0	0	102	50	0	0	0	844
8:00 AM	to	9:00 AM	0	0	0	137	613	0	0	97	50	0	0	0	897

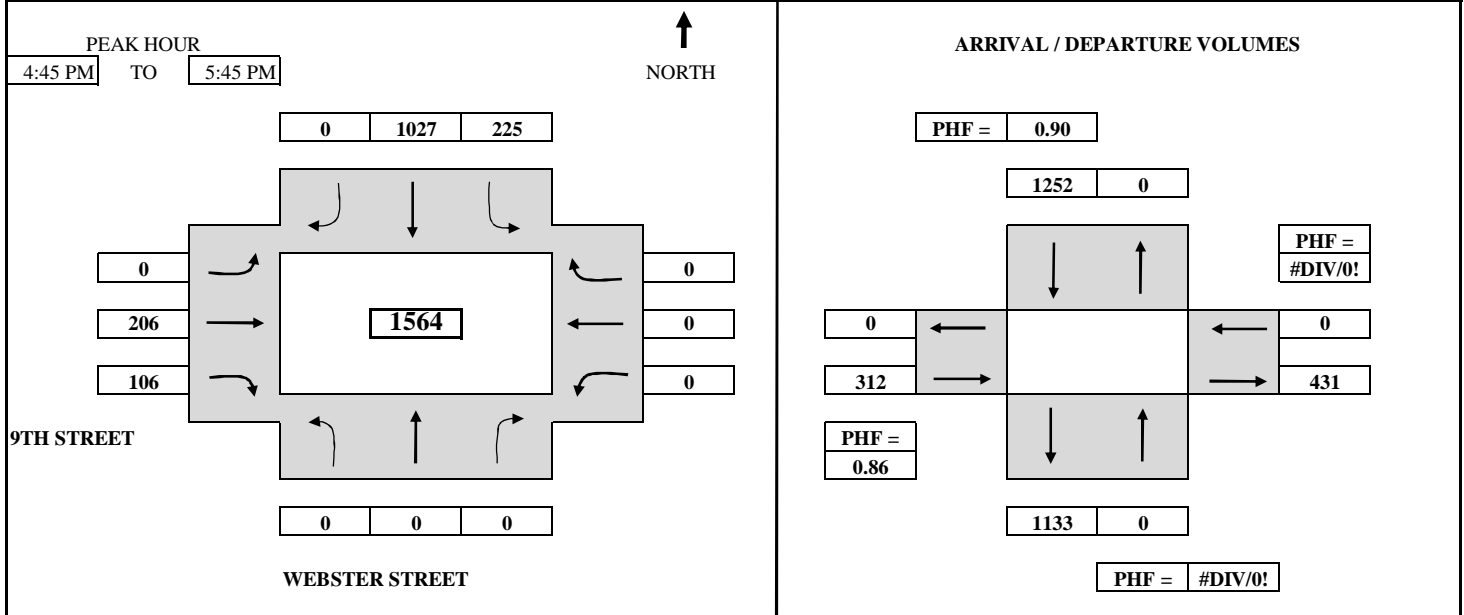
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-27PM



TIME	PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM				48	224			57	26			355
4:15 PM	to	4:30 PM				91	434			99	39			663
4:30 PM	to	4:45 PM				132	618			149	63			962
4:45 PM	to	5:00 PM				193	883			191	99			1366
5:00 PM	to	5:15 PM				231	1114			237	117			1699
5:15 PM	to	5:30 PM				308	1384			297	148			2137
5:30 PM	to	5:45 PM				357	1645			355	169			2526
5:45 PM	to	6:00 PM				397	1881			393	190			2861

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	48	224	0	0	57	26	0	0	0	355
4:15 PM	to	4:30 PM	0	0	0	43	210	0	0	42	13	0	0	0	308
4:30 PM	to	4:45 PM	0	0	0	41	184	0	0	50	24	0	0	0	299
4:45 PM	to	5:00 PM	0	0	0	61	265	0	0	42	36	0	0	0	404
5:00 PM	to	5:15 PM	0	0	0	38	231	0	0	46	18	0	0	0	333
5:15 PM	to	5:30 PM	0	0	0	77	270	0	0	60	31	0	0	0	438
5:30 PM	to	5:45 PM	0	0	0	49	261	0	0	58	21	0	0	0	389
5:45 PM	to	6:00 PM	0	0	0	40	236	0	0	38	21	0	0	0	335

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	193	883	0	0	191	99	0	0	0	1366
4:15 PM	to	5:15 PM	0	0	0	183	890	0	0	180	91	0	0	0	1344
4:30 PM	to	5:30 PM	0	0	0	217	950	0	0	198	109	0	0	0	1474
4:45 PM	to	5:45 PM	0	0	0	225	1027	0	0	206	106	0	0	0	1564
5:00 PM	to	6:00 PM	0	0	0	204	998	0	0	202	91	0	0	0	1495

TEL: (510) 232 - 1271

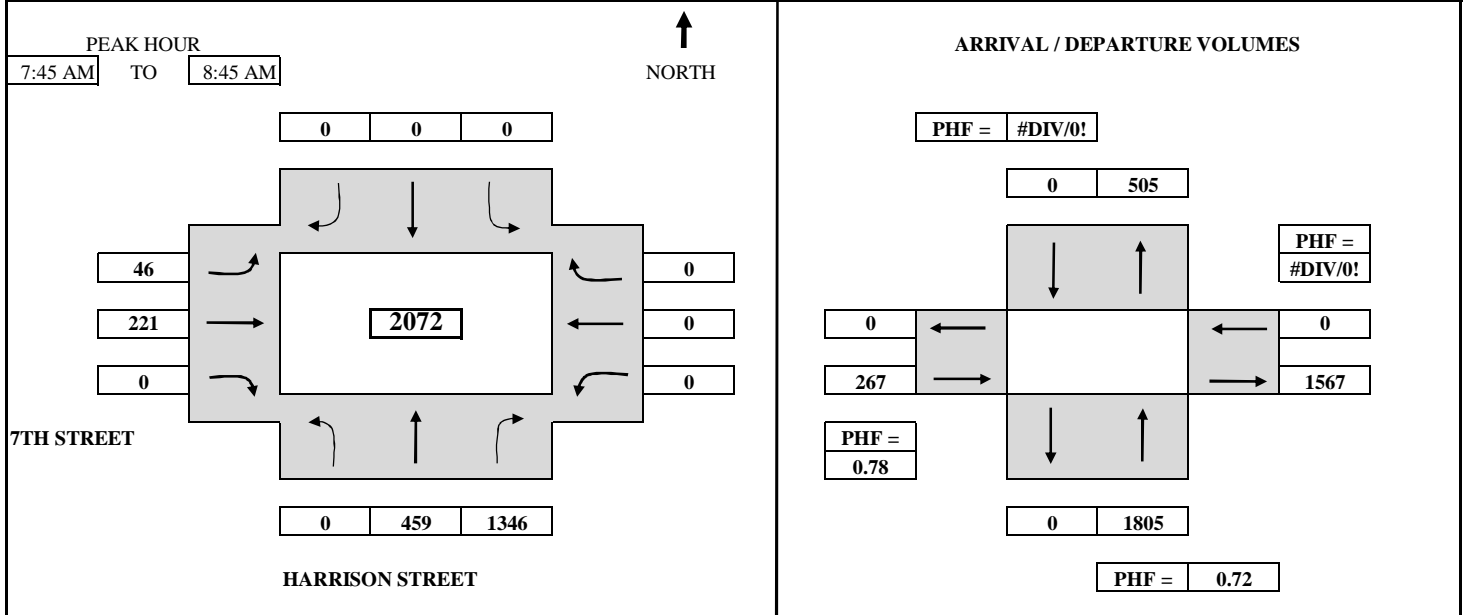
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> HARRISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-28AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
7:00 AM	to	7:15 AM	61	340				2	29			432
7:15 AM	to	7:30 AM	142	695				6	58			901
7:30 AM	to	7:45 AM	266	828				12	92			1198
7:45 AM	to	8:00 AM	321	1396				21	128			1866
8:00 AM	to	8:15 AM	465	1600				34	186			2285
8:15 AM	to	8:30 AM	539	1813				51	255			2658
8:30 AM	to	8:45 AM	725	2174				58	313			3270
8:45 AM	to	9:00 AM	891	2486				63	365			3805

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	61	340	0	0	0	2	29	0	0	0	432
7:15 AM	to	7:30 AM	0	81	355	0	0	0	4	29	0	0	0	469
7:30 AM	to	7:45 AM	0	124	133	0	0	0	6	34	0	0	0	297
7:45 AM	to	8:00 AM	0	55	568	0	0	0	9	36	0	0	0	668
8:00 AM	to	8:15 AM	0	144	204	0	0	0	13	58	0	0	0	419
8:15 AM	to	8:30 AM	0	74	213	0	0	0	17	69	0	0	0	373
8:30 AM	to	8:45 AM	0	186	361	0	0	0	7	58	0	0	0	612
8:45 AM	to	9:00 AM	0	166	312	0	0	0	5	52	0	0	0	535

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	321	1396	0	0	0	21	128	0	0	0	1866
7:15 AM	to	8:15 AM	0	404	1260	0	0	0	32	157	0	0	0	1853
7:30 AM	to	8:30 AM	0	397	1118	0	0	0	45	197	0	0	0	1757
7:45 AM	to	8:45 AM	0	459	1346	0	0	0	46	221	0	0	0	2072
8:00 AM	to	9:00 AM	0	570	1090	0	0	0	42	237	0	0	0	1939

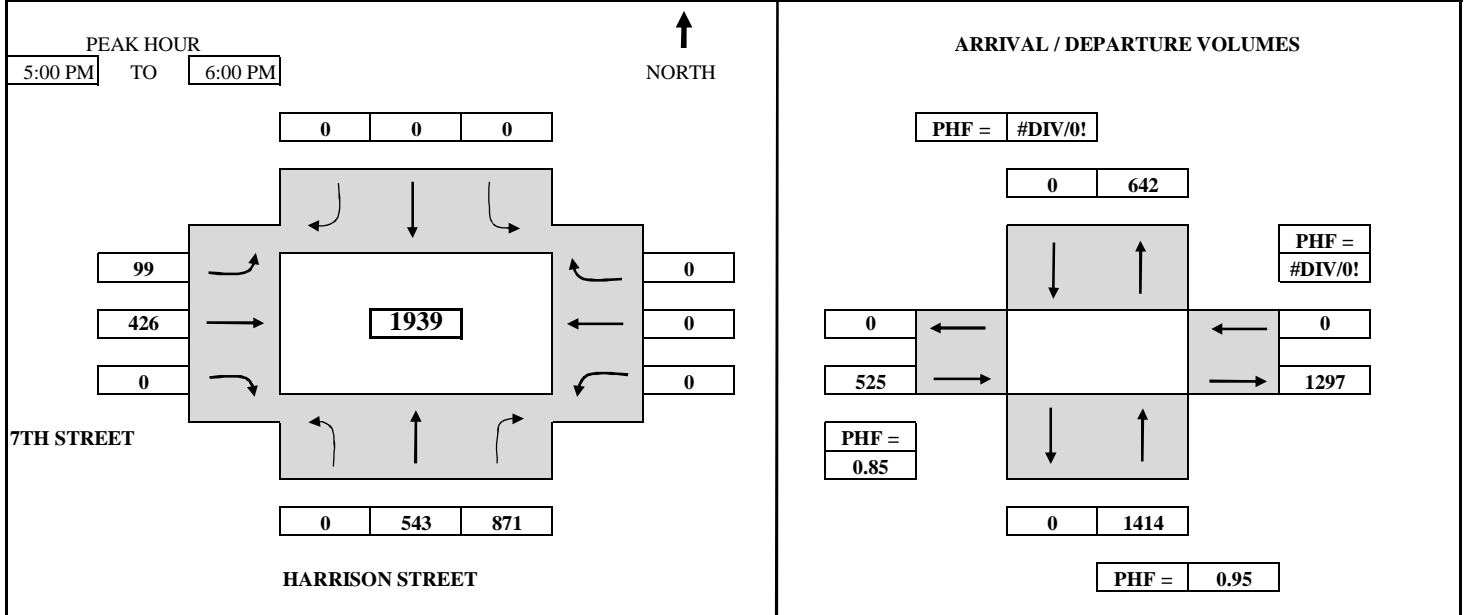
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> HARRISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-28PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>														
4:00 PM	to	4:15 PM	103	212			30	93				438		
4:15 PM	to	4:30 PM	229	410			58	219				916		
4:30 PM	to	4:45 PM	353	582			87	302				1324		
4:45 PM	to	5:00 PM	440	731			108	403				1682		
5:00 PM	to	5:15 PM	574	938			132	529				2173		
5:15 PM	to	5:30 PM	729	1143			153	623				2648		
5:30 PM	to	5:45 PM	852	1359			180	733				3124		
5:45 PM	to	6:00 PM	983	1602			207	829				3621		
<b>TOTAL BY PERIOD</b>														
4:00 PM	to	4:15 PM	0	103	212	0	0	0	30	93	0	0	0	438
4:15 PM	to	4:30 PM	0	126	198	0	0	0	28	126	0	0	0	478
4:30 PM	to	4:45 PM	0	124	172	0	0	0	29	83	0	0	0	408
4:45 PM	to	5:00 PM	0	87	149	0	0	0	21	101	0	0	0	358
5:00 PM	to	5:15 PM	0	134	207	0	0	0	24	126	0	0	0	491
5:15 PM	to	5:30 PM	0	155	205	0	0	0	21	94	0	0	0	475
5:30 PM	to	5:45 PM	0	123	216	0	0	0	27	110	0	0	0	476
5:45 PM	to	6:00 PM	0	131	243	0	0	0	27	96	0	0	0	497
<b>HOURLY TOTALS</b>														
4:00 PM	to	5:00 PM	0	440	731	0	0	0	108	403	0	0	0	1682
4:15 PM	to	5:15 PM	0	471	726	0	0	0	102	436	0	0	0	1735
4:30 PM	to	5:30 PM	0	500	733	0	0	0	95	404	0	0	0	1732
4:45 PM	to	5:45 PM	0	499	777	0	0	0	93	431	0	0	0	1800
5:00 PM	to	6:00 PM	0	543	871	0	0	0	99	426	0	0	0	1939

TEL: (510) 232 - 1271

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# B.A.Y.M.E.T.R.I.C.S. INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY				SURVEY DATE: 5/23/2012				DAY: WEDNESDAY			
N-S APPROACH: HARRISON STREET				SURVEY TIME: 7:00 AM				TO 9:00 AM			
E-W APPROACH: 20TH STREET				CITY: OAKLAND				FILE: 3205033-29AM			

PEAK HOUR	08:00 AM TO 09:00 AM	KAISER CENTER PARKING GARAGE 4 0 0 0	KAISER CENTER DRIVEWAY 11 8	NORTH ↑	
		B	F		ARRIVAL / DEPARTURE VOLUMES
		4 79	19		KAISER CENTER PARKING GARAGE PHF= 0.25
					KAISER CENTER DRIVEWAY PHF= 0.48
20TH STREET	14	7	192	HARRISON STREET	PHF= 0.84
80	80	TOTAL 1,153	337	333	538
28	28		2	178	293
56	56			PHF= 0.89	
		57 17 210 9	5 72 41 3	398 293	39 121
		HARRISON STREET	THOMAS BERKLEY WAY	HARRISON STREET PHF= 0.85	THOMAS BERKLEY WAY PHF= 0.62

TIME PERIOD		A NB (HARRISON ST - NB)				D NB (THOMAS BERKLEY)				B SB (P. G.)				F SB (DWAY)				C EB (20TH STREET)				E WB (HARRISON ST - SB)				TOTAL
From	To	AC	AB	AE	AD	DA	DC	DB	DE	BC	BE	BF	FC	CB	CE	CD	CA	ED	EA	EC	EB					
<b>SURVEY DATA</b>																										
7:00 AM	---	7:15 AM	8	7	18	0	1	3	0	0	2	2	3	0	21	0	10	0	36	34	2	147				
7:15 AM	---	7:30 AM	15	9	40	0	3	8	5	0	5	4	6	3	35	4	16	0	71	78	8	310				
7:30 AM	---	7:45 AM	22	19	70	0	4	14	9	0	8	7	13	4	59	14	31	0	131	120	8	533				
7:45 AM	---	8:00 AM	35	26	123	0	5	25	16	0	12	12	17	8	76	21	48	1	221	173	8	827				
8:00 AM	---	8:15 AM	51	30	170	2	7	44	31	2	13	16	18	11	104	27	57	2	288	208	8	1,089				
8:15 AM	---	8:30 AM	68	35	230	6	9	55	38	2	14	19	20	14	122	30	71	2	378	268	9	1,390				
8:30 AM	---	8:45 AM	79	40	270	8	10	64	42	2	16	22	23	19	136	40	90	2	478	325	12	1,678				
8:45 AM	---	9:00 AM	92	43	333	9	10	97	57	3	16	23	25	22	156	49	104	3	558	365	15	1,980				
<b>TOTAL BY PERIOD</b>																										
7:00 AM	---	7:15 AM	8	7	18	0	1	3	0	0	2	2	3	0	21	0	10	0	36	34	2	147				
7:15 AM	---	7:30 AM	7	2	22	0	2	5	5	0	3	0	2	3	3	14	4	6	0	35	44	6	163			
7:30 AM	---	7:45 AM	7	10	30	0	1	6	4	0	3	0	3	7	1	24	10	15	0	60	42	0	223			
7:45 AM	---	8:00 AM	13	7	53	0	1	11	7	0	4	0	5	4	4	17	7	17	1	90	53	0	294			
8:00 AM	---	8:15 AM	16	4	47	2	2	19	15	2	1	0	4	1	3	28	6	9	1	67	35	0	262			
8:15 AM	---	8:30 AM	17	5	60	4	2	11	7	0	1	0	3	2	3	18	3	14	0	90	60	1	301			
8:30 AM	---	8:45 AM	11	5	40	2	1	9	4	0	2	0	3	3	5	14	10	19	0	100	57	3	288			
8:45 AM	---	9:00 AM	13	3	63	1	0	33	15	1	0	0	1	2	3	20	9	14	1	80	40	3	302			
<b>HOURLY TOTALS</b>																										
7:00 AM	---	8:00 AM	35	26	123	0	5	25	16	0	12	0	12	17	8	76	21	48	1	221	173	8	827			
7:15 AM	---	8:15 AM	43	23	152	2	6	41	31	2	11	0	14	15	11	83	27	47	2	252	174	6	942			
7:30 AM	---	8:30 AM	53	26	190	6	6	47	33	2	9	0	15	14	11	87	26	55	2	307	190	1	1,080			
7:45 AM	---	8:45 AM	57	21	200	8	6	50	33	2	8	0	15	10	15	77	26	59	2	347	205	4	1,145			
8:00 AM	---	9:00 AM	57	17	210	9	5	72	41	3	4	0	11	8	14	80	28	56	2	337	192	7	1,153			

Telephone: (510)232-1271      Fax: (510)232-1272

# B.A.Y.M.E.T.R.I.C.S. INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY				SURVEY DATE: 5/23/2012				DAY: WEDNESDAY			
N-S APPROACH: HARRISON STREET				SURVEY TIME: 4:00 PM				TO: 6:00 PM			
E-W APPROACH: 20TH STREET				CITY: OAKLAND				FILE: 3205033-29PM			

PEAK HOUR	05:00 PM TO 06:00 PM	KAISER CENTER PARKING GARAGE	KAISER CENTER DRIVEWAY	NORTH ↑	
		54   0   0   0	18   31		
		ARRIVAL / DEPARTURE VOLUMES			
		KAISER CENTER PARKING GARAGE	KAISER CENTER DRIVEWAY		
		PHF= 0.45	PHF= 0.45		
		54   60	49		
20TH STREET	10	2	PHF= 0.81		
218	122				
65	108				
19	1				
TOTAL 1,325					
		ARRIVAL / DEPARTURE VOLUMES			
		HARRISON STREET	THOMAS BERKLEY WAY		
		PHF= 0.87	PHF= 0.78		
		136   586	74   91		
		PHF= 0.86	PHF= 0.78		

TIME PERIOD	A NB (HARRISON ST - NB)				D NB (THOMAS BERKLEY)				B SB (P. G.)				F SB (DWAY)				C EB (20TH STREET)				E WB (HARRISON ST - SB)				TOTAL
	From	To	AC	AB	AE	AD	DA	DC	DB	DE	BC	FB	FC	CB	CE	CD	CA	ED	EA	EC	EB				
<b>SURVEY DATA</b>																									
4:00 PM	---	4:15 PM	12	1	75	3	2	9	7	0	5	8	12	1	45	11	4	1	28	28	1	253			
4:15 PM	---	4:30 PM	27	5	156	4	6	16	11	0	11	16	19	3	94	23	13	2	62	61	5	534			
4:30 PM	---	4:45 PM	42	8	276	8	8	28	20	0	15	33	29	7	132	28	21	3	86	96	6	846			
4:45 PM	---	5:00 PM	53	8	368	12	10	34	30	0	25	46	37	13	183	38	29	4	106	127	7	1,130			
5:00 PM	---	5:15 PM	71	11	494	13	12	53	38	0	35	52	43	17	234	45	34	5	141	152	9	1,459			
5:15 PM	---	5:30 PM	81	12	623	16	12	60	49	0	40	55	47	18	283	61	39	5	165	181	9	1,756			
5:30 PM	---	5:45 PM	104	18	762	19	14	71	59	0	49	61	58	21	342	85	43	5	195	211	9	2,126			
5:45 PM	---	6:00 PM	119	20	868	20	19	80	66	0	79	64	68	23	401	103	48	5	214	249	9	2,455			
<b>TOTAL BY PERIOD</b>																									
4:00 PM	---	4:15 PM	12	1	75	3	2	9	7	0	5	8	12	1	45	11	4	1	28	28	1	253			
4:15 PM	---	4:30 PM	15	4	81	1	4	7	4	0	6	8	7	2	49	12	9	1	34	33	4	281			
4:30 PM	---	4:45 PM	15	3	120	4	2	12	9	0	4	17	10	4	38	5	8	1	24	35	1	312			
4:45 PM	---	5:00 PM	11	0	92	4	2	6	10	0	10	13	8	6	51	10	8	1	20	31	1	284			
5:00 PM	---	5:15 PM	18	3	126	1	2	19	8	0	10	6	6	4	51	7	5	1	35	25	2	329			
5:15 PM	---	5:30 PM	10	1	129	3	0	7	11	0	5	3	4	1	49	16	5	0	24	29	0	297			
5:30 PM	---	5:45 PM	23	6	139	3	2	11	10	0	9	6	11	3	59	24	4	0	30	30	0	370			
5:45 PM	---	6:00 PM	15	2	106	1	5	9	7	0	30	3	10	2	59	18	5	0	19	38	0	329			
<b>HOURLY TOTALS</b>																									
4:00 PM	---	5:00 PM	53	8	368	12	10	34	30	0	25	46	37	13	183	38	29	4	106	127	7	1,130			
4:15 PM	---	5:15 PM	59	10	419	10	10	44	31	0	30	44	31	16	189	34	30	4	113	124	8	1,206			
4:30 PM	---	5:30 PM	54	7	467	12	6	44	38	0	29	39	28	15	189	38	26	3	103	120	4	1,222			
4:45 PM	---	5:45 PM	62	10	486	11	6	43	39	0	34	28	29	14	210	57	22	2	109	115	3	1,280			
5:00 PM	---	6:00 PM	66	12	500	8	9	46	36	0	54	18	31	10	218	65	19	1	108	122	2	1,325			

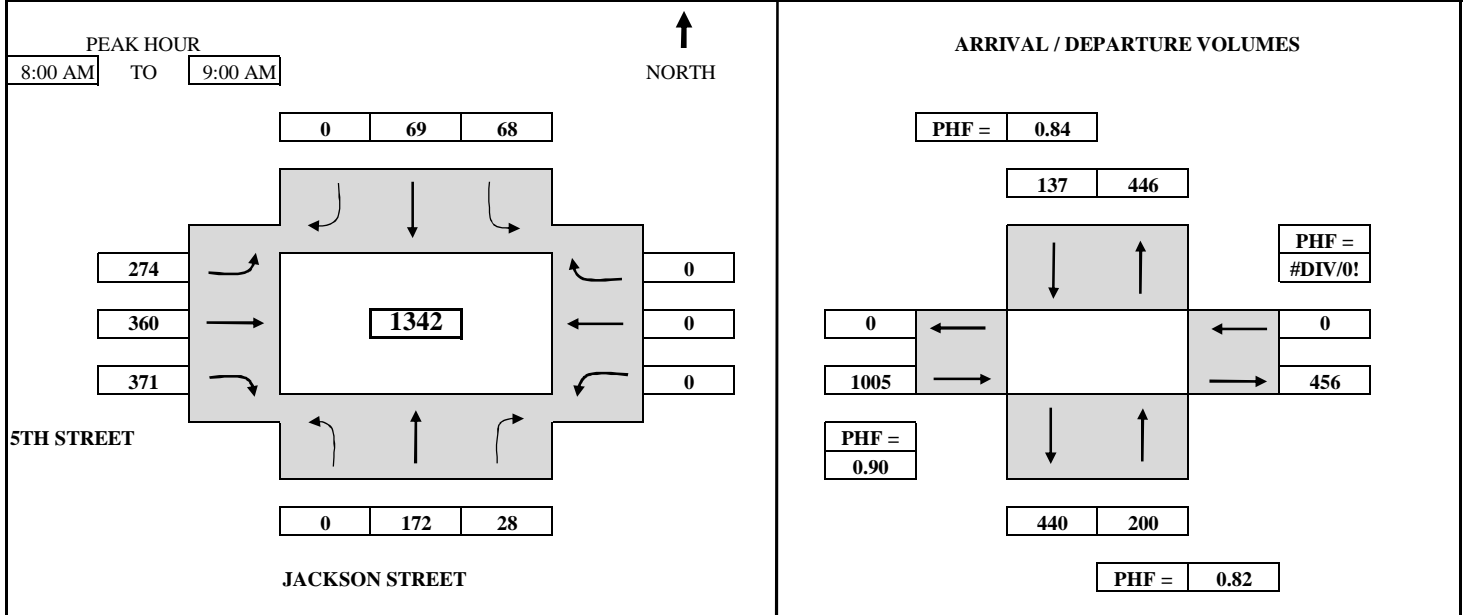
Telephone: (510)232-1271

Fax: (510)232-1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-30AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	29	6	12	11	44	41	69				212		
7:15 AM	to	7:30 AM	67	10	31	20	89	91	150				458		
7:30 AM	to	7:45 AM	98	16	49	28	162	159	218				730		
7:45 AM	to	8:00 AM	145	23	70	41	226	246	317				1068		
8:00 AM	to	8:15 AM	184	28	92	55	293	329	403				1384		
8:15 AM	to	8:30 AM	220	35	107	70	355	418	486				1691		
8:30 AM	to	8:45 AM	269	47	118	89	425	504	586				2038		
8:45 AM	to	9:00 AM	317	51	138	110	500	606	688				2410		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	0	29	6	12	11	0	44	41	69	0	0	0	212
7:15 AM	to	7:30 AM	0	38	4	19	9	0	45	50	81	0	0	0	246
7:30 AM	to	7:45 AM	0	31	6	18	8	0	73	68	68	0	0	0	272
7:45 AM	to	8:00 AM	0	47	7	21	13	0	64	87	99	0	0	0	338
8:00 AM	to	8:15 AM	0	39	5	22	14	0	67	83	86	0	0	0	316
8:15 AM	to	8:30 AM	0	36	7	15	15	0	62	89	83	0	0	0	307
8:30 AM	to	8:45 AM	0	49	12	11	19	0	70	86	100	0	0	0	347
8:45 AM	to	9:00 AM	0	48	4	20	21	0	75	102	102	0	0	0	372
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	0	145	23	70	41	0	226	246	317	0	0	0	1068
7:15 AM	to	8:15 AM	0	155	22	80	44	0	249	288	334	0	0	0	1172
7:30 AM	to	8:30 AM	0	153	25	76	50	0	266	327	336	0	0	0	1233
7:45 AM	to	8:45 AM	0	171	31	69	61	0	263	345	368	0	0	0	1308
8:00 AM	to	9:00 AM	0	172	28	68	69	0	274	360	371	0	0	0	1342

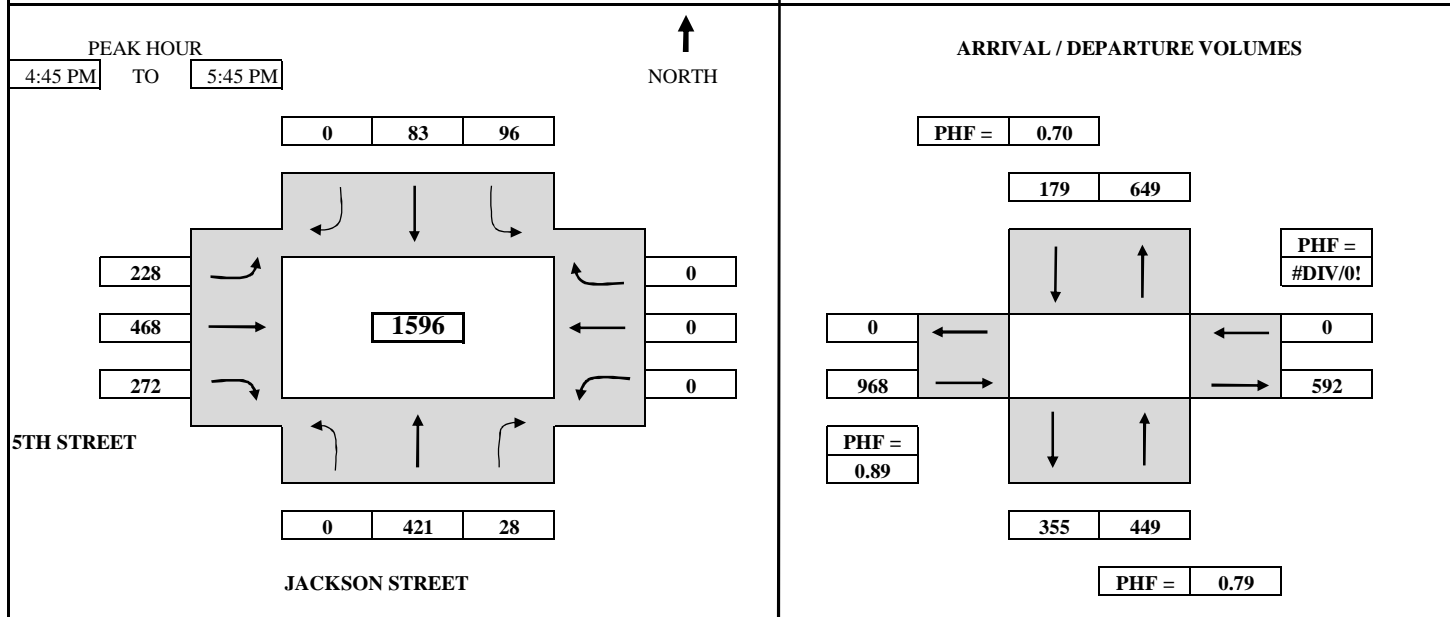
TEL: (510) 232 - 1271

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-30PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
4:00 PM to 4:15 PM	61	5	45	19	50	64	71					315
4:15 PM to 4:30 PM	118	15	75	34	102	166	135					645
4:30 PM to 4:45 PM	201	24	108	51	167	272	220					1043
4:45 PM to 5:00 PM	270	30	134	70	238	373	308					1423
5:00 PM to 5:15 PM	381	39	152	83	297	514	381					1847
5:15 PM to 5:30 PM	489	43	171	105	336	626	432					2202
5:30 PM to 5:45 PM	622	52	204	134	395	740	492					2639
5:45 PM to 6:00 PM	711	58	226	145	459	849	559					3007

TOTAL BY PERIOD													
4:00 PM to 4:15 PM	0	61	5	45	19	0	50	64	71	0	0	0	315
4:15 PM to 4:30 PM	0	57	10	30	15	0	52	102	64	0	0	0	330
4:30 PM to 4:45 PM	0	83	9	33	17	0	65	106	85	0	0	0	398
4:45 PM to 5:00 PM	0	69	6	26	19	0	71	101	88	0	0	0	380
5:00 PM to 5:15 PM	0	111	9	18	13	0	59	141	73	0	0	0	424
5:15 PM to 5:30 PM	0	108	4	19	22	0	39	112	51	0	0	0	355
5:30 PM to 5:45 PM	0	133	9	33	29	0	59	114	60	0	0	0	437
5:45 PM to 6:00 PM	0	89	6	22	11	0	64	109	67	0	0	0	368

HOURLY TOTALS													
4:00 PM to 5:00 PM	0	270	30	134	70	0	238	373	308	0	0	0	1423
4:15 PM to 5:15 PM	0	320	34	107	64	0	247	450	310	0	0	0	1532
4:30 PM to 5:30 PM	0	371	28	96	71	0	234	460	297	0	0	0	1557
4:45 PM to 5:45 PM	0	421	28	96	83	0	228	468	272	0	0	0	1596
5:00 PM to 6:00 PM	0	441	28	92	75	0	221	476	251	0	0	0	1584

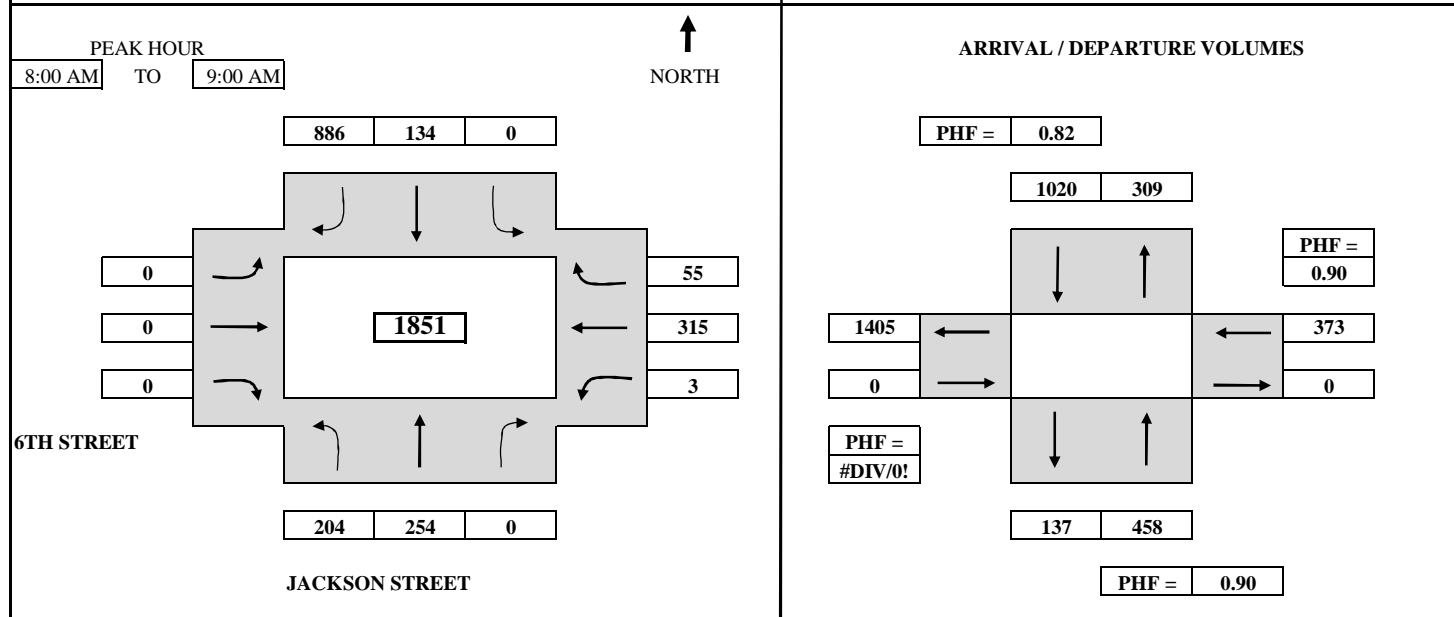
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-31AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT							
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	39	30		19	278			1	62	8	437		
7:15 AM	to	7:30 AM	85	87		44	542			4	122	22	906		
7:30 AM	to	7:45 AM	138	113		70	827			6	199	33	1386		
7:45 AM	to	8:00 AM	207	158		106	1046			10	271	48	1846		
8:00 AM	to	8:15 AM	252	225		142	1249			10	335	65	2278		
8:15 AM	to	8:30 AM	306	269		161	1462			11	417	84	2710		
8:30 AM	to	8:45 AM	363	339		195	1693			11	496	91	3188		
8:45 AM	to	9:00 AM	411	412		240	1932			13	586	103	3697		
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	39	30	0	0	19	278	0	0	0	1	62	8	437
7:15 AM	to	7:30 AM	46	57	0	0	25	264	0	0	0	3	60	14	469
7:30 AM	to	7:45 AM	53	26	0	0	26	285	0	0	0	2	77	11	480
7:45 AM	to	8:00 AM	69	45	0	0	36	219	0	0	0	4	72	15	460
8:00 AM	to	8:15 AM	45	67	0	0	36	203	0	0	0	0	64	17	432
8:15 AM	to	8:30 AM	54	44	0	0	19	213	0	0	0	1	82	19	432
8:30 AM	to	8:45 AM	57	70	0	0	34	231	0	0	0	0	79	7	478
8:45 AM	to	9:00 AM	48	73	0	0	45	239	0	0	0	2	90	12	509
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	207	158	0	0	106	1046	0	0	0	10	271	48	1846
7:15 AM	to	8:15 AM	213	195	0	0	123	971	0	0	0	9	273	57	1841
7:30 AM	to	8:30 AM	221	182	0	0	117	920	0	0	0	7	295	62	1804
7:45 AM	to	8:45 AM	225	226	0	0	125	866	0	0	0	5	297	58	1802
8:00 AM	to	9:00 AM	204	254	0	0	134	886	0	0	0	3	315	55	1851

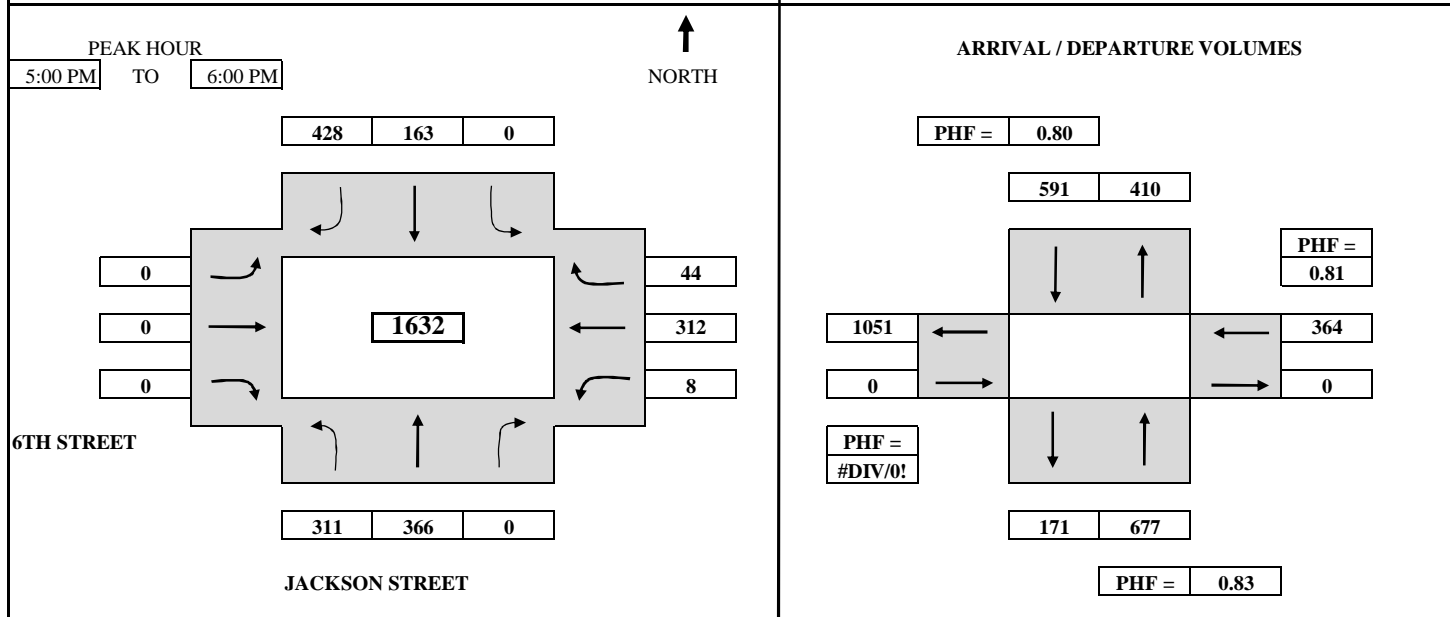
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-31PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM			72 42			64 121					2 91 10	402	
4:15 PM to 4:30 PM			126 95			108 230					3 159 19	740	
4:30 PM to 4:45 PM			205 164			155 334					5 243 29	1135	
4:45 PM to 5:00 PM			264 242			198 433					7 319 39	1502	
5:00 PM to 5:15 PM			351 333			227 522					9 404 51	1897	
5:15 PM to 5:30 PM			415 416			268 616					10 483 63	2271	
5:30 PM to 5:45 PM			498 537			330 729					15 579 74	2762	
5:45 PM to 6:00 PM			575 608			361 861					15 631 83	3134	
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			72 42 0			0 64 121			0 0 0		2 91 10	402	
4:15 PM to 4:30 PM			54 53 0			0 44 109			0 0 0		1 68 9	338	
4:30 PM to 4:45 PM			79 69 0			0 47 104			0 0 0		2 84 10	395	
4:45 PM to 5:00 PM			59 78 0			0 43 99			0 0 0		2 76 10	367	
5:00 PM to 5:15 PM			87 91 0			0 29 89			0 0 0		2 85 12	395	
5:15 PM to 5:30 PM			64 83 0			0 41 94			0 0 0		1 79 12	374	
5:30 PM to 5:45 PM			83 121 0			0 62 113			0 0 0		5 96 11	491	
5:45 PM to 6:00 PM			77 71 0			0 31 132			0 0 0		0 52 9	372	
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			264 242 0			0 198 433			0 0 0		7 319 39	1502	
4:15 PM to 5:15 PM			279 291 0			0 163 401			0 0 0		7 313 41	1495	
4:30 PM to 5:30 PM			289 321 0			0 160 386			0 0 0		7 324 44	1531	
4:45 PM to 5:45 PM			293 373 0			0 175 395			0 0 0		10 336 45	1627	
5:00 PM to 6:00 PM			311 366 0			0 163 428			0 0 0		8 312 44	1632	

TEL: (510) 232 - 1271

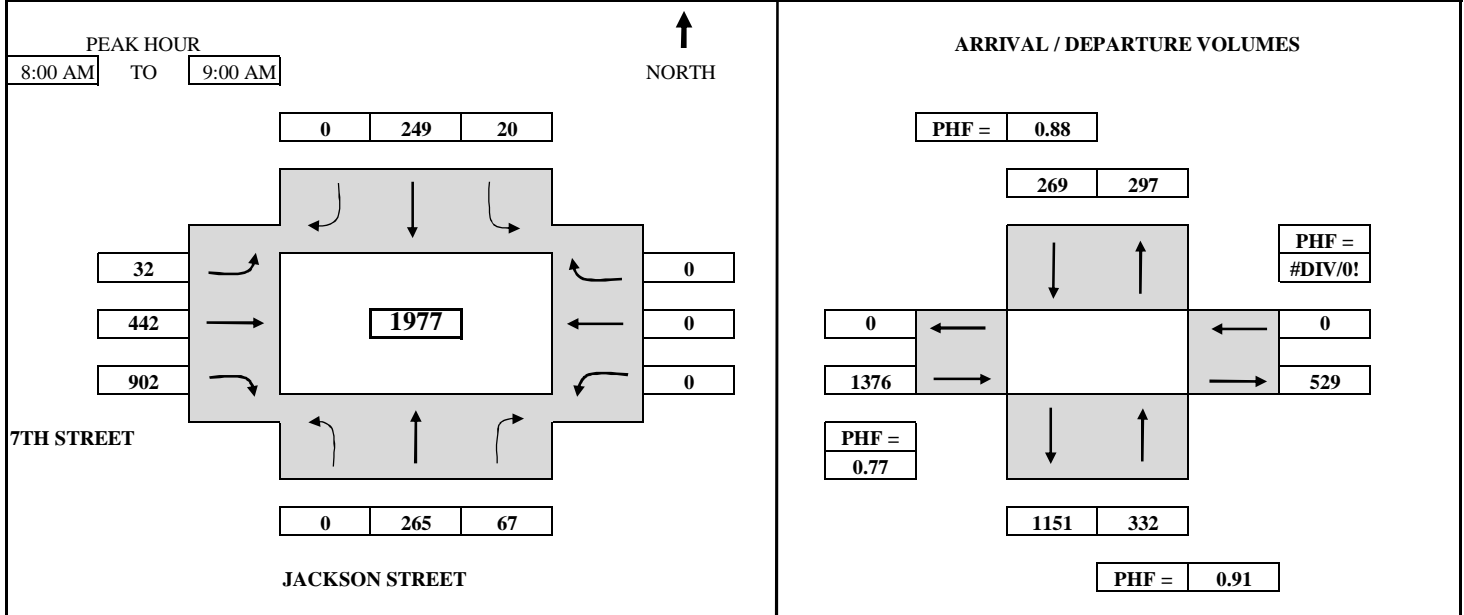
FAX: (510) 232 - 1272



# B. A. Y. M. E. T. R. I. C. S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-32AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT		THRU	RIGHT
<b>SURVEY DATA</b>															
7:00 AM	to	7:15 AM	23	6	3	36	4	99	266					437	
7:15 AM	to	7:30 AM	57	22	7	75	7	211	545					924	
7:30 AM	to	7:45 AM	98	33	14	130	14	341	852					1482	
7:45 AM	to	8:00 AM	134	53	20	180	20	442	1083					1932	
8:00 AM	to	8:15 AM	185	72	24	237	27	548	1270					2363	
8:15 AM	to	8:30 AM	258	88	31	306	37	642	1428					2790	
8:30 AM	to	8:45 AM	327	101	36	359	47	778	1705					3353	
8:45 AM	to	9:00 AM	399	120	40	429	52	884	1985					3909	
<b>TOTAL BY PERIOD</b>															
7:00 AM	to	7:15 AM	0	23	6	3	36	0	4	99	266	0	0	0	437
7:15 AM	to	7:30 AM	0	34	16	4	39	0	3	112	279	0	0	0	487
7:30 AM	to	7:45 AM	0	41	11	7	55	0	7	130	307	0	0	0	558
7:45 AM	to	8:00 AM	0	36	20	6	50	0	6	101	231	0	0	0	450
8:00 AM	to	8:15 AM	0	51	19	4	57	0	7	106	187	0	0	0	431
8:15 AM	to	8:30 AM	0	73	16	7	69	0	10	94	158	0	0	0	427
8:30 AM	to	8:45 AM	0	69	13	5	53	0	10	136	277	0	0	0	563
8:45 AM	to	9:00 AM	0	72	19	4	70	0	5	106	280	0	0	0	556
<b>HOURLY TOTALS</b>															
7:00 AM	to	8:00 AM	0	134	53	20	180	0	20	442	1083	0	0	0	1932
7:15 AM	to	8:15 AM	0	162	66	21	201	0	23	449	1004	0	0	0	1926
7:30 AM	to	8:30 AM	0	201	66	24	231	0	30	431	883	0	0	0	1866
7:45 AM	to	8:45 AM	0	229	68	22	229	0	33	437	853	0	0	0	1871
8:00 AM	to	9:00 AM	0	265	67	20	249	0	32	442	902	0	0	0	1977

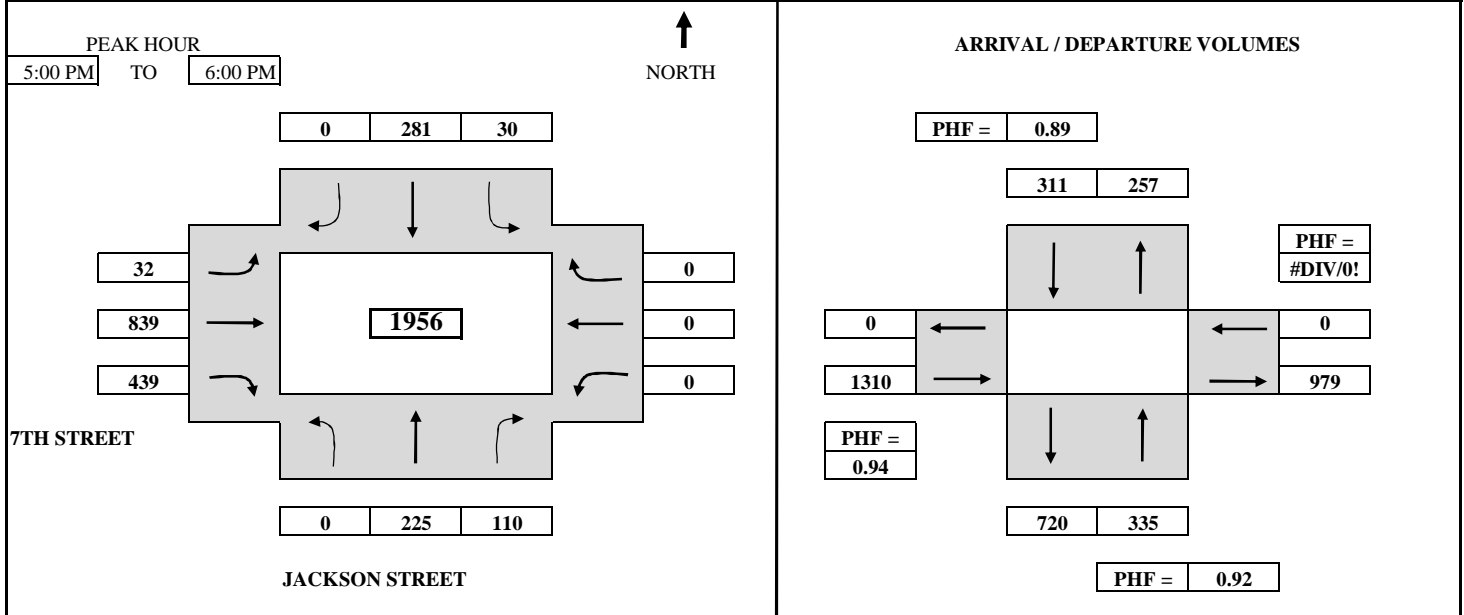
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-32PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT		THRU	RIGHT
<b>SURVEY DATA</b>															
4:00 PM	to	4:15 PM	39	23	9	70	7	186	132					466	
4:15 PM	to	4:30 PM	72	53	20	139	14	393	240					931	
4:30 PM	to	4:45 PM	123	78	25	209	16	561	323					1335	
4:45 PM	to	5:00 PM	181	98	32	280	23	723	401					1738	
5:00 PM	to	5:15 PM	242	127	42	354	27	962	496					2250	
5:15 PM	to	5:30 PM	293	150	51	432	39	1176	567					2708	
5:30 PM	to	5:45 PM	351	183	56	502	48	1368	692					3200	
5:45 PM	to	6:00 PM	406	208	62	561	55	1562	840					3694	
<b>TOTAL BY PERIOD</b>															
4:00 PM	to	4:15 PM	0	39	23	9	70	0	7	186	132	0	0	0	466
4:15 PM	to	4:30 PM	0	33	30	11	69	0	7	207	108	0	0	0	465
4:30 PM	to	4:45 PM	0	51	25	5	70	0	2	168	83	0	0	0	404
4:45 PM	to	5:00 PM	0	58	20	7	71	0	7	162	78	0	0	0	403
5:00 PM	to	5:15 PM	0	61	29	10	74	0	4	239	95	0	0	0	512
5:15 PM	to	5:30 PM	0	51	23	9	78	0	12	214	71	0	0	0	458
5:30 PM	to	5:45 PM	0	58	33	5	70	0	9	192	125	0	0	0	492
5:45 PM	to	6:00 PM	0	55	25	6	59	0	7	194	148	0	0	0	494
<b>HOURLY TOTALS</b>															
4:00 PM	to	5:00 PM	0	181	98	32	280	0	23	723	401	0	0	0	1738
4:15 PM	to	5:15 PM	0	203	104	33	284	0	20	776	364	0	0	0	1784
4:30 PM	to	5:30 PM	0	221	97	31	293	0	25	783	327	0	0	0	1777
4:45 PM	to	5:45 PM	0	228	105	31	293	0	32	807	369	0	0	0	1865
5:00 PM	to	6:00 PM	0	225	110	30	281	0	32	839	439	0	0	0	1956

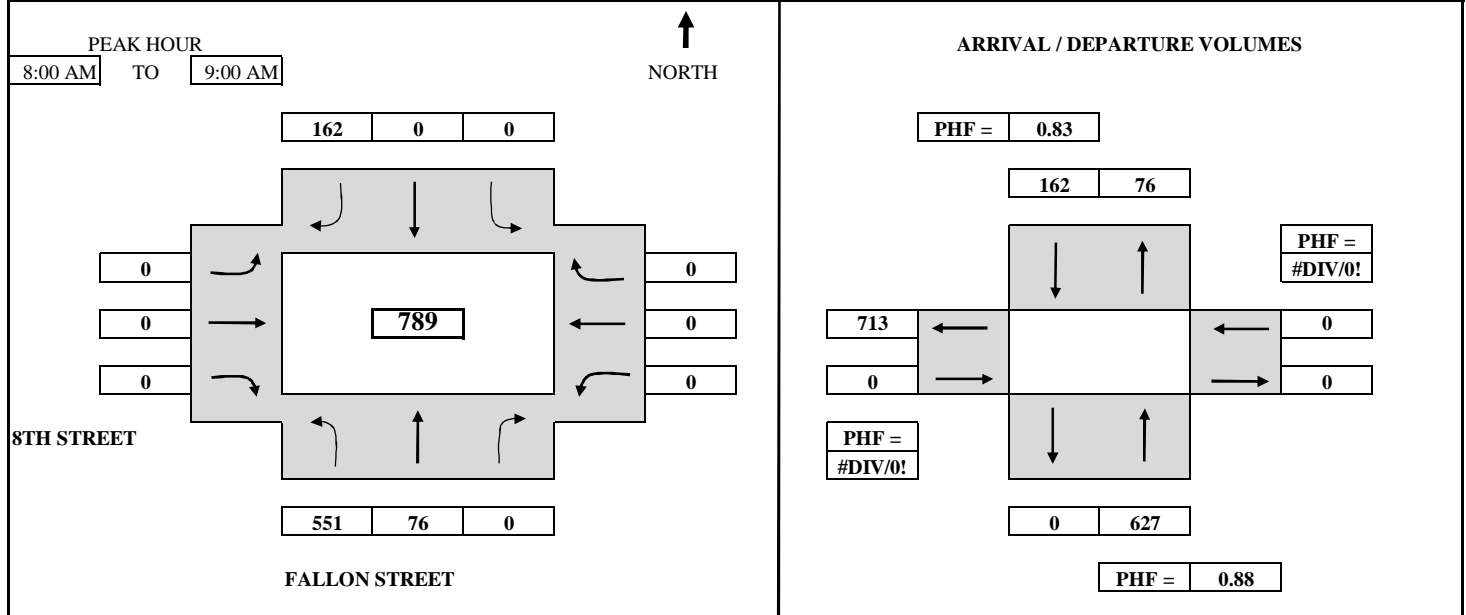
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> FALLON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-33AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

SURVEY DATA												
7:00 AM	to	7:15 AM	49	7			23					79
7:15 AM	to	7:30 AM	122	14			51					187
7:30 AM	to	7:45 AM	219	28			96					343
7:45 AM	to	8:00 AM	337	58			134					529
8:00 AM	to	8:15 AM	464	74			183					721
8:15 AM	to	8:30 AM	614	93			219					926
8:30 AM	to	8:45 AM	734	110			259					1103
8:45 AM	to	9:00 AM	888	134			296					1318

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	49	7	0	0	0	23	0	0	0	0	0	79
7:15 AM	to	7:30 AM	73	7	0	0	0	28	0	0	0	0	0	108
7:30 AM	to	7:45 AM	97	14	0	0	0	45	0	0	0	0	0	156
7:45 AM	to	8:00 AM	118	30	0	0	0	38	0	0	0	0	0	186
8:00 AM	to	8:15 AM	127	16	0	0	0	49	0	0	0	0	0	192
8:15 AM	to	8:30 AM	150	19	0	0	0	36	0	0	0	0	0	205
8:30 AM	to	8:45 AM	120	17	0	0	0	40	0	0	0	0	0	177
8:45 AM	to	9:00 AM	154	24	0	0	0	37	0	0	0	0	0	215

HOURLY TOTALS														
7:00 AM	to	8:00 AM	337	58	0	0	0	134	0	0	0	0	0	529
7:15 AM	to	8:15 AM	415	67	0	0	0	160	0	0	0	0	0	642
7:30 AM	to	8:30 AM	492	79	0	0	0	168	0	0	0	0	0	739
7:45 AM	to	8:45 AM	515	82	0	0	0	163	0	0	0	0	0	760
8:00 AM	to	9:00 AM	551	76	0	0	0	162	0	0	0	0	0	789

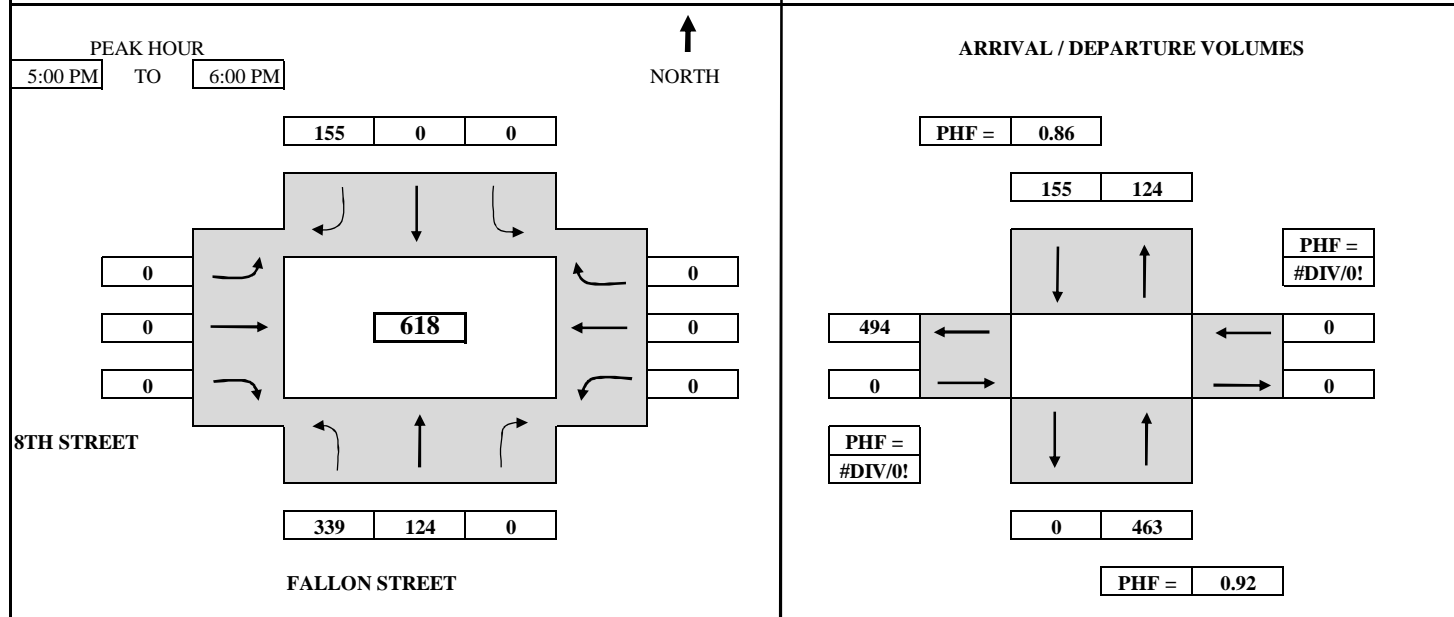
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> FALLON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-33PM



TIME	PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	101	25			22							148
4:15 PM	to	4:30 PM	185	53			64							302
4:30 PM	to	4:45 PM	259	65			94							418
4:45 PM	to	5:00 PM	337	82			123							542
5:00 PM	to	5:15 PM	429	115			168							712
5:15 PM	to	5:30 PM	516	147			205							868
5:30 PM	to	5:45 PM	583	173			243							999
5:45 PM	to	6:00 PM	676	206			278							1160

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	101	25	0	0	0	22	0	0	0	0	0	0	148
4:15 PM	to	4:30 PM	84	28	0	0	0	42	0	0	0	0	0	0	154
4:30 PM	to	4:45 PM	74	12	0	0	0	30	0	0	0	0	0	0	116
4:45 PM	to	5:00 PM	78	17	0	0	0	29	0	0	0	0	0	0	124
5:00 PM	to	5:15 PM	92	33	0	0	0	45	0	0	0	0	0	0	170
5:15 PM	to	5:30 PM	87	32	0	0	0	37	0	0	0	0	0	0	156
5:30 PM	to	5:45 PM	67	26	0	0	0	38	0	0	0	0	0	0	131
5:45 PM	to	6:00 PM	93	33	0	0	0	35	0	0	0	0	0	0	161

HOURLY TOTALS															
4:00 PM	to	5:00 PM	337	82	0	0	0	123	0	0	0	0	0	0	542
4:15 PM	to	5:15 PM	328	90	0	0	0	146	0	0	0	0	0	0	564
4:30 PM	to	5:30 PM	331	94	0	0	0	141	0	0	0	0	0	0	566
4:45 PM	to	5:45 PM	324	108	0	0	0	149	0	0	0	0	0	0	581
5:00 PM	to	6:00 PM	339	124	0	0	0	155	0	0	0	0	0	0	618

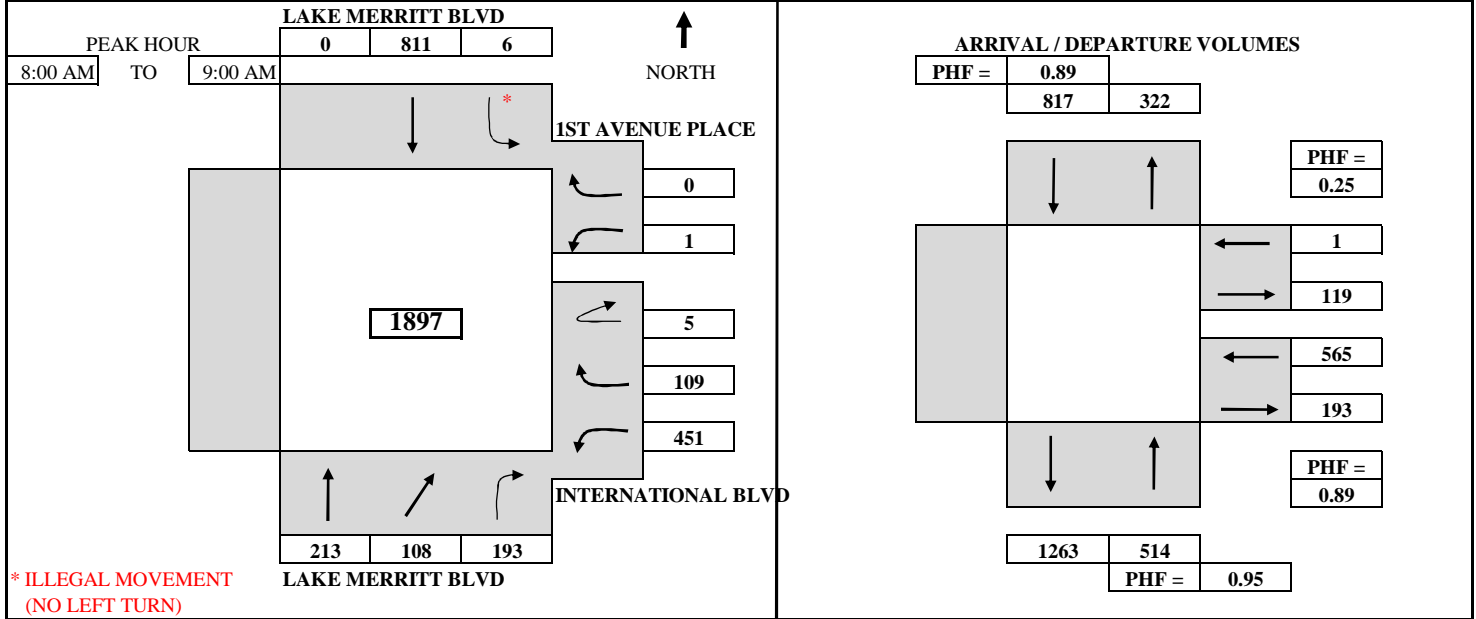
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B. A. Y. M. E. T. R. I. C. S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BLVD - 1ST AVENUE PL	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> INTERNATIONAL BLVD	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-34AM



TIME	PERIOD	NB (LAKE MERRITT BL)			SB (LAKE MERRITT BL)			WB (1 ST AVENUE PL)			WB (INTERNATIONAL BL)			TOTAL
		THRU	1ST AV	RIGHT	LEFT*	THRU	RIGHT	LEFT	THRU	RIGHT	LM (SB)	LM (NB)	1ST AV	

SURVEY DATA														
7:00 AM	to	7:15 AM	22	11	18	3	95	0	0	0	30	13	2	194
7:15 AM	to	7:30 AM	48	24	51	3	232	0	0	0	97	30	2	487
7:30 AM	to	7:45 AM	98	39	97	3	376	0	0	0	193	42	2	850
7:45 AM	to	8:00 AM	149	62	145	3	580	0	0	0	317	63	2	1321
8:00 AM	to	8:15 AM	198	88	182	3	758	1	0	0	427	89	3	1749
8:15 AM	to	8:30 AM	249	117	237	3	970	1	0	0	527	108	3	2215
8:30 AM	to	8:45 AM	308	140	288	5	1165	1	0	0	650	134	4	2695
8:45 AM	to	9:00 AM	362	170	338	9	1391	1	0	0	768	172	7	3218

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	22	11	18	3	95	0	0	0	30	13	2	194
7:15 AM	to	7:30 AM	26	13	33	0	137	0	0	0	67	17	0	293
7:30 AM	to	7:45 AM	50	15	46	0	144	0	0	0	96	12	0	363
7:45 AM	to	8:00 AM	51	23	48	0	204	0	0	0	124	21	0	471
8:00 AM	to	8:15 AM	49	26	37	0	178	0	1	0	110	26	1	428
8:15 AM	to	8:30 AM	51	29	55	0	212	0	0	0	100	19	0	466
8:30 AM	to	8:45 AM	59	23	51	2	195	0	0	0	123	26	1	480
8:45 AM	to	9:00 AM	54	30	50	4	226	0	0	0	118	38	3	523

HOURLY TOTALS														
7:00 AM	to	8:00 AM	149	62	145	3	580	0	0	0	317	63	2	1321
7:15 AM	to	8:15 AM	176	77	164	0	663	0	1	0	397	76	1	1555
7:30 AM	to	8:30 AM	201	93	186	0	738	0	1	0	430	78	1	1728
7:45 AM	to	8:45 AM	210	101	191	2	789	0	1	0	457	92	2	1845
8:00 AM	to	9:00 AM	213	108	193	6	811	0	1	0	451	109	5	1897

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE:</b> 5/22/2012		<b>DAY:</b> TUESDAY	
<b>N-S APPROACH:</b> LAKE MERRITT BLVD - 1ST AVENUE PL		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> INTERNATIONAL BLVD		<b>JURISDICTION:</b> OAKLAND		<b>FILE:</b> 3205033-34PM	

<p style="text-align: center;"><b>LAKE MERRITT BLVD</b></p> <p>PEAK HOUR: 5:00 PM TO 6:00 PM</p> <p style="text-align: center;">0    466    9</p> <p style="text-align: center;">↑ NORTH</p> <p style="text-align: center;">* ILLEGAL MOVEMENT (NO LEFT TURN)</p>	<p style="text-align: center;"><b>ARRIVAL / DEPARTURE VOLUMES</b></p> <p>PHF = 0.84 475    762</p> <p>PHF = 0.13</p> <p>PHF = 0.88</p> <p>PHF = 0.96</p>
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TIME PERIOD	NB (LAKE MERRITT BL)			SB (LAKE MERRITT BL)			WB (1 ST AVENUE PL)			WB (INTERNATIONAL BL)			TOTAL
	THRU	1ST AV	RIGHT	LEFT*	THRU	RIGHT	LEFT	THRU	RIGHT	LM (SB)	LM (NB)	1ST AV	
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM	88	43	84	1	131	0	0	0	73	23	1		444
4:15 PM to 4:30 PM	202	70	174	4	228	0	0	0	137	47	3		865
4:30 PM to 4:45 PM	340	121	272	6	328	0	0	0	195	73	3		1338
4:45 PM to 5:00 PM	481	168	377	7	428	1	1	1	256	95	5		1819
5:00 PM to 5:15 PM	636	212	482	12	530	1	2	2	329	118	5		2327
5:15 PM to 5:30 PM	815	252	603	14	669	1	2	2	412	147	8		2923
5:30 PM to 5:45 PM	969	319	719	15	789	1	2	2	471	174	8		3467
5:45 PM to 6:00 PM	1128	363	841	16	894	1	2	2	540	209	10		4004
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM	88	43	84	1	131	0	0	0	73	23	1		444
4:15 PM to 4:30 PM	114	27	90	3	97	0	0	0	64	24	2		421
4:30 PM to 4:45 PM	138	51	98	2	100	0	0	0	58	26	0		473
4:45 PM to 5:00 PM	141	47	105	1	100	0	1	0	61	22	2		481
5:00 PM to 5:15 PM	155	44	105	5	102	0	0	0	73	23	0		508
5:15 PM to 5:30 PM	179	40	121	2	139	0	0	0	83	29	3		596
5:30 PM to 5:45 PM	154	67	116	1	120	0	0	0	59	27	0		544
5:45 PM to 6:00 PM	159	44	122	1	105	0	0	0	69	35	2		537
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM	481	168	377	7	428	0	1	0	1	256	95	5	1819
4:15 PM to 5:15 PM	548	169	398	11	399	0	1	0	2	256	95	4	1883
4:30 PM to 5:30 PM	613	182	429	10	441	0	1	0	2	275	100	5	2058
4:45 PM to 5:45 PM	629	198	447	9	461	0	1	0	2	276	101	5	2129
5:00 PM to 6:00 PM	647	195	464	9	466	0	0	0	1	284	114	5	2185

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N in
215
231
287
293
304
340
337
325

2332

E out
85
93
100
106
110
123
117
123

857

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY				<b>SURVEY DATE:</b> 5/22/2012				<b>DAY:</b> TUESDAY			
<b>N-S APPROACH:</b> 5TH AVENUE				<b>SURVEY TIME:</b> 7:00 AM				<b>TO:</b> 9:00 AM			
<b>E-W APPROACH:</b> E 8TH STREET				<b>JURISDICTION:</b> OAKLAND				<b>FILE:</b> 3205033-35AM			

<p>PEAK HOUR 8:00 AM to 9:00 AM</p> <p style="text-align: center;">NORTH</p> <p style="text-align: center;">E 8TH STREET</p> <p style="text-align: center;">5TH AVENUE</p>	<p style="text-align: center;">ARRIVAL / DEPARTURE VOLUMES</p> <p style="text-align: center;">PHF = 0.90</p> <p style="text-align: center;">PHF = 0.95</p> <p style="text-align: center;">PHF = 0.88</p> <p style="text-align: center;">PHF = 0.82</p>
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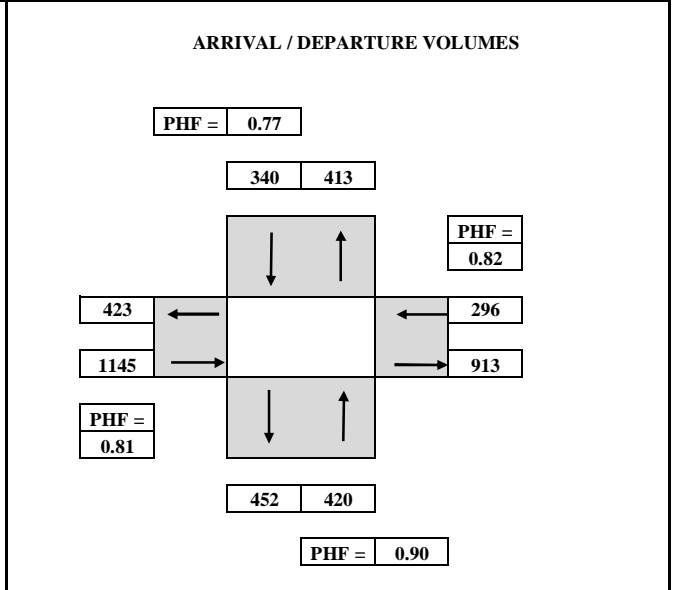
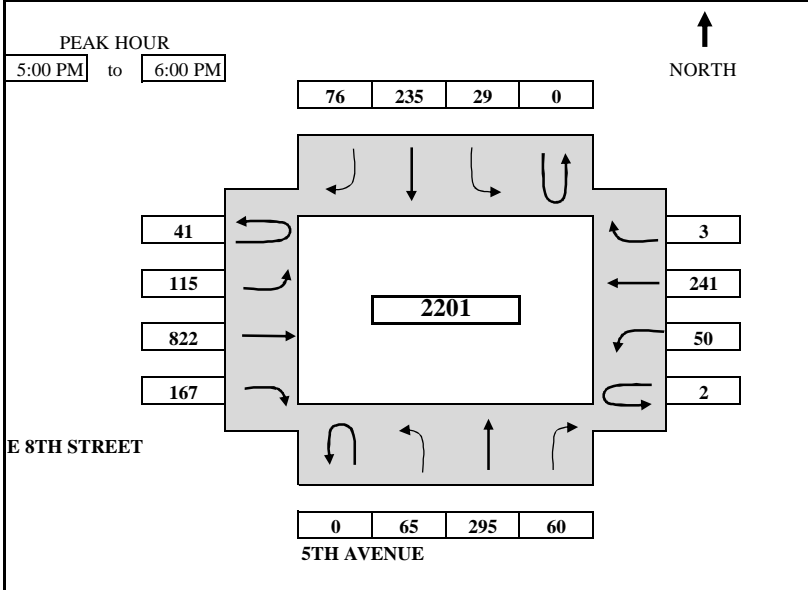
TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
<b>SURVEY DATA</b>																			
7:00 AM	to	7:15 AM	18	34	11	1	50	10	4	5	20	5	10	43	4	215			
7:15 AM	to	7:30 AM	35	68	18	1	91	20	6	11	49	13	16	108	6	442			
7:30 AM	to	7:45 AM	54	109	32	4	155	45	10	24	91	17	30	216	6	793			
7:45 AM	to	8:00 AM	73	133	38	6	219	77	16	42	142	30	49	370	7	1202			
8:00 AM	to	8:15 AM	86	174	53	11	282	104	25	53	200	34	74	514	7	1617			
8:15 AM	to	8:30 AM	99	222	61	15	346	124	32	68	264	38	99	654	8	2030			
8:30 AM	to	8:45 AM	111	260	70	18	413	146	40	90	338	43	128	777	11	2445			
8:45 AM	to	9:00 AM	123	291	74	23	479	180	50	118	397	50	157	914	13	2869			
<b>TOTAL BY PERIOD</b>																			
7:00 AM	to	7:15 AM	0	18	34	11	0	1	50	10	4	5	20	5	0	10	43	4	215
7:15 AM	to	7:30 AM	0	17	34	7	0	0	41	10	2	6	29	8	0	6	65	2	227
7:30 AM	to	7:45 AM	0	19	41	14	0	3	64	25	4	13	42	4	0	14	108	0	351
7:45 AM	to	8:00 AM	0	19	24	6	0	2	64	32	6	18	51	13	0	19	154	1	409
8:00 AM	to	8:15 AM	0	13	41	15	0	5	63	27	9	11	58	4	0	25	144	0	415
8:15 AM	to	8:30 AM	0	13	48	8	0	4	64	20	7	15	64	4	0	25	140	1	413
8:30 AM	to	8:45 AM	0	12	38	9	0	3	67	22	8	22	74	5	0	29	123	3	415
8:45 AM	to	9:00 AM	0	12	31	4	0	5	66	34	10	28	59	7	0	29	137	2	424
<b>HOURLY TOTALS</b>																			
7:00 AM	to	8:00 AM	0	73	133	38	0	6	219	77	16	42	142	30	0	49	370	7	1202
7:15 AM	to	8:15 AM	0	68	140	42	0	10	232	94	21	48	180	29	0	64	471	3	1402
7:30 AM	to	8:30 AM	0	64	154	43	0	14	255	104	26	57	215	25	0	83	546	2	1588
7:45 AM	to	8:45 AM	0	57	151	38	0	14	258	101	30	66	247	26	0	98	561	5	1652
8:00 AM	to	9:00 AM	0	50	158	36	0	17	260	103	34	76	255	20	0	108	544	6	1667

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> 5TH AVENUE	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH:</b> E 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-35AM



TIME	PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	

SURVEY DATA																	
4:00 PM	to	4:15 PM	25	62	11	7	50	18	11	32	134	24	0	15	50	0	439
4:15 PM	to	4:30 PM	36	117	27	12	97	29	18	62	264	56	0	30	97	2	847
4:30 PM	to	4:45 PM	50	197	42	16	150	37	26	88	417	89	0	41	142	3	1298
4:45 PM	to	5:00 PM	65	272	56	19	185	50	34	122	600	115	0	51	193	4	1766
5:00 PM	to	5:15 PM	80	350	80	29	258	78	44	154	776	156	0	65	235	5	2310
5:15 PM	to	5:30 PM	101	428	90	35	319	90	57	184	1030	211	1	73	299	5	2923
5:30 PM	to	5:45 PM	112	509	102	40	367	104	68	215	1257	253	1	86	360	7	3481
5:45 PM	to	6:00 PM	130	567	116	48	420	126	75	237	1422	282	2	101	434	7	3967

TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	25	62	11	0	7	50	18	11	32	134	24	0	15	50	0	439
4:15 PM	to	4:30 PM	0	11	55	16	0	5	47	11	7	30	130	32	0	15	47	2	408
4:30 PM	to	4:45 PM	0	14	80	15	0	4	53	8	8	26	153	33	0	11	45	1	451
4:45 PM	to	5:00 PM	0	15	75	14	0	3	35	13	8	34	183	26	0	10	51	1	468
5:00 PM	to	5:15 PM	0	15	78	24	0	10	73	28	10	32	176	41	0	14	42	1	544
5:15 PM	to	5:30 PM	0	21	78	10	0	6	61	12	13	30	254	55	1	8	64	0	613
5:30 PM	to	5:45 PM	0	11	81	12	0	5	48	14	11	31	227	42	0	13	61	2	558
5:45 PM	to	6:00 PM	0	18	58	14	0	8	53	22	7	22	165	29	1	15	74	0	486

HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	65	272	56	0	19	185	50	34	122	600	115	0	51	193	4	1766
4:15 PM	to	5:15 PM	0	55	288	69	0	22	208	60	33	122	642	132	0	50	185	5	1871
4:30 PM	to	5:30 PM	0	65	311	63	0	23	222	61	39	122	766	155	1	43	202	3	2076
4:45 PM	to	5:45 PM	0	62	312	60	0	24	217	67	42	127	840	164	1	45	218	4	2183
5:00 PM	to	6:00 PM	0	65	295	60	0	29	235	76	41	115	822	167	2	50	241	3	2201

TEL: (510) 232 - 1271

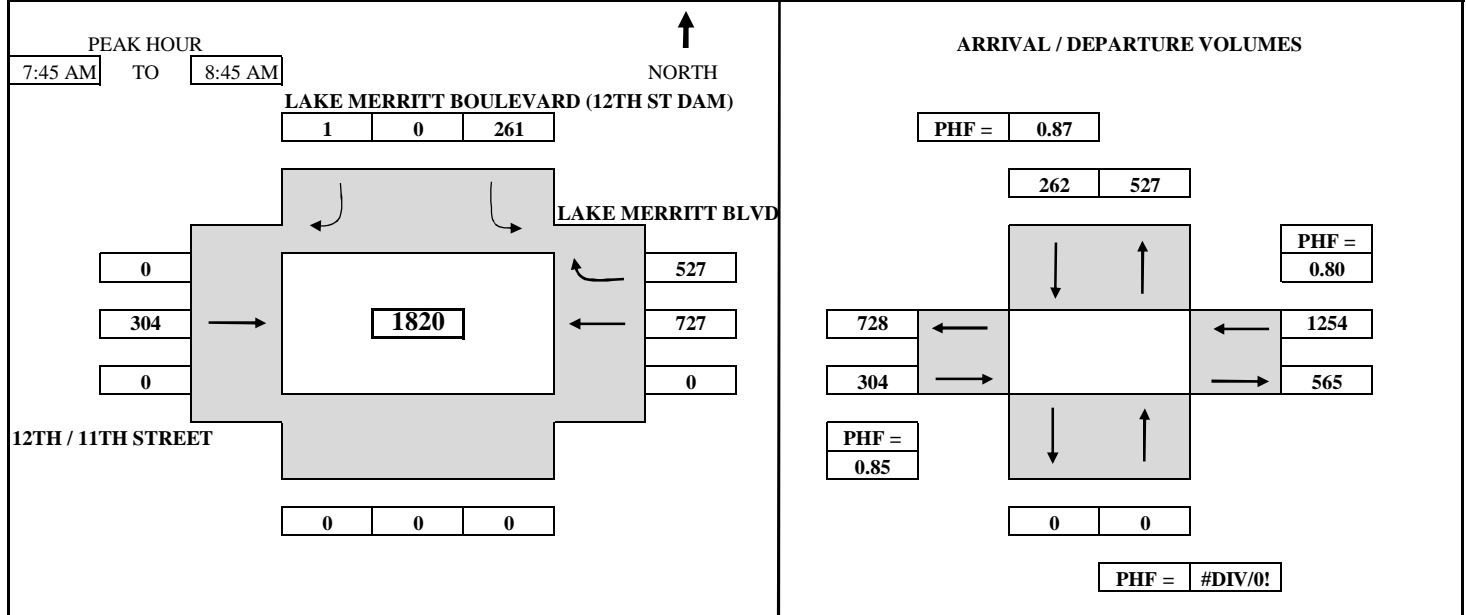
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD (12TH ST DAM)	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH</b> 12TH / 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-36AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
7:00 AM	to	7:15 AM		27	0		35			88	43		193
7:15 AM	to	7:30 AM		64	0		84			236	95		479
7:30 AM	to	7:45 AM		108	0		163			409	174		854
7:45 AM	to	8:00 AM		161	0		252			607	366		1386
8:00 AM	to	8:15 AM		225	1		325			761	432		1744
8:15 AM	to	8:30 AM		300	1		401			980	560		2242
8:30 AM	to	8:45 AM		369	1		467			1136	701		2674
8:45 AM	to	9:00 AM		439	2		522			1327	827		3117
<b>TOTAL BY PERIOD</b>													
7:00 AM	to	7:15 AM	0 0 0	27 0 0	0 35 0	0 88 43							193
7:15 AM	to	7:30 AM	0 0 0	37 0 0	0 49 0	0 148 52							286
7:30 AM	to	7:45 AM	0 0 0	44 0 0	0 79 0	0 173 79							375
7:45 AM	to	8:00 AM	0 0 0	53 0 0	0 89 0	0 198 192							532
8:00 AM	to	8:15 AM	0 0 0	64 0 1	0 73 0	0 154 66							358
8:15 AM	to	8:30 AM	0 0 0	75 0 0	0 76 0	0 219 128							498
8:30 AM	to	8:45 AM	0 0 0	69 0 0	0 66 0	0 156 141							432
8:45 AM	to	9:00 AM	0 0 0	70 0 1	0 55 0	0 191 126							443
<b>HOURLY TOTALS</b>													
7:00 AM	to	8:00 AM	0 0 0	161 0 0	0 252 0	0 607 366							1386
7:15 AM	to	8:15 AM	0 0 0	198 0 1	0 290 0	0 673 389							1551
7:30 AM	to	8:30 AM	0 0 0	236 0 1	0 317 0	0 744 465							1763
7:45 AM	to	8:45 AM	0 0 0	261 0 1	0 304 0	0 727 527							1820
8:00 AM	to	9:00 AM	0 0 0	278 0 2	0 270 0	0 720 461							1731

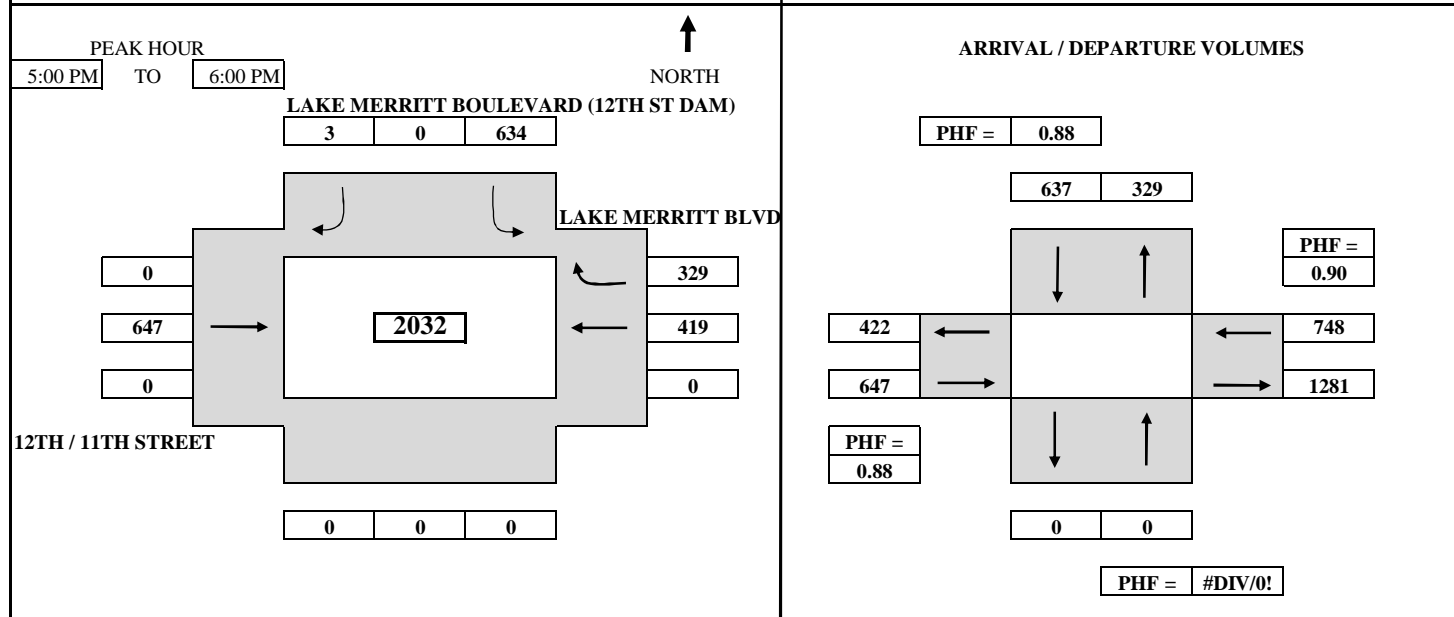
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD (12TH ST DAM)	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 12TH / 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-36PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
<b>SURVEY DATA</b>													
4:00 PM to 4:15 PM				131		1		114			108	95	449
4:15 PM to 4:30 PM				241		2		230			201	168	842
4:30 PM to 4:45 PM				397		3		355			278	239	1272
4:45 PM to 5:00 PM				538		5		497			349	301	1690
5:00 PM to 5:15 PM				697		5		660			458	399	2219
5:15 PM to 5:30 PM				835		5		836			552	475	2703
5:30 PM to 5:45 PM				1014		7		1019			669	554	3263
5:45 PM to 6:00 PM				1172		8		1144			768	630	3722
<b>TOTAL BY PERIOD</b>													
4:00 PM to 4:15 PM			0 0 0	131	0	1	0	114	0	0	108	95	449
4:15 PM to 4:30 PM			0 0 0	110	0	1	0	116	0	0	93	73	393
4:30 PM to 4:45 PM			0 0 0	156	0	1	0	125	0	0	77	71	430
4:45 PM to 5:00 PM			0 0 0	141	0	2	0	142	0	0	71	62	418
5:00 PM to 5:15 PM			0 0 0	159	0	0	0	163	0	0	109	98	529
5:15 PM to 5:30 PM			0 0 0	138	0	0	0	176	0	0	94	76	484
5:30 PM to 5:45 PM			0 0 0	179	0	2	0	183	0	0	117	79	560
5:45 PM to 6:00 PM			0 0 0	158	0	1	0	125	0	0	99	76	459
<b>HOURLY TOTALS</b>													
4:00 PM to 5:00 PM			0 0 0	538	0	5	0	497	0	0	349	301	1690
4:15 PM to 5:15 PM			0 0 0	566	0	4	0	546	0	0	350	304	1770
4:30 PM to 5:30 PM			0 0 0	594	0	3	0	606	0	0	351	307	1861
4:45 PM to 5:45 PM			0 0 0	617	0	4	0	664	0	0	391	315	1991
5:00 PM to 6:00 PM			0 0 0	634	0	3	0	647	0	0	419	329	2032

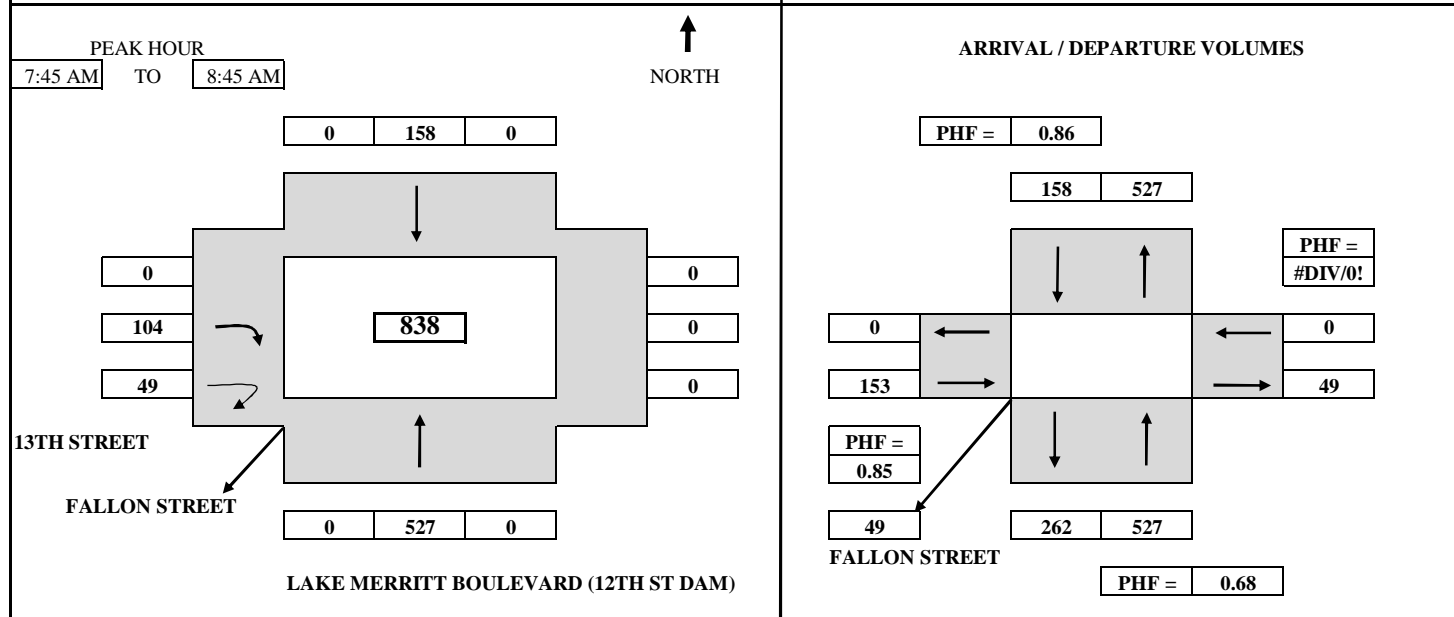
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD (12TH ST DAM)	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 13TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-37AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT FALLON ST RIGHT	LEFT FALLON ST RIGHT	LEFT THRU RIGHT						

SURVEY DATA													
7:00 AM to 7:15 AM	43	22	2	5	72								
7:15 AM to 7:30 AM	95	44	4	20	163								
7:30 AM to 7:45 AM	173	74	10	34	291								
7:45 AM to 8:00 AM	366	103	17	58	544								
8:00 AM to 8:15 AM	432	145	39	81	697								
8:15 AM to 8:30 AM	559	186	50	115	910								
8:30 AM to 8:45 AM	700	232	59	138	1129								
8:45 AM to 9:00 AM	827	278	78	163	1346								

TOTAL BY PERIOD													
7:00 AM to 7:15 AM	0	43	0	0	22	0	0	2	5	0	0	0	72
7:15 AM to 7:30 AM	0	52	0	0	22	0	0	2	15	0	0	0	91
7:30 AM to 7:45 AM	0	78	0	0	30	0	0	6	14	0	0	0	128
7:45 AM to 8:00 AM	0	193	0	0	29	0	0	7	24	0	0	0	253
8:00 AM to 8:15 AM	0	66	0	0	42	0	0	22	23	0	0	0	153
8:15 AM to 8:30 AM	0	127	0	0	41	0	0	11	34	0	0	0	213
8:30 AM to 8:45 AM	0	141	0	0	46	0	0	9	23	0	0	0	219
8:45 AM to 9:00 AM	0	127	0	0	46	0	0	19	25	0	0	0	217

HOURLY TOTALS													
7:00 AM to 8:00 AM	0	366	0	0	103	0	0	17	58	0	0	0	544
7:15 AM to 8:15 AM	0	389	0	0	123	0	0	37	76	0	0	0	625
7:30 AM to 8:30 AM	0	464	0	0	142	0	0	46	95	0	0	0	747
7:45 AM to 8:45 AM	0	527	0	0	158	0	0	49	104	0	0	0	838
8:00 AM to 9:00 AM	0	461	0	0	175	0	0	61	105	0	0	0	802

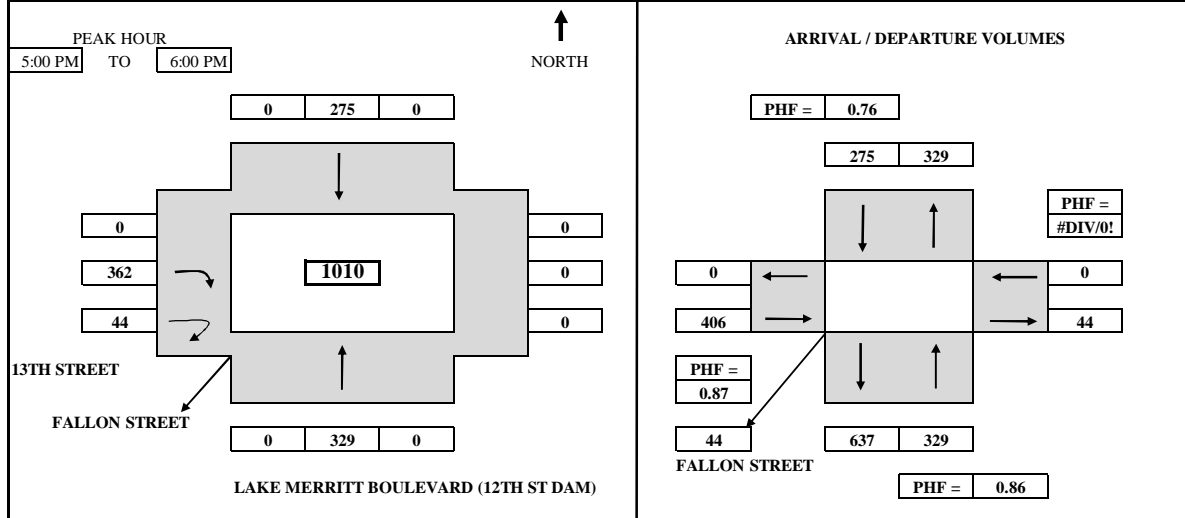
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/22/2012	DAY: TUESDAY
N-S APPROACH: LAKE MERRITT BOULEVARD (12TH ST DAM)	SURVEY TIME: 4:00 PM	TO 6:00 PM
E-W APPROACH 13TH STREET	JURISDICTION: OAKLAND	FILE: 3205033-37PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND		WESTBOUND			TOTAL			
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT FALLON ST RIGHT	LEFT THRU RIGHT								
<b>SURVEY DATA</b>															
4:00 PM	to	4:15 PM	93		72		6	60				231			
4:15 PM	to	4:30 PM	168		130		18	113				429			
4:30 PM	to	4:45 PM	238		215		28	185				666			
4:45 PM	to	5:00 PM	301		284		39	259				883			
5:00 PM	to	5:15 PM	397		346		59	356				1158			
5:15 PM	to	5:30 PM	475		397		71	443				1386			
5:30 PM	to	5:45 PM	553		488		79	533				1653			
5:45 PM	to	6:00 PM	630		559		83	621				1893			
<b>TOTAL BY PERIOD</b>															
4:00 PM	to	4:15 PM	0	93	0	0	72	0	0	6	60	0	0	0	231
4:15 PM	to	4:30 PM	0	75	0	0	58	0	0	12	53	0	0	0	198
4:30 PM	to	4:45 PM	0	70	0	0	85	0	0	10	72	0	0	0	237
4:45 PM	to	5:00 PM	0	63	0	0	69	0	0	11	74	0	0	0	217
5:00 PM	to	5:15 PM	0	96	0	0	62	0	0	20	97	0	0	0	275
5:15 PM	to	5:30 PM	0	78	0	0	51	0	0	12	87	0	0	0	228
5:30 PM	to	5:45 PM	0	78	0	0	91	0	0	8	90	0	0	0	267
5:45 PM	to	6:00 PM	0	77	0	0	71	0	0	4	88	0	0	0	240
<b>HOURLY TOTALS</b>															
4:00 PM	to	5:00 PM	0	301	0	0	284	0	0	39	259	0	0	0	883
4:15 PM	to	5:15 PM	0	304	0	0	274	0	0	53	296	0	0	0	927
4:30 PM	to	5:30 PM	0	307	0	0	267	0	0	53	330	0	0	0	957
4:45 PM	to	5:45 PM	0	315	0	0	273	0	0	51	348	0	0	0	987
5:00 PM	to	6:00 PM	0	329	0	0	275	0	0	44	362	0	0	0	1010

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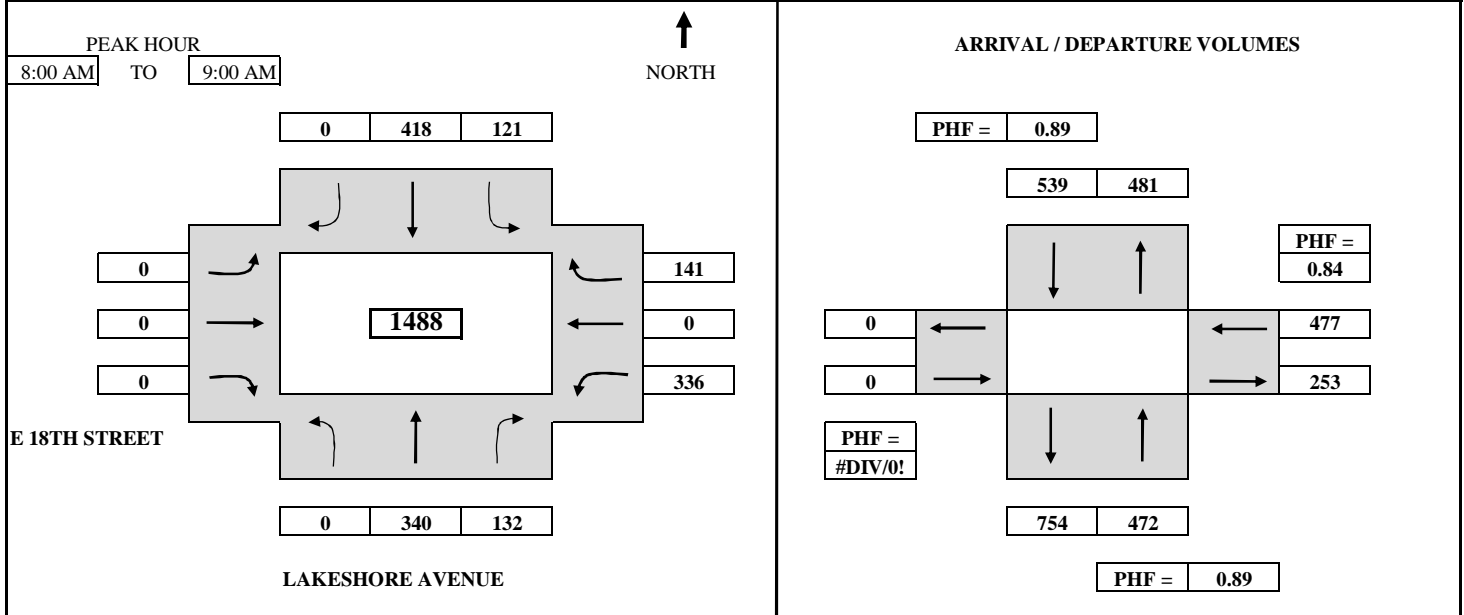
N in
93
75
70
63
96
78
78
77
<b>630</b>

E out
6
12
10
11
20
12
8
4
<b>83</b>

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKESHORE AVENUE	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 18TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-38AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA												
7:00 AM	to	7:15 AM	34	18	19	47				37	22	177
7:15 AM	to	7:30 AM	63	33	39	132				81	34	382
7:30 AM	to	7:45 AM	121	60	65	243				125	69	683
7:45 AM	to	8:00 AM	205	88	92	367				205	86	1043
8:00 AM	to	8:15 AM	277	116	122	485				282	121	1403
8:15 AM	to	8:30 AM	372	153	156	593				380	165	1819
8:30 AM	to	8:45 AM	458	181	186	675				458	185	2143
8:45 AM	to	9:00 AM	545	220	213	785				541	227	2531

TOTAL BY PERIOD													
7:00 AM	to	7:15 AM	0	34	18	19	47	0	0	0	37	22	177
7:15 AM	to	7:30 AM	0	29	15	20	85	0	0	0	44	12	205
7:30 AM	to	7:45 AM	0	58	27	26	111	0	0	0	44	35	301
7:45 AM	to	8:00 AM	0	84	28	27	124	0	0	0	80	17	360
8:00 AM	to	8:15 AM	0	72	28	30	118	0	0	0	77	35	360
8:15 AM	to	8:30 AM	0	95	37	34	108	0	0	0	98	44	416
8:30 AM	to	8:45 AM	0	86	28	30	82	0	0	0	78	20	324
8:45 AM	to	9:00 AM	0	87	39	27	110	0	0	0	83	42	388

HOURLY TOTALS													
7:00 AM	to	8:00 AM	0	205	88	92	367	0	0	0	205	86	1043
7:15 AM	to	8:15 AM	0	243	98	103	438	0	0	0	245	99	1226
7:30 AM	to	8:30 AM	0	309	120	117	461	0	0	0	299	131	1437
7:45 AM	to	8:45 AM	0	337	121	121	432	0	0	0	333	116	1460
8:00 AM	to	9:00 AM	0	340	132	121	418	0	0	0	336	141	1488

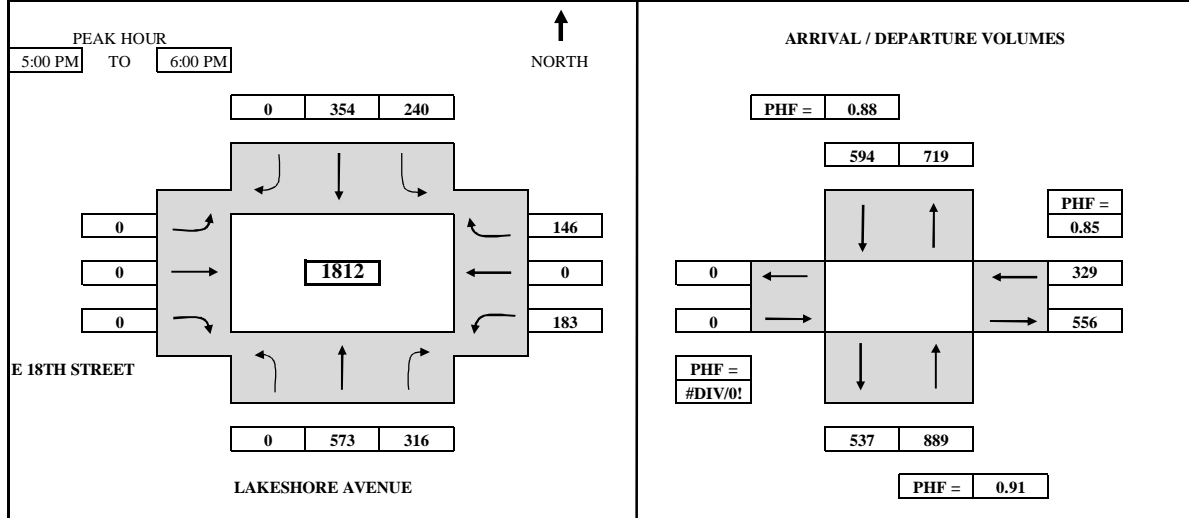
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/22/2012	DAY: TUESDAY
N-S APPROACH: LAKESHORE AVENUE	SURVEY TIME: 4:00 PM	TO 6:00 PM
E-W APPROACH: 18TH STREET	JURISDICTION: OAKLAND	FILE: 3205033-38PM



TIME PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>														
4:00 PM	to 4:15 PM	104	46	58	89						51	45		393
4:15 PM	to 4:30 PM	205	109	115	177						85	79		770
4:30 PM	to 4:45 PM	327	166	160	259						116	118		1146
4:45 PM	to 5:00 PM	446	239	203	345						148	147		1528
5:00 PM	to 5:15 PM	583	310	257	429						199	189		1967
5:15 PM	to 5:30 PM	738	398	325	529						238	217		2445
5:30 PM	to 5:45 PM	896	465	387	613						289	263		2913
5:45 PM	to 6:00 PM	1019	555	443	699						331	293		3340
<b>TOTAL BY PERIOD</b>														
4:00 PM	to 4:15 PM	0	104	46	58	89	0	0	0	0	51	0	45	393
4:15 PM	to 4:30 PM	0	101	63	57	88	0	0	0	0	34	0	34	377
4:30 PM	to 4:45 PM	0	122	57	45	82	0	0	0	0	31	0	39	376
4:45 PM	to 5:00 PM	0	119	73	43	86	0	0	0	0	32	0	29	382
5:00 PM	to 5:15 PM	0	137	71	54	84	0	0	0	0	51	0	42	439
5:15 PM	to 5:30 PM	0	155	88	68	100	0	0	0	0	39	0	28	478
5:30 PM	to 5:45 PM	0	158	67	62	84	0	0	0	0	51	0	46	468
5:45 PM	to 6:00 PM	0	123	90	56	86	0	0	0	0	42	0	30	427
<b>HOURLY TOTALS</b>														
4:00 PM	to 5:00 PM	0	446	239	203	345	0	0	0	0	148	0	147	1528
4:15 PM	to 5:15 PM	0	479	264	199	340	0	0	0	0	148	0	144	1574
4:30 PM	to 5:30 PM	0	533	289	210	352	0	0	0	0	153	0	138	1675
4:45 PM	to 5:45 PM	0	569	299	227	354	0	0	0	0	173	0	145	1767
5:00 PM	to 6:00 PM	0	573	316	240	354	0	0	0	0	183	0	146	1812

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N in
150
164
179
192
208
243
225
213

**1574**

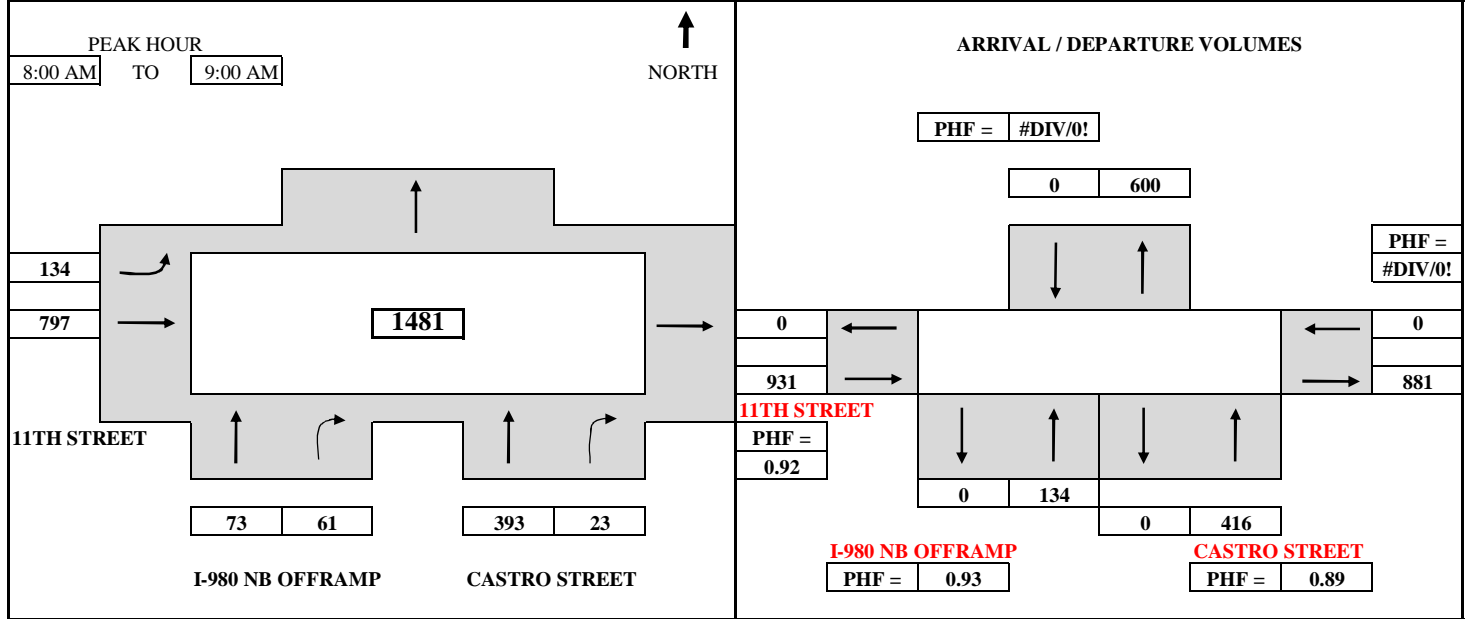
E out
104
120
102
116
125
156
129
146

**998**

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> CASTRO STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH</b> 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-39AM



TIME	PERIOD	NB (CASTRO STREET)		NB (I-980 NB OFFRAMP)			EB (11TH STREET)		WB (11TH STREET)			TOTAL
		THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	

SURVEY DATA												
7:00 AM	to	7:15 AM	70	4	15	9	17	131				246
7:15 AM	to	7:30 AM	148	6	31	17	34	302				538
7:30 AM	to	7:45 AM	229	16	42	39	53	482				861
7:45 AM	to	8:00 AM	319	20	61	49	77	672				1198
8:00 AM	to	8:15 AM	398	27	80	66	105	860				1536
8:15 AM	to	8:30 AM	491	32	95	80	145	1074				1917
8:30 AM	to	8:45 AM	602	38	111	99	180	1269				2299
8:45 AM	to	9:00 AM	712	43	134	110	211	1469				2679

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	70	4	0	15	9	17	131	0	0	0	246
7:15 AM	to	7:30 AM	0	78	2	0	16	8	17	171	0	0	0	292
7:30 AM	to	7:45 AM	0	81	10	0	11	22	19	180	0	0	0	323
7:45 AM	to	8:00 AM	0	90	4	0	19	10	24	190	0	0	0	337
8:00 AM	to	8:15 AM	0	79	7	0	19	17	28	188	0	0	0	338
8:15 AM	to	8:30 AM	0	93	5	0	15	14	40	214	0	0	0	381
8:30 AM	to	8:45 AM	0	111	6	0	16	19	35	195	0	0	0	382
8:45 AM	to	9:00 AM	0	110	5	0	23	11	31	200	0	0	0	380

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	319	20	0	61	49	77	672	0	0	0	1198
7:15 AM	to	8:15 AM	0	328	23	0	65	57	88	729	0	0	0	1290
7:30 AM	to	8:30 AM	0	343	26	0	64	63	111	772	0	0	0	1379
7:45 AM	to	8:45 AM	0	373	22	0	69	60	127	787	0	0	0	1438
8:00 AM	to	9:00 AM	0	393	23	0	73	61	134	797	0	0	0	1481

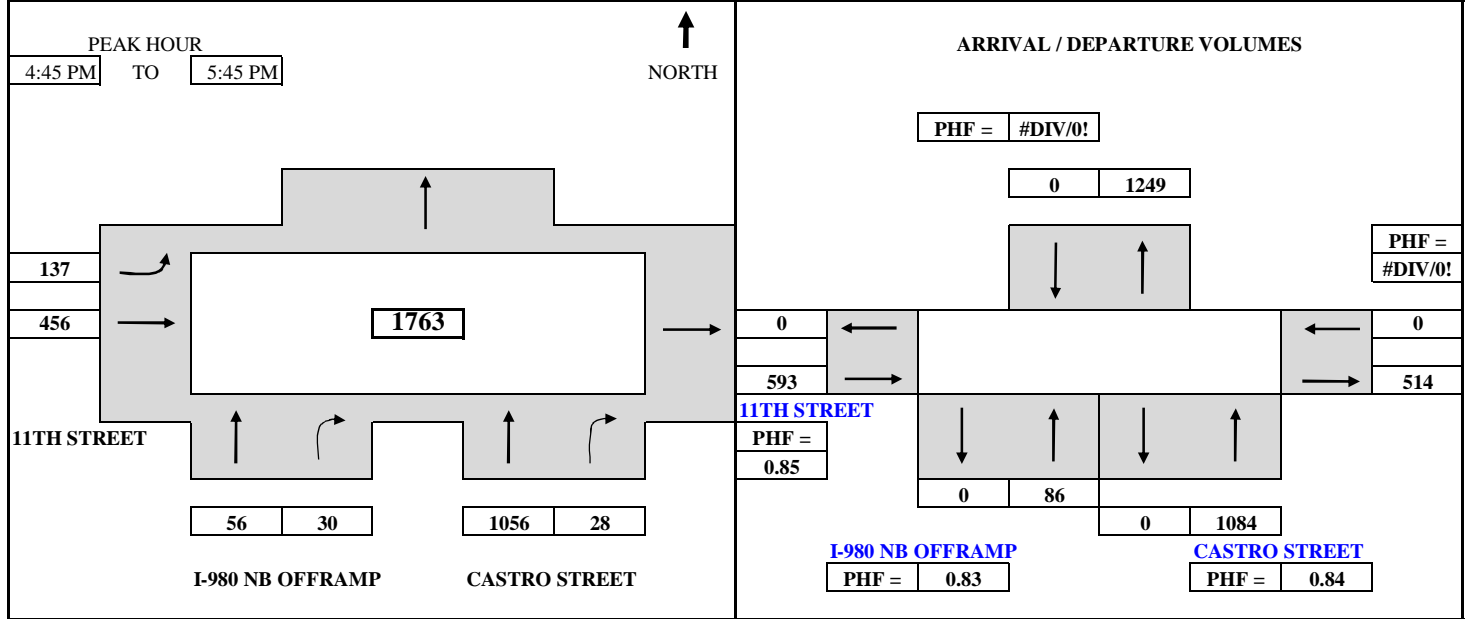
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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> CASTRO STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-39PM



TIME	PERIOD	NB (CASTRO STREET)		NB (I-980 NB OFFRAMP)			EB (11TH STREET)		WB (11TH STREET)			TOTAL
		THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	

SURVEY DATA												
4:00 PM	to	4:15 PM	227	7	12	3	27	112	0	0	0	388
4:15 PM	to	4:30 PM	476	15	25	10	63	195	0	0	0	784
4:30 PM	to	4:45 PM	702	25	34	15	116	293	0	0	0	1185
4:45 PM	to	5:00 PM	921	30	47	22	154	385	0	0	0	1559
5:00 PM	to	5:15 PM	1238	36	64	30	185	528	0	0	0	2081
5:15 PM	to	5:30 PM	1500	42	79	35	213	651	0	0	0	2520
5:30 PM	to	5:45 PM	1758	53	90	45	253	749	0	0	0	2948
5:45 PM	to	6:00 PM	1955	62	110	51	279	861	0	0	0	3318

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	227	7	0	12	3	27	112	0	0	0	388
4:15 PM	to	4:30 PM	0	249	8	0	13	7	36	83	0	0	0	396
4:30 PM	to	4:45 PM	0	226	10	0	9	5	53	98	0	0	0	401
4:45 PM	to	5:00 PM	0	219	5	0	13	7	38	92	0	0	0	374
5:00 PM	to	5:15 PM	0	317	6	0	17	8	31	143	0	0	0	522
5:15 PM	to	5:30 PM	0	262	6	0	15	5	28	123	0	0	0	439
5:30 PM	to	5:45 PM	0	258	11	0	11	10	40	98	0	0	0	428
5:45 PM	to	6:00 PM	0	197	9	0	20	6	26	112	0	0	0	370

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	921	30	0	47	22	154	385	0	0	0	1559
4:15 PM	to	5:15 PM	0	1011	29	0	52	27	158	416	0	0	0	1693
4:30 PM	to	5:30 PM	0	1024	27	0	54	25	150	456	0	0	0	1736
4:45 PM	to	5:45 PM	0	1056	28	0	56	30	137	456	0	0	0	1763
5:00 PM	to	6:00 PM	0	1034	32	0	63	29	125	476	0	0	0	1759

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY				<b>SURVEY DATE:</b> 5/22/2012				<b>DAY:</b> TUESDAY			
<b>N-S APPROACH:</b> BROADWAY				<b>SURVEY TIME:</b> 7:00 AM				<b>TO:</b> 9:00 AM			
<b>E-W APPROACH:</b> GRAND AVENUE				<b>JURISDICTION:</b> OAKLAND				<b>FILE:</b> 3205033-40AM			

<p><b>PEAK HOUR</b> 8:00 AM to 9:00 AM</p> <p style="text-align: center;"><b>1939</b></p> <p style="text-align: center;"><b>BROADWAY</b></p> <p style="text-align: center;"><b>GRAND AVENUE</b></p>	<p style="text-align: center;"><b>ARRIVAL / DEPARTURE VOLUMES</b></p> <p style="text-align: center;">PHF = 0.92</p> <p style="text-align: center;">419 441</p> <p style="text-align: center;">PHF = 0.90</p> <p style="text-align: center;">502 462</p> <p style="text-align: center;">541 581</p> <p style="text-align: center;">PHF = 0.91</p> <p style="text-align: center;">415 517</p> <p style="text-align: center;">PHF = 0.92</p>
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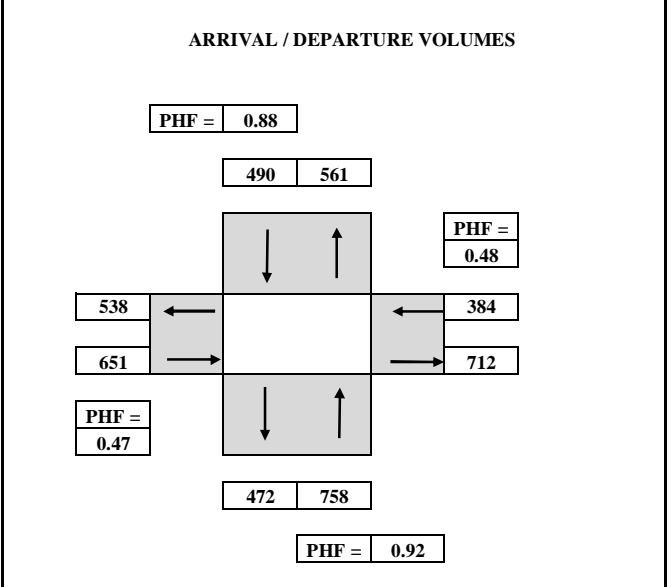
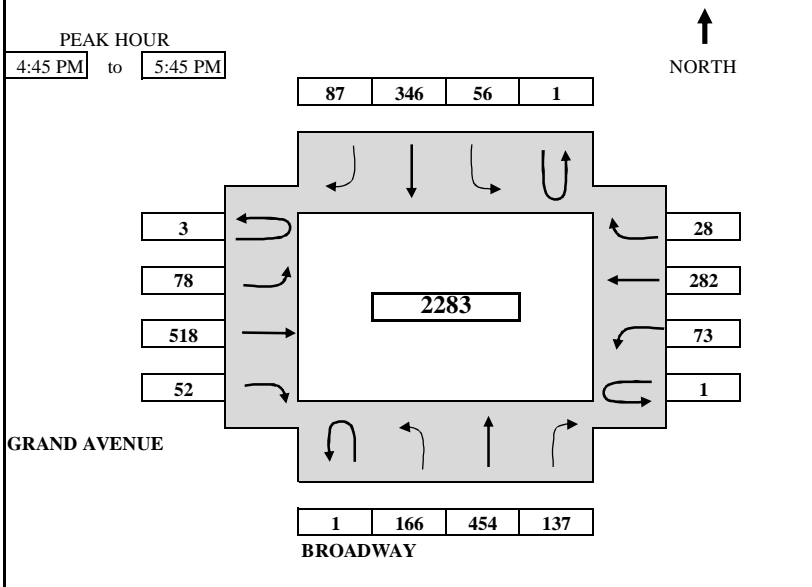
TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
<b>SURVEY DATA</b>																			
7:00 AM to 7:15 AM			1	9	44	28	0	5	28	11	0	6	71	3	0	6	43	2	257
7:15 AM to 7:30 AM			1	21	97	55	1	11	61	24	3	13	148	10	1	12	82	4	544
7:30 AM to 7:45 AM			2	44	164	78	1	22	108	39	5	26	233	21	1	25	143	10	922
7:45 AM to 8:00 AM			2	69	255	97	3	33	154	60	5	41	336	33	2	44	209	17	1360
8:00 AM to 8:15 AM			2	86	341	122	3	42	217	83	7	59	443	38	2	67	293	28	1833
8:15 AM to 8:30 AM			2	97	422	151	3	51	300	105	9	72	554	44	2	85	366	39	2302
8:30 AM to 8:45 AM			2	119	515	177	3	58	375	134	12	81	680	55	2	117	452	49	2831
8:45 AM to 9:00 AM			2	143	597	198	4	66	444	155	16	88	783	69	2	133	531	68	3299
<b>TOTAL BY PERIOD</b>																			
7:00 AM to 7:15 AM			1	9	44	28	0	5	28	11	0	6	71	3	0	6	43	2	257
7:15 AM to 7:30 AM			0	12	53	27	1	6	33	13	3	7	77	7	1	6	39	2	287
7:30 AM to 7:45 AM			1	23	67	23	0	11	47	15	2	13	85	11	0	13	61	6	378
7:45 AM to 8:00 AM			0	25	91	19	2	11	46	21	0	15	103	12	1	19	66	7	438
8:00 AM to 8:15 AM			0	17	86	25	0	9	63	23	2	18	107	5	0	23	84	11	473
8:15 AM to 8:30 AM			0	11	81	29	0	9	83	22	2	13	111	6	0	18	73	11	469
8:30 AM to 8:45 AM			0	22	93	26	0	7	75	29	3	9	126	11	0	32	86	10	529
8:45 AM to 9:00 AM			0	24	82	21	1	8	69	21	4	7	103	14	0	16	79	19	468
<b>HOURLY TOTALS</b>																			
7:00 AM to 8:00 AM			2	69	255	97	3	33	154	60	5	41	336	33	2	44	209	17	1360
7:15 AM to 8:15 AM			1	77	297	94	3	37	189	72	7	53	372	35	2	61	250	26	1576
7:30 AM to 8:30 AM			1	76	325	96	2	40	239	81	6	59	406	34	1	73	284	35	1758
7:45 AM to 8:45 AM			0	75	351	99	2	36	267	95	7	55	447	34	1	92	309	39	1909
8:00 AM to 9:00 AM			0	74	342	101	1	33	290	95	11	47	447	36	0	89	322	51	1939

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# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> BROADWAY	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH:</b> GRAND AVENUE	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-40PM



TIME	PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	

SURVEY DATA																			
4:00 PM	to	4:15 PM	1	27	88	33	0	13	74	19	0	18	67	14	0	7	42	3	406
4:15 PM	to	4:30 PM	1	60	161	64	0	24	156	40	2	41	161	28	0	18	101	11	868
4:30 PM	to	4:45 PM	1	101	250	104	0	38	244	56	2	53	264	38	0	36	164	21	1372
4:45 PM	to	5:00 PM	1	149	339	148	0	52	322	75	2	68	375	53	0	54	231	30	1899
5:00 PM	to	5:15 PM	1	188	452	177	1	60	411	90	3	91	509	70	0	69	309	36	2467
5:15 PM	to	5:30 PM	1	226	577	205	1	81	504	115	3	110	641	79	1	88	375	42	3049
5:30 PM	to	5:45 PM	2	267	704	241	1	94	590	143	5	131	782	90	1	109	446	49	3655
5:45 PM	to	6:00 PM	2	310	790	266	1	109	669	176	7	157	885	102	1	133	512	52	4172

TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	1	27	88	33	0	13	74	19	0	18	67	14	0	7	42	3	406
4:15 PM	to	4:30 PM	0	33	73	31	0	11	82	21	2	23	94	14	0	11	59	8	462
4:30 PM	to	4:45 PM	0	41	89	40	0	14	88	16	0	12	103	10	0	18	63	10	504
4:45 PM	to	5:00 PM	0	48	89	44	0	14	78	19	0	15	111	15	0	18	67	9	527
5:00 PM	to	5:15 PM	0	39	113	29	1	8	89	15	1	23	134	17	0	15	78	6	568
5:15 PM	to	5:30 PM	0	38	125	28	0	21	93	25	0	19	132	9	1	19	66	6	582
5:30 PM	to	5:45 PM	1	41	127	36	0	13	86	28	2	21	141	11	0	21	71	7	606
5:45 PM	to	6:00 PM	0	43	86	25	0	15	79	33	2	26	103	12	0	24	66	3	517

HOURLY TOTALS																			
4:00 PM	to	5:00 PM	1	149	339	148	0	52	322	75	2	68	375	53	0	54	231	30	1899
4:15 PM	to	5:15 PM	0	161	364	144	1	47	337	71	3	73	442	56	0	62	267	33	2061
4:30 PM	to	5:30 PM	0	166	416	141	1	57	348	75	1	69	480	51	1	70	274	31	2181
4:45 PM	to	5:45 PM	1	166	454	137	1	56	346	87	3	78	518	52	1	73	282	28	2283
5:00 PM	to	6:00 PM	1	161	451	118	1	57	347	101	5	89	510	49	1	79	281	22	2273

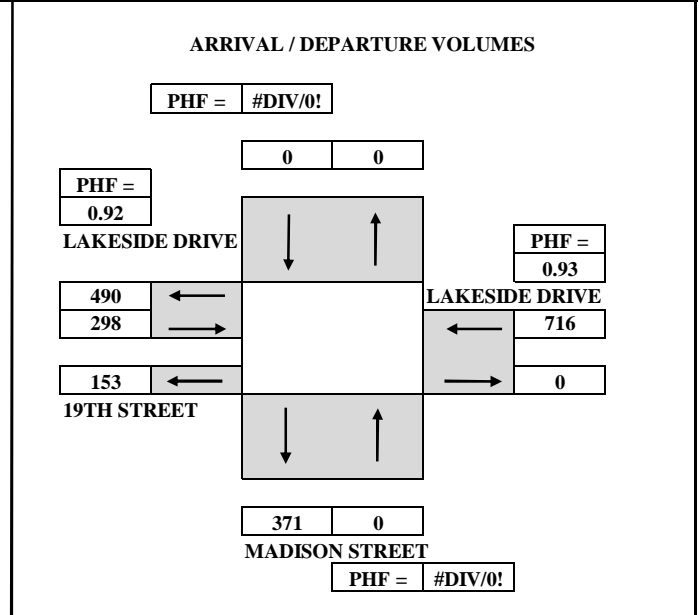
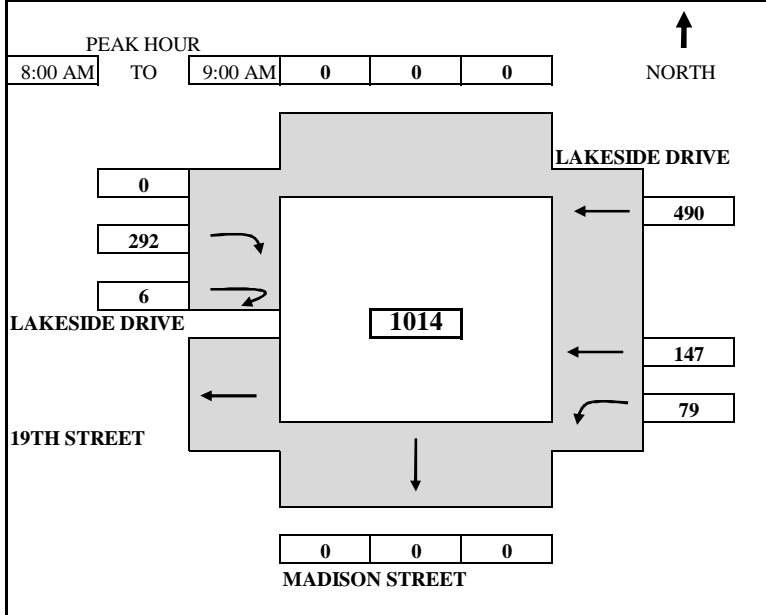
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> LAKESIDE DRIVE	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-42AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EB (LAKESIDE DR)			WB (LAKESIDE DR)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT	Madison	19th St	Madison	19th St	Lakeside			

SURVEY DATA													
7:00 AM	to	7:15 AM						27	2	12	20	61	122
7:15 AM	to	7:30 AM						61	2	18	40	146	267
7:30 AM	to	7:45 AM						117	3	31	69	238	458
7:45 AM	to	8:00 AM						172	4	41	96	362	675
8:00 AM	to	8:15 AM						238	4	60	129	473	904
8:15 AM	to	8:30 AM						313	5	81	170	598	1167
8:30 AM	to	8:45 AM						386	7	102	215	724	1434
8:45 AM	to	9:00 AM						464	10	120	243	852	1689

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	27	2	12	20	61	122
7:15 AM	to	7:30 AM	0	0	0	0	0	0	34	0	6	20	85	145
7:30 AM	to	7:45 AM	0	0	0	0	0	0	56	1	13	29	92	191
7:45 AM	to	8:00 AM	0	0	0	0	0	0	55	1	10	27	124	217
8:00 AM	to	8:15 AM	0	0	0	0	0	0	66	0	19	33	111	229
8:15 AM	to	8:30 AM	0	0	0	0	0	0	75	1	21	41	125	263
8:30 AM	to	8:45 AM	0	0	0	0	0	0	73	2	21	45	126	267
8:45 AM	to	9:00 AM	0	0	0	0	0	0	78	3	18	28	128	255

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	0	0	172	4	41	96	362	675
7:15 AM	to	8:15 AM	0	0	0	0	0	0	211	2	48	109	412	782
7:30 AM	to	8:30 AM	0	0	0	0	0	0	252	3	63	130	452	900
7:45 AM	to	8:45 AM	0	0	0	0	0	0	269	4	71	146	486	976
8:00 AM	to	9:00 AM	0	0	0	0	0	0	292	6	79	147	490	1014

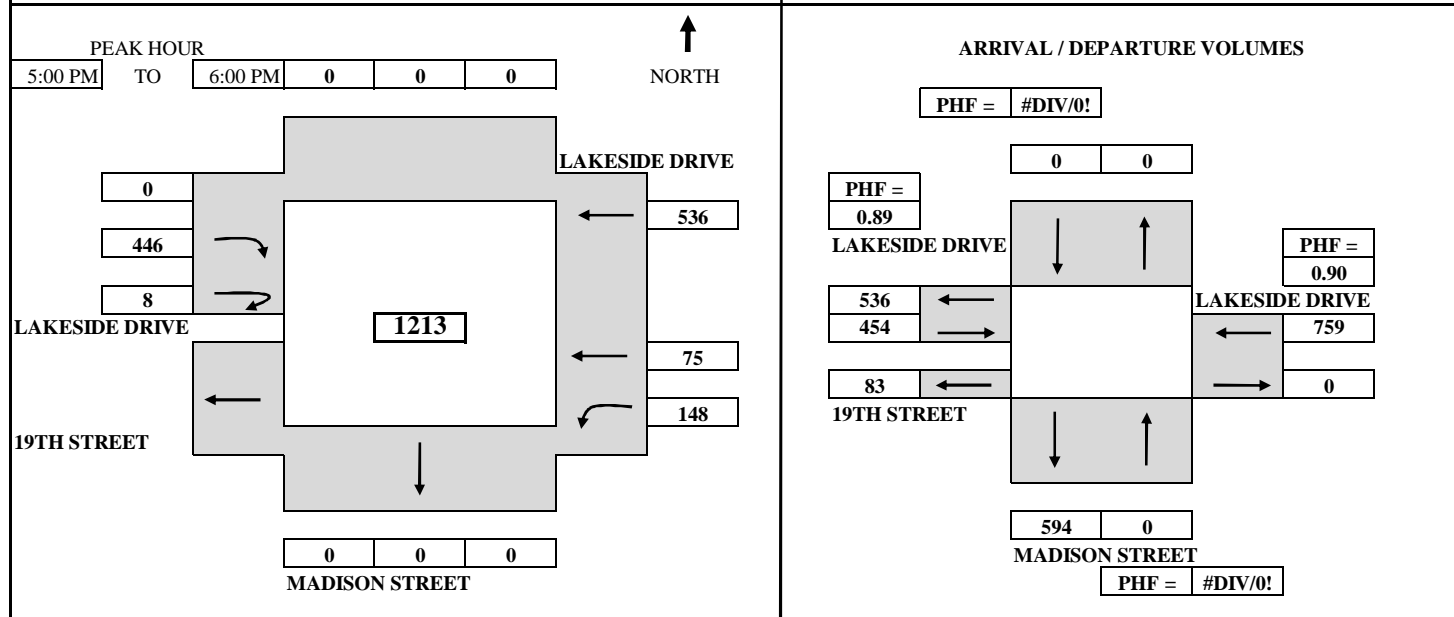
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## INTERSECTION TURNING MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> LAKESIDE DRIVE	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-42PM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	From	To		LEFT	THRU	RIGHT	LEFT	Madison	19th St	Madison	19th St	Lakeside	

SURVEY DATA													
4:00 PM	to	4:15 PM						88	0	25	18	96	227
4:15 PM	to	4:30 PM						151	2	39	36	224	452
4:30 PM	to	4:45 PM						231	2	64	58	378	733
4:45 PM	to	5:00 PM						340	2	87	74	522	1025
5:00 PM	to	5:15 PM						454	4	118	101	661	1338
5:15 PM	to	5:30 PM						555	6	156	121	815	1653
5:30 PM	to	5:45 PM						663	6	194	138	940	1941
5:45 PM	to	6:00 PM						786	10	235	149	1058	2238

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	0	0	88	0	25	18	96	227
4:15 PM	to	4:30 PM	0	0	0	0	0	0	63	2	14	18	128	225
4:30 PM	to	4:45 PM	0	0	0	0	0	0	80	0	25	22	154	281
4:45 PM	to	5:00 PM	0	0	0	0	0	0	109	0	23	16	144	292
5:00 PM	to	5:15 PM	0	0	0	0	0	0	114	2	31	27	139	313
5:15 PM	to	5:30 PM	0	0	0	0	0	0	101	2	38	20	154	315
5:30 PM	to	5:45 PM	0	0	0	0	0	0	108	0	38	17	125	288
5:45 PM	to	6:00 PM	0	0	0	0	0	0	123	4	41	11	118	297

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	0	0	0	0	0	340	2	87	74	522	1025
4:15 PM	to	5:15 PM	0	0	0	0	0	0	366	4	93	83	565	1111
4:30 PM	to	5:30 PM	0	0	0	0	0	0	404	4	117	85	591	1201
4:45 PM	to	5:45 PM	0	0	0	0	0	0	432	4	130	80	562	1208
5:00 PM	to	6:00 PM	0	0	0	0	0	0	446	8	148	75	536	1213

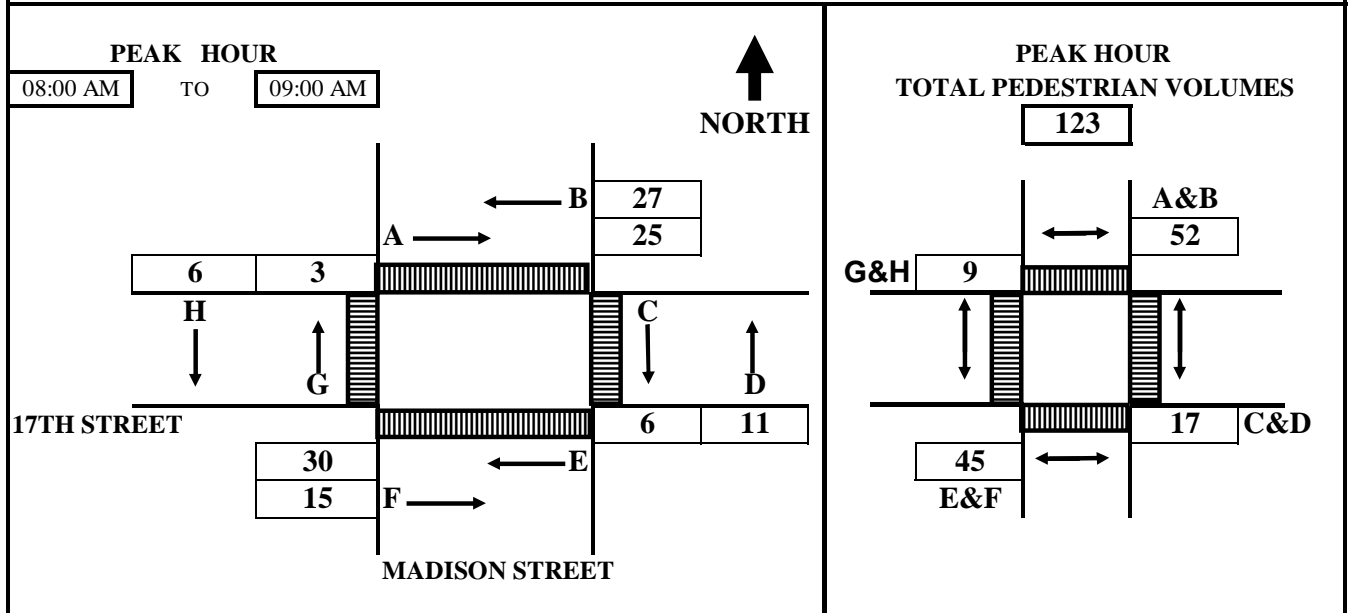
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 17TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-1AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	5	0	0	3	1	2	1	13
07:15 AM	---	07:30 AM	1	7	0	0	6	3	5	2	24
07:30 AM	---	07:45 AM	2	13	0	0	7	7	6	8	43
07:45 AM	---	08:00 AM	2	20	0	4	14	13	7	8	68
08:00 AM	---	08:15 AM	7	26	0	5	20	15	9	11	93
08:15 AM	---	08:30 AM	7	41	1	8	29	19	9	13	127
08:30 AM	---	08:45 AM	23	44	3	10	35	23	9	14	161
08:45 AM	---	09:00 AM	27	47	6	15	44	28	10	14	191

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	5	0	0	3	1	2	1	13
07:15 AM	---	07:30 AM	0	2	0	0	3	2	3	1	11
07:30 AM	---	07:45 AM	1	6	0	0	1	4	1	6	19
07:45 AM	---	08:00 AM	0	7	0	4	7	6	1	0	25
08:00 AM	---	08:15 AM	5	6	0	1	6	2	2	3	25
08:15 AM	---	08:30 AM	0	15	1	3	9	4	0	2	34
08:30 AM	---	08:45 AM	16	3	2	2	6	4	0	1	34
08:45 AM	---	09:00 AM	4	3	3	5	9	5	1	0	30

### HOURLY TOTALS

07:00 AM	---	08:00 AM	2	20	0	4	14	13	7	8	68
07:15 AM	---	08:15 AM	6	21	0	5	17	14	7	10	80
07:30 AM	---	08:30 AM	6	34	1	8	23	16	4	11	103
07:45 AM	---	08:45 AM	21	31	3	10	28	16	3	6	118
08:00 AM	---	09:00 AM	25	27	6	11	30	15	3	6	123

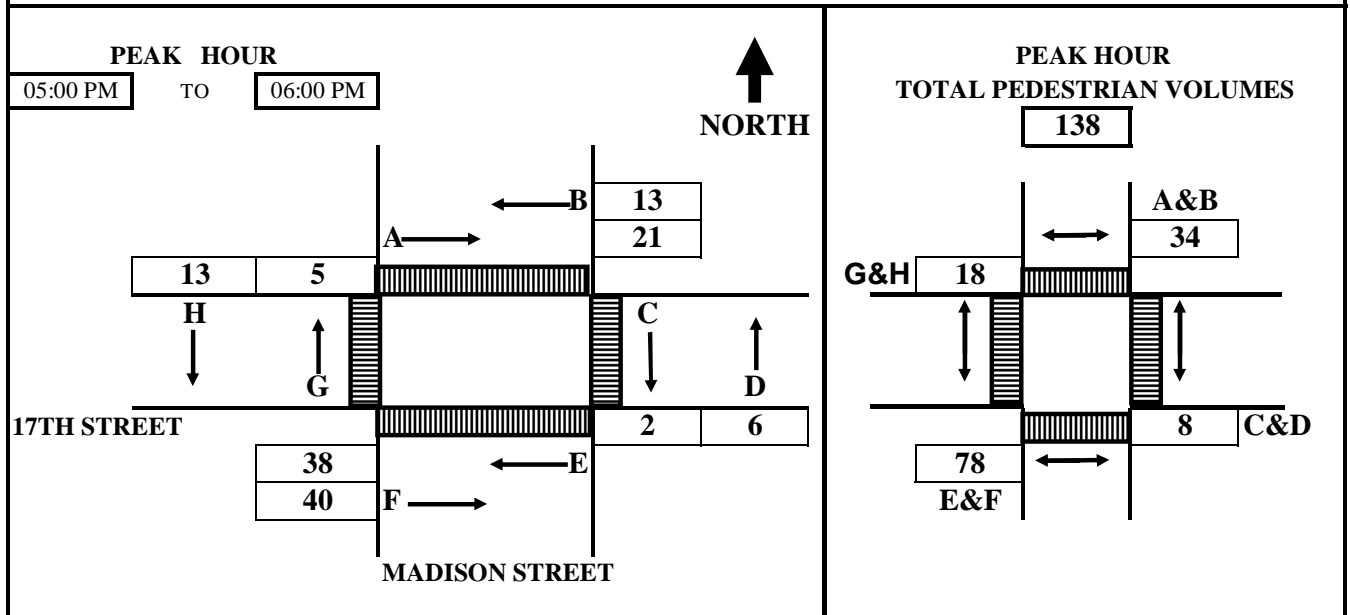
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 17TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-1PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	7	4	0	3	1	0	2	10	27
04:15 PM	---	04:30 PM	11	6	0	3	4	6	2	12	44
04:30 PM	---	04:45 PM	13	8	0	3	8	12	2	12	58
04:45 PM	---	05:00 PM	18	11	1	3	12	21	2	13	81
05:00 PM	---	05:15 PM	25	17	3	5	22	26	5	15	118
05:15 PM	---	05:30 PM	28	21	3	9	36	36	5	17	155
05:30 PM	---	05:45 PM	32	22	3	9	47	51	5	20	189
05:45 PM	---	06:00 PM	39	24	3	9	50	61	7	26	219

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	7	4	0	3	1	0	2	10	27
04:15 PM	---	04:30 PM	4	2	0	0	3	6	0	2	17
04:30 PM	---	04:45 PM	2	2	0	0	4	6	0	0	14
04:45 PM	---	05:00 PM	5	3	1	0	4	9	0	1	23
05:00 PM	---	05:15 PM	7	6	2	2	10	5	3	2	37
05:15 PM	---	05:30 PM	3	4	0	4	14	10	0	2	37
05:30 PM	---	05:45 PM	4	1	0	0	11	15	0	3	34
05:45 PM	---	06:00 PM	7	2	0	0	3	10	2	6	30

### HOURLY TOTALS

04:00 PM	---	05:00 PM	18	11	1	3	12	21	2	13	81
04:15 PM	---	05:15 PM	18	13	3	2	21	26	3	5	91
04:30 PM	---	05:30 PM	17	15	3	6	32	30	3	5	111
04:45 PM	---	05:45 PM	19	14	3	6	39	39	3	8	131
05:00 PM	---	06:00 PM	21	13	2	6	38	40	5	13	138

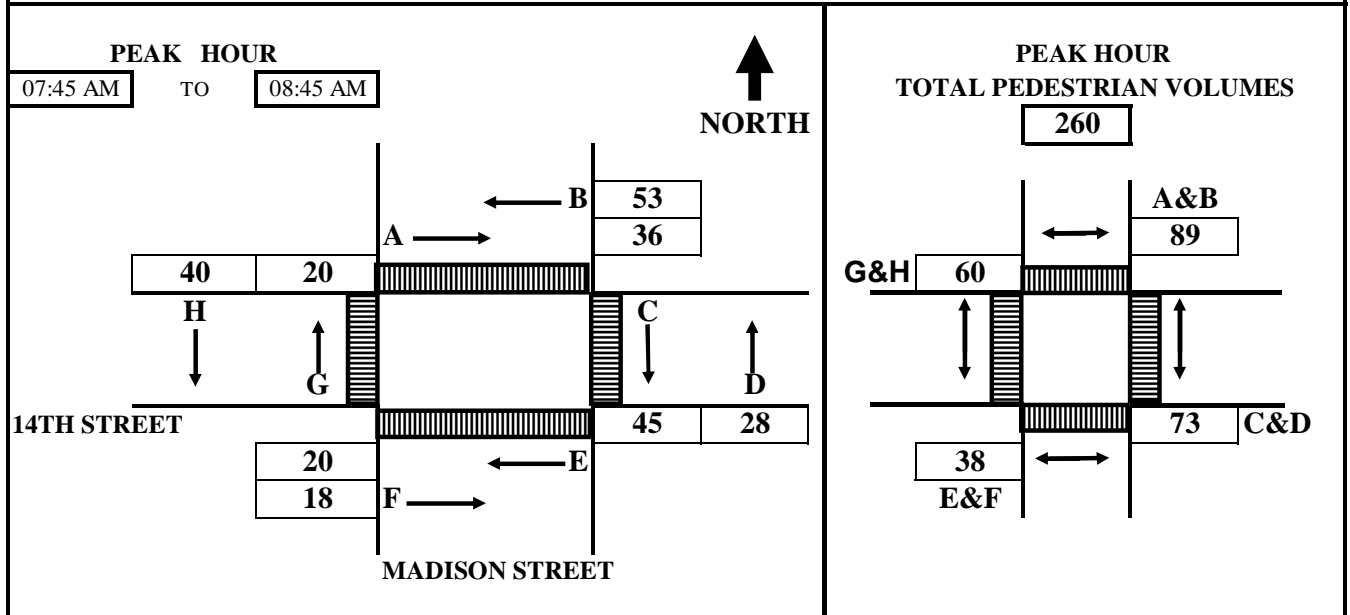
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 14TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-2AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	4	1	0	1	0	1	0	0	7
07:15 AM	---	07:30 AM	11	11	6	5	4	2	2	2	43
07:30 AM	---	07:45 AM	23	15	9	9	7	4	7	6	80
07:45 AM	---	08:00 AM	29	26	13	15	12	6	11	20	132
08:00 AM	---	08:15 AM	43	36	33	18	17	9	17	27	200
08:15 AM	---	08:30 AM	52	59	43	32	20	16	20	38	280
08:30 AM	---	08:45 AM	59	68	54	37	27	22	27	46	340
08:45 AM	---	09:00 AM	66	79	61	39	29	24	32	55	385

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	4	1	0	1	0	1	0	0	7
07:15 AM	---	07:30 AM	7	10	6	4	4	1	2	2	36
07:30 AM	---	07:45 AM	12	4	3	4	3	2	5	4	37
07:45 AM	---	08:00 AM	6	11	4	6	5	2	4	14	52
08:00 AM	---	08:15 AM	14	10	20	3	5	3	6	7	68
08:15 AM	---	08:30 AM	9	23	10	14	3	7	3	11	80
08:30 AM	---	08:45 AM	7	9	11	5	7	6	7	8	60
08:45 AM	---	09:00 AM	7	11	7	2	2	2	5	9	45

### HOURLY TOTALS

07:00 AM	---	08:00 AM	29	26	13	15	12	6	11	20	132
07:15 AM	---	08:15 AM	39	35	33	17	17	8	17	27	193
07:30 AM	---	08:30 AM	41	48	37	27	16	14	18	36	237
07:45 AM	---	08:45 AM	36	53	45	28	20	18	20	40	260
08:00 AM	---	09:00 AM	37	53	48	24	17	18	21	35	253

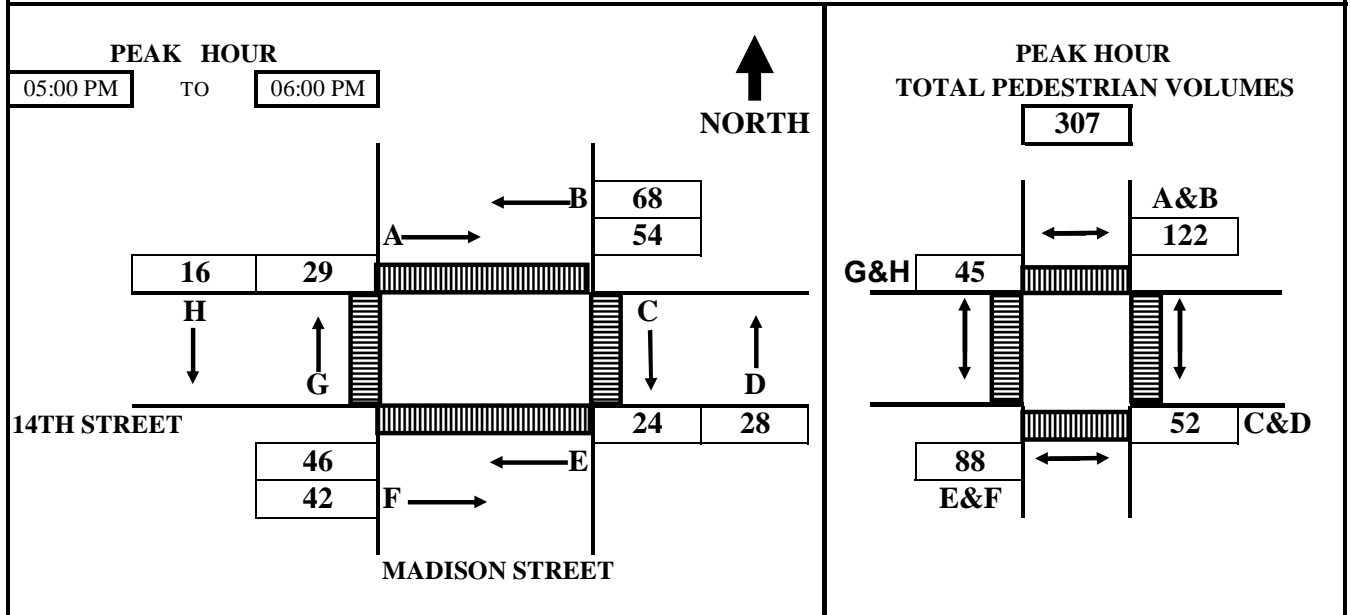
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 14TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-2PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	11	5	4	10	23	11	4	5	73
04:15 PM	---	04:30 PM	24	11	9	16	32	24	12	7	135
04:30 PM	---	04:45 PM	33	35	15	22	38	27	13	12	195
04:45 PM	---	05:00 PM	46	48	23	26	44	39	15	16	257
05:00 PM	---	05:15 PM	58	63	31	32	64	59	20	18	345
05:15 PM	---	05:30 PM	66	83	36	40	69	62	25	20	401
05:30 PM	---	05:45 PM	83	104	41	50	85	74	34	26	497
05:45 PM	---	06:00 PM	100	116	47	54	90	81	44	32	564

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	11	5	4	10	23	11	4	5	73
04:15 PM	---	04:30 PM	13	6	5	6	9	13	8	2	62
04:30 PM	---	04:45 PM	9	24	6	6	6	3	1	5	60
04:45 PM	---	05:00 PM	13	13	8	4	6	12	2	4	62
05:00 PM	---	05:15 PM	12	15	8	6	20	20	5	2	88
05:15 PM	---	05:30 PM	8	20	5	8	5	3	5	2	56
05:30 PM	---	05:45 PM	17	21	5	10	16	12	9	6	96
05:45 PM	---	06:00 PM	17	12	6	4	5	7	10	6	67

### HOURLY TOTALS

04:00 PM	---	05:00 PM	46	48	23	26	44	39	15	16	257
04:15 PM	---	05:15 PM	47	58	27	22	41	48	16	13	272
04:30 PM	---	05:30 PM	42	72	27	24	37	38	13	13	266
04:45 PM	---	05:45 PM	50	69	26	28	47	47	21	14	302
05:00 PM	---	06:00 PM	54	68	24	28	46	42	29	16	307

Tel : (510) 232-1271

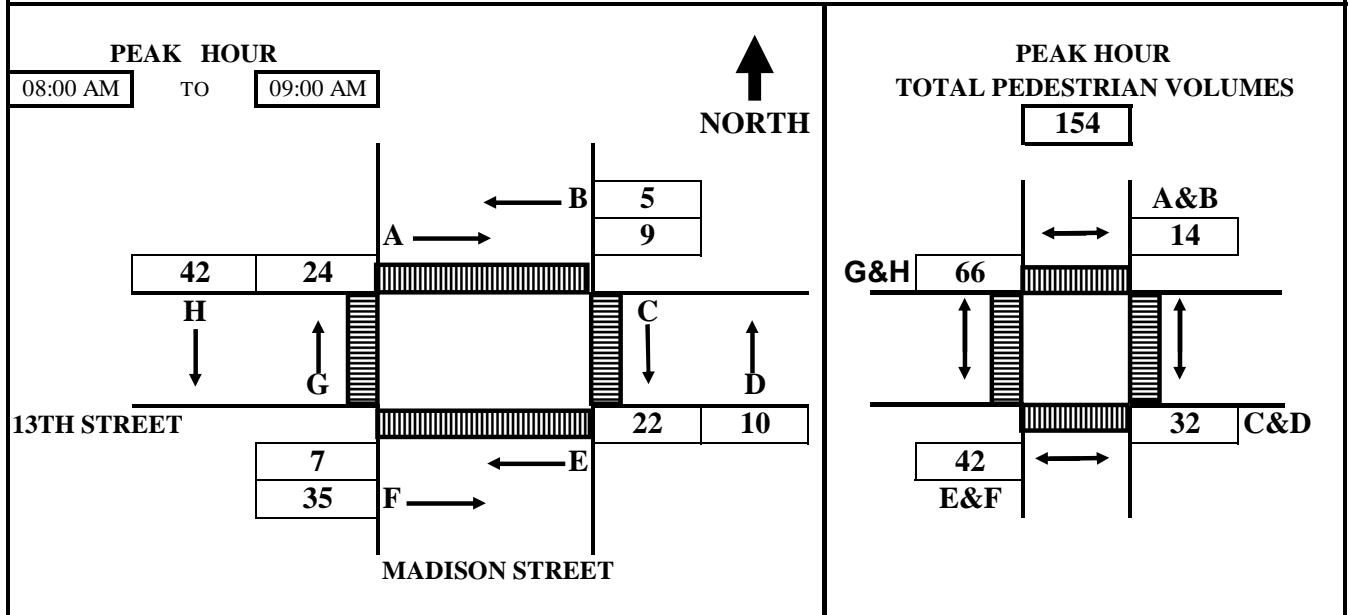
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 13TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-3AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	0	0	1	0	0	0	0	1
07:15 AM	---	07:30 AM	1	1	7	3	2	2	3	4	23
07:30 AM	---	07:45 AM	5	5	12	3	3	4	8	12	52
07:45 AM	---	08:00 AM	7	5	13	5	3	7	13	17	70
08:00 AM	---	08:15 AM	8	5	20	8	3	12	17	24	97
08:15 AM	---	08:30 AM	10	7	26	10	4	18	23	32	130
08:30 AM	---	08:45 AM	15	9	31	14	7	40	28	52	196
08:45 AM	---	09:00 AM	16	10	35	15	10	42	37	59	224

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	0	1	0	0	0	0	1
07:15 AM	---	07:30 AM	1	1	7	2	2	2	3	4	22
07:30 AM	---	07:45 AM	4	4	5	0	1	2	5	8	29
07:45 AM	---	08:00 AM	2	0	1	2	0	3	5	5	18
08:00 AM	---	08:15 AM	1	0	7	3	0	5	4	7	27
08:15 AM	---	08:30 AM	2	2	6	2	1	6	6	8	33
08:30 AM	---	08:45 AM	5	2	5	4	3	22	5	20	66
08:45 AM	---	09:00 AM	1	1	4	1	3	2	9	7	28

### HOURLY TOTALS

07:00 AM	---	08:00 AM	7	5	13	5	3	7	13	17	70
07:15 AM	---	08:15 AM	8	5	20	7	3	12	17	24	96
07:30 AM	---	08:30 AM	9	6	19	7	2	16	20	28	107
07:45 AM	---	08:45 AM	10	4	19	11	4	36	20	40	144
08:00 AM	---	09:00 AM	9	5	22	10	7	35	24	42	154

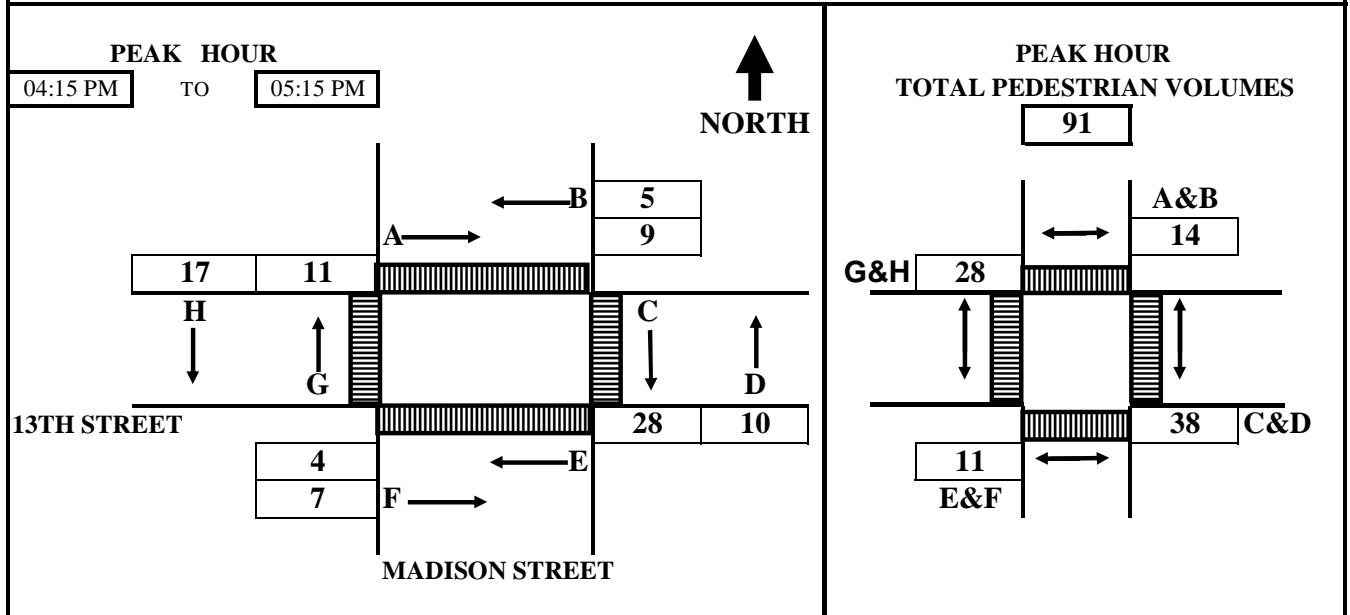
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 13TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-3PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	1	1	3	5	3	5	11	29
04:15 PM	---	04:30 PM	5	3	5	7	5	8	12	15	60
04:30 PM	---	04:45 PM	6	5	8	7	8	10	13	21	78
04:45 PM	---	05:00 PM	8	6	9	9	9	10	14	22	87
05:00 PM	---	05:15 PM	9	6	29	13	9	10	16	28	120
05:15 PM	---	05:30 PM	9	6	30	16	11	11	21	31	135
05:30 PM	---	05:45 PM	12	6	30	16	11	12	23	35	145
05:45 PM	---	06:00 PM	14	6	30	17	11	15	26	35	154

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	1	1	3	5	3	5	11	29
04:15 PM	---	04:30 PM	5	2	4	4	0	5	7	4	31
04:30 PM	---	04:45 PM	1	2	3	0	3	2	1	6	18
04:45 PM	---	05:00 PM	2	1	1	2	1	0	1	1	9
05:00 PM	---	05:15 PM	1	0	20	4	0	0	2	6	33
05:15 PM	---	05:30 PM	0	0	1	3	2	1	5	3	15
05:30 PM	---	05:45 PM	3	0	0	0	0	1	2	4	10
05:45 PM	---	06:00 PM	2	0	0	1	0	3	3	0	9

### HOURLY TOTALS

04:00 PM	---	05:00 PM	8	6	9	9	9	10	14	22	87
04:15 PM	---	05:15 PM	9	5	28	10	4	7	11	17	91
04:30 PM	---	05:30 PM	4	3	25	9	6	3	9	16	75
04:45 PM	---	05:45 PM	6	1	22	9	3	2	10	14	67
05:00 PM	---	06:00 PM	6	0	21	8	2	5	12	13	67

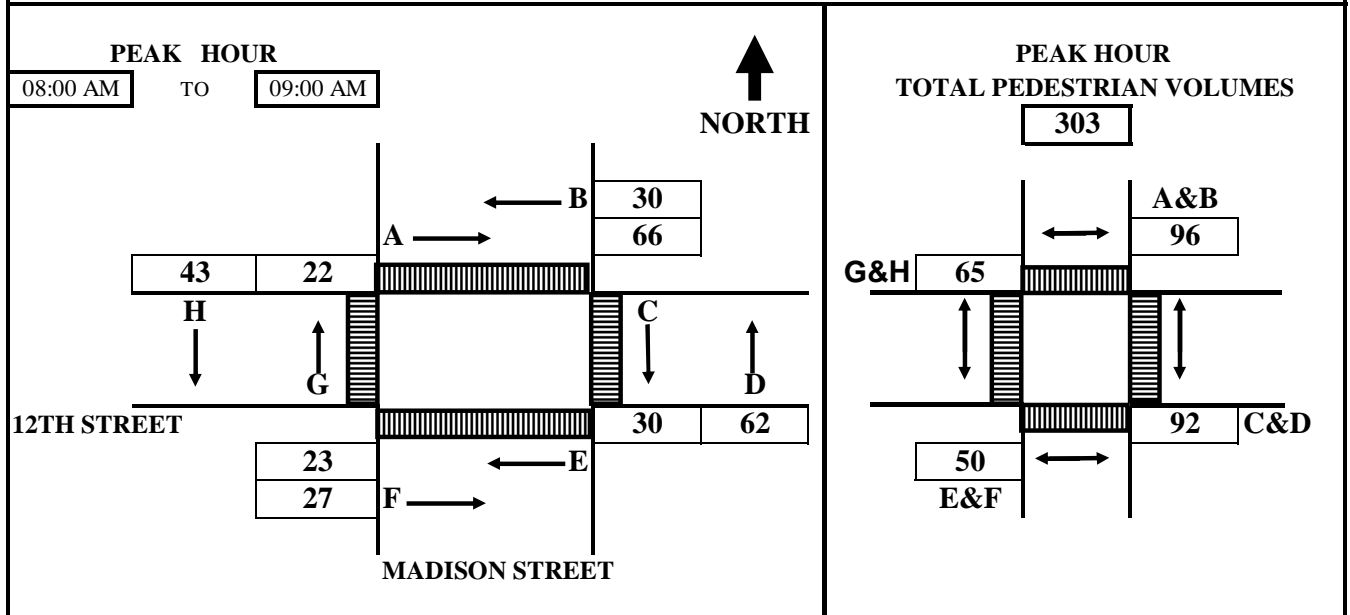
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 12TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-4AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	4	7	3	9	8	6	2	4	43
07:15 AM	---	07:30 AM	9	12	7	32	29	18	4	19	130
07:30 AM	---	07:45 AM	14	16	14	44	38	22	6	31	185
07:45 AM	---	08:00 AM	25	25	19	54	43	28	12	39	245
08:00 AM	---	08:15 AM	39	29	23	72	47	32	18	46	306
08:15 AM	---	08:30 AM	55	33	30	90	56	37	23	62	386
08:30 AM	---	08:45 AM	73	41	40	105	62	46	28	70	465
08:45 AM	---	09:00 AM	91	55	49	116	66	55	34	82	548

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	4	7	3	9	8	6	2	4	43
07:15 AM	---	07:30 AM	5	5	4	23	21	12	2	15	87
07:30 AM	---	07:45 AM	5	4	7	12	9	4	2	12	55
07:45 AM	---	08:00 AM	11	9	5	10	5	6	6	8	60
08:00 AM	---	08:15 AM	14	4	4	18	4	4	6	7	61
08:15 AM	---	08:30 AM	16	4	7	18	9	5	5	16	80
08:30 AM	---	08:45 AM	18	8	10	15	6	9	5	8	79
08:45 AM	---	09:00 AM	18	14	9	11	4	9	6	12	83

### HOURLY TOTALS

07:00 AM	---	08:00 AM	25	25	19	54	43	28	12	39	245
07:15 AM	---	08:15 AM	35	22	20	63	39	26	16	42	263
07:30 AM	---	08:30 AM	46	21	23	58	27	19	19	43	256
07:45 AM	---	08:45 AM	59	25	26	61	24	24	22	39	280
08:00 AM	---	09:00 AM	66	30	30	62	23	27	22	43	303

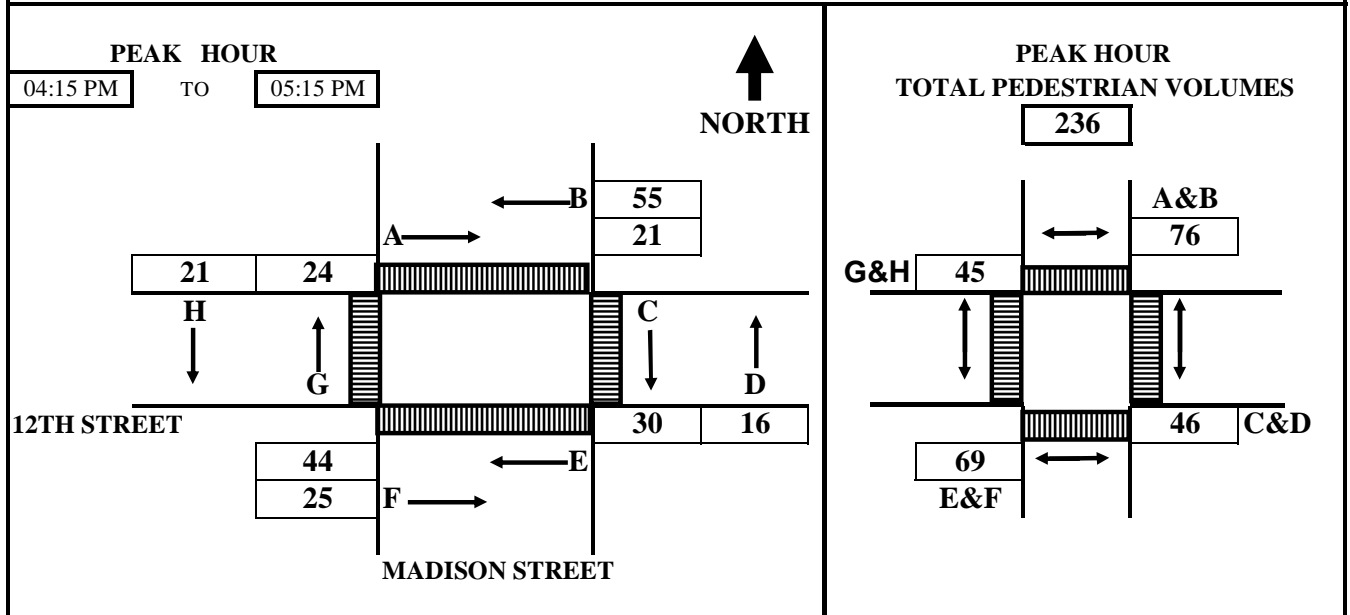
Tel : (510) 232-1271

Fax : (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 12TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-4PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	6	8	8	3	14	10	3	7	59
04:15 PM	---	04:30 PM	11	23	15	7	20	14	5	12	107
04:30 PM	---	04:45 PM	13	35	23	12	36	22	11	20	172
04:45 PM	---	05:00 PM	22	45	30	14	48	28	19	22	228
05:00 PM	---	05:15 PM	27	63	38	19	58	35	27	28	295
05:15 PM	---	05:30 PM	29	73	41	21	65	40	35	33	337
05:30 PM	---	05:45 PM	35	84	43	28	72	46	44	42	394
05:45 PM	---	06:00 PM	39	99	45	38	78	54	50	47	450

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	6	8	8	3	14	10	3	7	59
04:15 PM	---	04:30 PM	5	15	7	4	6	4	2	5	48
04:30 PM	---	04:45 PM	2	12	8	5	16	8	6	8	65
04:45 PM	---	05:00 PM	9	10	7	2	12	6	8	2	56
05:00 PM	---	05:15 PM	5	18	8	5	10	7	8	6	67
05:15 PM	---	05:30 PM	2	10	3	2	7	5	8	5	42
05:30 PM	---	05:45 PM	6	11	2	7	7	6	9	9	57
05:45 PM	---	06:00 PM	4	15	2	10	6	8	6	5	56

### HOURLY TOTALS

04:00 PM	---	05:00 PM	22	45	30	14	48	28	19	22	228
04:15 PM	---	05:15 PM	21	55	30	16	44	25	24	21	236
04:30 PM	---	05:30 PM	18	50	26	14	45	26	30	21	230
04:45 PM	---	05:45 PM	22	49	20	16	36	24	33	22	222
05:00 PM	---	06:00 PM	17	54	15	24	30	26	31	25	222

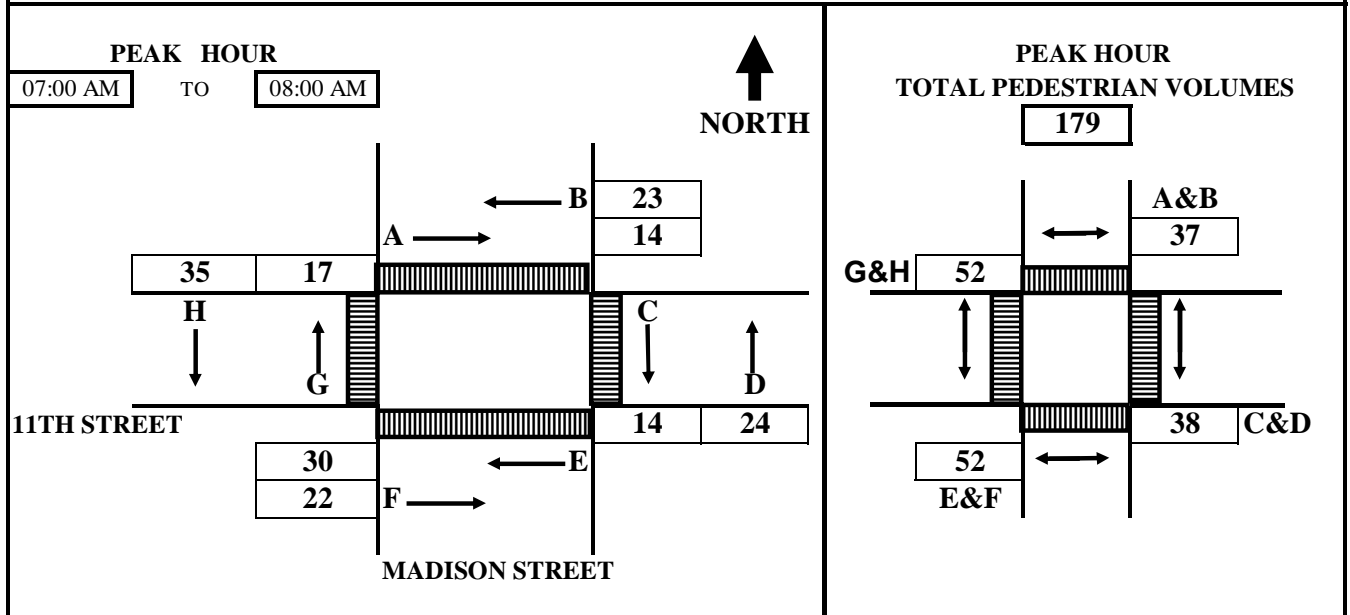
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-5AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	4	5	4	6	5	6	1	7	38
07:15 AM	---	07:30 AM	9	9	7	11	11	12	4	17	80
07:30 AM	---	07:45 AM	11	15	12	18	19	16	9	23	123
07:45 AM	---	08:00 AM	14	23	14	24	30	22	17	35	179
08:00 AM	---	08:15 AM	16	30	17	31	34	25	21	42	216
08:15 AM	---	08:30 AM	18	38	21	37	35	30	23	44	246
08:30 AM	---	08:45 AM	21	45	26	42	37	37	26	47	281
08:45 AM	---	09:00 AM	25	51	28	46	41	46	30	50	317

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	4	5	4	6	5	6	1	7	38
07:15 AM	---	07:30 AM	5	4	3	5	6	6	3	10	42
07:30 AM	---	07:45 AM	2	6	5	7	8	4	5	6	43
07:45 AM	---	08:00 AM	3	8	2	6	11	6	8	12	56
08:00 AM	---	08:15 AM	2	7	3	7	4	3	4	7	37
08:15 AM	---	08:30 AM	2	8	4	6	1	5	2	2	30
08:30 AM	---	08:45 AM	3	7	5	5	2	7	3	3	35
08:45 AM	---	09:00 AM	4	6	2	4	4	9	4	3	36

### HOURLY TOTALS

07:00 AM	---	08:00 AM	14	23	14	24	30	22	17	35	179
07:15 AM	---	08:15 AM	12	25	13	25	29	19	20	35	178
07:30 AM	---	08:30 AM	9	29	14	26	24	18	19	27	166
07:45 AM	---	08:45 AM	10	30	14	24	18	21	17	24	158
08:00 AM	---	09:00 AM	11	28	14	22	11	24	13	15	138

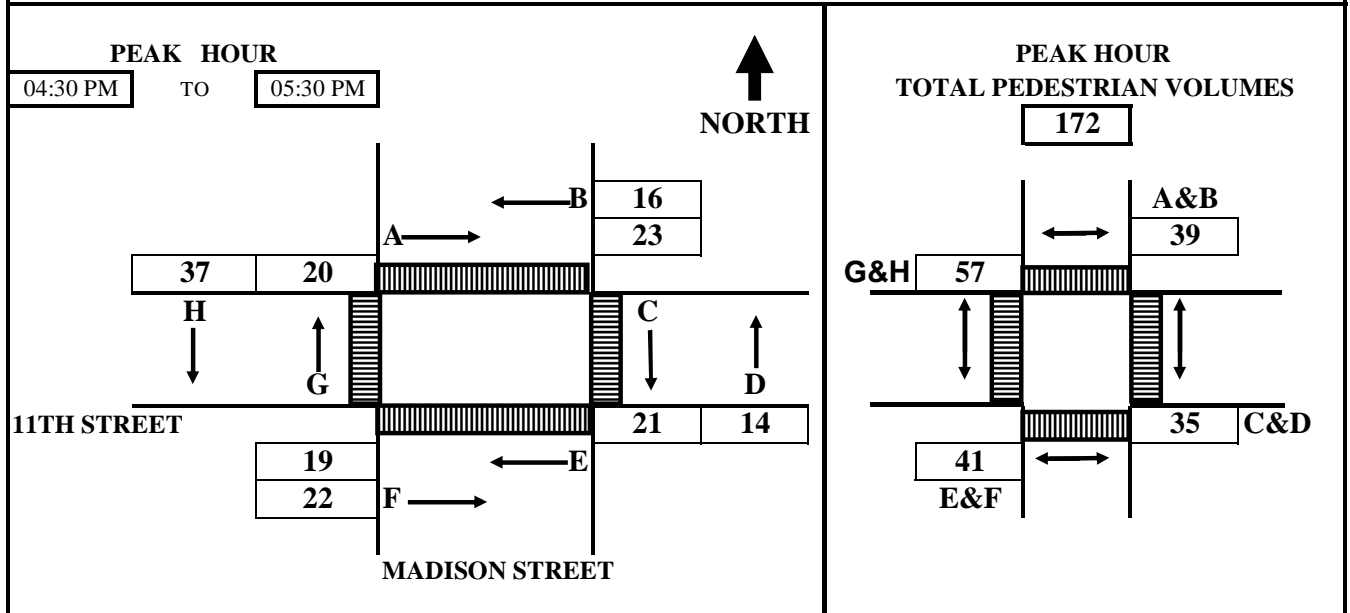
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-5PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	3	3	2	3	6	9	5	4	35
04:15 PM	---	04:30 PM	5	7	5	6	13	12	12	9	69
04:30 PM	---	04:45 PM	8	13	11	8	19	16	21	19	115
04:45 PM	---	05:00 PM	16	15	17	12	21	23	28	22	154
05:00 PM	---	05:15 PM	23	18	22	15	29	27	30	33	197
05:15 PM	---	05:30 PM	28	23	26	20	32	34	32	46	241
05:30 PM	---	05:45 PM	29	30	27	27	34	40	36	51	274
05:45 PM	---	06:00 PM	33	39	28	33	37	42	40	54	306

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	3	3	2	3	6	9	5	4	35
04:15 PM	---	04:30 PM	2	4	3	3	7	3	7	5	34
04:30 PM	---	04:45 PM	3	6	6	2	6	4	9	10	46
04:45 PM	---	05:00 PM	8	2	6	4	2	7	7	3	39
05:00 PM	---	05:15 PM	7	3	5	3	8	4	2	11	43
05:15 PM	---	05:30 PM	5	5	4	5	3	7	2	13	44
05:30 PM	---	05:45 PM	1	7	1	7	2	6	4	5	33
05:45 PM	---	06:00 PM	4	9	1	6	3	2	4	3	32

### HOURLY TOTALS

04:00 PM	---	05:00 PM	16	15	17	12	21	23	28	22	154
04:15 PM	---	05:15 PM	20	15	20	12	23	18	25	29	162
04:30 PM	---	05:30 PM	23	16	21	14	19	22	20	37	172
04:45 PM	---	05:45 PM	21	17	16	19	15	24	15	32	159
05:00 PM	---	06:00 PM	17	24	11	21	16	19	12	32	152

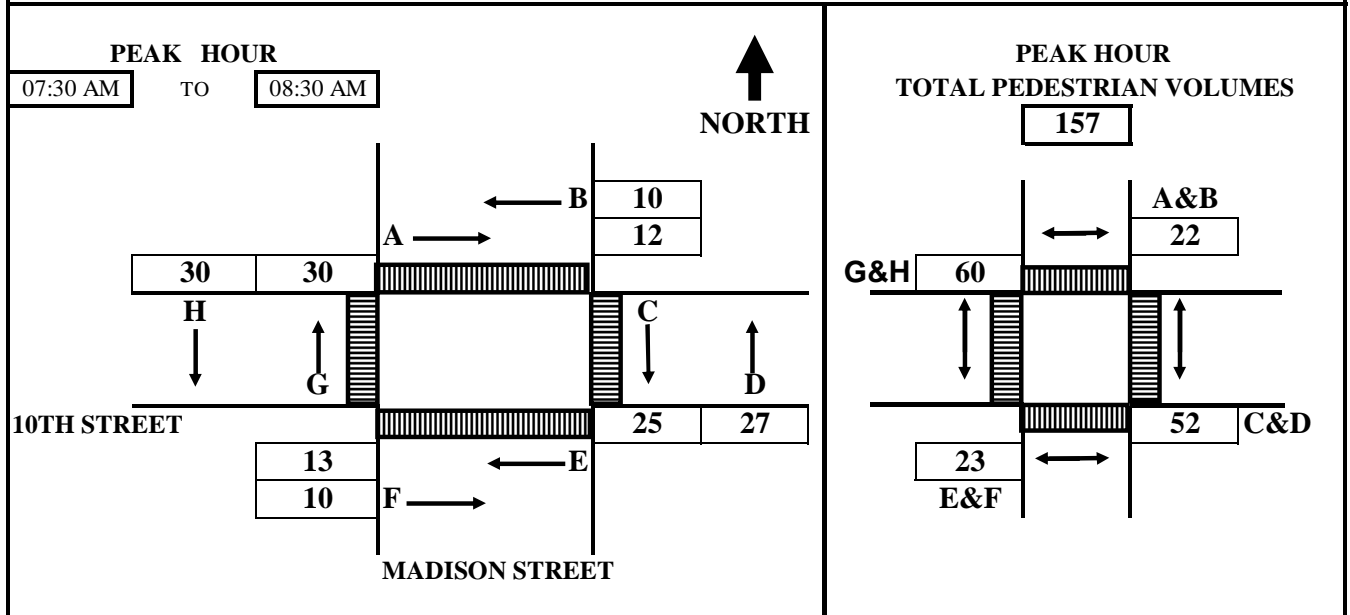
Tel : (510) 232-1271

Fax : (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 10TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-6AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	2	4	5	3	1	7	5	28
07:15 AM	---	07:30 AM	2	4	7	10	5	4	16	10	58
07:30 AM	---	07:45 AM	5	6	15	19	9	5	26	17	102
07:45 AM	---	08:00 AM	8	9	21	23	11	7	37	26	142
08:00 AM	---	08:15 AM	10	12	29	31	14	11	41	32	180
08:15 AM	---	08:30 AM	14	14	32	37	18	14	46	40	215
08:30 AM	---	08:45 AM	18	18	41	44	18	14	52	44	249
08:45 AM	---	09:00 AM	19	21	43	48	21	16	55	47	270

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	2	4	5	3	1	7	5	28
07:15 AM	---	07:30 AM	1	2	3	5	2	3	9	5	30
07:30 AM	---	07:45 AM	3	2	8	9	4	1	10	7	44
07:45 AM	---	08:00 AM	3	3	6	4	2	2	11	9	40
08:00 AM	---	08:15 AM	2	3	8	8	3	4	4	6	38
08:15 AM	---	08:30 AM	4	2	3	6	4	3	5	8	35
08:30 AM	---	08:45 AM	4	4	9	7	0	0	6	4	34
08:45 AM	---	09:00 AM	1	3	2	4	3	2	3	3	21

### HOURLY TOTALS

07:00 AM	---	08:00 AM	8	9	21	23	11	7	37	26	142
07:15 AM	---	08:15 AM	9	10	25	26	11	10	34	27	152
07:30 AM	---	08:30 AM	12	10	25	27	13	10	30	30	157
07:45 AM	---	08:45 AM	13	12	26	25	9	9	26	27	147
08:00 AM	---	09:00 AM	11	12	22	25	10	9	18	21	128

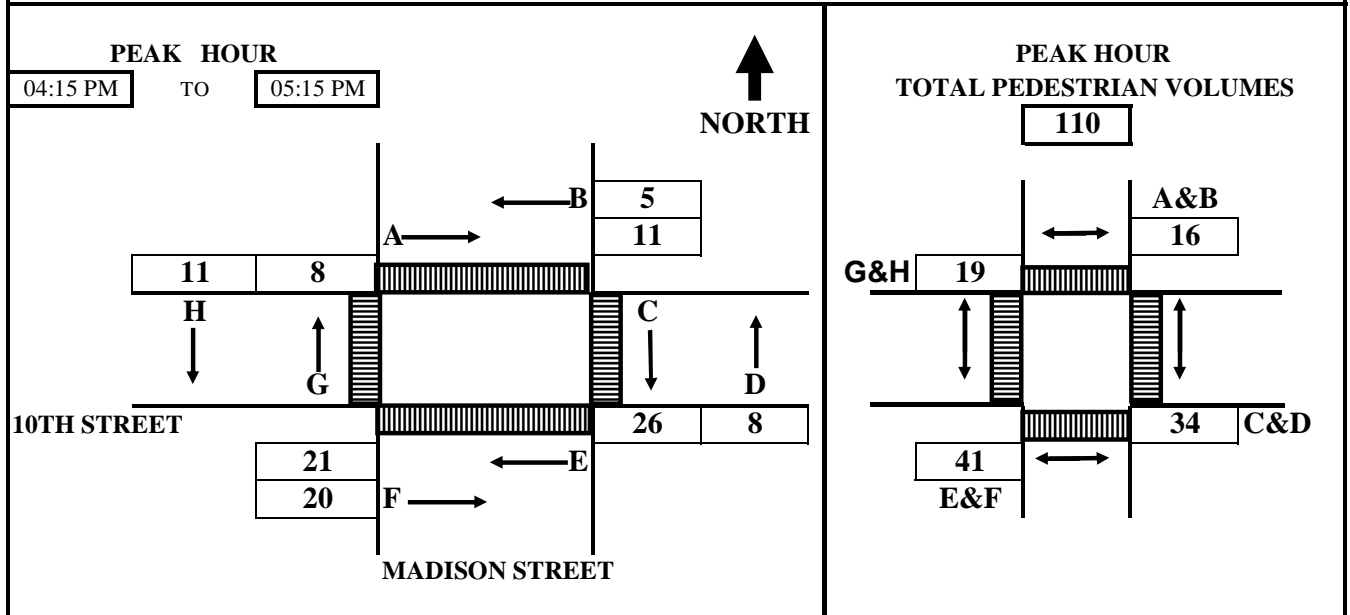
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 10TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-6PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	3	2	3	5	2	2	2	6	25
04:15 PM	---	04:30 PM	7	3	7	7	16	4	6	9	59
04:30 PM	---	04:45 PM	11	4	13	9	18	8	8	12	83
04:45 PM	---	05:00 PM	13	5	22	10	20	10	9	15	104
05:00 PM	---	05:15 PM	14	7	29	13	23	22	10	17	135
05:15 PM	---	05:30 PM	15	7	34	17	28	25	10	19	155
05:30 PM	---	05:45 PM	18	8	42	19	36	29	11	20	183
05:45 PM	---	06:00 PM	21	9	49	21	38	33	13	21	205

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	3	2	3	5	2	2	2	6	25
04:15 PM	---	04:30 PM	4	1	4	2	14	2	4	3	34
04:30 PM	---	04:45 PM	4	1	6	2	2	4	2	3	24
04:45 PM	---	05:00 PM	2	1	9	1	2	2	1	3	21
05:00 PM	---	05:15 PM	1	2	7	3	3	12	1	2	31
05:15 PM	---	05:30 PM	1	0	5	4	5	3	0	2	20
05:30 PM	---	05:45 PM	3	1	8	2	8	4	1	1	28
05:45 PM	---	06:00 PM	3	1	7	2	2	4	2	1	22

### HOURLY TOTALS

04:00 PM	---	05:00 PM	13	5	22	10	20	10	9	15	104
04:15 PM	---	05:15 PM	11	5	26	8	21	20	8	11	110
04:30 PM	---	05:30 PM	8	4	27	10	12	21	4	10	96
04:45 PM	---	05:45 PM	7	4	29	10	18	21	3	8	100
05:00 PM	---	06:00 PM	8	4	27	11	18	23	4	6	101

Tel : (510) 232-1271

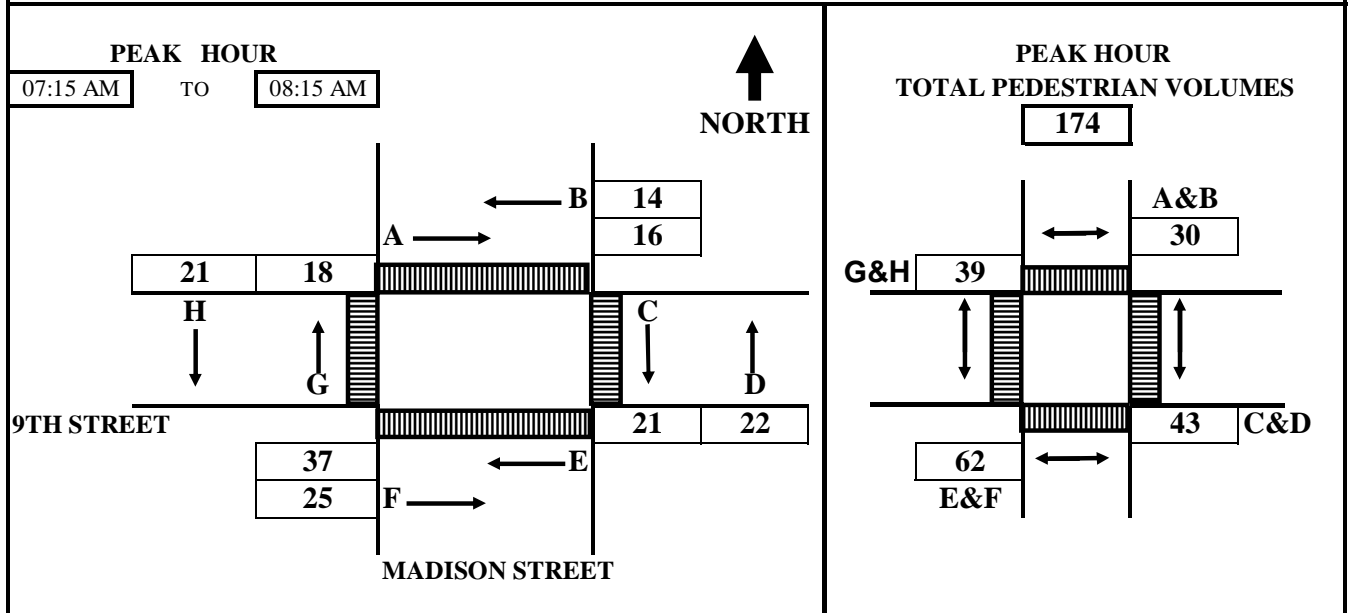
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 9TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-7AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	4	5	5	3	6	1	1	6	31
07:15 AM	---	07:30 AM	8	9	9	12	16	4	6	11	75
07:30 AM	---	07:45 AM	13	12	18	15	23	13	13	17	124
07:45 AM	---	08:00 AM	16	16	21	21	33	18	17	21	163
08:00 AM	---	08:15 AM	20	19	26	25	43	26	19	27	205
08:15 AM	---	08:30 AM	20	25	27	38	50	35	23	29	247
08:30 AM	---	08:45 AM	25	28	34	43	60	43	26	32	291
08:45 AM	---	09:00 AM	29	32	41	49	66	46	26	38	327

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	4	5	5	3	6	1	1	6	31
07:15 AM	---	07:30 AM	4	4	4	9	10	3	5	5	44
07:30 AM	---	07:45 AM	5	3	9	3	7	9	7	6	49
07:45 AM	---	08:00 AM	3	4	3	6	10	5	4	4	39
08:00 AM	---	08:15 AM	4	3	5	4	10	8	2	6	42
08:15 AM	---	08:30 AM	0	6	1	13	7	9	4	2	42
08:30 AM	---	08:45 AM	5	3	7	5	10	8	3	3	44
08:45 AM	---	09:00 AM	4	4	7	6	6	3	0	6	36

### HOURLY TOTALS

07:00 AM	---	08:00 AM	16	16	21	21	33	18	17	21	163
07:15 AM	---	08:15 AM	16	14	21	22	37	25	18	21	174
07:30 AM	---	08:30 AM	12	16	18	26	34	31	17	18	172
07:45 AM	---	08:45 AM	12	16	16	28	37	30	13	15	167
08:00 AM	---	09:00 AM	13	16	20	28	33	28	9	17	164

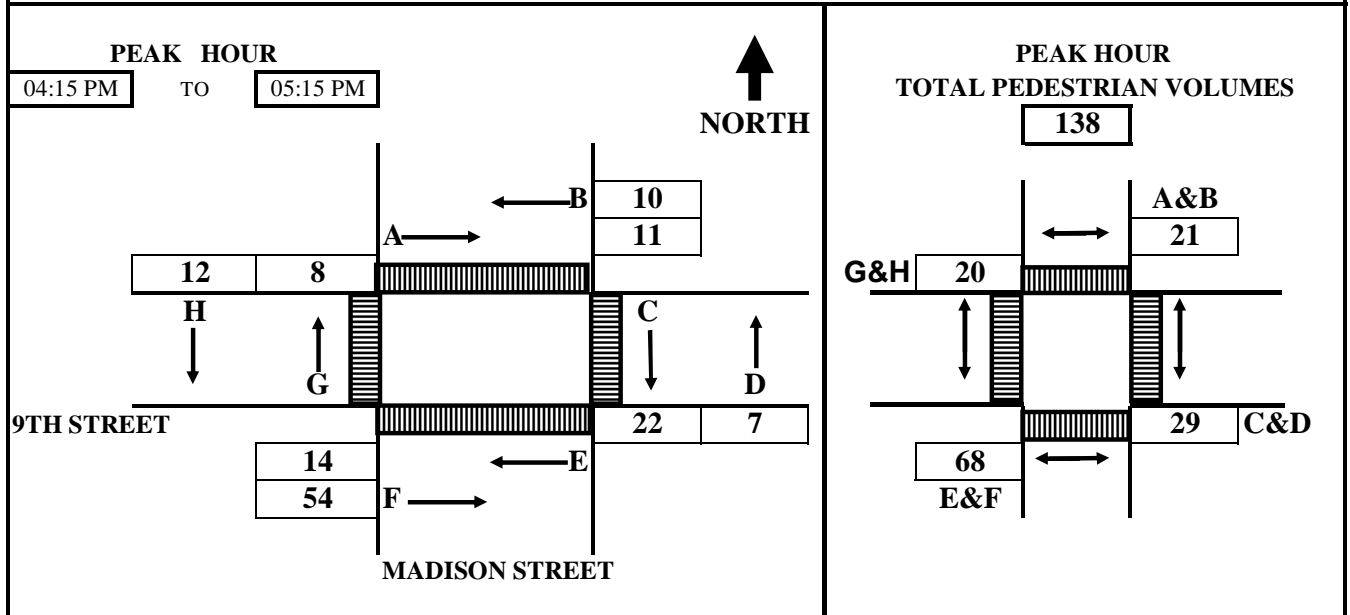
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 9TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-7PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	7	0	3	2	4	7	0	4	27
04:15 PM	---	04:30 PM	10	3	8	5	8	18	2	8	62
04:30 PM	---	04:45 PM	13	9	16	6	10	27	5	13	99
04:45 PM	---	05:00 PM	16	10	22	6	14	40	8	16	132
05:00 PM	---	05:15 PM	18	10	25	9	18	61	8	16	165
05:15 PM	---	05:30 PM	23	12	30	12	21	73	8	16	195
05:30 PM	---	05:45 PM	26	12	39	15	26	81	8	16	223
05:45 PM	---	06:00 PM	28	13	47	18	31	87	9	17	250

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	7	0	3	2	4	7	0	4	27
04:15 PM	---	04:30 PM	3	3	5	3	4	11	2	4	35
04:30 PM	---	04:45 PM	3	6	8	1	2	9	3	5	37
04:45 PM	---	05:00 PM	3	1	6	0	4	13	3	3	33
05:00 PM	---	05:15 PM	2	0	3	3	4	21	0	0	33
05:15 PM	---	05:30 PM	5	2	5	3	3	12	0	0	30
05:30 PM	---	05:45 PM	3	0	9	3	5	8	0	0	28
05:45 PM	---	06:00 PM	2	1	8	3	5	6	1	1	27

### HOURLY TOTALS

04:00 PM	---	05:00 PM	16	10	22	6	14	40	8	16	132
04:15 PM	---	05:15 PM	11	10	22	7	14	54	8	12	138
04:30 PM	---	05:30 PM	13	9	22	7	13	55	6	8	133
04:45 PM	---	05:45 PM	13	3	23	9	16	54	3	3	124
05:00 PM	---	06:00 PM	12	3	25	12	17	47	1	1	118

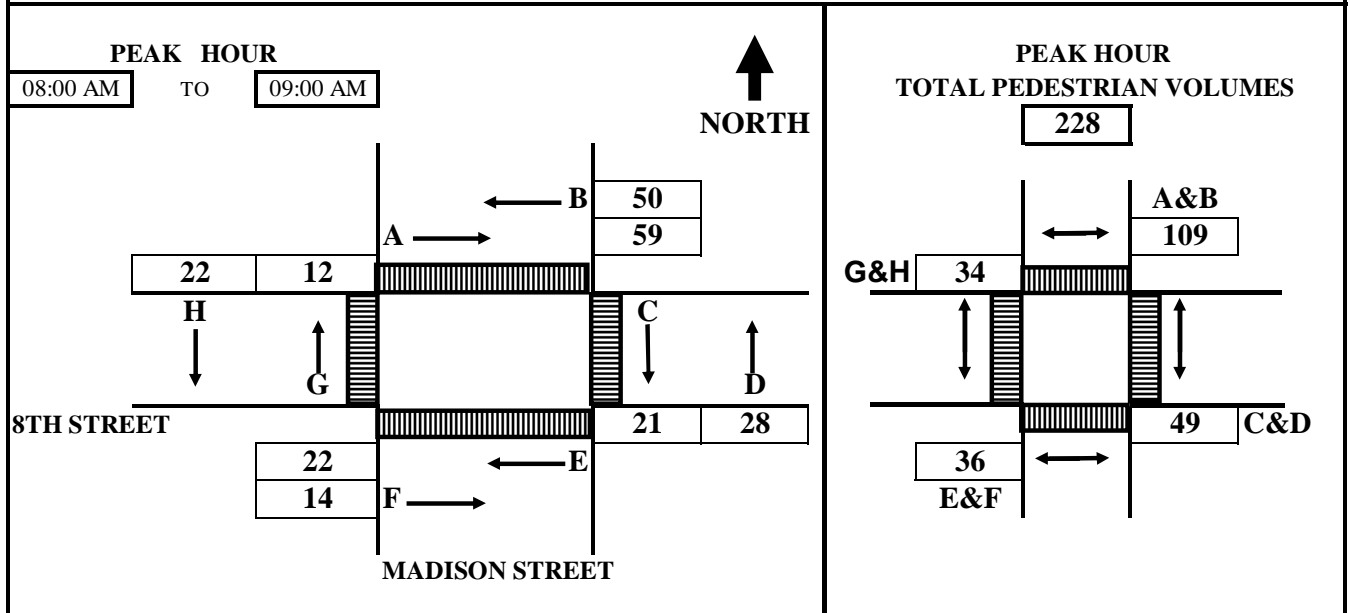
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-8AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	10	8	5	5	2	4	6	4	44
07:15 AM	---	07:30 AM	17	16	9	14	10	12	12	8	98
07:30 AM	---	07:45 AM	22	21	13	21	14	14	16	14	135
07:45 AM	---	08:00 AM	28	34	17	23	16	16	21	18	173
08:00 AM	---	08:15 AM	40	45	23	28	23	18	23	20	220
08:15 AM	---	08:30 AM	54	54	29	36	31	24	29	28	285
08:30 AM	---	08:45 AM	75	68	31	42	35	28	30	36	345
08:45 AM	---	09:00 AM	87	84	38	51	38	30	33	40	401

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	10	8	5	5	2	4	6	4	44
07:15 AM	---	07:30 AM	7	8	4	9	8	8	6	4	54
07:30 AM	---	07:45 AM	5	5	4	7	4	2	4	6	37
07:45 AM	---	08:00 AM	6	13	4	2	2	2	5	4	38
08:00 AM	---	08:15 AM	12	11	6	5	7	2	2	2	47
08:15 AM	---	08:30 AM	14	9	6	8	8	6	6	8	65
08:30 AM	---	08:45 AM	21	14	2	6	4	4	1	8	60
08:45 AM	---	09:00 AM	12	16	7	9	3	2	3	4	56

### HOURLY TOTALS

07:00 AM	---	08:00 AM	28	34	17	23	16	16	21	18	173
07:15 AM	---	08:15 AM	30	37	18	23	21	14	17	16	176
07:30 AM	---	08:30 AM	37	38	20	22	21	12	17	20	187
07:45 AM	---	08:45 AM	53	47	18	21	21	14	14	22	210
08:00 AM	---	09:00 AM	59	50	21	28	22	14	12	22	228

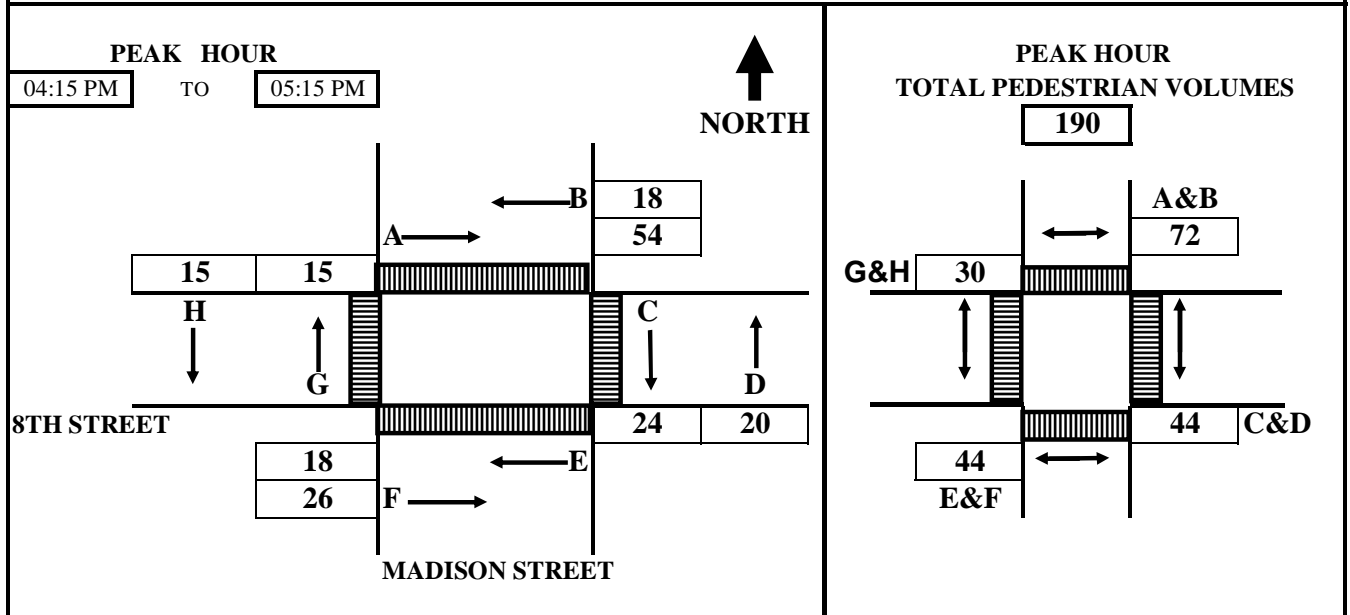
Tel : (510) 232-1271

Fax: (510) 232-1272

# B.A.Y.M.E.T.R.I.C.S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-8PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	12	4	7	3	4	6	3	2	41
04:15 PM	---	04:30 PM	22	7	13	10	10	14	5	9	90
04:30 PM	---	04:45 PM	38	15	17	17	16	20	9	12	144
04:45 PM	---	05:00 PM	50	18	23	20	18	29	13	15	186
05:00 PM	---	05:15 PM	66	22	31	23	22	32	18	17	231
05:15 PM	---	05:30 PM	72	26	35	30	28	37	21	19	268
05:30 PM	---	05:45 PM	82	30	39	34	33	41	23	23	305
05:45 PM	---	06:00 PM	90	35	43	38	37	43	27	25	338

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	12	4	7	3	4	6	3	2	41
04:15 PM	---	04:30 PM	10	3	6	7	6	8	2	7	49
04:30 PM	---	04:45 PM	16	8	4	7	6	6	4	3	54
04:45 PM	---	05:00 PM	12	3	6	3	2	9	4	3	42
05:00 PM	---	05:15 PM	16	4	8	3	4	3	5	2	45
05:15 PM	---	05:30 PM	6	4	4	7	6	5	3	2	37
05:30 PM	---	05:45 PM	10	4	4	4	5	4	2	4	37
05:45 PM	---	06:00 PM	8	5	4	4	4	2	4	2	33

### HOURLY TOTALS

04:00 PM	---	05:00 PM	50	18	23	20	18	29	13	15	186
04:15 PM	---	05:15 PM	54	18	24	20	18	26	15	15	190
04:30 PM	---	05:30 PM	50	19	22	20	18	23	16	10	178
04:45 PM	---	05:45 PM	44	15	22	17	17	21	14	11	161
05:00 PM	---	06:00 PM	40	17	20	18	19	14	14	10	152

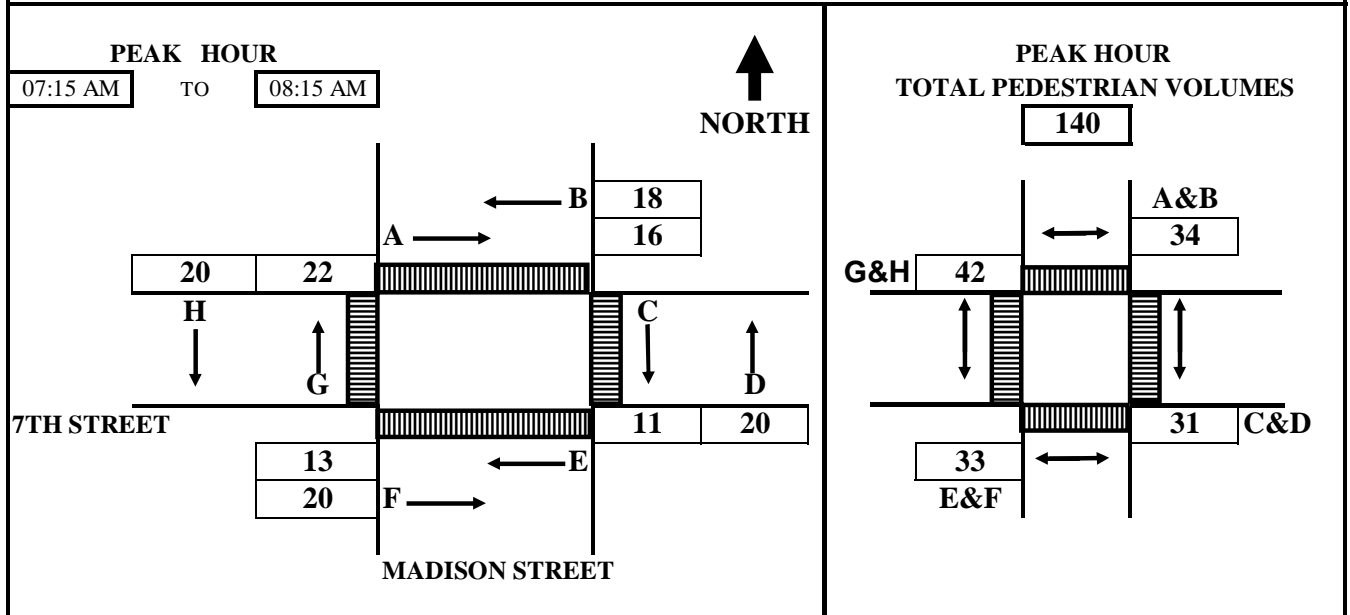
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-9AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	2	2	5	5	2	4	4	4	28
07:15 AM	---	07:30 AM	3	10	8	13	4	10	10	10	68
07:30 AM	---	07:45 AM	7	12	10	19	6	14	18	16	102
07:45 AM	---	08:00 AM	16	18	12	21	10	18	22	18	135
08:00 AM	---	08:15 AM	18	20	16	25	15	24	26	24	168
08:15 AM	---	08:30 AM	20	23	20	31	17	28	30	26	195
08:30 AM	---	08:45 AM	22	26	22	35	21	30	32	28	216
08:45 AM	---	09:00 AM	26	30	28	41	23	33	34	32	247

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	2	2	5	5	2	4	4	4	28
07:15 AM	---	07:30 AM	1	8	3	8	2	6	6	6	40
07:30 AM	---	07:45 AM	4	2	2	6	2	4	8	6	34
07:45 AM	---	08:00 AM	9	6	2	2	4	4	4	2	33
08:00 AM	---	08:15 AM	2	2	4	4	5	6	4	6	33
08:15 AM	---	08:30 AM	2	3	4	6	2	4	4	2	27
08:30 AM	---	08:45 AM	2	3	2	4	4	2	2	2	21
08:45 AM	---	09:00 AM	4	4	6	6	2	3	2	4	31

### HOURLY TOTALS

07:00 AM	---	08:00 AM	16	18	12	21	10	18	22	18	135
07:15 AM	---	08:15 AM	16	18	11	20	13	20	22	20	140
07:30 AM	---	08:30 AM	17	13	12	18	13	18	20	16	127
07:45 AM	---	08:45 AM	15	14	12	16	15	16	14	12	114
08:00 AM	---	09:00 AM	10	12	16	20	13	15	12	14	112

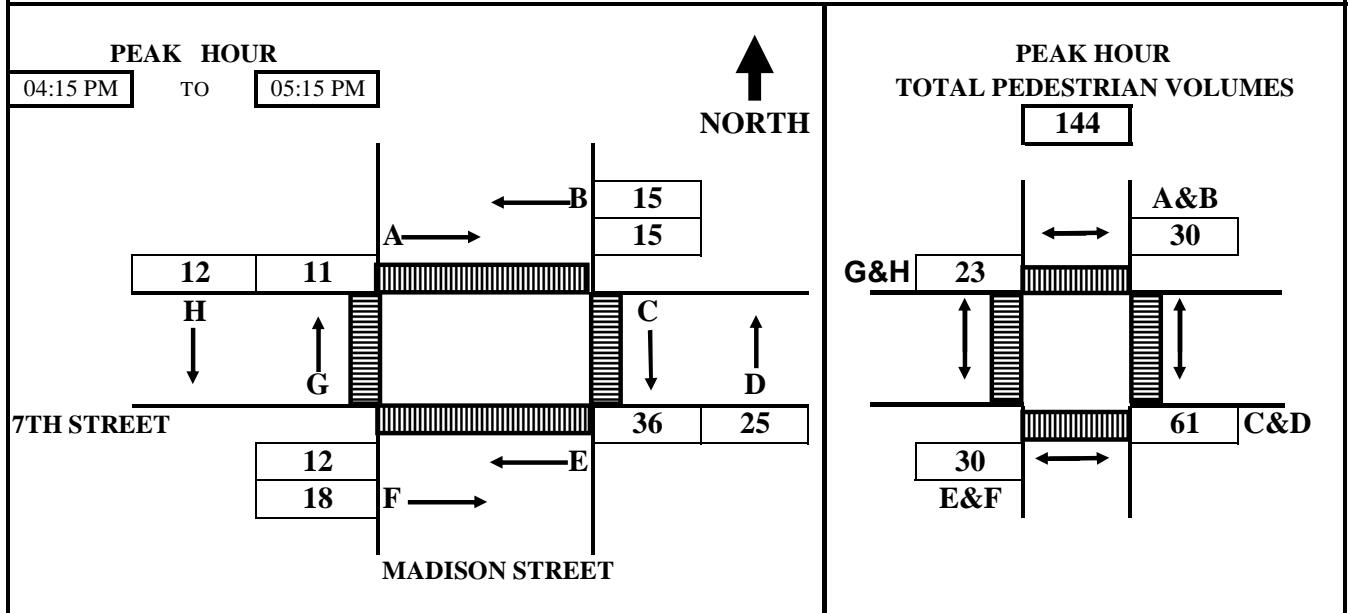
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-9PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	8	2	4	2	2	6	3	2	29
04:15 PM	---	04:30 PM	12	4	12	15	5	10	5	6	69
04:30 PM	---	04:45 PM	15	7	19	20	7	16	7	8	99
04:45 PM	---	05:00 PM	17	13	28	24	9	20	10	11	132
05:00 PM	---	05:15 PM	23	17	40	27	14	24	14	14	173
05:15 PM	---	05:30 PM	25	19	46	33	16	26	19	16	200
05:30 PM	---	05:45 PM	27	22	50	35	19	29	23	17	222
05:45 PM	---	06:00 PM	29	24	58	37	21	31	25	19	244

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	8	2	4	2	2	6	3	2	29
04:15 PM	---	04:30 PM	4	2	8	13	3	4	2	4	40
04:30 PM	---	04:45 PM	3	3	7	5	2	6	2	2	30
04:45 PM	---	05:00 PM	2	6	9	4	2	4	3	3	33
05:00 PM	---	05:15 PM	6	4	12	3	5	4	4	3	41
05:15 PM	---	05:30 PM	2	2	6	6	2	2	5	2	27
05:30 PM	---	05:45 PM	2	3	4	2	3	3	4	1	22
05:45 PM	---	06:00 PM	2	2	8	2	2	2	2	2	22

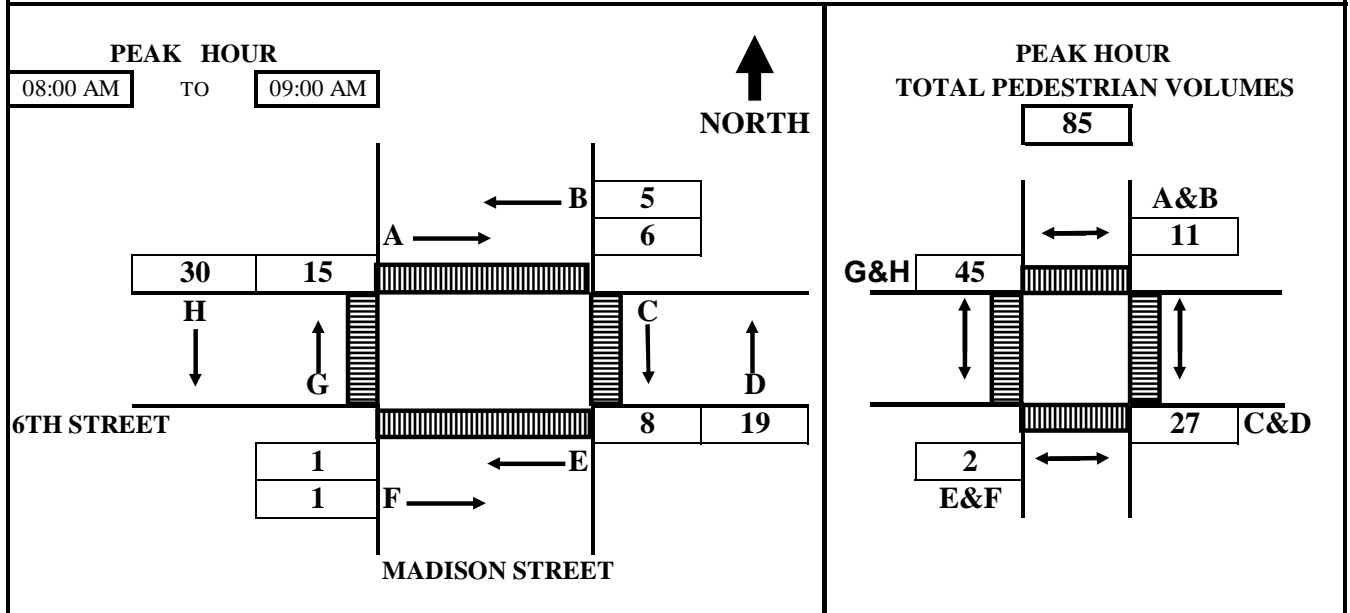
### HOURLY TOTALS

04:00 PM	---	05:00 PM	17	13	28	24	9	20	10	11	132
04:15 PM	---	05:15 PM	15	15	36	25	12	18	11	12	144
04:30 PM	---	05:30 PM	13	15	34	18	11	16	14	10	131
04:45 PM	---	05:45 PM	12	15	31	15	12	13	16	9	123
05:00 PM	---	06:00 PM	12	11	30	13	12	11	15	8	112

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 6TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-10AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	0	0	3	0	0	7	2	12
07:15 AM	---	07:30 AM	0	0	1	5	0	0	12	4	22
07:30 AM	---	07:45 AM	0	0	1	9	0	2	15	8	35
07:45 AM	---	08:00 AM	0	1	4	11	0	2	20	11	49
08:00 AM	---	08:15 AM	0	2	5	16	0	2	23	20	68
08:15 AM	---	08:30 AM	0	4	5	21	1	2	28	27	88
08:30 AM	---	08:45 AM	2	4	8	27	1	3	31	35	111
08:45 AM	---	09:00 AM	6	6	12	30	1	3	35	41	134

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	0	3	0	0	7	2	12
07:15 AM	---	07:30 AM	0	0	1	2	0	0	5	2	10
07:30 AM	---	07:45 AM	0	0	0	4	0	2	3	4	13
07:45 AM	---	08:00 AM	0	1	3	2	0	0	5	3	14
08:00 AM	---	08:15 AM	0	1	1	5	0	0	3	9	19
08:15 AM	---	08:30 AM	0	2	0	5	1	0	5	7	20
08:30 AM	---	08:45 AM	2	0	3	6	0	1	3	8	23
08:45 AM	---	09:00 AM	4	2	4	3	0	0	4	6	23

### HOURLY TOTALS

07:00 AM	---	08:00 AM	0	1	4	11	0	2	20	11	49
07:15 AM	---	08:15 AM	0	2	5	13	0	2	16	18	56
07:30 AM	---	08:30 AM	0	4	4	16	1	2	16	23	66
07:45 AM	---	08:45 AM	2	4	7	18	1	1	16	27	76
08:00 AM	---	09:00 AM	6	5	8	19	1	1	15	30	85

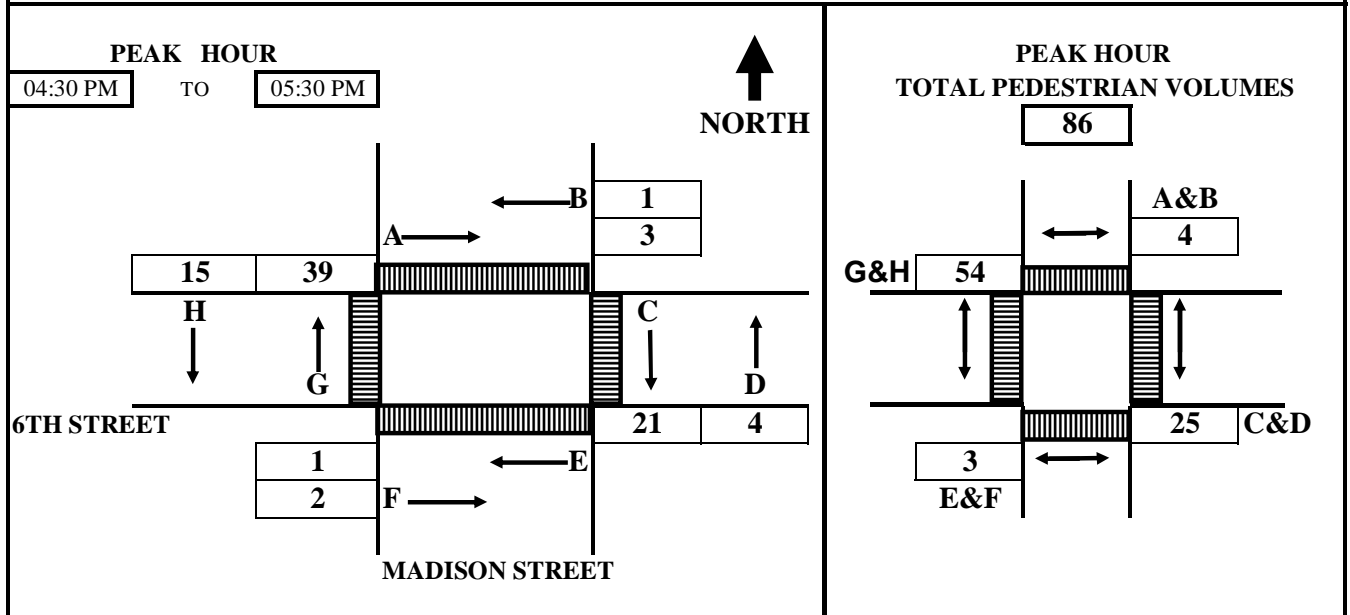
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 6TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-10PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	0	0	1	0	0	3	4	8
04:15 PM	---	04:30 PM	0	0	0	3	0	0	7	6	16
04:30 PM	---	04:45 PM	2	1	6	3	0	0	17	11	40
04:45 PM	---	05:00 PM	2	1	12	4	1	0	26	13	59
05:00 PM	---	05:15 PM	3	1	18	7	1	0	35	18	83
05:15 PM	---	05:30 PM	3	1	21	7	1	2	46	21	102
05:30 PM	---	05:45 PM	3	1	26	7	1	3	53	23	117
05:45 PM	---	06:00 PM	3	1	34	9	3	3	61	27	141

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	0	0	1	0	0	3	4	8
04:15 PM	---	04:30 PM	0	0	0	2	0	0	4	2	8
04:30 PM	---	04:45 PM	2	1	6	0	0	0	10	5	24
04:45 PM	---	05:00 PM	0	0	6	1	1	0	9	2	19
05:00 PM	---	05:15 PM	1	0	6	3	0	0	9	5	24
05:15 PM	---	05:30 PM	0	0	3	0	0	2	11	3	19
05:30 PM	---	05:45 PM	0	0	5	0	0	1	7	2	15
05:45 PM	---	06:00 PM	0	0	8	2	2	0	8	4	24

### HOURLY TOTALS

04:00 PM	---	05:00 PM	2	1	12	4	1	0	26	13	59
04:15 PM	---	05:15 PM	3	1	18	6	1	0	32	14	75
04:30 PM	---	05:30 PM	3	1	21	4	1	2	39	15	86
04:45 PM	---	05:45 PM	1	0	20	4	1	3	36	12	77
05:00 PM	---	06:00 PM	1	0	22	5	2	3	35	14	82

Tel : (510) 232-1271

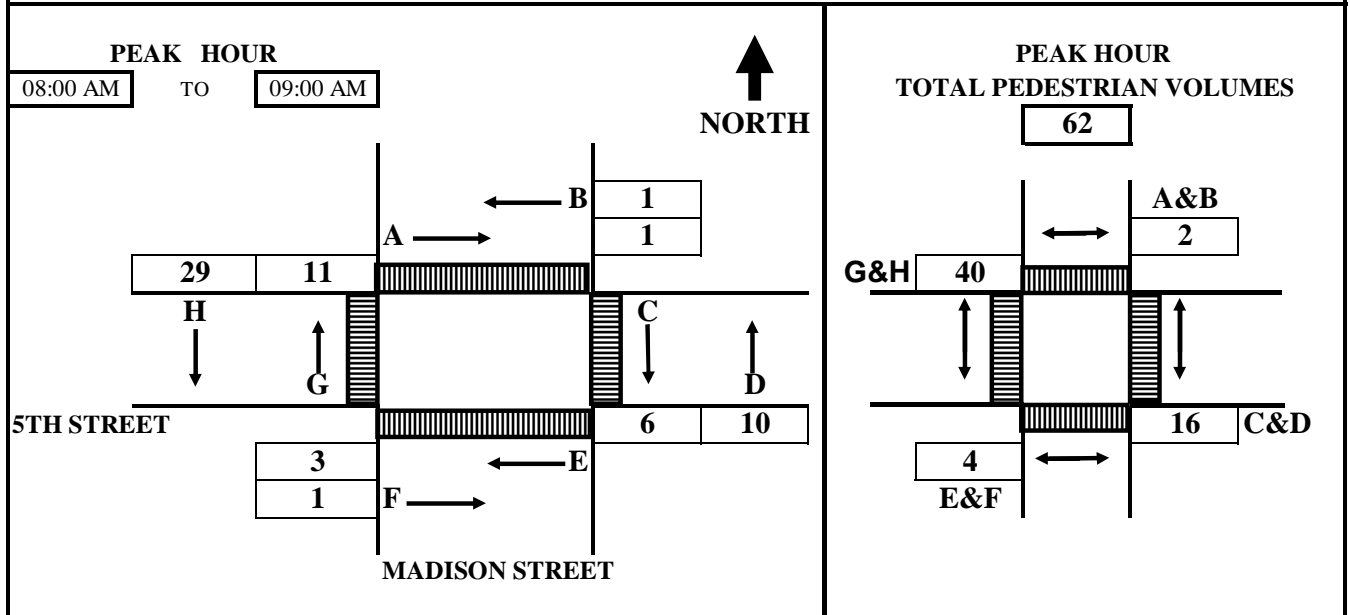
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> MADISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 5TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-11AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	2	0	0	3	0	0	8	1	14
07:15 AM	---	07:30 AM	2	0	2	3	1	3	13	4	28
07:30 AM	---	07:45 AM	2	0	2	5	2	3	16	9	39
07:45 AM	---	08:00 AM	3	0	2	5	2	3	21	12	48
08:00 AM	---	08:15 AM	4	0	2	9	3	3	23	21	65
08:15 AM	---	08:30 AM	4	1	2	11	3	4	26	28	79
08:30 AM	---	08:45 AM	4	1	3	13	3	4	27	36	91
08:45 AM	---	09:00 AM	4	1	8	15	5	4	32	41	110

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	2	0	0	3	0	0	8	1	14
07:15 AM	---	07:30 AM	0	0	2	0	1	3	5	3	14
07:30 AM	---	07:45 AM	0	0	0	2	1	0	3	5	11
07:45 AM	---	08:00 AM	1	0	0	0	0	0	5	3	9
08:00 AM	---	08:15 AM	1	0	0	4	1	0	2	9	17
08:15 AM	---	08:30 AM	0	1	0	2	0	1	3	7	14
08:30 AM	---	08:45 AM	0	0	1	2	0	0	1	8	12
08:45 AM	---	09:00 AM	0	0	5	2	2	0	5	5	19

### HOURLY TOTALS

07:00 AM	---	08:00 AM	3	0	2	5	2	3	21	12	48
07:15 AM	---	08:15 AM	2	0	2	6	3	3	15	20	51
07:30 AM	---	08:30 AM	2	1	0	8	2	1	13	24	51
07:45 AM	---	08:45 AM	2	1	1	8	1	1	11	27	52
08:00 AM	---	09:00 AM	1	1	6	10	3	1	11	29	62

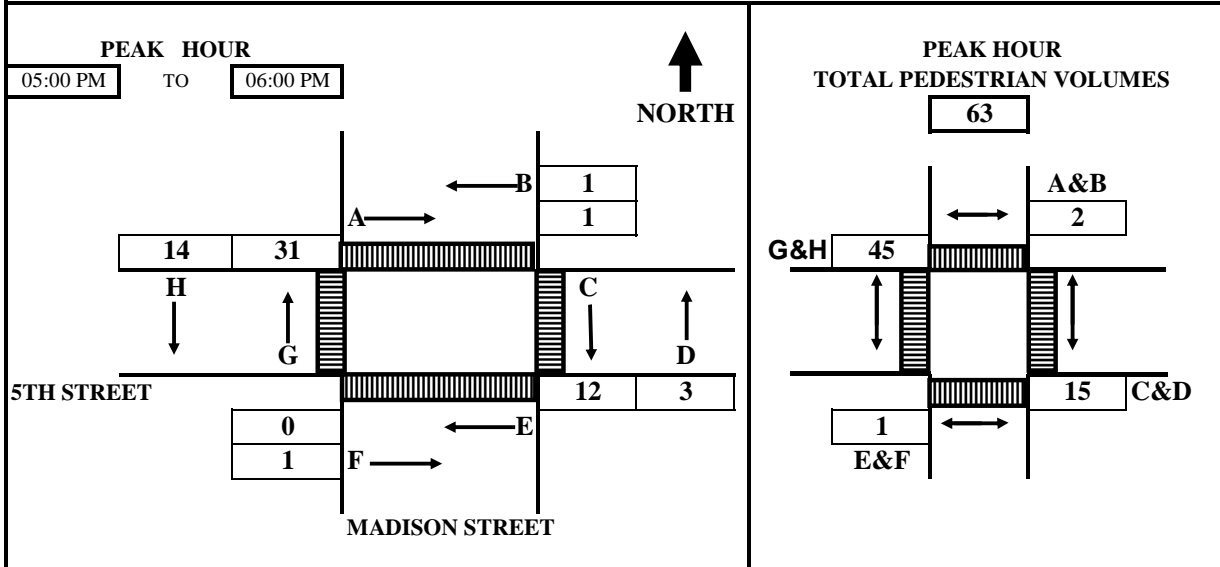
Tel : (510) 232-1271

Fax: (510) 232-1272

# B.A.Y.M.E.T.R.I.C.S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012
<b>N-S APPROACH:</b> MADISON STREET	<b>DAY:</b> THURSDAY
<b>E-W APPROACH:</b> 5TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD:</b> 4:00 PM TO 6:00 PM	<b>FILE:</b> 3205033-PED-11PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	2	0	1	0	0	3	1	7
04:15 PM	---	04:30 PM	0	2	0	3	1	0	7	3	16
04:30 PM	---	04:45 PM	1	2	4	3	1	0	17	5	33
04:45 PM	---	05:00 PM	2	2	8	4	1	0	25	7	49
05:00 PM	---	05:15 PM	3	2	8	4	1	1	34	12	65
05:15 PM	---	05:30 PM	3	3	8	4	1	1	41	15	76
05:30 PM	---	05:45 PM	3	3	12	5	1	1	48	17	90
05:45 PM	---	06:00 PM	3	3	20	7	1	1	56	21	112

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	2	0	1	0	0	3	1	7
04:15 PM	---	04:30 PM	0	0	0	2	1	0	4	2	9
04:30 PM	---	04:45 PM	1	0	4	0	0	0	10	2	17
04:45 PM	---	05:00 PM	1	0	4	1	0	0	8	2	16
05:00 PM	---	05:15 PM	1	0	0	0	0	1	9	5	16
05:15 PM	---	05:30 PM	0	1	0	0	0	0	7	3	11
05:30 PM	---	05:45 PM	0	0	4	1	0	0	7	2	14
05:45 PM	---	06:00 PM	0	0	8	2	0	0	8	4	22

### HOURLY TOTALS

04:00 PM	---	05:00 PM	2	2	8	4	1	0	25	7	49
04:15 PM	---	05:15 PM	3	0	8	3	1	1	31	11	58
04:30 PM	---	05:30 PM	3	1	8	1	0	1	34	12	60
04:45 PM	---	05:45 PM	2	1	8	2	0	1	31	12	57
05:00 PM	---	06:00 PM	1	1	12	3	0	1	31	14	63

Tel : (510) 232-1271

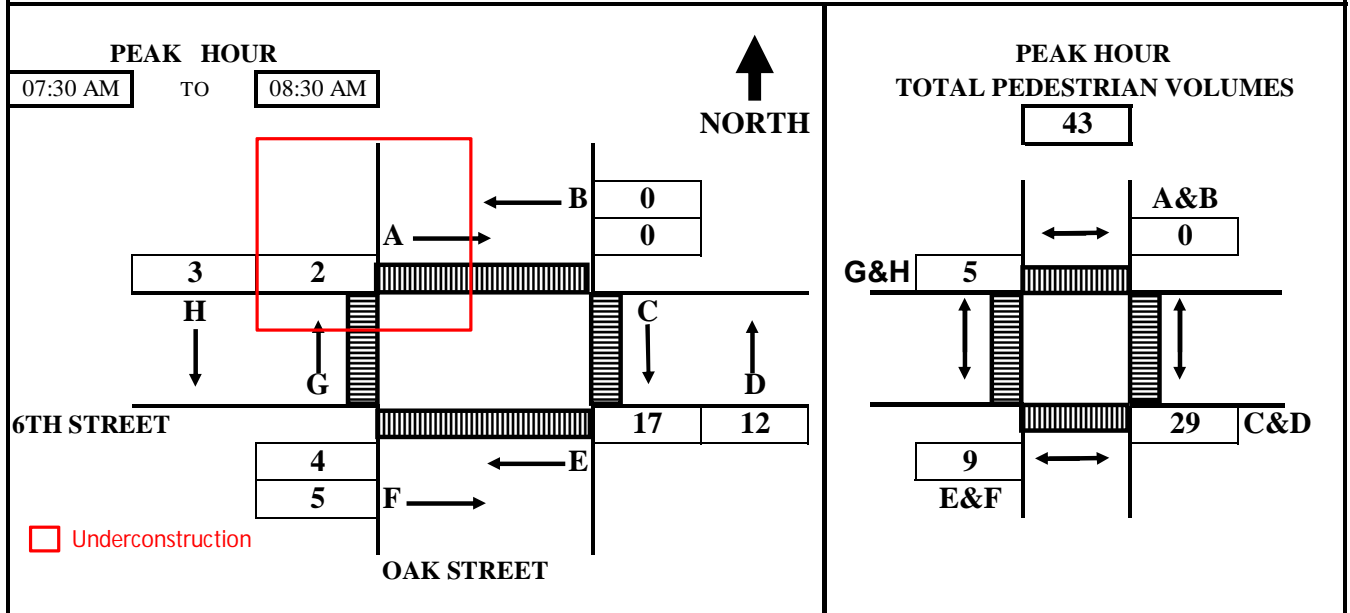
Fax: (510) 232-1272

0  
0  
0  
0  
1

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b>	OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b>	5/17/2012
<b>N-S APPROACH:</b>	OAK STREET	<b>DAY:</b>	THURSDAY
<b>E-W APPROACH:</b>	6TH STREET	<b>CITY:</b>	OAKLAND
<b>SURVEY PERIOD</b>	7:00 AM TO 9:00 AM	<b>FILE:</b>	3205033-PED-12AM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

<b>SURVEY DATA</b>											
07:00 AM	---	07:15 AM			2	2	1	1	0	0	6
07:15 AM	---	07:30 AM			5	3	2	4	0	0	14
07:30 AM	---	07:45 AM			10	6	2	6	1	1	26
07:45 AM	---	08:00 AM			14	10	5	8	1	2	40
08:00 AM	---	08:15 AM			20	12	5	8	1	2	48
08:15 AM	---	08:30 AM			22	15	6	9	2	3	57
08:30 AM	---	08:45 AM			27	19	6	9	2	3	66
08:45 AM	---	09:00 AM			30	21	6	10	2	5	74

<b>TOTAL BY PERIOD</b>											
07:00 AM	---	07:15 AM	0	0	2	2	1	1	0	0	6
07:15 AM	---	07:30 AM	0	0	3	1	1	3	0	0	8
07:30 AM	---	07:45 AM	0	0	5	3	0	2	1	1	12
07:45 AM	---	08:00 AM	0	0	4	4	3	2	0	1	14
08:00 AM	---	08:15 AM	0	0	6	2	0	0	0	0	8
08:15 AM	---	08:30 AM	0	0	2	3	1	1	1	1	9
08:30 AM	---	08:45 AM	0	0	5	4	0	0	0	0	9
08:45 AM	---	09:00 AM	0	0	3	2	0	1	0	2	8

<b>HOURLY TOTALS</b>											
07:00 AM	---	08:00 AM	0	0	14	10	5	8	1	2	40
07:15 AM	---	08:15 AM	0	0	18	10	4	7	1	2	42
07:30 AM	---	08:30 AM	0	0	17	12	4	5	2	3	43
07:45 AM	---	08:45 AM	0	0	17	13	4	3	1	2	40
08:00 AM	---	09:00 AM	0	0	16	11	1	2	1	3	34

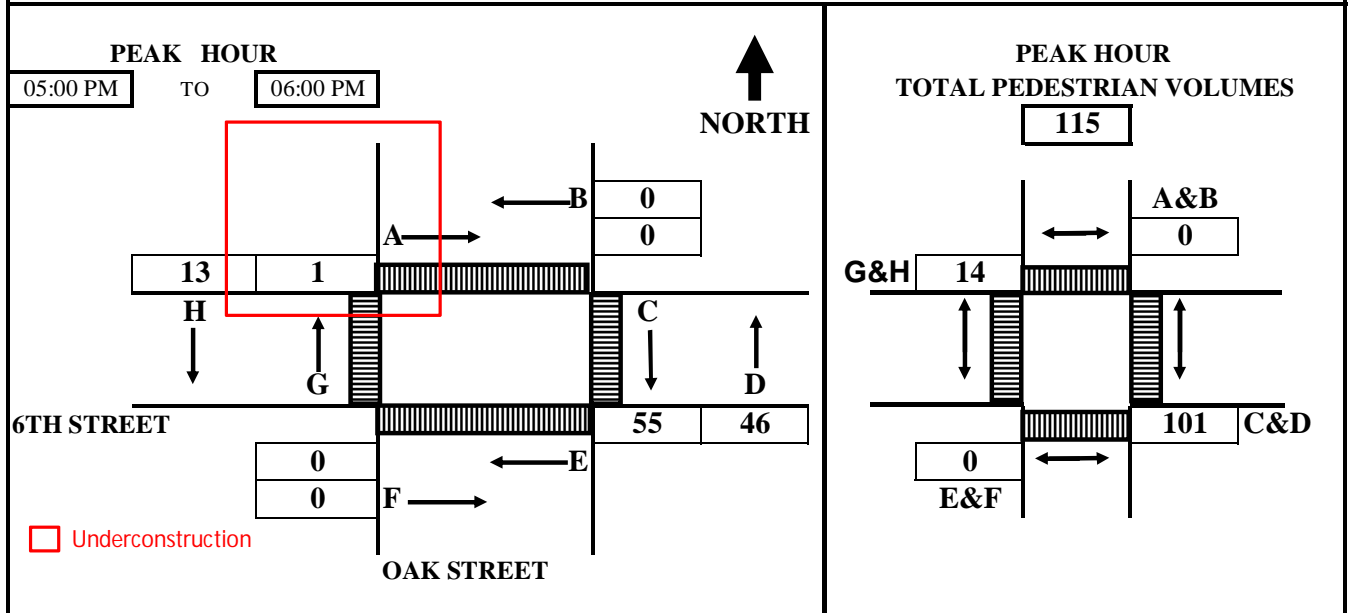
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 6TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-12PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	0	7	4	2	1	0	0	14
04:15 PM	---	04:30 PM	0	0	20	8	3	4	0	0	35
04:30 PM	---	04:45 PM	0	0	30	15	3	7	1	0	56
04:45 PM	---	05:00 PM	0	0	44	21	6	11	1	0	83
05:00 PM	---	05:15 PM	0	0	57	37	6	11	2	7	120
05:15 PM	---	05:30 PM	0	0	71	45	6	11	2	10	145
05:30 PM	---	05:45 PM	0	0	76	51	6	11	2	10	156
05:45 PM	---	06:00 PM	0	0	99	67	6	11	2	13	198

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	0	7	4	2	1	0	0	14
04:15 PM	---	04:30 PM	0	0	13	4	1	3	0	0	21
04:30 PM	---	04:45 PM	0	0	10	7	0	3	1	0	21
04:45 PM	---	05:00 PM	0	0	14	6	3	4	0	0	27
05:00 PM	---	05:15 PM	0	0	13	16	0	0	1	7	37
05:15 PM	---	05:30 PM	0	0	14	8	0	0	0	3	25
05:30 PM	---	05:45 PM	0	0	5	6	0	0	0	0	11
05:45 PM	---	06:00 PM	0	0	23	16	0	0	0	3	42

### HOURLY TOTALS

04:00 PM	---	05:00 PM	0	0	44	21	6	11	1	0	83
04:15 PM	---	05:15 PM	0	0	50	33	4	10	2	7	106
04:30 PM	---	05:30 PM	0	0	51	37	3	7	2	10	110
04:45 PM	---	05:45 PM	0	0	46	36	3	4	1	10	100
05:00 PM	---	06:00 PM	0	0	55	46	0	0	1	13	115

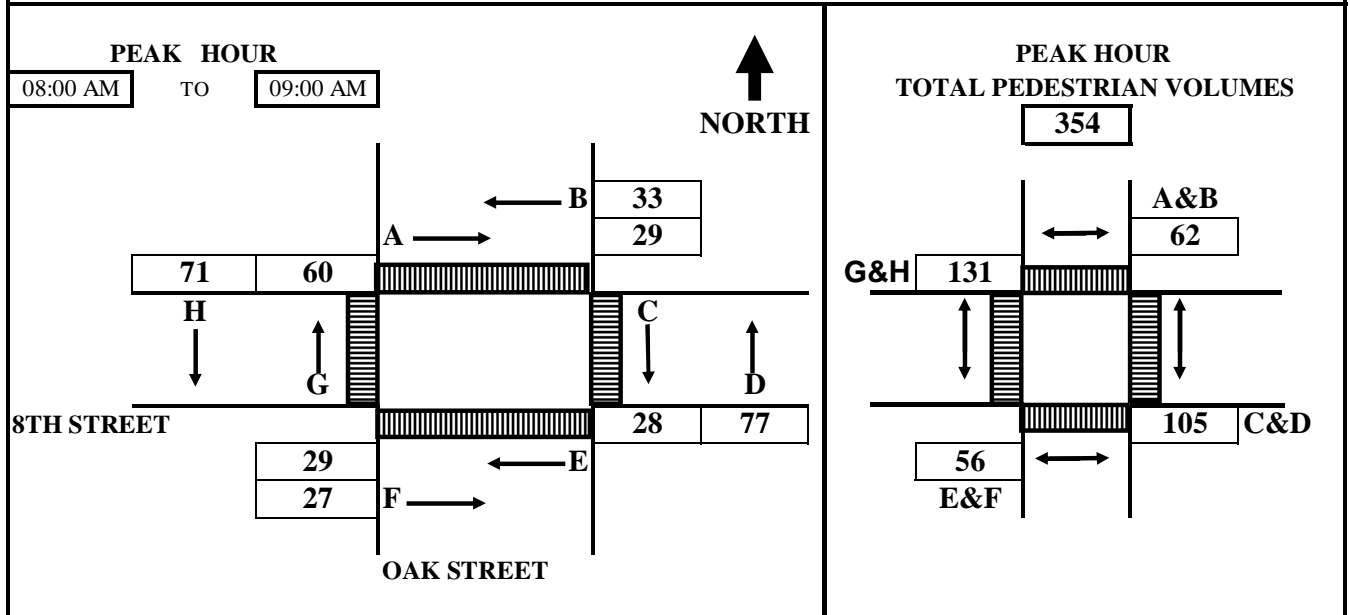
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-13AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	3	1	3	1	2	3	11	5	29
07:15 AM	---	07:30 AM	4	3	6	4	7	4	23	20	71
07:30 AM	---	07:45 AM	5	5	7	18	8	7	33	41	124
07:45 AM	---	08:00 AM	10	8	11	38	13	12	42	53	187
08:00 AM	---	08:15 AM	16	19	17	68	21	17	62	67	287
08:15 AM	---	08:30 AM	27	28	30	84	31	25	81	87	393
08:30 AM	---	08:45 AM	32	33	31	99	35	34	92	108	464
08:45 AM	---	09:00 AM	39	41	39	115	42	39	102	124	541

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	3	1	3	1	2	3	11	5	29
07:15 AM	---	07:30 AM	1	2	3	3	5	1	12	15	42
07:30 AM	---	07:45 AM	1	2	1	14	1	3	10	21	53
07:45 AM	---	08:00 AM	5	3	4	20	5	5	9	12	63
08:00 AM	---	08:15 AM	6	11	6	30	8	5	20	14	100
08:15 AM	---	08:30 AM	11	9	13	16	10	8	19	20	106
08:30 AM	---	08:45 AM	5	5	1	15	4	9	11	21	71
08:45 AM	---	09:00 AM	7	8	8	16	7	5	10	16	77

### HOURLY TOTALS

07:00 AM	---	08:00 AM	10	8	11	38	13	12	42	53	187
07:15 AM	---	08:15 AM	13	18	14	67	19	14	51	62	258
07:30 AM	---	08:30 AM	23	25	24	80	24	21	58	67	322
07:45 AM	---	08:45 AM	27	28	24	81	27	27	59	67	340
08:00 AM	---	09:00 AM	29	33	28	77	29	27	60	71	354

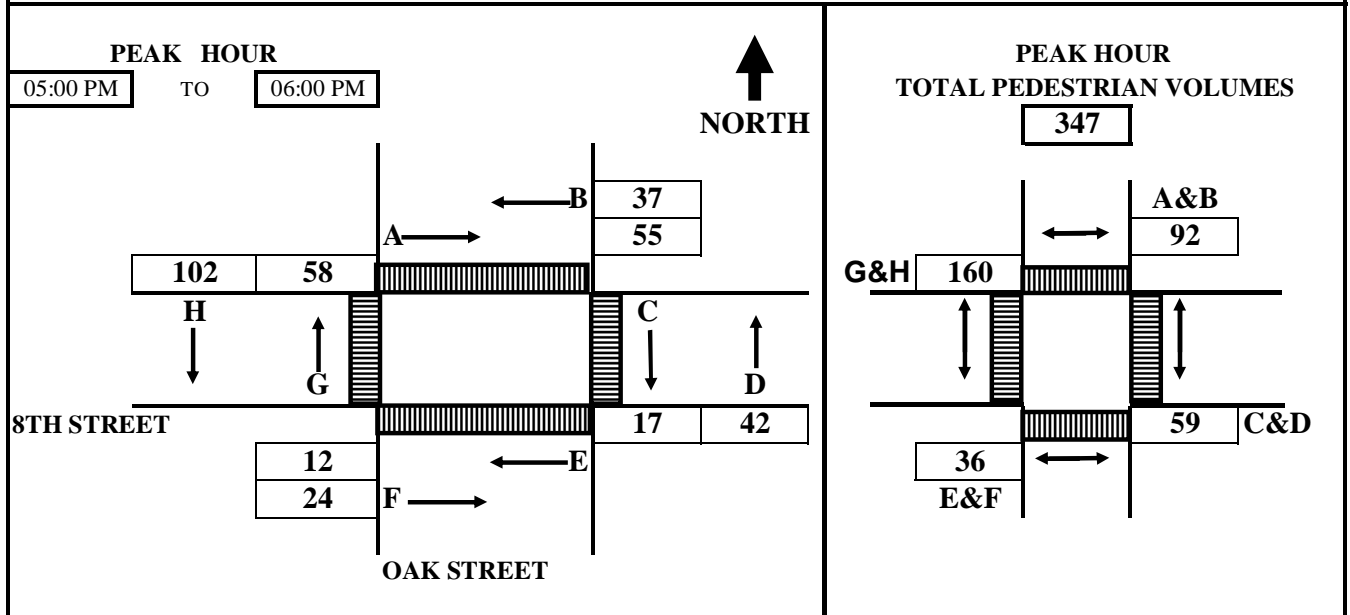
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-13PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	8	8	4	6	5	7	12	16	66
04:15 PM	---	04:30 PM	21	14	9	10	6	15	20	43	138
04:30 PM	---	04:45 PM	36	19	13	16	10	25	29	60	208
04:45 PM	---	05:00 PM	49	23	17	24	13	31	41	85	283
05:00 PM	---	05:15 PM	63	32	20	37	15	35	59	108	369
05:15 PM	---	05:30 PM	72	40	25	50	17	43	71	136	454
05:30 PM	---	05:45 PM	82	57	32	57	22	50	84	147	531
05:45 PM	---	06:00 PM	104	60	34	66	25	55	99	187	630

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	8	8	4	6	5	7	12	16	66
04:15 PM	---	04:30 PM	13	6	5	4	1	8	8	27	72
04:30 PM	---	04:45 PM	15	5	4	6	4	10	9	17	70
04:45 PM	---	05:00 PM	13	4	4	8	3	6	12	25	75
05:00 PM	---	05:15 PM	14	9	3	13	2	4	18	23	86
05:15 PM	---	05:30 PM	9	8	5	13	2	8	12	28	85
05:30 PM	---	05:45 PM	10	17	7	7	5	7	13	11	77
05:45 PM	---	06:00 PM	22	3	2	9	3	5	15	40	99

### HOURLY TOTALS

04:00 PM	---	05:00 PM	49	23	17	24	13	31	41	85	283
04:15 PM	---	05:15 PM	55	24	16	31	10	28	47	92	303
04:30 PM	---	05:30 PM	51	26	16	40	11	28	51	93	316
04:45 PM	---	05:45 PM	46	38	19	41	12	25	55	87	323
05:00 PM	---	06:00 PM	55	37	17	42	12	24	58	102	347

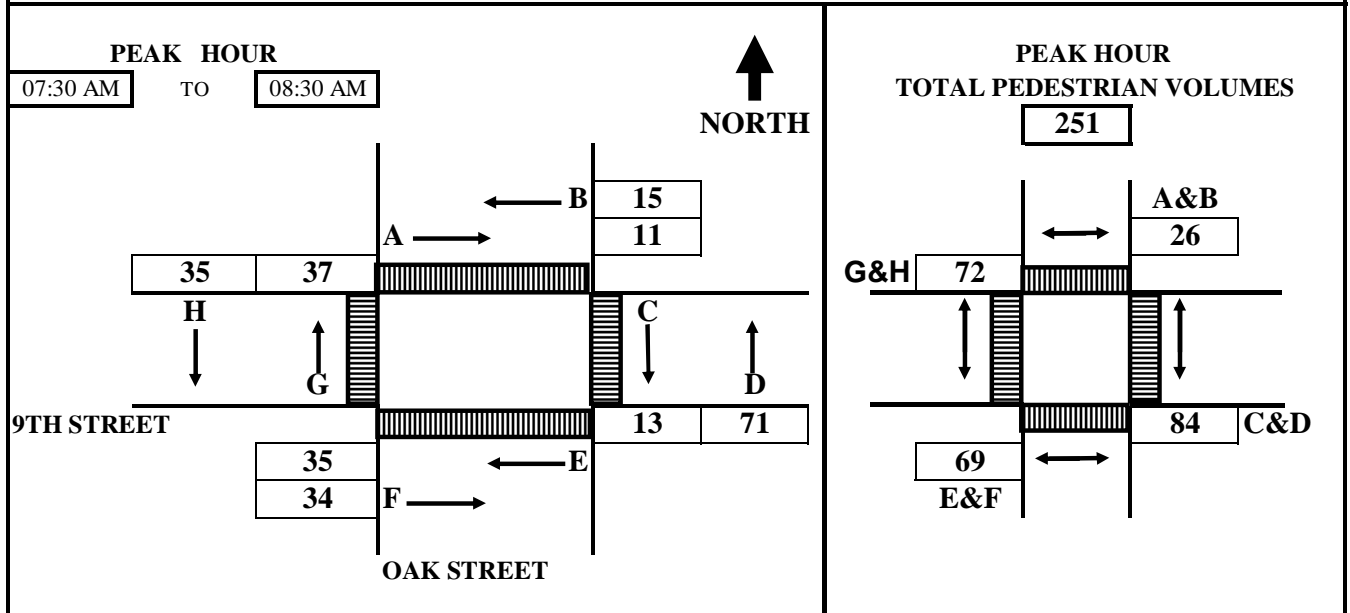
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 9TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-14AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	6	4	6	9	9	2	4	5	45
07:15 AM	---	07:30 AM	10	8	13	22	17	4	9	9	92
07:30 AM	---	07:45 AM	14	11	17	37	25	12	13	18	147
07:45 AM	---	08:00 AM	16	15	21	56	33	19	20	27	207
08:00 AM	---	08:15 AM	19	19	24	79	44	30	33	36	284
08:15 AM	---	08:30 AM	21	23	26	93	52	38	46	44	343
08:30 AM	---	08:45 AM	25	26	27	103	61	47	56	51	396
08:45 AM	---	09:00 AM	27	30	28	113	70	52	64	57	441

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	6	4	6	9	9	2	4	5	45
07:15 AM	---	07:30 AM	4	4	7	13	8	2	5	4	47
07:30 AM	---	07:45 AM	4	3	4	15	8	8	4	9	55
07:45 AM	---	08:00 AM	2	4	4	19	8	7	7	9	60
08:00 AM	---	08:15 AM	3	4	3	23	11	11	13	9	77
08:15 AM	---	08:30 AM	2	4	2	14	8	8	13	8	59
08:30 AM	---	08:45 AM	4	3	1	10	9	9	10	7	53
08:45 AM	---	09:00 AM	2	4	1	10	9	5	8	6	45

### HOURLY TOTALS

07:00 AM	---	08:00 AM	16	15	21	56	33	19	20	27	207
07:15 AM	---	08:15 AM	13	15	18	70	35	28	29	31	239
07:30 AM	---	08:30 AM	11	15	13	71	35	34	37	35	251
07:45 AM	---	08:45 AM	11	15	10	66	36	35	43	33	249
08:00 AM	---	09:00 AM	11	15	7	57	37	33	44	30	234

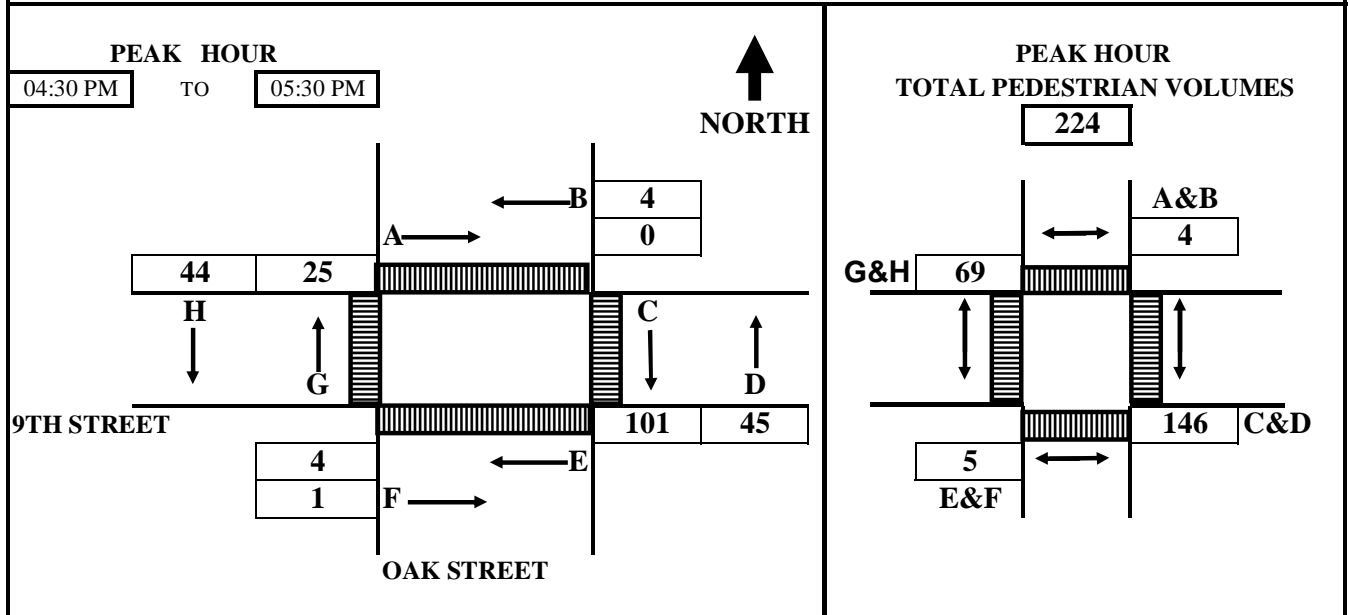
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 9TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-14PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	3	0	8	5	0	1	4	8	29
04:15 PM	---	04:30 PM	3	0	18	11	0	1	7	12	52
04:30 PM	---	04:45 PM	3	4	30	27	0	2	10	18	94
04:45 PM	---	05:00 PM	3	4	62	37	1	2	21	34	164
05:00 PM	---	05:15 PM	3	4	91	50	1	2	30	49	230
05:15 PM	---	05:30 PM	3	4	119	56	4	2	32	56	276
05:30 PM	---	05:45 PM	3	4	133	64	4	2	38	65	313
05:45 PM	---	06:00 PM	4	5	142	68	4	2	41	69	335

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	3	0	8	5	0	1	4	8	29
04:15 PM	---	04:30 PM	0	0	10	6	0	0	3	4	23
04:30 PM	---	04:45 PM	0	4	12	16	0	1	3	6	42
04:45 PM	---	05:00 PM	0	0	32	10	1	0	11	16	70
05:00 PM	---	05:15 PM	0	0	29	13	0	0	9	15	66
05:15 PM	---	05:30 PM	0	0	28	6	3	0	2	7	46
05:30 PM	---	05:45 PM	0	0	14	8	0	0	6	9	37
05:45 PM	---	06:00 PM	1	1	9	4	0	0	3	4	22

### HOURLY TOTALS

04:00 PM	---	05:00 PM	3	4	62	37	1	2	21	34	164
04:15 PM	---	05:15 PM	0	4	83	45	1	1	26	41	201
04:30 PM	---	05:30 PM	0	4	101	45	4	1	25	44	224
04:45 PM	---	05:45 PM	0	0	103	37	4	0	28	47	219
05:00 PM	---	06:00 PM	1	1	80	31	3	0	20	35	171

Tel : (510) 232-1271

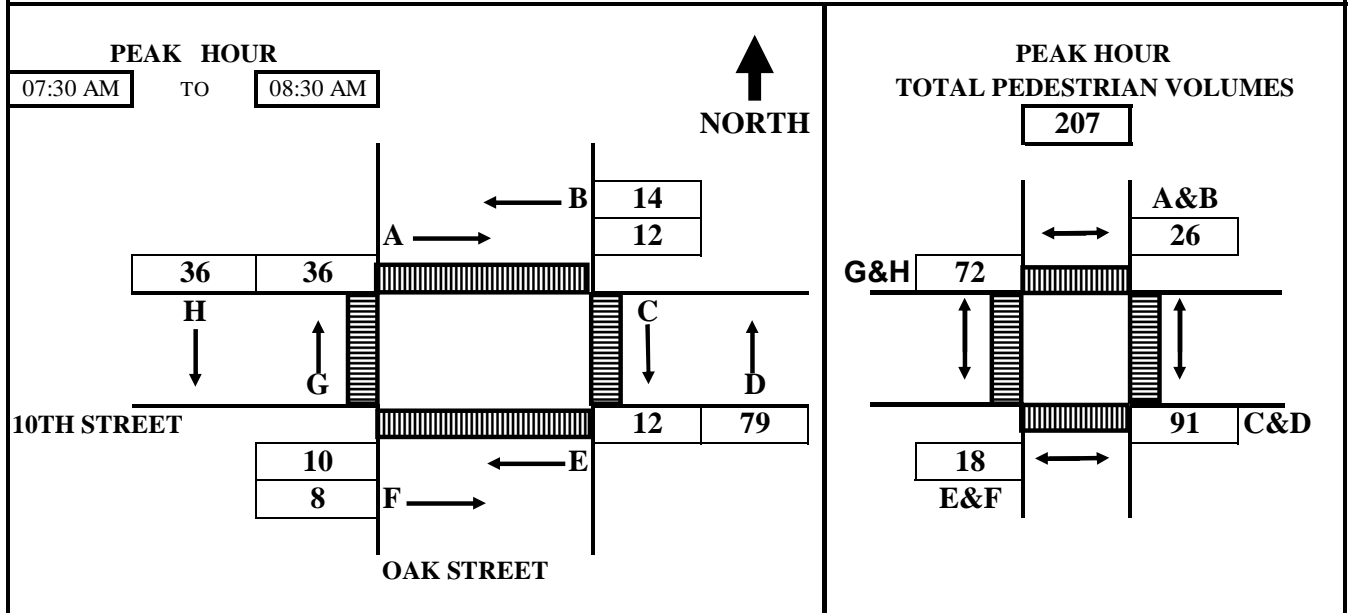
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 10TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-15AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	2	5	10	1	1	5	9	34
07:15 AM	---	07:30 AM	3	3	14	17	5	3	10	11	66
07:30 AM	---	07:45 AM	7	6	17	37	7	5	14	21	114
07:45 AM	---	08:00 AM	9	10	22	51	8	8	23	30	161
08:00 AM	---	08:15 AM	10	13	23	84	12	11	35	43	231
08:15 AM	---	08:30 AM	15	17	26	96	15	11	46	47	273
08:30 AM	---	08:45 AM	18	21	28	105	16	13	55	53	309
08:45 AM	---	09:00 AM	20	23	29	116	18	13	62	57	338

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	2	5	10	1	1	5	9	34
07:15 AM	---	07:30 AM	2	1	9	7	4	2	5	2	32
07:30 AM	---	07:45 AM	4	3	3	20	2	2	4	10	48
07:45 AM	---	08:00 AM	2	4	5	14	1	3	9	9	47
08:00 AM	---	08:15 AM	1	3	1	33	4	3	12	13	70
08:15 AM	---	08:30 AM	5	4	3	12	3	0	11	4	42
08:30 AM	---	08:45 AM	3	4	2	9	1	2	9	6	36
08:45 AM	---	09:00 AM	2	2	1	11	2	0	7	4	29

### HOURLY TOTALS

07:00 AM	---	08:00 AM	9	10	22	51	8	8	23	30	161
07:15 AM	---	08:15 AM	9	11	18	74	11	10	30	34	197
07:30 AM	---	08:30 AM	12	14	12	79	10	8	36	36	207
07:45 AM	---	08:45 AM	11	15	11	68	9	8	41	32	195
08:00 AM	---	09:00 AM	11	13	7	65	10	5	39	27	177

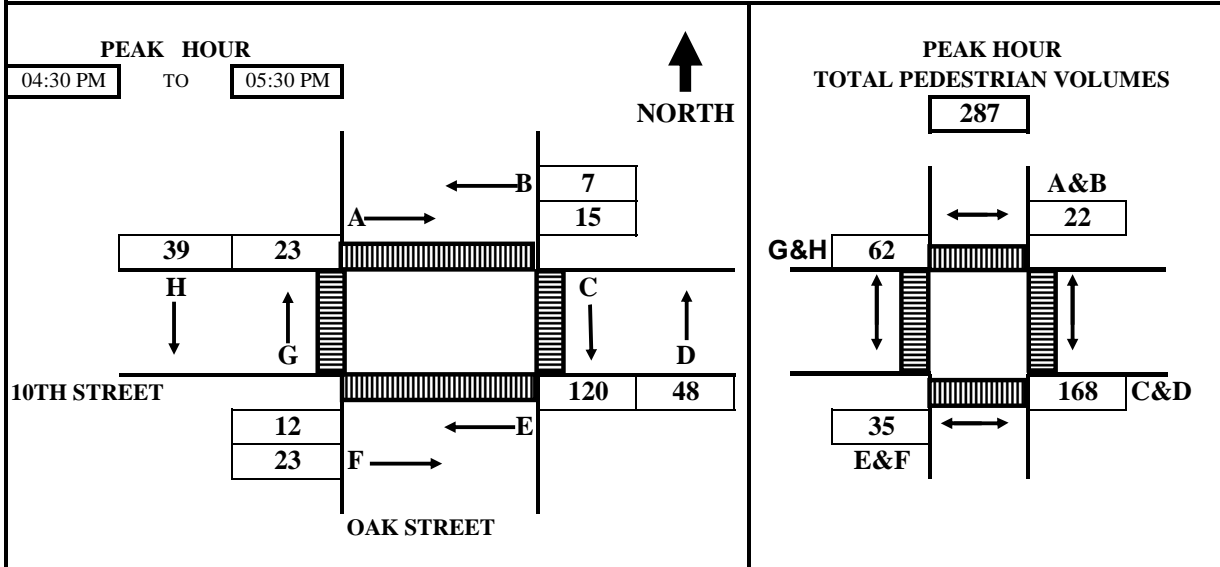
Tel : (510) 232-1271

Fax: (510) 232-1272

# B.A.Y.M.E.T.R.I.C.S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b> 5/16/2012
<b>N-S APPROACH:</b> OAK STREET	<b>DAY:</b> WEDNESDAY
<b>E-W APPROACH:</b> 10TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD</b> 4:00 PM TO 6:00 PM	<b>FILE:</b> 3205033-PED-15PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	2	0	4	6	2	2	4	4	24
04:15 PM	---	04:30 PM	2	0	15	11	16	4	7	8	63
04:30 PM	---	04:45 PM	9	2	36	32	18	8	11	16	132
04:45 PM	---	05:00 PM	12	5	52	47	20	10	14	18	178
05:00 PM	---	05:15 PM	15	7	104	51	23	24	23	34	281
05:15 PM	---	05:30 PM	17	7	135	59	28	27	30	47	350
05:30 PM	---	05:45 PM	21	9	139	66	36	31	38	56	396
05:45 PM	---	06:00 PM	22	10	150	71	38	35	44	64	434

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	2	0	4	6	2	2	4	4	24
04:15 PM	---	04:30 PM	0	0	11	5	14	2	3	4	39
04:30 PM	---	04:45 PM	7	2	21	21	2	4	4	8	69
04:45 PM	---	05:00 PM	3	3	16	15	2	2	3	2	46
05:00 PM	---	05:15 PM	3	2	52	4	3	14	9	16	103
05:15 PM	---	05:30 PM	2	0	31	8	5	3	7	13	69
05:30 PM	---	05:45 PM	4	2	4	7	8	4	8	9	46
05:45 PM	---	06:00 PM	1	1	11	5	2	4	6	8	38

### HOURLY TOTALS

04:00 PM	---	05:00 PM	12	5	52	47	20	10	14	18	178
04:15 PM	---	05:15 PM	13	7	100	45	21	22	19	30	257
04:30 PM	---	05:30 PM	15	7	120	48	12	23	23	39	287
04:45 PM	---	05:45 PM	12	7	103	34	18	23	27	40	264
05:00 PM	---	06:00 PM	10	5	98	24	18	25	30	46	256

Tel : (510) 232-1271

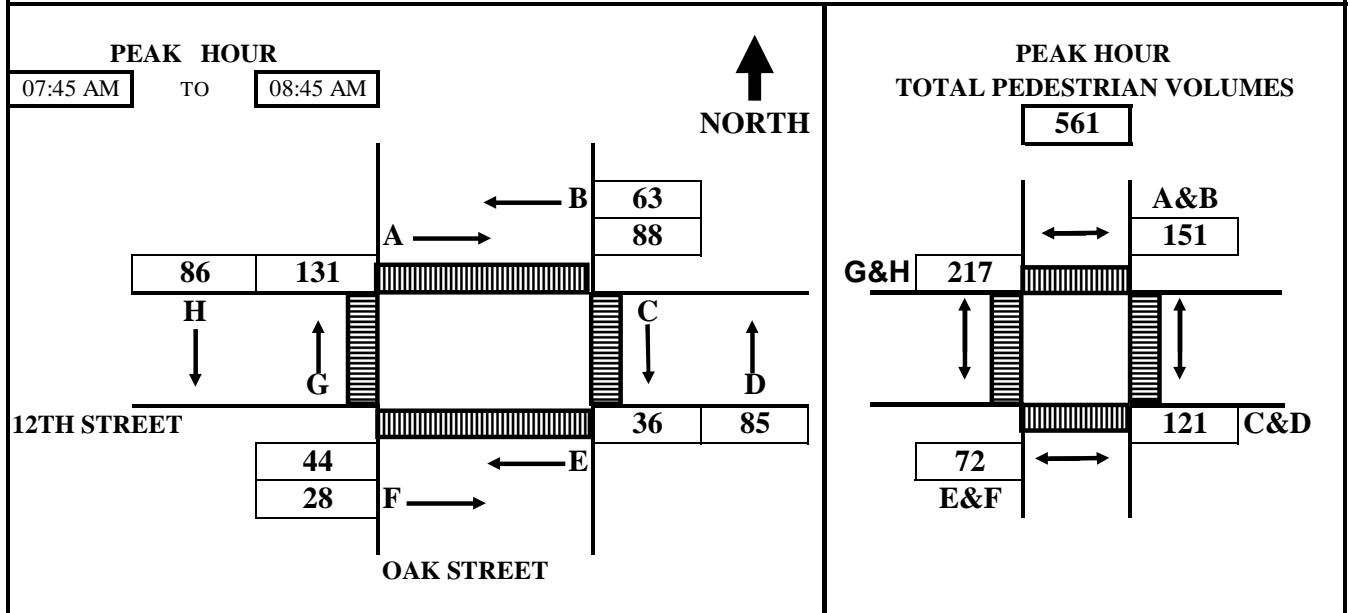
Fax: (510) 232-1272

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# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 12TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-16AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	1	3	9	5	1	8	11	38
07:15 AM	---	07:30 AM	0	8	18	26	12	3	16	18	101
07:30 AM	---	07:45 AM	3	18	24	31	22	4	22	28	152
07:45 AM	---	08:00 AM	16	35	35	61	32	13	56	42	290
08:00 AM	---	08:15 AM	39	40	47	81	48	18	98	65	436
08:15 AM	---	08:30 AM	71	73	58	108	64	25	140	93	632
08:30 AM	---	08:45 AM	91	81	60	116	66	32	153	114	713
08:45 AM	---	09:00 AM	113	95	74	126	73	33	175	133	822

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	1	3	9	5	1	8	11	38
07:15 AM	---	07:30 AM	0	7	15	17	7	2	8	7	63
07:30 AM	---	07:45 AM	3	10	6	5	10	1	6	10	51
07:45 AM	---	08:00 AM	13	17	11	30	10	9	34	14	138
08:00 AM	---	08:15 AM	23	5	12	20	16	5	42	23	146
08:15 AM	---	08:30 AM	32	33	11	27	16	7	42	28	196
08:30 AM	---	08:45 AM	20	8	2	8	2	7	13	21	81
08:45 AM	---	09:00 AM	22	14	14	10	7	1	22	19	109

### HOURLY TOTALS

07:00 AM	---	08:00 AM	16	35	35	61	32	13	56	42	290
07:15 AM	---	08:15 AM	39	39	44	72	43	17	90	54	398
07:30 AM	---	08:30 AM	71	65	40	82	52	22	124	75	531
07:45 AM	---	08:45 AM	88	63	36	85	44	28	131	86	561
08:00 AM	---	09:00 AM	97	60	39	65	41	20	119	91	532

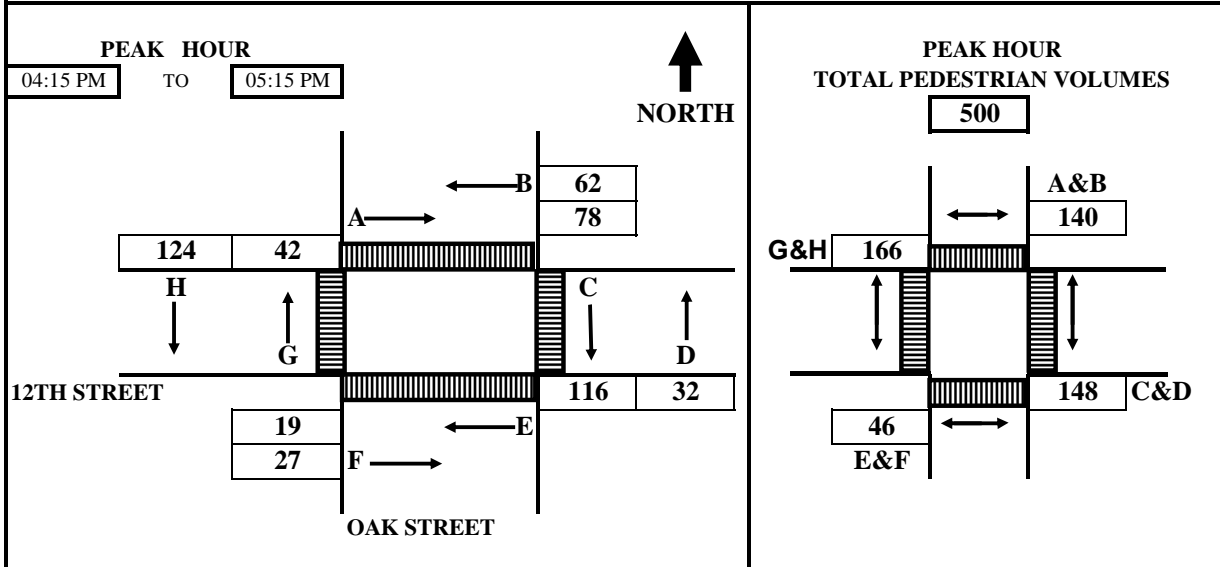
Tel : (510) 232-1271

Fax: (510) 232-1272

# B.A.Y.M.E.T.R.I.C.S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b> 5/16/2012
<b>N-S APPROACH:</b> OAK STREET	<b>DAY:</b> WEDNESDAY
<b>E-W APPROACH:</b> 12TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD</b> 4:00 PM TO 6:00 PM	<b>FILE:</b> 3205033-PED-16PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	9	8	14	14	10	7	18	14	94
04:15 PM	---	04:30 PM	27	21	27	21	14	15	30	42	197
04:30 PM	---	04:45 PM	36	37	44	28	20	21	40	60	286
04:45 PM	---	05:00 PM	46	53	63	35	24	27	51	80	379
05:00 PM	---	05:15 PM	87	70	130	46	29	34	60	138	594
05:15 PM	---	05:30 PM	91	73	144	56	32	36	70	149	651
05:30 PM	---	05:45 PM	98	75	164	73	35	39	83	159	726
05:45 PM	---	06:00 PM	103	76	176	93	37	40	91	172	788

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	9	8	14	14	10	7	18	14	94
04:15 PM	---	04:30 PM	18	13	13	7	4	8	12	28	103
04:30 PM	---	04:45 PM	9	16	17	7	6	6	10	18	89
04:45 PM	---	05:00 PM	10	16	19	7	4	6	11	20	93
05:00 PM	---	05:15 PM	41	17	67	11	5	7	9	58	215
05:15 PM	---	05:30 PM	4	3	14	10	3	2	10	11	57
05:30 PM	---	05:45 PM	7	2	20	17	3	3	13	10	75
05:45 PM	---	06:00 PM	5	1	12	20	2	1	8	13	62

### HOURLY TOTALS

04:00 PM	---	05:00 PM	46	53	63	35	24	27	51	80	379
04:15 PM	---	05:15 PM	78	62	116	32	19	27	42	124	500
04:30 PM	---	05:30 PM	64	52	117	35	18	21	40	107	454
04:45 PM	---	05:45 PM	62	38	120	45	15	18	43	99	440
05:00 PM	---	06:00 PM	57	23	113	58	13	13	40	92	409

Tel : (510) 232-1271

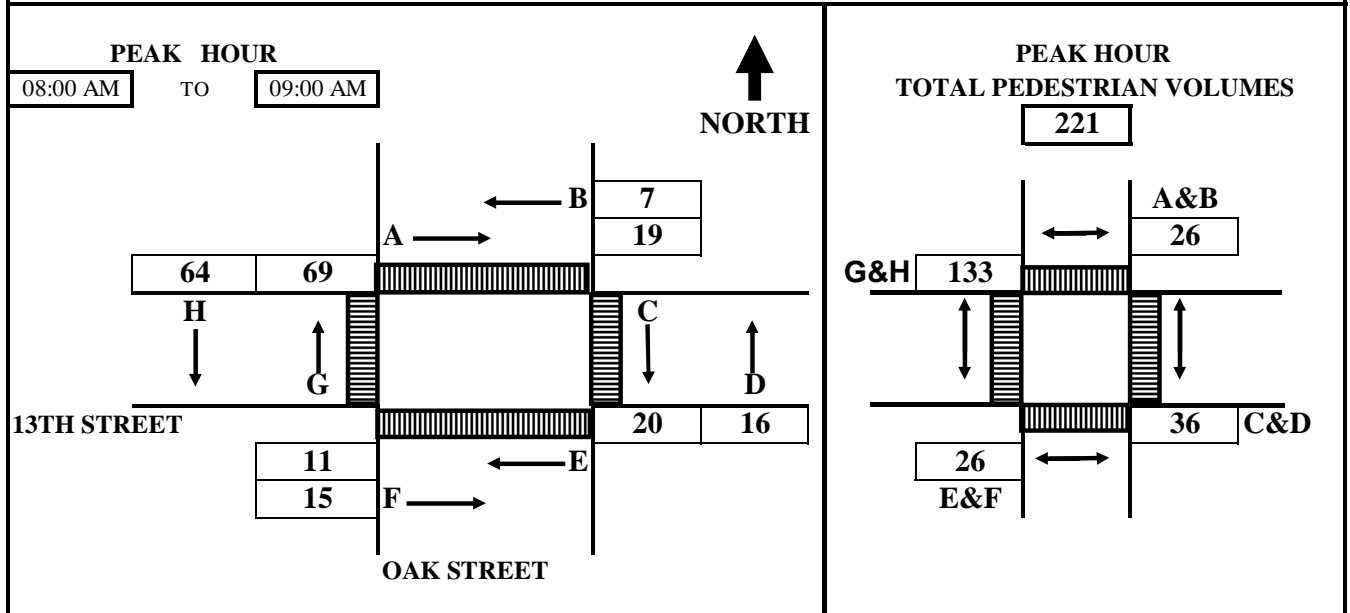
Fax: (510) 232-1272

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# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 13TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-17AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	0	1	1	0	4	0	1	7
07:15 AM	---	07:30 AM	0	1	3	7	1	5	1	3	21
07:30 AM	---	07:45 AM	2	3	4	11	2	6	11	5	44
07:45 AM	---	08:00 AM	5	5	15	13	3	8	13	20	82
08:00 AM	---	08:15 AM	8	5	21	17	5	9	36	47	148
08:15 AM	---	08:30 AM	16	7	22	24	8	18	48	65	208
08:30 AM	---	08:45 AM	19	9	23	25	11	20	62	77	246
08:45 AM	---	09:00 AM	24	12	35	29	14	23	82	84	303

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	1	1	0	4	0	1	7
07:15 AM	---	07:30 AM	0	1	2	6	1	1	1	2	14
07:30 AM	---	07:45 AM	2	2	1	4	1	1	10	2	23
07:45 AM	---	08:00 AM	3	2	11	2	1	2	2	15	38
08:00 AM	---	08:15 AM	3	0	6	4	2	1	23	27	66
08:15 AM	---	08:30 AM	8	2	1	7	3	9	12	18	60
08:30 AM	---	08:45 AM	3	2	1	1	3	2	14	12	38
08:45 AM	---	09:00 AM	5	3	12	4	3	3	20	7	57

### HOURLY TOTALS

07:00 AM	---	08:00 AM	5	5	15	13	3	8	13	20	82
07:15 AM	---	08:15 AM	8	5	20	16	5	5	36	46	141
07:30 AM	---	08:30 AM	16	6	19	17	7	13	47	62	187
07:45 AM	---	08:45 AM	17	6	19	14	9	14	51	72	202
08:00 AM	---	09:00 AM	19	7	20	16	11	15	69	64	221

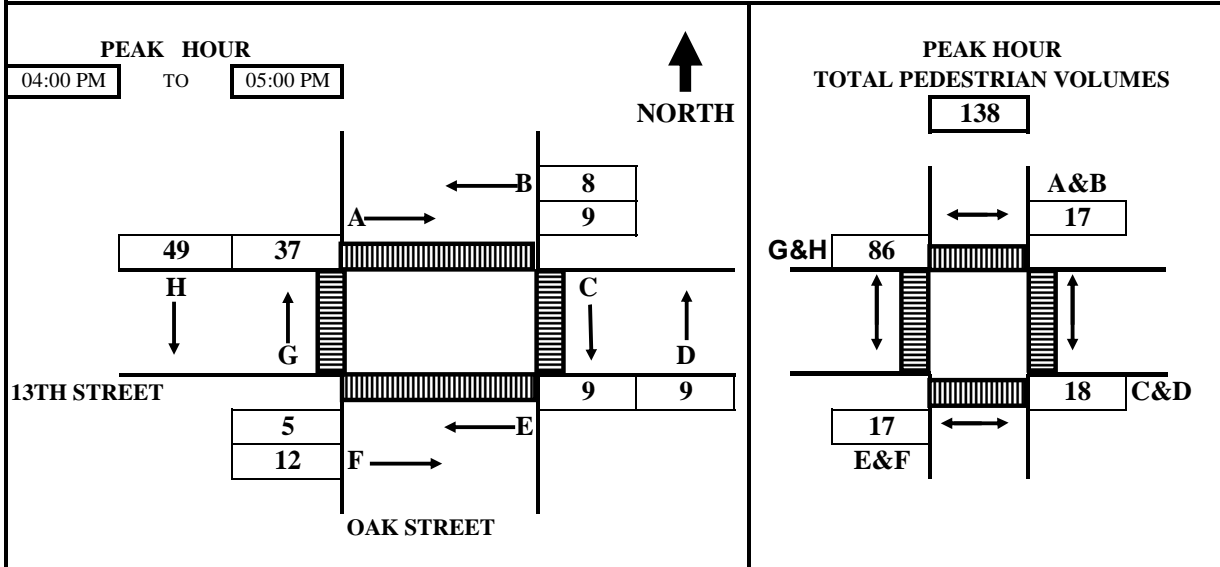
Tel : (510) 232-1271

Fax: (510) 232-1272

# B.A.Y.M.E.T.R.I.C.S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b> 5/16/2012
<b>N-S APPROACH:</b> OAK STREET	<b>DAY:</b> WEDNESDAY
<b>E-W APPROACH:</b> 13TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD</b> 4:00 PM TO 6:00 PM	<b>FILE:</b> 3205033-PED-17PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	2	2	1	4	3	6	10	25	53
04:15 PM	---	04:30 PM	3	2	3	6	3	10	22	39	88
04:30 PM	---	04:45 PM	6	4	5	8	5	12	27	44	111
04:45 PM	---	05:00 PM	9	8	9	9	5	12	37	49	138
05:00 PM	---	05:15 PM	9	10	20	16	6	12	43	61	177
05:15 PM	---	05:30 PM	9	10	25	25	9	15	50	71	214
05:30 PM	---	05:45 PM	10	11	30	27	12	19	55	80	244
05:45 PM	---	06:00 PM	11	11	34	29	12	22	56	88	263

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	2	2	1	4	3	6	10	25	53
04:15 PM	---	04:30 PM	1	0	2	2	0	4	12	14	35
04:30 PM	---	04:45 PM	3	2	2	2	2	2	5	5	23
04:45 PM	---	05:00 PM	3	4	4	1	0	0	10	5	27
05:00 PM	---	05:15 PM	0	2	11	7	1	0	6	12	39
05:15 PM	---	05:30 PM	0	0	5	9	3	3	7	10	37
05:30 PM	---	05:45 PM	1	1	5	2	3	4	5	9	30
05:45 PM	---	06:00 PM	1	0	4	2	0	3	1	8	19

### HOURLY TOTALS

04:00 PM	---	05:00 PM	9	8	9	9	5	12	37	49	138
04:15 PM	---	05:15 PM	7	8	19	12	3	6	33	36	124
04:30 PM	---	05:30 PM	6	8	22	19	6	5	28	32	126
04:45 PM	---	05:45 PM	4	7	25	19	7	7	28	36	133
05:00 PM	---	06:00 PM	2	3	25	20	7	10	19	39	125

Tel : (510) 232-1271

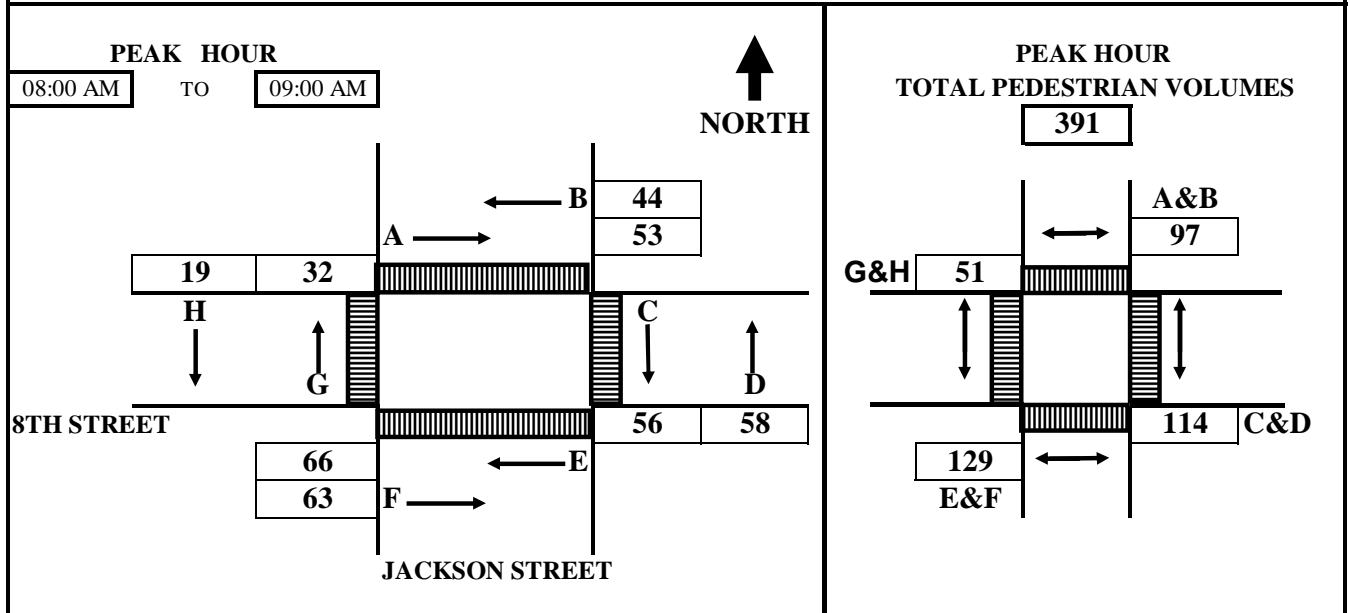
Fax: (510) 232-1272

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# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-18AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	5	3	2	2	10	2	2	1	27
07:15 AM	---	07:30 AM	19	6	7	8	21	10	5	3	79
07:30 AM	---	07:45 AM	28	12	14	15	31	15	6	5	126
07:45 AM	---	08:00 AM	41	23	19	23	42	26	11	8	193
08:00 AM	---	08:15 AM	56	33	25	35	55	41	17	10	272
08:15 AM	---	08:30 AM	70	44	40	48	76	58	27	14	377
08:30 AM	---	08:45 AM	80	55	62	64	89	73	37	22	482
08:45 AM	---	09:00 AM	94	67	75	81	108	89	43	27	584

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	5	3	2	2	10	2	2	1	27
07:15 AM	---	07:30 AM	14	3	5	6	11	8	3	2	52
07:30 AM	---	07:45 AM	9	6	7	7	10	5	1	2	47
07:45 AM	---	08:00 AM	13	11	5	8	11	11	5	3	67
08:00 AM	---	08:15 AM	15	10	6	12	13	15	6	2	79
08:15 AM	---	08:30 AM	14	11	15	13	21	17	10	4	105
08:30 AM	---	08:45 AM	10	11	22	16	13	15	10	8	105
08:45 AM	---	09:00 AM	14	12	13	17	19	16	6	5	102

### HOURLY TOTALS

07:00 AM	---	08:00 AM	41	23	19	23	42	26	11	8	193
07:15 AM	---	08:15 AM	51	30	23	33	45	39	15	9	245
07:30 AM	---	08:30 AM	51	38	33	40	55	48	22	11	298
07:45 AM	---	08:45 AM	52	43	48	49	58	58	31	17	356
08:00 AM	---	09:00 AM	53	44	56	58	66	63	32	19	391

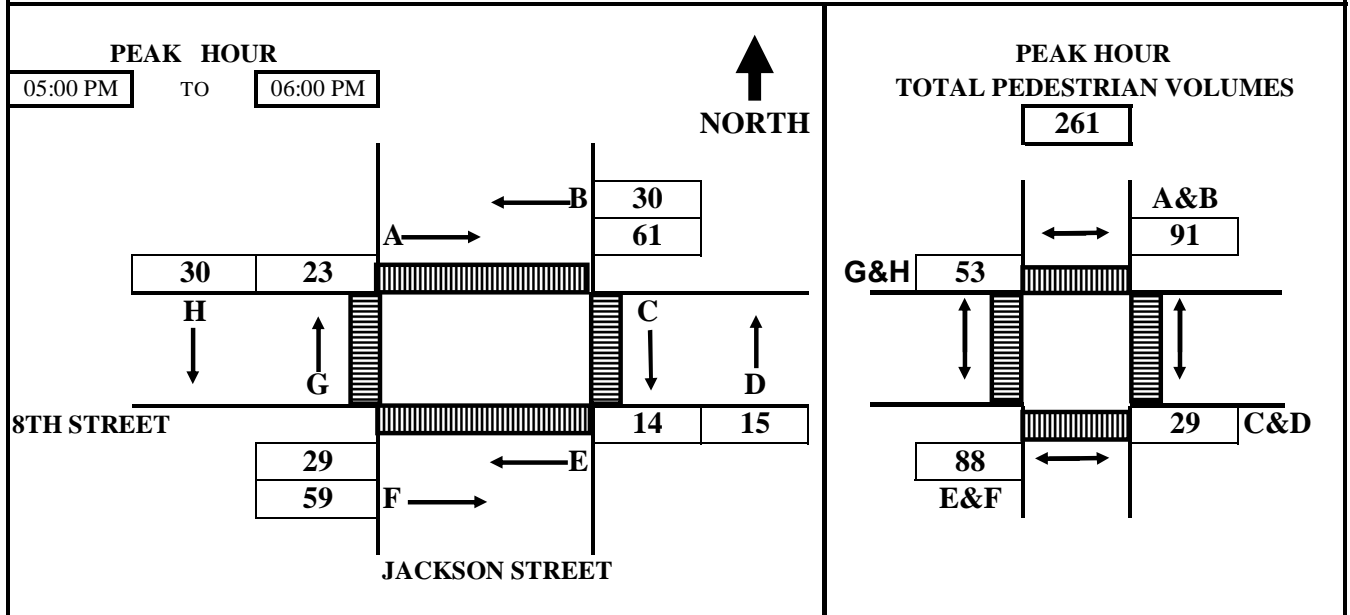
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-18PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	6	3	1	7	1	12	0	8	38
04:15 PM	---	04:30 PM	11	7	2	11	9	21	5	12	78
04:30 PM	---	04:45 PM	24	10	5	15	26	30	14	15	139
04:45 PM	---	05:00 PM	31	16	11	17	33	45	17	16	186
05:00 PM	---	05:15 PM	42	17	13	21	37	52	19	20	221
05:15 PM	---	05:30 PM	56	22	19	23	43	71	22	27	283
05:30 PM	---	05:45 PM	73	36	23	28	51	89	25	35	360
05:45 PM	---	06:00 PM	92	46	25	32	62	104	40	46	447

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	6	3	1	7	1	12	0	8	38
04:15 PM	---	04:30 PM	5	4	1	4	8	9	5	4	40
04:30 PM	---	04:45 PM	13	3	3	4	17	9	9	3	61
04:45 PM	---	05:00 PM	7	6	6	2	7	15	3	1	47
05:00 PM	---	05:15 PM	11	1	2	4	4	7	2	4	35
05:15 PM	---	05:30 PM	14	5	6	2	6	19	3	7	62
05:30 PM	---	05:45 PM	17	14	4	5	8	18	3	8	77
05:45 PM	---	06:00 PM	19	10	2	4	11	15	15	11	87

### HOURLY TOTALS

04:00 PM	---	05:00 PM	31	16	11	17	33	45	17	16	186
04:15 PM	---	05:15 PM	36	14	12	14	36	40	19	12	183
04:30 PM	---	05:30 PM	45	15	17	12	34	50	17	15	205
04:45 PM	---	05:45 PM	49	26	18	13	25	59	11	20	221
05:00 PM	---	06:00 PM	61	30	14	15	29	59	23	30	261

Tel : (510) 232-1271

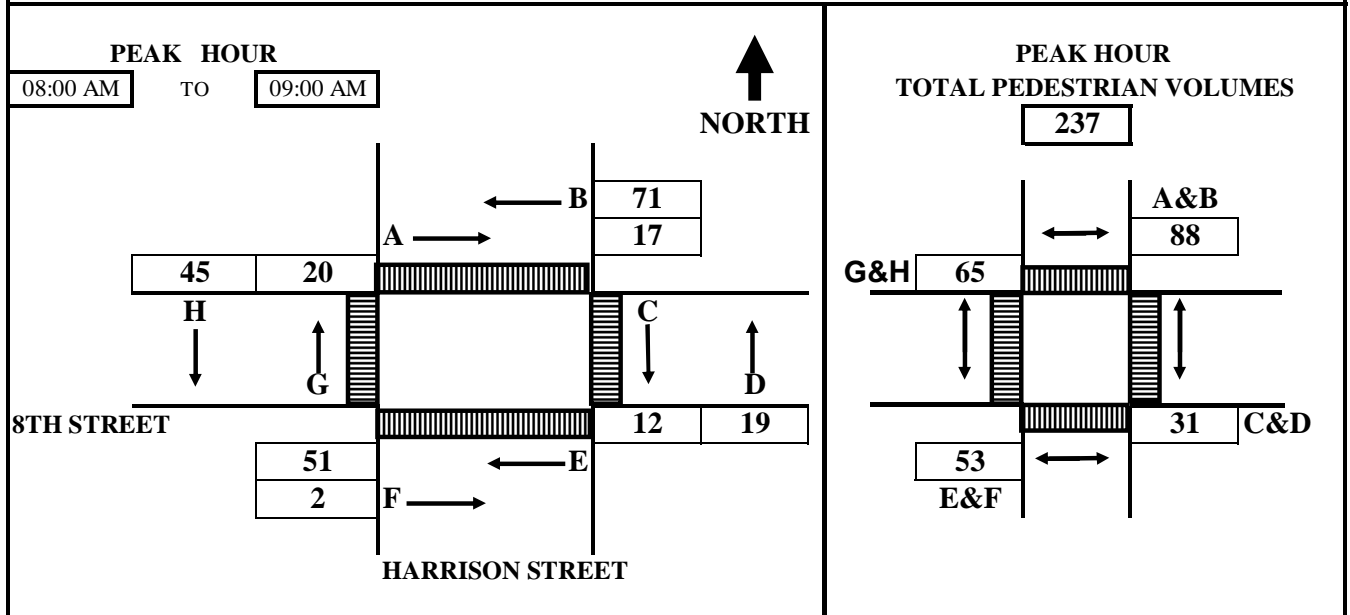
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> HARRISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-19AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	14	0	5	4	2	5	5	35
07:15 AM	---	07:30 AM	7	24	0	8	12	5	10	8	74
07:30 AM	---	07:45 AM	12	50	3	11	18	6	10	12	122
07:45 AM	---	08:00 AM	17	67	3	13	29	14	14	17	174
08:00 AM	---	08:15 AM	20	80	9	15	40	14	17	29	224
08:15 AM	---	08:30 AM	28	95	10	19	58	16	23	37	286
08:30 AM	---	08:45 AM	32	105	13	21	61	16	29	46	323
08:45 AM	---	09:00 AM	34	138	15	32	80	16	34	62	411

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	14	0	5	4	2	5	5	35
07:15 AM	---	07:30 AM	7	10	0	3	8	3	5	3	39
07:30 AM	---	07:45 AM	5	26	3	3	6	1	0	4	48
07:45 AM	---	08:00 AM	5	17	0	2	11	8	4	5	52
08:00 AM	---	08:15 AM	3	13	6	2	11	0	3	12	50
08:15 AM	---	08:30 AM	8	15	1	4	18	2	6	8	62
08:30 AM	---	08:45 AM	4	10	3	2	3	0	6	9	37
08:45 AM	---	09:00 AM	2	33	2	11	19	0	5	16	88

### HOURLY TOTALS

07:00 AM	---	08:00 AM	17	67	3	13	29	14	14	17	174
07:15 AM	---	08:15 AM	20	66	9	10	36	12	12	24	189
07:30 AM	---	08:30 AM	21	71	10	11	46	11	13	29	212
07:45 AM	---	08:45 AM	20	55	10	10	43	10	19	34	201
08:00 AM	---	09:00 AM	17	71	12	19	51	2	20	45	237

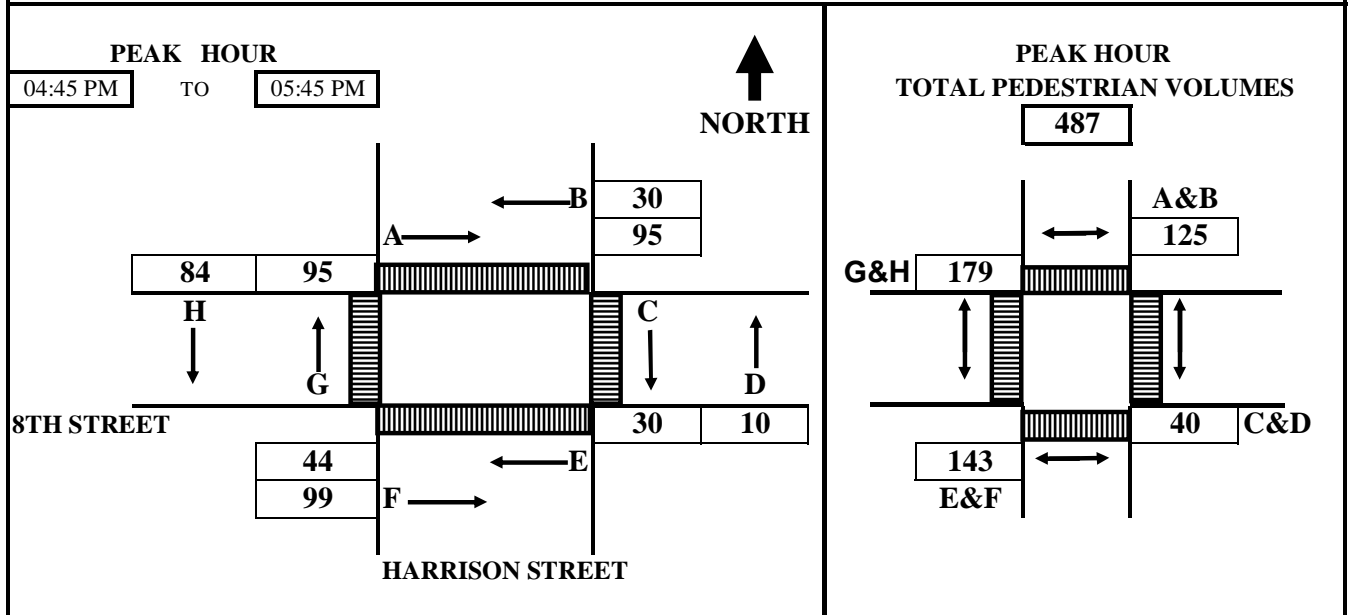
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> HARRISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-19PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	19	15	7	3	15	34	27	16	136
04:15 PM	---	04:30 PM	36	38	9	7	28	49	41	48	256
04:30 PM	---	04:45 PM	50	45	14	10	47	73	67	68	374
04:45 PM	---	05:00 PM	63	48	22	13	54	102	84	90	476
05:00 PM	---	05:15 PM	112	57	24	15	62	124	107	108	609
05:15 PM	---	05:30 PM	122	67	34	20	77	142	138	133	733
05:30 PM	---	05:45 PM	145	75	44	20	91	172	162	152	861
05:45 PM	---	06:00 PM	156	83	45	27	99	188	174	162	934

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	19	15	7	3	15	34	27	16	136
04:15 PM	---	04:30 PM	17	23	2	4	13	15	14	32	120
04:30 PM	---	04:45 PM	14	7	5	3	19	24	26	20	118
04:45 PM	---	05:00 PM	13	3	8	3	7	29	17	22	102
05:00 PM	---	05:15 PM	49	9	2	2	8	22	23	18	133
05:15 PM	---	05:30 PM	10	10	10	5	15	18	31	25	124
05:30 PM	---	05:45 PM	23	8	10	0	14	30	24	19	128
05:45 PM	---	06:00 PM	11	8	1	7	8	16	12	10	73

### HOURLY TOTALS

04:00 PM	---	05:00 PM	63	48	22	13	54	102	84	90	476
04:15 PM	---	05:15 PM	93	42	17	12	47	90	80	92	473
04:30 PM	---	05:30 PM	86	29	25	13	49	93	97	85	477
04:45 PM	---	05:45 PM	95	30	30	10	44	99	95	84	487
05:00 PM	---	06:00 PM	93	35	23	14	45	86	90	72	458

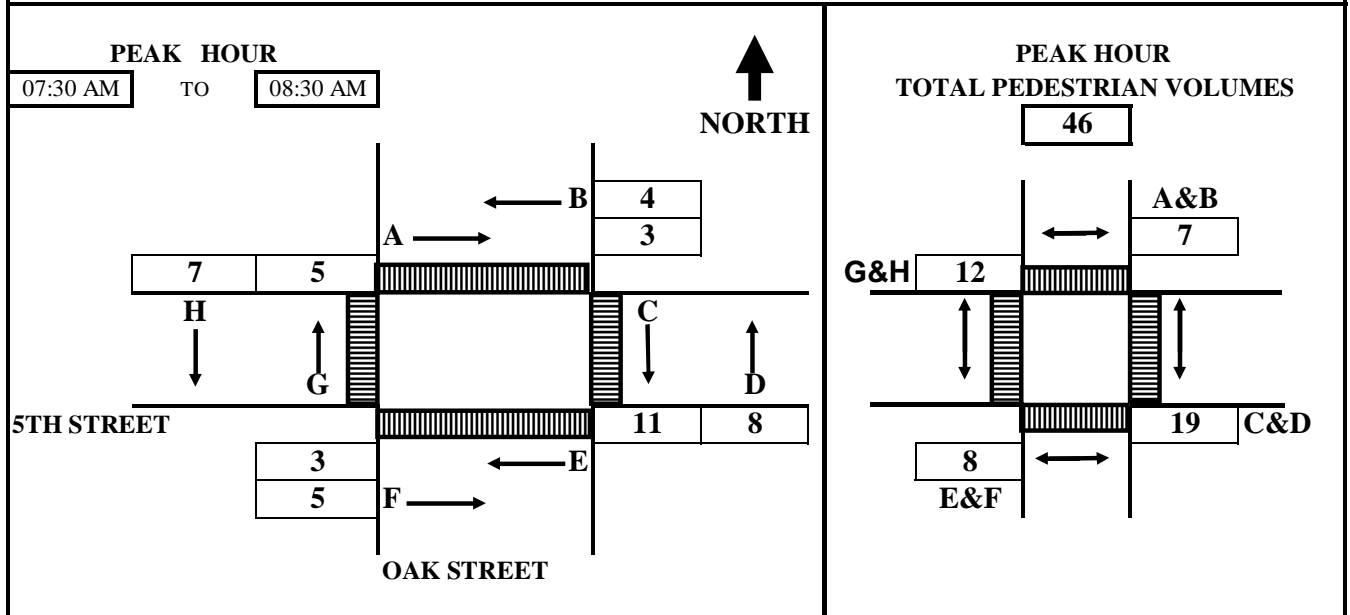
Tel : (510) 232-1271

Fax : (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 5TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-20AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	1	1	1	1	1	1	8
07:15 AM	---	07:30 AM	1	3	3	2	2	2	1	17
07:30 AM	---	07:45 AM	2	4	7	3	2	4	3	29
07:45 AM	---	08:00 AM	4	6	9	5	3	6	4	44
08:00 AM	---	08:15 AM	4	7	12	7	4	6	4	53
08:15 AM	---	08:30 AM	4	7	14	10	5	7	6	63
08:30 AM	---	08:45 AM	5	9	17	12	5	7	7	72
08:45 AM	---	09:00 AM	5	10	20	13	5	8	8	81

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	1	1	1	1	1	1	8
07:15 AM	---	07:30 AM	0	2	2	1	1	1	0	9
07:30 AM	---	07:45 AM	1	1	4	1	0	2	2	12
07:45 AM	---	08:00 AM	2	2	2	2	1	2	1	15
08:00 AM	---	08:15 AM	0	1	3	2	1	0	0	9
08:15 AM	---	08:30 AM	0	0	2	3	1	1	2	10
08:30 AM	---	08:45 AM	1	2	3	2	0	0	1	9
08:45 AM	---	09:00 AM	0	1	3	1	0	1	1	9

### HOURLY TOTALS

07:00 AM	---	08:00 AM	4	6	9	5	3	6	4	7	44
07:15 AM	---	08:15 AM	3	6	11	6	3	5	3	8	45
07:30 AM	---	08:30 AM	3	4	11	8	3	5	5	7	46
07:45 AM	---	08:45 AM	3	5	10	9	3	3	4	6	43
08:00 AM	---	09:00 AM	1	4	11	8	2	2	4	5	37

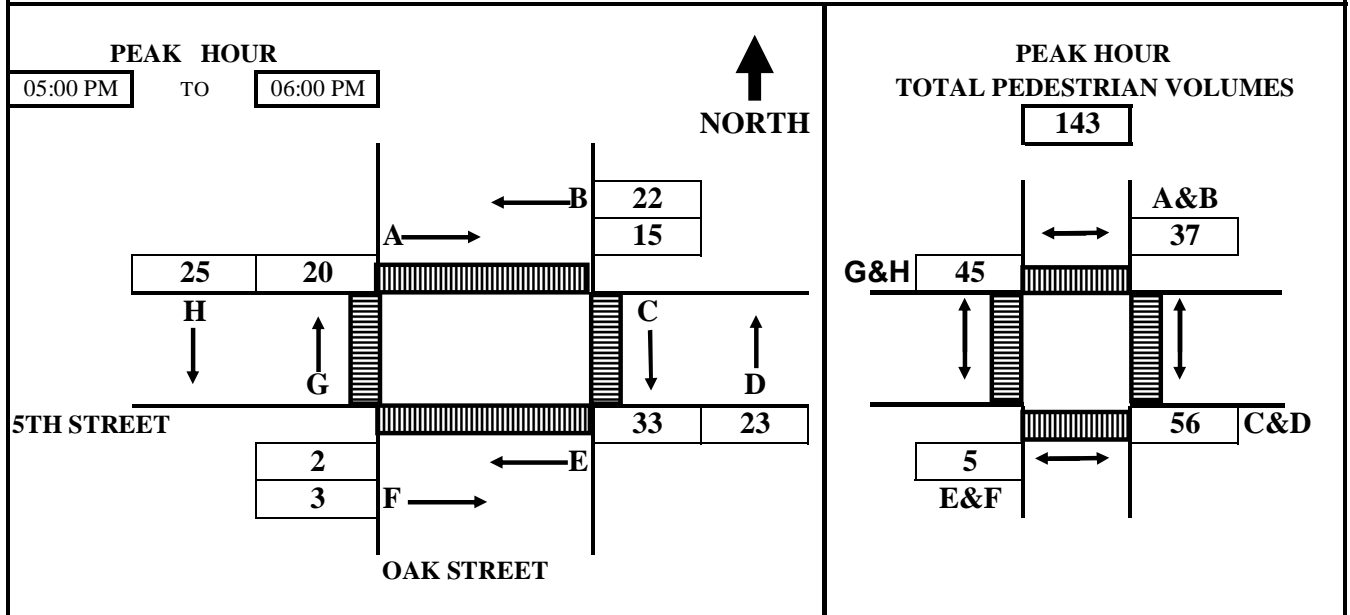
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 5TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-20PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	2	2	5	2	1	2	2	2	18
04:15 PM	---	04:30 PM	4	9	11	3	3	4	3	9	46
04:30 PM	---	04:45 PM	6	11	19	7	3	5	6	11	68
04:45 PM	---	05:00 PM	9	16	28	10	5	7	6	17	98
05:00 PM	---	05:15 PM	14	23	34	19	5	9	12	25	141
05:15 PM	---	05:30 PM	16	28	43	23	6	10	15	31	172
05:30 PM	---	05:45 PM	18	30	46	26	6	10	18	33	187
05:45 PM	---	06:00 PM	24	38	61	33	7	10	26	42	241

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	2	2	5	2	1	2	2	2	18
04:15 PM	---	04:30 PM	2	7	6	1	2	2	1	7	28
04:30 PM	---	04:45 PM	2	2	8	4	0	1	3	2	22
04:45 PM	---	05:00 PM	3	5	9	3	2	2	0	6	30
05:00 PM	---	05:15 PM	5	7	6	9	0	2	6	8	43
05:15 PM	---	05:30 PM	2	5	9	4	1	1	3	6	31
05:30 PM	---	05:45 PM	2	2	3	3	0	0	3	2	15
05:45 PM	---	06:00 PM	6	8	15	7	1	0	8	9	54

### HOURLY TOTALS

04:00 PM	---	05:00 PM	9	16	28	10	5	7	6	17	98
04:15 PM	---	05:15 PM	12	21	29	17	4	7	10	23	123
04:30 PM	---	05:30 PM	12	19	32	20	3	6	12	22	126
04:45 PM	---	05:45 PM	12	19	27	19	3	5	12	22	119
05:00 PM	---	06:00 PM	15	22	33	23	2	3	20	25	143

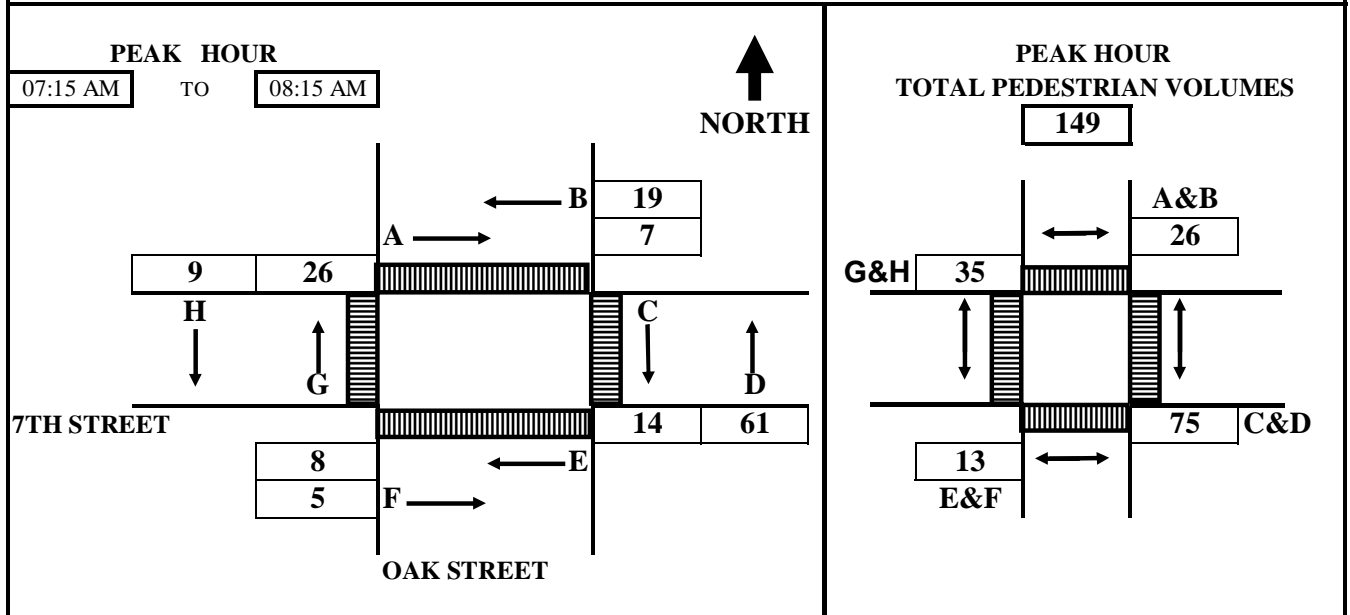
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-21AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	4	0	2	1	1	3	2	14
07:15 AM	---	07:30 AM	1	15	3	13	4	1	9	6	52
07:30 AM	---	07:45 AM	2	20	5	32	4	4	12	9	88
07:45 AM	---	08:00 AM	7	22	7	48	8	5	25	9	131
08:00 AM	---	08:15 AM	8	23	14	63	9	6	29	11	163
08:15 AM	---	08:30 AM	12	23	17	77	14	6	35	12	196
08:30 AM	---	08:45 AM	15	24	19	92	14	10	37	15	226
08:45 AM	---	09:00 AM	20	30	23	113	15	14	41	18	274

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	4	0	2	1	1	3	2	14
07:15 AM	---	07:30 AM	0	11	3	11	3	0	6	4	38
07:30 AM	---	07:45 AM	1	5	2	19	0	3	3	3	36
07:45 AM	---	08:00 AM	5	2	2	16	4	1	13	0	43
08:00 AM	---	08:15 AM	1	1	7	15	1	1	4	2	32
08:15 AM	---	08:30 AM	4	0	3	14	5	0	6	1	33
08:30 AM	---	08:45 AM	3	1	2	15	0	4	2	3	30
08:45 AM	---	09:00 AM	5	6	4	21	1	4	4	3	48

### HOURLY TOTALS

07:00 AM	---	08:00 AM	7	22	7	48	8	5	25	9	131
07:15 AM	---	08:15 AM	7	19	14	61	8	5	26	9	149
07:30 AM	---	08:30 AM	11	8	14	64	10	5	26	6	144
07:45 AM	---	08:45 AM	13	4	14	60	10	6	25	6	138
08:00 AM	---	09:00 AM	13	8	16	65	7	9	16	9	143

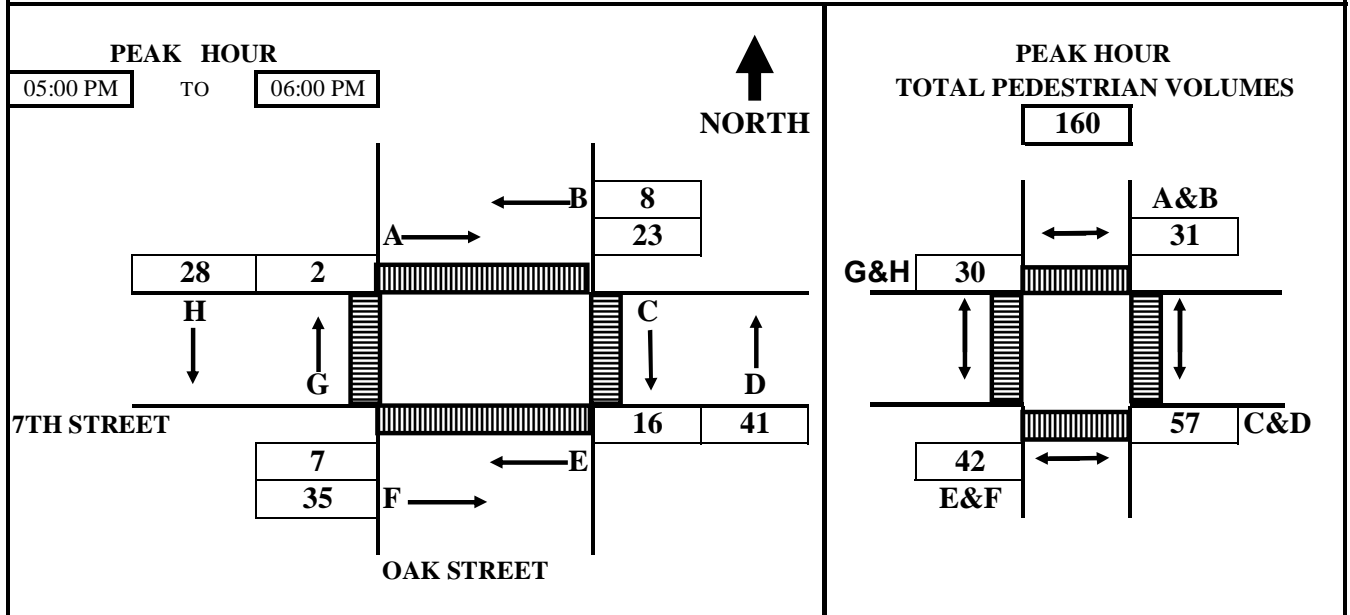
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-21PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	8	1	4	5	2	4	2	6	32
04:15 PM	---	04:30 PM	12	6	6	7	2	5	3	7	48
04:30 PM	---	04:45 PM	14	7	9	8	2	6	4	9	59
04:45 PM	---	05:00 PM	17	8	14	15	2	7	7	11	81
05:00 PM	---	05:15 PM	21	8	16	25	2	14	7	24	117
05:15 PM	---	05:30 PM	31	12	21	32	2	23	8	28	157
05:30 PM	---	05:45 PM	38	15	25	43	4	29	9	30	193
05:45 PM	---	06:00 PM	40	16	30	56	9	42	9	39	241

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	8	1	4	5	2	4	2	6	32
04:15 PM	---	04:30 PM	4	5	2	2	0	1	1	1	16
04:30 PM	---	04:45 PM	2	1	3	1	0	1	1	2	11
04:45 PM	---	05:00 PM	3	1	5	7	0	1	3	2	22
05:00 PM	---	05:15 PM	4	0	2	10	0	7	0	13	36
05:15 PM	---	05:30 PM	10	4	5	7	0	9	1	4	40
05:30 PM	---	05:45 PM	7	3	4	11	2	6	1	2	36
05:45 PM	---	06:00 PM	2	1	5	13	5	13	0	9	48

### HOURLY TOTALS

04:00 PM	---	05:00 PM	17	8	14	15	2	7	7	11	81
04:15 PM	---	05:15 PM	13	7	12	20	0	10	5	18	85
04:30 PM	---	05:30 PM	19	6	15	25	0	18	5	21	109
04:45 PM	---	05:45 PM	24	8	16	35	2	23	5	21	134
05:00 PM	---	06:00 PM	23	8	16	41	7	35	2	28	160

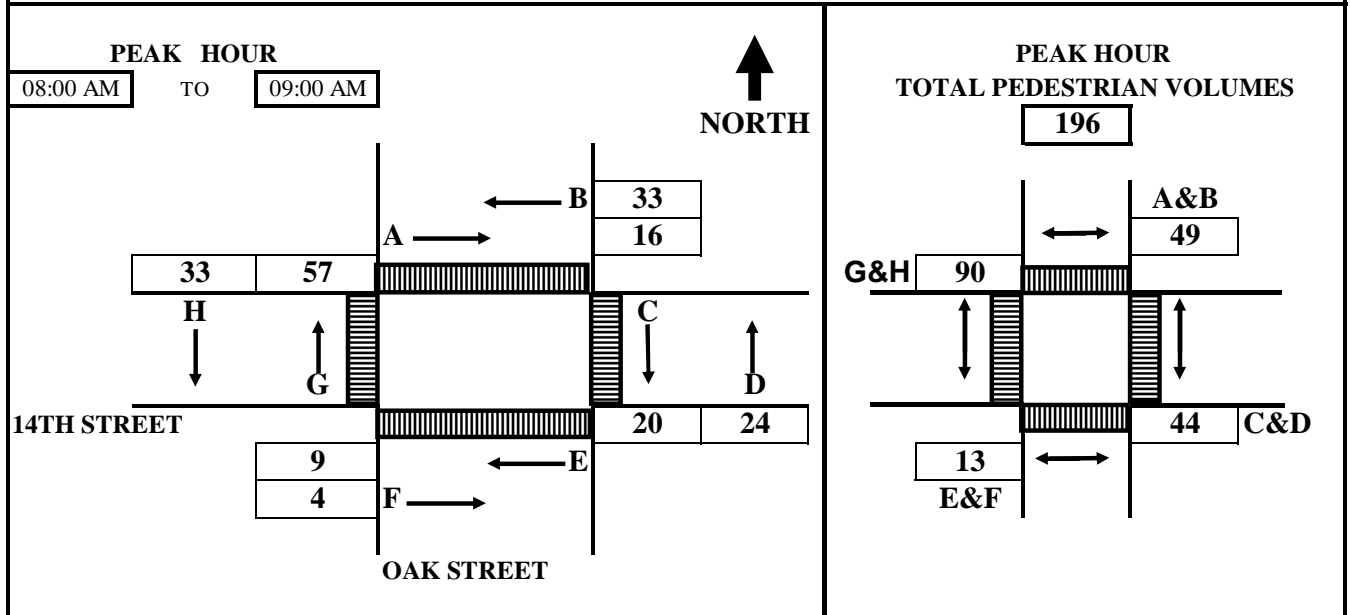
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 14TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-22AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	3	4	4	3	1	0	5	4	24
07:15 AM	---	07:30 AM	12	8	7	4	1	0	8	8	48
07:30 AM	---	07:45 AM	14	14	12	7	1	2	15	13	78
07:45 AM	---	08:00 AM	19	20	17	10	2	2	28	21	119
08:00 AM	---	08:15 AM	23	28	24	19	5	2	40	33	174
08:15 AM	---	08:30 AM	28	36	31	26	6	4	57	47	235
08:30 AM	---	08:45 AM	31	42	34	31	7	5	64	52	266
08:45 AM	---	09:00 AM	35	53	37	34	11	6	85	54	315

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	3	4	4	3	1	0	5	4	24
07:15 AM	---	07:30 AM	9	4	3	1	0	0	3	4	24
07:30 AM	---	07:45 AM	2	6	5	3	0	2	7	5	30
07:45 AM	---	08:00 AM	5	6	5	3	1	0	13	8	41
08:00 AM	---	08:15 AM	4	8	7	9	3	0	12	12	55
08:15 AM	---	08:30 AM	5	8	7	7	1	2	17	14	61
08:30 AM	---	08:45 AM	3	6	3	5	1	1	7	5	31
08:45 AM	---	09:00 AM	4	11	3	3	4	1	21	2	49

### HOURLY TOTALS

07:00 AM	---	08:00 AM	19	20	17	10	2	2	28	21	119
07:15 AM	---	08:15 AM	20	24	20	16	4	2	35	29	150
07:30 AM	---	08:30 AM	16	28	24	22	5	4	49	39	187
07:45 AM	---	08:45 AM	17	28	22	24	6	3	49	39	188
08:00 AM	---	09:00 AM	16	33	20	24	9	4	57	33	196

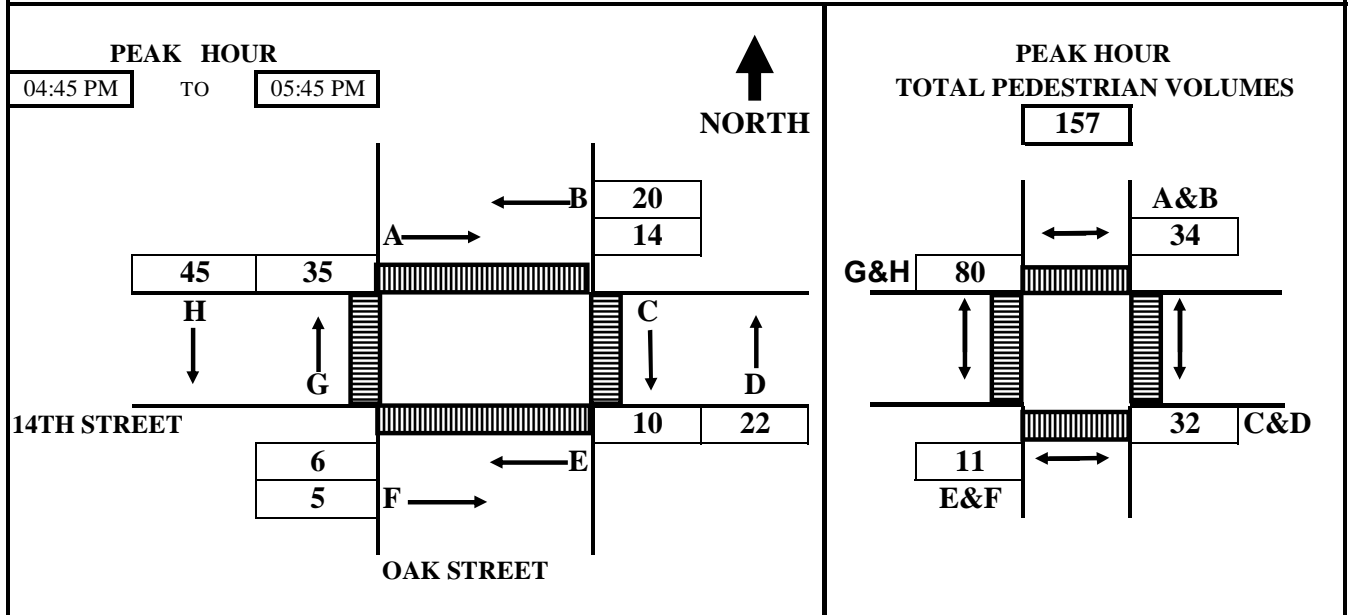
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> OAK STREET		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 14TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-22PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	3	4	1	2	0	1	4	6	21
04:15 PM	---	04:30 PM	5	10	5	3	2	1	5	11	42
04:30 PM	---	04:45 PM	6	13	8	8	4	2	14	18	73
04:45 PM	---	05:00 PM	7	15	13	10	5	2	21	25	98
05:00 PM	---	05:15 PM	13	23	15	14	6	4	32	39	146
05:15 PM	---	05:30 PM	16	27	17	21	8	5	42	54	190
05:30 PM	---	05:45 PM	20	33	18	30	10	7	49	63	230
05:45 PM	---	06:00 PM	22	36	21	32	11	8	51	67	248

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	3	4	1	2	0	1	4	6	21
04:15 PM	---	04:30 PM	2	6	4	1	2	0	1	5	21
04:30 PM	---	04:45 PM	1	3	3	5	2	1	9	7	31
04:45 PM	---	05:00 PM	1	2	5	2	1	0	7	7	25
05:00 PM	---	05:15 PM	6	8	2	4	1	2	11	14	48
05:15 PM	---	05:30 PM	3	4	2	7	2	1	10	15	44
05:30 PM	---	05:45 PM	4	6	1	9	2	2	7	9	40
05:45 PM	---	06:00 PM	2	3	3	2	1	1	2	4	18

### HOURLY TOTALS

04:00 PM	---	05:00 PM	7	15	13	10	5	2	21	25	98
04:15 PM	---	05:15 PM	10	19	14	12	6	3	28	33	125
04:30 PM	---	05:30 PM	11	17	12	18	6	4	37	43	148
04:45 PM	---	05:45 PM	14	20	10	22	6	5	35	45	157
05:00 PM	---	06:00 PM	15	21	8	22	6	6	30	42	150

Tel : (510) 232-1271

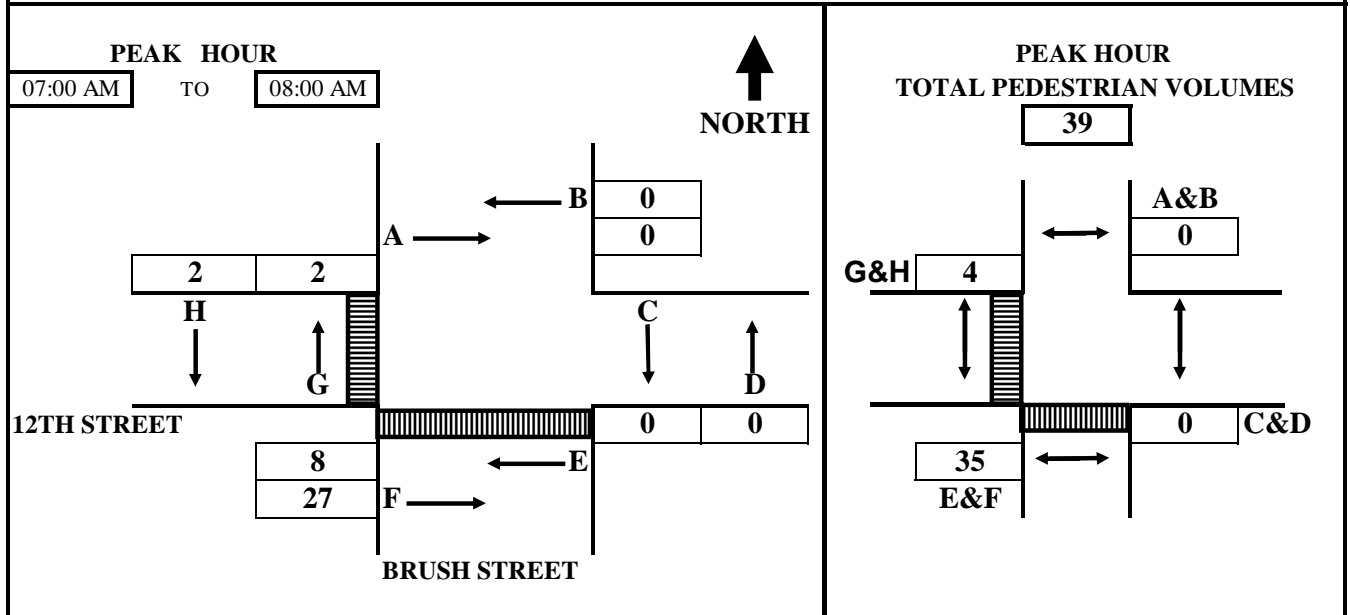
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012
<b>N-S APPROACH:</b> BRUSH STREET	<b>DAY:</b> TUESDAY
<b>E-W APPROACH:</b> 12TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD:</b> 7:00 AM TO 9:00 AM	<b>FILE:</b> 3205033-PED-23AM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM				3	5	2	0	10
07:15 AM	---	07:30 AM				6	15	2	0	23
07:30 AM	---	07:45 AM				6	21	2	1	30
07:45 AM	---	08:00 AM				8	27	2	2	39
08:00 AM	---	08:15 AM				8	32	2	5	47
08:15 AM	---	08:30 AM				9	36	2	6	53
08:30 AM	---	08:45 AM				10	39	2	7	58
08:45 AM	---	09:00 AM				12	42	2	9	65

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	0	0	3	5	2	0	10
07:15 AM	---	07:30 AM	0	0	0	0	3	10	0	0	13
07:30 AM	---	07:45 AM	0	0	0	0	0	6	0	1	7
07:45 AM	---	08:00 AM	0	0	0	0	2	6	0	1	9
08:00 AM	---	08:15 AM	0	0	0	0	0	5	0	3	8
08:15 AM	---	08:30 AM	0	0	0	0	1	4	0	1	6
08:30 AM	---	08:45 AM	0	0	0	0	1	3	0	1	5
08:45 AM	---	09:00 AM	0	0	0	0	2	3	0	2	7

### HOURLY TOTALS

07:00 AM	---	08:00 AM	0	0	0	0	8	27	2	2	39
07:15 AM	---	08:15 AM	0	0	0	0	5	27	0	5	37
07:30 AM	---	08:30 AM	0	0	0	0	3	21	0	6	30
07:45 AM	---	08:45 AM	0	0	0	0	4	18	0	6	28
08:00 AM	---	09:00 AM	0	0	0	0	4	15	0	7	26

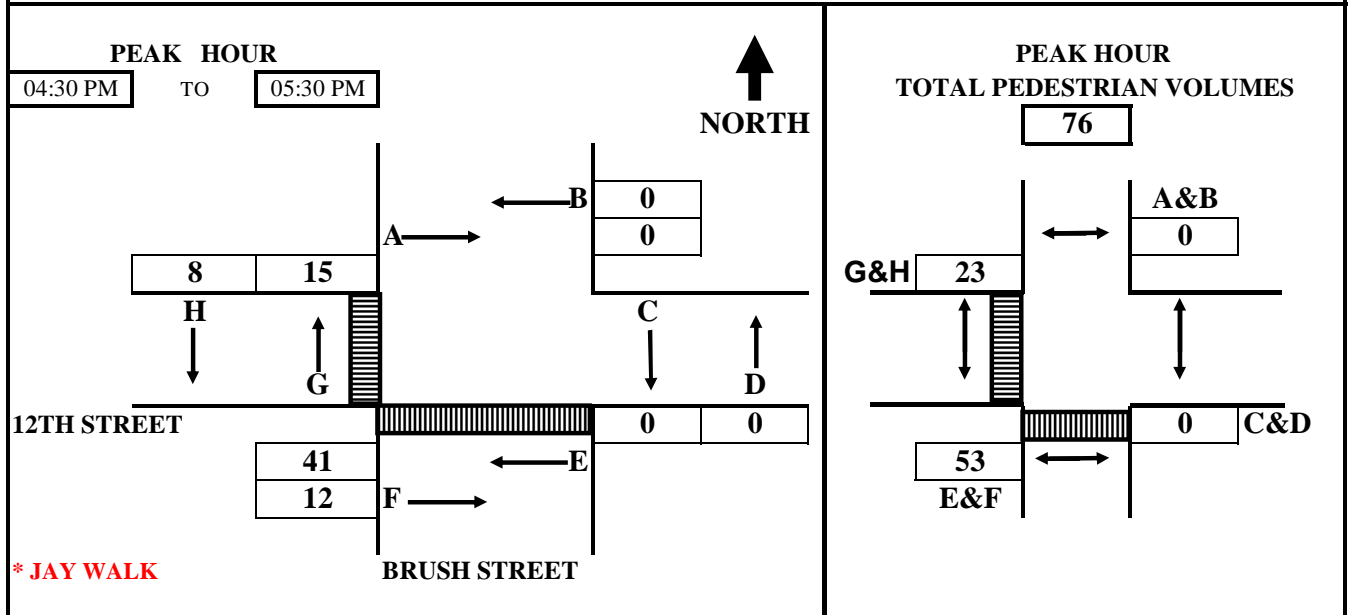
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> BRUSH STREET		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 12TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-23PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A *	B	C *	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	0	0	7	7	4	2	20
04:15 PM	---	04:30 PM	0	0	0	9	8	5	2	24
04:30 PM	---	04:45 PM	0	0	0	16	10	7	3	36
04:45 PM	---	05:00 PM	0	0	0	21	15	16	8	60
05:00 PM	---	05:15 PM	0	0	0	42	17	19	9	87
05:15 PM	---	05:30 PM	0	0	0	50	20	20	10	100
05:30 PM	---	05:45 PM	0	0	0	54	21	22	10	107
05:45 PM	---	06:00 PM	1	0	1	59	22	22	10	115

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	0	0	7	7	4	2	20
04:15 PM	---	04:30 PM	0	0	0	2	1	1	0	4
04:30 PM	---	04:45 PM	0	0	0	7	2	2	1	12
04:45 PM	---	05:00 PM	0	0	0	5	5	9	5	24
05:00 PM	---	05:15 PM	0	0	0	21	2	3	1	27
05:15 PM	---	05:30 PM	0	0	0	8	3	1	1	13
05:30 PM	---	05:45 PM	0	0	0	4	1	2	0	7
05:45 PM	---	06:00 PM	1	0	1	5	1	0	0	8

### HOURLY TOTALS

04:00 PM	---	05:00 PM	0	0	0	21	15	16	8	60
04:15 PM	---	05:15 PM	0	0	0	35	10	15	7	67
04:30 PM	---	05:30 PM	0	0	0	41	12	15	8	76
04:45 PM	---	05:45 PM	0	0	0	38	11	15	7	71
05:00 PM	---	06:00 PM	1	0	1	38	7	6	2	55

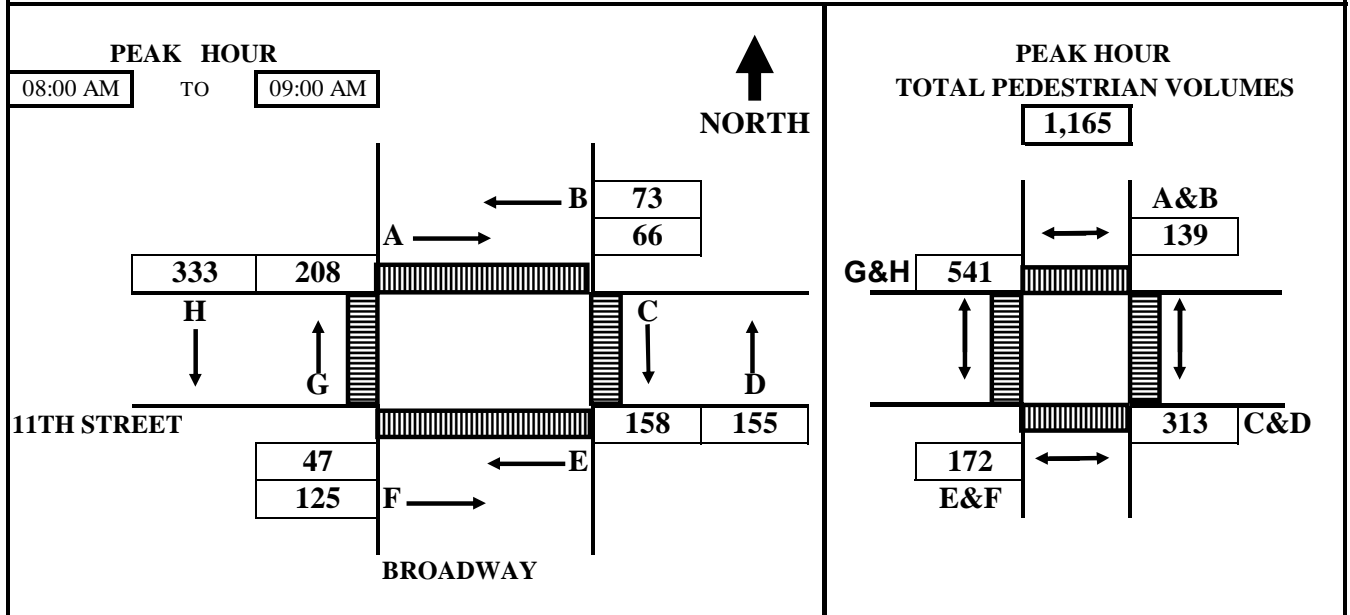
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> BROADWAY		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-24AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	11	8	15	40	4	16	30	31	155
07:15 AM	---	07:30 AM	25	19	52	64	10	41	61	79	351
07:30 AM	---	07:45 AM	40	27	97	109	18	67	100	141	599
07:45 AM	---	08:00 AM	51	36	147	117	48	115	134	234	882
08:00 AM	---	08:15 AM	66	66	172	152	63	151	199	335	1,204
08:15 AM	---	08:30 AM	80	82	200	190	70	185	242	405	1,454
08:30 AM	---	08:45 AM	98	101	253	232	86	209	282	470	1,731
08:45 AM	---	09:00 AM	117	109	305	272	95	240	342	567	2,047

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	11	8	15	40	4	16	30	31	155
07:15 AM	---	07:30 AM	14	11	37	24	6	25	31	48	196
07:30 AM	---	07:45 AM	15	8	45	45	8	26	39	62	248
07:45 AM	---	08:00 AM	11	9	50	8	30	48	34	93	283
08:00 AM	---	08:15 AM	15	30	25	35	15	36	65	101	322
08:15 AM	---	08:30 AM	14	16	28	38	7	34	43	70	250
08:30 AM	---	08:45 AM	18	19	53	42	16	24	40	65	277
08:45 AM	---	09:00 AM	19	8	52	40	9	31	60	97	316

### HOURLY TOTALS

07:00 AM	---	08:00 AM	51	36	147	117	48	115	134	234	882
07:15 AM	---	08:15 AM	55	58	157	112	59	135	169	304	1,049
07:30 AM	---	08:30 AM	55	63	148	126	60	144	181	326	1,103
07:45 AM	---	08:45 AM	58	74	156	123	68	142	182	329	1,132
08:00 AM	---	09:00 AM	66	73	158	155	47	125	208	333	1,165

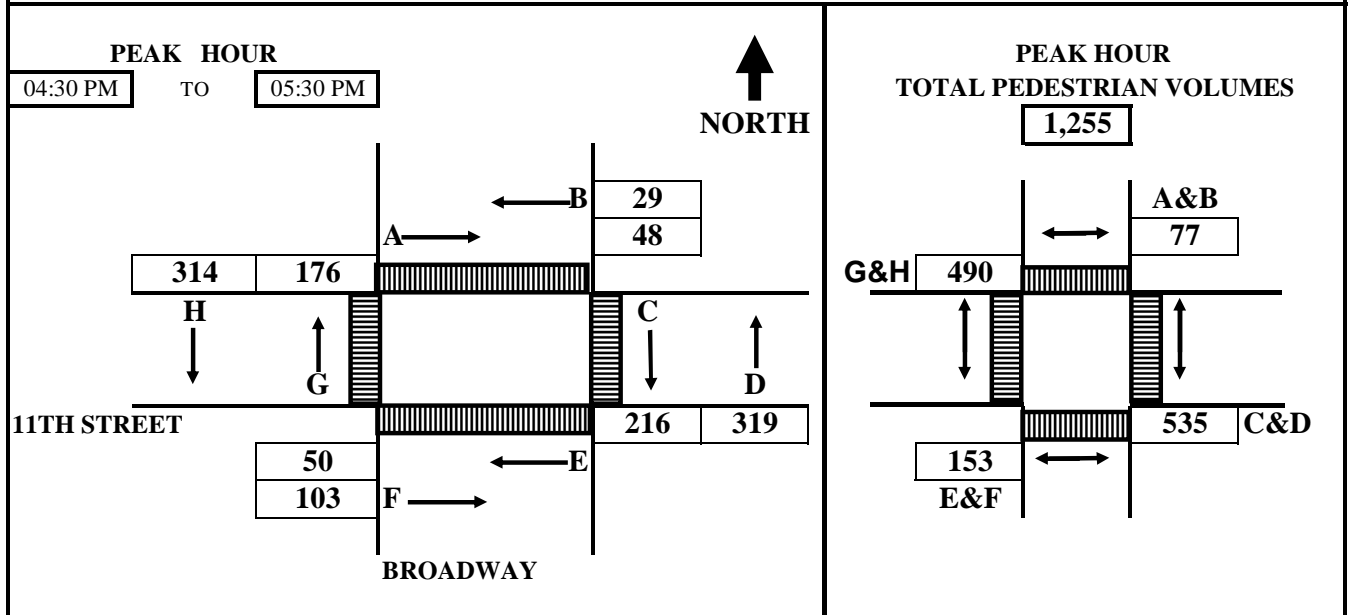
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> BROADWAY		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-24PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	13	12	26	49	24	51	53	82	310
04:15 PM	---	04:30 PM	27	25	65	94	37	76	92	150	566
04:30 PM	---	04:45 PM	41	37	109	171	48	97	132	239	874
04:45 PM	---	05:00 PM	56	41	160	236	53	133	159	310	1,148
05:00 PM	---	05:15 PM	59	46	241	324	73	152	227	354	1,476
05:15 PM	---	05:30 PM	75	54	281	413	87	179	268	464	1,821
05:30 PM	---	05:45 PM	82	61	317	474	93	207	317	532	2,083
05:45 PM	---	06:00 PM	86	68	345	490	103	226	330	582	2,230

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	13	12	26	49	24	51	53	82	310
04:15 PM	---	04:30 PM	14	13	39	45	13	25	39	68	256
04:30 PM	---	04:45 PM	14	12	44	77	11	21	40	89	308
04:45 PM	---	05:00 PM	15	4	51	65	5	36	27	71	274
05:00 PM	---	05:15 PM	3	5	81	88	20	19	68	44	328
05:15 PM	---	05:30 PM	16	8	40	89	14	27	41	110	345
05:30 PM	---	05:45 PM	7	7	36	61	6	28	49	68	262
05:45 PM	---	06:00 PM	4	7	28	16	10	19	13	50	147

### HOURLY TOTALS

04:00 PM	---	05:00 PM	56	41	160	236	53	133	159	310	1,148
04:15 PM	---	05:15 PM	46	34	215	275	49	101	174	272	1,166
04:30 PM	---	05:30 PM	48	29	216	319	50	103	176	314	1,255
04:45 PM	---	05:45 PM	41	24	208	303	45	110	185	293	1,209
05:00 PM	---	06:00 PM	30	27	185	254	50	93	171	272	1,082

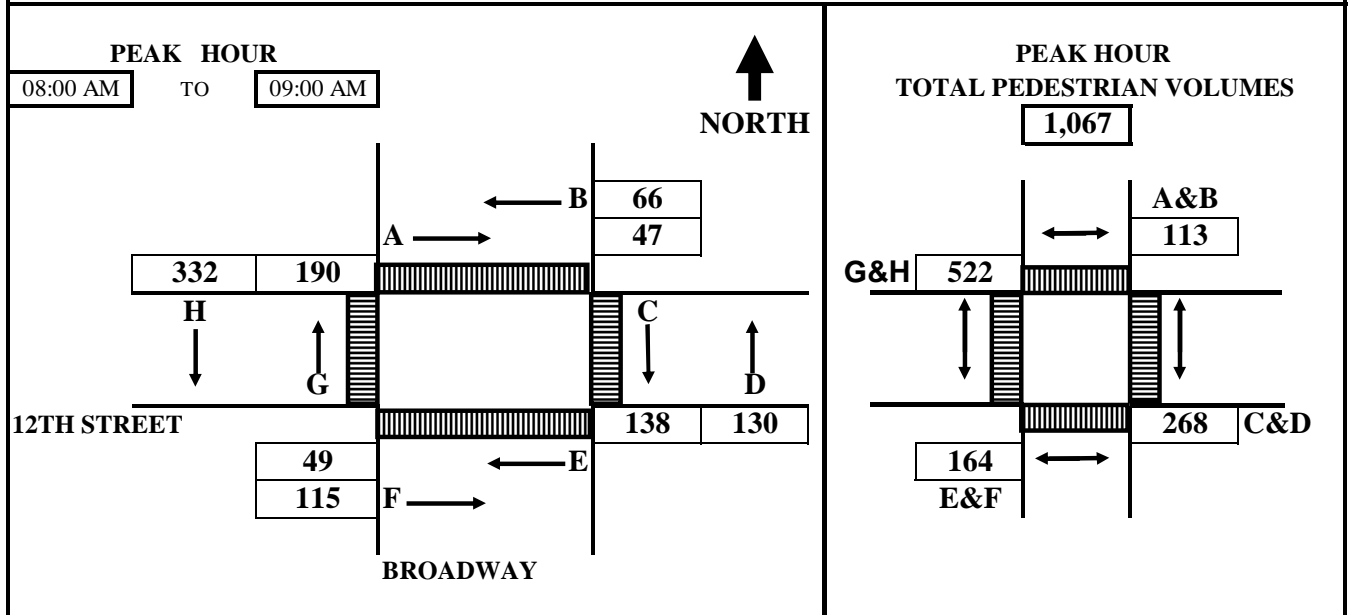
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> BROADWAY		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 12TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-25AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	13	11	11	32	6	17	24	33	147
07:15 AM	---	07:30 AM	24	20	37	75	17	40	57	72	342
07:30 AM	---	07:45 AM	33	32	70	120	32	65	98	129	579
07:45 AM	---	08:00 AM	46	42	108	133	55	98	128	205	815
08:00 AM	---	08:15 AM	58	60	129	162	72	130	180	293	1,084
08:15 AM	---	08:30 AM	71	76	156	189	78	170	226	377	1,343
08:30 AM	---	08:45 AM	80	97	204	227	90	189	270	456	1,613
08:45 AM	---	09:00 AM	93	108	246	263	104	213	318	537	1,882

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	13	11	11	32	6	17	24	33	147
07:15 AM	---	07:30 AM	11	9	26	43	11	23	33	39	195
07:30 AM	---	07:45 AM	9	12	33	45	15	25	41	57	237
07:45 AM	---	08:00 AM	13	10	38	13	23	33	30	76	236
08:00 AM	---	08:15 AM	12	18	21	29	17	32	52	88	269
08:15 AM	---	08:30 AM	13	16	27	27	6	40	46	84	259
08:30 AM	---	08:45 AM	9	21	48	38	12	19	44	79	270
08:45 AM	---	09:00 AM	13	11	42	36	14	24	48	81	269

### HOURLY TOTALS

07:00 AM	---	08:00 AM	46	42	108	133	55	98	128	205	815
07:15 AM	---	08:15 AM	45	49	118	130	66	113	156	260	937
07:30 AM	---	08:30 AM	47	56	119	114	61	130	169	305	1,001
07:45 AM	---	08:45 AM	47	65	134	107	58	124	172	327	1,034
08:00 AM	---	09:00 AM	47	66	138	130	49	115	190	332	1,067

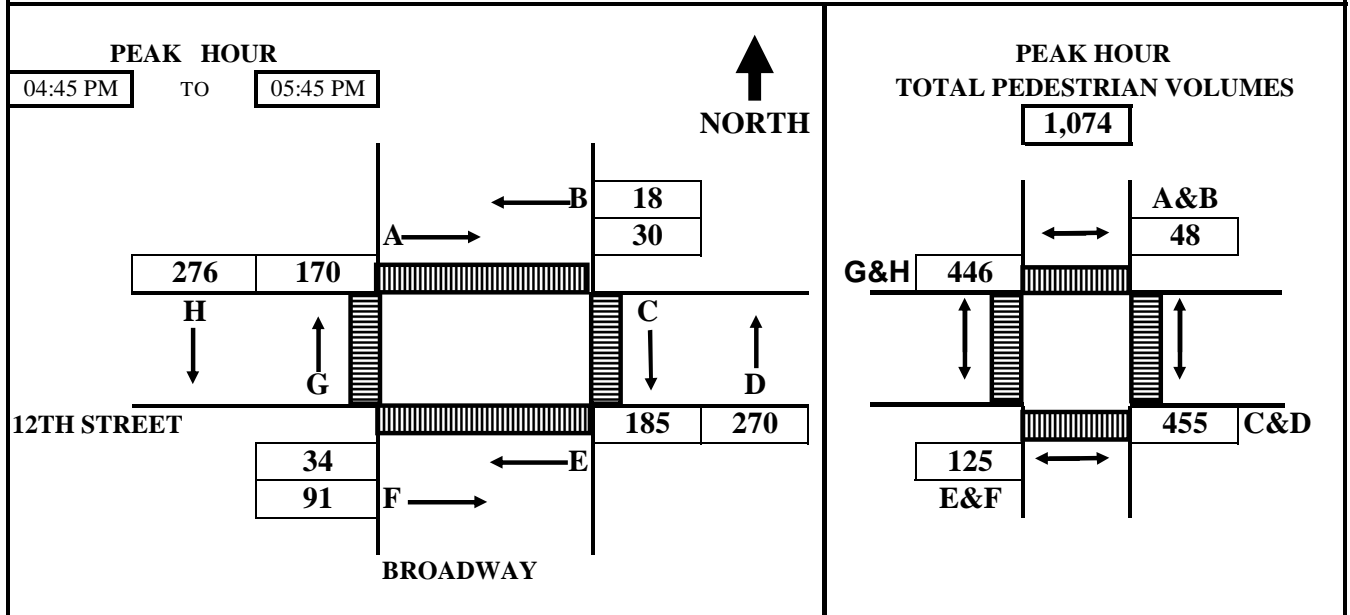
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> BROADWAY		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 12TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-25PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	11	10	23	47	32	34	35	67	259
04:15 PM	---	04:30 PM	20	21	41	92	50	63	74	138	499
04:30 PM	---	04:45 PM	31	27	73	153	61	82	104	211	742
04:45 PM	---	05:00 PM	39	32	109	216	65	103	135	276	975
05:00 PM	---	05:15 PM	47	35	158	285	77	122	183	330	1,237
05:15 PM	---	05:30 PM	54	39	211	359	88	144	225	413	1,533
05:30 PM	---	05:45 PM	61	45	258	423	95	173	274	487	1,816
05:45 PM	---	06:00 PM	69	50	289	461	102	217	289	543	2,020

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	11	10	23	47	32	34	35	67	259
04:15 PM	---	04:30 PM	9	11	18	45	18	29	39	71	240
04:30 PM	---	04:45 PM	11	6	32	61	11	19	30	73	243
04:45 PM	---	05:00 PM	8	5	36	63	4	21	31	65	233
05:00 PM	---	05:15 PM	8	3	49	69	12	19	48	54	262
05:15 PM	---	05:30 PM	7	4	53	74	11	22	42	83	296
05:30 PM	---	05:45 PM	7	6	47	64	7	29	49	74	283
05:45 PM	---	06:00 PM	8	5	31	38	7	44	15	56	204

### HOURLY TOTALS

04:00 PM	---	05:00 PM	39	32	109	216	65	103	135	276	975
04:15 PM	---	05:15 PM	36	25	135	238	45	88	148	263	978
04:30 PM	---	05:30 PM	34	18	170	267	38	81	151	275	1,034
04:45 PM	---	05:45 PM	30	18	185	270	34	91	170	276	1,074
05:00 PM	---	06:00 PM	30	18	180	245	37	114	154	267	1,045

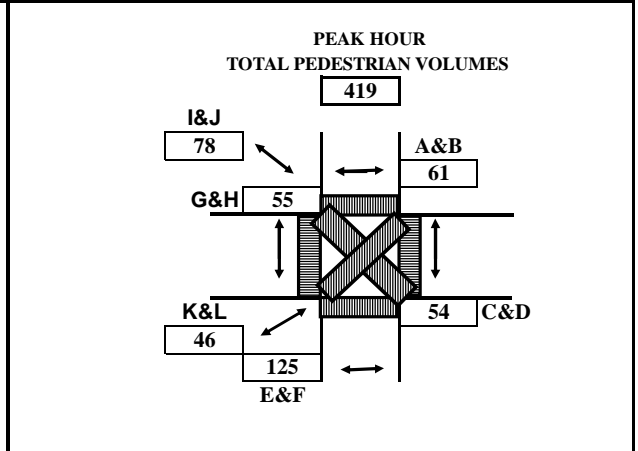
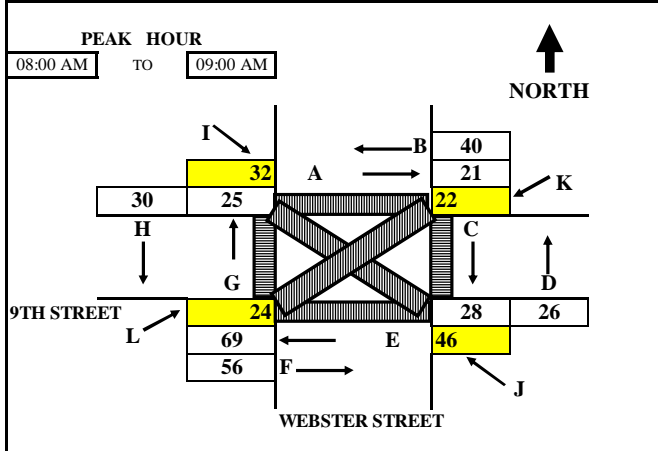
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012
<b>N-S APPROACH:</b> WEBSTER STREET	<b>DAY:</b> WEDNESDAY
<b>E-W APPROACH:</b> 9TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD:</b> 7:00 AM TO 9:00 AM	<b>FILE:</b> 3205033-PED-26AM



TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	DIAGONAL X-WALK				TOTAL
From To	A B	C D	E F	G H	I J	K L			

<b>SURVEY DATA</b>															
07:00 AM	---	07:15 AM	2	2	1	1	1	4	1	0	4	3	3	5	27
07:15 AM	---	07:30 AM	7	13	14	6	5	13	6	4	9	8	7	10	102
07:30 AM	---	07:45 AM	15	20	16	16	17	19	17	8	16	10	9	22	185
07:45 AM	---	08:00 AM	24	22	17	21	25	29	21	15	20	22	13	30	259
08:00 AM	---	08:15 AM	27	24	18	30	35	34	26	23	24	28	16	33	318
08:15 AM	---	08:30 AM	36	33	25	33	53	55	32	30	25	38	21	39	420
08:30 AM	---	08:45 AM	38	45	32	37	69	64	34	35	38	50	29	48	519
08:45 AM	---	09:00 AM	45	62	45	47	94	85	46	45	52	68	35	54	678

<b>TOTAL BY PERIOD</b>															
07:00 AM	---	07:15 AM	2	2	1	1	1	4	1	0	4	3	3	5	27
07:15 AM	---	07:30 AM	5	11	13	5	4	9	5	4	5	5	4	5	75
07:30 AM	---	07:45 AM	8	7	2	10	12	6	11	4	7	2	2	12	83
07:45 AM	---	08:00 AM	9	2	1	5	8	10	4	7	4	12	4	8	74
08:00 AM	---	08:15 AM	3	2	1	9	10	5	5	8	4	6	3	3	59
08:15 AM	---	08:30 AM	9	9	7	3	18	21	6	7	1	10	5	6	102
08:30 AM	---	08:45 AM	2	12	7	4	16	9	2	5	13	12	8	9	99
08:45 AM	---	09:00 AM	7	17	13	10	25	21	12	10	14	18	6	6	159

<b>HOURLY TOTALS</b>															
07:00 AM	---	08:00 AM	24	22	17	21	25	29	21	15	20	22	13	30	259
07:15 AM	---	08:15 AM	25	22	17	29	34	30	25	23	20	25	13	28	291
07:30 AM	---	08:30 AM	29	20	11	27	48	42	26	26	16	30	14	29	318
07:45 AM	---	08:45 AM	23	25	16	21	52	45	17	27	22	40	20	26	334
08:00 AM	---	09:00 AM	21	40	28	26	69	56	25	30	32	46	22	24	419

Tel : (510) 232-1271

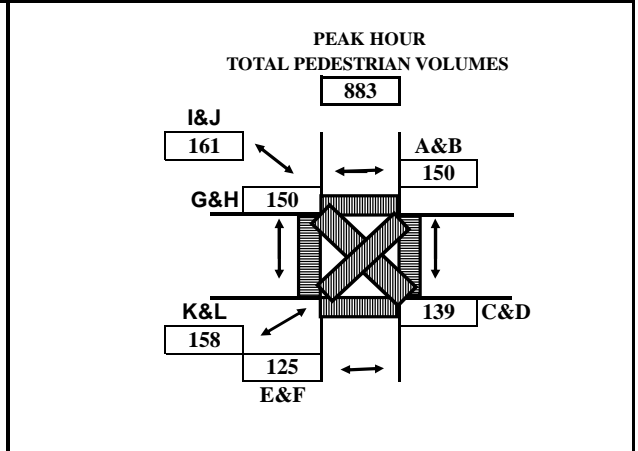
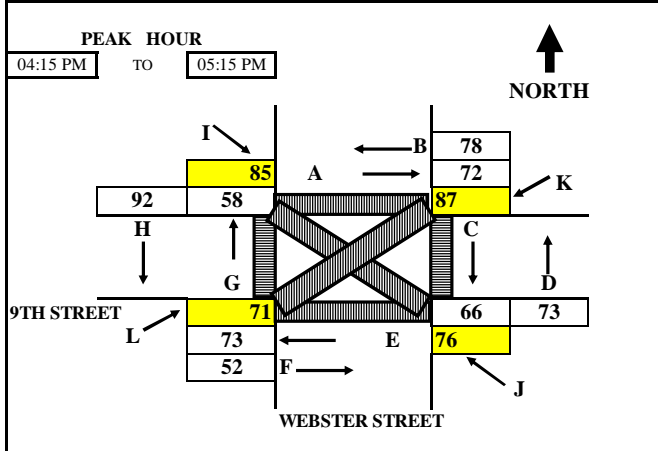
Fax: (510) 232-1272

0  
0  
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1

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012
<b>N-S APPROACH:</b> WEBSTER STREET	<b>DAY:</b> WEDNESDAY
<b>E-W APPROACH:</b> 9TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD:</b> 4:00 PM TO 6:00 PM	<b>FILE:</b> 3205033-PED-26PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		DIAGONAL X-WALK				TOTAL
From	To	A	B	C	D	E	F	G	H	I	J	K	L	
<b>SURVEY DATA</b>														
04:00 PM	--- 04:15 PM	15	21	16	16	11	7	15	13	20	12	21	25	192
04:15 PM	--- 04:30 PM	27	35	35	36	28	11	24	41	39	24	36	49	385
04:30 PM	--- 04:45 PM	59	58	52	48	44	31	39	63	56	50	70	62	632
04:45 PM	--- 05:00 PM	71	60	64	65	63	38	50	78	82	67	88	80	806
05:00 PM	--- 05:15 PM	87	99	82	89	84	59	73	105	105	88	108	96	1,075
05:15 PM	--- 05:30 PM	113	118	90	101	104	70	88	122	127	96	123	109	1,261
05:30 PM	--- 05:45 PM	140	134	102	126	131	90	116	137	145	107	132	122	1,482
05:45 PM	--- 06:00 PM	151	147	117	137	138	95	123	144	156	121	133	123	1,585
<b>TOTAL BY PERIOD</b>														
04:00 PM	--- 04:15 PM	15	21	16	16	11	7	15	13	20	12	21	25	192
04:15 PM	--- 04:30 PM	12	14	19	20	17	4	9	28	19	12	15	24	193
04:30 PM	--- 04:45 PM	32	23	17	12	16	20	15	22	17	26	34	13	247
04:45 PM	--- 05:00 PM	12	2	12	17	19	7	11	15	26	17	18	18	174
05:00 PM	--- 05:15 PM	16	39	18	24	21	21	23	27	23	21	20	16	269
05:15 PM	--- 05:30 PM	26	19	8	12	20	11	15	17	22	8	15	13	186
05:30 PM	--- 05:45 PM	27	16	12	25	27	20	28	15	18	11	9	13	221
05:45 PM	--- 06:00 PM	11	13	15	11	7	5	7	7	11	14	1	1	103
<b>HOURLY TOTALS</b>														
04:00 PM	--- 05:00 PM	71	60	64	65	63	38	50	78	82	67	88	80	806
04:15 PM	--- 05:15 PM	72	78	66	73	73	52	58	92	85	76	87	71	883
04:30 PM	--- 05:30 PM	86	83	55	65	76	59	64	81	88	72	87	60	876
04:45 PM	--- 05:45 PM	81	76	50	78	87	59	77	74	89	57	62	60	850
05:00 PM	--- 06:00 PM	80	87	53	72	75	57	73	66	74	54	45	43	779

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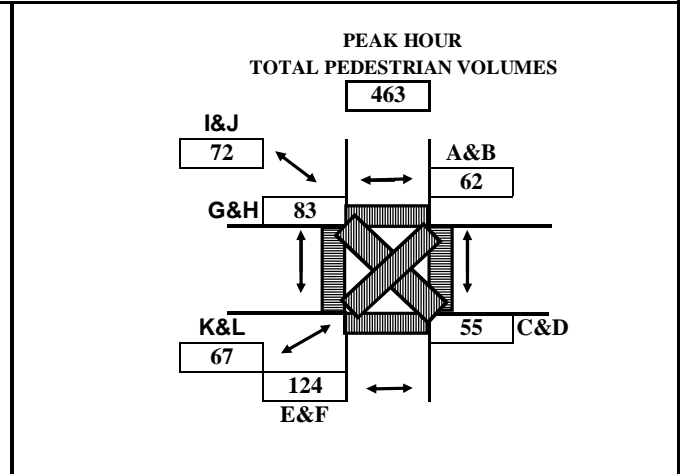
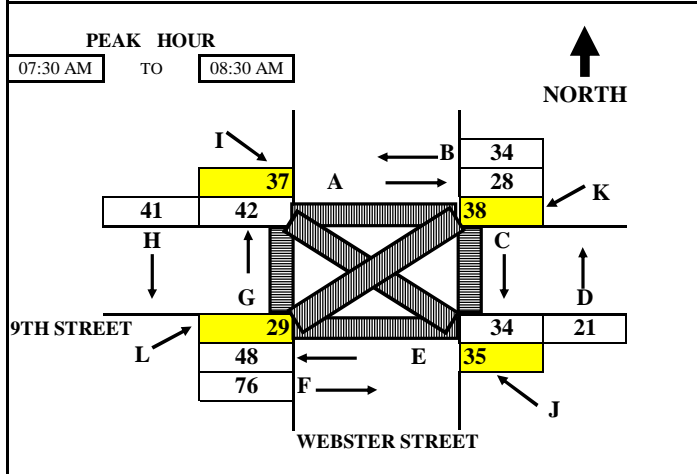
0  
1  
0  
0  
0



# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/23/2012
N-S APPROACH: WEBSTER STREET	DAY: WEDNESDAY
E-W APPROACH: 9TH STREET	CITY: OAKLAND
SURVEY PERIOD: 7:00 AM TO 9:00 AM	FILE: 3205033-PED-27AM



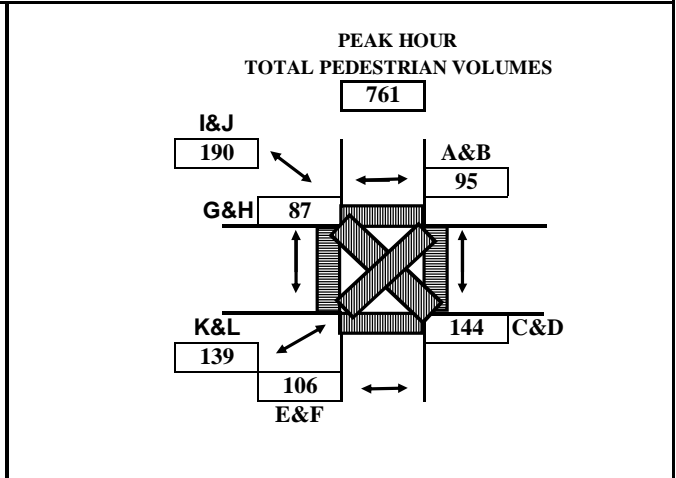
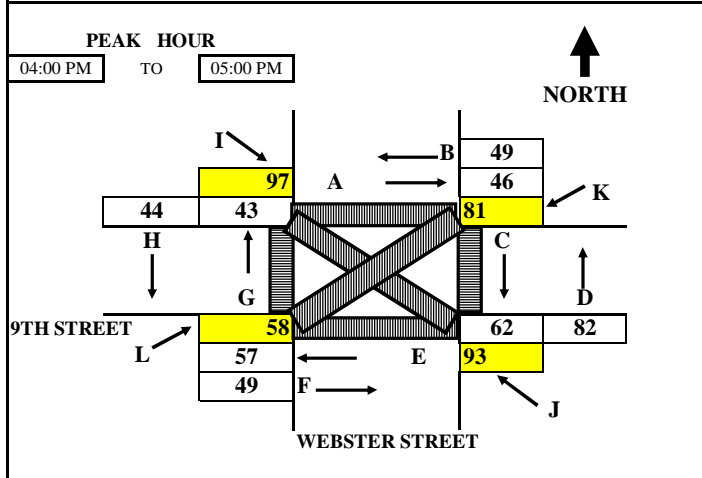
TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		DIAGONAL X-WALK				TOTAL	
From	To	A	B	C	D	E	F	G	H	I	J	K	L		
<b>SURVEY DATA</b>															
07:00 AM	---	07:15 AM	2	3	2	0	9	5	4	5	2	3	1	1	37
07:15 AM	---	07:30 AM	14	9	7	3	23	22	8	17	8	5	8	6	130
07:30 AM	---	07:45 AM	19	18	13	10	30	63	16	26	23	16	19	12	265
07:45 AM	---	08:00 AM	29	31	28	15	42	78	24	36	35	23	27	17	385
08:00 AM	---	08:15 AM	35	39	32	20	57	89	36	44	39	31	32	23	477
08:15 AM	---	08:30 AM	42	43	41	24	71	98	50	58	45	40	46	35	593
08:30 AM	---	08:45 AM	53	52	46	30	82	106	57	68	56	54	53	47	704
08:45 AM	---	09:00 AM	65	59	54	35	93	119	70	70	68	78	68	60	839
<b>TOTAL BY PERIOD</b>															
07:00 AM	---	07:15 AM	2	3	2	0	9	5	4	5	2	3	1	1	37
07:15 AM	---	07:30 AM	12	6	5	3	14	17	4	12	6	2	7	5	93
07:30 AM	---	07:45 AM	5	9	6	7	7	41	8	9	15	11	11	6	135
07:45 AM	---	08:00 AM	10	13	15	5	12	15	8	10	12	7	8	5	120
08:00 AM	---	08:15 AM	6	8	4	5	15	11	12	8	4	8	5	6	92
08:15 AM	---	08:30 AM	7	4	9	4	14	9	14	14	6	9	14	12	116
08:30 AM	---	08:45 AM	11	9	5	6	11	8	7	10	11	14	7	12	111
08:45 AM	---	09:00 AM	12	7	8	5	11	13	13	2	12	24	15	13	135
<b>HOURLY TOTALS</b>															
07:00 AM	---	08:00 AM	29	31	28	15	42	78	24	36	35	23	27	17	385
07:15 AM	---	08:15 AM	33	36	30	20	48	84	32	39	37	28	31	22	440
07:30 AM	---	08:30 AM	28	34	34	21	48	76	42	41	37	35	38	29	463
07:45 AM	---	08:45 AM	34	34	33	20	52	43	41	42	33	38	34	35	439
08:00 AM	---	09:00 AM	36	28	26	20	51	41	46	34	33	55	41	43	454

Tel : (510) 232-1271 Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE:</b> 5/23/2012	
<b>N-S APPROACH:</b> WEBSTER STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 9TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD:</b> 4:00 PM TO 6:00 PM		<b>FILE:</b> 3205033-PED-27AM	



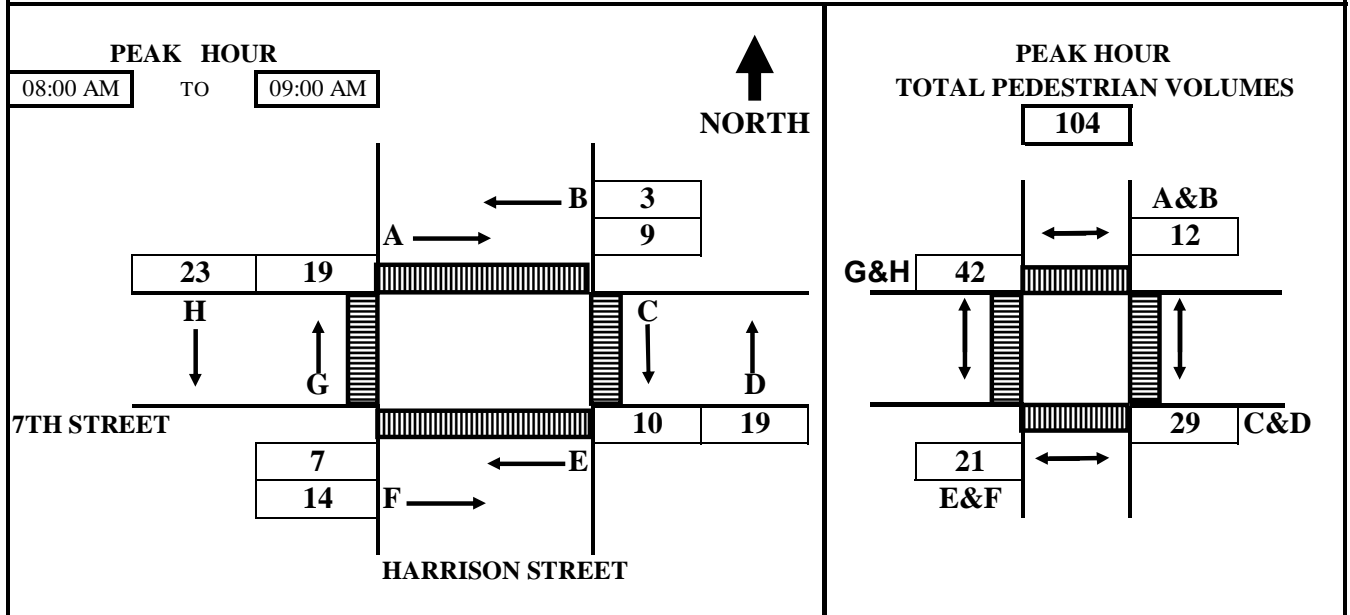
TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		DIAGONAL X-WALK				TOTAL	
From	To	A	B	C	D	E	F	G	H	I	J	K	L		
<b>SURVEY DATA</b>															
04:00 PM	---	04:15 PM	8	13	26	20	16	15	16	10	13	21	11	15	184
04:15 PM	---	04:30 PM	20	25	35	47	31	25	25	18	41	50	39	24	380
04:30 PM	---	04:45 PM	40	37	49	61	44	40	38	32	66	76	64	47	594
04:45 PM	---	05:00 PM	46	49	62	82	57	49	43	44	97	93	81	58	761
05:00 PM	---	05:15 PM	57	56	68	98	68	58	57	55	116	115	97	67	912
05:15 PM	---	05:30 PM	68	88	75	108	81	74	71	67	130	129	112	81	1,084
05:30 PM	---	05:45 PM	74	100	89	117	95	88	85	83	142	144	127	98	1,242
05:45 PM	---	06:00 PM	84	103	100	129	112	102	98	96	148	155	149	102	1,378
<b>TOTAL BY PERIOD</b>															
04:00 PM	---	04:15 PM	8	13	26	20	16	15	16	10	13	21	11	15	184
04:15 PM	---	04:30 PM	12	12	9	27	15	10	9	8	28	29	28	9	196
04:30 PM	---	04:45 PM	20	12	14	14	13	15	13	14	25	26	25	23	214
04:45 PM	---	05:00 PM	6	12	13	21	13	9	5	12	31	17	17	11	167
05:00 PM	---	05:15 PM	11	7	6	16	11	9	14	11	19	22	16	9	151
05:15 PM	---	05:30 PM	11	32	7	10	13	16	14	12	14	14	15	14	172
05:30 PM	---	05:45 PM	6	12	14	9	14	14	14	16	12	15	15	17	158
05:45 PM	---	06:00 PM	10	3	11	12	17	14	13	13	6	11	22	4	136
<b>HOURLY TOTALS</b>															
04:00 PM	---	05:00 PM	46	49	62	82	57	49	43	44	97	93	81	58	761
04:15 PM	---	05:15 PM	49	43	42	78	52	43	41	45	103	94	86	52	728
04:30 PM	---	05:30 PM	48	63	40	61	50	49	46	49	89	79	73	57	704
04:45 PM	---	05:45 PM	34	63	40	56	51	48	47	51	76	68	63	51	648
05:00 PM	---	06:00 PM	38	54	38	47	55	53	55	52	51	62	68	44	617

Tel : (510) 232-1271 Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> HARRISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-28AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	3	0	0	0	0	0	1	4
07:15 AM	---	07:30 AM	1	8	0	1	4	2	3	1	20
07:30 AM	---	07:45 AM	2	16	1	1	6	2	3	2	33
07:45 AM	---	08:00 AM	5	21	3	1	6	3	7	7	53
08:00 AM	---	08:15 AM	10	21	6	1	9	4	11	16	78
08:15 AM	---	08:30 AM	14	23	7	2	10	14	15	18	103
08:30 AM	---	08:45 AM	14	23	7	11	10	16	19	22	122
08:45 AM	---	09:00 AM	14	24	13	20	13	17	26	30	157

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	3	0	0	0	0	0	1	4
07:15 AM	---	07:30 AM	1	5	0	1	4	2	3	0	16
07:30 AM	---	07:45 AM	1	8	1	0	2	0	0	1	13
07:45 AM	---	08:00 AM	3	5	2	0	0	1	4	5	20
08:00 AM	---	08:15 AM	5	0	3	0	3	1	4	9	25
08:15 AM	---	08:30 AM	4	2	1	1	1	10	4	2	25
08:30 AM	---	08:45 AM	0	0	0	9	0	2	4	4	19
08:45 AM	---	09:00 AM	0	1	6	9	3	1	7	8	35

### HOURLY TOTALS

07:00 AM	---	08:00 AM	5	21	3	1	6	3	7	7	53
07:15 AM	---	08:15 AM	10	18	6	1	9	4	11	15	74
07:30 AM	---	08:30 AM	13	15	7	1	6	12	12	17	83
07:45 AM	---	08:45 AM	12	7	6	10	4	14	16	20	89
08:00 AM	---	09:00 AM	9	3	10	19	7	14	19	23	104

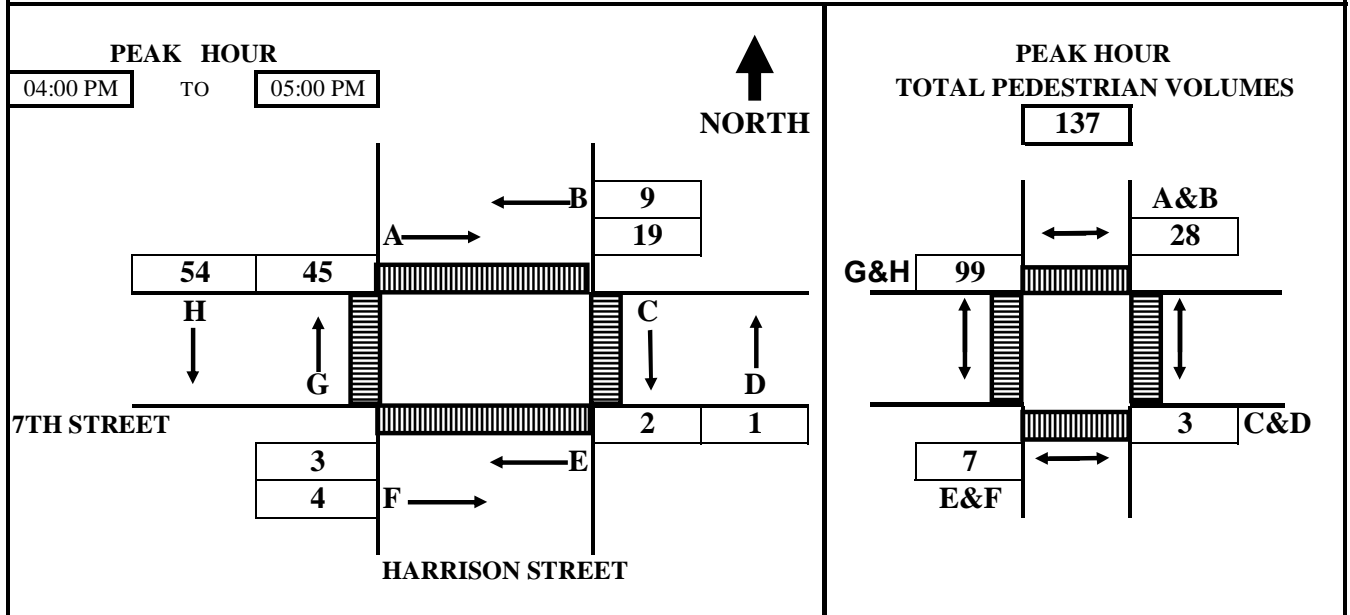
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> HARRISON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-28PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	8	3	1	0	3	4	8	16	43
04:15 PM	---	04:30 PM	11	7	1	1	3	4	18	27	72
04:30 PM	---	04:45 PM	17	9	1	1	3	4	29	47	111
04:45 PM	---	05:00 PM	19	9	2	1	3	4	45	54	137
05:00 PM	---	05:15 PM	22	13	2	1	4	5	54	62	163
05:15 PM	---	05:30 PM	25	14	2	1	4	5	57	74	182
05:30 PM	---	05:45 PM	30	19	2	1	4	5	62	86	209
05:45 PM	---	06:00 PM	36	21	2	1	4	5	69	98	236

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	8	3	1	0	3	4	8	16	43
04:15 PM	---	04:30 PM	3	4	0	1	0	0	10	11	29
04:30 PM	---	04:45 PM	6	2	0	0	0	0	11	20	39
04:45 PM	---	05:00 PM	2	0	1	0	0	0	16	7	26
05:00 PM	---	05:15 PM	3	4	0	0	1	1	9	8	26
05:15 PM	---	05:30 PM	3	1	0	0	0	0	3	12	19
05:30 PM	---	05:45 PM	5	5	0	0	0	0	5	12	27
05:45 PM	---	06:00 PM	6	2	0	0	0	0	7	12	27

### HOURLY TOTALS

04:00 PM	---	05:00 PM	19	9	2	1	3	4	45	54	137
04:15 PM	---	05:15 PM	14	10	1	1	1	1	46	46	120
04:30 PM	---	05:30 PM	14	7	1	0	1	1	39	47	110
04:45 PM	---	05:45 PM	13	10	1	0	1	1	33	39	98
05:00 PM	---	06:00 PM	17	12	0	0	1	1	24	44	99

Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT: OAKLAND TRAFFIC STUDY</b>				<b>SURVEY DATE 5/23/2012</b>			
<b>N-S APPROACH: HARRISON STREET</b>				<b>DAY: WEDNESDAY</b>			
<b>E-W APPROACH: 20TH STREET</b>				<b>CITY: OAKLAND</b>			
<b>SURVEY PERIOD 7:00 AM</b>		<b>TO 9:00 AM</b>		<b>FILE: 3205033-PED-29AM</b>			

<p style="text-align: center;"><b>PEAK HOUR</b> 08:00 AM TO 09:00 AM</p>	<p style="text-align: center;"><b>PEAK HOUR</b> <b>TOTAL PEDESTRIAN VOLUMES</b> 282</p>
--	---

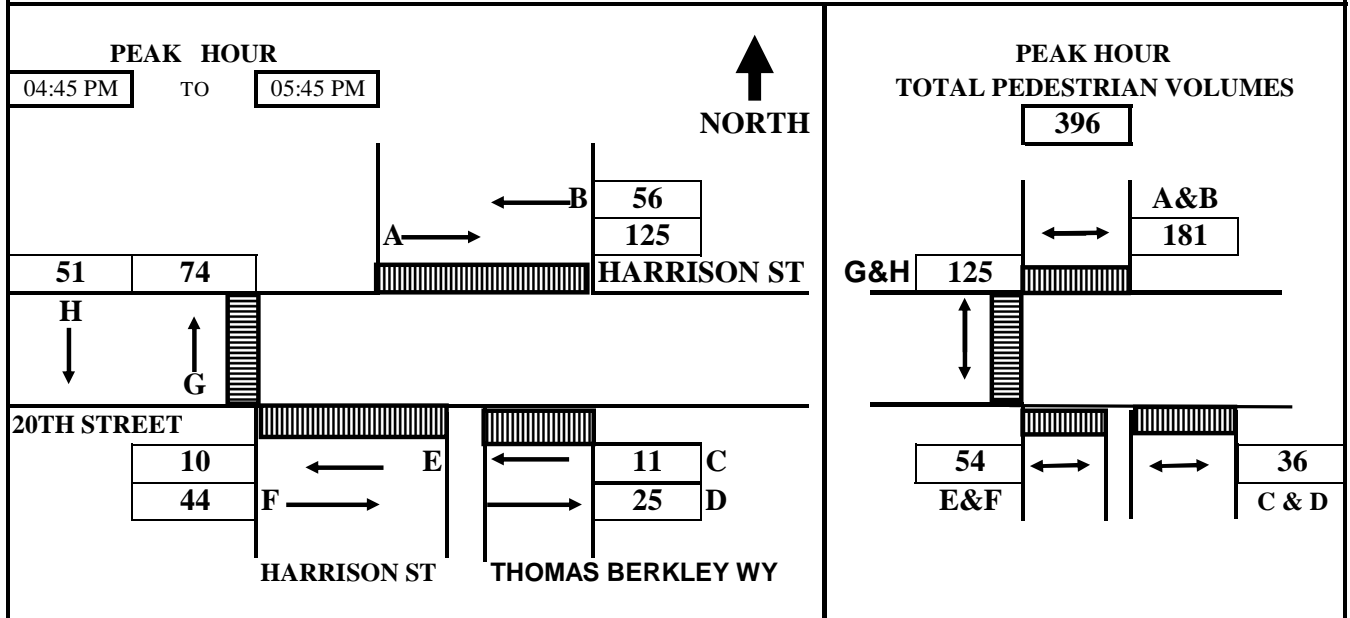
TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL	
From	To	A	B	C	D	E	F	G	H		
<b>SURVEY DATA</b>											
07:00 AM	---	07:15 AM	2	16	0	0	2	3	5	6	34
07:15 AM	---	07:30 AM	5	28	2	0	7	5	9	12	68
07:30 AM	---	07:45 AM	9	40	3	3	10	12	27	22	126
07:45 AM	---	08:00 AM	15	68	5	3	11	13	43	33	191
08:00 AM	---	08:15 AM	26	96	8	3	14	13	56	46	262
08:15 AM	---	08:30 AM	36	116	12	5	19	19	67	53	327
08:30 AM	---	08:45 AM	41	137	18	7	22	21	76	72	394
08:45 AM	---	09:00 AM	49	157	22	8	23	21	93	100	473
<b>TOTAL BY PERIOD</b>											
07:00 AM	---	07:15 AM	2	16	0	0	2	3	5	6	34
07:15 AM	---	07:30 AM	3	12	2	0	5	2	4	6	34
07:30 AM	---	07:45 AM	4	12	1	3	3	7	18	10	58
07:45 AM	---	08:00 AM	6	28	2	0	1	1	16	11	65
08:00 AM	---	08:15 AM	11	28	3	0	3	0	13	13	71
08:15 AM	---	08:30 AM	10	20	4	2	5	6	11	7	65
08:30 AM	---	08:45 AM	5	21	6	2	3	2	9	19	67
08:45 AM	---	09:00 AM	8	20	4	1	1	0	17	28	79
<b>HOURLY TOTALS</b>											
07:00 AM	---	08:00 AM	15	68	5	3	11	13	43	33	191
07:15 AM	---	08:15 AM	24	80	8	3	12	10	51	40	228
07:30 AM	---	08:30 AM	31	88	10	5	12	14	58	41	259
07:45 AM	---	08:45 AM	32	97	15	4	12	9	49	50	268
08:00 AM	---	09:00 AM	34	89	17	5	12	8	50	67	282

Tel : (510) 232-1271 Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> HARRISON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 20TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-29PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	21	6	2	4	7	0	22	13	75
04:15 PM	---	04:30 PM	26	24	10	8	10	0	27	27	132
04:30 PM	---	04:45 PM	39	38	11	19	11	15	43	46	222
04:45 PM	---	05:00 PM	89	62	11	29	13	28	58	66	356
05:00 PM	---	05:15 PM	100	70	13	38	15	47	76	72	431
05:15 PM	---	05:30 PM	118	79	17	42	18	54	91	87	506
05:30 PM	---	05:45 PM	164	94	22	44	21	59	117	97	618
05:45 PM	---	06:00 PM	197	31	23	48	22	69	120	113	623

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	21	6	2	4	7	0	22	13	75
04:15 PM	---	04:30 PM	5	18	8	4	3	0	5	14	57
04:30 PM	---	04:45 PM	13	14	1	11	1	15	16	19	90
04:45 PM	---	05:00 PM	50	24	0	10	2	13	15	20	134
05:00 PM	---	05:15 PM	11	8	2	9	2	19	18	6	75
05:15 PM	---	05:30 PM	18	9	4	4	3	7	15	15	75
05:30 PM	---	05:45 PM	46	15	5	2	3	5	26	10	112
05:45 PM	---	06:00 PM	33	-63	1	4	1	10	3	16	5

### HOURLY TOTALS

04:00 PM	---	05:00 PM	89	62	11	29	13	28	58	66	356
04:15 PM	---	05:15 PM	79	64	11	34	8	47	54	59	356
04:30 PM	---	05:30 PM	92	55	7	34	8	54	64	60	374
04:45 PM	---	05:45 PM	125	56	11	25	10	44	74	51	396
05:00 PM	---	06:00 PM	108	-31	12	19	9	41	62	47	267

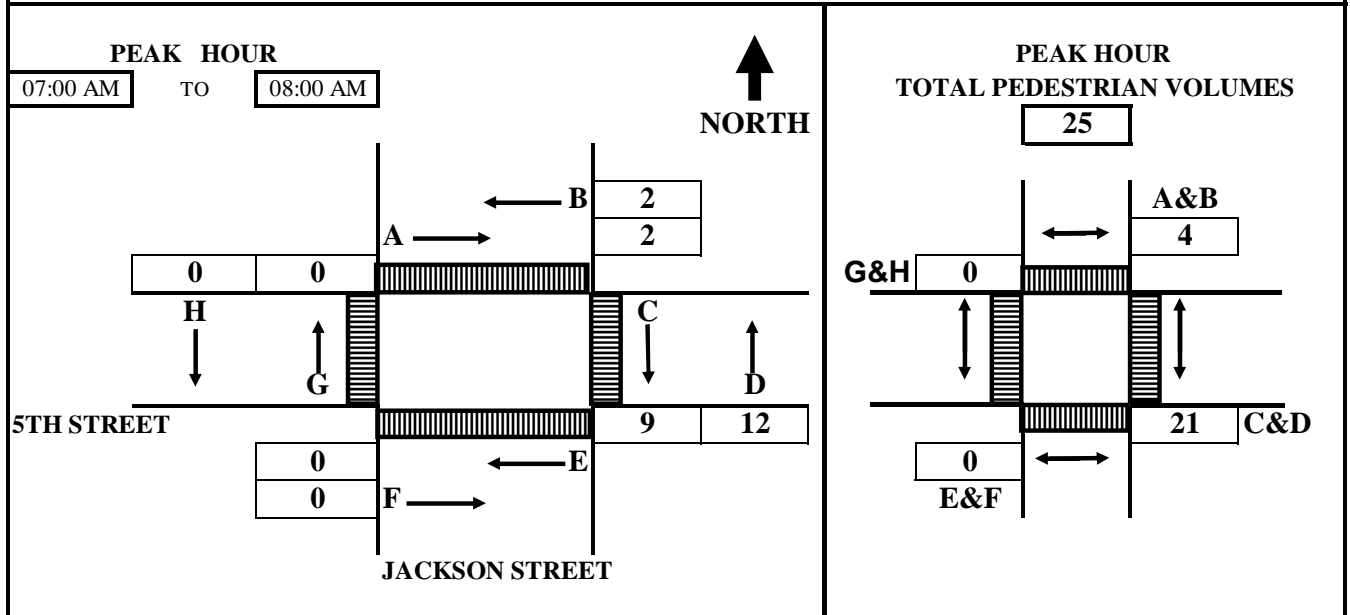
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 5TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-30AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	0	2	3	0	0	0	0	5
07:15 AM	---	07:30 AM	2	0	6	6	0	0	0	0	14
07:30 AM	---	07:45 AM	2	0	8	9	0	0	0	0	19
07:45 AM	---	08:00 AM	2	2	9	12	0	0	0	0	25
08:00 AM	---	08:15 AM	3	2	11	13	0	0	0	0	29
08:15 AM	---	08:30 AM	3	2	12	15	0	0	0	0	32
08:30 AM	---	08:45 AM	3	3	13	17	0	0	0	0	36
08:45 AM	---	09:00 AM	3	3	14	19	0	0	0	0	39

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	2	3	0	0	0	0	5
07:15 AM	---	07:30 AM	2	0	4	3	0	0	0	0	9
07:30 AM	---	07:45 AM	0	0	2	3	0	0	0	0	5
07:45 AM	---	08:00 AM	0	2	1	3	0	0	0	0	6
08:00 AM	---	08:15 AM	1	0	2	1	0	0	0	0	4
08:15 AM	---	08:30 AM	0	0	1	2	0	0	0	0	3
08:30 AM	---	08:45 AM	0	1	1	2	0	0	0	0	4
08:45 AM	---	09:00 AM	0	0	1	2	0	0	0	0	3

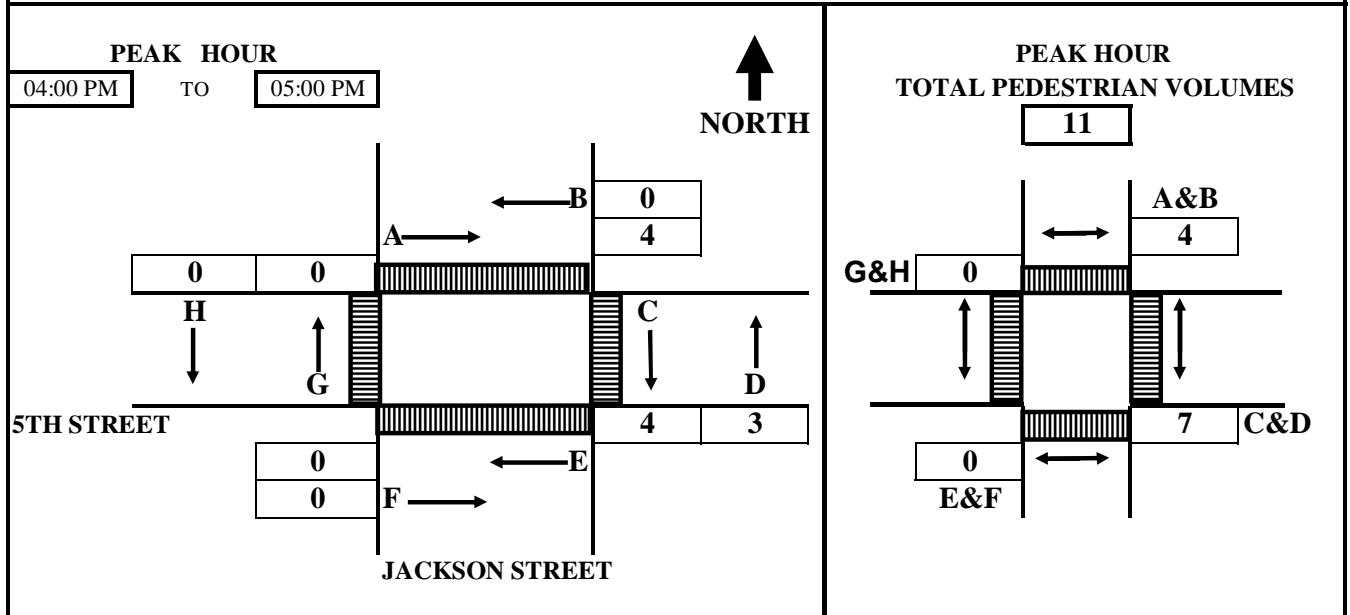
### HOURLY TOTALS

07:00 AM	---	08:00 AM	2	2	9	12	0	0	0	0	25
07:15 AM	---	08:15 AM	3	2	9	10	0	0	0	0	24
07:30 AM	---	08:30 AM	1	2	6	9	0	0	0	0	18
07:45 AM	---	08:45 AM	1	3	5	8	0	0	0	0	17
08:00 AM	---	09:00 AM	1	1	5	7	0	0	0	0	14

# B.A.Y.M.E.T.R.I.C.S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 5TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-30PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	0	0	1	0	0	0	0	1
04:15 PM	---	04:30 PM	1	0	1	3	0	0	0	0	5
04:30 PM	---	04:45 PM	3	0	1	3	0	0	0	0	7
04:45 PM	---	05:00 PM	4	0	4	3	0	0	0	0	11
05:00 PM	---	05:15 PM	4	0	4	3	0	0	0	0	11
05:15 PM	---	05:30 PM	6	0	4	4	0	0	0	0	14
05:30 PM	---	05:45 PM	6	0	6	4	0	0	0	0	16
05:45 PM	---	06:00 PM	7	0	6	4	0	0	0	0	17

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	0	0	1	0	0	0	0	1
04:15 PM	---	04:30 PM	1	0	1	2	0	0	0	0	4
04:30 PM	---	04:45 PM	2	0	0	0	0	0	0	0	2
04:45 PM	---	05:00 PM	1	0	3	0	0	0	0	0	4
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	0
05:15 PM	---	05:30 PM	2	0	0	1	0	0	0	0	3
05:30 PM	---	05:45 PM	0	0	2	0	0	0	0	0	2
05:45 PM	---	06:00 PM	1	0	0	0	0	0	0	0	1

### HOURLY TOTALS

04:00 PM	---	05:00 PM	4	0	4	3	0	0	0	0	11
04:15 PM	---	05:15 PM	4	0	4	2	0	0	0	0	10
04:30 PM	---	05:30 PM	5	0	3	1	0	0	0	0	9
04:45 PM	---	05:45 PM	3	0	5	1	0	0	0	0	9
05:00 PM	---	06:00 PM	3	0	2	1	0	0	0	0	6

Tel : (510) 232-1271

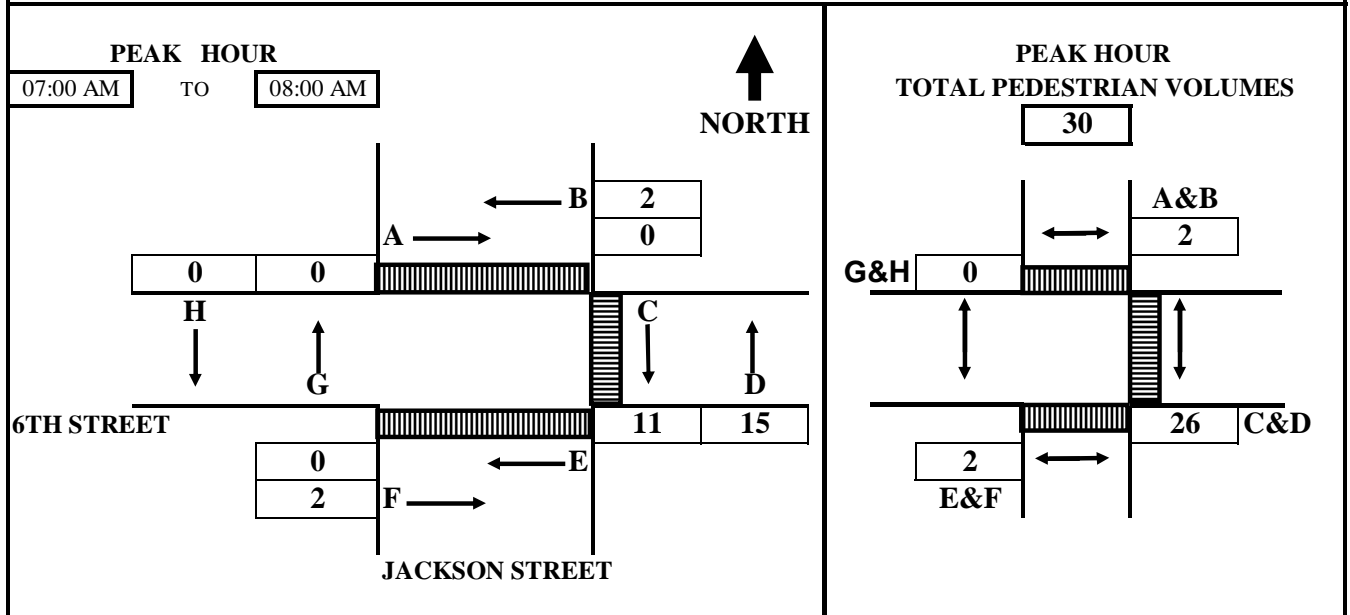
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/23/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> 6TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-31AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	0	3	3	0	1	0	0	7
07:15 AM	---	07:30 AM	0	0	6	7	0	1	0	0	14
07:30 AM	---	07:45 AM	0	2	9	11	0	2	0	0	24
07:45 AM	---	08:00 AM	0	2	11	15	0	2	0	0	30
08:00 AM	---	08:15 AM	0	3	12	17	0	2	0	0	34
08:15 AM	---	08:30 AM	0	3	14	21	0	2	0	0	40
08:30 AM	---	08:45 AM	0	3	15	24	0	4	0	0	46
08:45 AM	---	09:00 AM	0	3	16	27	0	4	0	0	50

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	3	3	0	1	0	0	7
07:15 AM	---	07:30 AM	0	0	3	4	0	0	0	0	7
07:30 AM	---	07:45 AM	0	2	3	4	0	1	0	0	10
07:45 AM	---	08:00 AM	0	0	2	4	0	0	0	0	6
08:00 AM	---	08:15 AM	0	1	1	2	0	0	0	0	4
08:15 AM	---	08:30 AM	0	0	2	4	0	0	0	0	6
08:30 AM	---	08:45 AM	0	0	1	3	0	2	0	0	6
08:45 AM	---	09:00 AM	0	0	1	3	0	0	0	0	4

### HOURLY TOTALS

07:00 AM	---	08:00 AM	0	2	11	15	0	2	0	0	30
07:15 AM	---	08:15 AM	0	3	9	14	0	1	0	0	27
07:30 AM	---	08:30 AM	0	3	8	14	0	1	0	0	26
07:45 AM	---	08:45 AM	0	1	6	13	0	2	0	0	22
08:00 AM	---	09:00 AM	0	1	5	12	0	2	0	0	20

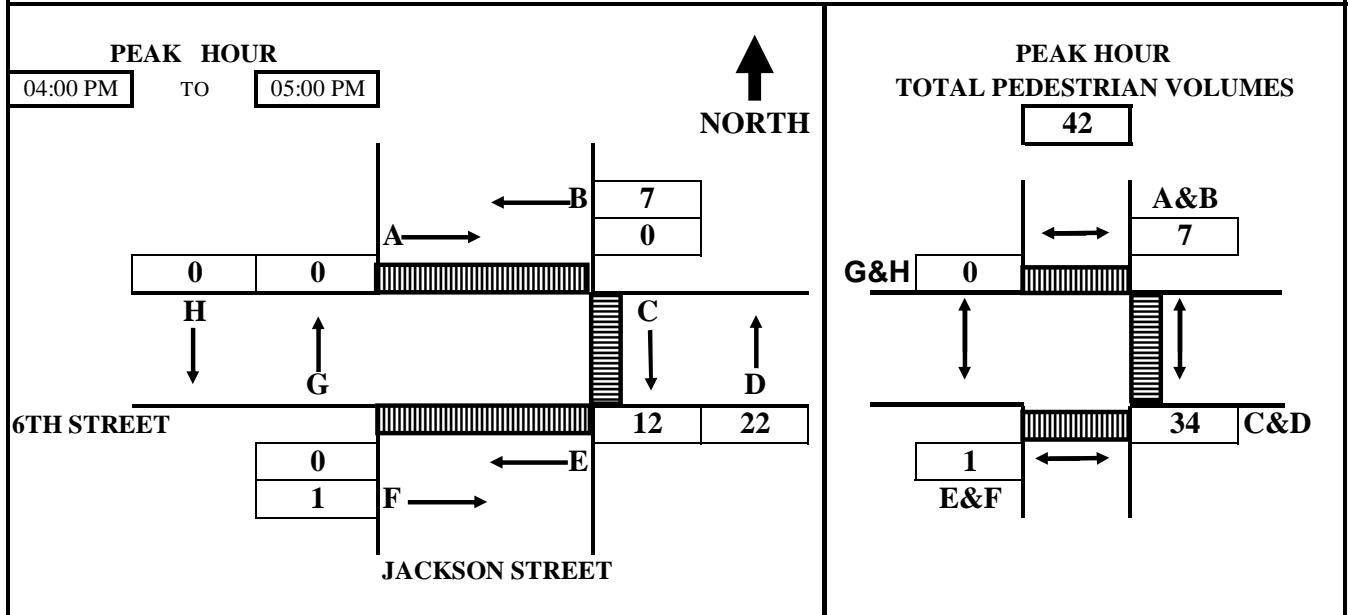
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/15/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 6TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-31PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	6	4	13	0	1	0	0	24
04:15 PM	---	04:30 PM	0	6	7	17	0	1	0	0	31
04:30 PM	---	04:45 PM	0	6	9	20	0	1	0	0	36
04:45 PM	---	05:00 PM	0	7	12	22	0	1	0	0	42
05:00 PM	---	05:15 PM	0	7	15	25	0	1	0	0	48
05:15 PM	---	05:30 PM	0	7	17	28	0	1	0	0	53
05:30 PM	---	05:45 PM	0	8	20	31	0	1	0	0	60
05:45 PM	---	06:00 PM	0	8	24	33	0	1	0	0	66

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	6	4	13	0	1	0	0	24
04:15 PM	---	04:30 PM	0	0	3	4	0	0	0	0	7
04:30 PM	---	04:45 PM	0	0	2	3	0	0	0	0	5
04:45 PM	---	05:00 PM	0	1	3	2	0	0	0	0	6
05:00 PM	---	05:15 PM	0	0	3	3	0	0	0	0	6
05:15 PM	---	05:30 PM	0	0	2	3	0	0	0	0	5
05:30 PM	---	05:45 PM	0	1	3	3	0	0	0	0	7
05:45 PM	---	06:00 PM	0	0	4	2	0	0	0	0	6

### HOURLY TOTALS

04:00 PM	---	05:00 PM	0	7	12	22	0	1	0	0	42
04:15 PM	---	05:15 PM	0	1	11	12	0	0	0	0	24
04:30 PM	---	05:30 PM	0	1	10	11	0	0	0	0	22
04:45 PM	---	05:45 PM	0	2	11	11	0	0	0	0	24
05:00 PM	---	06:00 PM	0	1	12	11	0	0	0	0	24

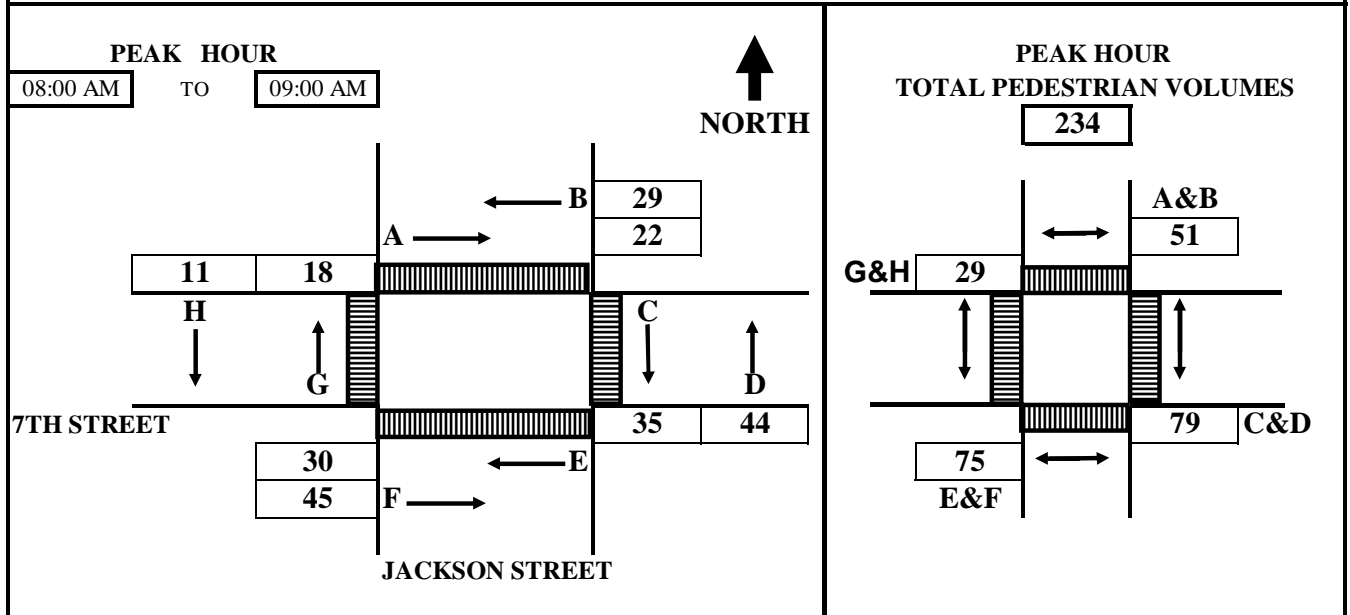
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-32AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	3	5	5	5	7	1	1	0	27
07:15 AM	---	07:30 AM	9	9	8	11	23	7	4	2	73
07:30 AM	---	07:45 AM	13	11	12	18	27	16	4	5	106
07:45 AM	---	08:00 AM	22	16	19	22	36	28	7	8	158
08:00 AM	---	08:15 AM	29	26	26	35	45	37	11	11	220
08:15 AM	---	08:30 AM	38	32	35	47	53	50	16	12	283
08:30 AM	---	08:45 AM	42	41	46	57	59	55	18	17	335
08:45 AM	---	09:00 AM	44	45	54	66	66	73	25	19	392

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	3	5	5	5	7	1	1	0	27
07:15 AM	---	07:30 AM	6	4	3	6	16	6	3	2	46
07:30 AM	---	07:45 AM	4	2	4	7	4	9	0	3	33
07:45 AM	---	08:00 AM	9	5	7	4	9	12	3	3	52
08:00 AM	---	08:15 AM	7	10	7	13	9	9	4	3	62
08:15 AM	---	08:30 AM	9	6	9	12	8	13	5	1	63
08:30 AM	---	08:45 AM	4	9	11	10	6	5	2	5	52
08:45 AM	---	09:00 AM	2	4	8	9	7	18	7	2	57

### HOURLY TOTALS

07:00 AM	---	08:00 AM	22	16	19	22	36	28	7	8	158
07:15 AM	---	08:15 AM	26	21	21	30	38	36	10	11	193
07:30 AM	---	08:30 AM	29	23	27	36	30	43	12	10	210
07:45 AM	---	08:45 AM	29	30	34	39	32	39	14	12	229
08:00 AM	---	09:00 AM	22	29	35	44	30	45	18	11	234

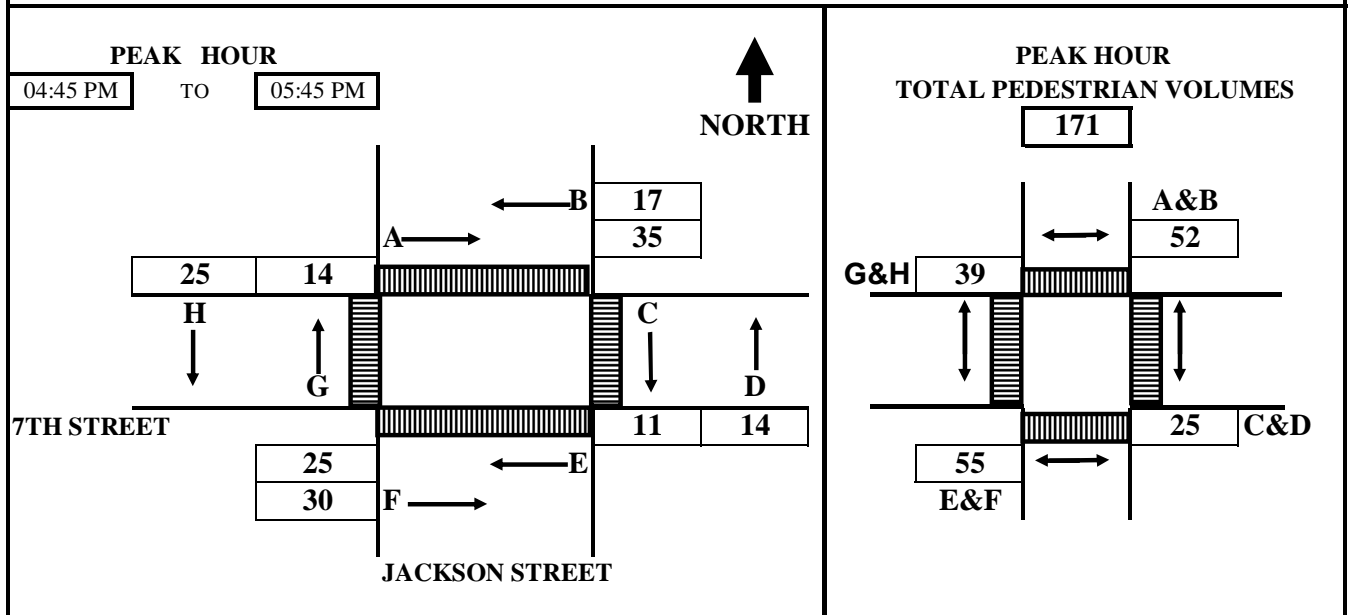
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/17/2012	
<b>N-S APPROACH:</b> JACKSON STREET		<b>DAY:</b> THURSDAY	
<b>E-W APPROACH:</b> 7TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-32PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	3	3	1	3	1	3	3	4	21
04:15 PM	---	04:30 PM	12	7	3	8	6	7	5	8	56
04:30 PM	---	04:45 PM	16	10	5	13	15	14	9	11	93
04:45 PM	---	05:00 PM	27	15	6	13	20	23	15	14	133
05:00 PM	---	05:15 PM	36	15	10	17	22	30	17	18	165
05:15 PM	---	05:30 PM	42	20	12	22	32	33	20	25	206
05:30 PM	---	05:45 PM	51	27	16	27	40	44	23	36	264
05:45 PM	---	06:00 PM	61	35	17	29	44	49	25	41	301

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	3	3	1	3	1	3	3	4	21
04:15 PM	---	04:30 PM	9	4	2	5	5	4	2	4	35
04:30 PM	---	04:45 PM	4	3	2	5	9	7	4	3	37
04:45 PM	---	05:00 PM	11	5	1	0	5	9	6	3	40
05:00 PM	---	05:15 PM	9	0	4	4	2	7	2	4	32
05:15 PM	---	05:30 PM	6	5	2	5	10	3	3	7	41
05:30 PM	---	05:45 PM	9	7	4	5	8	11	3	11	58
05:45 PM	---	06:00 PM	10	8	1	2	4	5	2	5	37

### HOURLY TOTALS

04:00 PM	---	05:00 PM	27	15	6	13	20	23	15	14	133
04:15 PM	---	05:15 PM	33	12	9	14	21	27	14	14	144
04:30 PM	---	05:30 PM	30	13	9	14	26	26	15	17	150
04:45 PM	---	05:45 PM	35	17	11	14	25	30	14	25	171
05:00 PM	---	06:00 PM	34	20	11	16	24	26	10	27	168

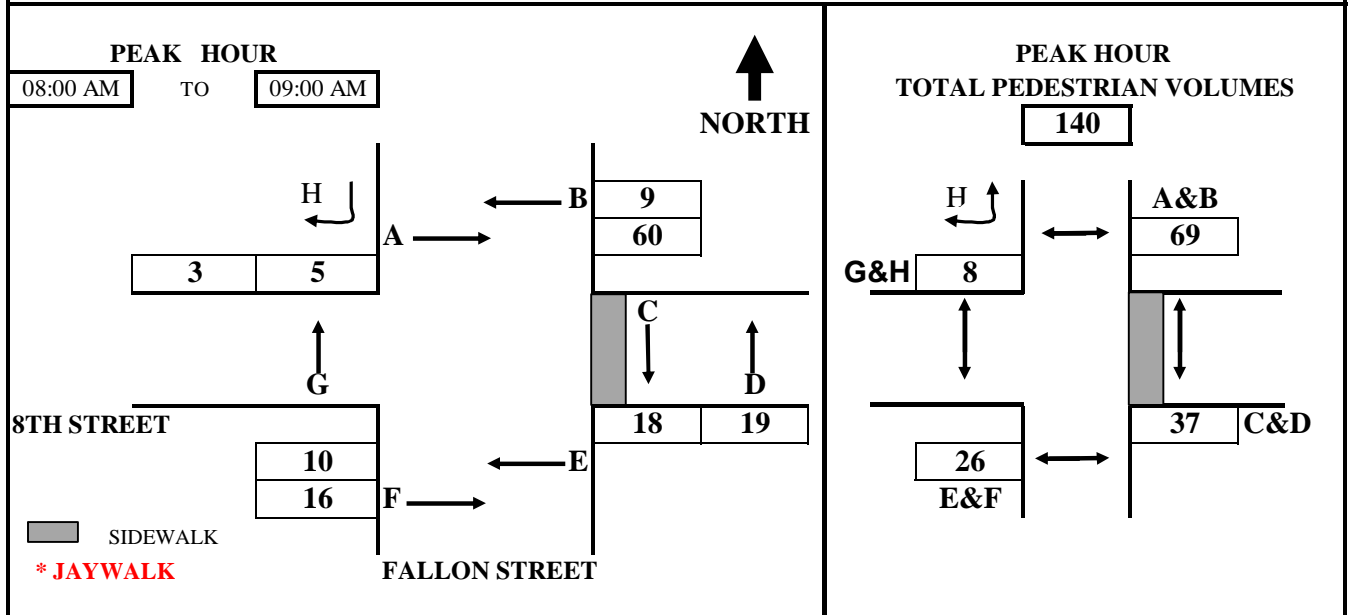
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012
<b>N-S APPROACH:</b> FALLON STREET	<b>DAY:</b> TUESDAY
<b>E-W APPROACH:</b> 8TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD:</b> 7:00 AM TO 9:00 AM	<b>FILE:</b> 3205033-PED-33AM



TIME PERIOD		NORTH X-WALK		EAST S-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A *	B *	C	D	E *	F *	G *	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	13	1	5	1	9	2	2	6	39
07:15 AM	---	07:30 AM	20	3	15	5	12	7	2	7	71
07:30 AM	---	07:45 AM	29	4	31	9	16	10	2	7	108
07:45 AM	---	08:00 AM	41	5	35	11	23	14	2	7	138
08:00 AM	---	08:15 AM	56	6	38	15	26	17	5	7	170
08:15 AM	---	08:30 AM	72	7	41	21	28	22	6	7	204
08:30 AM	---	08:45 AM	81	13	50	25	31	25	7	8	240
08:45 AM	---	09:00 AM	101	14	53	30	33	30	7	10	278

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	13	1	5	1	9	2	2	6	39
07:15 AM	---	07:30 AM	7	2	10	4	3	5	0	1	32
07:30 AM	---	07:45 AM	9	1	16	4	4	3	0	0	37
07:45 AM	---	08:00 AM	12	1	4	2	7	4	0	0	30
08:00 AM	---	08:15 AM	15	1	3	4	3	3	3	0	32
08:15 AM	---	08:30 AM	16	1	3	6	2	5	1	0	34
08:30 AM	---	08:45 AM	9	6	9	4	3	3	1	1	36
08:45 AM	---	09:00 AM	20	1	3	5	2	5	0	2	38

### HOURLY TOTALS

07:00 AM	---	08:00 AM	41	5	35	11	23	14	2	7	138
07:15 AM	---	08:15 AM	43	5	33	14	17	15	3	1	131
07:30 AM	---	08:30 AM	52	4	26	16	16	15	4	0	133
07:45 AM	---	08:45 AM	52	9	19	16	15	15	5	1	132
08:00 AM	---	09:00 AM	60	9	18	19	10	16	5	3	140

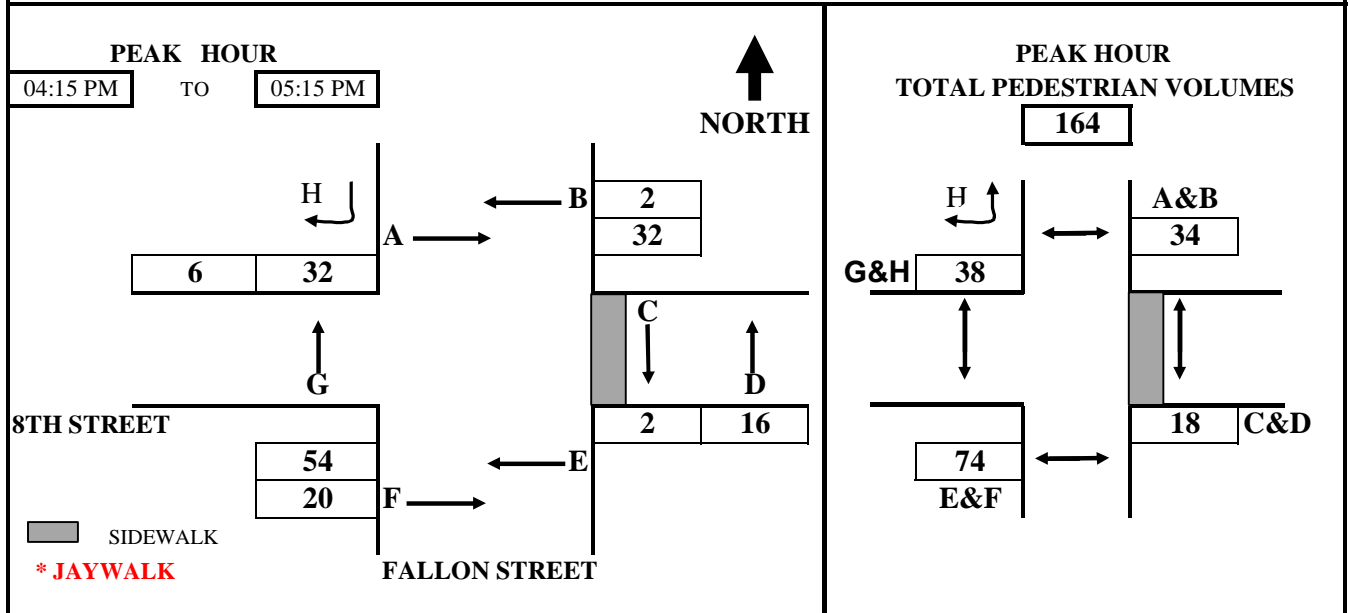
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> FALLON STREET		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-33PM	



TIME PERIOD		NORTH X-WALK		EAST S-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A *	B *	C	D	E *	F *	G *	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	1	0	1	0	16	2	6	2	28
04:15 PM	---	04:30 PM	7	1	1	4	35	5	12	4	69
04:30 PM	---	04:45 PM	12	2	2	5	45	10	18	5	99
04:45 PM	---	05:00 PM	24	2	3	9	54	20	34	8	154
05:00 PM	---	05:15 PM	33	2	3	16	70	22	38	8	192
05:15 PM	---	05:30 PM	34	2	8	19	79	26	44	8	220
05:30 PM	---	05:45 PM	38	2	12	23	87	26	49	8	245
05:45 PM	---	06:00 PM	44	2	16	30	96	34	51	11	284

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	1	0	1	0	16	2	6	2	28
04:15 PM	---	04:30 PM	6	1	0	4	19	3	6	2	41
04:30 PM	---	04:45 PM	5	1	1	1	10	5	6	1	30
04:45 PM	---	05:00 PM	12	0	1	4	9	10	16	3	55
05:00 PM	---	05:15 PM	9	0	0	7	16	2	4	0	38
05:15 PM	---	05:30 PM	1	0	5	3	9	4	6	0	28
05:30 PM	---	05:45 PM	4	0	4	4	8	0	5	0	25
05:45 PM	---	06:00 PM	6	0	4	7	9	8	2	3	39

### HOURLY TOTALS

04:00 PM	---	05:00 PM	24	2	3	9	54	20	34	8	154
04:15 PM	---	05:15 PM	32	2	2	16	54	20	32	6	164
04:30 PM	---	05:30 PM	27	1	7	15	44	21	32	4	151
04:45 PM	---	05:45 PM	26	0	10	18	42	16	31	3	146
05:00 PM	---	06:00 PM	20	0	13	21	42	14	17	3	130

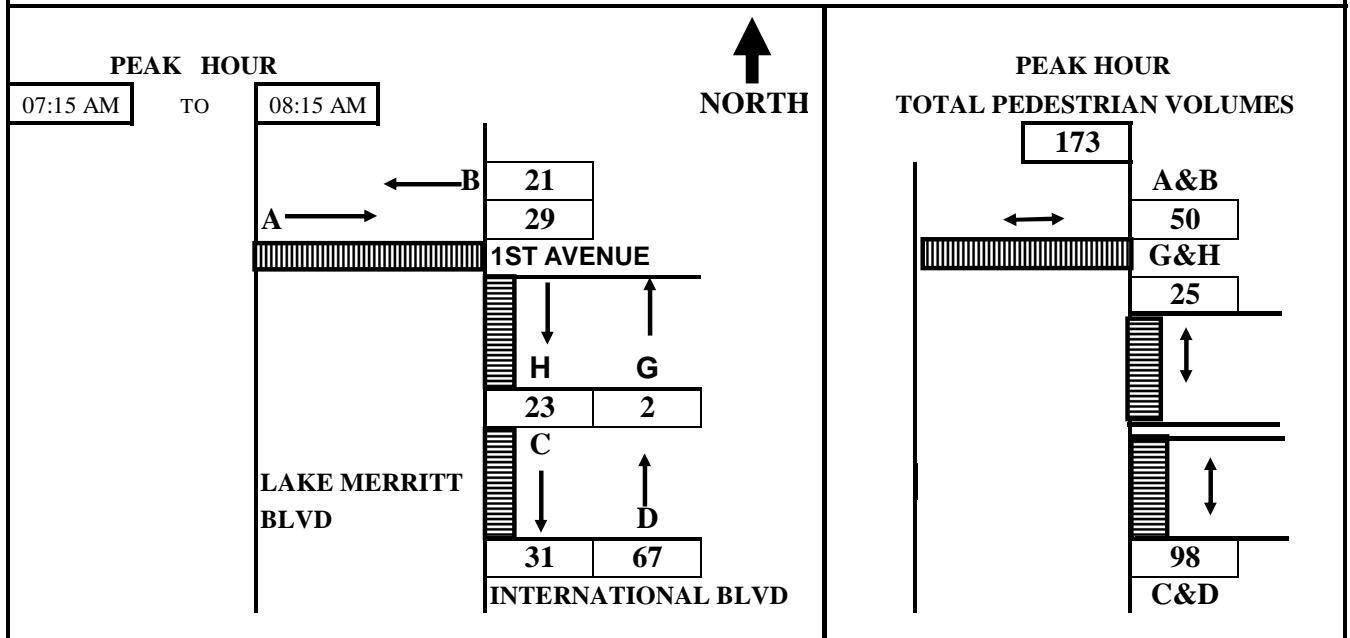
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b>	OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b>	5/22/2012
<b>N-S APPROACH:</b>	1ST AVENUE	<b>DAY:</b>	TUESDAY
<b>E-W APPROACH:</b>	INTERNATIONAL BLVD	<b>CITY:</b>	OAKLAND
<b>SURVEY PERIOD</b>	7:00 AM TO 9:00 AM	<b>FILE:</b>	3205033-PED-34AM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	9	0	3	23			0	1	36
07:15 AM	---	07:30 AM	13	2	12	45			0	9	81
07:30 AM	---	07:45 AM	16	14	20	60			0	14	124
07:45 AM	---	08:00 AM	27	21	29	75			2	18	172
08:00 AM	---	08:15 AM	38	21	34	90			2	24	209
08:15 AM	---	08:30 AM	48	23	39	103			3	28	244
08:30 AM	---	08:45 AM	56	29	47	118			9	34	293
08:45 AM	---	09:00 AM	64	38	55	130			9	36	332

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	9	0	3	23	0	0	0	1	36
07:15 AM	---	07:30 AM	4	2	9	22	0	0	0	8	45
07:30 AM	---	07:45 AM	3	12	8	15	0	0	0	5	43
07:45 AM	---	08:00 AM	11	7	9	15	0	0	2	4	48
08:00 AM	---	08:15 AM	11	0	5	15	0	0	0	6	37
08:15 AM	---	08:30 AM	10	2	5	13	0	0	1	4	35
08:30 AM	---	08:45 AM	8	6	8	15	0	0	6	6	49
08:45 AM	---	09:00 AM	8	9	8	12	0	0	0	2	39

### HOURLY TOTALS

07:00 AM	---	08:00 AM	27	21	29	75	0	0	2	18	172
07:15 AM	---	08:15 AM	29	21	31	67	0	0	2	23	173
07:30 AM	---	08:30 AM	35	21	27	58	0	0	3	19	163
07:45 AM	---	08:45 AM	40	15	27	58	0	0	9	20	169
08:00 AM	---	09:00 AM	37	17	26	55	0	0	7	18	160

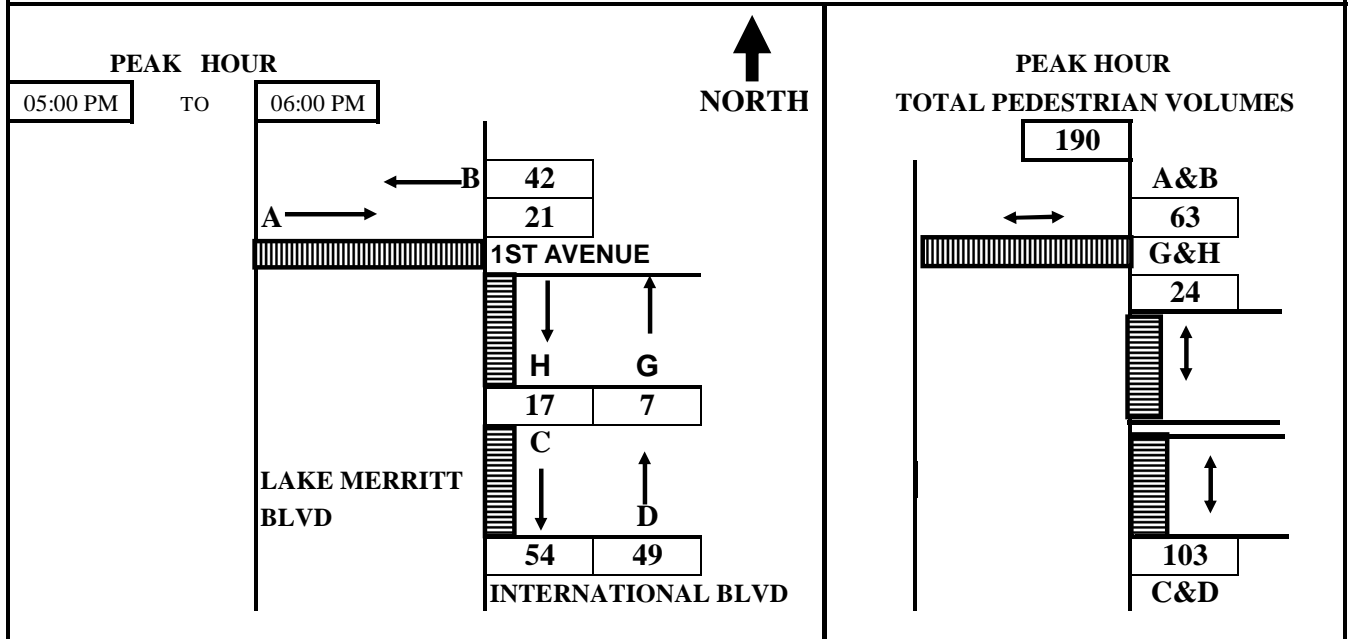
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> 1ST AVENUE		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> INTERNATIONAL BLVD		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-34PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	6	10	13		0	9	38
04:15 PM	---	04:30 PM	10	18	24	24		2	13	91
04:30 PM	---	04:45 PM	17	29	34	36		5	15	136
04:45 PM	---	05:00 PM	20	37	47	49		7	18	178
05:00 PM	---	05:15 PM	30	49	59	62		7	19	226
05:15 PM	---	05:30 PM	34	59	72	74		8	23	270
05:30 PM	---	05:45 PM	38	69	87	85		10	33	322
05:45 PM	---	06:00 PM	41	79	101	98		14	35	368

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	6	10	13	0	0	0	9	38
04:15 PM	---	04:30 PM	10	12	14	11	0	0	2	4	53
04:30 PM	---	04:45 PM	7	11	10	12	0	0	3	2	45
04:45 PM	---	05:00 PM	3	8	13	13	0	0	2	3	42
05:00 PM	---	05:15 PM	10	12	12	13	0	0	0	1	48
05:15 PM	---	05:30 PM	4	10	13	12	0	0	1	4	44
05:30 PM	---	05:45 PM	4	10	15	11	0	0	2	10	52
05:45 PM	---	06:00 PM	3	10	14	13	0	0	4	2	46

### HOURLY TOTALS

04:00 PM	---	05:00 PM	20	37	47	49	0	0	7	18	178
04:15 PM	---	05:15 PM	30	43	49	49	0	0	7	10	188
04:30 PM	---	05:30 PM	24	41	48	50	0	0	6	10	179
04:45 PM	---	05:45 PM	21	40	53	49	0	0	5	18	186
05:00 PM	---	06:00 PM	21	42	54	49	0	0	7	17	190

Tel : (510) 232-1271

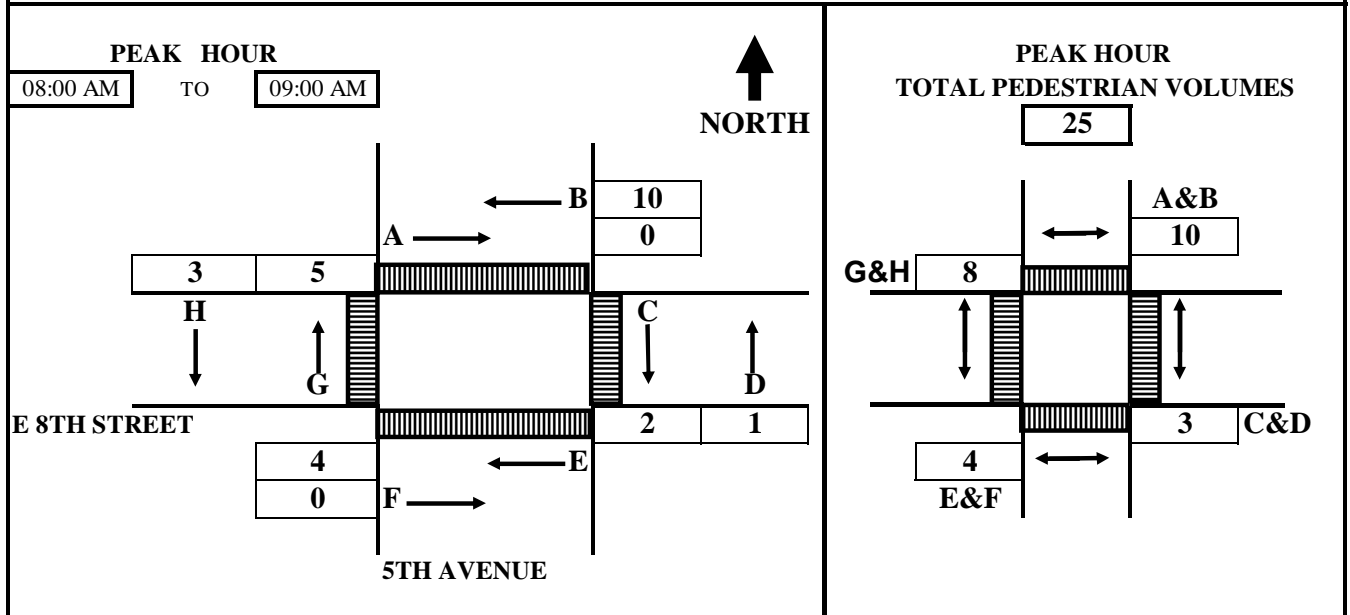
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> 5TH AVENUE		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> E 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-35AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0
07:15 AM	---	07:30 AM	0	1	0	0	0	0	0	1
07:30 AM	---	07:45 AM	0	1	1	0	1	0	1	4
07:45 AM	---	08:00 AM	0	3	1	0	3	1	1	11
08:00 AM	---	08:15 AM	0	3	2	0	5	1	1	16
08:15 AM	---	08:30 AM	0	5	2	0	5	1	2	19
08:30 AM	---	08:45 AM	0	7	2	1	5	1	3	23
08:45 AM	---	09:00 AM	0	13	3	1	7	1	6	36

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0
07:15 AM	---	07:30 AM	0	1	0	0	0	0	0	1
07:30 AM	---	07:45 AM	0	0	1	0	1	0	1	3
07:45 AM	---	08:00 AM	0	2	0	0	2	1	0	7
08:00 AM	---	08:15 AM	0	0	1	0	2	0	0	5
08:15 AM	---	08:30 AM	0	2	0	0	0	0	1	3
08:30 AM	---	08:45 AM	0	2	0	1	0	0	1	4
08:45 AM	---	09:00 AM	0	6	1	0	2	0	3	13

### HOURLY TOTALS

07:00 AM	---	08:00 AM	0	3	1	0	3	1	1	2	11
07:15 AM	---	08:15 AM	0	3	2	0	5	1	1	4	16
07:30 AM	---	08:30 AM	0	4	2	0	5	1	2	4	18
07:45 AM	---	08:45 AM	0	6	1	1	4	1	2	4	19
08:00 AM	---	09:00 AM	0	10	2	1	4	0	5	3	25

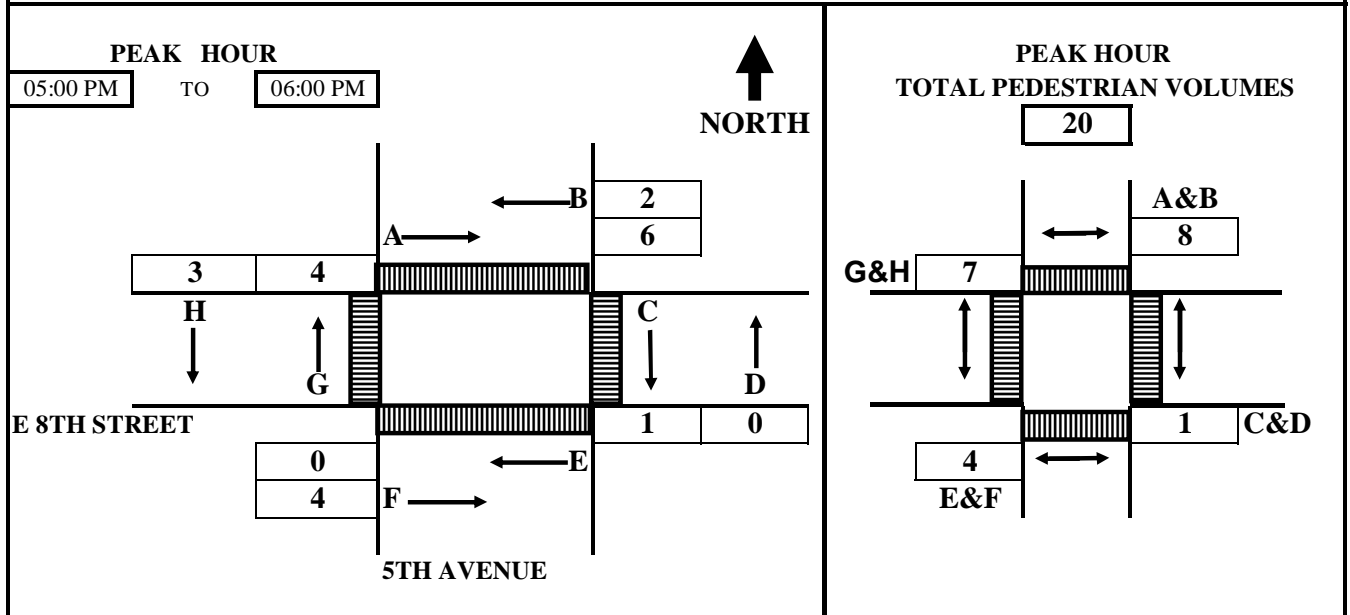
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> 5TH AVENUE		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> E 8TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-35PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	1	1	0	0	0	0	1	2	5
04:15 PM	---	04:30 PM	1	2	0	0	0	0	1	4	8
04:30 PM	---	04:45 PM	4	2	0	0	0	1	1	4	12
04:45 PM	---	05:00 PM	4	2	0	0	0	1	2	4	13
05:00 PM	---	05:15 PM	4	3	0	0	0	3	3	4	17
05:15 PM	---	05:30 PM	6	3	1	0	0	5	5	4	24
05:30 PM	---	05:45 PM	9	3	1	0	0	5	6	6	30
05:45 PM	---	06:00 PM	10	4	1	0	0	5	6	7	33

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	1	1	0	0	0	0	1	2	5
04:15 PM	---	04:30 PM	0	1	0	0	0	0	0	2	3
04:30 PM	---	04:45 PM	3	0	0	0	0	1	0	0	4
04:45 PM	---	05:00 PM	0	0	0	0	0	0	1	0	1
05:00 PM	---	05:15 PM	0	1	0	0	0	2	1	0	4
05:15 PM	---	05:30 PM	2	0	1	0	0	2	2	0	7
05:30 PM	---	05:45 PM	3	0	0	0	0	0	1	2	6
05:45 PM	---	06:00 PM	1	1	0	0	0	0	0	1	3

### HOURLY TOTALS

04:00 PM	---	05:00 PM	4	2	0	0	0	1	2	4	13
04:15 PM	---	05:15 PM	3	2	0	0	0	3	2	2	12
04:30 PM	---	05:30 PM	5	1	1	0	0	5	4	0	16
04:45 PM	---	05:45 PM	5	1	1	0	0	4	5	2	18
05:00 PM	---	06:00 PM	6	2	1	0	0	4	4	3	20

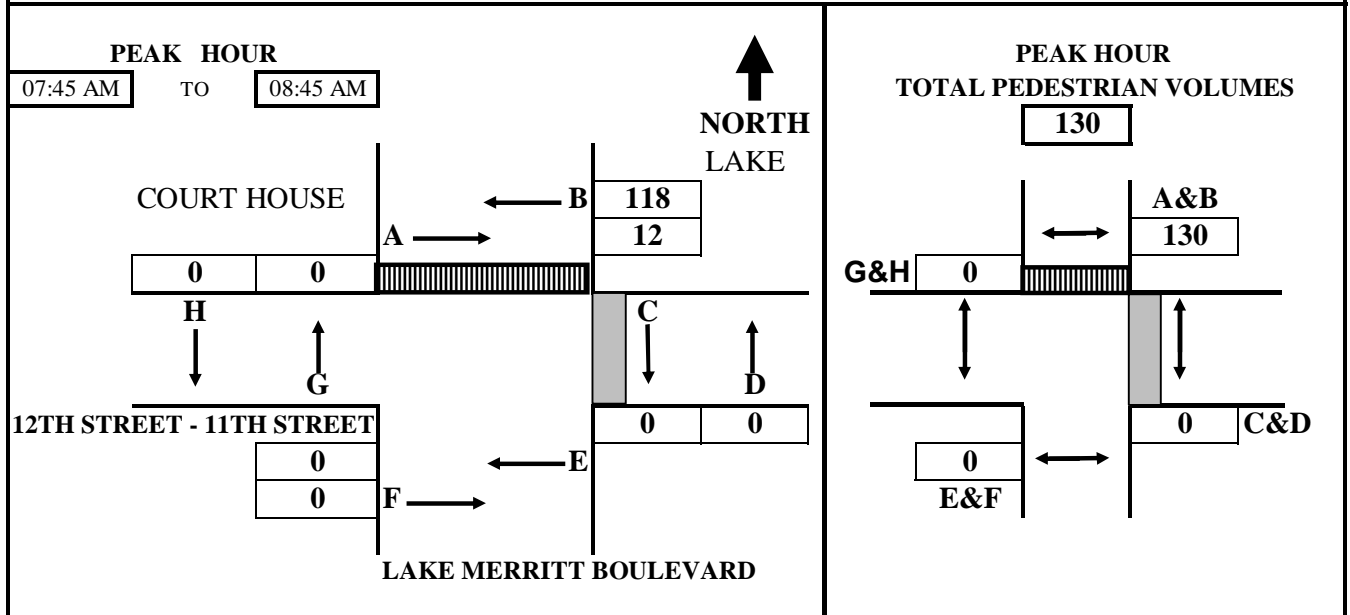
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 12TH STREET - 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-36AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	4	9						13
07:15 AM	---	07:30 AM	8	19						27
07:30 AM	---	07:45 AM	10	43						53
07:45 AM	---	08:00 AM	12	68						80
08:00 AM	---	08:15 AM	13	102						115
08:15 AM	---	08:30 AM	16	128						144
08:30 AM	---	08:45 AM	22	161						183
08:45 AM	---	09:00 AM	24	184						208

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	4	9	0	0	0	0	0	0	13
07:15 AM	---	07:30 AM	4	10	0	0	0	0	0	0	14
07:30 AM	---	07:45 AM	2	24	0	0	0	0	0	0	26
07:45 AM	---	08:00 AM	2	25	0	0	0	0	0	0	27
08:00 AM	---	08:15 AM	1	34	0	0	0	0	0	0	35
08:15 AM	---	08:30 AM	3	26	0	0	0	0	0	0	29
08:30 AM	---	08:45 AM	6	33	0	0	0	0	0	0	39
08:45 AM	---	09:00 AM	2	23	0	0	0	0	0	0	25

### HOURLY TOTALS

07:00 AM	---	08:00 AM	12	68	0	0	0	0	0	0	80
07:15 AM	---	08:15 AM	9	93	0	0	0	0	0	0	102
07:30 AM	---	08:30 AM	8	109	0	0	0	0	0	0	117
07:45 AM	---	08:45 AM	12	118	0	0	0	0	0	0	130
08:00 AM	---	09:00 AM	12	116	0	0	0	0	0	0	128

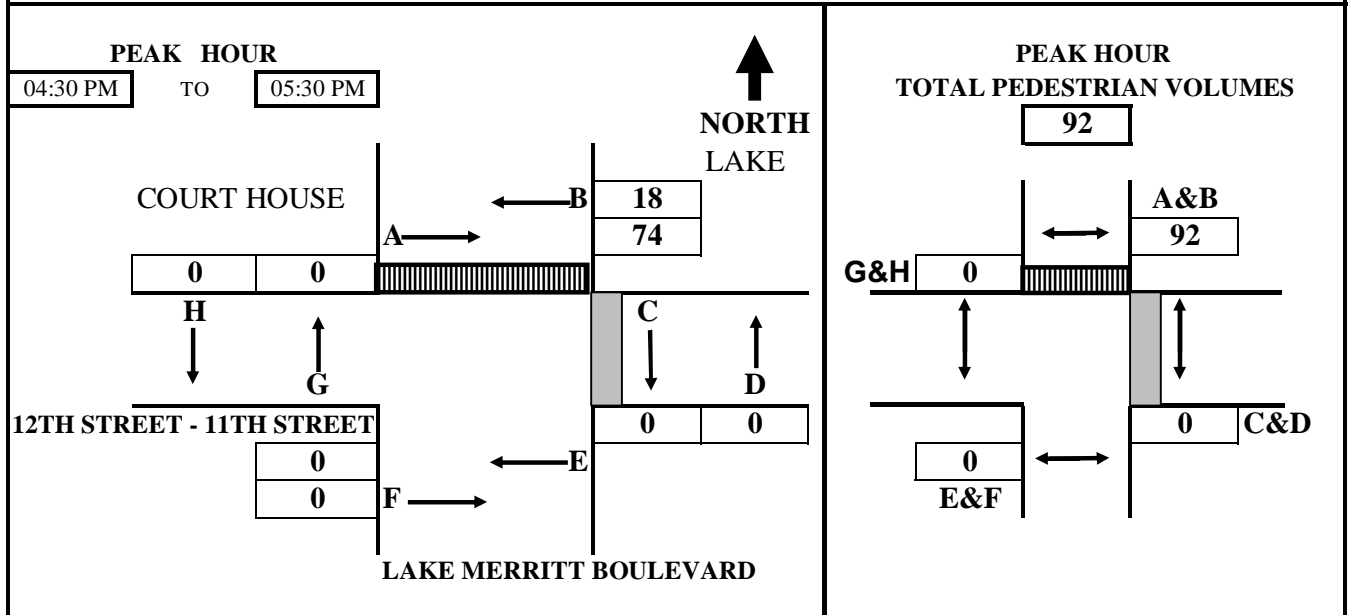
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 12TH STREET - 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-36PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	7	9						16
04:15 PM	---	04:30 PM	14	13						27
04:30 PM	---	04:45 PM	24	17						41
04:45 PM	---	05:00 PM	38	19						57
05:00 PM	---	05:15 PM	60	28						88
05:15 PM	---	05:30 PM	88	31						119
05:30 PM	---	05:45 PM	99	33						132
05:45 PM	---	06:00 PM	108	36						144

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	7	9	0	0	0	0	0	0	16
04:15 PM	---	04:30 PM	7	4	0	0	0	0	0	0	11
04:30 PM	---	04:45 PM	10	4	0	0	0	0	0	0	14
04:45 PM	---	05:00 PM	14	2	0	0	0	0	0	0	16
05:00 PM	---	05:15 PM	22	9	0	0	0	0	0	0	31
05:15 PM	---	05:30 PM	28	3	0	0	0	0	0	0	31
05:30 PM	---	05:45 PM	11	2	0	0	0	0	0	0	13
05:45 PM	---	06:00 PM	9	3	0	0	0	0	0	0	12

### HOURLY TOTALS

04:00 PM	---	05:00 PM	38	19	0	0	0	0	0	0	57
04:15 PM	---	05:15 PM	53	19	0	0	0	0	0	0	72
04:30 PM	---	05:30 PM	74	18	0	0	0	0	0	0	92
04:45 PM	---	05:45 PM	75	16	0	0	0	0	0	0	91
05:00 PM	---	06:00 PM	70	17	0	0	0	0	0	0	87

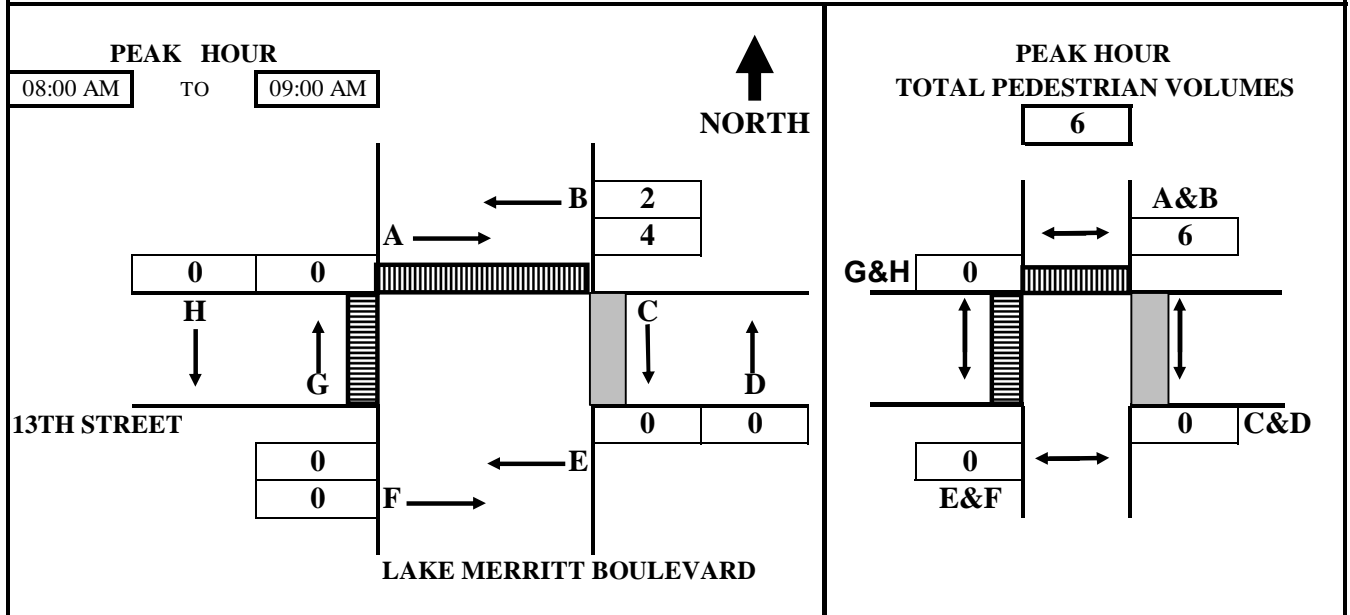
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b> 5/22/2012
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD	<b>DAY:</b> TUESDAY
<b>E-W APPROACH:</b> 13TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD</b> 7:00 AM TO 9:00 AM	<b>FILE:</b> 3205033-PED-37AM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	0				0	1	2
07:15 AM	---	07:30 AM	1	0				0	1	2
07:30 AM	---	07:45 AM	1	0				0	1	2
07:45 AM	---	08:00 AM	1	0				0	1	2
08:00 AM	---	08:15 AM	2	1				0	1	4
08:15 AM	---	08:30 AM	4	2				0	1	7
08:30 AM	---	08:45 AM	4	2				0	1	7
08:45 AM	---	09:00 AM	5	2				0	1	8

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	0	0	0	0	0	1	2
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0
08:00 AM	---	08:15 AM	1	1	0	0	0	0	0	2
08:15 AM	---	08:30 AM	2	1	0	0	0	0	0	3
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0
08:45 AM	---	09:00 AM	1	0	0	0	0	0	0	1

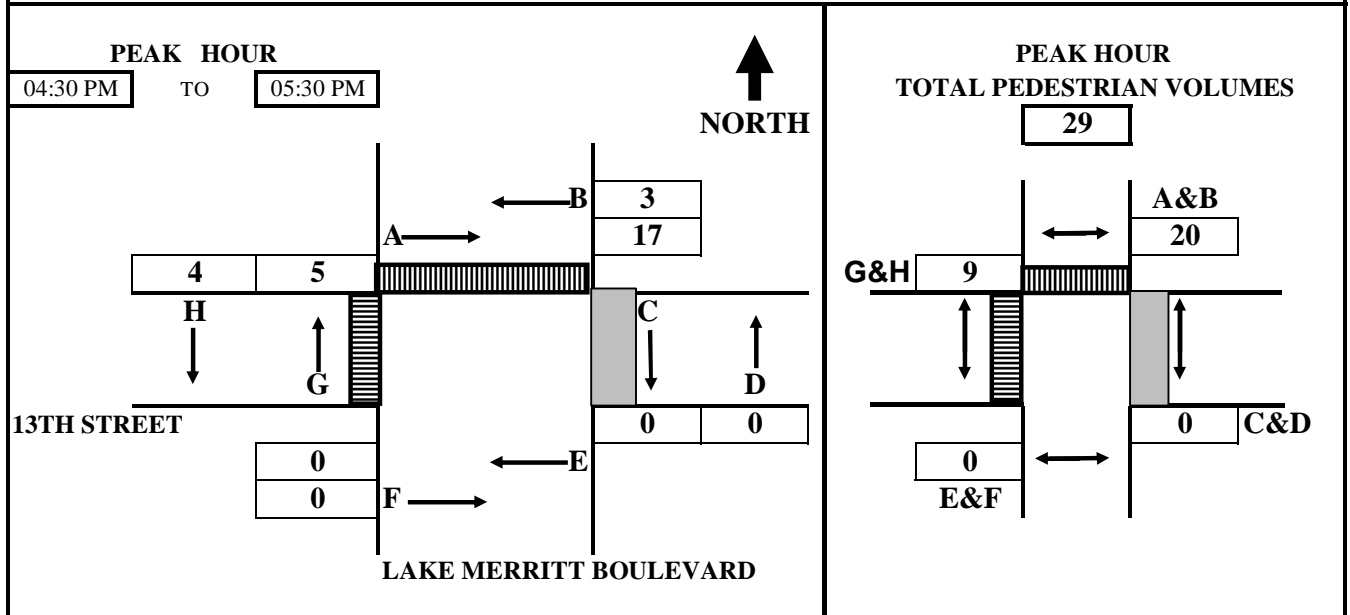
### HOURLY TOTALS

07:00 AM	---	08:00 AM	1	0	0	0	0	0	1	2
07:15 AM	---	08:15 AM	1	1	0	0	0	0	0	2
07:30 AM	---	08:30 AM	3	2	0	0	0	0	0	5
07:45 AM	---	08:45 AM	3	2	0	0	0	0	0	5
08:00 AM	---	09:00 AM	4	2	0	0	0	0	0	6

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD	<b>DAY:</b> TUESDAY
<b>E-W APPROACH:</b> 13TH STREET	<b>CITY:</b> OAKLAND
<b>SURVEY PERIOD:</b> 4:00 PM TO 6:00 PM	<b>FILE:</b> 3205033-PED-37PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	0	0				0	0	0
04:15 PM	---	04:30 PM	0	0				0	0	0
04:30 PM	---	04:45 PM	2	2				1	2	7
04:45 PM	---	05:00 PM	6	3				1	3	13
05:00 PM	---	05:15 PM	11	3				3	3	20
05:15 PM	---	05:30 PM	17	3				5	4	29
05:30 PM	---	05:45 PM	19	4				5	7	35
05:45 PM	---	06:00 PM	20	4				5	8	37

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0
04:30 PM	---	04:45 PM	2	2	0	0	0	1	2	7
04:45 PM	---	05:00 PM	4	1	0	0	0	0	1	6
05:00 PM	---	05:15 PM	5	0	0	0	0	2	0	7
05:15 PM	---	05:30 PM	6	0	0	0	0	2	1	9
05:30 PM	---	05:45 PM	2	1	0	0	0	0	3	6
05:45 PM	---	06:00 PM	1	0	0	0	0	0	1	2

### HOURLY TOTALS

04:00 PM	---	05:00 PM	6	3	0	0	0	0	1	3	13
04:15 PM	---	05:15 PM	11	3	0	0	0	0	3	3	20
04:30 PM	---	05:30 PM	17	3	0	0	0	0	5	4	29
04:45 PM	---	05:45 PM	17	2	0	0	0	0	4	5	28
05:00 PM	---	06:00 PM	14	1	0	0	0	0	4	5	24

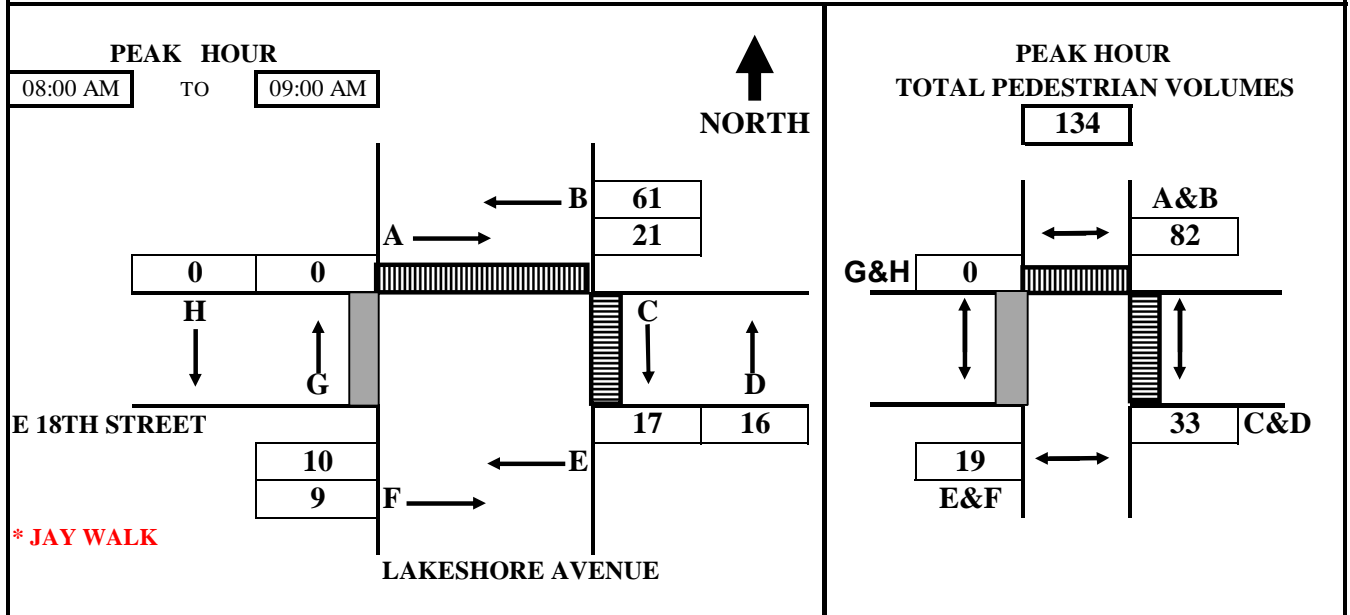
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> LAKESHORE AVENUE		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> E 18TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-38AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E*	F*	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	4	9	0	3	0	1		17
07:15 AM	---	07:30 AM	7	18	1	3	4	1		34
07:30 AM	---	07:45 AM	10	31	5	6	8	2		62
07:45 AM	---	08:00 AM	11	49	7	7	10	5		89
08:00 AM	---	08:15 AM	13	70	11	12	12	11		129
08:15 AM	---	08:30 AM	14	82	17	16	15	12		156
08:30 AM	---	08:45 AM	23	96	22	21	16	13		191
08:45 AM	---	09:00 AM	32	110	24	23	20	14		223

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	4	9	0	3	0	1	0	0	17
07:15 AM	---	07:30 AM	3	9	1	0	4	0	0	0	17
07:30 AM	---	07:45 AM	3	13	4	3	4	1	0	0	28
07:45 AM	---	08:00 AM	1	18	2	1	2	3	0	0	27
08:00 AM	---	08:15 AM	2	21	4	5	2	6	0	0	40
08:15 AM	---	08:30 AM	1	12	6	4	3	1	0	0	27
08:30 AM	---	08:45 AM	9	14	5	5	1	1	0	0	35
08:45 AM	---	09:00 AM	9	14	2	2	4	1	0	0	32

### HOURLY TOTALS

07:00 AM	---	08:00 AM	11	49	7	7	10	5	0	0	89
07:15 AM	---	08:15 AM	9	61	11	9	12	10	0	0	112
07:30 AM	---	08:30 AM	7	64	16	13	11	11	0	0	122
07:45 AM	---	08:45 AM	13	65	17	15	8	11	0	0	129
08:00 AM	---	09:00 AM	21	61	17	16	10	9	0	0	134

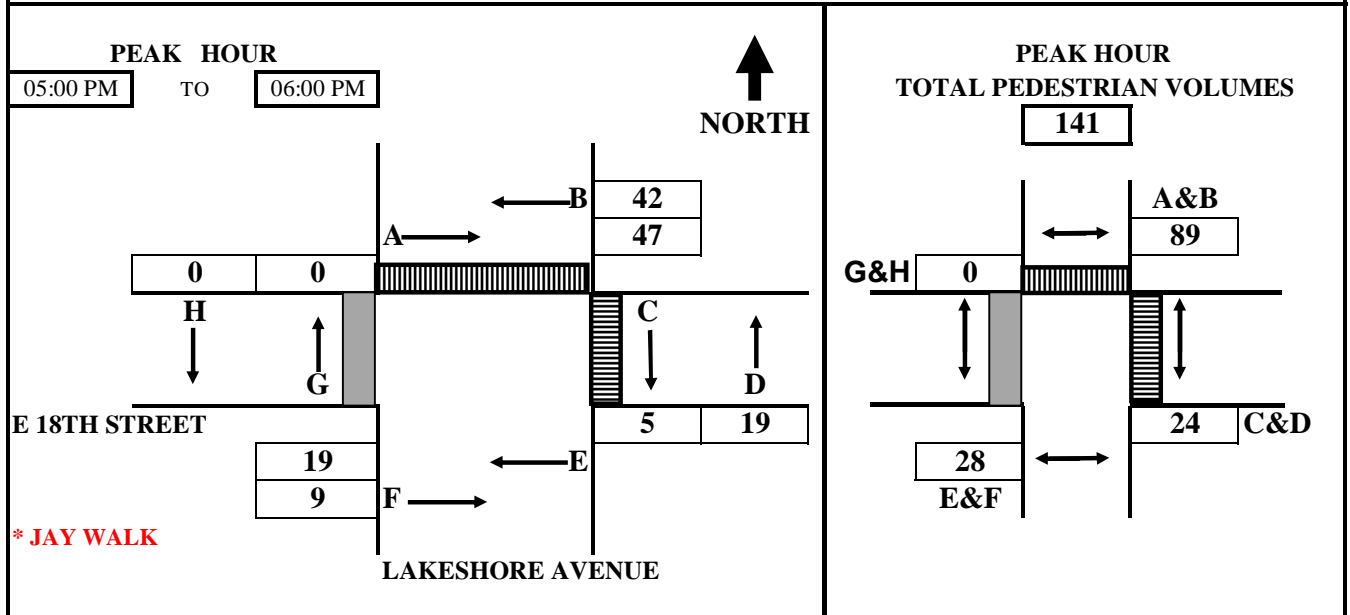
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> LAKESHORE AVENUE		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> E 18TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-38PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E*	F*	G	H	

### SURVEY DATA

04:00 PM	---	04:15 PM	5	2	0	3	3	0		13
04:15 PM	---	04:30 PM	10	7	1	5	2	0		25
04:30 PM	---	04:45 PM	16	10	1	9	7	5		48
04:45 PM	---	05:00 PM	23	22	1	9	12	10		77
05:00 PM	---	05:15 PM	32	27	3	16	22	13		113
05:15 PM	---	05:30 PM	45	46	3	21	25	16		156
05:30 PM	---	05:45 PM	57	52	4	27	27	16		183
05:45 PM	---	06:00 PM	70	64	6	28	31	19		218

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	5	2	0	3	3	0	0	0	13
04:15 PM	---	04:30 PM	5	5	1	2	-1	0	0	0	12
04:30 PM	---	04:45 PM	6	3	0	4	5	5	0	0	23
04:45 PM	---	05:00 PM	7	12	0	0	5	5	0	0	29
05:00 PM	---	05:15 PM	9	5	2	7	10	3	0	0	36
05:15 PM	---	05:30 PM	13	19	0	5	3	3	0	0	43
05:30 PM	---	05:45 PM	12	6	1	6	2	0	0	0	27
05:45 PM	---	06:00 PM	13	12	2	1	4	3	0	0	35

### HOURLY TOTALS

04:00 PM	---	05:00 PM	23	22	1	9	12	10	0	0	77
04:15 PM	---	05:15 PM	27	25	3	13	19	13	0	0	100
04:30 PM	---	05:30 PM	35	39	2	16	23	16	0	0	131
04:45 PM	---	05:45 PM	41	42	3	18	20	11	0	0	135
05:00 PM	---	06:00 PM	47	42	5	19	19	9	0	0	141

Tel : (510) 232-1271

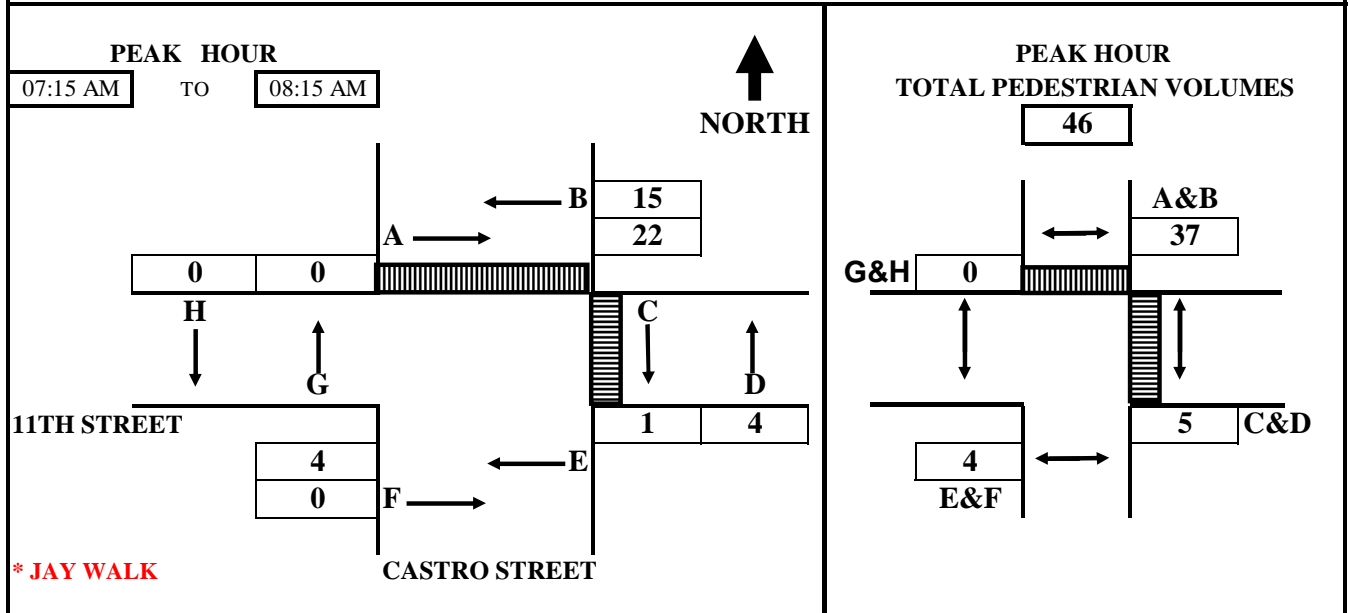
Fax: (510) 232-1272



# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b>	OAKLAND TRAFFIC STUDY	<b>SURVEY DATE</b>	5/22/2012
<b>N-S APPROACH:</b>	CASTRO STREET	<b>DAY:</b>	TUESDAY
<b>E-W APPROACH:</b>	11TH STREET	<b>CITY:</b>	OAKLAND
<b>SURVEY PERIOD</b>	7:00 AM TO 9:00 AM	<b>FILE:</b>	3205033-PED-39AM



TIME PERIOD	NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
	From	To	A	B	C	D	E*	F	

### SURVEY DATA

07:00 AM	---	07:15 AM	3	0	0	1	0			4
07:15 AM	---	07:30 AM	10	3	0	5	1			19
07:30 AM	---	07:45 AM	18	8	0	5	2			33
07:45 AM	---	08:00 AM	21	11	1	5	4			42
08:00 AM	---	08:15 AM	25	15	1	5	4			50
08:15 AM	---	08:30 AM	31	18	1	5	4			59
08:30 AM	---	08:45 AM	36	20	2	6	4			68
08:45 AM	---	09:00 AM	49	22	2	8	4			85

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	3	0	0	1	0	0	0	4
07:15 AM	---	07:30 AM	7	3	0	4	1	0	0	15
07:30 AM	---	07:45 AM	8	5	0	0	1	0	0	14
07:45 AM	---	08:00 AM	3	3	1	0	2	0	0	9
08:00 AM	---	08:15 AM	4	4	0	0	0	0	0	8
08:15 AM	---	08:30 AM	6	3	0	0	0	0	0	9
08:30 AM	---	08:45 AM	5	2	1	1	0	0	0	9
08:45 AM	---	09:00 AM	13	2	0	2	0	0	0	17

### HOURLY TOTALS

07:00 AM	---	08:00 AM	21	11	1	5	4	0	0	42
07:15 AM	---	08:15 AM	22	15	1	4	4	0	0	46
07:30 AM	---	08:30 AM	21	15	1	0	3	0	0	40
07:45 AM	---	08:45 AM	18	12	2	1	2	0	0	35
08:00 AM	---	09:00 AM	28	11	1	3	0	0	0	43

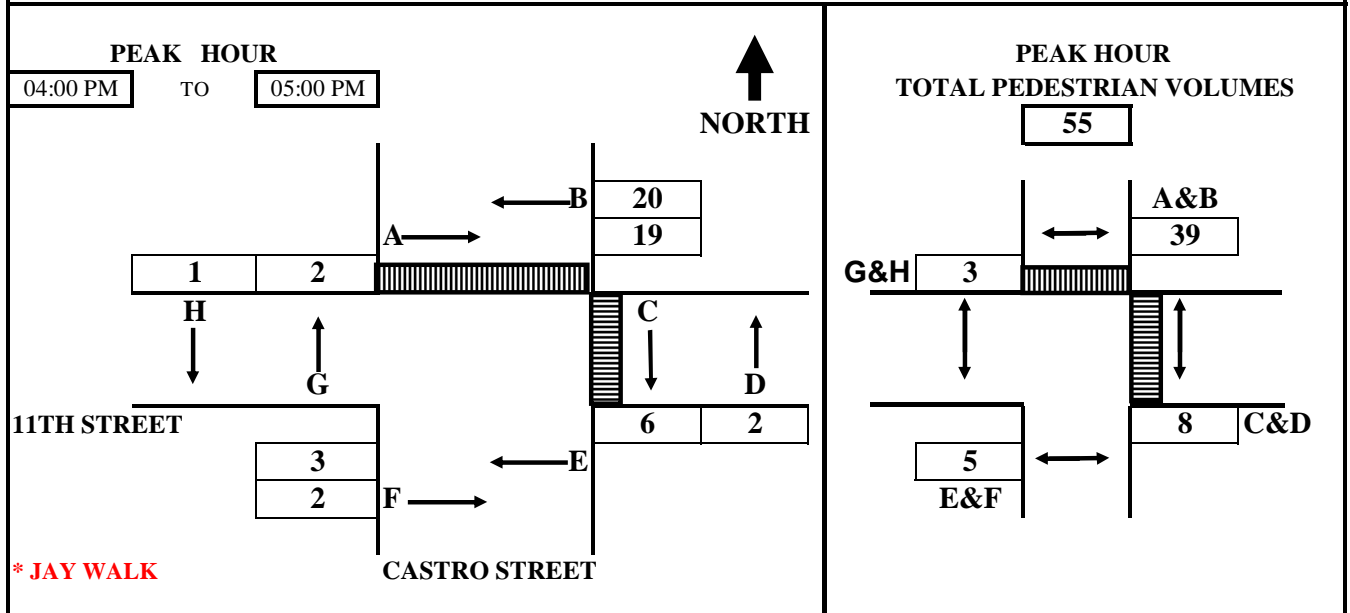
Tel : (510) 232-1271

Fax: (510) 232-1272

# B. A. Y. M. E. T. R. I. C. S.

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/22/2012	
<b>N-S APPROACH:</b> CASTRO STREET		<b>DAY:</b> TUESDAY	
<b>E-W APPROACH:</b> 11TH STREET		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-39PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E*	F*	G*	H*	

### SURVEY DATA

04:00 PM	---	04:15 PM	5	5	2	2	3	1	1	1	20
04:15 PM	---	04:30 PM	9	7	2	2	3	2	2	1	28
04:30 PM	---	04:45 PM	10	12	4	2	3	2	2	1	36
04:45 PM	---	05:00 PM	19	20	6	2	3	2	2	1	55
05:00 PM	---	05:15 PM	20	26	6	4	3	2	2	2	65
05:15 PM	---	05:30 PM	20	34	6	4	3	2	2	2	73
05:30 PM	---	05:45 PM	21	40	10	5	3	2	2	2	85
05:45 PM	---	06:00 PM	23	42	12	6	3	2	2	2	92

### TOTAL BY PERIOD

04:00 PM	---	04:15 PM	5	5	2	2	3	1	1	1	20
04:15 PM	---	04:30 PM	4	2	0	0	0	1	1	0	8
04:30 PM	---	04:45 PM	1	5	2	0	0	0	0	0	8
04:45 PM	---	05:00 PM	9	8	2	0	0	0	0	0	19
05:00 PM	---	05:15 PM	1	6	0	2	0	0	0	1	10
05:15 PM	---	05:30 PM	0	8	0	0	0	0	0	0	8
05:30 PM	---	05:45 PM	1	6	4	1	0	0	0	0	12
05:45 PM	---	06:00 PM	2	2	2	1	0	0	0	0	7

### HOURLY TOTALS

04:00 PM	---	05:00 PM	19	20	6	2	3	2	2	1	55
04:15 PM	---	05:15 PM	15	21	4	2	0	1	1	1	45
04:30 PM	---	05:30 PM	11	27	4	2	0	0	0	1	45
04:45 PM	---	05:45 PM	11	28	6	3	0	0	0	1	49
05:00 PM	---	06:00 PM	4	22	6	4	0	0	0	1	37

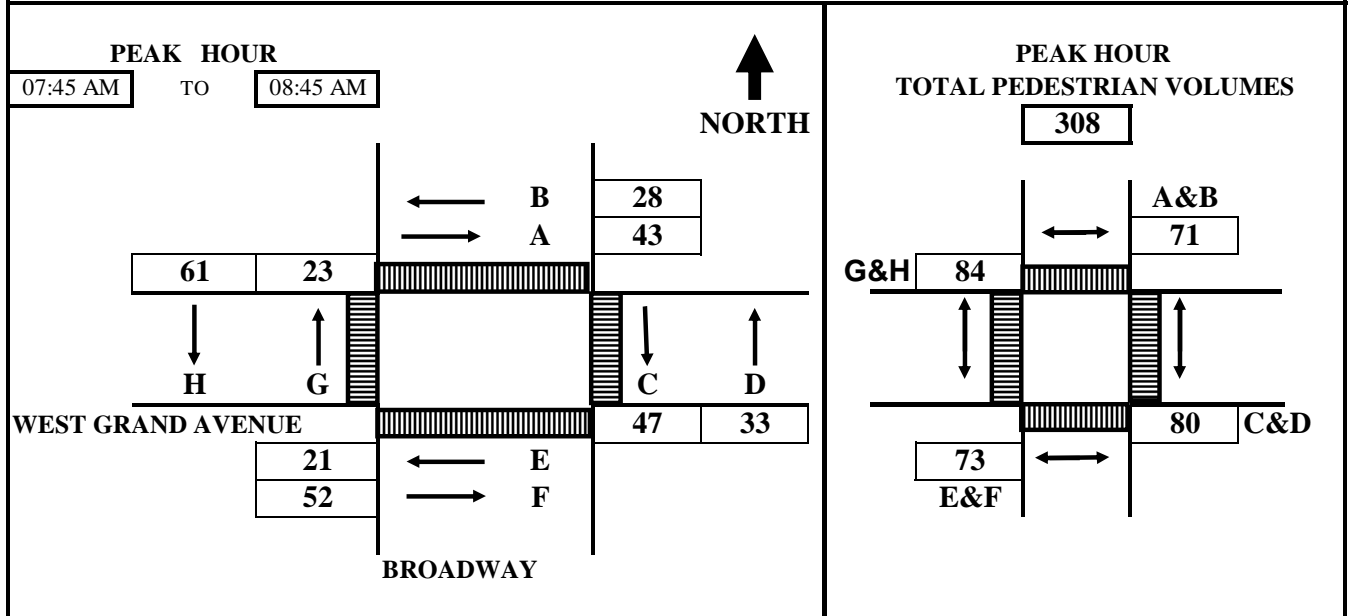
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b>	<b>OAKLAND TRAFFIC STUDY</b>	<b>SURVEY DATE</b>	<b>5/22/2012</b>
<b>N-S APPROACH:</b>	<b>BROADWAY</b>	<b>DAY:</b>	<b>TUESDAY</b>
<b>E-W APPROACH:</b>	<b>WEST GRAND AVENUE</b>	<b>CITY:</b>	<b>OAKLAND</b>
<b>SURVEY PERIOD</b>	<b>7:00 AM TO 9:00 AM</b>	<b>FILE:</b>	<b>3205033-PED-40AM</b>



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	2	1	3	5	2	5	1	2	21
07:15 AM	---	07:30 AM	6	2	9	8	7	18	4	9	63
07:30 AM	---	07:45 AM	19	4	18	12	14	21	9	18	115
07:45 AM	---	08:00 AM	25	7	31	19	20	31	16	30	179
08:00 AM	---	08:15 AM	38	16	45	30	28	47	23	38	265
08:15 AM	---	08:30 AM	47	28	56	40	31	61	27	59	349
08:30 AM	---	08:45 AM	62	32	65	45	35	73	32	79	423
08:45 AM	---	09:00 AM	66	40	76	50	36	82	38	83	471

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	2	1	3	5	2	5	1	2	21
07:15 AM	---	07:30 AM	4	1	6	3	5	13	3	7	42
07:30 AM	---	07:45 AM	13	2	9	4	7	3	5	9	52
07:45 AM	---	08:00 AM	6	3	13	7	6	10	7	12	64
08:00 AM	---	08:15 AM	13	9	14	11	8	16	7	8	86
08:15 AM	---	08:30 AM	9	12	11	10	3	14	4	21	84
08:30 AM	---	08:45 AM	15	4	9	5	4	12	5	20	74
08:45 AM	---	09:00 AM	4	8	11	5	1	9	6	4	48

### HOURLY TOTALS

07:00 AM	---	08:00 AM	25	7	31	19	20	31	16	30	179
07:15 AM	---	08:15 AM	36	15	42	25	26	42	22	36	244
07:30 AM	---	08:30 AM	41	26	47	32	24	43	23	50	286
07:45 AM	---	08:45 AM	43	28	47	33	21	52	23	61	308
08:00 AM	---	09:00 AM	41	33	45	31	16	51	22	53	292

Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b>		<b>OAKLAND TRAFFIC STUDY</b>				<b>SURVEY DATE</b>		5/22/2012	
<b>N-S APPROACH:</b>		<b>BROADWAY</b>				<b>DAY:</b>		TUESDAY	
<b>E-W APPROACH:</b>		<b>WEST GRAND AVENUE</b>				<b>CITY:</b>		OAKLAND	
<b>SURVEY PERIOD</b>		4:00 PM		TO		6:00 PM		<b>FILE:</b> 3205033-PED-40PM	

<p style="text-align: center;"><b>PEAK HOUR</b></p> <p style="text-align: center;">04:00 PM TO 05:00 PM</p> <p style="text-align: center;"><b>NORTH</b></p> <p style="text-align: center;"><b>BROADWAY</b></p>	<p style="text-align: center;"><b>PEAK HOUR</b></p> <p style="text-align: center;"><b>TOTAL PEDESTRIAN VOLUMES</b></p> <p style="text-align: center;"><b>218</b></p> <p style="text-align: center;"><b>G&amp;H</b></p> <p style="text-align: center;"><b>E&amp;F</b></p> <p style="text-align: center;"><b>C&amp;D</b></p>
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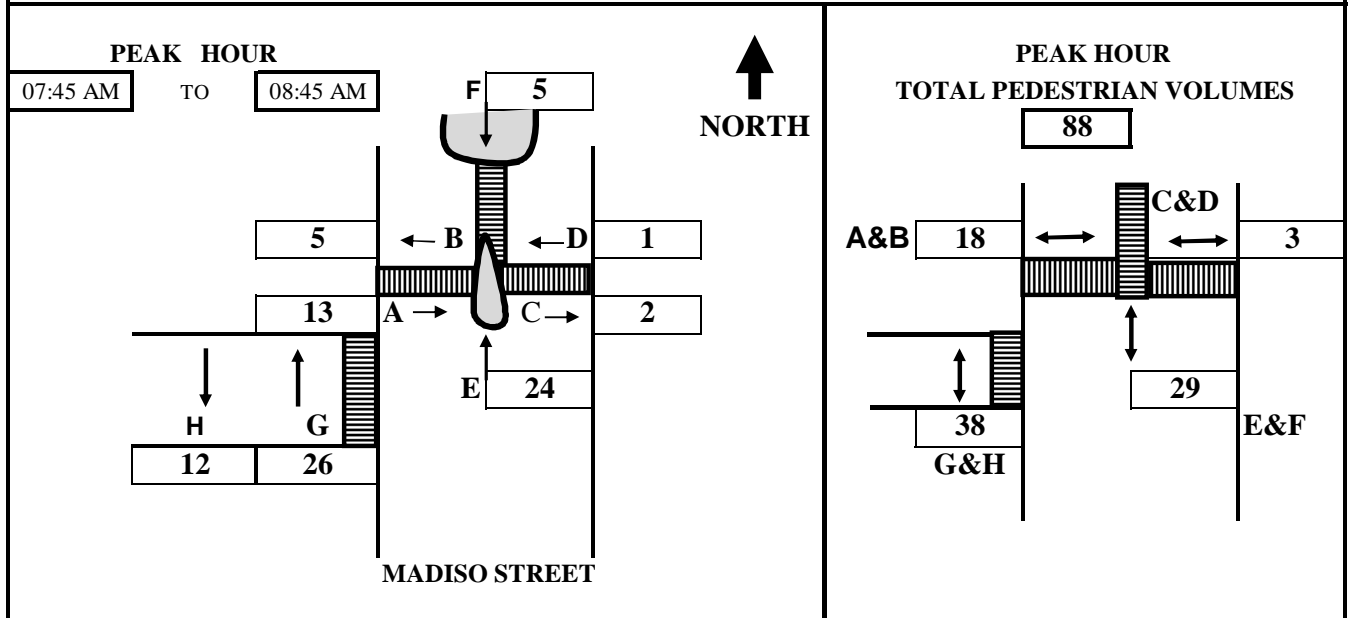
TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL	
From	To	A	B	C	D	E	F	G	H		
<b>SURVEY DATA</b>											
04:00 PM	---	04:15 PM	3	13	6	9	4	11	10	2	58
04:15 PM	---	04:30 PM	10	16	8	18	10	13	21	2	98
04:30 PM	---	04:45 PM	12	31	11	31	23	22	27	9	166
04:45 PM	---	05:00 PM	12	35	23	43	31	31	30	13	218
05:00 PM	---	05:15 PM	16	44	32	50	39	36	30	22	269
05:15 PM	---	05:30 PM	20	52	33	55	41	40	38	30	309
05:30 PM	---	05:45 PM	23	55	36	61	49	43	46	35	348
05:45 PM	---	06:00 PM	27	61	38	70	53	50	58	39	396
<b>TOTAL BY PERIOD</b>											
04:00 PM	---	04:15 PM	3	13	6	9	4	11	10	2	58
04:15 PM	---	04:30 PM	7	3	2	9	6	2	11	0	40
04:30 PM	---	04:45 PM	2	15	3	13	13	9	6	7	68
04:45 PM	---	05:00 PM	0	4	12	12	8	9	3	4	52
05:00 PM	---	05:15 PM	4	9	9	7	8	5	0	9	51
05:15 PM	---	05:30 PM	4	8	1	5	2	4	8	8	40
05:30 PM	---	05:45 PM	3	3	3	6	8	3	8	5	39
05:45 PM	---	06:00 PM	4	6	2	9	4	7	12	4	48
<b>HOURLY TOTALS</b>											
04:00 PM	---	05:00 PM	12	35	23	43	31	31	30	13	218
04:15 PM	---	05:15 PM	13	31	26	41	35	25	20	20	211
04:30 PM	---	05:30 PM	10	36	25	37	31	27	17	28	211
04:45 PM	---	05:45 PM	11	24	25	30	26	21	19	26	182
05:00 PM	---	06:00 PM	15	26	15	27	22	19	28	26	178

Tel : (510) 232-1271 Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISO STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> LAKESIDE DRIVE		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 7:00 AM	<b>TO</b> 9:00 AM	<b>FILE:</b> 3205033-PED-42AM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

### SURVEY DATA

07:00 AM	---	07:15 AM	1	0	0	0	3	0	3	1	8
07:15 AM	---	07:30 AM	3	0	2	0	5	0	5	1	16
07:30 AM	---	07:45 AM	4	4	2	2	8	0	8	2	30
07:45 AM	---	08:00 AM	8	4	3	2	18	0	18	4	57
08:00 AM	---	08:15 AM	12	4	4	2	22	0	23	6	73
08:15 AM	---	08:30 AM	14	8	4	3	26	5	27	12	99
08:30 AM	---	08:45 AM	17	9	4	3	32	5	34	14	118
08:45 AM	---	09:00 AM	19	14	4	3	39	5	41	15	140

### TOTAL BY PERIOD

07:00 AM	---	07:15 AM	1	0	0	0	3	0	3	1	8
07:15 AM	---	07:30 AM	2	0	2	0	2	0	2	0	8
07:30 AM	---	07:45 AM	1	4	0	2	3	0	3	1	14
07:45 AM	---	08:00 AM	4	0	1	0	10	0	10	2	27
08:00 AM	---	08:15 AM	4	0	1	0	4	0	5	2	16
08:15 AM	---	08:30 AM	2	4	0	1	4	5	4	6	26
08:30 AM	---	08:45 AM	3	1	0	0	6	0	7	2	19
08:45 AM	---	09:00 AM	2	5	0	0	7	0	7	1	22

### HOURLY TOTALS

07:00 AM	---	08:00 AM	8	4	3	2	18	0	18	4	57
07:15 AM	---	08:15 AM	11	4	4	2	19	0	20	5	65
07:30 AM	---	08:30 AM	11	8	2	3	21	5	22	11	83
07:45 AM	---	08:45 AM	13	5	2	1	24	5	26	12	88
08:00 AM	---	09:00 AM	11	10	1	1	21	5	23	11	83

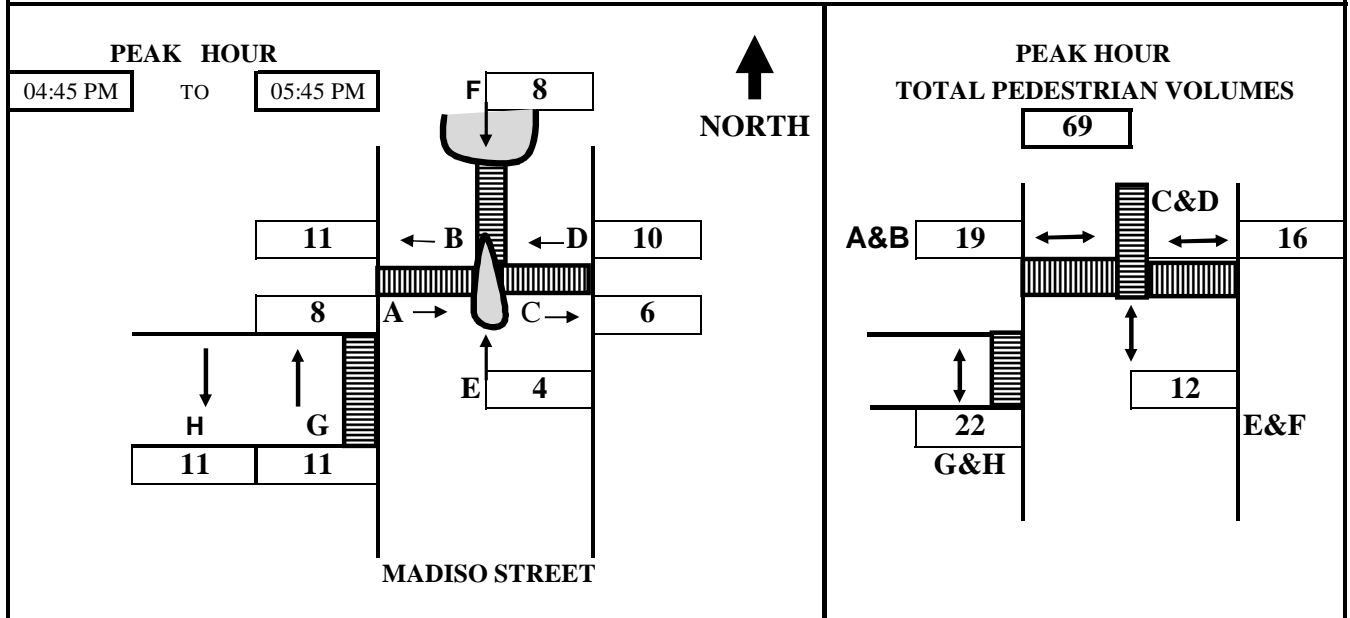
Tel : (510) 232-1271

Fax: (510) 232-1272

# B . A . Y . M . E . T . R . I . C . S .

## PEDESTRIAN MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY		<b>SURVEY DATE</b> 5/16/2012	
<b>N-S APPROACH:</b> MADISO STREET		<b>DAY:</b> WEDNESDAY	
<b>E-W APPROACH:</b> LAKESIDE DRIVE		<b>CITY:</b> OAKLAND	
<b>SURVEY PERIOD</b> 4:00 PM	<b>TO</b> 6:00 PM	<b>FILE:</b> 3205033-PED-42PM	



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

<b>SURVEY DATA</b>											
04:00 PM	---	04:15 PM	0	2	2	0	2	5	2	4	17
04:15 PM	---	04:30 PM	0	4	2	1	2	6	2	7	24
04:30 PM	---	04:45 PM	0	8	2	5	2	9	7	12	45
04:45 PM	---	05:00 PM	5	8	3	7	6	9	11	14	63
05:00 PM	---	05:15 PM	6	9	5	7	6	11	13	19	76
05:15 PM	---	05:30 PM	8	9	8	9	6	12	18	22	92
05:30 PM	---	05:45 PM	8	19	8	15	6	17	18	23	114
05:45 PM	---	06:00 PM	8	24	8	20	7	17	19	25	128

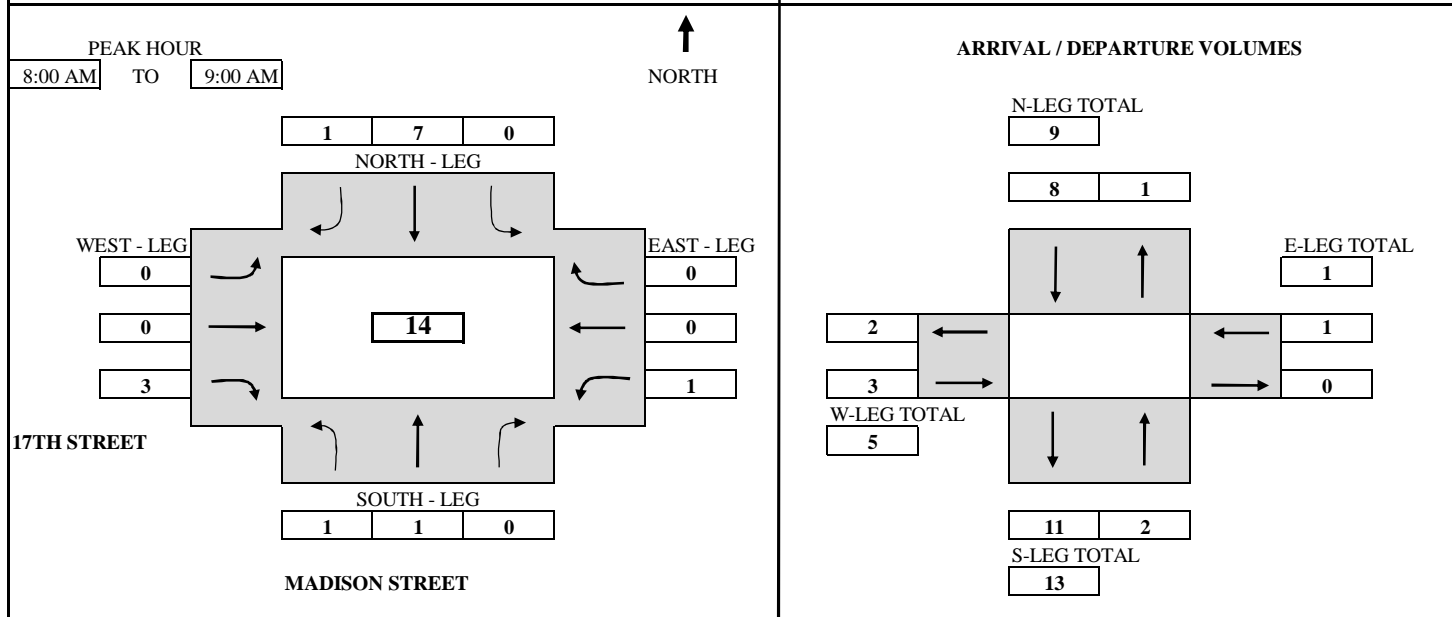
<b>TOTAL BY PERIOD</b>											
04:00 PM	---	04:15 PM	0	2	2	0	2	5	2	4	17
04:15 PM	---	04:30 PM	0	2	0	1	0	1	0	3	7
04:30 PM	---	04:45 PM	0	4	0	4	0	3	5	5	21
04:45 PM	---	05:00 PM	5	0	1	2	4	0	4	2	18
05:00 PM	---	05:15 PM	1	1	2	0	0	2	2	5	13
05:15 PM	---	05:30 PM	2	0	3	2	0	1	5	3	16
05:30 PM	---	05:45 PM	0	10	0	6	0	5	0	1	22
05:45 PM	---	06:00 PM	0	5	0	5	1	0	1	2	14

<b>HOURLY TOTALS</b>											
04:00 PM	---	05:00 PM	5	8	3	7	6	9	11	14	63
04:15 PM	---	05:15 PM	6	7	3	7	4	6	11	15	59
04:30 PM	---	05:30 PM	8	5	6	8	4	6	16	15	68
04:45 PM	---	05:45 PM	8	11	6	10	4	8	11	11	69
05:00 PM	---	06:00 PM	3	16	5	13	1	8	8	11	65

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 17TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-1AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	to	7:45 AM	0	0	1	0	0	0	0	0	0	0	1	2
7:45 AM	to	8:00 AM	0	0	1	0	1	0	0	0	0	3	0	5
8:00 AM	to	8:15 AM	0	0	2	0	1	0	0	0	0	3	0	6
8:15 AM	to	8:30 AM	0	0	3	0	1	0	0	0	0	3	0	7
8:30 AM	to	8:45 AM	0	0	6	0	1	2	1	0	1	3	0	13
8:45 AM	to	9:00 AM	1	1	8	1	1	3	1	0	1	3	0	19

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	7:45 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	1	0	2	0	3
8:00 AM	to	8:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	to	8:30 AM	0	0	0	0	1	0	0	0	0	0	0	1
8:30 AM	to	8:45 AM	0	0	0	0	3	0	0	0	2	1	0	6
8:45 AM	to	9:00 AM	1	1	0	0	2	1	0	0	1	0	0	6

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	1	0	0	1	0	0	3	0	5
7:15 AM	to	8:15 AM	0	0	0	0	2	0	0	1	0	0	2	0	5
7:30 AM	to	8:30 AM	0	0	0	0	3	0	0	1	0	0	2	0	6
7:45 AM	to	8:45 AM	0	0	0	0	5	0	0	1	2	1	2	0	11
8:00 AM	to	9:00 AM	1	1	0	0	7	1	0	0	3	1	0	0	14

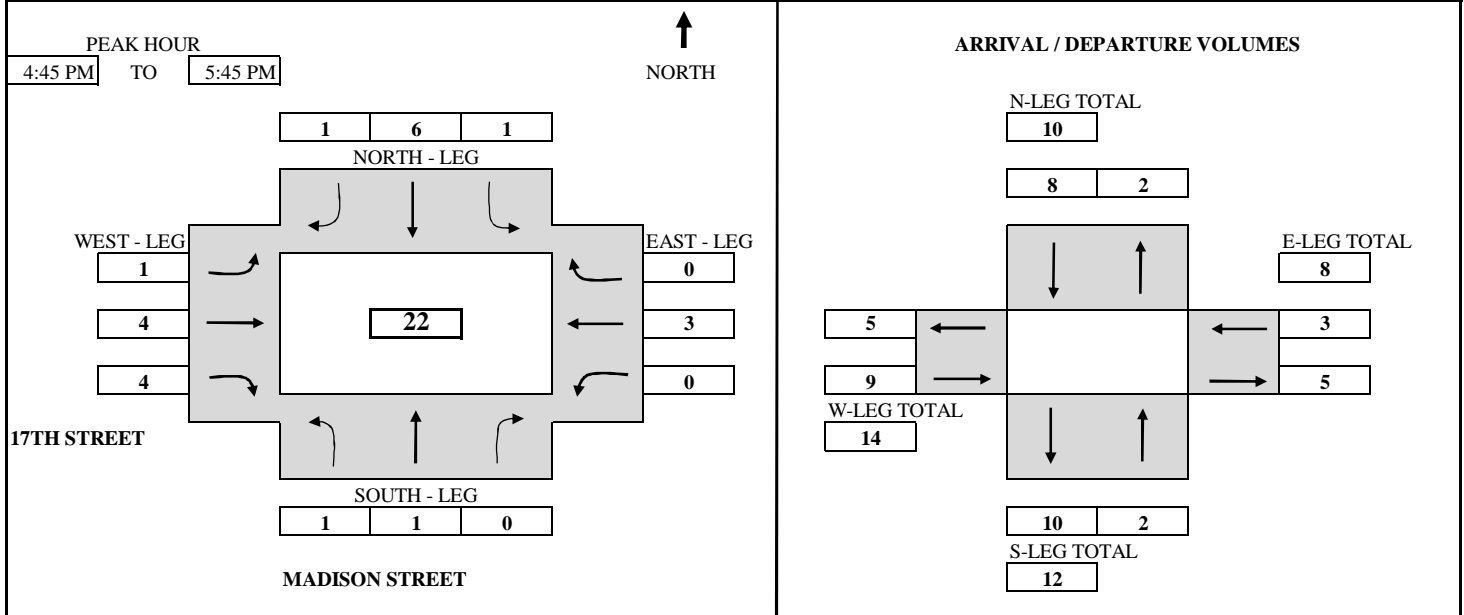
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 17TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-1PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	0	0	0	0	0	0	1	2	0	1	0	4
4:15 PM	to	4:30 PM	0	0	0	2	0	0	1	3	1	2	0	9
4:30 PM	to	4:45 PM	0	0	0	3	0	0	1	3	1	2	0	10
4:45 PM	to	5:00 PM	1	0	0	5	0	0	4	3	1	3	0	17
5:00 PM	to	5:15 PM	1	1	1	5	0	0	4	3	1	3	0	19
5:15 PM	to	5:30 PM	1	1	1	8	0	0	5	4	1	4	0	25
5:30 PM	to	5:45 PM	1	1	1	9	1	1	5	7	1	5	0	32
5:45 PM	to	6:00 PM	1	1	1	10	1	1	6	8	1	5	0	35

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	0	0	1	2	0	1	0	4
4:15 PM	to	4:30 PM	0	0	0	2	0	0	0	1	1	1	0	5
4:30 PM	to	4:45 PM	0	0	0	1	0	0	0	0	0	0	0	1
4:45 PM	to	5:00 PM	1	0	0	2	0	0	3	0	0	1	0	7
5:00 PM	to	5:15 PM	0	1	0	0	0	0	0	0	0	0	0	2
5:15 PM	to	5:30 PM	0	0	0	3	0	0	1	1	0	1	0	6
5:30 PM	to	5:45 PM	0	0	0	1	1	1	0	3	0	1	0	7
5:45 PM	to	6:00 PM	0	0	0	1	0	0	1	1	0	0	0	3

HOURLY TOTALS														
4:00 PM	to	5:00 PM	1	0	0	5	0	0	4	3	1	3	0	17
4:15 PM	to	5:15 PM	1	1	0	5	0	0	3	1	1	2	0	15
4:30 PM	to	5:30 PM	1	1	0	6	0	0	4	1	0	2	0	16
4:45 PM	to	5:45 PM	1	1	0	6	1	1	4	4	0	3	0	22
5:00 PM	to	6:00 PM	0	1	0	5	1	1	2	5	0	2	0	18

TEL: (510) 232 - 1271

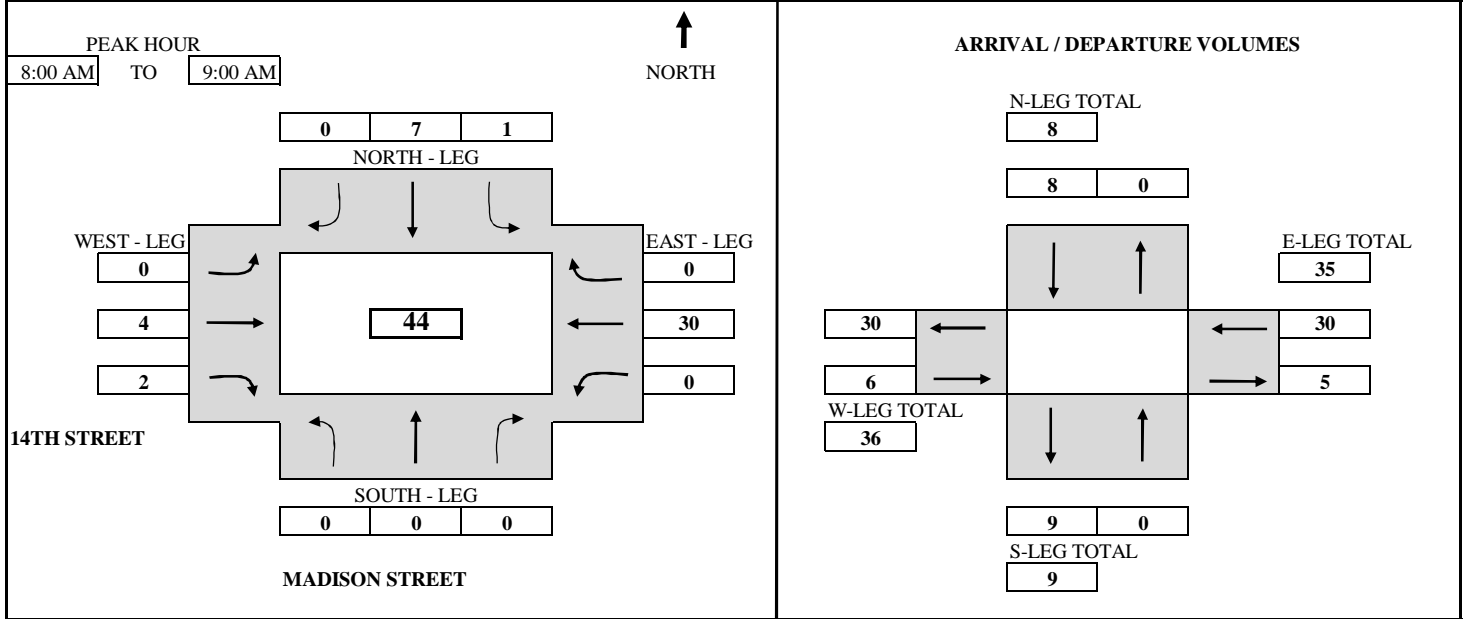
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 14TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-2AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM				0	3	0	2	0	0	0	0	5
7:15 AM	to	7:30 AM				0	3	0	2	0	0	4	0	9
7:30 AM	to	7:45 AM				0	3	0	3	0	0	8	0	14
7:45 AM	to	8:00 AM				0	4	1	4	1	1	12	0	23
8:00 AM	to	8:15 AM				1	6	1	5	2	1	17	0	33
8:15 AM	to	8:30 AM				1	7	1	5	3	1	22	0	40
8:30 AM	to	8:45 AM				1	10	1	5	3	1	36	0	57
8:45 AM	to	9:00 AM				1	11	1	8	3	1	42	0	67

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	3	0	0	2	0	0	0	5
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	4	0	4
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	1	0	4	0	5
7:45 AM	to	8:00 AM	0	0	0	0	1	1	0	1	1	4	0	9
8:00 AM	to	8:15 AM	0	0	0	1	2	0	0	1	1	5	0	10
8:15 AM	to	8:30 AM	0	0	0	0	1	0	0	0	1	5	0	7
8:30 AM	to	8:45 AM	0	0	0	0	3	0	0	0	0	14	0	17
8:45 AM	to	9:00 AM	0	0	0	0	1	0	0	3	0	6	0	10

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	4	1	0	4	1	1	12	0	23
7:15 AM	to	8:15 AM	0	0	0	1	3	1	0	3	2	1	17	0	28
7:30 AM	to	8:30 AM	0	0	0	1	4	1	0	3	3	1	18	0	31
7:45 AM	to	8:45 AM	0	0	0	1	7	1	0	2	3	1	28	0	43
8:00 AM	to	9:00 AM	0	0	0	1	7	0	0	4	2	0	30	0	44

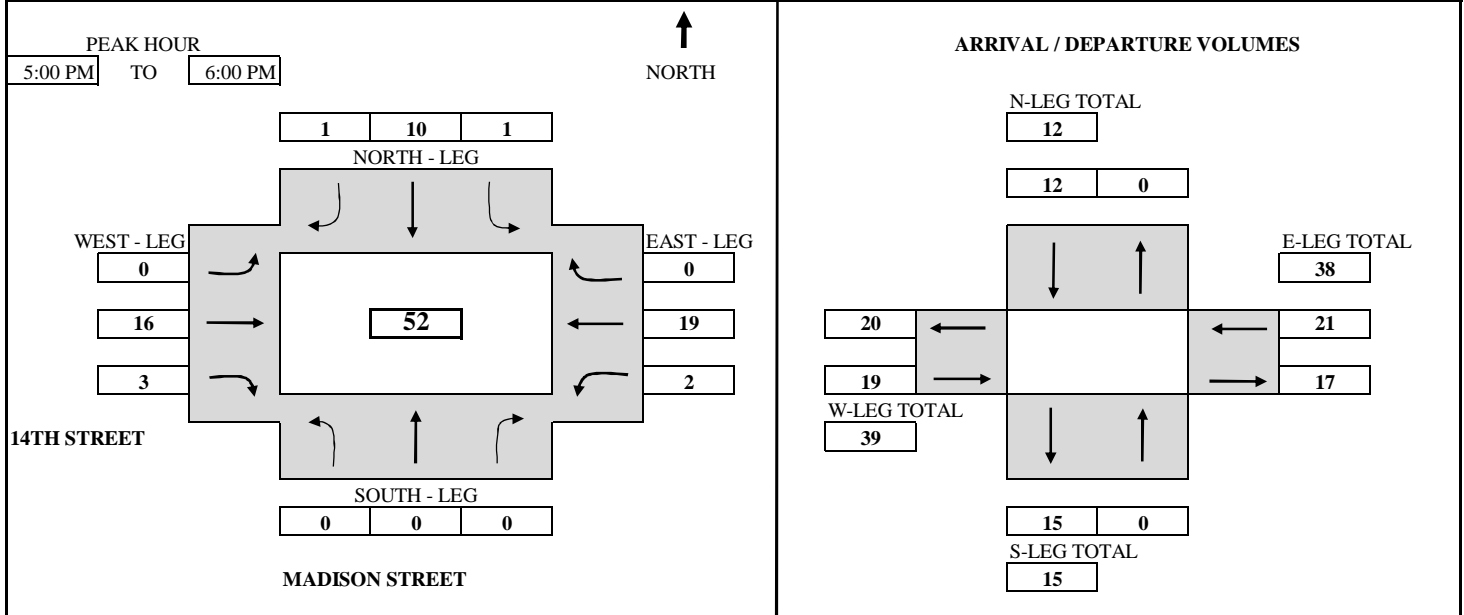
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 14TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-2PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM				0	0	0	1	1	0	3		5
4:15 PM	to	4:30 PM				0	3	0	5	1	1	6		16
4:30 PM	to	4:45 PM				0	5	0	6	1	1	6		19
4:45 PM	to	5:00 PM				0	5	0	10	1	2	8		26
5:00 PM	to	5:15 PM				0	8	0	13	2	2	16		41
5:15 PM	to	5:30 PM				0	8	0	18	2	2	22		52
5:30 PM	to	5:45 PM				1	11	0	22	3	4	23		64
5:45 PM	to	6:00 PM				1	15	1	26	4	4	27		78

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	1	1	0	3	0	5
4:15 PM	to	4:30 PM	0	0	0	0	3	0	0	4	0	1	3	0	11
4:30 PM	to	4:45 PM	0	0	0	0	2	0	0	1	0	0	0	0	3
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	4	0	1	2	0	7
5:00 PM	to	5:15 PM	0	0	0	0	3	0	0	3	1	0	8	0	15
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	5	0	0	6	0	11
5:30 PM	to	5:45 PM	0	0	0	1	3	0	0	4	1	2	1	0	12
5:45 PM	to	6:00 PM	0	0	0	0	4	1	0	4	1	0	4	0	14

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	5	0	0	10	1	2	8	0	26
4:15 PM	to	5:15 PM	0	0	0	0	8	0	0	12	1	2	13	0	36
4:30 PM	to	5:30 PM	0	0	0	0	5	0	0	13	1	1	16	0	36
4:45 PM	to	5:45 PM	0	0	0	1	6	0	0	16	2	3	17	0	45
5:00 PM	to	6:00 PM	0	0	0	1	10	1	0	16	3	2	19	0	52

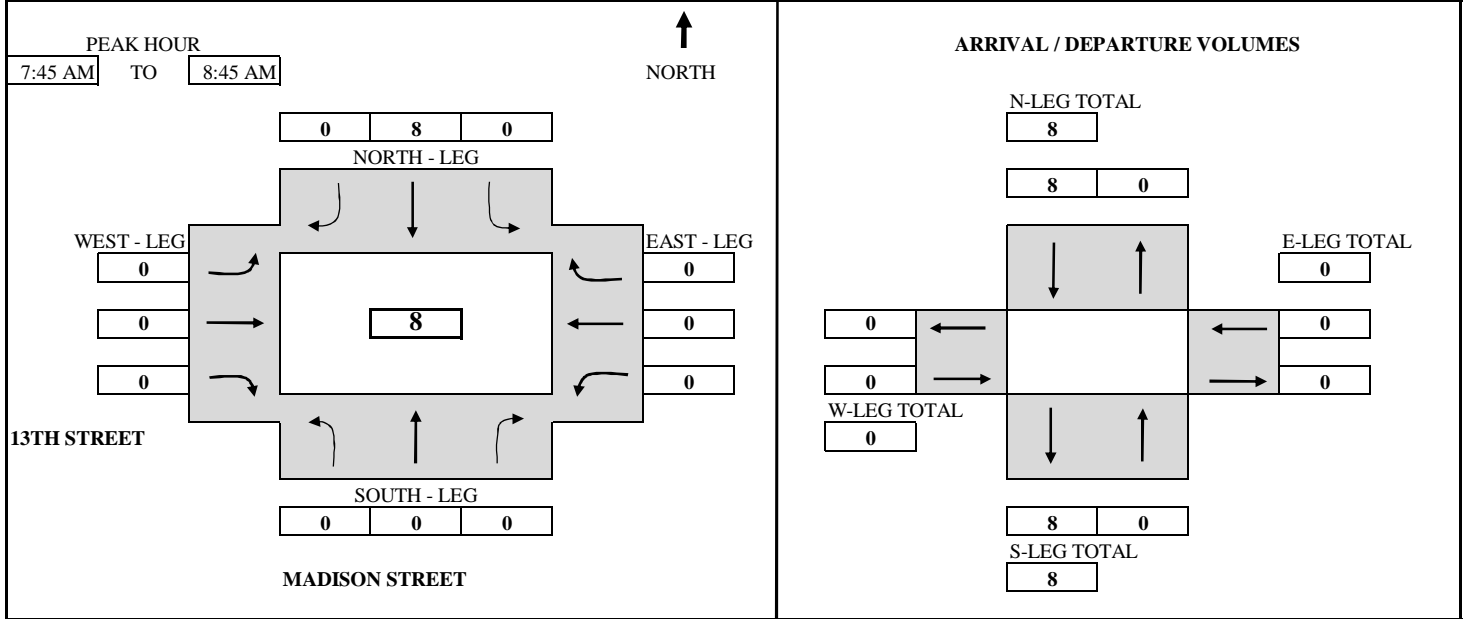
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 13TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-3AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM					1			0				1
7:15 AM	to	7:30 AM				3			0					3
7:30 AM	to	7:45 AM				3			1					4
7:45 AM	to	8:00 AM				5			1					6
8:00 AM	to	8:15 AM				7			1					8
8:15 AM	to	8:30 AM				9			1					10
8:30 AM	to	8:45 AM				11			1					12
8:45 AM	to	9:00 AM				12			1					13

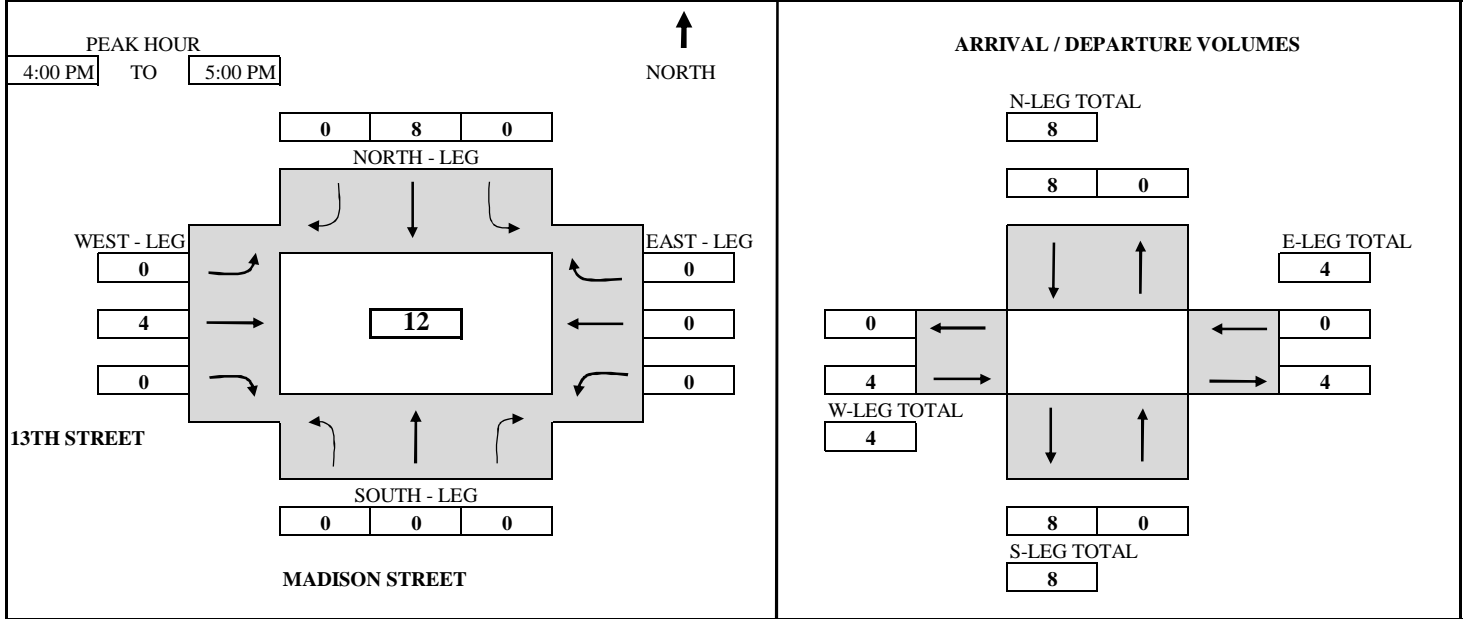
TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	to	7:30 AM	0	0	0	0	2	0	0	0	0	0	0	2
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	1	0	0	0	1
7:45 AM	to	8:00 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:00 AM	to	8:15 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:45 AM	to	9:00 AM	0	0	0	0	1	0	0	0	0	0	0	1

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	5	0	0	1	0	0	0	6
7:15 AM	to	8:15 AM	0	0	0	0	6	0	0	1	0	0	0	7
7:30 AM	to	8:30 AM	0	0	0	0	6	0	0	1	0	0	0	7
7:45 AM	to	8:45 AM	0	0	0	0	8	0	0	0	0	0	0	8
8:00 AM	to	9:00 AM	0	0	0	0	7	0	0	0	0	0	0	7

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 13TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-3PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM				0	1			2					3
4:15 PM	to 4:30 PM				0	4			2					6
4:30 PM	to 4:45 PM				0	6			3					9
4:45 PM	to 5:00 PM				0	8			4					12
5:00 PM	to 5:15 PM				0	9			4					13
5:15 PM	to 5:30 PM				0	10			4					14
5:30 PM	to 5:45 PM				1	15			4					20
5:45 PM	to 6:00 PM				1	16			4					21

TOTAL BY PERIOD														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	1	0	0	2	0	0	0	0	3
4:15 PM	to 4:30 PM	0	0	0	0	3	0	0	0	0	0	0	0	3
4:30 PM	to 4:45 PM	0	0	0	0	2	0	0	1	0	0	0	0	3
4:45 PM	to 5:00 PM	0	0	0	0	2	0	0	1	0	0	0	0	3
5:00 PM	to 5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	to 5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:30 PM	to 5:45 PM	0	0	0	1	5	0	0	0	0	0	0	0	6
5:45 PM	to 6:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1

HOURLY TOTALS														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	8	0	0	4	0	0	0	0	12
4:15 PM	to 5:15 PM	0	0	0	0	8	0	0	2	0	0	0	0	10
4:30 PM	to 5:30 PM	0	0	0	0	6	0	0	2	0	0	0	0	8
4:45 PM	to 5:45 PM	0	0	0	1	9	0	0	1	0	0	0	0	11
5:00 PM	to 6:00 PM	0	0	0	1	8	0	0	0	0	0	0	0	9

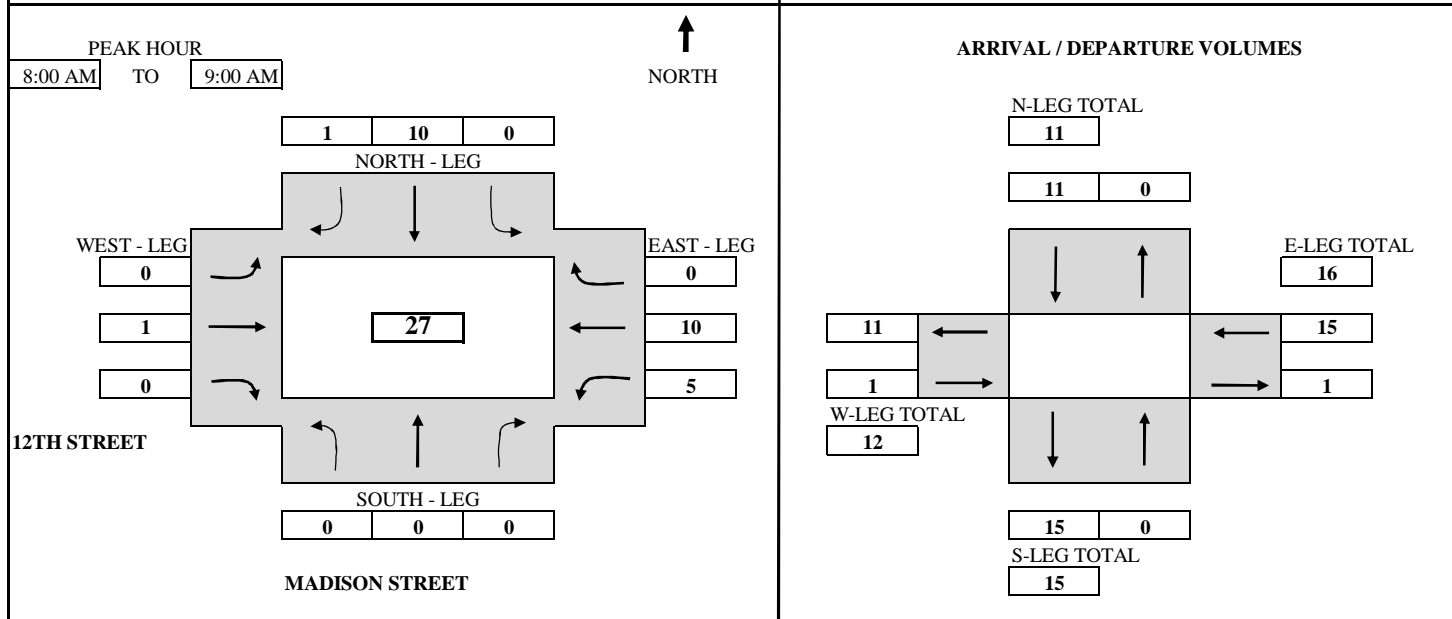
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-4AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM				1	0		0	0		2	0		3
7:15 AM	to 7:30 AM				3	0		0	0		3	3		9
7:30 AM	to 7:45 AM				3	0		0	1		4	4		12
7:45 AM	to 8:00 AM				7	0		0	1		5	6		19
8:00 AM	to 8:15 AM				10	0		0	1		7	9		27
8:15 AM	to 8:30 AM				12	0		0	1		7	10		30
8:30 AM	to 8:45 AM				16	0		1	1		9	10		37
8:45 AM	to 9:00 AM				17	1		1	1		10	16		46

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	0	0	0	1	0	0	0	0	2	0	0	3
7:15 AM	to 7:30 AM	0	0	0	0	2	0	0	0	0	1	3	0	6
7:30 AM	to 7:45 AM	0	0	0	0	0	0	0	0	1	1	1	0	3
7:45 AM	to 8:00 AM	0	0	0	0	4	0	0	0	0	1	2	0	7
8:00 AM	to 8:15 AM	0	0	0	0	3	0	0	0	0	2	3	0	8
8:15 AM	to 8:30 AM	0	0	0	0	2	0	0	0	0	0	1	0	3
8:30 AM	to 8:45 AM	0	0	0	0	4	0	0	1	0	2	0	0	7
8:45 AM	to 9:00 AM	0	0	0	0	1	1	0	0	0	1	6	0	9

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	0	0	0	7	0	0	0	1	5	6	0	19
7:15 AM	to 8:15 AM	0	0	0	0	9	0	0	0	1	5	9	0	24
7:30 AM	to 8:30 AM	0	0	0	0	9	0	0	0	1	4	7	0	21
7:45 AM	to 8:45 AM	0	0	0	0	13	0	0	1	0	5	6	0	25
8:00 AM	to 9:00 AM	0	0	0	0	10	1	0	1	0	5	10	0	27

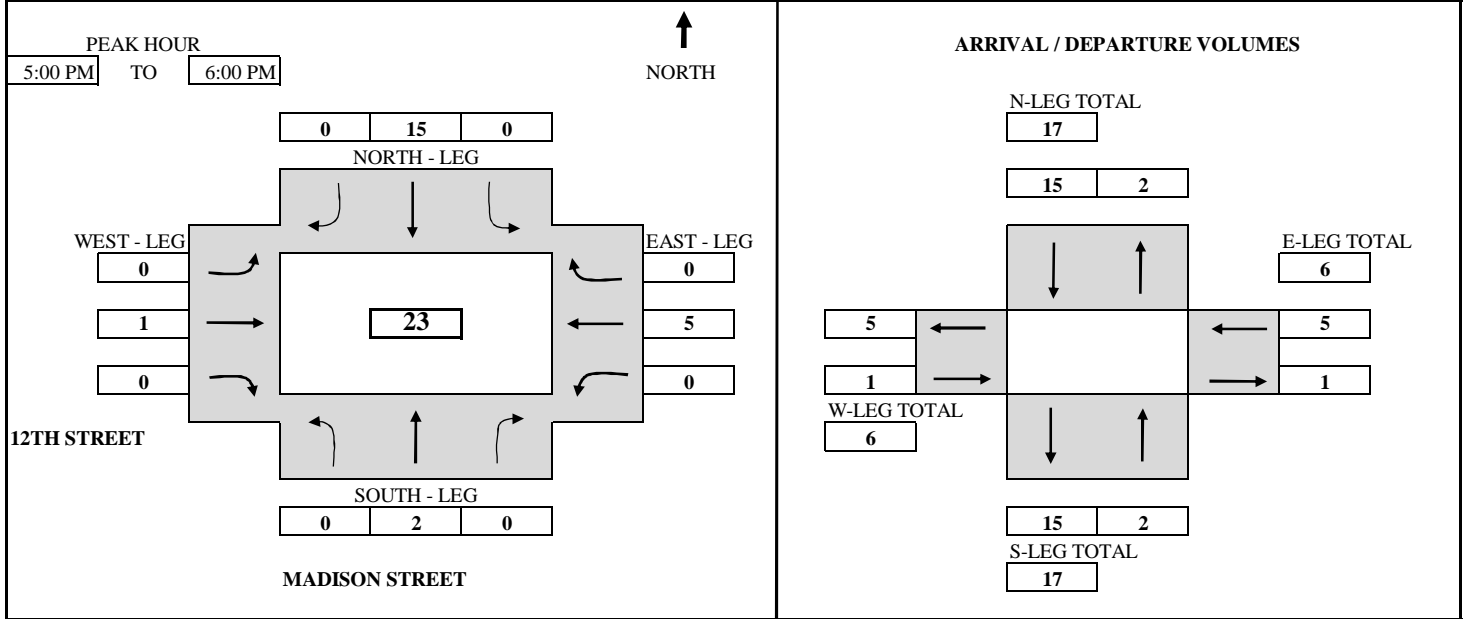
TEL: (510) 232 - 1271

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# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-4PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	2	0	0	0	0	1	0	0	3
4:15 PM	to 4:30 PM	0	0	0	0	4	0	0	0	0	1	1	0	6
4:30 PM	to 4:45 PM	0	0	0	0	5	0	0	1	0	1	4	0	11
4:45 PM	to 5:00 PM	0	0	0	0	7	0	0	1	0	2	4	0	14
5:00 PM	to 5:15 PM	0	0	0	0	10	0	0	1	0	2	4	0	17
5:15 PM	to 5:30 PM	0	0	0	0	15	0	0	1	0	2	5	0	23
5:30 PM	to 5:45 PM	2	0	0	0	19	0	0	2	0	2	6	0	31
5:45 PM	to 6:00 PM	2	0	0	0	22	0	0	2	0	2	9	0	37

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	2	0	0	0	0	1	0	0	3
4:15 PM	to 4:30 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
4:30 PM	to 4:45 PM	0	0	0	0	1	0	0	1	0	0	3	0	5
4:45 PM	to 5:00 PM	0	0	0	0	2	0	0	0	0	1	0	0	3
5:00 PM	to 5:15 PM	0	0	0	0	3	0	0	0	0	0	0	0	3
5:15 PM	to 5:30 PM	0	0	0	0	5	0	0	0	0	0	1	0	6
5:30 PM	to 5:45 PM	0	2	0	0	4	0	0	1	0	0	1	0	8
5:45 PM	to 6:00 PM	0	0	0	0	3	0	0	0	0	0	3	0	6

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	7	0	0	1	0	2	4	0	14
4:15 PM	to 5:15 PM	0	0	0	0	8	0	0	1	0	1	4	0	14
4:30 PM	to 5:30 PM	0	0	0	0	11	0	0	1	0	1	4	0	17
4:45 PM	to 5:45 PM	0	2	0	0	14	0	0	1	0	1	2	0	20
5:00 PM	to 6:00 PM	0	2	0	0	15	0	0	1	0	0	5	0	23

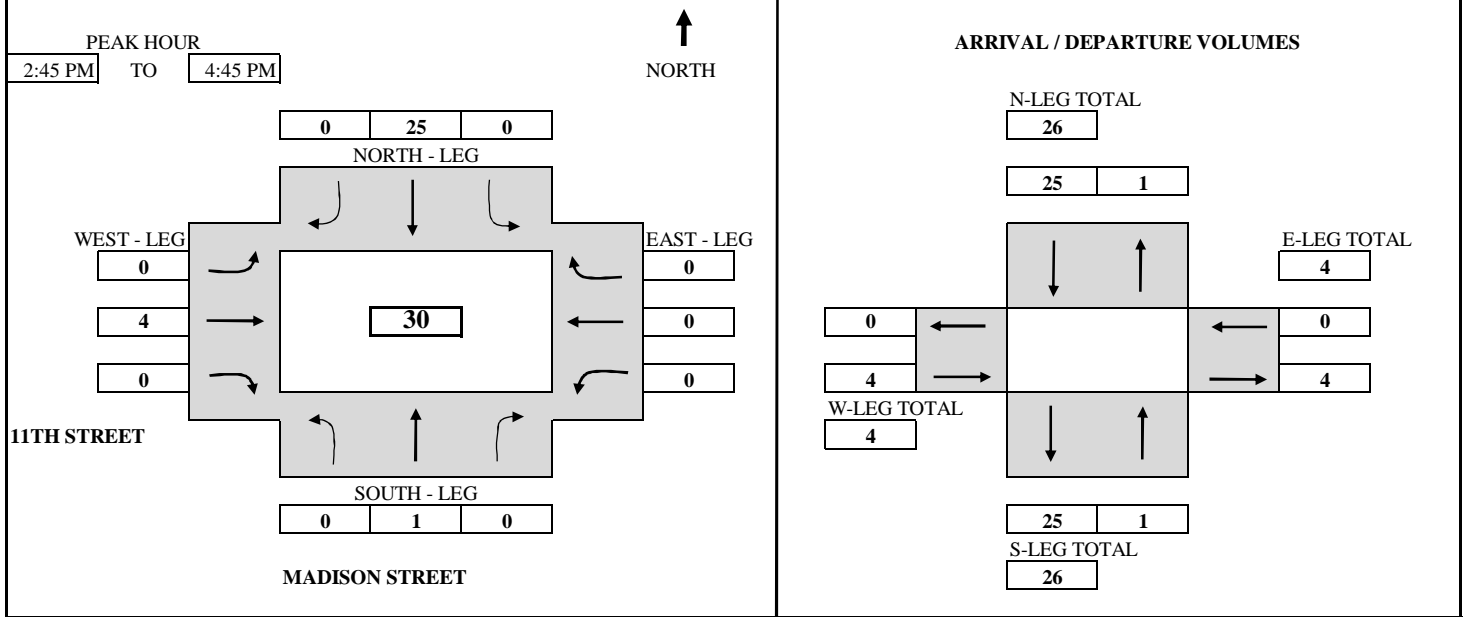
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 11TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-5AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	0			3			1					4
7:15 AM	to	7:30 AM	0			6			1					7
7:30 AM	to	7:45 AM	1			7			1					9
7:45 AM	to	8:00 AM	1			12			2					15
8:00 AM	to	8:15 AM	1			12			2					15
8:15 AM	to	8:30 AM	1			14			2					17
8:30 AM	to	8:45 AM	1			20			3					24
8:45 AM	to	9:00 AM	1			22			3					26

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	3	0	0	1	0	0	0	0	4
7:15 AM	to	7:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	3
7:30 AM	to	7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	2
7:45 AM	to	8:00 AM	0	0	0	0	5	0	0	1	0	0	0	0	6
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	6	0	0	1	0	0	0	0	7
8:45 AM	to	9:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	2

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	1	0	0	12	0	0	2	0	0	0	0	15
7:15 AM	to	8:15 AM	0	1	0	0	9	0	0	1	0	0	0	0	11
7:30 AM	to	8:30 AM	0	1	0	0	8	0	0	1	0	0	0	0	10
7:45 AM	to	8:45 AM	0	0	0	0	13	0	0	2	0	0	0	0	15
8:00 AM	to	9:00 AM	0	0	0	0	10	0	0	1	0	0	0	0	11

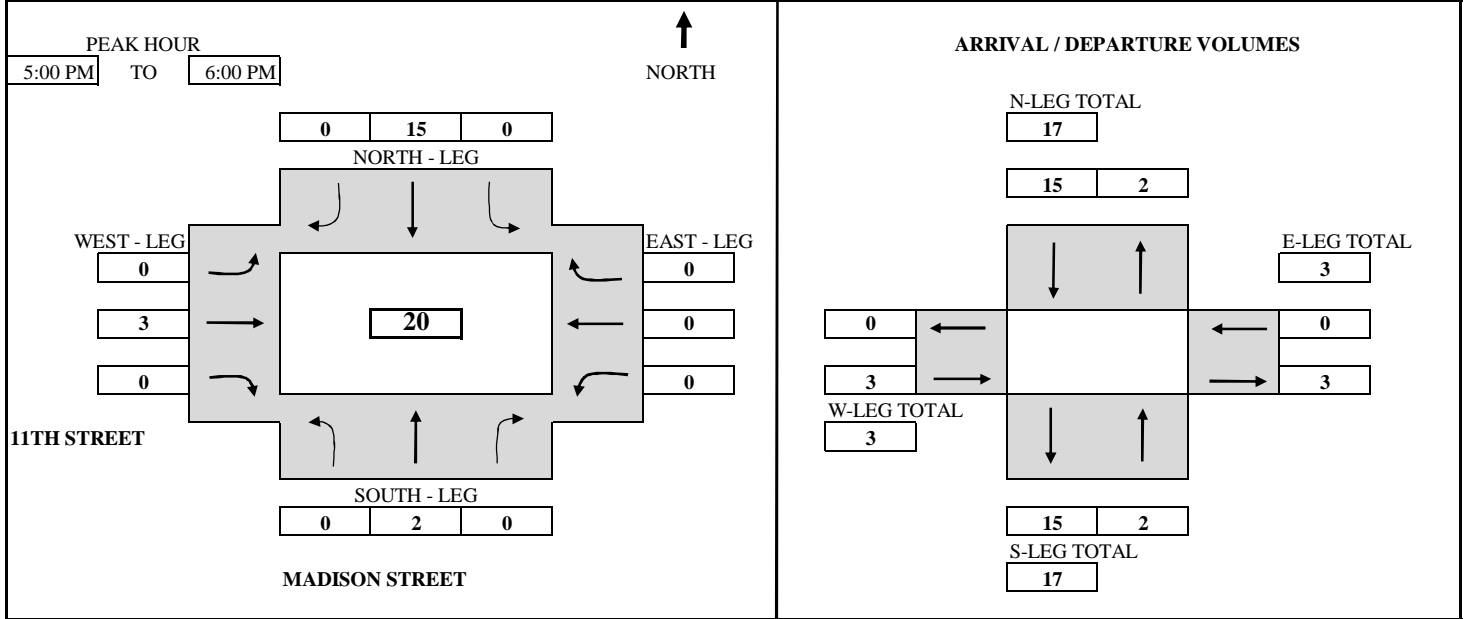
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 11TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-5PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	0	2	0	0	0	0	0	0	0	0	0	2
4:15 PM	to	4:30 PM	0	3	1	0	0	0	0	0	0	0	0	4
4:30 PM	to	4:45 PM	0	5	1	0	0	0	0	0	0	0	0	6
4:45 PM	to	5:00 PM	0	8	1	0	0	0	0	0	0	0	0	9
5:00 PM	to	5:15 PM	0	10	1	0	0	0	0	0	0	0	0	11
5:15 PM	to	5:30 PM	1	14	3	0	0	0	0	0	0	0	0	18
5:30 PM	to	5:45 PM	2	19	4	0	0	0	0	0	0	0	0	25
5:45 PM	to	6:00 PM	2	23	4	0	0	0	0	0	0	0	0	29

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	2	0	0	0	0	0	0	2
4:15 PM	to	4:30 PM	0	0	0	0	1	0	0	1	0	0	0	2
4:30 PM	to	4:45 PM	0	0	0	0	2	0	0	0	0	0	0	2
4:45 PM	to	5:00 PM	0	0	0	0	3	0	0	0	0	0	0	3
5:00 PM	to	5:15 PM	0	0	0	0	2	0	0	0	0	0	0	2
5:15 PM	to	5:30 PM	0	1	0	0	4	0	0	2	0	0	0	7
5:30 PM	to	5:45 PM	0	1	0	0	5	0	0	1	0	0	0	7
5:45 PM	to	6:00 PM	0	0	0	0	4	0	0	0	0	0	0	4

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	0	0	0	8	0	0	1	0	0	0	9
4:15 PM	to	5:15 PM	0	0	0	0	8	0	0	1	0	0	0	9
4:30 PM	to	5:30 PM	0	1	0	0	11	0	0	2	0	0	0	14
4:45 PM	to	5:45 PM	0	2	0	0	14	0	0	3	0	0	0	19
5:00 PM	to	6:00 PM	0	2	0	0	15	0	0	3	0	0	0	20

TEL: (510) 232 - 1271

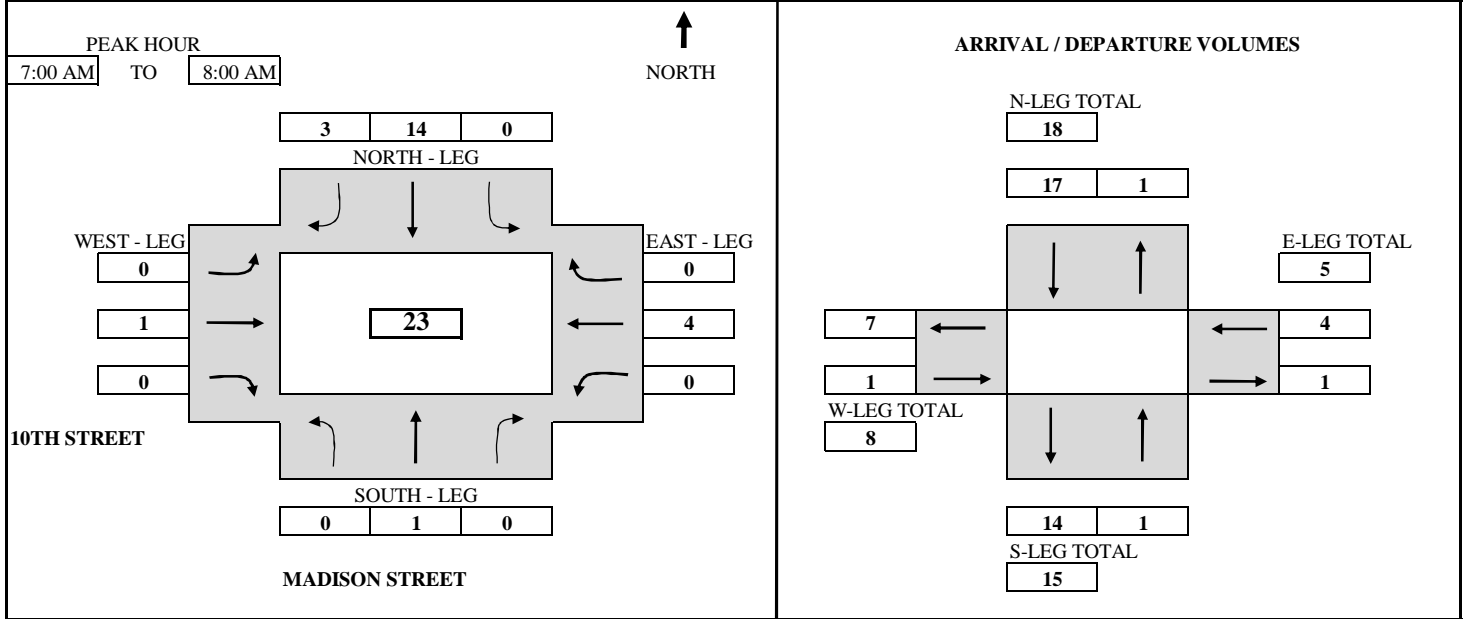
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 10TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-6AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM		1		0	5	3	0				3		12
7:15 AM	to 7:30 AM		1		0	9	3	1				3		17
7:30 AM	to 7:45 AM		1		0	14	3	1				3		22
7:45 AM	to 8:00 AM		1		0	14	3	1				4		23
8:00 AM	to 8:15 AM		1		0	15	3	1				5		25
8:15 AM	to 8:30 AM		1		1	16	3	1				5		27
8:30 AM	to 8:45 AM		1		3	18	3	1				5		31
8:45 AM	to 9:00 AM		1		5	21	3	1				5		36

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	1	0	0	5	3	0	0	0	0	3	0	12
7:15 AM	to 7:30 AM	0	0	0	0	4	0	0	1	0	0	0	0	5
7:30 AM	to 7:45 AM	0	0	0	0	5	0	0	0	0	0	0	0	5
7:45 AM	to 8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	to 8:15 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
8:15 AM	to 8:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	2
8:30 AM	to 8:45 AM	0	0	0	2	2	0	0	0	0	0	0	0	4
8:45 AM	to 9:00 AM	0	0	0	2	3	0	0	0	0	0	0	0	5

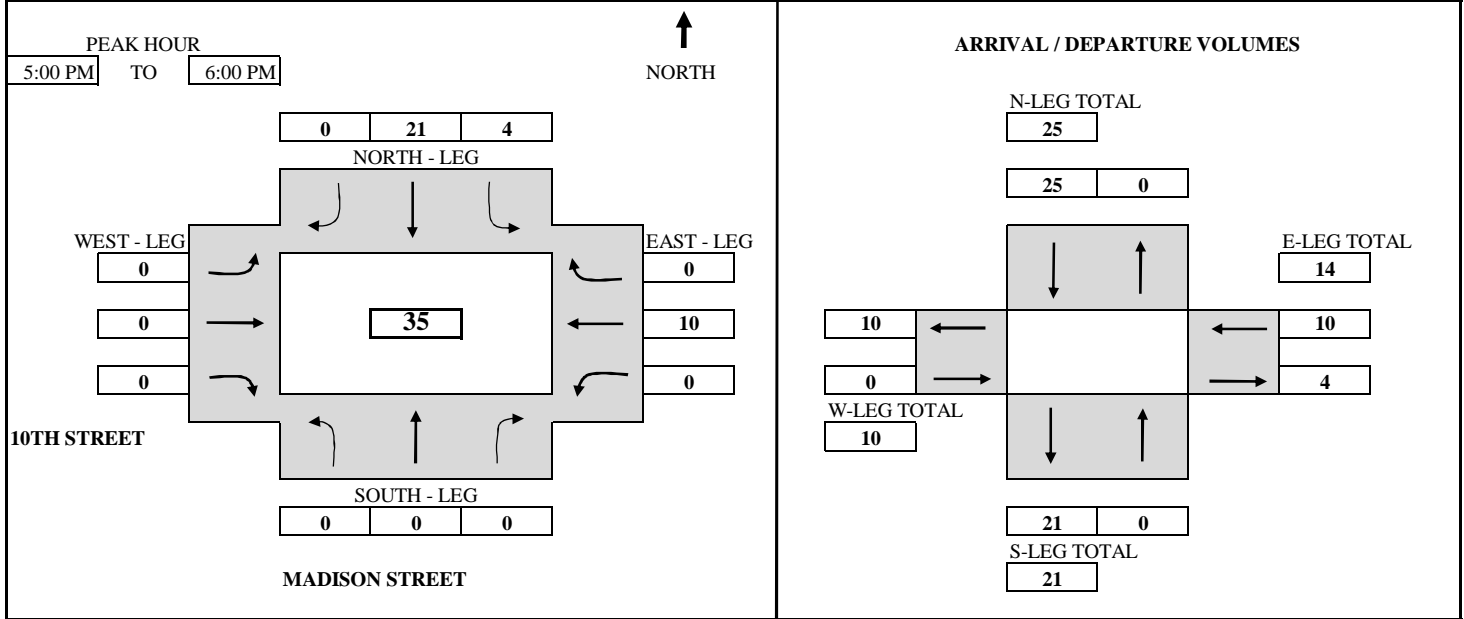
HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	1	0	0	14	3	0	1	0	0	4	0	23
7:15 AM	to 8:15 AM	0	0	0	0	10	0	0	1	0	0	2	0	13
7:30 AM	to 8:30 AM	0	0	0	1	7	0	0	0	0	0	2	0	10
7:45 AM	to 8:45 AM	0	0	0	3	4	0	0	0	0	0	2	0	9
8:00 AM	to 9:00 AM	0	0	0	5	7	0	0	0	0	0	1	0	13

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 10TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-6PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	1			1	7					1			10
4:15 PM	to 4:30 PM	2			1	10					2			15
4:30 PM	to 4:45 PM	2			2	11					4			19
4:45 PM	to 5:00 PM	2			2	12					5			21
5:00 PM	to 5:15 PM	2			3	19					6			30
5:15 PM	to 5:30 PM	2			4	20					8			34
5:30 PM	to 5:45 PM	2			5	30					13			50
5:45 PM	to 6:00 PM	2			6	33					15			56

TOTAL BY PERIOD														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	1	0	1	7	0	0	0	0	0	1	0	10
4:15 PM	to 4:30 PM	0	1	0	0	3	0	0	0	0	0	1	0	5
4:30 PM	to 4:45 PM	0	0	0	1	1	0	0	0	0	0	2	0	4
4:45 PM	to 5:00 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
5:00 PM	to 5:15 PM	0	0	0	1	7	0	0	0	0	0	1	0	9
5:15 PM	to 5:30 PM	0	0	0	1	1	0	0	0	0	0	2	0	4
5:30 PM	to 5:45 PM	0	0	0	1	10	0	0	0	0	0	5	0	16
5:45 PM	to 6:00 PM	0	0	0	1	3	0	0	0	0	0	2	0	6

HOURLY TOTALS														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	2	0	2	12	0	0	0	0	0	5	0	21
4:15 PM	to 5:15 PM	0	1	0	2	12	0	0	0	0	0	5	0	20
4:30 PM	to 5:30 PM	0	0	0	3	10	0	0	0	0	0	6	0	19
4:45 PM	to 5:45 PM	0	0	0	3	19	0	0	0	0	0	9	0	31
5:00 PM	to 6:00 PM	0	0	0	4	21	0	0	0	0	0	10	0	35

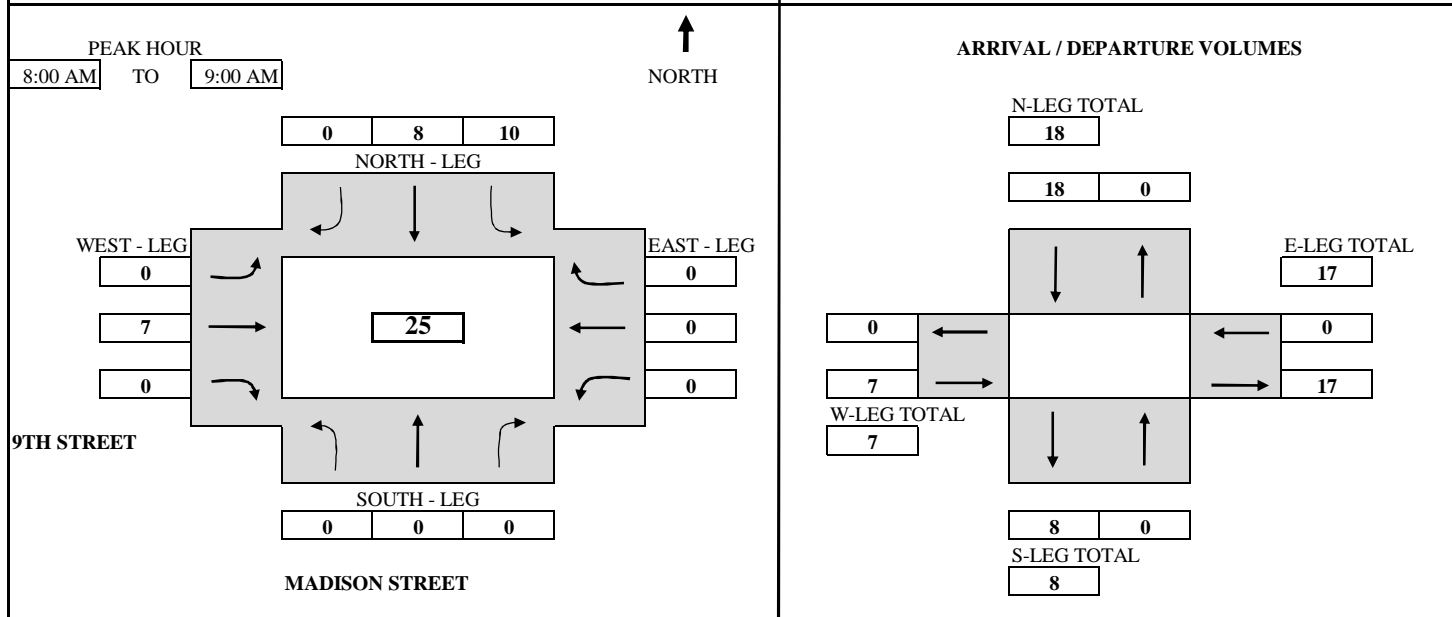
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-7AM



TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	

SURVEY DATA														
7:00 AM	to	7:15 AM				0	3	0	0	1	0			4
7:15 AM	to	7:30 AM				1	3	0	0	0	1			6
7:30 AM	to	7:45 AM				2	3	0	0	3	2			10
7:45 AM	to	8:00 AM				3	7	0	0	4	2			16
8:00 AM	to	8:15 AM				3	12	0	0	4	2			21
8:15 AM	to	8:30 AM				6	12	0	0	6	2			26
8:30 AM	to	8:45 AM				9	14	0	0	9	2			34
8:45 AM	to	9:00 AM				13	15	0	0	11	2			41

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	3	0	0	1	0	0	0	0	4
7:15 AM	to	7:30 AM	0	0	0	1	0	0	0	0	1	0	0	0	2
7:30 AM	to	7:45 AM	0	0	0	1	0	0	0	2	1	0	0	0	4
7:45 AM	to	8:00 AM	0	0	0	1	4	0	0	1	0	0	0	0	6
8:00 AM	to	8:15 AM	0	0	0	0	5	0	0	0	0	0	0	0	5
8:15 AM	to	8:30 AM	0	0	0	3	0	0	0	2	0	0	0	0	5
8:30 AM	to	8:45 AM	0	0	0	3	2	0	0	3	0	0	0	0	8
8:45 AM	to	9:00 AM	0	0	0	4	1	0	0	2	0	0	0	0	7

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	3	7	0	0	4	2	0	0	0	16
7:15 AM	to	8:15 AM	0	0	0	3	9	0	0	3	2	0	0	0	17
7:30 AM	to	8:30 AM	0	0	0	5	9	0	0	5	1	0	0	0	20
7:45 AM	to	8:45 AM	0	0	0	7	11	0	0	6	0	0	0	0	24
8:00 AM	to	9:00 AM	0	0	0	10	8	0	0	7	0	0	0	0	25

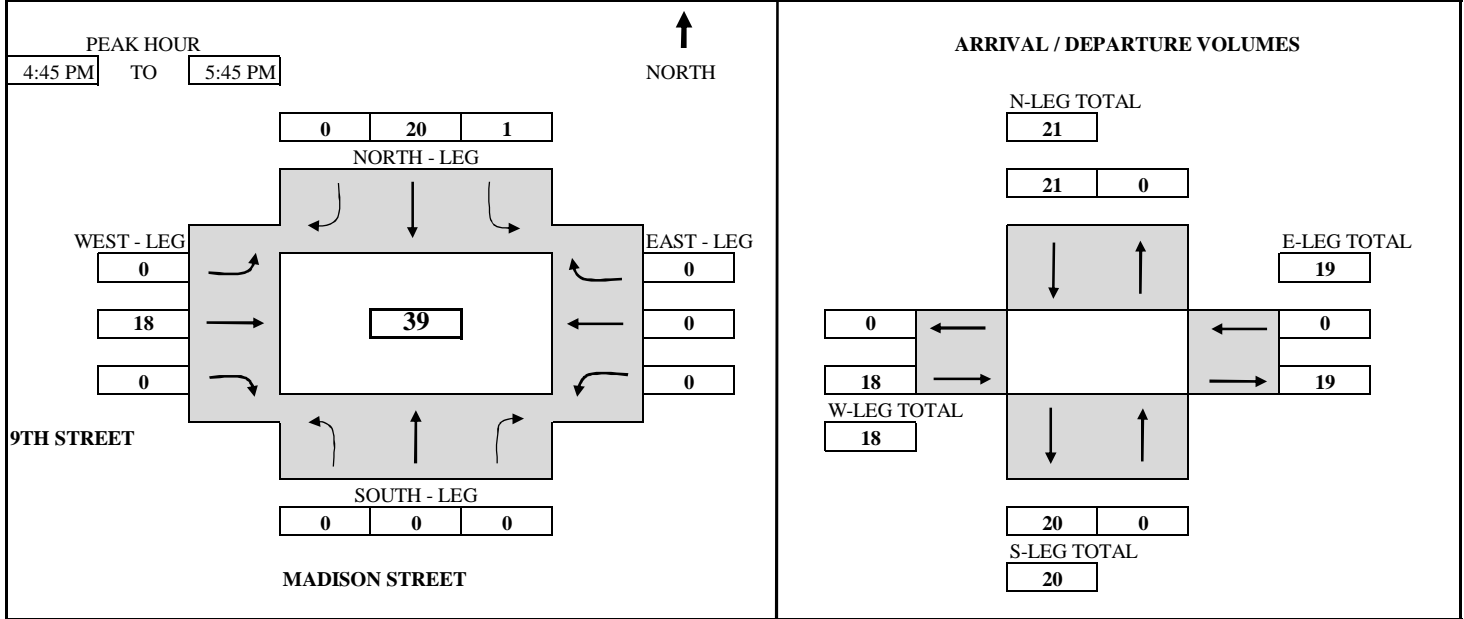
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-7PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA															
4:00 PM	to	4:15 PM				1	7	0	0	6	0	0	0	0	14
4:15 PM	to	4:30 PM				1	9	0	0	2	0	0	0	0	18
4:30 PM	to	4:45 PM				2	12	0	0	1	1	0	0	0	24
4:45 PM	to	5:00 PM				2	15	0	0	6	0	0	0	0	33
5:00 PM	to	5:15 PM				2	22	0	0	3	0	0	0	0	43
5:15 PM	to	5:30 PM				2	26	0	0	2	0	0	0	0	49
5:30 PM	to	5:45 PM				3	32	0	0	7	0	0	0	0	63
5:45 PM	to	6:00 PM				3	36	0	0	4	0	0	0	0	71

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	1	7	0	0	6	0	0	0	0	14
4:15 PM	to	4:30 PM	0	0	0	0	2	0	0	2	0	0	0	0	4
4:30 PM	to	4:45 PM	0	0	0	1	3	0	0	1	1	0	0	0	6
4:45 PM	to	5:00 PM	0	0	0	0	3	0	0	6	0	0	0	0	9
5:00 PM	to	5:15 PM	0	0	0	0	7	0	0	3	0	0	0	0	10
5:15 PM	to	5:30 PM	0	0	0	0	4	0	0	2	0	0	0	0	6
5:30 PM	to	5:45 PM	0	0	0	1	6	0	0	7	0	0	0	0	14
5:45 PM	to	6:00 PM	0	0	0	0	4	0	0	4	0	0	0	0	8

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	2	15	0	0	15	1	0	0	0	33
4:15 PM	to	5:15 PM	0	0	0	1	15	0	0	12	1	0	0	0	29
4:30 PM	to	5:30 PM	0	0	0	1	17	0	0	12	1	0	0	0	31
4:45 PM	to	5:45 PM	0	0	0	1	20	0	0	18	0	0	0	0	39
5:00 PM	to	6:00 PM	0	0	0	1	21	0	0	16	0	0	0	0	38

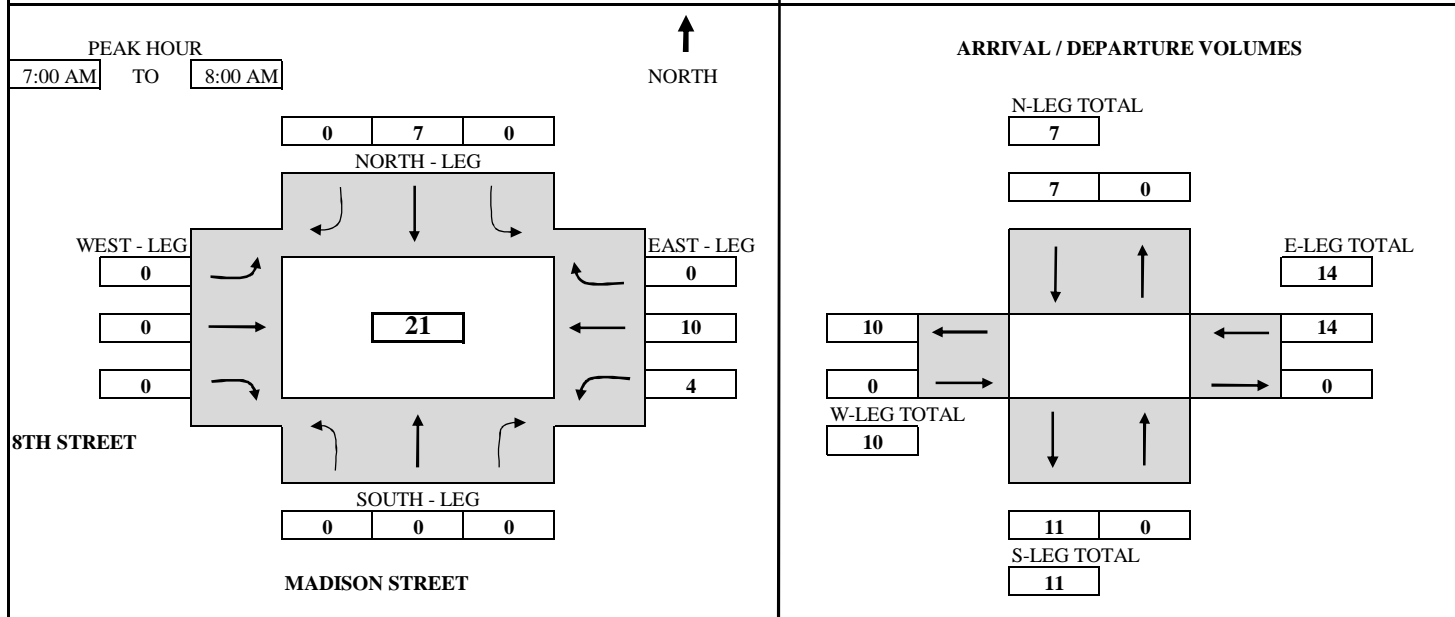
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-8AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM					2	0				2	4		8
7:15 AM	to 7:30 AM					6	0				4	8		18
7:30 AM	to 7:45 AM					7	0				4	10		21
7:45 AM	to 8:00 AM					7	0				4	10		21
8:00 AM	to 8:15 AM					8	0				4	10		22
8:15 AM	to 8:30 AM					9	0				5	11		25
8:30 AM	to 8:45 AM					12	0				5	12		29
8:45 AM	to 9:00 AM					14	1				6	13		34

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	0	0	0	2	0	0	0	0	2	4	0	8
7:15 AM	to 7:30 AM	0	0	0	0	4	0	0	0	0	2	4	0	10
7:30 AM	to 7:45 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
7:45 AM	to 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to 8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:15 AM	to 8:30 AM	0	0	0	0	1	0	0	0	0	1	1	0	3
8:30 AM	to 8:45 AM	0	0	0	0	3	0	0	0	0	0	1	0	4
8:45 AM	to 9:00 AM	0	0	0	0	2	1	0	0	0	1	1	0	5

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	0	0	0	7	0	0	0	0	4	10	0	21
7:15 AM	to 8:15 AM	0	0	0	0	6	0	0	0	0	2	6	0	14
7:30 AM	to 8:30 AM	0	0	0	0	3	0	0	0	0	1	3	0	7
7:45 AM	to 8:45 AM	0	0	0	0	5	0	0	0	0	1	2	0	8
8:00 AM	to 9:00 AM	0	0	0	0	7	1	0	0	0	2	3	0	13

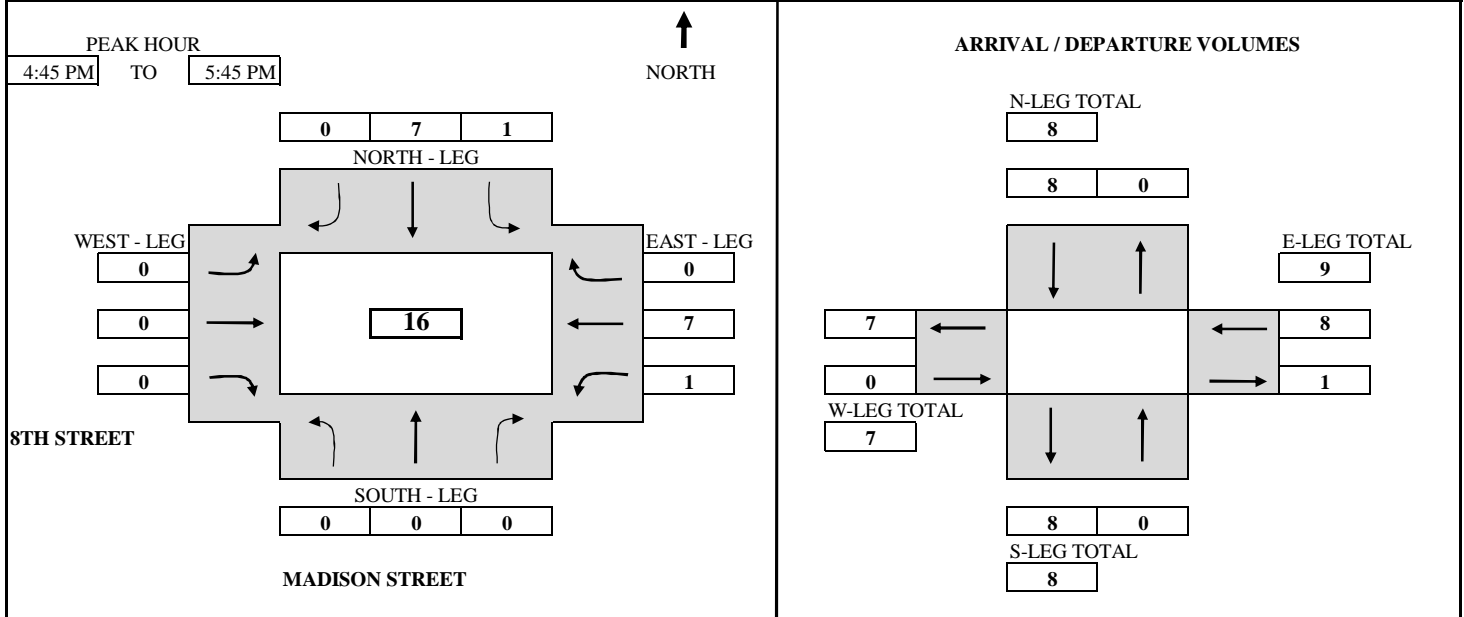
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-8PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM				0	1					0	1		2
4:15 PM	to 4:30 PM				0	1					0	2		3
4:30 PM	to 4:45 PM				0	1					0	2		3
4:45 PM	to 5:00 PM				0	6					0	4		10
5:00 PM	to 5:15 PM				1	6					1	7		15
5:15 PM	to 5:30 PM				1	7					1	9		18
5:30 PM	to 5:45 PM				1	8					1	9		19
5:45 PM	to 6:00 PM				1	8					1	9		19

TOTAL BY PERIOD														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
4:15 PM	to 4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
4:30 PM	to 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to 5:00 PM	0	0	0	0	5	0	0	0	0	0	2	0	7
5:00 PM	to 5:15 PM	0	0	0	1	0	0	0	0	0	1	3	0	5
5:15 PM	to 5:30 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
5:30 PM	to 5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	to 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	6	0	0	0	0	0	4	0	10
4:15 PM	to 5:15 PM	0	0	0	1	5	0	0	0	0	1	6	0	13
4:30 PM	to 5:30 PM	0	0	0	1	6	0	0	0	0	1	7	0	15
4:45 PM	to 5:45 PM	0	0	0	1	7	0	0	0	0	1	7	0	16
5:00 PM	to 6:00 PM	0	0	0	1	2	0	0	0	0	1	5	0	9

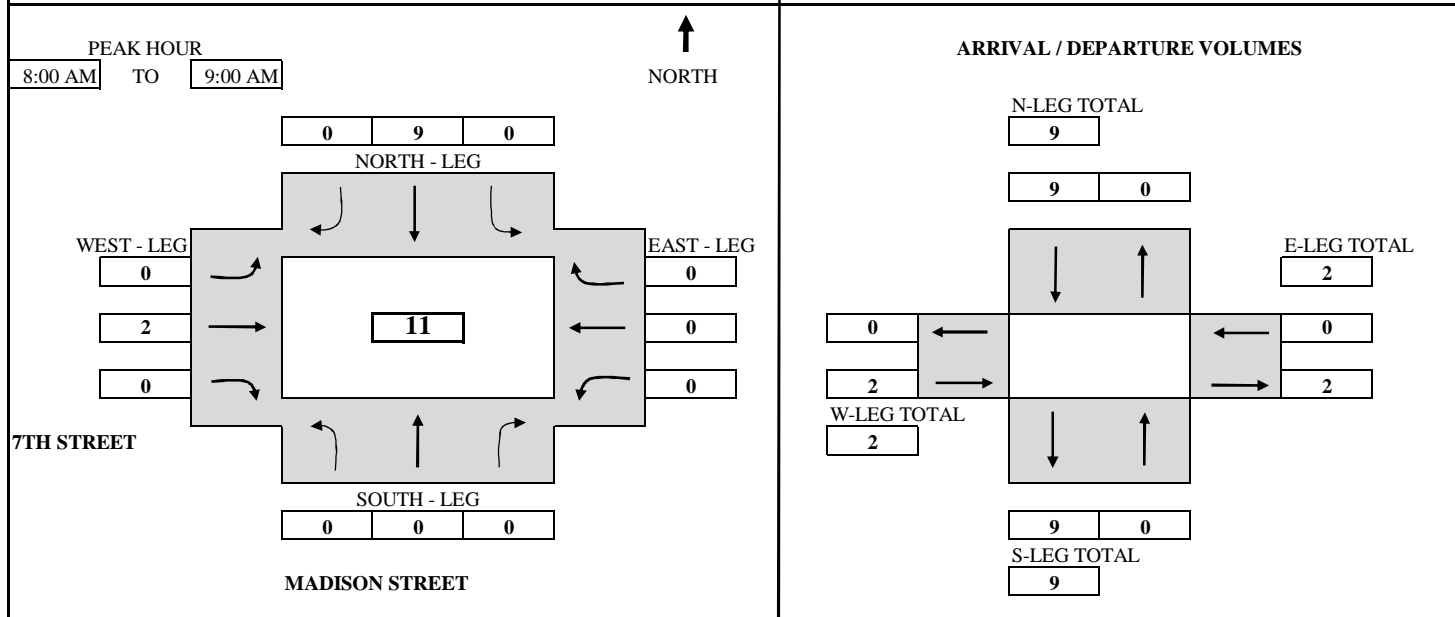
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 7TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-9AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM					4			0				4
7:15 AM	to	7:30 AM				7			1					8
7:30 AM	to	7:45 AM				8			1					9
7:45 AM	to	8:00 AM				8			1					9
8:00 AM	to	8:15 AM				9			1					10
8:15 AM	to	8:30 AM				11			1					12
8:30 AM	to	8:45 AM				14			2					16
8:45 AM	to	9:00 AM				17			3					20

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	4	0	0	0	0	0	0	4
7:15 AM	to	7:30 AM	0	0	0	0	3	0	0	1	0	0	0	4
7:30 AM	to	7:45 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	8:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	3	0	0	1	0	0	0	4
8:45 AM	to	9:00 AM	0	0	0	0	3	0	0	1	0	0	0	4

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	8	0	0	1	0	0	0	9
7:15 AM	to	8:15 AM	0	0	0	0	5	0	0	1	0	0	0	6
7:30 AM	to	8:30 AM	0	0	0	0	4	0	0	0	0	0	0	4
7:45 AM	to	8:45 AM	0	0	0	0	6	0	0	1	0	0	0	7
8:00 AM	to	9:00 AM	0	0	0	0	9	0	0	2	0	0	0	11

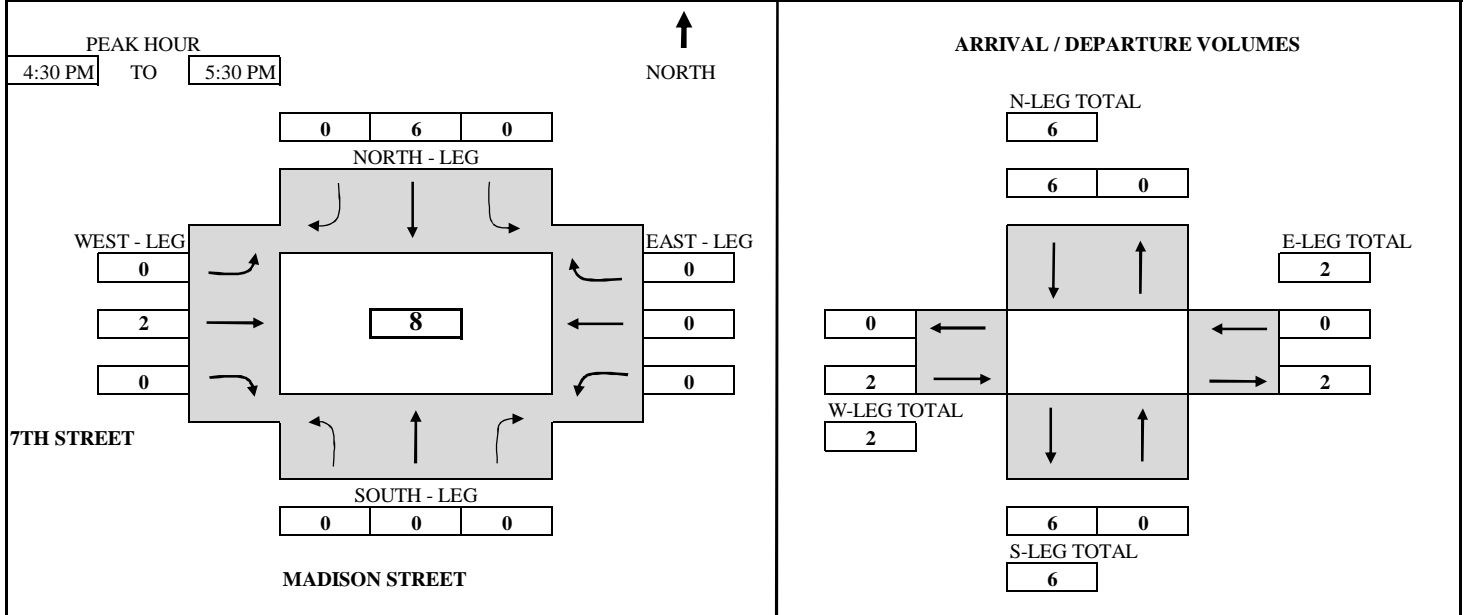
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH 7TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-9PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM					1			0					1
4:15 PM	to 4:30 PM					1			0					1
4:30 PM	to 4:45 PM					2			1					3
4:45 PM	to 5:00 PM					6			1					7
5:00 PM	to 5:15 PM					6			1					7
5:15 PM	to 5:30 PM					7			2					9
5:30 PM	to 5:45 PM					8			2					10
5:45 PM	to 6:00 PM					8			2					10

TOTAL BY PERIOD														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	to 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to 4:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	2
4:45 PM	to 5:00 PM	0	0	0	0	4	0	0	0	0	0	0	0	4
5:00 PM	to 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to 5:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	2
5:30 PM	to 5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	to 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	6	0	0	1	0	0	0	0	7
4:15 PM	to 5:15 PM	0	0	0	0	5	0	0	1	0	0	0	0	6
4:30 PM	to 5:30 PM	0	0	0	0	6	0	0	2	0	0	0	0	8
4:45 PM	to 5:45 PM	0	0	0	0	6	0	0	1	0	0	0	0	7
5:00 PM	to 6:00 PM	0	0	0	0	2	0	0	1	0	0	0	0	3

TEL: (510) 232 - 1271

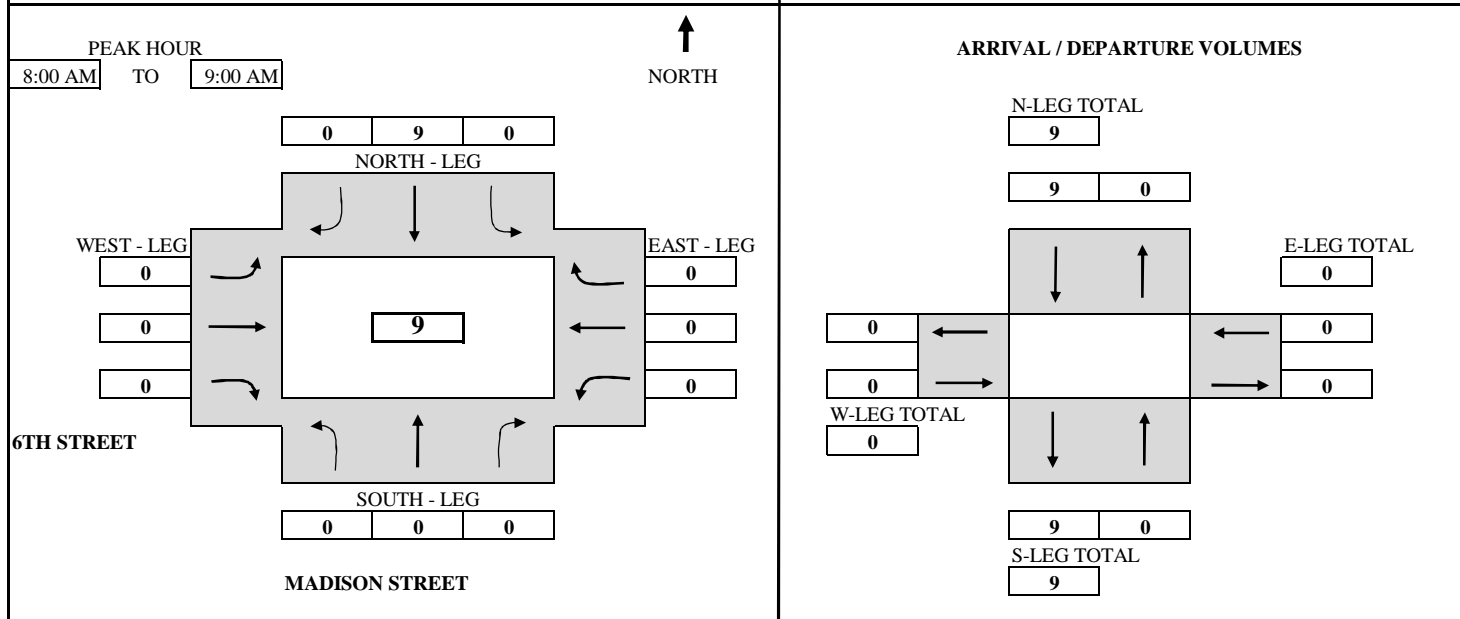
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: MADISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 6TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-10AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM						3						3
7:15 AM	to	7:30 AM						7						7
7:30 AM	to	7:45 AM						7						7
7:45 AM	to	8:00 AM						7						7
8:00 AM	to	8:15 AM						8						8
8:15 AM	to	8:30 AM						10						10
8:30 AM	to	8:45 AM						13						13
8:45 AM	to	9:00 AM						16						16

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	3	0	0	0	0	0	0	3
7:15 AM	to	7:30 AM	0	0	0	0	4	0	0	0	0	0	0	4
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	8:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	3	0	0	0	0	0	0	3
8:45 AM	to	9:00 AM	0	0	0	0	3	0	0	0	0	0	0	3

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	7	0	0	0	0	0	0	7
7:15 AM	to	8:15 AM	0	0	0	0	5	0	0	0	0	0	0	5
7:30 AM	to	8:30 AM	0	0	0	0	3	0	0	0	0	0	0	3
7:45 AM	to	8:45 AM	0	0	0	0	6	0	0	0	0	0	0	6
8:00 AM	to	9:00 AM	0	0	0	0	9	0	0	0	0	0	0	9

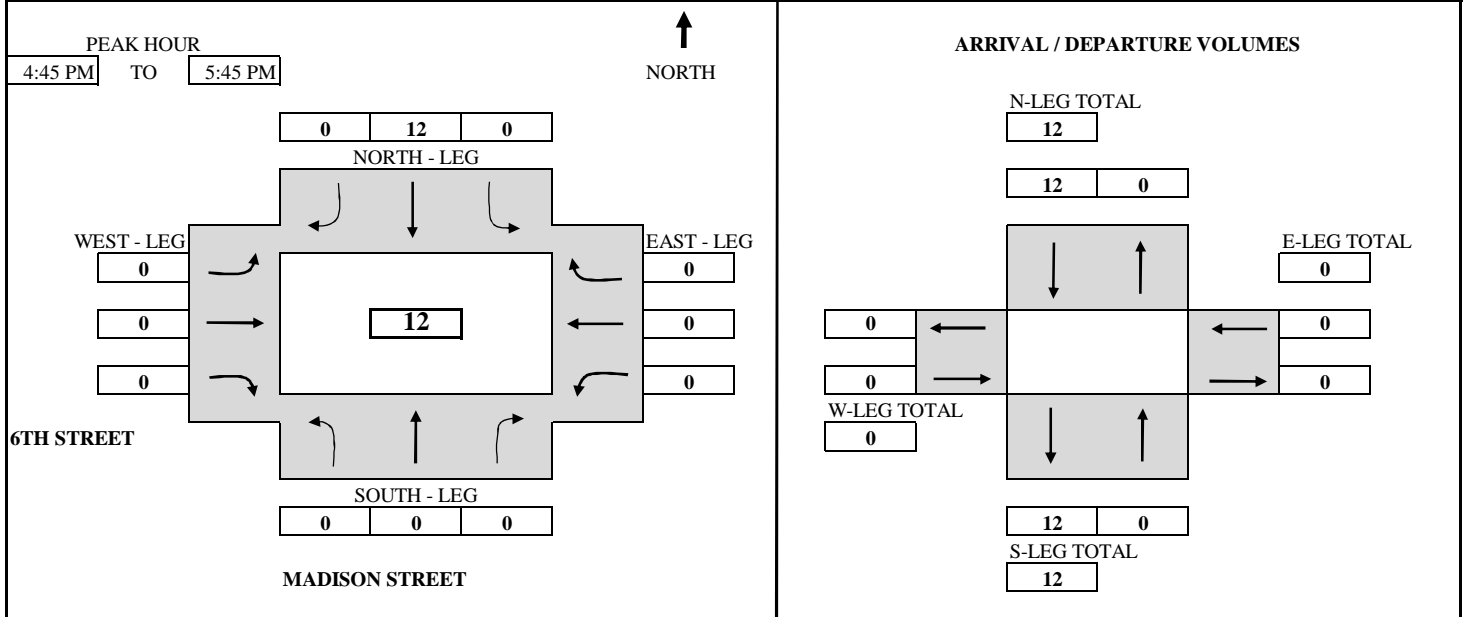
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-10PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM					1							1	
4:15 PM	to 4:30 PM					2							2	
4:30 PM	to 4:45 PM					3							3	
4:45 PM	to 5:00 PM					9							9	
5:00 PM	to 5:15 PM					10							10	
5:15 PM	to 5:30 PM					13							13	
5:30 PM	to 5:45 PM					15							15	
5:45 PM	to 6:00 PM					15							15	

TOTAL BY PERIOD														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	1	0	0	0	0	0	0	1	
4:15 PM	to 4:30 PM	0	0	0	0	1	0	0	0	0	0	0	1	
4:30 PM	to 4:45 PM	0	0	0	0	1	0	0	0	0	0	0	1	
4:45 PM	to 5:00 PM	0	0	0	0	6	0	0	0	0	0	0	6	
5:00 PM	to 5:15 PM	0	0	0	0	1	0	0	0	0	0	0	1	
5:15 PM	to 5:30 PM	0	0	0	0	3	0	0	0	0	0	0	3	
5:30 PM	to 5:45 PM	0	0	0	0	2	0	0	0	0	0	0	2	
5:45 PM	to 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	

HOURLY TOTALS														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	9	0	0	0	0	0	0	9	
4:15 PM	to 5:15 PM	0	0	0	0	9	0	0	0	0	0	0	9	
4:30 PM	to 5:30 PM	0	0	0	0	11	0	0	0	0	0	0	11	
4:45 PM	to 5:45 PM	0	0	0	0	12	0	0	0	0	0	0	12	
5:00 PM	to 6:00 PM	0	0	0	0	6	0	0	0	0	0	0	6	

TEL: (510) 232 - 1271

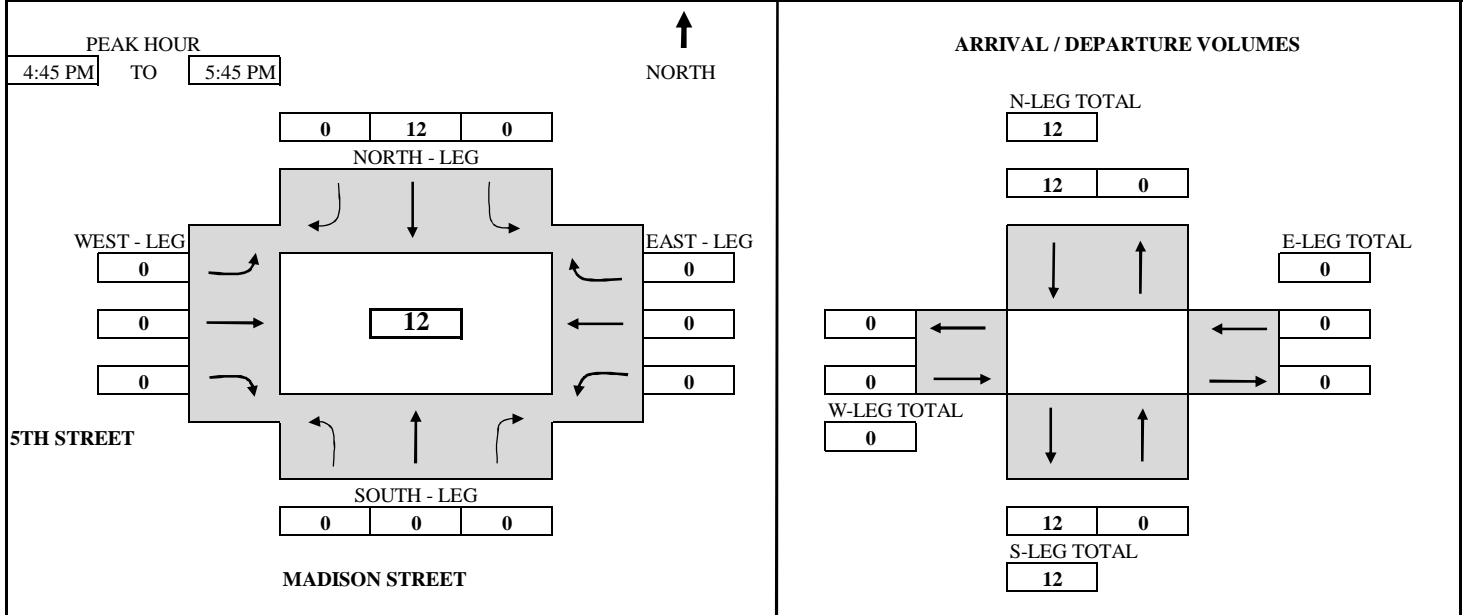
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-11PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM					1								1
4:15 PM	to 4:30 PM					1								1
4:30 PM	to 4:45 PM					3								3
4:45 PM	to 5:00 PM					7								7
5:00 PM	to 5:15 PM					10								10
5:15 PM	to 5:30 PM					12								12
5:30 PM	to 5:45 PM					15								15
5:45 PM	to 6:00 PM					15								15

TOTAL BY PERIOD														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	to 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to 4:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
4:45 PM	to 5:00 PM	0	0	0	0	4	0	0	0	0	0	0	0	4
5:00 PM	to 5:15 PM	0	0	0	0	3	0	0	0	0	0	0	0	3
5:15 PM	to 5:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
5:30 PM	to 5:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	3
5:45 PM	to 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	7	0	0	0	0	0	0	0	7
4:15 PM	to 5:15 PM	0	0	0	0	9	0	0	0	0	0	0	0	9
4:30 PM	to 5:30 PM	0	0	0	0	11	0	0	0	0	0	0	0	11
4:45 PM	to 5:45 PM	0	0	0	0	12	0	0	0	0	0	0	0	12
5:00 PM	to 6:00 PM	0	0	0	0	8	0	0	0	0	0	0	0	8

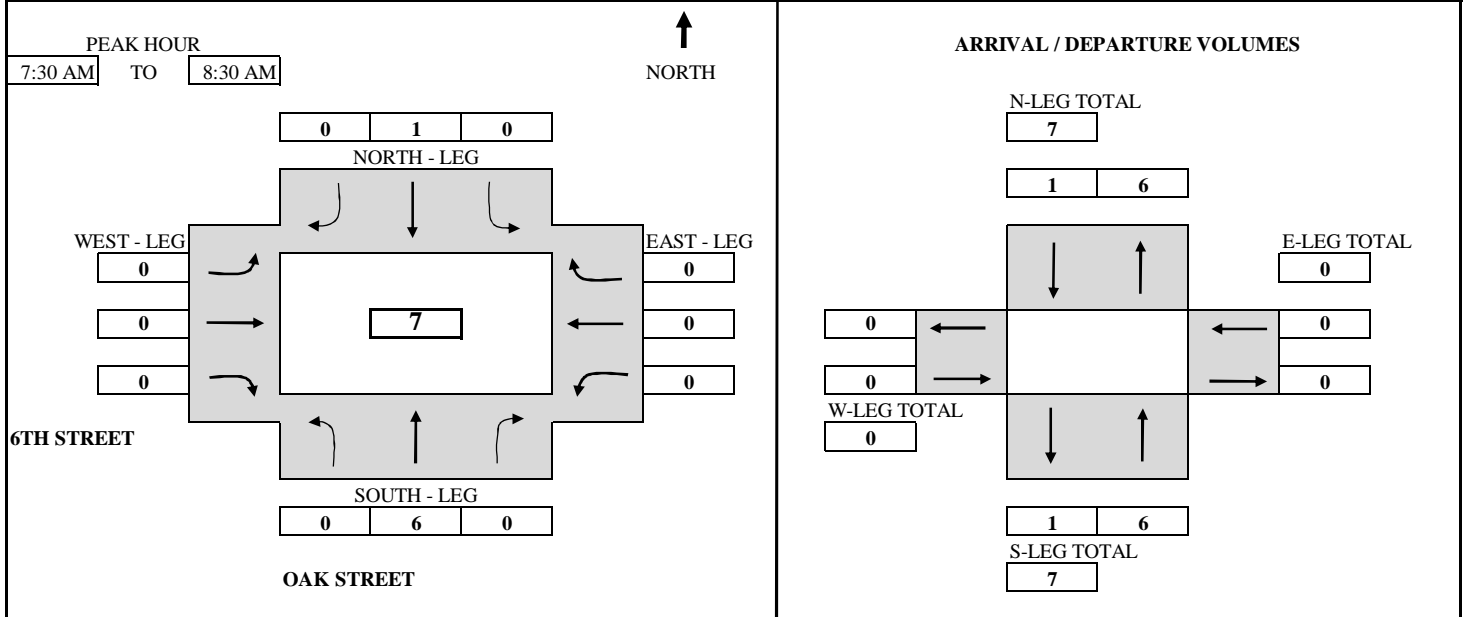
TEL: (510) 232 - 1271

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# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-12AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM		1			0								1
7:15 AM	to 7:30 AM		1			0								1
7:30 AM	to 7:45 AM		2			1								3
7:45 AM	to 8:00 AM		3			1								4
8:00 AM	to 8:15 AM		5			1								6
8:15 AM	to 8:30 AM		7			1								8
8:30 AM	to 8:45 AM		7			2								9
8:45 AM	to 9:00 AM		8			2								10

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	to 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to 7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	2
7:45 AM	to 8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	to 8:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	to 8:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	to 8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:45 AM	to 9:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	3	0	0	1	0	0	0	0	0	0	0	4
7:15 AM	to 8:15 AM	0	4	0	0	1	0	0	0	0	0	0	0	5
7:30 AM	to 8:30 AM	0	6	0	0	1	0	0	0	0	0	0	0	7
7:45 AM	to 8:45 AM	0	5	0	0	1	0	0	0	0	0	0	0	6
8:00 AM	to 9:00 AM	0	5	0	0	1	0	0	0	0	0	0	0	6

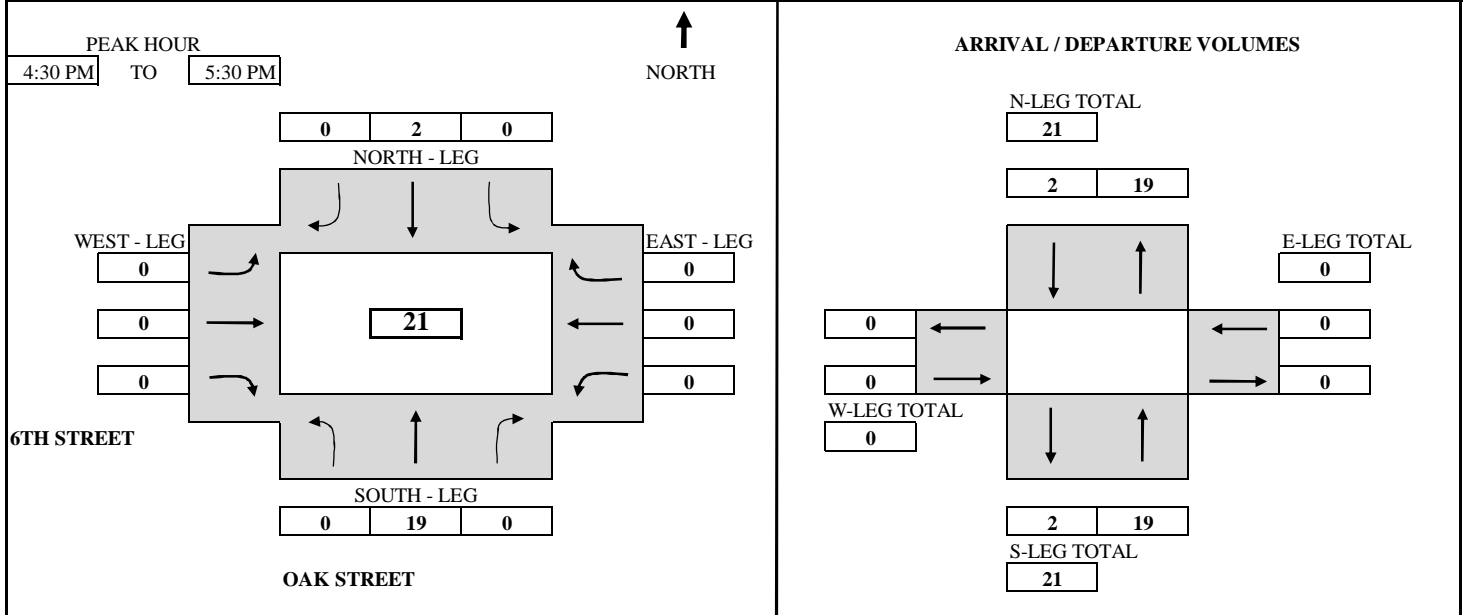
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-12PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM		1			0								1
4:15 PM	to 4:30 PM		3			0								3
4:30 PM	to 4:45 PM		6			0								6
4:45 PM	to 5:00 PM		11			1								12
5:00 PM	to 5:15 PM		16			1								17
5:15 PM	to 5:30 PM		22			2								24
5:30 PM	to 5:45 PM		24			2								26
5:45 PM	to 6:00 PM		27			4								31

TOTAL BY PERIOD														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	to 4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	to 4:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	to 5:00 PM	0	5	0	0	1	0	0	0	0	0	0	0	6
5:00 PM	to 5:15 PM	0	5	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	to 5:30 PM	0	6	0	0	1	0	0	0	0	0	0	0	7
5:30 PM	to 5:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	to 6:00 PM	0	3	0	0	2	0	0	0	0	0	0	0	5

HOURLY TOTALS														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	11	0	0	1	0	0	0	0	0	0	0	12
4:15 PM	to 5:15 PM	0	15	0	0	1	0	0	0	0	0	0	0	16
4:30 PM	to 5:30 PM	0	19	0	0	2	0	0	0	0	0	0	0	21
4:45 PM	to 5:45 PM	0	18	0	0	2	0	0	0	0	0	0	0	20
5:00 PM	to 6:00 PM	0	16	0	0	3	0	0	0	0	0	0	0	19

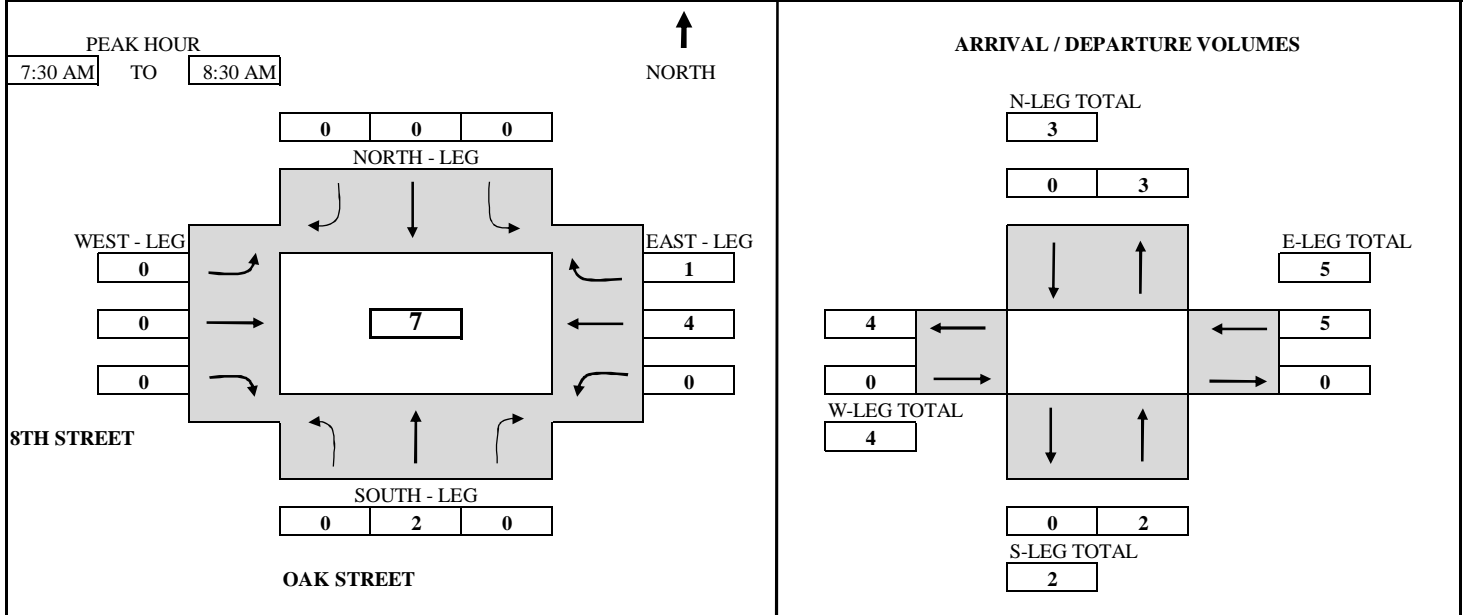
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-13AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
7:00 AM	to	7:15 AM	0								1	0	1
7:15 AM	to	7:30 AM	1								2	0	3
7:30 AM	to	7:45 AM	1								4	1	6
7:45 AM	to	8:00 AM	1								4	1	6
8:00 AM	to	8:15 AM	1								4	1	6
8:15 AM	to	8:30 AM	3								6	1	10
8:30 AM	to	8:45 AM	4								6	1	11
8:45 AM	to	9:00 AM	4								6	1	11

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	to	7:30 AM	0	1	0	0	0	0	0	0	0	1	0	2
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	2	1	3
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	2	0	0	0	0	0	0	0	2	0	4
8:30 AM	to	8:45 AM	0	1	0	0	0	0	0	0	0	0	0	1
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	1	0	0	0	0	0	0	0	4	1	6
7:15 AM	to	8:15 AM	0	1	0	0	0	0	0	0	0	3	1	5
7:30 AM	to	8:30 AM	0	2	0	0	0	0	0	0	0	4	1	7
7:45 AM	to	8:45 AM	0	3	0	0	0	0	0	0	0	2	0	5
8:00 AM	to	9:00 AM	0	3	0	0	0	0	0	0	0	2	0	5

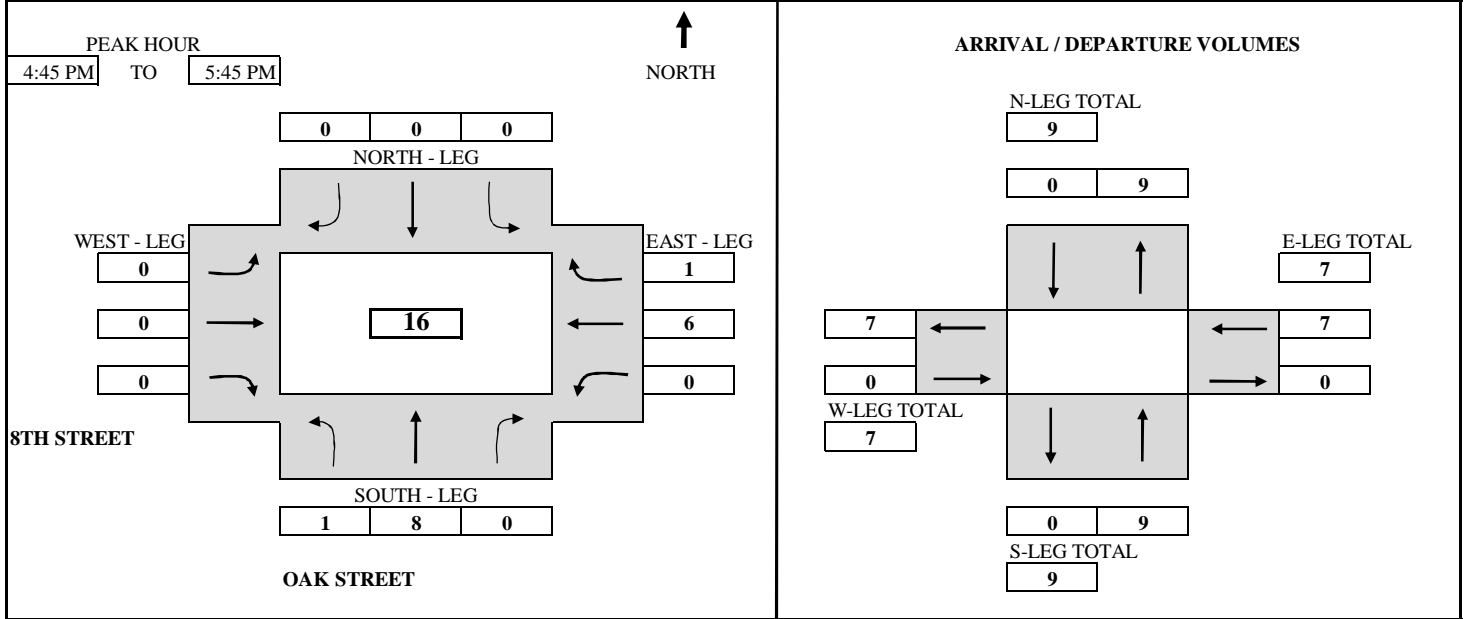
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-13PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
4:00 PM	to	4:15 PM	0	1	0	0	0	0	0	0	1	0	2
4:15 PM	to	4:30 PM	0	3	0	0	0	0	0	0	1	0	4
4:30 PM	to	4:45 PM	0	3	0	0	0	0	0	0	1	1	5
4:45 PM	to	5:00 PM	0	5	0	0	0	0	0	3	1	9	
5:00 PM	to	5:15 PM	1	7	0	0	0	0	0	7	1	16	
5:15 PM	to	5:30 PM	1	9	0	0	0	0	0	7	1	18	
5:30 PM	to	5:45 PM	1	11	0	0	0	0	0	7	2	21	
5:45 PM	to	6:00 PM	1	12	0	0	0	0	0	7	2	22	

TOTAL BY PERIOD													
4:00 PM	to	4:15 PM	0	1	0	0	0	0	0	0	1	0	2
4:15 PM	to	4:30 PM	0	2	0	0	0	0	0	0	0	0	2
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	1	1
4:45 PM	to	5:00 PM	0	2	0	0	0	0	0	0	2	0	4
5:00 PM	to	5:15 PM	1	2	0	0	0	0	0	0	4	0	7
5:15 PM	to	5:30 PM	0	2	0	0	0	0	0	0	0	0	2
5:30 PM	to	5:45 PM	0	2	0	0	0	0	0	0	0	1	3
5:45 PM	to	6:00 PM	0	1	0	0	0	0	0	0	0	0	1

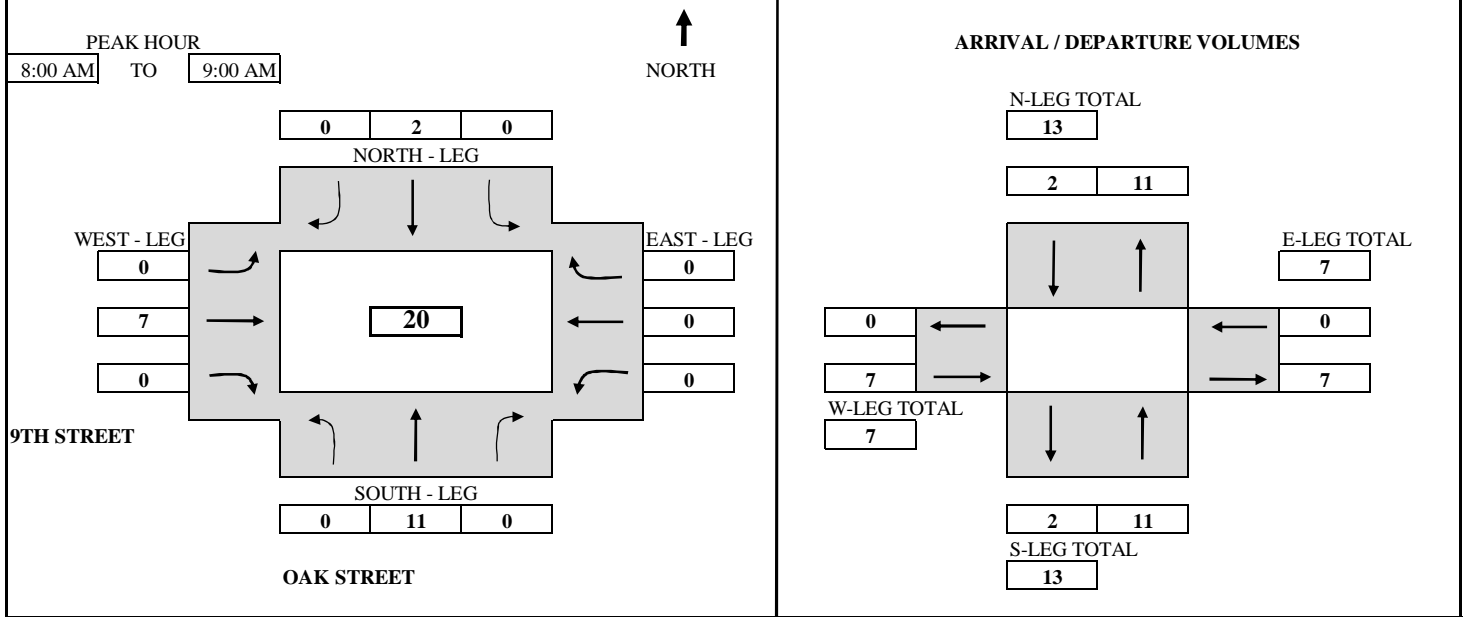
HOURLY TOTALS													
4:00 PM	to	5:00 PM	0	5	0	0	0	0	0	0	3	1	9
4:15 PM	to	5:15 PM	1	6	0	0	0	0	0	0	6	1	14
4:30 PM	to	5:30 PM	1	6	0	0	0	0	0	0	6	1	14
4:45 PM	to	5:45 PM	1	8	0	0	0	0	0	0	6	1	16
5:00 PM	to	6:00 PM	1	7	0	0	0	0	0	0	4	1	13



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-14AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	2			0			1					3
7:15 AM	to	7:30 AM	4			0			2					6
7:30 AM	to	7:45 AM	6			0			3					9
7:45 AM	to	8:00 AM	7			1			4					12
8:00 AM	to	8:15 AM	9			1			4					14
8:15 AM	to	8:30 AM	13			1			7					21
8:30 AM	to	8:45 AM	16			3			9					28
8:45 AM	to	9:00 AM	18			3			11					32

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	2	0	0	0	0	0	1	0	0	0	0	3
7:15 AM	to	7:30 AM	0	2	0	0	0	0	0	1	0	0	0	0	3
7:30 AM	to	7:45 AM	0	2	0	0	0	0	0	1	0	0	0	0	3
7:45 AM	to	8:00 AM	0	1	0	0	1	0	0	1	0	0	0	0	3
8:00 AM	to	8:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	to	8:30 AM	0	4	0	0	0	0	0	3	0	0	0	0	7
8:30 AM	to	8:45 AM	0	3	0	0	2	0	0	2	0	0	0	0	7
8:45 AM	to	9:00 AM	0	2	0	0	0	0	0	2	0	0	0	0	4

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	7	0	0	1	0	0	4	0	0	0	0	12
7:15 AM	to	8:15 AM	0	7	0	0	1	0	0	3	0	0	0	0	11
7:30 AM	to	8:30 AM	0	9	0	0	1	0	0	5	0	0	0	0	15
7:45 AM	to	8:45 AM	0	10	0	0	3	0	0	6	0	0	0	0	19
8:00 AM	to	9:00 AM	0	11	0	0	2	0	0	7	0	0	0	0	20

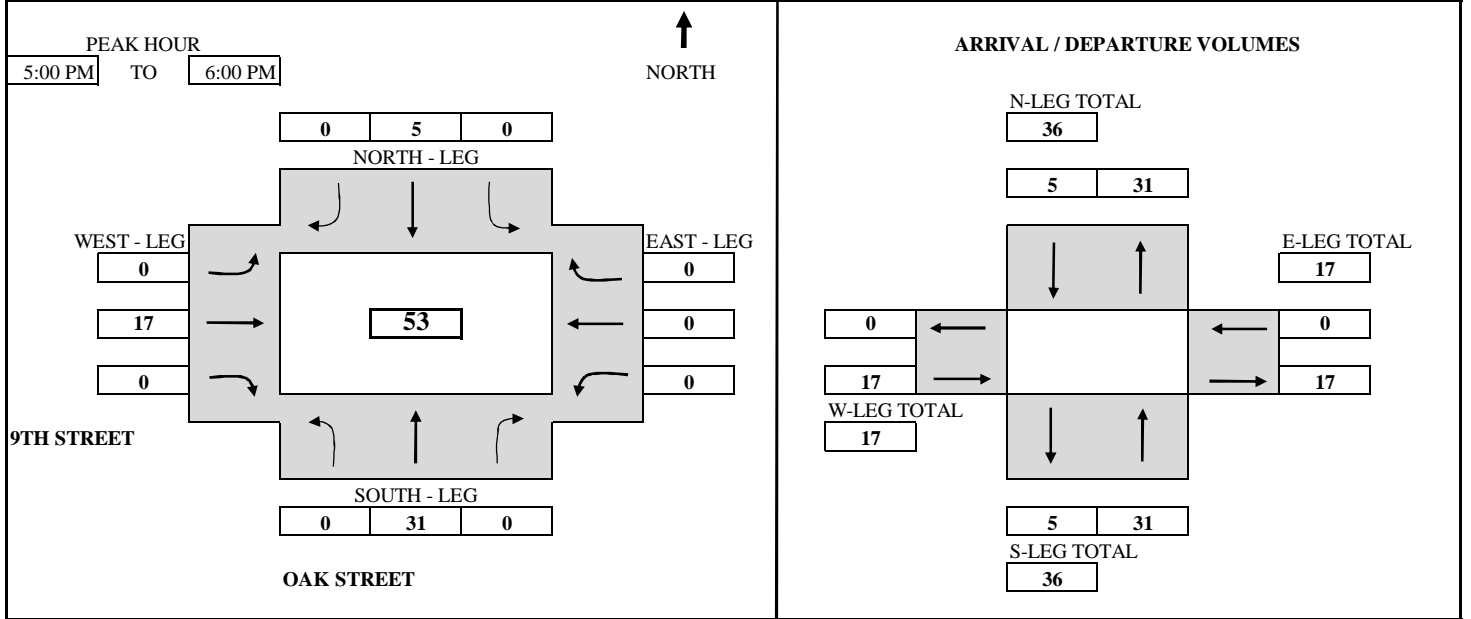
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-14PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	3			0			5	0				8
4:15 PM	to	4:30 PM	7			0			5	0				12
4:30 PM	to	4:45 PM	8			0			8	0				16
4:45 PM	to	5:00 PM	17			0			12	1				30
5:00 PM	to	5:15 PM	23			3			16	1				43
5:15 PM	to	5:30 PM	35			3			18	1				57
5:30 PM	to	5:45 PM	38			5			24	1				68
5:45 PM	to	6:00 PM	48			5			29	1				83

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	3	0	0	0	0	0	5	0	0	0	0	8
4:15 PM	to	4:30 PM	0	4	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	to	4:45 PM	0	1	0	0	0	0	0	3	0	0	0	0	4
4:45 PM	to	5:00 PM	0	9	0	0	0	0	0	4	1	0	0	0	14
5:00 PM	to	5:15 PM	0	6	0	0	3	0	0	4	0	0	0	0	13
5:15 PM	to	5:30 PM	0	12	0	0	0	0	0	2	0	0	0	0	14
5:30 PM	to	5:45 PM	0	3	0	0	2	0	0	6	0	0	0	0	11
5:45 PM	to	6:00 PM	0	10	0	0	0	0	0	5	0	0	0	0	15

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	17	0	0	0	0	0	12	1	0	0	0	30
4:15 PM	to	5:15 PM	0	20	0	0	3	0	0	11	1	0	0	0	35
4:30 PM	to	5:30 PM	0	28	0	0	3	0	0	13	1	0	0	0	45
4:45 PM	to	5:45 PM	0	30	0	0	5	0	0	16	1	0	0	0	52
5:00 PM	to	6:00 PM	0	31	0	0	5	0	0	17	0	0	0	0	53

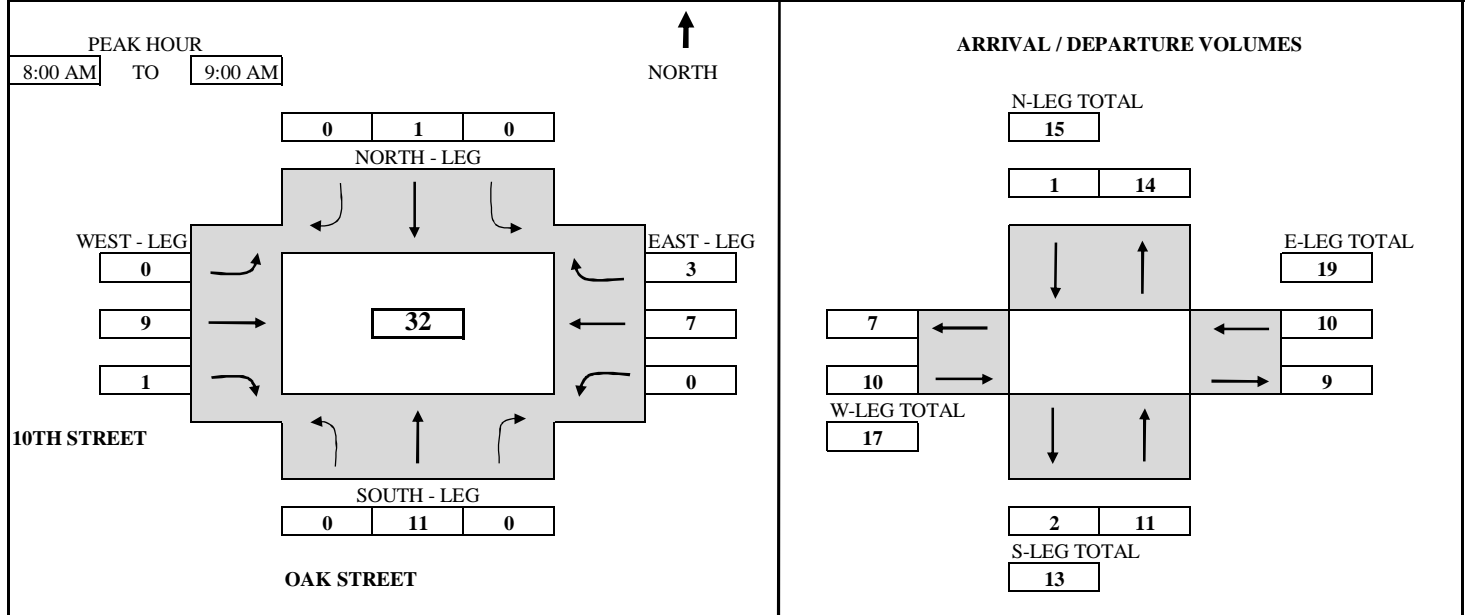
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 10TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-15AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
7:00 AM	to	7:15 AM	1	0	0	1	0	0	0	3	0		5
7:15 AM	to	7:30 AM	4	0	0	1	0	0	0	4	3		12
7:30 AM	to	7:45 AM	6	1	0	1	0	1	0	4	3		16
7:45 AM	to	8:00 AM	6	1	0	1	0	2	0	8	4		22
8:00 AM	to	8:15 AM	9	1	0	1	0	3	0	11	6		31
8:15 AM	to	8:30 AM	12	1	0	1	0	6	1	11	6		38
8:30 AM	to	8:45 AM	16	1	0	2	0	7	1	12	7		46
8:45 AM	to	9:00 AM	17	1	0	2	0	11	1	15	7		54

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	1	0	0	1	0	0	0	0	3	0	5
7:15 AM	to	7:30 AM	0	3	0	0	0	0	0	0	1	3		7
7:30 AM	to	7:45 AM	0	2	1	0	0	0	0	0	0	0		4
7:45 AM	to	8:00 AM	0	0	0	0	0	0	1	0	4	1		6
8:00 AM	to	8:15 AM	0	3	0	0	0	0	1	0	3	2		9
8:15 AM	to	8:30 AM	0	3	0	0	0	0	3	1	0	0		7
8:30 AM	to	8:45 AM	0	4	0	0	1	0	0	1	0	1	1	8
8:45 AM	to	9:00 AM	0	1	0	0	0	0	4	0	0	3	0	8

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	6	1	0	1	0	0	2	0	0	8	4	22
7:15 AM	to	8:15 AM	0	8	1	0	0	0	0	3	0	0	8	6	26
7:30 AM	to	8:30 AM	0	8	1	0	0	0	0	6	1	0	7	3	26
7:45 AM	to	8:45 AM	0	10	0	0	1	0	0	6	1	0	8	4	30
8:00 AM	to	9:00 AM	0	11	0	0	1	0	0	9	1	0	7	3	32

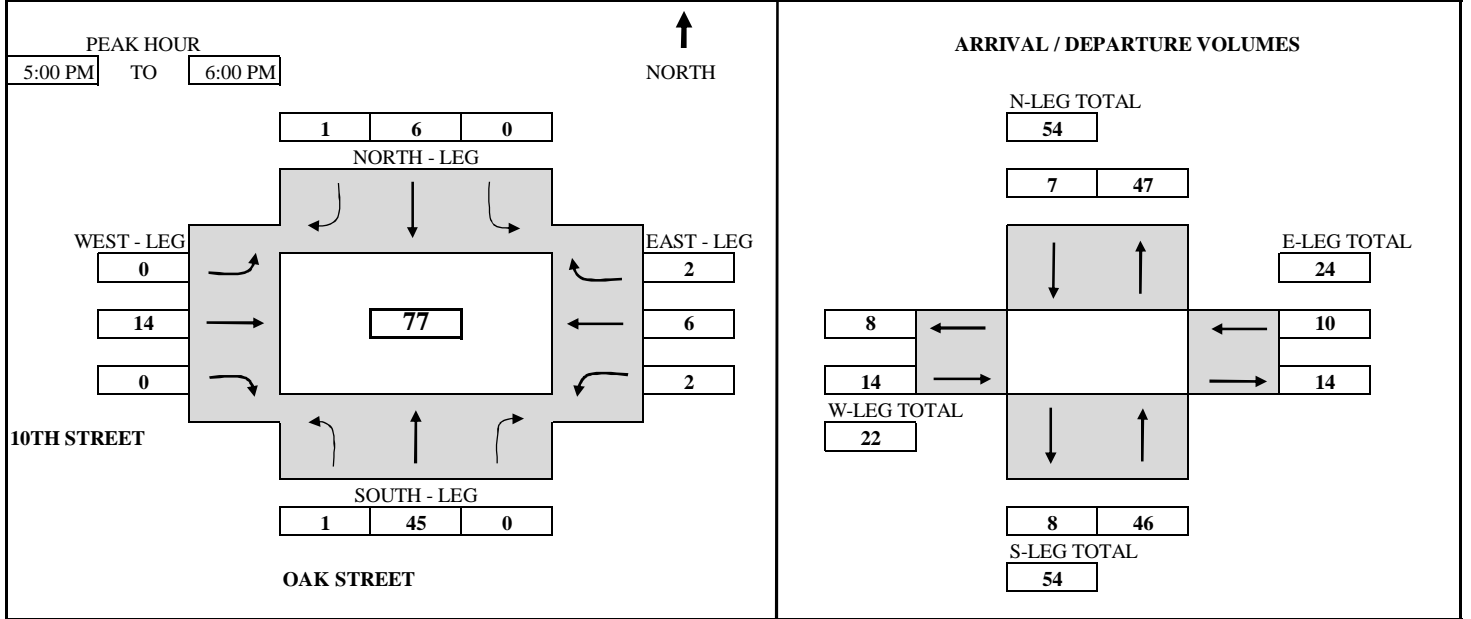
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 10TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-15PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
4:00 PM	to	4:15 PM	0	5	0	1	0	4	0	2	1	13	
4:15 PM	to	4:30 PM	0	10	0	1	0	6	0	6	2	25	
4:30 PM	to	4:45 PM	0	13	2	2	0	7	0	8	4	36	
4:45 PM	to	5:00 PM	0	20	3	3	0	13	0	10	7	56	
5:00 PM	to	5:15 PM	0	26	3	7	0	14	0	12	9	71	
5:15 PM	to	5:30 PM	0	46	3	8	0	21	1	12	9	100	
5:30 PM	to	5:45 PM	0	49	3	8	0	24	1	15	9	109	
5:45 PM	to	6:00 PM	1	65	3	9	1	27	2	16	9	133	

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	5	0	0	1	0	0	4	0	0	2	1	13
4:15 PM	to	4:30 PM	0	5	0	0	0	0	0	2	0	0	4	1	12
4:30 PM	to	4:45 PM	0	3	2	0	1	0	0	1	0	0	2	2	11
4:45 PM	to	5:00 PM	0	7	1	0	1	0	0	6	0	0	2	3	20
5:00 PM	to	5:15 PM	0	6	0	0	4	0	0	1	0	0	2	2	15
5:15 PM	to	5:30 PM	0	20	0	0	1	0	0	7	0	1	0	0	29
5:30 PM	to	5:45 PM	0	3	0	0	0	0	0	3	0	0	3	0	9
5:45 PM	to	6:00 PM	1	16	0	0	1	1	0	3	0	1	1	0	24

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	20	3	0	3	0	0	13	0	0	10	7	56
4:15 PM	to	5:15 PM	0	21	3	0	6	0	0	10	0	0	10	8	58
4:30 PM	to	5:30 PM	0	36	3	0	7	0	0	15	0	1	6	7	75
4:45 PM	to	5:45 PM	0	36	1	0	6	0	0	17	0	1	7	5	73
5:00 PM	to	6:00 PM	1	45	0	0	6	1	0	14	0	2	6	2	77

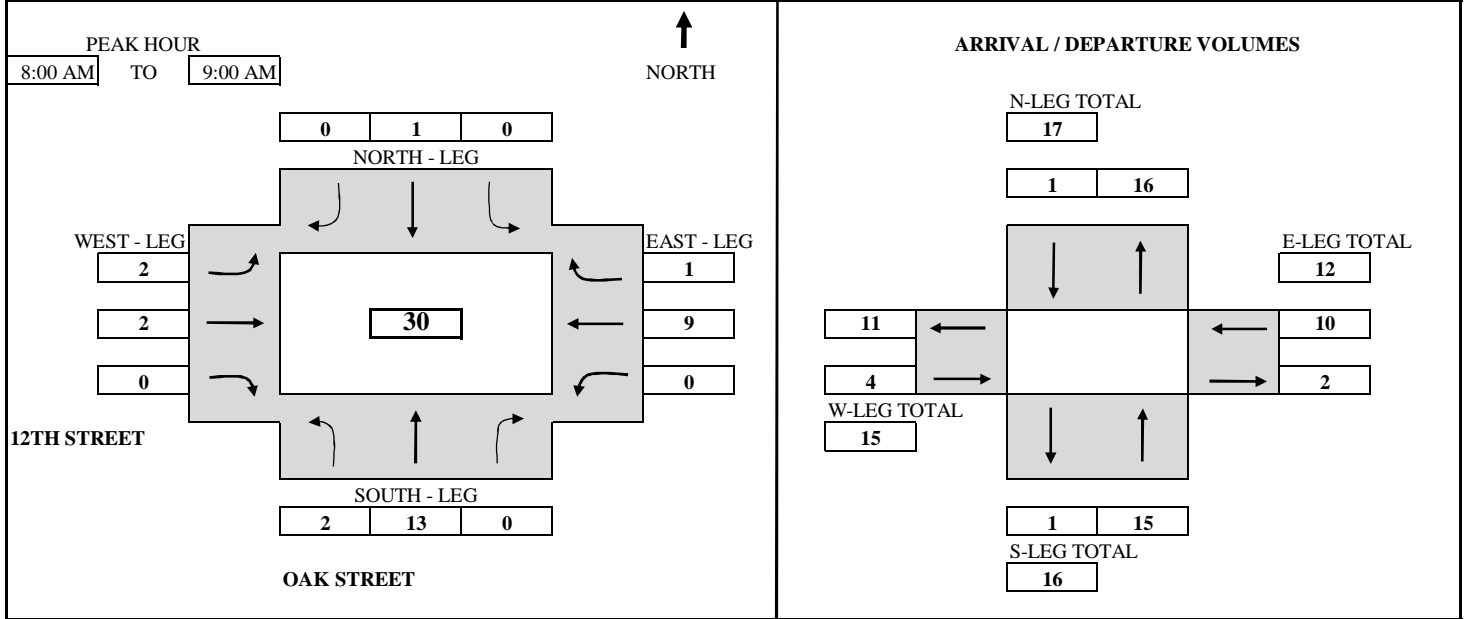
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-16AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
7:00 AM	to	7:15 AM	0	1	0	0	0	0	0	0	3	0	4
7:15 AM	to	7:30 AM	1	3	0	0	0	1	0	4	0	9	
7:30 AM	to	7:45 AM	1	5	0	0	1	0	5	0	12		
7:45 AM	to	8:00 AM	1	7	0	0	1	1	8	0	18		
8:00 AM	to	8:15 AM	1	9	1	0	2	1	11	1	26		
8:15 AM	to	8:30 AM	2	12	1	0	2	1	14	1	33		
8:30 AM	to	8:45 AM	2	15	1	2	3	1	14	1	39		
8:45 AM	to	9:00 AM	3	20	1	2	3	1	17	1	48		

TOTAL BY PERIOD													
7:00 AM	to	7:15 AM	0	1	0	0	0	0	0	0	3	0	4
7:15 AM	to	7:30 AM	1	2	0	0	0	1	0	1	0	5	
7:30 AM	to	7:45 AM	0	2	0	0	0	0	1	0	3		
7:45 AM	to	8:00 AM	0	2	0	0	0	1	3	0	6		
8:00 AM	to	8:15 AM	0	2	0	0	1	0	3	1	8		
8:15 AM	to	8:30 AM	1	3	0	0	0	0	3	0	7		
8:30 AM	to	8:45 AM	0	3	0	0	0	2	1	0	6		
8:45 AM	to	9:00 AM	1	5	0	0	0	0	3	0	9		

HOURLY TOTALS													
7:00 AM	to	8:00 AM	1	7	0	0	0	0	1	1	8	0	18
7:15 AM	to	8:15 AM	1	8	0	0	1	0	2	1	8	1	22
7:30 AM	to	8:30 AM	1	9	0	0	1	0	1	1	10	1	24
7:45 AM	to	8:45 AM	1	10	0	0	1	0	2	2	9	1	27
8:00 AM	to	9:00 AM	2	13	0	0	1	0	2	2	9	1	30

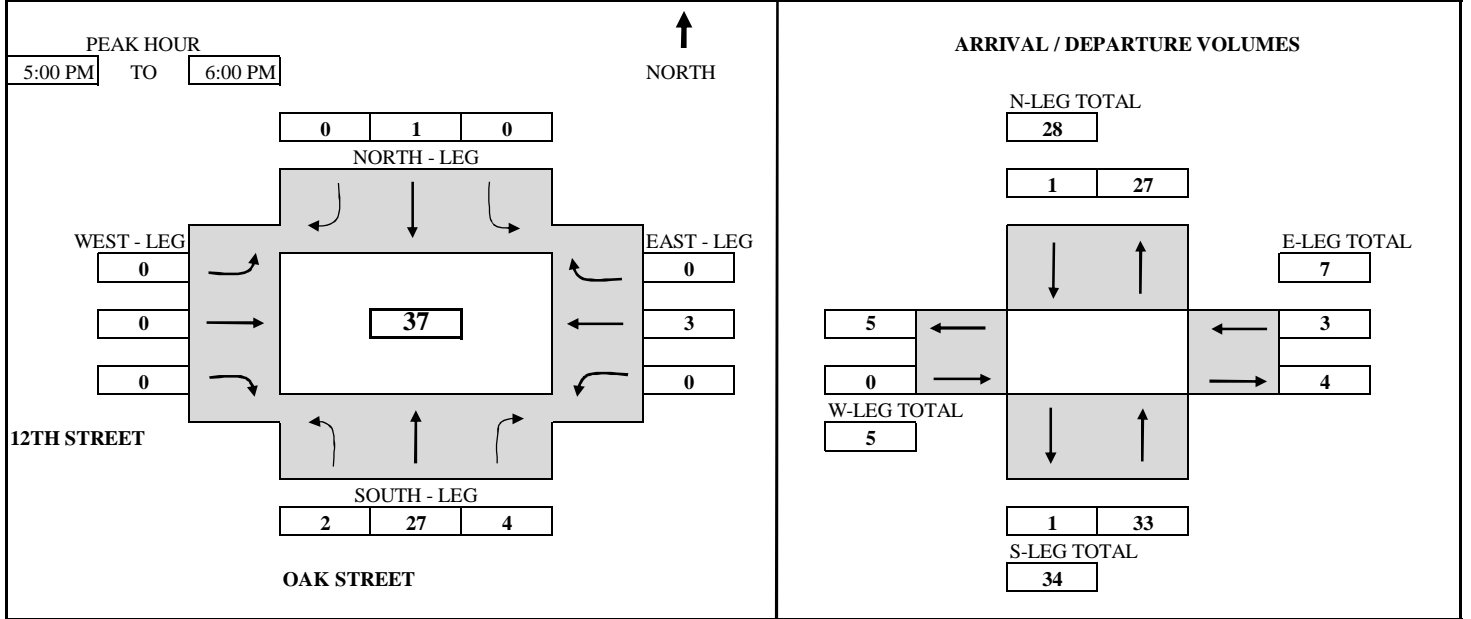
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-16PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	0	3	0	0	0	0	0	0	0	0	0	3
4:15 PM	to	4:30 PM	0	7	1	0	0	0	0	0	0	0	0	8
4:30 PM	to	4:45 PM	0	9	1	0	0	0	0	0	1	0	0	11
4:45 PM	to	5:00 PM	0	12	1	0	0	0	0	0	1	0	0	14
5:00 PM	to	5:15 PM	1	17	1	1	1	0	0	0	1	0	0	21
5:15 PM	to	5:30 PM	1	28	2	1	1	0	0	0	3	0	0	35
5:30 PM	to	5:45 PM	1	36	2	1	1	0	0	0	3	0	0	43
5:45 PM	to	6:00 PM	2	39	5	1	1	0	0	0	4	0	0	51

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	3	0	0	0	0	0	0	0	0	0	3
4:15 PM	to	4:30 PM	0	4	1	0	0	0	0	0	0	0	0	5
4:30 PM	to	4:45 PM	0	2	0	0	0	0	0	0	1	0	0	3
4:45 PM	to	5:00 PM	0	3	0	0	0	0	0	0	0	0	0	3
5:00 PM	to	5:15 PM	1	5	0	0	1	0	0	0	0	0	0	7
5:15 PM	to	5:30 PM	0	11	1	0	0	0	0	0	0	2	0	14
5:30 PM	to	5:45 PM	0	8	0	0	0	0	0	0	0	0	0	8
5:45 PM	to	6:00 PM	1	3	3	0	0	0	0	0	0	1	0	8

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	12	1	0	0	0	0	0	0	1	0	14
4:15 PM	to	5:15 PM	1	14	1	0	1	0	0	0	0	1	0	18
4:30 PM	to	5:30 PM	1	21	1	0	1	0	0	0	0	3	0	27
4:45 PM	to	5:45 PM	1	27	1	0	1	0	0	0	0	2	0	32
5:00 PM	to	6:00 PM	2	27	4	0	1	0	0	0	0	3	0	37

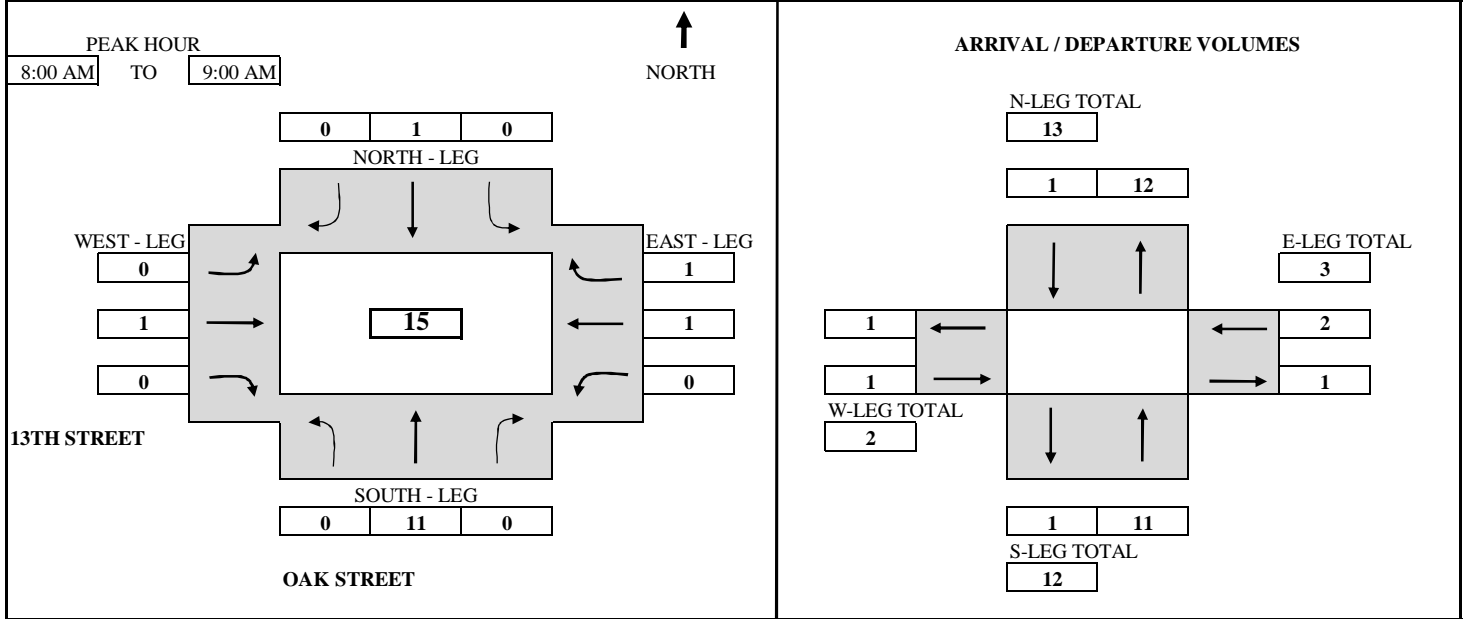
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 13TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-17AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to 7:30 AM	2	0	0	0	0	0	1	0	0	0	0	0	3
7:30 AM	to 7:45 AM	4	0	0	0	0	0	1	0	0	1	0	0	6
7:45 AM	to 8:00 AM	6	0	0	0	0	0	1	0	0	2	0	0	9
8:00 AM	to 8:15 AM	9	1	0	1	1	0	2	0	0	2	0	0	14
8:15 AM	to 8:30 AM	11	1	0	1	0	0	2	0	0	3	0	0	17
8:30 AM	to 8:45 AM	11	1	0	1	0	0	2	0	0	3	1	0	18
8:45 AM	to 9:00 AM	17	1	0	1	0	0	2	0	0	3	1	0	24

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to 7:30 AM	0	2	0	0	0	0	0	1	0	0	0	0	3
7:30 AM	to 7:45 AM	0	2	0	0	0	0	0	0	0	0	1	0	3
7:45 AM	to 8:00 AM	0	2	0	0	0	0	0	0	0	0	1	0	3
8:00 AM	to 8:15 AM	0	3	0	0	1	0	0	1	0	0	0	0	5
8:15 AM	to 8:30 AM	0	2	0	0	0	0	0	0	0	0	1	0	3
8:30 AM	to 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
8:45 AM	to 9:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	6

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	6	0	0	0	0	0	1	0	0	2	0	9
7:15 AM	to 8:15 AM	0	9	0	0	1	0	0	2	0	0	2	0	14
7:30 AM	to 8:30 AM	0	9	0	0	1	0	0	1	0	0	3	0	14
7:45 AM	to 8:45 AM	0	7	0	0	1	0	0	1	0	0	2	1	12
8:00 AM	to 9:00 AM	0	11	0	0	1	0	0	1	0	0	1	1	15

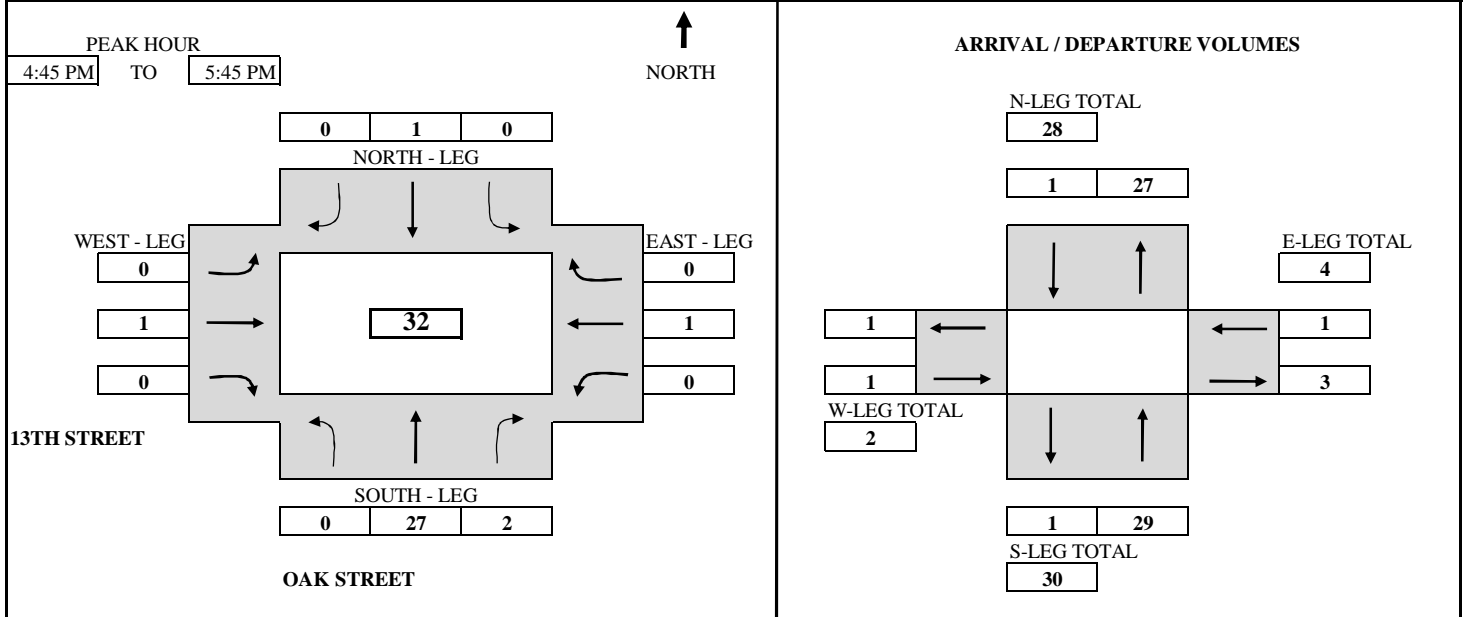
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 13TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-17PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	4	0	0	0	0	0	0	1	1	0	1	0	7
4:15 PM	to 4:30 PM	8	0	0	0	0	0	1	1	1	0	0	0	12
4:30 PM	to 4:45 PM	12	1	0	0	0	0	1	2	1	0	0	0	18
4:45 PM	to 5:00 PM	16	1	0	0	0	0	1	3	1	0	2	0	24
5:00 PM	to 5:15 PM	21	1	1	1	1	0	1	3	1	0	2	0	30
5:15 PM	to 5:30 PM	30	2	1	1	0	0	1	3	1	0	2	0	40
5:30 PM	to 5:45 PM	39	3	1	1	0	0	1	3	1	0	2	0	50
5:45 PM	to 6:00 PM	40	4	1	1	0	0	1	3	1	0	3	0	53

TOTAL BY PERIOD														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	4	0	0	0	0	0	1	1	0	1	0	7
4:15 PM	to 4:30 PM	0	4	0	0	0	0	1	0	0	0	0	0	5
4:30 PM	to 4:45 PM	0	4	1	0	0	0	0	1	0	0	0	0	6
4:45 PM	to 5:00 PM	0	4	0	0	0	0	0	1	0	0	1	0	6
5:00 PM	to 5:15 PM	0	5	0	0	1	0	0	0	0	0	0	0	6
5:15 PM	to 5:30 PM	0	9	1	0	0	0	0	0	0	0	0	0	10
5:30 PM	to 5:45 PM	0	9	1	0	0	0	0	0	0	0	0	0	10
5:45 PM	to 6:00 PM	0	1	1	0	0	0	0	0	0	0	1	0	3

HOURLY TOTALS														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	16	1	0	0	0	1	3	1	0	2	0	24
4:15 PM	to 5:15 PM	0	17	1	0	1	0	1	2	0	0	1	0	23
4:30 PM	to 5:30 PM	0	22	2	0	1	0	0	2	0	0	1	0	28
4:45 PM	to 5:45 PM	0	27	2	0	1	0	0	1	0	0	1	0	32
5:00 PM	to 6:00 PM	0	24	3	0	1	0	0	0	0	0	1	0	29

TEL: (510) 232 - 1271

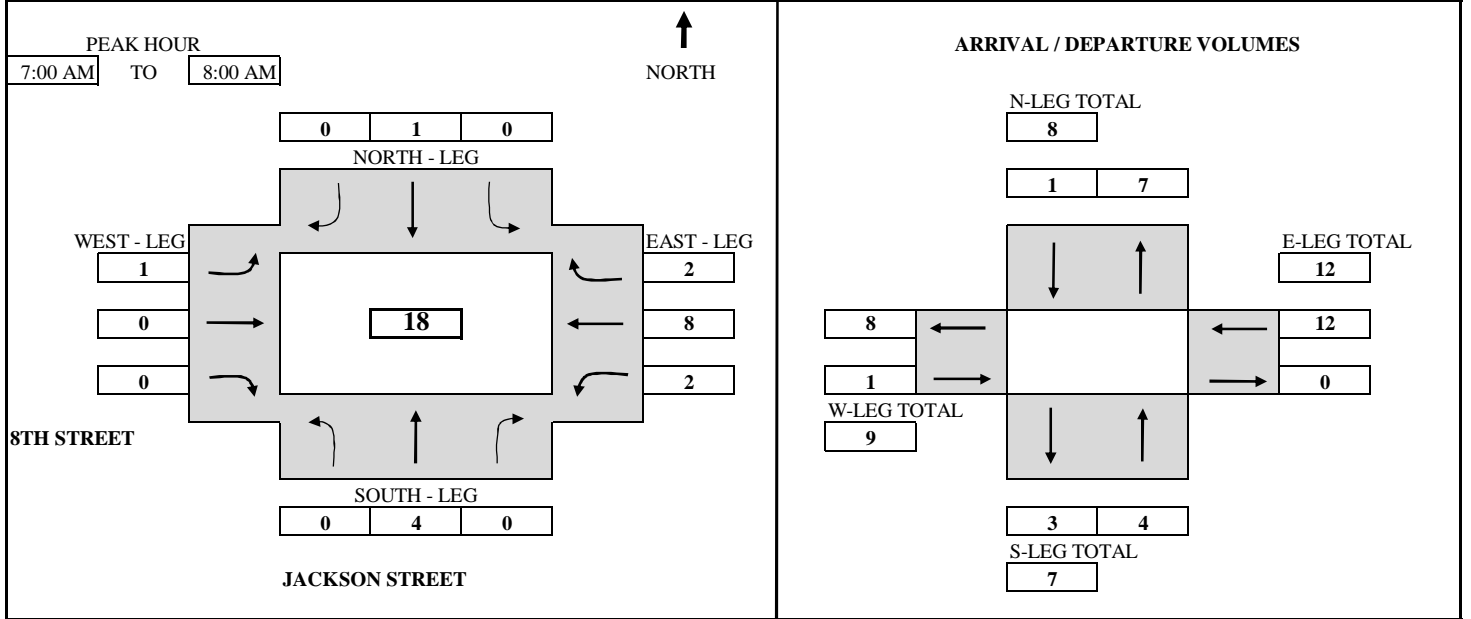
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: JACKSON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 8TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-18AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
7:00 AM	to	7:15 AM	2		0	1	0	0	0	0	1	0	4
7:15 AM	to	7:30 AM	2		0	1	0	0	0	0	6	1	10
7:30 AM	to	7:45 AM	4		0	1	0	0	0	8	2	15	
7:45 AM	to	8:00 AM	4		0	1	1	2	8	2	18		
8:00 AM	to	8:15 AM	4		1	1	1	2	8	2	19		
8:15 AM	to	8:30 AM	4		1	2	1	3	11	3	25		
8:30 AM	to	8:45 AM	4		1	3	1	3	11	3	26		
8:45 AM	to	9:00 AM	5		1	3	1	3	13	3	29		

TOTAL BY PERIOD													
7:00 AM	to	7:15 AM	0	2	0	0	1	0	0	0	1	0	4
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	5	1	6	
7:30 AM	to	7:45 AM	0	2	0	0	0	0	0	2	1	5	
7:45 AM	to	8:00 AM	0	0	0	0	0	1	0	0	0	3	
8:00 AM	to	8:15 AM	0	0	0	1	0	0	0	0	0	1	
8:15 AM	to	8:30 AM	0	0	0	0	1	0	0	3	1	6	
8:30 AM	to	8:45 AM	0	0	0	0	1	0	0	0	0	1	
8:45 AM	to	9:00 AM	0	1	0	0	0	0	0	2	0	3	

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	4	0	0	1	0	1	0	2	8	2	18
7:15 AM	to	8:15 AM	0	2	0	1	0	0	1	0	2	7	2	15
7:30 AM	to	8:30 AM	0	2	0	1	1	0	1	0	3	5	2	15
7:45 AM	to	8:45 AM	0	0	0	1	2	0	1	0	3	3	1	11
8:00 AM	to	9:00 AM	0	1	0	1	2	0	0	0	1	5	1	11

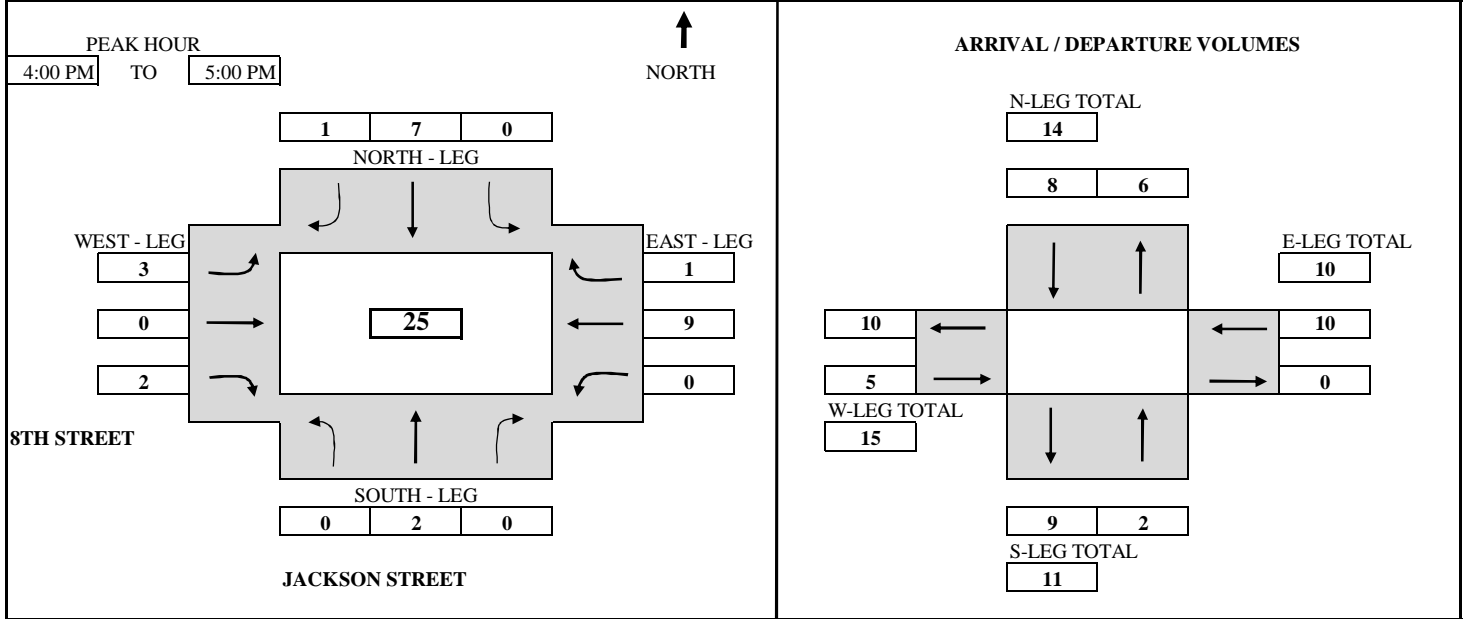
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-18PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM		1			2	0	0	0	1	0	3	0	7
4:15 PM	to 4:30 PM		1			3	0	0	0	1	0	4	0	9
4:30 PM	to 4:45 PM		1			6	0	0	0	1	0	5	1	14
4:45 PM	to 5:00 PM		2			7	1	3	0	2	0	9	1	25
5:00 PM	to 5:15 PM		3			7	1	3	1	2	0	11	2	30
5:15 PM	to 5:30 PM		3			7	1	4	2	2	0	12	2	33
5:30 PM	to 5:45 PM		3			7	1	4	3	2	1	12	2	35
5:45 PM	to 6:00 PM		6			9	1	4	4	3	1	13	2	43

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	1	0	0	2	0	0	0	1	0	3	0	7
4:15 PM	to 4:30 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
4:30 PM	to 4:45 PM	0	0	0	0	3	0	0	0	0	0	1	1	5
4:45 PM	to 5:00 PM	0	1	0	0	1	1	3	0	1	0	4	0	11
5:00 PM	to 5:15 PM	0	1	0	0	0	0	0	1	0	0	2	1	5
5:15 PM	to 5:30 PM	0	0	0	0	0	0	1	1	0	0	1	0	3
5:30 PM	to 5:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	2
5:45 PM	to 6:00 PM	0	3	0	0	2	0	0	1	1	0	1	0	8

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	2	0	0	7	1	3	0	2	0	9	1	25
4:15 PM	to 5:15 PM	0	2	0	0	5	1	3	1	1	0	8	2	23
4:30 PM	to 5:30 PM	0	2	0	0	4	1	4	2	1	0	8	2	24
4:45 PM	to 5:45 PM	0	2	0	0	1	1	4	3	1	1	7	1	21
5:00 PM	to 6:00 PM	0	4	0	0	2	0	1	4	1	1	4	1	18

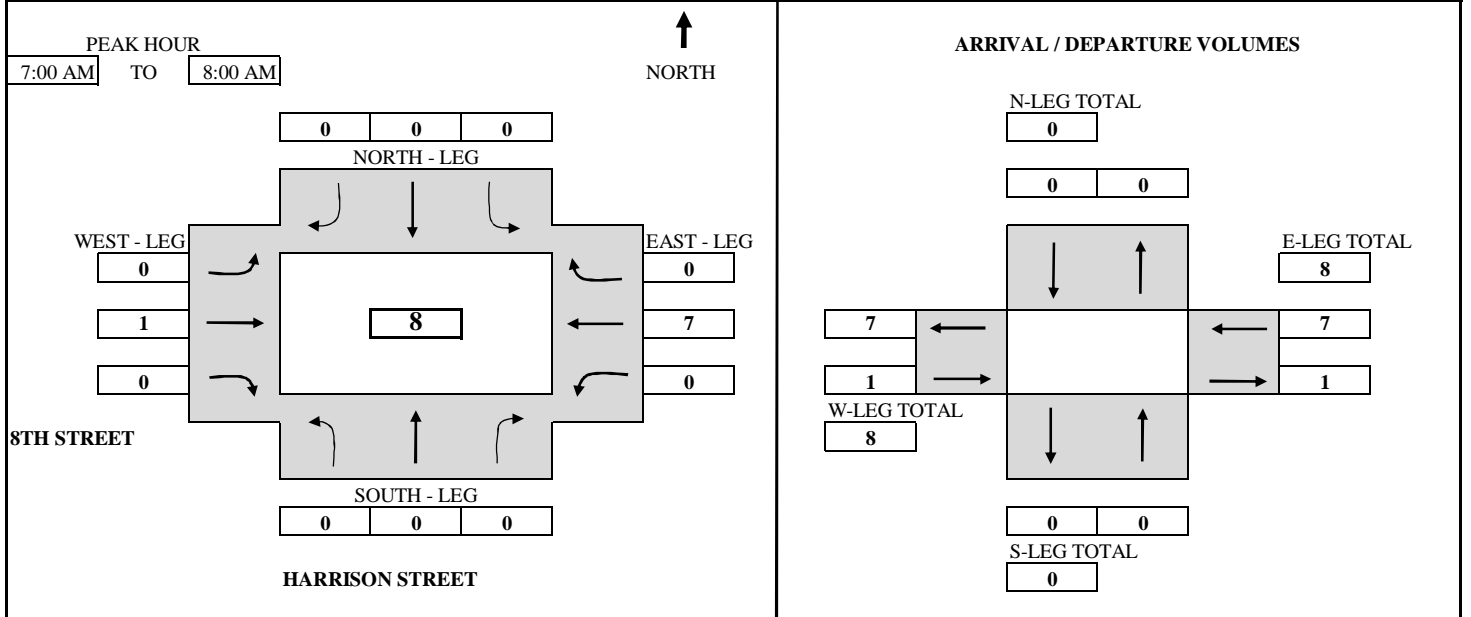
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: HARRISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 8TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-19AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM							0			3		3
7:15 AM	to	7:30 AM							0			5		5
7:30 AM	to	7:45 AM							0			7		7
7:45 AM	to	8:00 AM							1			7		8
8:00 AM	to	8:15 AM							1			7		8
8:15 AM	to	8:30 AM							1			7		8
8:30 AM	to	8:45 AM							1			8		9
8:45 AM	to	9:00 AM							1			9		10

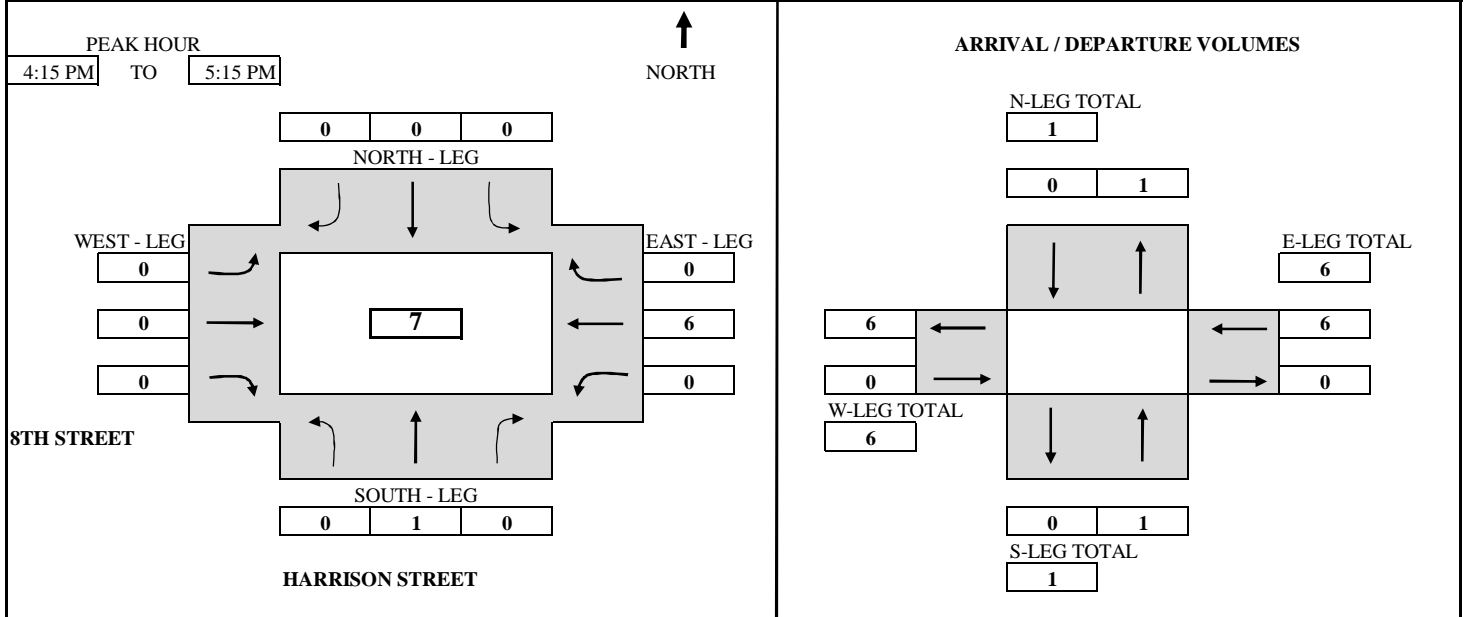
TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	3	0	3
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	2	0	2
7:45 AM	to	8:00 AM	0	0	0	0	0	0	1	0	0	0	0	1
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	1	0	1

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	0	0	1	0	0	7	0	8
7:15 AM	to	8:15 AM	0	0	0	0	0	0	1	0	0	4	0	5
7:30 AM	to	8:30 AM	0	0	0	0	0	0	1	0	0	2	0	3
7:45 AM	to	8:45 AM	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	2	0	2

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> HARRISON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-19PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	0							0	1			1
4:15 PM	to	4:30 PM	1							0	3			4
4:30 PM	to	4:45 PM	1							0	4			5
4:45 PM	to	5:00 PM	1							0	4			5
5:00 PM	to	5:15 PM	1							0	7			8
5:15 PM	to	5:30 PM	1							1	7			9
5:30 PM	to	5:45 PM	1							1	7			9
5:45 PM	to	6:00 PM	1							1	8			10

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	to	4:30 PM	0	1	0	0	0	0	0	0	0	2	0	3
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	3	0	3
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	1	0	1

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	1	0	0	0	0	0	0	0	4	0	5
4:15 PM	to	5:15 PM	0	1	0	0	0	0	0	0	0	6	0	7
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	1	4	0	0	5
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	1	3	0	0	4
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	1	4	0	0	5

TEL: (510) 232 - 1271

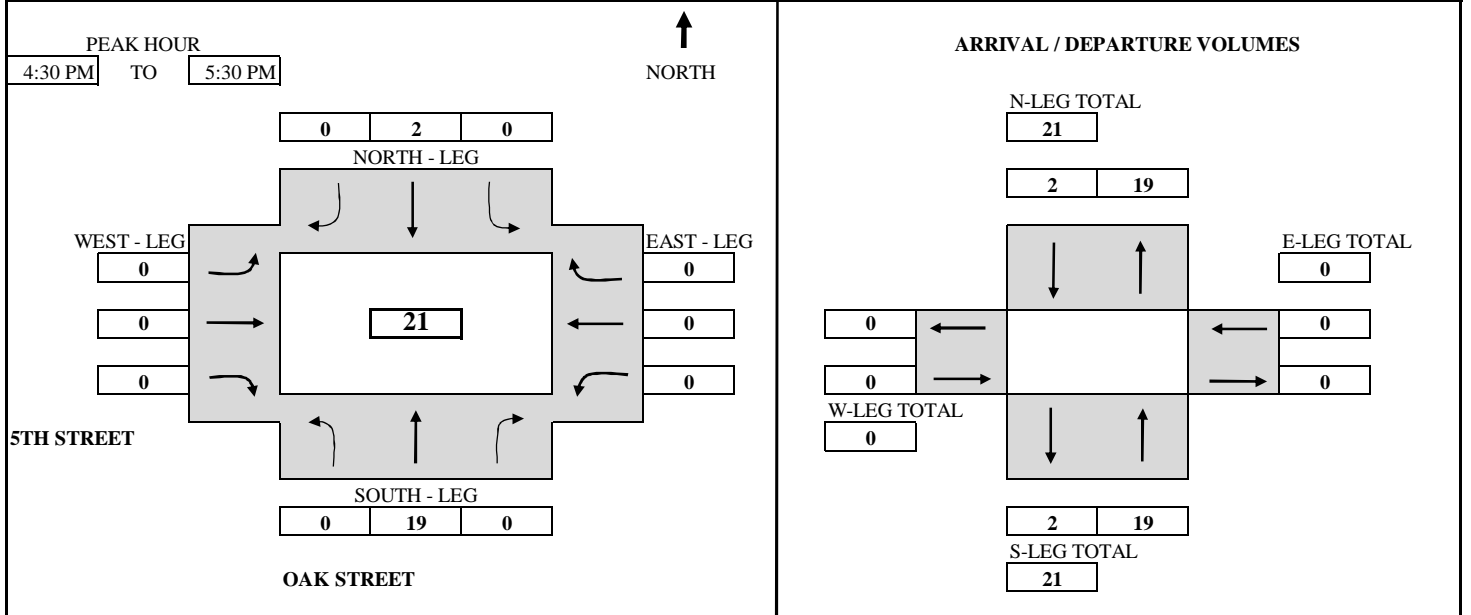
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-20PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM		1			0			0			0		1
4:15 PM	to 4:30 PM		3			0			0			0		3
4:30 PM	to 4:45 PM		6			0			0			0		6
4:45 PM	to 5:00 PM		11			1			0			0		12
5:00 PM	to 5:15 PM		16			1			0			0		17
5:15 PM	to 5:30 PM		22			2			0			0		24
5:30 PM	to 5:45 PM		24			2			0			0		26
5:45 PM	to 6:00 PM		27			4			0			0		31

TOTAL BY PERIOD														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	to 4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	to 4:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	to 5:00 PM	0	5	0	0	1	0	0	0	0	0	0	0	6
5:00 PM	to 5:15 PM	0	5	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	to 5:30 PM	0	6	0	0	1	0	0	0	0	0	0	0	7
5:30 PM	to 5:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	to 6:00 PM	0	3	0	0	2	0	0	0	0	0	0	0	5

HOURLY TOTALS														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	11	0	0	1	0	0	0	0	0	0	0	12
4:15 PM	to 5:15 PM	0	15	0	0	1	0	0	0	0	0	0	0	16
4:30 PM	to 5:30 PM	0	19	0	0	2	0	0	0	0	0	0	0	21
4:45 PM	to 5:45 PM	0	18	0	0	2	0	0	0	0	0	0	0	20
5:00 PM	to 6:00 PM	0	16	0	0	3	0	0	0	0	0	0	0	19

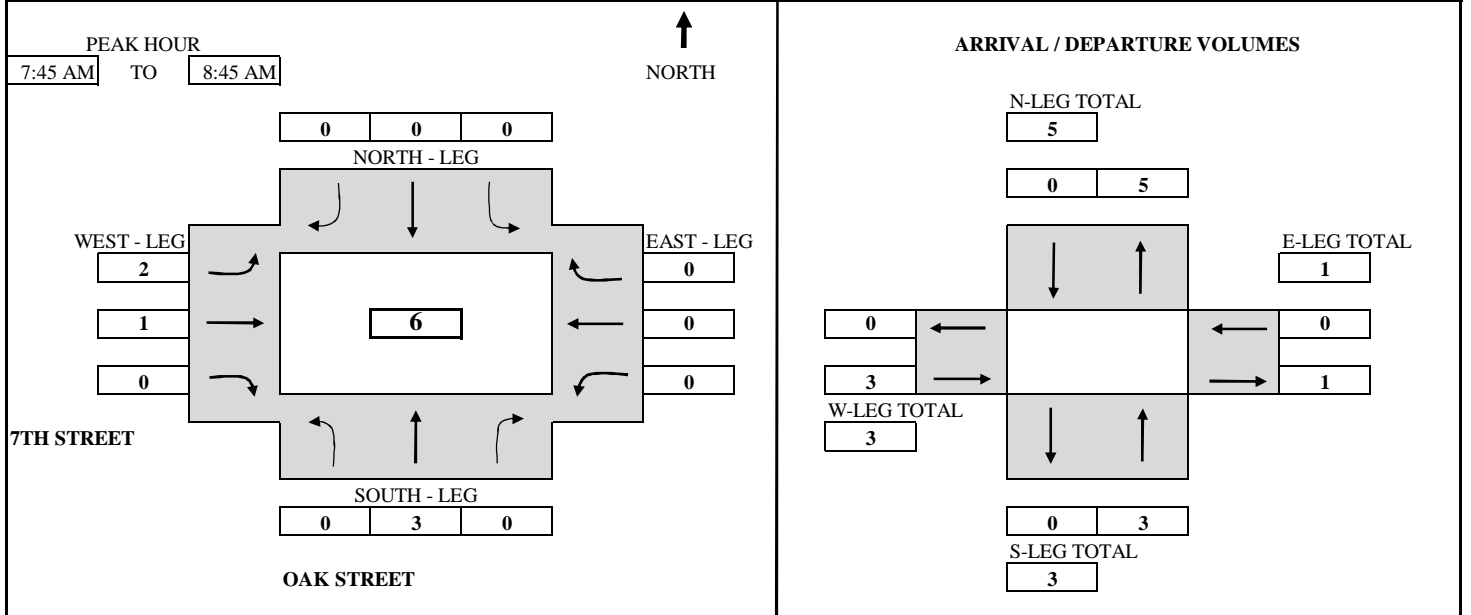
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 7TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-21AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	0				0	1						1
7:15 AM	to	7:30 AM	1				0	1						2
7:30 AM	to	7:45 AM	1				0	1						2
7:45 AM	to	8:00 AM	2				1	1						4
8:00 AM	to	8:15 AM	2				1	1						4
8:15 AM	to	8:30 AM	4				1	2						7
8:30 AM	to	8:45 AM	4				2	2						8
8:45 AM	to	9:00 AM	4				2	3						9

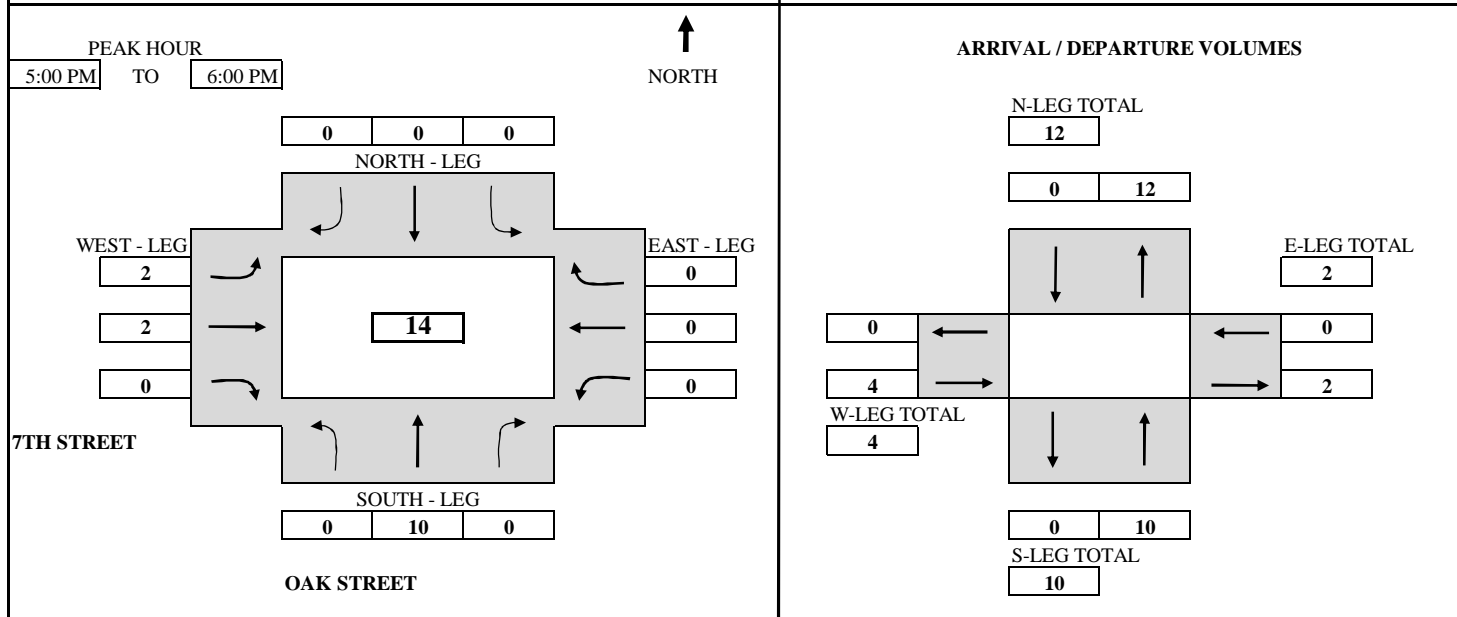
TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1
7:15 AM	to	7:30 AM	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:00 AM	0	1	0	0	0	0	1	0	0	0	0	2
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	2	0	0	0	0	0	1	0	0	0	3
8:30 AM	to	8:45 AM	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	1	0	0	0	1

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	2	0	0	0	0	1	1	0	0	0	0	4
7:15 AM	to	8:15 AM	0	2	0	0	0	0	1	0	0	0	0	0	3
7:30 AM	to	8:30 AM	0	3	0	0	0	0	1	1	0	0	0	0	5
7:45 AM	to	8:45 AM	0	3	0	0	0	0	2	1	0	0	0	0	6
8:00 AM	to	9:00 AM	0	2	0	0	0	0	1	2	0	0	0	0	5

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> OAK STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-21PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	1					0	1					2
4:15 PM	to	4:30 PM	3					0	1					4
4:30 PM	to	4:45 PM	4					0	1					5
4:45 PM	to	5:00 PM	6					0	1					7
5:00 PM	to	5:15 PM	8					0	2					10
5:15 PM	to	5:30 PM	10					0	2					12
5:30 PM	to	5:45 PM	13					0	2					15
5:45 PM	to	6:00 PM	16					2	3					21

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	1	0	0	0	0	1	0	0	0	0	2
4:15 PM	to	4:30 PM	0	2	0	0	0	0	0	0	0	0	0	2
4:30 PM	to	4:45 PM	0	1	0	0	0	0	0	0	0	0	0	1
4:45 PM	to	5:00 PM	0	2	0	0	0	0	0	0	0	0	0	2
5:00 PM	to	5:15 PM	0	2	0	0	0	0	1	0	0	0	0	3
5:15 PM	to	5:30 PM	0	2	0	0	0	0	0	0	0	0	0	2
5:30 PM	to	5:45 PM	0	3	0	0	0	0	0	0	0	0	0	3
5:45 PM	to	6:00 PM	0	3	0	0	0	2	1	0	0	0	0	6

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	6	0	0	0	0	1	0	0	0	0	7
4:15 PM	to	5:15 PM	0	7	0	0	0	0	1	0	0	0	0	8
4:30 PM	to	5:30 PM	0	7	0	0	0	0	1	0	0	0	0	8
4:45 PM	to	5:45 PM	0	9	0	0	0	0	1	0	0	0	0	10
5:00 PM	to	6:00 PM	0	10	0	0	0	2	2	0	0	0	0	14

TEL: (510) 232 - 1271

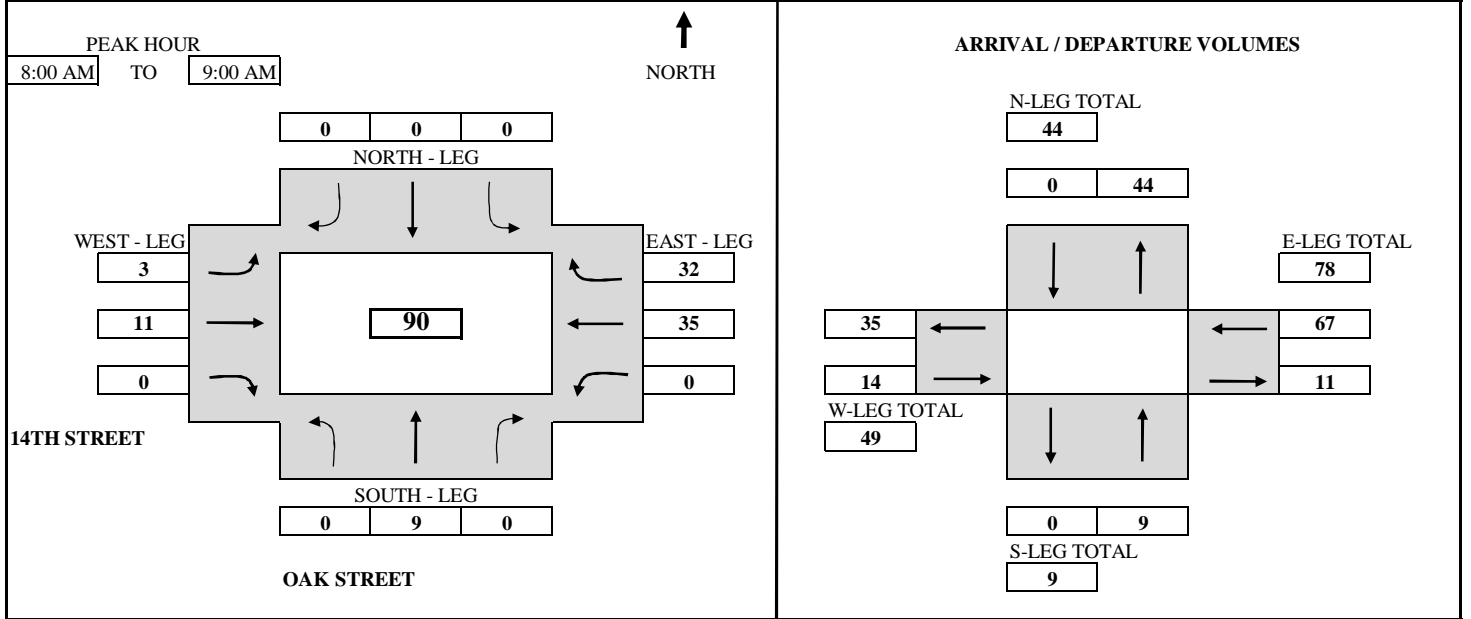
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 14TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-22AM



TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

SURVEY DATA														
7:00 AM	to	7:15 AM	0	3	0	0	0	0	1	0	0	4	12	20
7:15 AM	to	7:30 AM	0	6	0	0	0	0	3	0	0	9	17	35
7:30 AM	to	7:45 AM	2	7	0	0	0	1	4	0	0	16	19	49
7:45 AM	to	8:00 AM	2	8	1	0	1	4	0	0	0	21	21	58
8:00 AM	to	8:15 AM	2	11	1	0	1	7	0	0	0	33	29	84
8:15 AM	to	8:30 AM	2	11	1	0	2	11	0	0	0	37	40	104
8:30 AM	to	8:45 AM	2	14	1	0	2	12	0	0	0	45	47	123
8:45 AM	to	9:00 AM	2	17	1	0	4	15	0	0	0	56	53	148

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	3	0	0	0	0	1	0	0	4	12	20
7:15 AM	to	7:30 AM	0	3	0	0	0	0	2	0	0	5	5	15
7:30 AM	to	7:45 AM	2	1	0	0	0	1	1	0	0	7	2	14
7:45 AM	to	8:00 AM	0	1	0	0	1	0	0	0	0	5	2	9
8:00 AM	to	8:15 AM	0	3	0	0	0	0	3	0	0	12	8	26
8:15 AM	to	8:30 AM	0	0	0	0	0	1	4	0	0	4	11	20
8:30 AM	to	8:45 AM	0	3	0	0	0	0	1	0	0	8	7	19
8:45 AM	to	9:00 AM	0	3	0	0	0	2	3	0	0	11	6	25

HOURLY TOTALS															
7:00 AM	to	8:00 AM	2	8	0	0	1	0	1	4	0	0	21	21	58
7:15 AM	to	8:15 AM	2	8	0	0	1	0	1	6	0	0	29	17	64
7:30 AM	to	8:30 AM	2	5	0	0	1	0	2	8	0	0	28	23	69
7:45 AM	to	8:45 AM	0	7	0	0	1	0	1	8	0	0	29	28	74
8:00 AM	to	9:00 AM	0	9	0	0	0	0	3	11	0	0	35	32	90

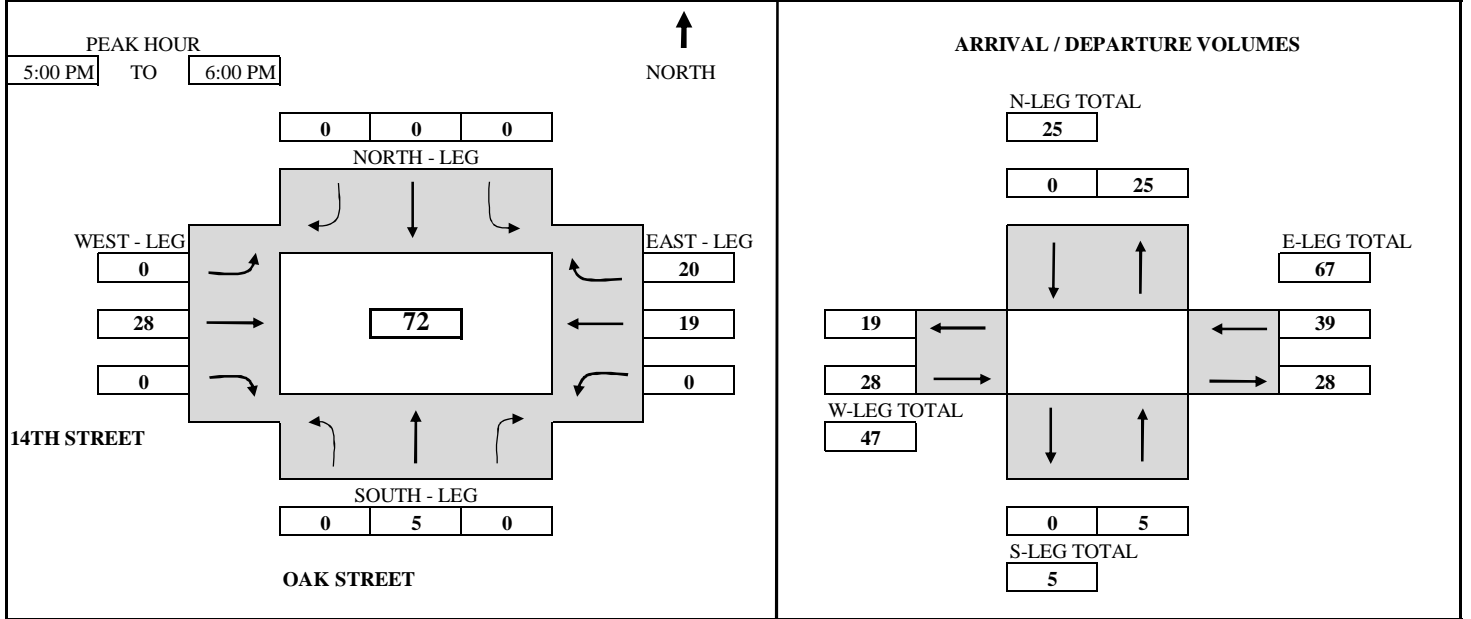
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: OAK STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 14TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-22PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
4:00 PM	to	4:15 PM	0			0	7			2	3		12
4:15 PM	to	4:30 PM	1			0	10			4	5		20
4:30 PM	to	4:45 PM	4			1	15			9	11		40
4:45 PM	to	5:00 PM	8			1	25			16	16		66
5:00 PM	to	5:15 PM	9			1	29			19	20		78
5:15 PM	to	5:30 PM	9			1	35			23	23		91
5:30 PM	to	5:45 PM	12			1	43			25	28		109
5:45 PM	to	6:00 PM	13			1	53			35	36		138

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	0	0	7	0	0	2	3	12
4:15 PM	to	4:30 PM	0	1	0	0	0	0	3	0	0	2	2	8
4:30 PM	to	4:45 PM	0	3	0	0	0	0	1	5	0	5	6	20
4:45 PM	to	5:00 PM	0	4	0	0	0	0	10	0	0	7	5	26
5:00 PM	to	5:15 PM	0	1	0	0	0	0	4	0	0	3	4	12
5:15 PM	to	5:30 PM	0	0	0	0	0	0	6	0	0	4	3	13
5:30 PM	to	5:45 PM	0	3	0	0	0	0	8	0	0	2	5	18
5:45 PM	to	6:00 PM	0	1	0	0	0	0	10	0	0	10	8	29

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	8	0	0	0	0	1	25	0	0	16	16	66
4:15 PM	to	5:15 PM	0	9	0	0	0	0	1	22	0	0	17	17	66
4:30 PM	to	5:30 PM	0	8	0	0	0	0	1	25	0	0	19	18	71
4:45 PM	to	5:45 PM	0	8	0	0	0	0	0	28	0	0	16	17	69
5:00 PM	to	6:00 PM	0	5	0	0	0	0	0	28	0	0	19	20	72

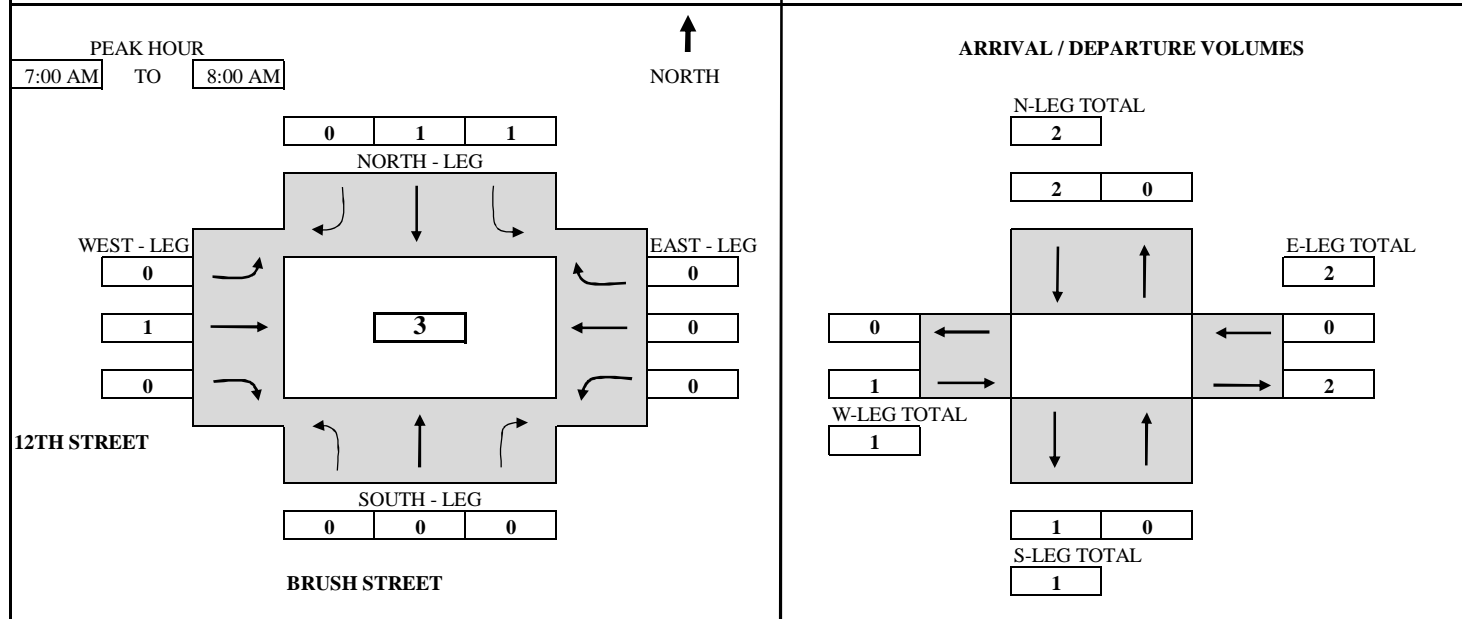
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: BRUSH STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-23AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM				0	0	0	0	0	0	0	0	0
7:15 AM	to	7:30 AM				0	1	0	0	1	0	0	0	2
7:30 AM	to	7:45 AM				0	1	0	0	1	0	0	0	2
7:45 AM	to	8:00 AM				1	1	0	0	1	0	0	0	3
8:00 AM	to	8:15 AM				1	1	0	0	1	0	0	0	3
8:15 AM	to	8:30 AM				1	1	0	0	1	0	0	0	3
8:30 AM	to	8:45 AM				1	1	0	0	1	0	1	0	4
8:45 AM	to	9:00 AM				1	1	1	1	1	0	1	0	5

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to	7:30 AM	0	0	0	0	1	0	0	1	0	0	0	2
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:00 AM	0	0	0	1	0	0	0	0	0	0	0	1
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
8:45 AM	to	9:00 AM	0	0	0	0	0	0	1	0	0	0	0	1

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	1	1	0	0	1	0	0	0	3
7:15 AM	to	8:15 AM	0	0	0	1	1	0	0	1	0	0	0	3
7:30 AM	to	8:30 AM	0	0	0	1	0	0	0	0	0	0	0	1
7:45 AM	to	8:45 AM	0	0	0	1	0	0	0	0	0	1	0	2
8:00 AM	to	9:00 AM	0	0	0	0	0	0	1	0	0	0	1	2

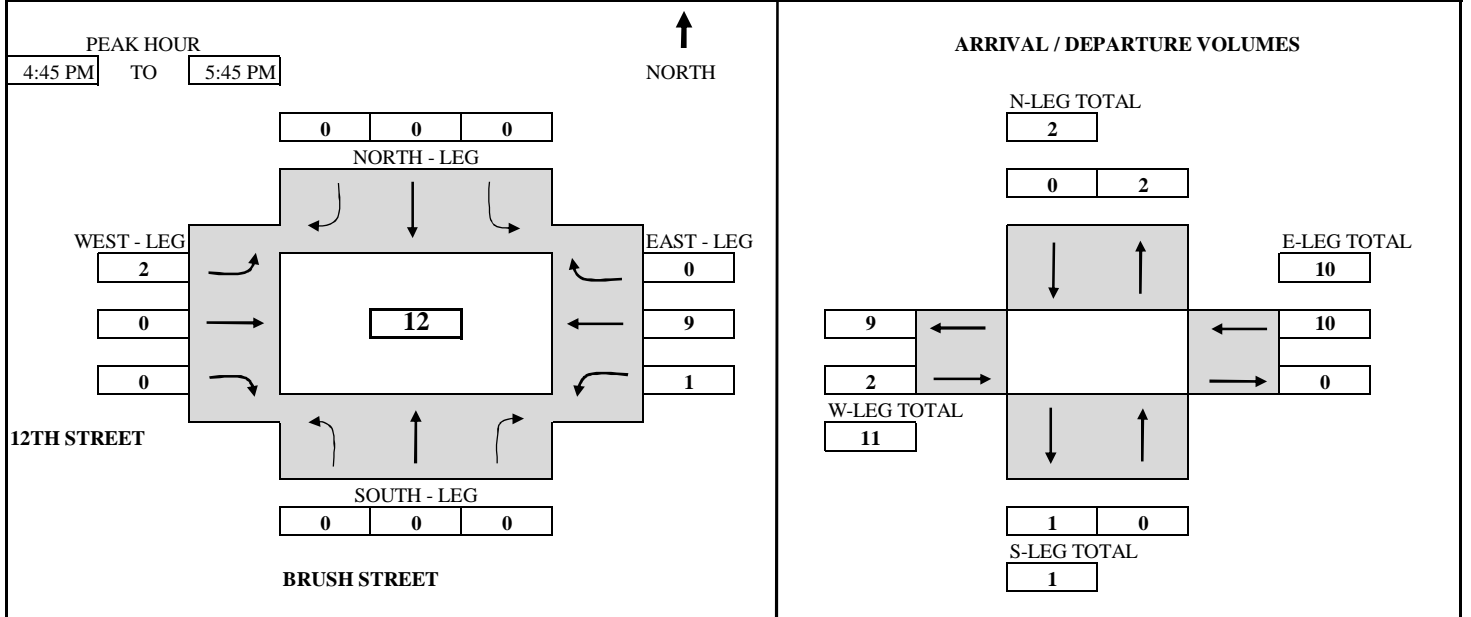
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: BRUSH STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-23PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM					1		0	2		0	0	3
4:15 PM	to	4:30 PM					1		0	2		0	0	3
4:30 PM	to	4:45 PM					2		0	2		0	0	4
4:45 PM	to	5:00 PM					2		0	2		0	4	8
5:00 PM	to	5:15 PM					2		0	2		0	5	9
5:15 PM	to	5:30 PM					2		2	2		0	5	11
5:30 PM	to	5:45 PM					2		2	2		1	9	16
5:45 PM	to	6:00 PM					2		2	3		1	9	17

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	1	0	0	2	0	0	0	3
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	4	0	4
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1
5:15 PM	to	5:30 PM	0	0	0	0	0	0	2	0	0	0	0	2
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	1	4	5
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	1	0	0	0	1

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	2	0	0	2	0	0	4	0	8
4:15 PM	to	5:15 PM	0	0	0	0	1	0	0	0	0	0	5	0	6
4:30 PM	to	5:30 PM	0	0	0	0	1	0	2	0	0	0	5	0	8
4:45 PM	to	5:45 PM	0	0	0	0	0	0	2	0	0	1	9	0	12
5:00 PM	to	6:00 PM	0	0	0	0	0	0	2	1	0	1	5	0	9

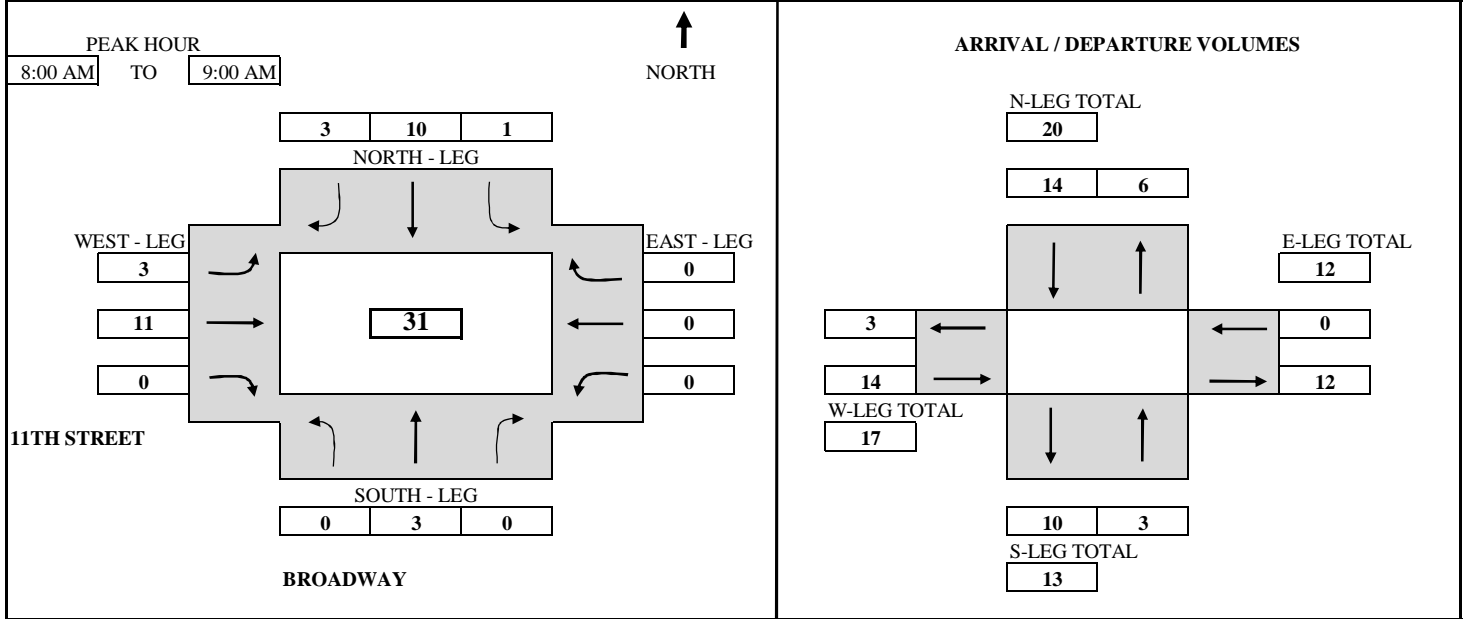
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: BROADWAY</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 11TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-24AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	1		0	2	0	0	0					3
7:15 AM	to	7:30 AM	3		0	3	2	0	2					10
7:30 AM	to	7:45 AM	5		0	6	2	0	3					16
7:45 AM	to	8:00 AM	7		0	8	2	0	6					23
8:00 AM	to	8:15 AM	7		1	11	3	0	8					30
8:15 AM	to	8:30 AM	7		1	13	3	0	10					34
8:30 AM	to	8:45 AM	7		1	15	3	2	15					43
8:45 AM	to	9:00 AM	10		1	18	5	3	17					54

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	1	0	0	2	0	0	0	0	0	0	3
7:15 AM	to	7:30 AM	0	2	0	0	1	2	0	2	0	0	0	7
7:30 AM	to	7:45 AM	0	2	0	0	3	0	0	1	0	0	0	6
7:45 AM	to	8:00 AM	0	2	0	0	2	0	0	3	0	0	0	7
8:00 AM	to	8:15 AM	0	0	0	1	3	1	0	2	0	0	0	7
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	2	0	0	0	4
8:30 AM	to	8:45 AM	0	0	0	0	2	0	2	5	0	0	0	9
8:45 AM	to	9:00 AM	0	3	0	0	3	2	1	2	0	0	0	11

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	7	0	0	8	2	0	6	0	0	0	23
7:15 AM	to	8:15 AM	0	6	0	1	9	3	0	8	0	0	0	27
7:30 AM	to	8:30 AM	0	4	0	1	10	1	0	8	0	0	0	24
7:45 AM	to	8:45 AM	0	2	0	1	9	1	2	12	0	0	0	27
8:00 AM	to	9:00 AM	0	3	0	1	10	3	3	11	0	0	0	31

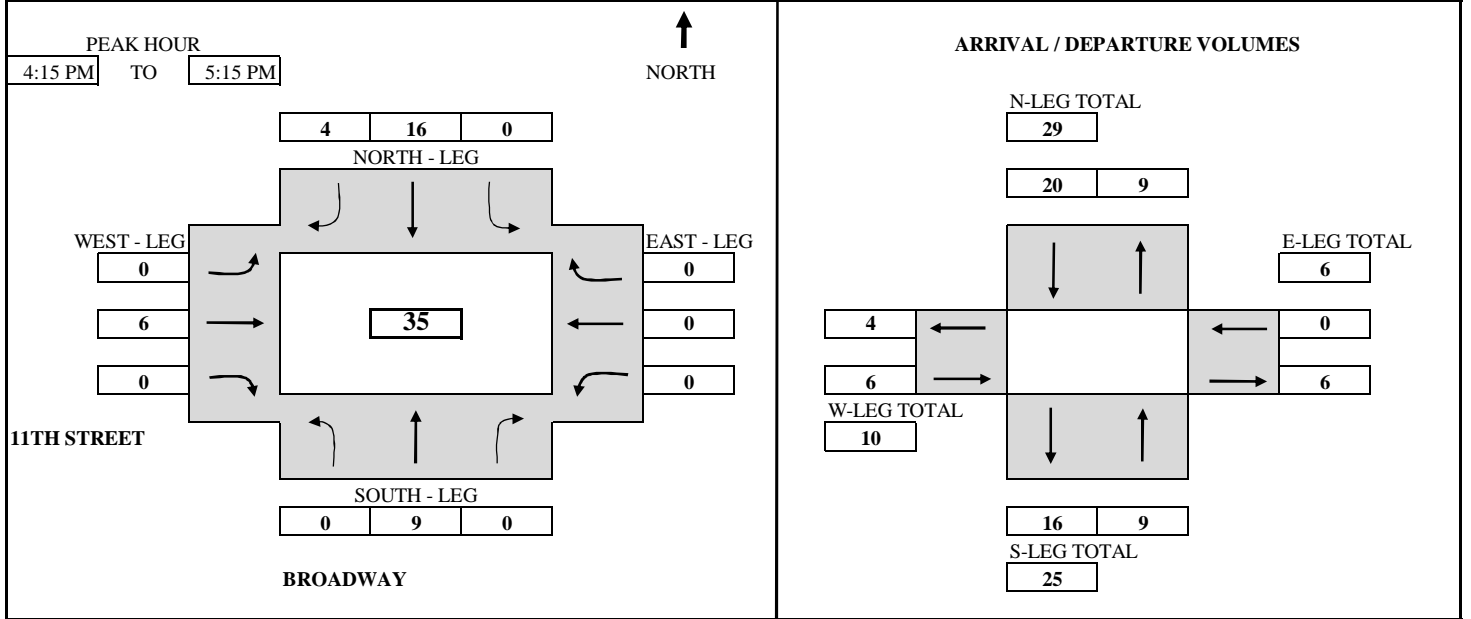
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: BROADWAY</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 11TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-24PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM	3	0	1	0	2							6
4:15 PM	to	4:30 PM	5	0	6	0	4							15
4:30 PM	to	4:45 PM	8	0	9	2	5							24
4:45 PM	to	5:00 PM	10	0	13	3	8							34
5:00 PM	to	5:15 PM	12	0	17	4	8							41
5:15 PM	to	5:30 PM	13	0	19	4	10							46
5:30 PM	to	5:45 PM	13	0	20	4	10							47
5:45 PM	to	6:00 PM	14	1	21	4	12							52

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	3	0	0	1	0	0	2	0	0	0	0	6
4:15 PM	to	4:30 PM	0	2	0	0	5	0	0	2	0	0	0	0	9
4:30 PM	to	4:45 PM	0	3	0	0	3	2	0	1	0	0	0	0	9
4:45 PM	to	5:00 PM	0	2	0	0	4	1	0	3	0	0	0	0	10
5:00 PM	to	5:15 PM	0	2	0	0	4	1	0	0	0	0	0	0	7
5:15 PM	to	5:30 PM	0	1	0	0	2	0	0	2	0	0	0	0	5
5:30 PM	to	5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	to	6:00 PM	0	1	0	1	1	0	0	2	0	0	0	0	5

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	10	0	0	13	3	0	8	0	0	0	0	34
4:15 PM	to	5:15 PM	0	9	0	0	16	4	0	6	0	0	0	0	35
4:30 PM	to	5:30 PM	0	8	0	0	13	4	0	6	0	0	0	0	31
4:45 PM	to	5:45 PM	0	5	0	0	11	2	0	5	0	0	0	0	23
5:00 PM	to	6:00 PM	0	4	0	1	8	1	0	4	0	0	0	0	18

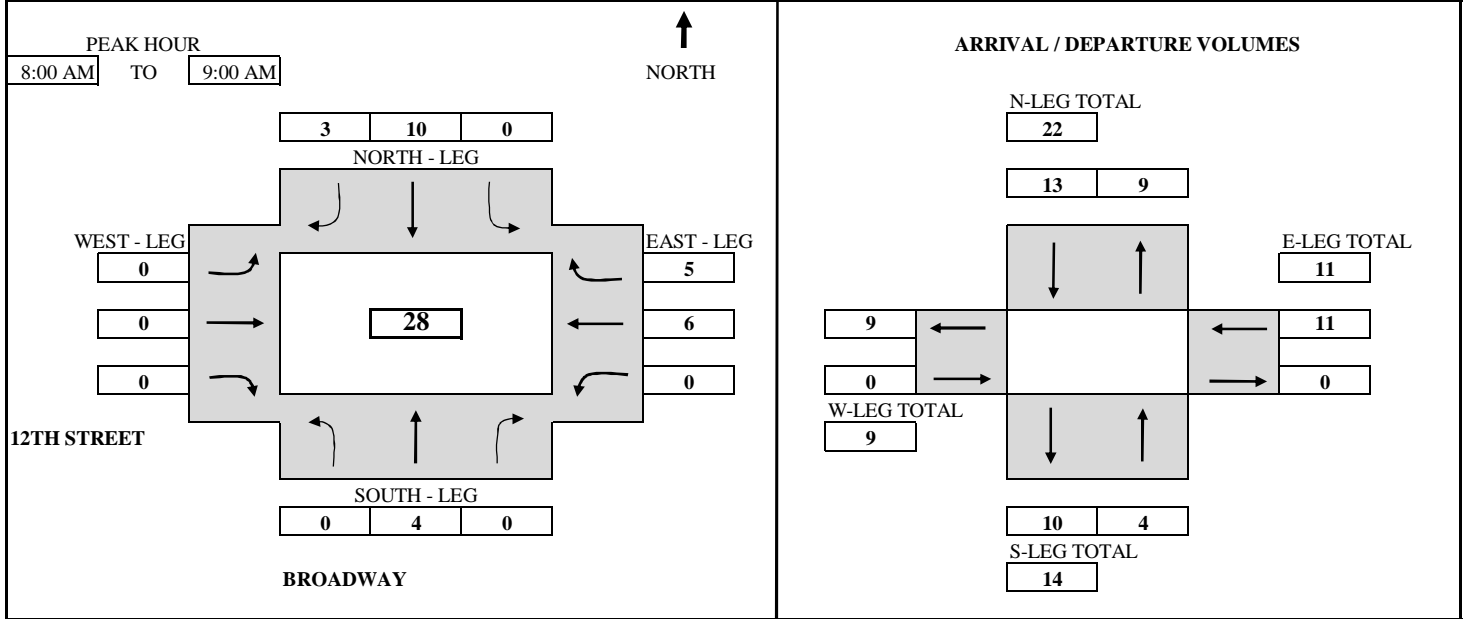
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: BROADWAY</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-25AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
7:00 AM	to	7:15 AM	1			2	0				2	0	5
7:15 AM	to	7:30 AM	3			4	2			2	0	11	
7:30 AM	to	7:45 AM	5			6	2			3	0	16	
7:45 AM	to	8:00 AM	6			8	2			3	0	19	
8:00 AM	to	8:15 AM	7			11	3			3	0	24	
8:15 AM	to	8:30 AM	7			12	3			5	2	29	
8:30 AM	to	8:45 AM	8			15	3			7	3	36	
8:45 AM	to	9:00 AM	10			18	5			9	5	47	

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	1	0	0	2	0	0	0	0	2	0	5
7:15 AM	to	7:30 AM	0	2	0	0	2	2	0	0	0	0	0	6
7:30 AM	to	7:45 AM	0	2	0	0	2	0	0	0	0	1	0	5
7:45 AM	to	8:00 AM	0	1	0	0	2	0	0	0	0	0	0	3
8:00 AM	to	8:15 AM	0	1	0	0	3	1	0	0	0	0	0	5
8:15 AM	to	8:30 AM	0	0	0	0	1	0	0	0	0	2	2	5
8:30 AM	to	8:45 AM	0	1	0	0	3	0	0	0	0	2	1	7
8:45 AM	to	9:00 AM	0	2	0	0	3	2	0	0	0	2	2	11

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	6	0	0	8	2	0	0	0	3	0	19
7:15 AM	to	8:15 AM	0	6	0	0	9	3	0	0	0	1	0	19
7:30 AM	to	8:30 AM	0	4	0	0	8	1	0	0	0	3	2	18
7:45 AM	to	8:45 AM	0	3	0	0	9	1	0	0	0	4	3	20
8:00 AM	to	9:00 AM	0	4	0	0	10	3	0	0	0	6	5	28

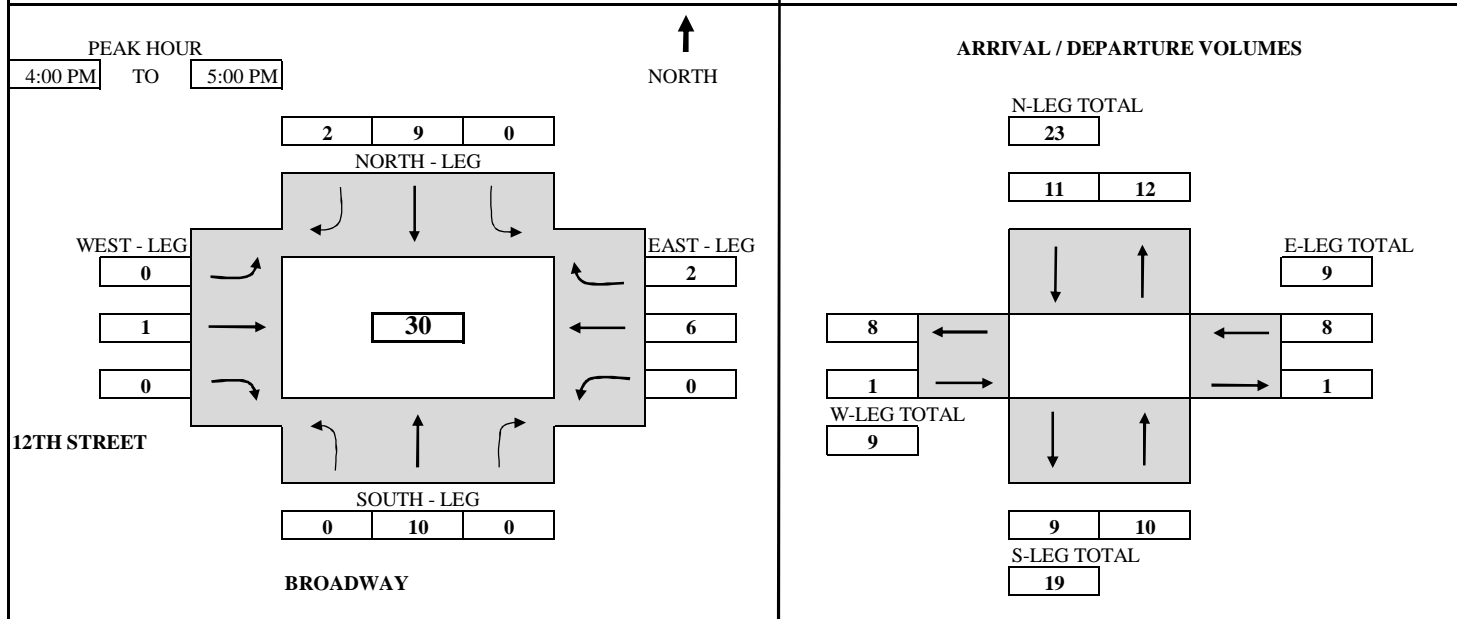
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH: BROADWAY</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-25PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA													
4:00 PM	to	4:15 PM	3		0	2	0	0	0	0	2	0	7
4:15 PM	to	4:30 PM	5		3	1	0	0	0	2	1	12	
4:30 PM	to	4:45 PM	7		5	1	0	0	0	5	1	19	
4:45 PM	to	5:00 PM	10		9	2	1	0	1	6	2	30	
5:00 PM	to	5:15 PM	10		12	4	1	0	0	6	2	35	
5:15 PM	to	5:30 PM	12		14	4	1	0	0	6	4	41	
5:30 PM	to	5:45 PM	13		15	4	1	0	0	7	4	44	
5:45 PM	to	6:00 PM	15		18	5	1	0	0	10	4	53	

TOTAL BY PERIOD													
4:00 PM	to	4:15 PM	0	3	0	0	2	0	0	0	2	0	7
4:15 PM	to	4:30 PM	0	2	0	0	1	1	0	0	0	1	5
4:30 PM	to	4:45 PM	0	2	0	0	2	0	0	0	3	0	7
4:45 PM	to	5:00 PM	0	3	0	0	4	1	0	1	1	1	11
5:00 PM	to	5:15 PM	0	0	0	0	3	2	0	0	0	0	5
5:15 PM	to	5:30 PM	0	2	0	0	2	0	0	0	0	2	6
5:30 PM	to	5:45 PM	0	1	0	0	1	0	0	0	1	0	3
5:45 PM	to	6:00 PM	0	2	0	0	3	1	0	0	3	0	9

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	10	0	0	9	2	0	1	0	0	6	2	30
4:15 PM	to	5:15 PM	0	7	0	0	10	4	0	1	0	0	4	2	28
4:30 PM	to	5:30 PM	0	7	0	0	11	3	0	1	0	0	4	3	29
4:45 PM	to	5:45 PM	0	6	0	0	10	3	0	1	0	0	2	3	25
5:00 PM	to	6:00 PM	0	5	0	0	9	3	0	0	0	0	4	2	23

TEL: (510) 232 - 1271

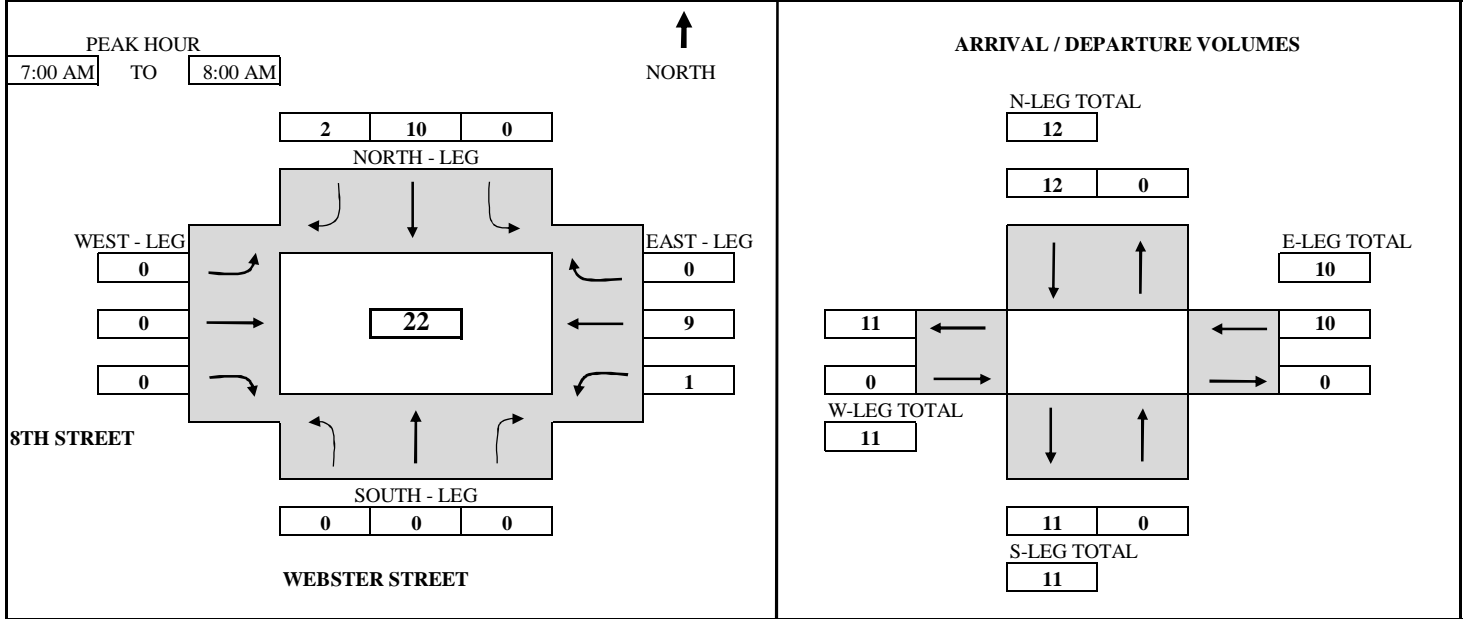
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-26AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM					7	0				1	3		11
7:15 AM	to 7:30 AM					8	0				1	6		15
7:30 AM	to 7:45 AM					9	0				1	8		18
7:45 AM	to 8:00 AM					10	2				1	9		22
8:00 AM	to 8:15 AM					12	2				1	11		26
8:15 AM	to 8:30 AM					13	2				1	11		27
8:30 AM	to 8:45 AM					17	3				1	12		33
8:45 AM	to 9:00 AM					18	3				2	14		37

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	0	0	0	7	0	0	0	0	1	3	0	11
7:15 AM	to 7:30 AM	0	0	0	0	1	0	0	0	0	0	3	0	4
7:30 AM	to 7:45 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
7:45 AM	to 8:00 AM	0	0	0	0	1	2	0	0	0	0	1	0	4
8:00 AM	to 8:15 AM	0	0	0	0	2	0	0	0	0	0	2	0	4
8:15 AM	to 8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:30 AM	to 8:45 AM	0	0	0	0	4	1	0	0	0	0	1	0	6
8:45 AM	to 9:00 AM	0	0	0	0	1	0	0	0	0	1	2	0	4

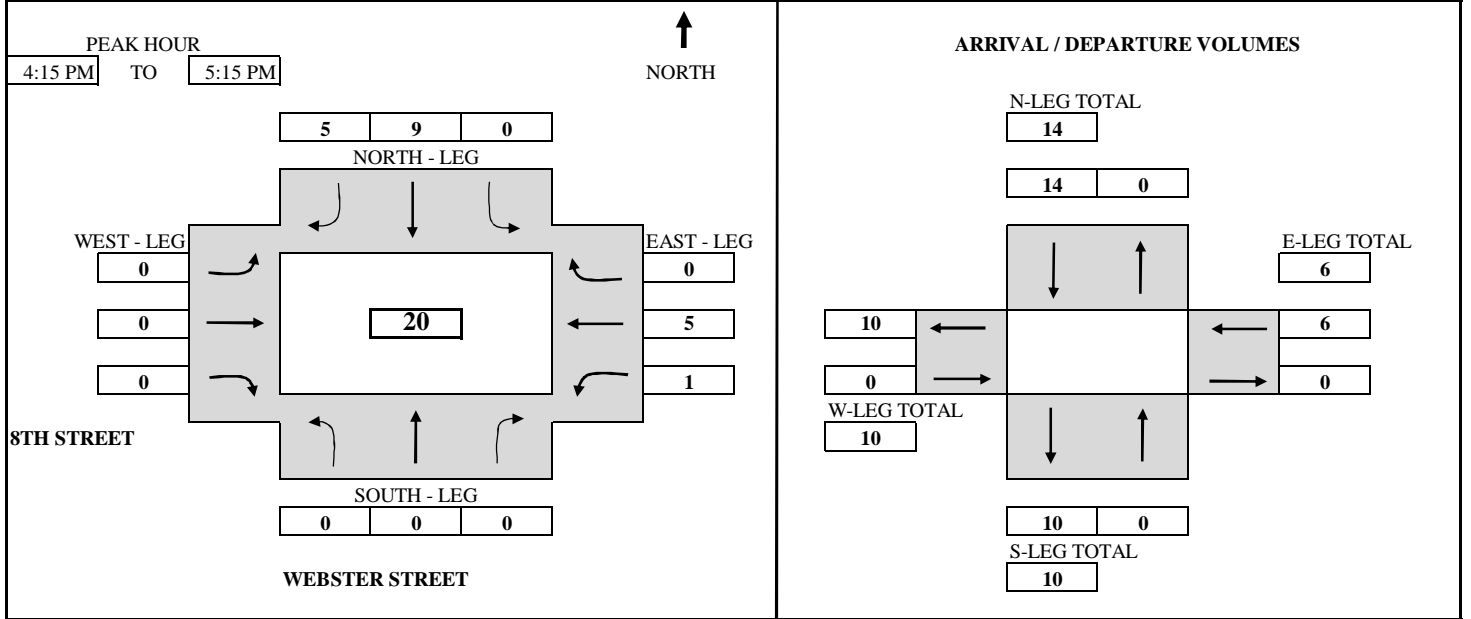
HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	0	0	0	10	2	0	0	0	1	9	0	22
7:15 AM	to 8:15 AM	0	0	0	0	5	2	0	0	0	0	8	0	15
7:30 AM	to 8:30 AM	0	0	0	0	5	2	0	0	0	0	5	0	12
7:45 AM	to 8:45 AM	0	0	0	0	8	3	0	0	0	0	4	0	15
8:00 AM	to 9:00 AM	0	0	0	0	8	1	0	0	0	1	5	0	15

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/23/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-26PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM				0	1					1	0		2
4:15 PM	to 4:30 PM				1	2					2	0		5
4:30 PM	to 4:45 PM				1	3					2	1		7
4:45 PM	to 5:00 PM				6	5					2	3		16
5:00 PM	to 5:15 PM				9	6					2	5		22
5:15 PM	to 5:30 PM				9	6					2	5		22
5:30 PM	to 5:45 PM				9	6					2	6		23
5:45 PM	to 6:00 PM				11	6					2	8		27

TOTAL BY PERIOD														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	2
4:15 PM	to 4:30 PM	0	0	0	0	1	1	0	0	0	1	0	0	3
4:30 PM	to 4:45 PM	0	0	0	0	0	1	0	0	0	0	1	0	2
4:45 PM	to 5:00 PM	0	0	0	0	5	2	0	0	0	0	2	0	9
5:00 PM	to 5:15 PM	0	0	0	0	3	1	0	0	0	0	2	0	6
5:15 PM	to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to 5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:45 PM	to 6:00 PM	0	0	0	0	2	0	0	0	0	0	2	0	4

HOURLY TOTALS														
TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
4:00 PM	to 5:00 PM	0	0	0	0	6	5	0	0	0	2	3	0	16
4:15 PM	to 5:15 PM	0	0	0	0	9	5	0	0	0	1	5	0	20
4:30 PM	to 5:30 PM	0	0	0	0	8	4	0	0	0	0	5	0	17
4:45 PM	to 5:45 PM	0	0	0	0	8	3	0	0	0	0	5	0	16
5:00 PM	to 6:00 PM	0	0	0	0	5	1	0	0	0	0	5	0	11

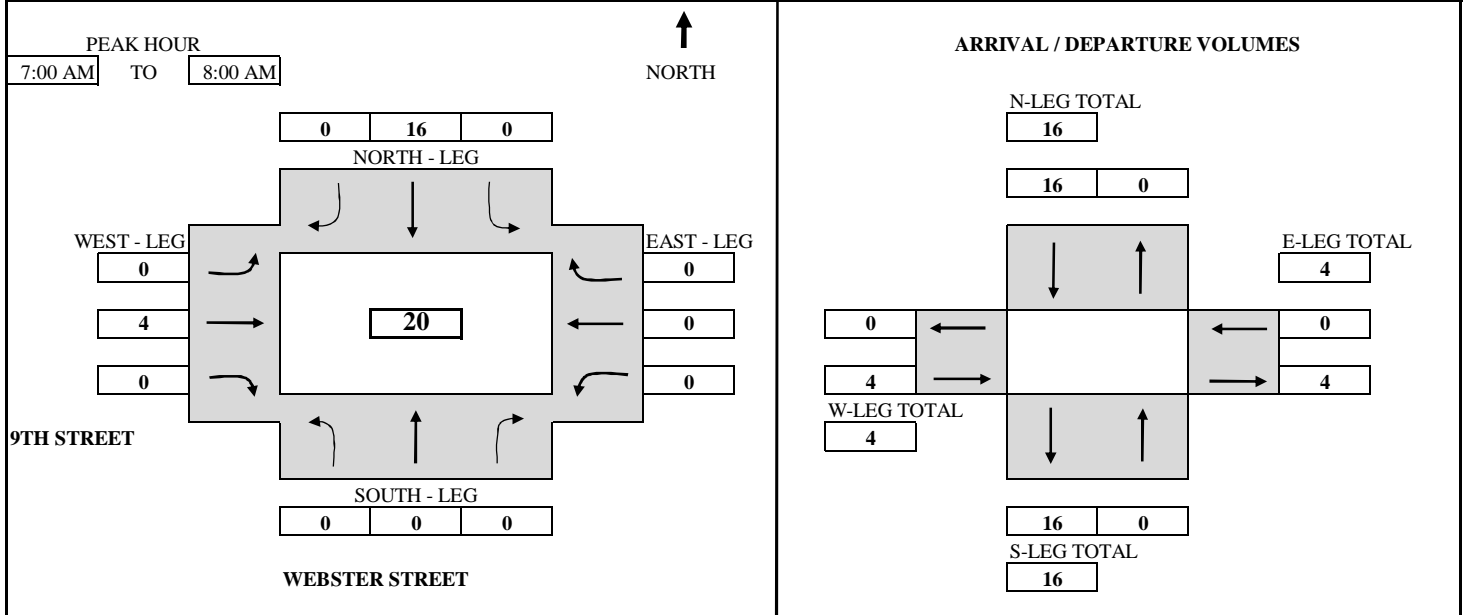
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/15/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> WEBSTER STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 9TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-27AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM				0	7	0		2				9
7:15 AM	to	7:30 AM				0	11	0		3				14
7:30 AM	to	7:45 AM				0	13	0		3				16
7:45 AM	to	8:00 AM				0	16	0		4				20
8:00 AM	to	8:15 AM				1	19	0		4				24
8:15 AM	to	8:30 AM				1	21	0		4				26
8:30 AM	to	8:45 AM				1	24	0		4				29
8:45 AM	to	9:00 AM				1	27	0		4				32

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	7	0	0	2	0	0	0	9
7:15 AM	to	7:30 AM	0	0	0	0	4	0	0	1	0	0	0	5
7:30 AM	to	7:45 AM	0	0	0	0	2	0	0	0	0	0	0	2
7:45 AM	to	8:00 AM	0	0	0	0	3	0	0	1	0	0	0	4
8:00 AM	to	8:15 AM	0	0	0	1	3	0	0	0	0	0	0	4
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	3	0	0	0	0	0	0	3
8:45 AM	to	9:00 AM	0	0	0	0	3	0	0	0	0	0	0	3

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	16	0	0	4	0	0	0	20
7:15 AM	to	8:15 AM	0	0	0	1	12	0	0	2	0	0	0	15
7:30 AM	to	8:30 AM	0	0	0	1	10	0	0	1	0	0	0	12
7:45 AM	to	8:45 AM	0	0	0	1	11	0	0	1	0	0	0	13
8:00 AM	to	9:00 AM	0	0	0	1	11	0	0	0	0	0	0	12

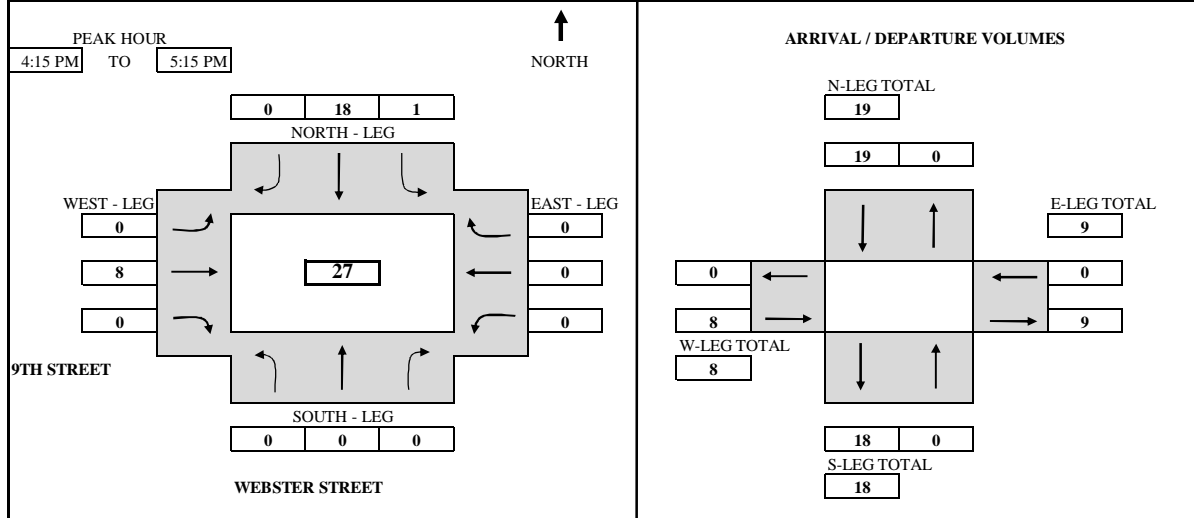
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/15/2012	DAY: TUESDAY
N-S APPROACH: WEBSTER STREET	SURVEY TIME: 4:00 PM	TO 6:00 PM
E-W APPROACH 9TH STREET	JURISDICTION: OAKLAND	FILE: 3205033-B-27PM



TIME PERIOD		NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>														
4:00 PM	to 4:15 PM				0	1	0	3	0					4
4:15 PM	to 4:30 PM				0	5	0	6	0					11
4:30 PM	to 4:45 PM				1	6	0	7	0					14
4:45 PM	to 5:00 PM				1	14	0	8	0					23
5:00 PM	to 5:15 PM				1	19	0	11	0					31
5:15 PM	to 5:30 PM				2	20	0	14	0					36
5:30 PM	to 5:45 PM				2	21	0	15	0					38
5:45 PM	to 6:00 PM				2	26	0	20	1					49
<b>TOTAL BY PERIOD</b>														
4:00 PM	to 4:15 PM	0	0	0	0	1	0	0	3	0	0	0	0	4
4:15 PM	to 4:30 PM	0	0	0	0	4	0	0	3	0	0	0	0	7
4:30 PM	to 4:45 PM	0	0	0	1	1	0	0	1	0	0	0	0	3
4:45 PM	to 5:00 PM	0	0	0	0	8	0	0	1	0	0	0	0	9
5:00 PM	to 5:15 PM	0	0	0	0	5	0	0	3	0	0	0	0	8
5:15 PM	to 5:30 PM	0	0	0	1	1	0	0	3	0	0	0	0	5
5:30 PM	to 5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	2
5:45 PM	to 6:00 PM	0	0	0	0	5	0	0	5	1	0	0	0	11
<b>HOURLY TOTALS</b>														
4:00 PM	to 5:00 PM	0	0	0	1	14	0	0	8	0	0	0	0	23
4:15 PM	to 5:15 PM	0	0	0	1	18	0	0	8	0	0	0	0	27
4:30 PM	to 5:30 PM	0	0	0	2	15	0	0	8	0	0	0	0	25
4:45 PM	to 5:45 PM	0	0	0	1	15	0	0	8	0	0	0	0	24
5:00 PM	to 6:00 PM	0	0	0	1	12	0	0	12	1	0	0	0	26

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

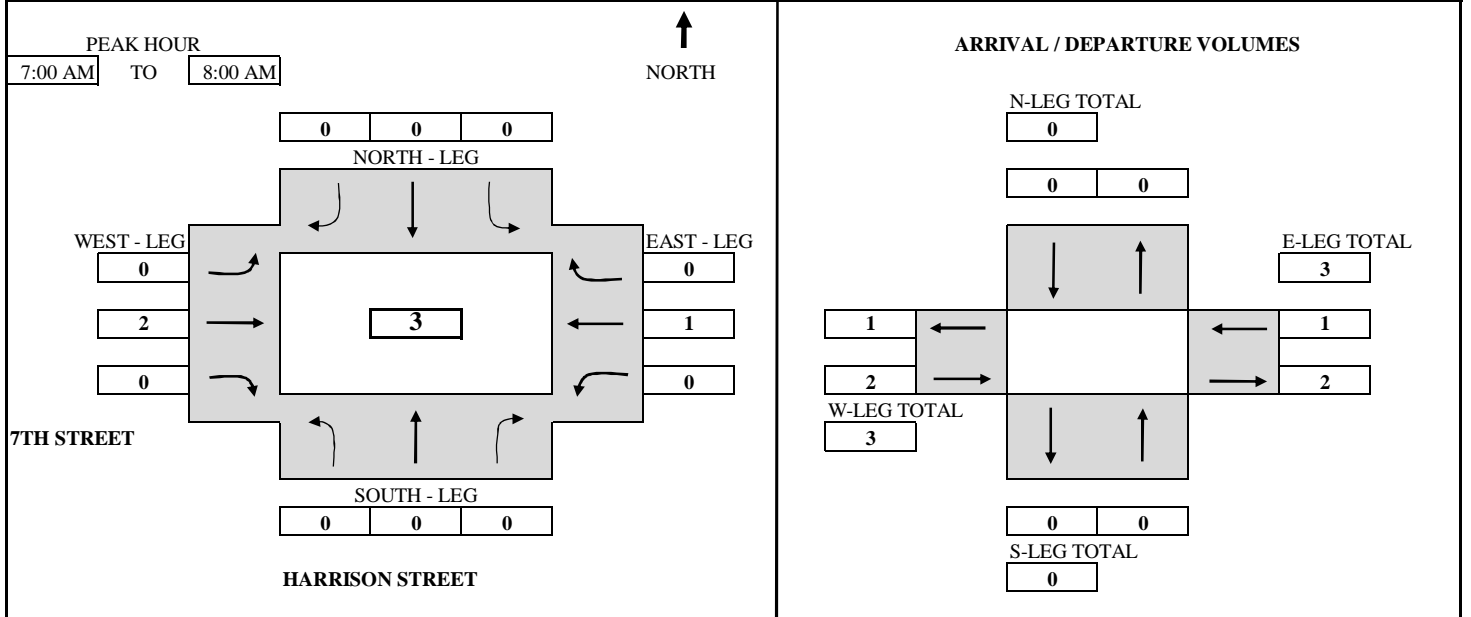
S out	N in
1	0
4	0
1	0
8	0
5	0
1	0
1	0
6	0
<b>27</b>	<b>0</b>

W in	E out
0	3
0	3
0	2
0	1
0	3
0	4
0	1
0	5
<b>0</b>	<b>22</b>

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: HARRISON STREET</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 7TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-28AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
From	To													

### SURVEY DATA

7:00 AM	to	7:15 AM							0			0		0
7:15 AM	to	7:30 AM							1			0		1
7:30 AM	to	7:45 AM							2			0		2
7:45 AM	to	8:00 AM							2			1		3
8:00 AM	to	8:15 AM							2			1		3
8:15 AM	to	8:30 AM							3			1		4
8:30 AM	to	8:45 AM							3			1		4
8:45 AM	to	9:00 AM							3			1		4

### TOTAL BY PERIOD

7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to	7:30 AM	0	0	0	0	0	0	1	0	0	0	0	1
7:30 AM	to	7:45 AM	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	0	0	1	0	0	0	0	1
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

### HOURLY TOTALS

7:00 AM	to	8:00 AM	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	to	8:15 AM	0	0	0	0	0	0	2	0	0	1	0	3
7:30 AM	to	8:30 AM	0	0	0	0	0	0	2	0	0	1	0	3
7:45 AM	to	8:45 AM	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	to	9:00 AM	0	0	0	0	0	0	1	0	0	0	0	1

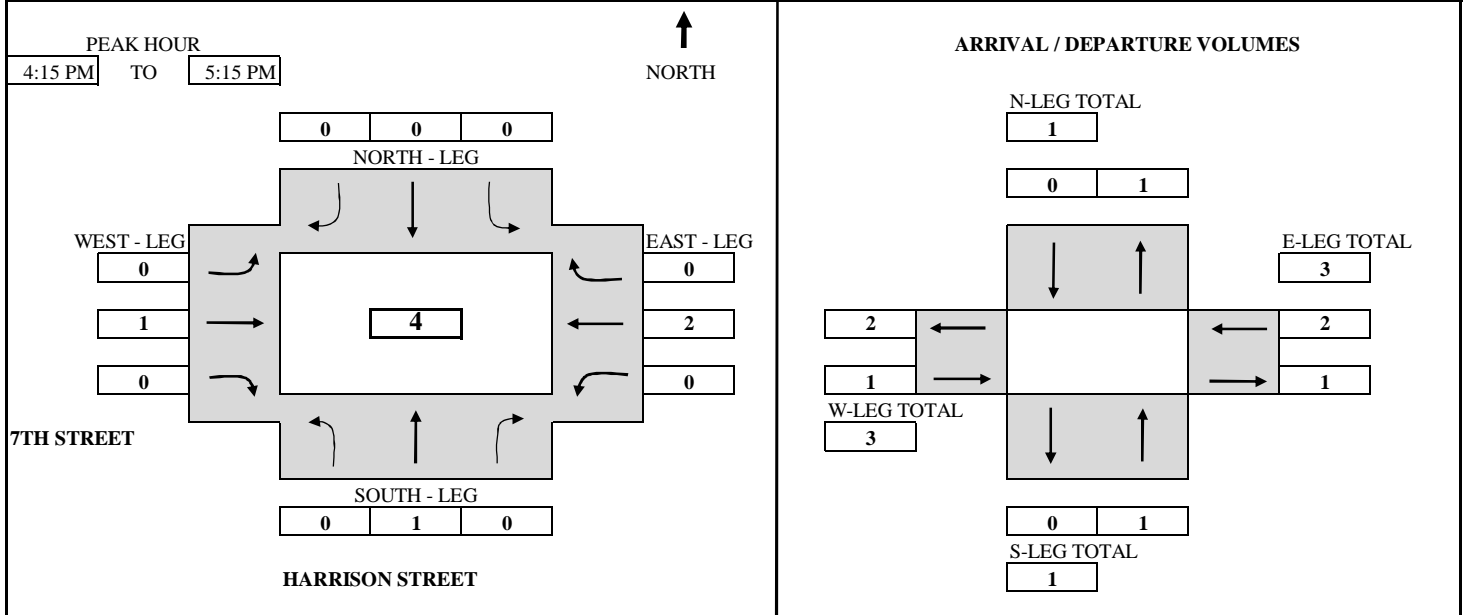
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH: HARRISON STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH 7TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-28PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0				0	0	0	0	0	0	0
4:15 PM	to 4:30 PM	1	0	0				1	1	0	0	0	0	2
4:30 PM	to 4:45 PM	1	0	0				1	1	0	0	1	0	3
4:45 PM	to 5:00 PM	1	0	0				1	1	0	0	1	0	3
5:00 PM	to 5:15 PM	1	0	0				1	1	0	0	2	0	4
5:15 PM	to 5:30 PM	1	0	0				2	2	0	0	2	0	5
5:30 PM	to 5:45 PM	1	0	0				2	2	0	0	2	0	5
5:45 PM	to 6:00 PM	1	0	0				2	2	0	0	2	0	5

TOTAL BY PERIOD														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to 4:30 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
4:30 PM	to 4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	to 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to 5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:15 PM	to 5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:30 PM	to 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	1	0	0	0	0	0	1	0	0	1	0	3
4:15 PM	to 5:15 PM	0	1	0	0	0	0	0	1	0	0	2	0	4
4:30 PM	to 5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	3
4:45 PM	to 5:45 PM	0	0	0	0	0	0	0	1	0	0	1	0	2
5:00 PM	to 6:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	2

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

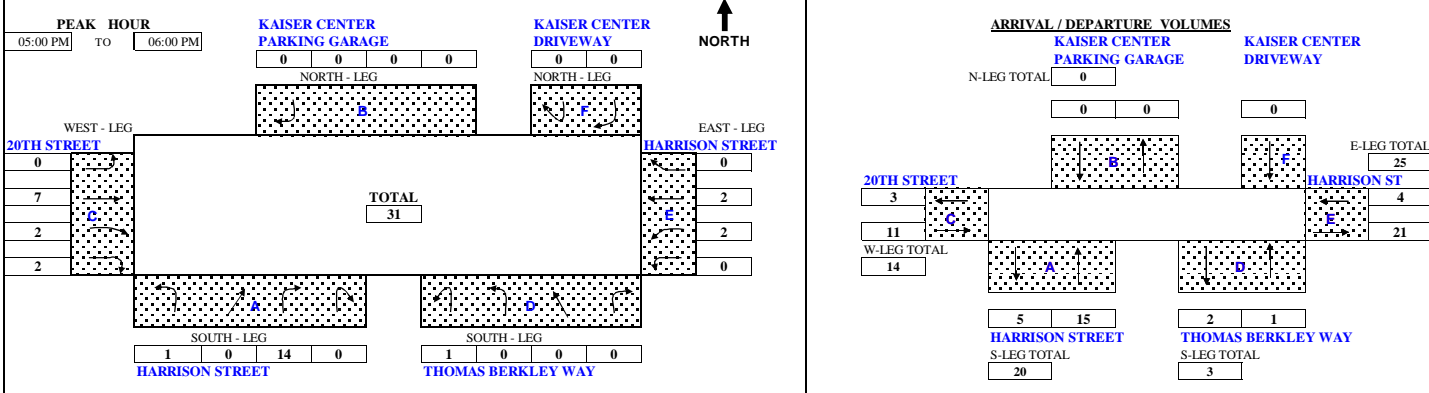
PROJECT: OAKLAND TRAFFIC STUDY		SURVEY DATE: 5/23/2012		DAY: WEDNESDAY																		
N-S APPROACH: HARRISON STREET		SURVEY TIME: 7:00 AM		TO 9:00 AM																		
E-W APPROACH: 20TH STREET		CITY: OAKLAND		FILE: 3205033-B-29AM																		
<b>PEAK HOUR</b> 08:00 AM TO 09:00 AM			<b>KAISER CENTER PARKING GARAGE</b> NORTH - LEG 0 0 0 0		<b>KAISER CENTER DRIVEWAY</b> NORTH - LEG 0 0																	
<b>WEST - LEG</b> 20TH STREET 0 0 1 1			<b>TOTAL</b> 31		<b>EAST - LEG</b> HARRISON STREET 0 18 4 0																	
<b>SOUTH - LEG</b> HARRISON STREET 0 3 0 0			<b>SOUTH - LEG</b> THOMAS BERKLEY WAY 0 4 0 0		<b>ARRIVAL / DEPARTURE VOLUMES</b> <b>KAISER CENTER PARKING GARAGE</b> N-LEG TOTAL 3 0 3 <b>KAISER CENTER DRIVEWAY</b> 0 <b>HARRISON ST</b> 22 2 W-LEG TOTAL 24 <b>HARRISON STREET</b> 5 3 HARRISON STREET S-LEG TOTAL 8 <b>THOMAS BERKLEY WAY</b> 1 4 S-LEG TOTAL 5																	
TIME PERIOD		A NB (HARRISON ST - NB)				D NB (THOMAS BERKLEY)				B SB (P. G.)		F SB (DWAY)		C EB (20TH STREET)				E WB (HARRISON ST - SB)				TOTAL
From	To	AC	AB	AE	AD	DA	DC	DB	DE	BC	FB	FC	CB	CE	CD	CA	ED	EA	EC	EB		
<b>SURVEY DATA</b>																						
7:00 AM	---	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5		6	
7:15 AM	---	7:30 AM	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	8		12	
7:30 AM	---	7:45 AM	1	0	0	0	0	1	0	0	0	0	2	0	1	0	0	2	10		17	
7:45 AM	---	8:00 AM	1	1	0	0	0	1	0	0	0	0	2	0	1	0	0	4	14		24	
8:00 AM	---	8:15 AM	4	1	0	0	0	1	0	0	0	0	2	0	1	0	0	4	17		30	
8:15 AM	---	8:30 AM	4	1	0	0	3	1	0	0	0	0	2	0	2	0	0	7	21		41	
8:30 AM	---	8:45 AM	4	1	0	0	4	1	0	0	0	0	2	1	2	0	0	7	24		46	
8:45 AM	---	9:00 AM	4	1	0	0	4	1	0	0	0	0	2	1	2	0	0	8	32		55	
<b>TOTAL BY PERIOD</b>																						
7:00 AM	---	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	6	
7:15 AM	---	7:30 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	3	0	6	
7:30 AM	---	7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	5	
7:45 AM	---	8:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	7	
8:00 AM	---	8:15 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	6	
8:15 AM	---	8:30 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	3	4	0	11	
8:30 AM	---	8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3	0	5	
8:45 AM	---	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	9	
<b>HOURLY TOTALS</b>																						
7:00 AM	---	8:00 AM	0	1	1	0	0	0	1	0	0	0	0	2	0	1	0	4	14	0	24	
7:15 AM	---	8:15 AM	0	4	1	0	0	0	1	0	0	0	0	2	0	1	0	3	12	0	24	
7:30 AM	---	8:30 AM	0	4	1	0	0	3	0	0	0	0	0	1	0	1	0	6	13	0	29	
7:45 AM	---	8:45 AM	0	3	1	0	0	4	0	0	0	0	0	0	1	1	0	5	14	0	29	
8:00 AM	---	9:00 AM	0	3	0	0	0	4	0	0	0	0	0	0	1	1	0	4	18	0	31	

Telephone: (510)232-1271

Fax: (510)232-1272

**B. A. Y. M. E. T. R. I. C. S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/23/2012	DAY: WEDNESDAY
N-S APPROACH: HARRISON STREET	SURVEY TIME: 4:00 PM	TO 6:00 PM
E-W APPROACH: 20TH STREET	CITY: OAKLAND	FILE: 3205033-B-29PM



TIME PERIOD	From	To	A NB (HARRISON ST - NB)				D NB (THOMAS BERKLEY)				B SB (P. G.)				F SB (DWAY)				C EB (20TH STREET)				E WB (HARRISON ST - SB)				TOTAL
			AC	AB	AE	AD	DA	DC	DB	DE	BC	BE	BF	BF	FC	CB	CE	CD	CA	ED	EA	EC	EB				
<b>SURVEY DATA</b>																											
4:00 PM	---	4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	
4:15 PM	---	4:30 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	3	12	
4:30 PM	---	4:45 PM	0	5	0	0	1	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	4	16	
4:45 PM	---	5:00 PM	0	6	0	0	1	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	5	20	
5:00 PM	---	5:15 PM	0	11	0	0	1	0	0	0	0	0	0	0	0	0	9	0	1	0	0	0	0	0	6	28	
5:15 PM	---	5:30 PM	0	13	0	0	1	0	0	0	0	0	0	0	0	0	9	0	1	0	0	0	0	0	6	30	
5:30 PM	---	5:45 PM	0	16	0	0	1	0	0	0	0	0	0	0	0	0	11	0	2	0	0	0	1	0	6	37	
5:45 PM	---	6:00 PM	1	20	1	1	0	0	0	0	0	0	0	0	0	0	15	2	2	0	0	2	0	7	51		
<b>TOTAL BY PERIOD</b>																											
4:00 PM	---	4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
4:15 PM	---	4:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	3	0	10
4:30 PM	---	4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	4
4:45 PM	---	5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	4
5:00 PM	---	5:15 PM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	8
5:15 PM	---	5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	---	5:45 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	0	0	7
5:45 PM	---	6:00 PM	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	1	1	0	0	14
<b>HOURLY TOTALS</b>																											
4:00 PM	---	5:00 PM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	5	0	20
4:15 PM	---	5:15 PM	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	8	0	1	0	0	0	0	6	0	26
4:30 PM	---	5:30 PM	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	3	0	18
4:45 PM	---	5:45 PM	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	5	0	2	0	0	1	2	0	0	21
5:00 PM	---	6:00 PM	1	0	14	0	0	0	0	0	0	0	0	0	0	0	0	7	2	2	0	0	2	2	0	0	31

Telephone: (510)232-1271

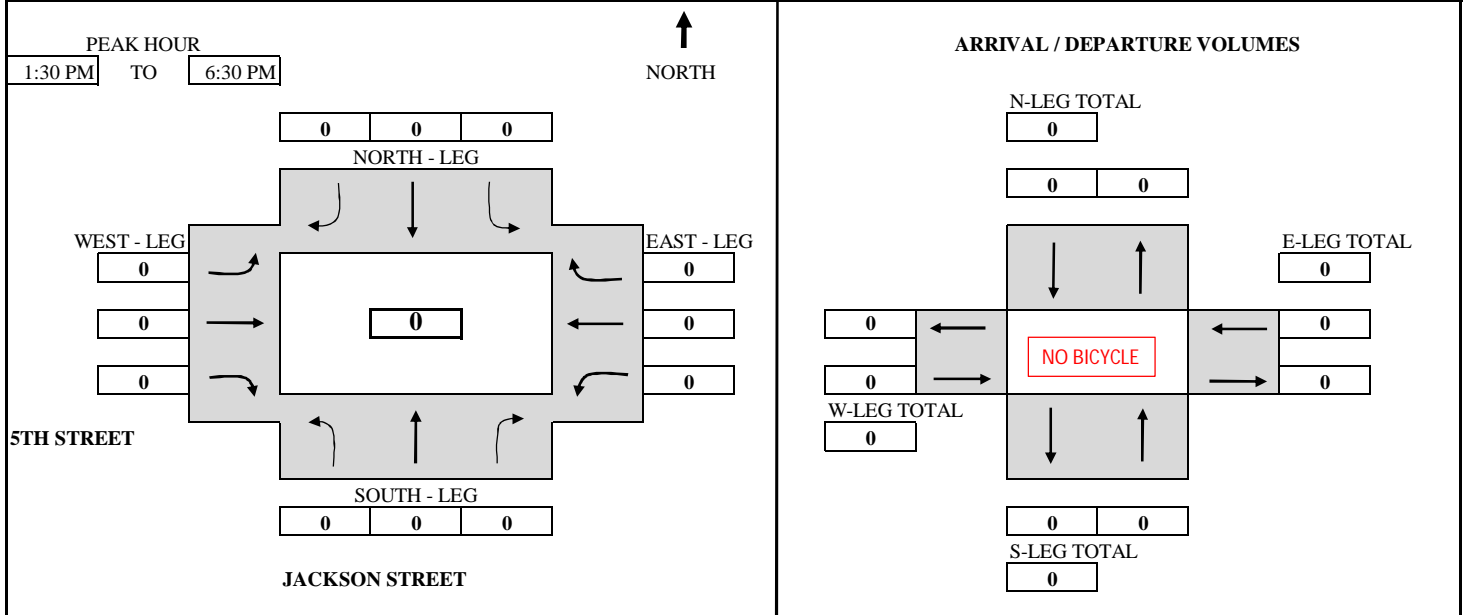
Fax: (510)232-1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/15/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-30AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM												0
7:15 AM	to	7:30 AM												0
7:30 AM	to	7:45 AM												0
7:45 AM	to	8:00 AM												0
8:00 AM	to	8:15 AM												0
8:15 AM	to	8:30 AM												0
8:30 AM	to	8:45 AM												0
8:45 AM	to	9:00 AM												0

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

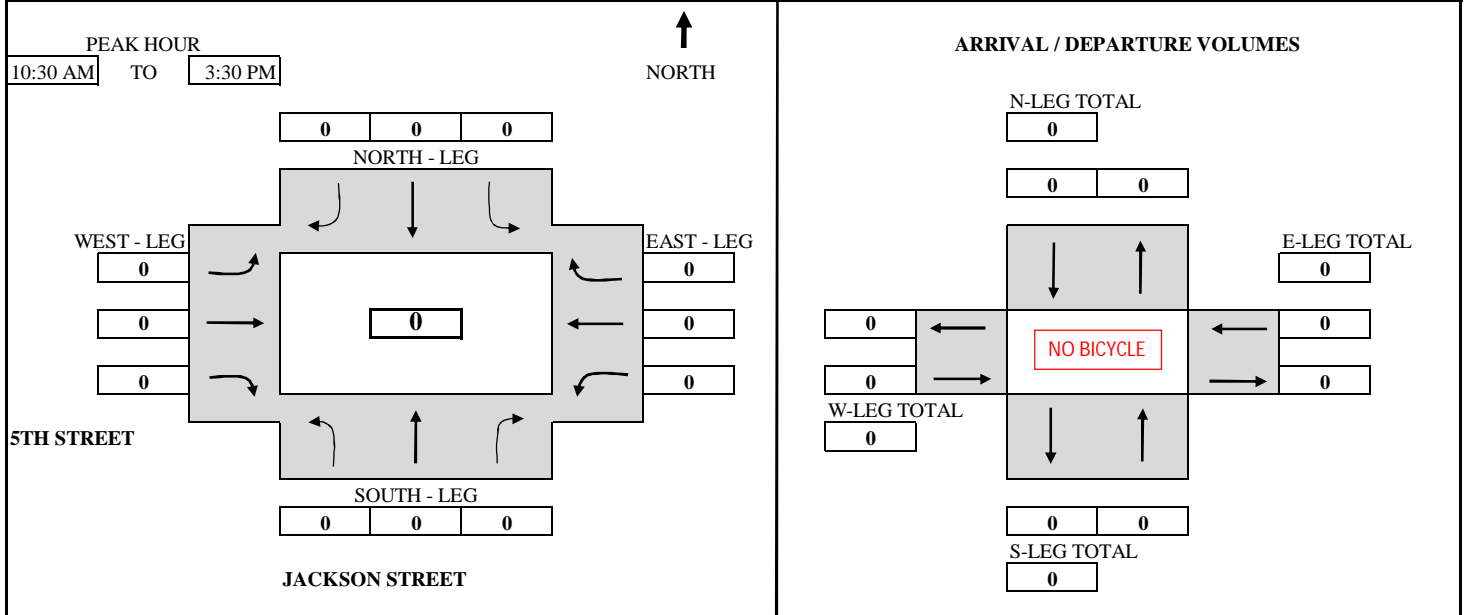
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/15/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 5TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-30PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM												0
4:15 PM	to	4:30 PM												0
4:30 PM	to	4:45 PM												0
4:45 PM	to	5:00 PM												0
5:00 PM	to	5:15 PM												0
5:15 PM	to	5:30 PM												0
5:30 PM	to	5:45 PM												0
5:45 PM	to	6:00 PM												0

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0

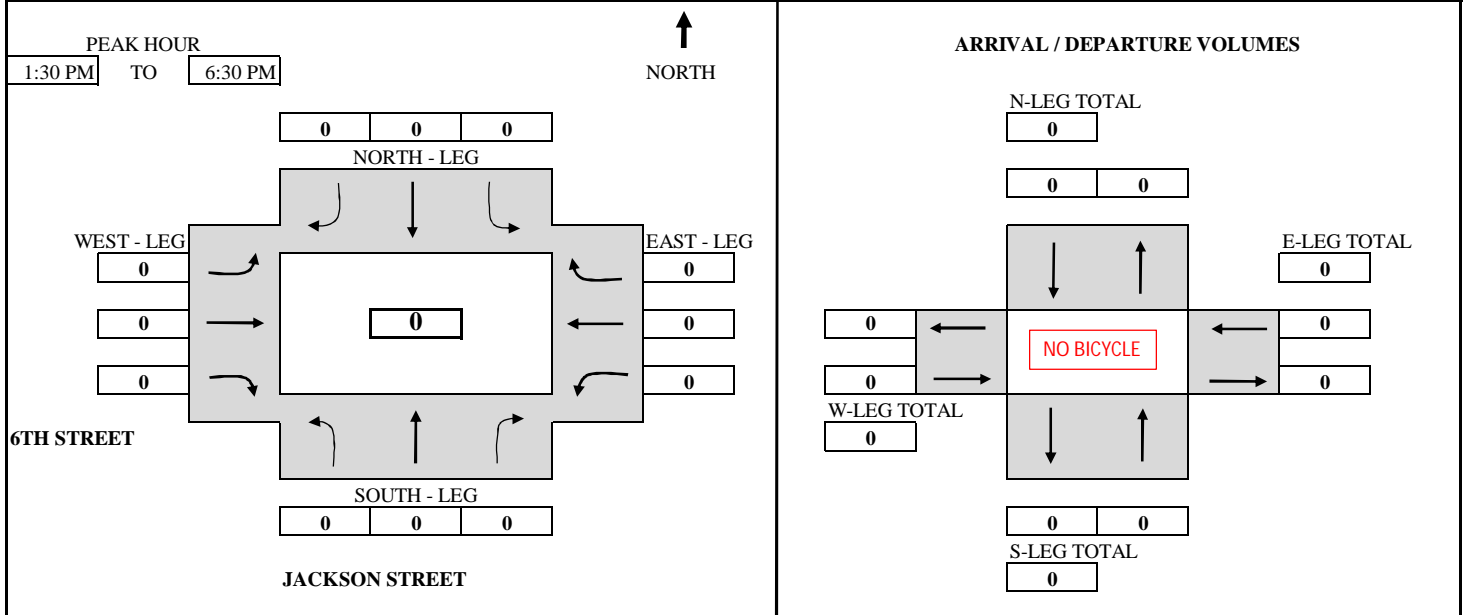
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/15/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-31AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM												0
7:15 AM	to	7:30 AM												0
7:30 AM	to	7:45 AM												0
7:45 AM	to	8:00 AM												0
8:00 AM	to	8:15 AM												0
8:15 AM	to	8:30 AM												0
8:30 AM	to	8:45 AM												0
8:45 AM	to	9:00 AM												0

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

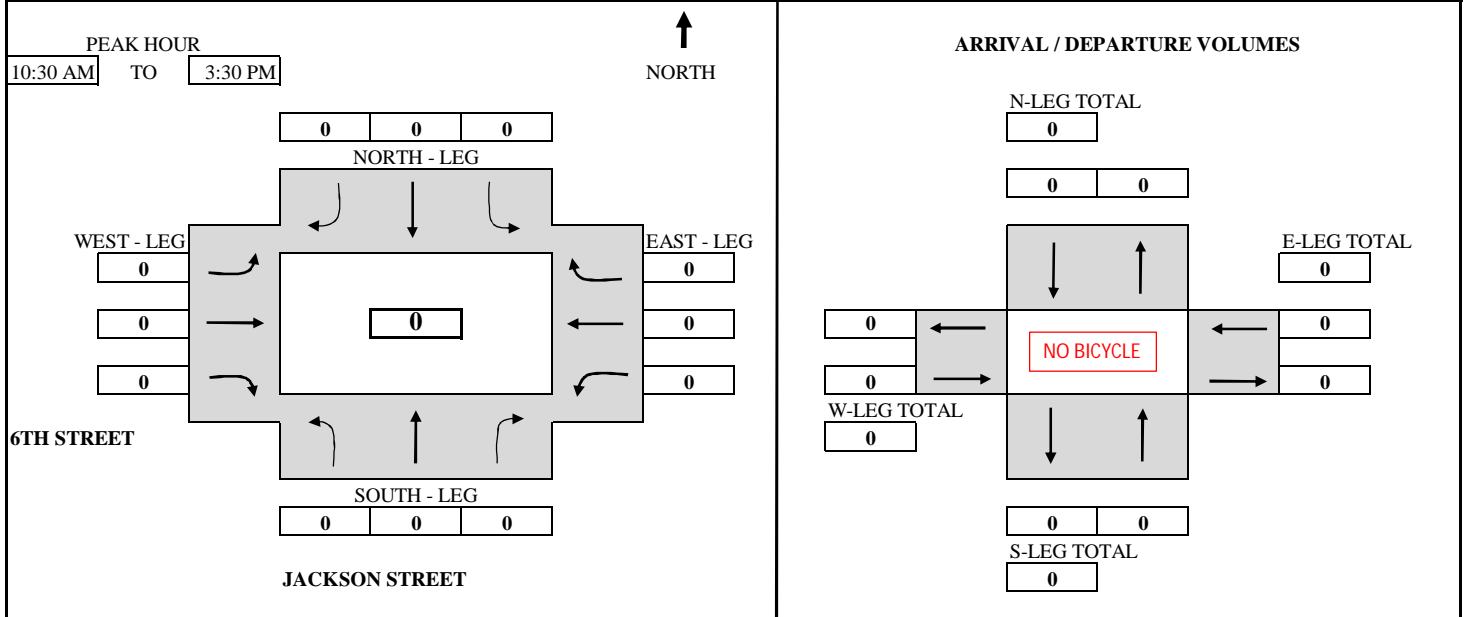
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/15/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 6TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-31PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
From	To													

### SURVEY DATA

4:00 PM	to	4:15 PM												0
4:15 PM	to	4:30 PM												0
4:30 PM	to	4:45 PM												0
4:45 PM	to	5:00 PM												0
5:00 PM	to	5:15 PM												0
5:15 PM	to	5:30 PM												0
5:30 PM	to	5:45 PM												0
5:45 PM	to	6:00 PM												0

### TOTAL BY PERIOD

4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0

### HOURLY TOTALS

4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0

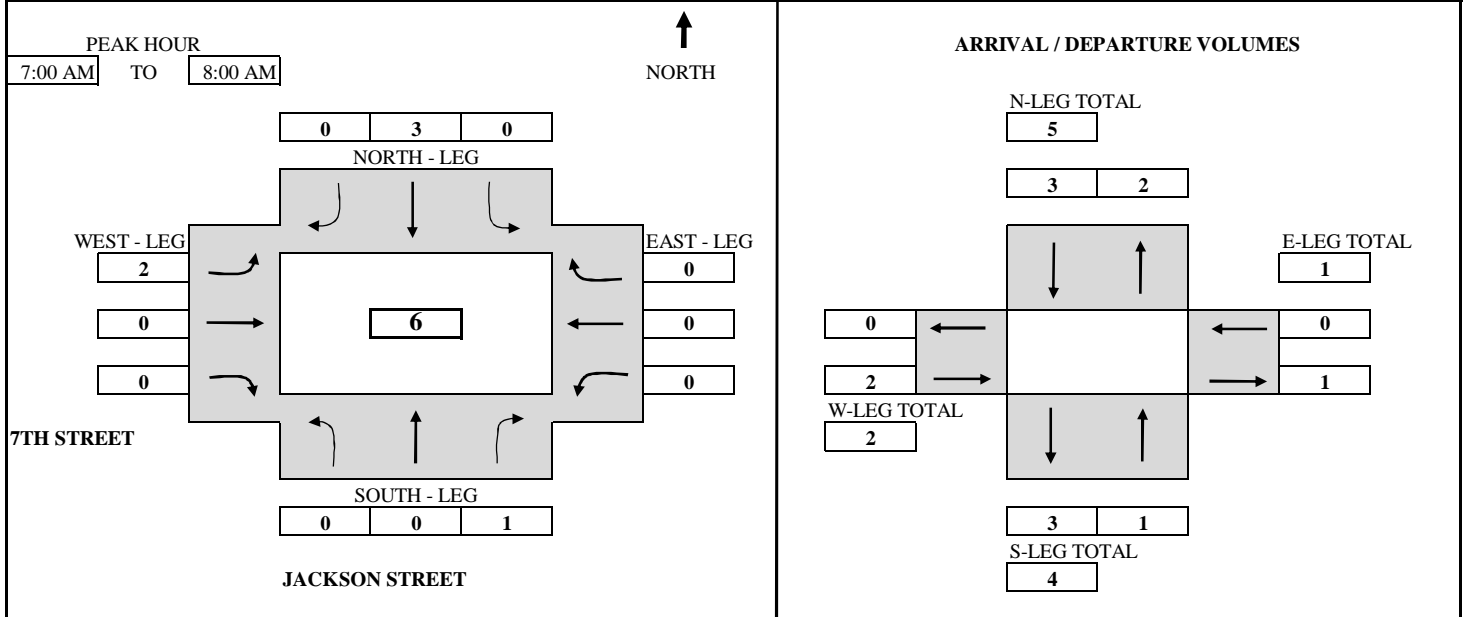
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-32AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
From	To													

SURVEY DATA														
7:00 AM	to	7:15 AM			1		1		2					4
7:15 AM	to	7:30 AM			1		1		2					4
7:30 AM	to	7:45 AM			1		1		2					4
7:45 AM	to	8:00 AM			1		3		2					6
8:00 AM	to	8:15 AM			1		3		2					6
8:15 AM	to	8:30 AM			1		5		2					8
8:30 AM	to	8:45 AM			1		6		2					9
8:45 AM	to	9:00 AM			1		6		2					9

TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	1	0	1	0	2	0	0	0	0	0	4
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	to	8:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0

HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	1	0	3	0	2	0	0	0	0	0	6
7:15 AM	to	8:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
7:30 AM	to	8:30 AM	0	0	0	0	4	0	0	0	0	0	0	0	4
7:45 AM	to	8:45 AM	0	0	0	0	5	0	0	0	0	0	0	0	5
8:00 AM	to	9:00 AM	0	0	0	0	3	0	0	0	0	0	0	0	3

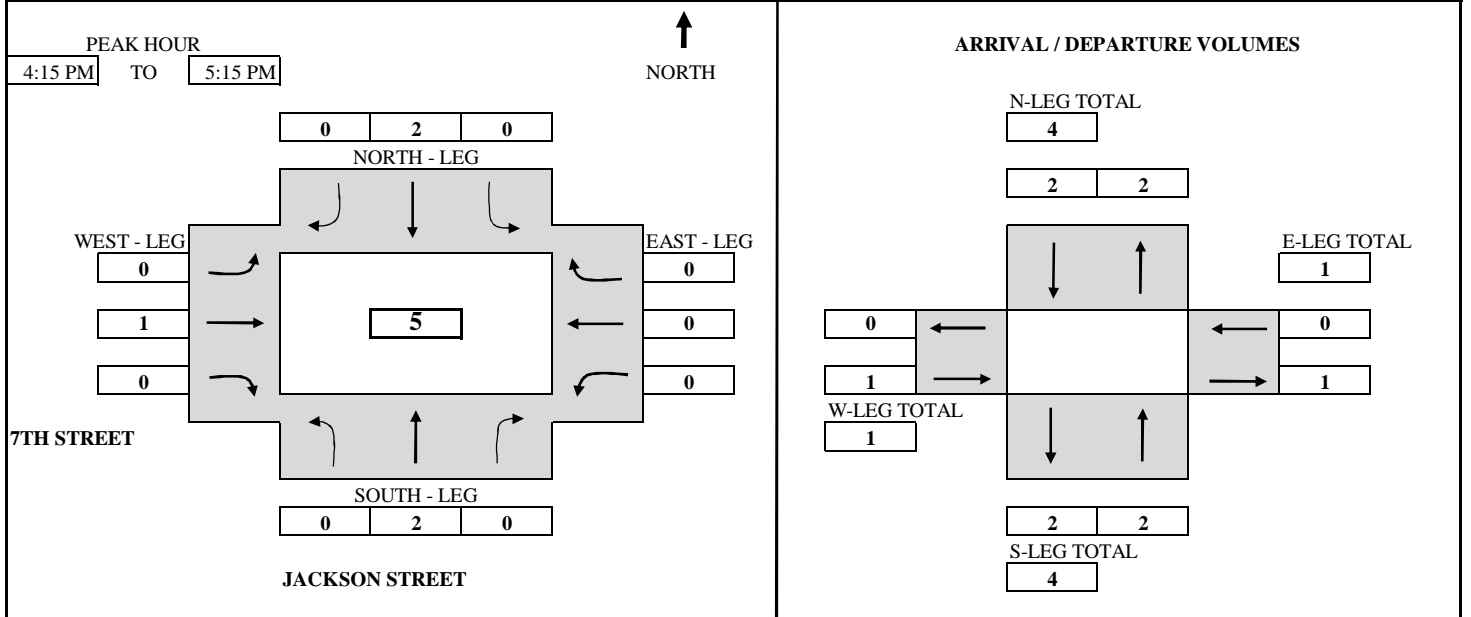
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/17/2012	<b>DAY:</b> THURSDAY
<b>N-S APPROACH:</b> JACKSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 7TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-32PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to 4:30 PM	2	0	0	0	0	0	0	1	0	0	0	0	3
4:30 PM	to 4:45 PM	2	1	0	0	1	0	0	0	0	0	0	0	4
4:45 PM	to 5:00 PM	2	1	0	0	1	0	0	0	0	0	0	0	4
5:00 PM	to 5:15 PM	2	2	0	0	2	0	0	0	0	0	0	0	5
5:15 PM	to 5:30 PM	2	2	0	0	2	0	0	1	0	0	0	0	6
5:30 PM	to 5:45 PM	2	2	0	0	2	0	0	0	0	0	0	0	6
5:45 PM	to 6:00 PM	3	2	0	0	2	0	0	1	0	0	0	0	8

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to 4:30 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
4:30 PM	to 4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:45 PM	to 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to 5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	to 5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:30 PM	to 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to 6:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	2

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	2	0	0	1	0	0	1	0	0	0	0	4
4:15 PM	to 5:15 PM	0	2	0	0	2	0	0	1	0	0	0	0	5
4:30 PM	to 5:30 PM	0	0	0	0	2	0	0	1	0	0	0	0	3
4:45 PM	to 5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	2
5:00 PM	to 6:00 PM	0	1	0	0	1	0	0	2	0	0	0	0	4

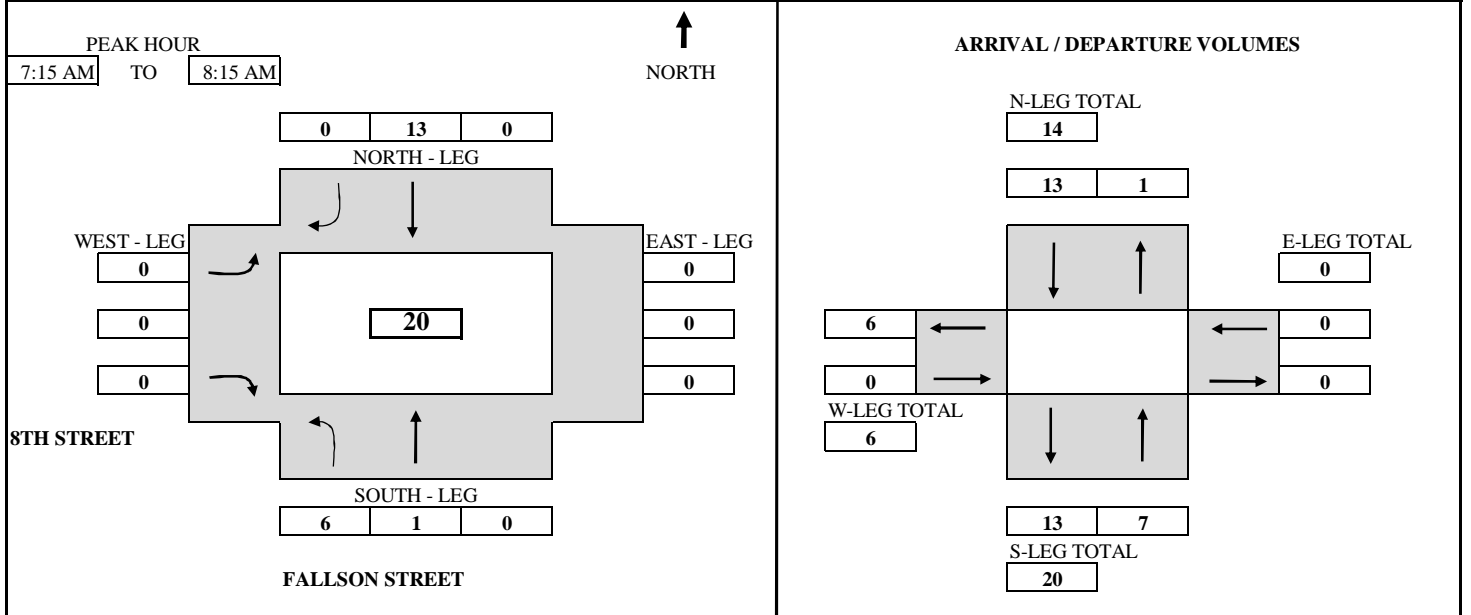
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> FALLSON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-33AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	1	0	0	1	0	0	0	0	0	0	0	2
7:15 AM	to	7:30 AM	3	1	0	6	0	0	0	0	0	0	0	10
7:30 AM	to	7:45 AM	5	1	0	7	0	0	0	0	0	0	0	13
7:45 AM	to	8:00 AM	6	1	0	8	0	0	0	0	0	0	0	15
8:00 AM	to	8:15 AM	7	1	0	14	0	0	0	0	0	0	0	22
8:15 AM	to	8:30 AM	8	1	0	17	0	0	0	0	0	0	0	26
8:30 AM	to	8:45 AM	9	1	0	17	0	0	0	0	0	0	0	27
8:45 AM	to	9:00 AM	9	1	0	18	0	0	0	0	0	0	0	28

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	1	0	0	0	1	0	0	0	0	0	0	2
7:15 AM	to	7:30 AM	2	1	0	0	5	0	0	0	0	0	0	8
7:30 AM	to	7:45 AM	2	0	0	0	1	0	0	0	0	0	0	3
7:45 AM	to	8:00 AM	1	0	0	0	1	0	0	0	0	0	0	2
8:00 AM	to	8:15 AM	1	0	0	0	6	0	0	0	0	0	0	7
8:15 AM	to	8:30 AM	1	0	0	0	3	0	0	0	0	0	0	4
8:30 AM	to	8:45 AM	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	to	9:00 AM	0	0	0	0	1	0	0	0	0	0	0	1

HOURLY TOTALS														
7:00 AM	to	8:00 AM	6	1	0	0	8	0	0	0	0	0	0	15
7:15 AM	to	8:15 AM	6	1	0	0	13	0	0	0	0	0	0	20
7:30 AM	to	8:30 AM	5	0	0	0	11	0	0	0	0	0	0	16
7:45 AM	to	8:45 AM	4	0	0	0	10	0	0	0	0	0	0	14
8:00 AM	to	9:00 AM	3	0	0	0	10	0	0	0	0	0	0	13

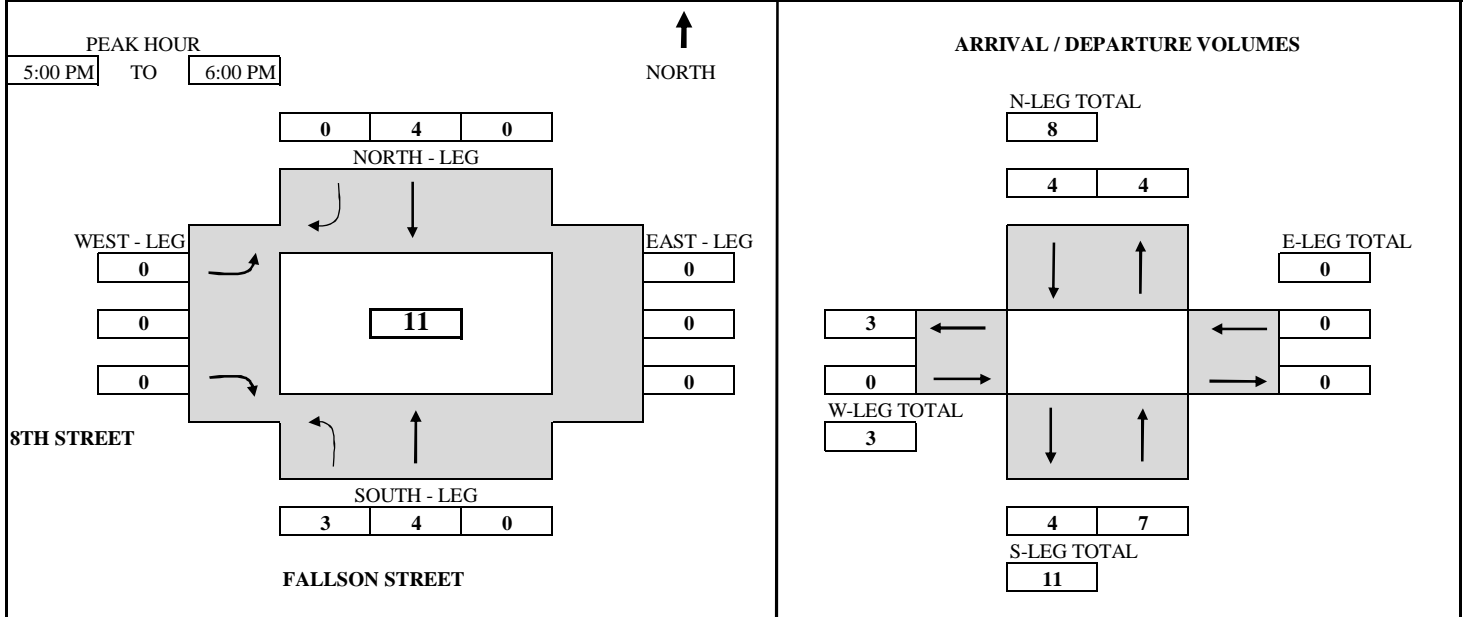
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> FALLSON STREET	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-33PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
From	To													

SURVEY DATA														
4:00 PM	to	4:15 PM	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	to	4:30 PM	1	1	0	0	0	0	0	0	0	0	0	3
4:30 PM	to	4:45 PM	3	1	0	0	0	0	0	0	0	0	0	5
4:45 PM	to	5:00 PM	4	2	0	0	0	0	0	0	0	0	0	7
5:00 PM	to	5:15 PM	5	2	0	0	2	0	0	0	0	0	0	9
5:15 PM	to	5:30 PM	5	2	0	0	2	0	0	0	0	0	0	9
5:30 PM	to	5:45 PM	6	4	0	0	3	0	0	0	0	0	0	13
5:45 PM	to	6:00 PM	7	6	0	0	5	0	0	0	0	0	0	18

TOTAL BY PERIOD														
4:00 PM	to	4:15 PM	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	to	4:30 PM	1	1	0	0	0	0	0	0	0	0	0	2
4:30 PM	to	4:45 PM	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	to	5:00 PM	1	1	0	0	0	0	0	0	0	0	0	2
5:00 PM	to	5:15 PM	1	0	0	0	1	0	0	0	0	0	0	2
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	1	2	0	0	1	0	0	0	0	0	0	4
5:45 PM	to	6:00 PM	1	2	0	0	2	0	0	0	0	0	0	5

HOURLY TOTALS														
4:00 PM	to	5:00 PM	4	2	0	0	1	0	0	0	0	0	0	7
4:15 PM	to	5:15 PM	5	2	0	0	1	0	0	0	0	0	0	8
4:30 PM	to	5:30 PM	4	1	0	0	1	0	0	0	0	0	0	6
4:45 PM	to	5:45 PM	3	3	0	0	2	0	0	0	0	0	0	8
5:00 PM	to	6:00 PM	3	4	0	0	4	0	0	0	0	0	0	11

TEL: (510) 232 - 1271

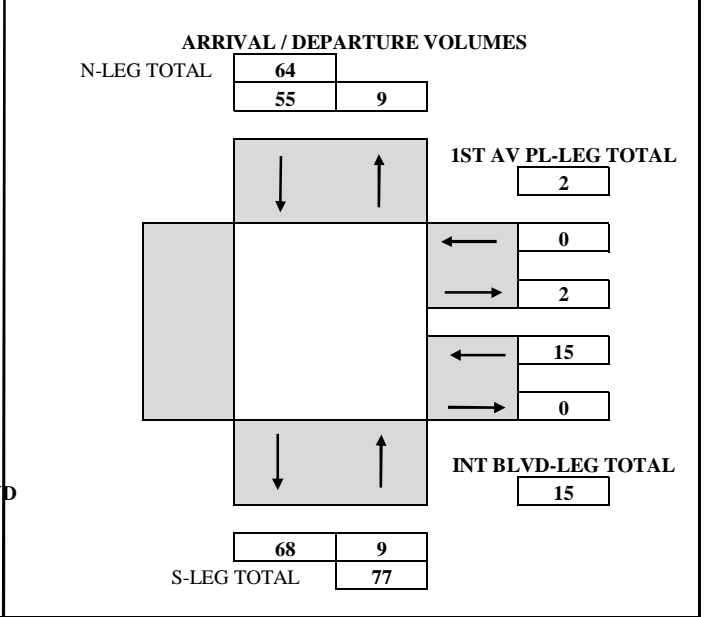
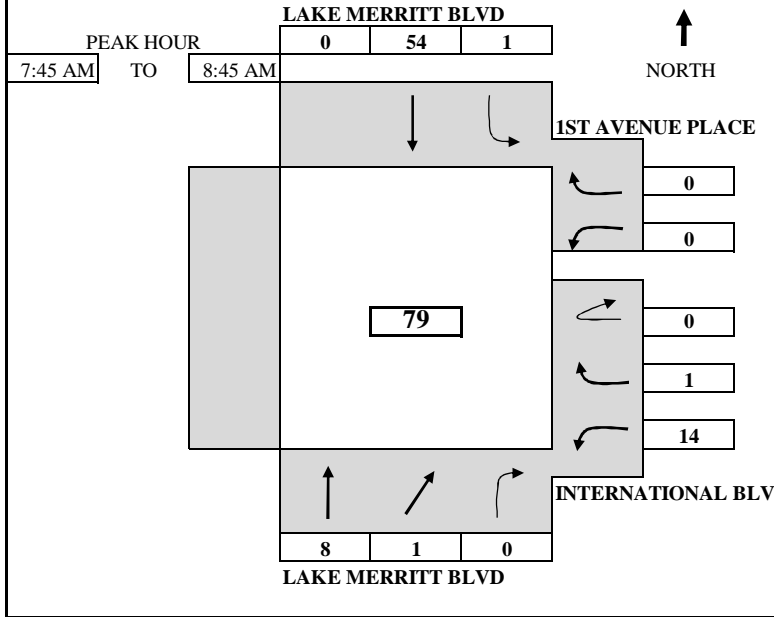
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BLVD - 1ST AVENUE PL	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> INTERNATIONAL BLVD	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-34AM



TIME	PERIOD	NB (LAKE MERRITT BL)			SB (LAKE MERRITT BL)			WB (1 ST AVENUE PL)			WB (INTERNATIONAL BL)			TOTAL
		From	To	THRU	1ST AV	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LM (SB)	

SURVEY DATA														
7:00 AM	to	7:15 AM	0	0	0	7	0	1	2	0	1			11
7:15 AM	to	7:30 AM	1	0	0	18	0	1	9	0	1			30
7:30 AM	to	7:45 AM	1	0	0	27	0	3	14	0	1			46
7:45 AM	to	8:00 AM	2	0	0	41	0	3	16	0	1			63
8:00 AM	to	8:15 AM	4	0	0	51	0	3	21	1	1			81
8:15 AM	to	8:30 AM	7	0	0	66	0	3	28	1	1			106
8:30 AM	to	8:45 AM	9	1	1	81	0	3	28	1	1			125
8:45 AM	to	9:00 AM	9	1	1	92	0	3	28	1	1			136

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	7	0	0	1	0	2	0	1	11
7:15 AM	to	7:30 AM	1	0	0	11	0	0	7	0	0	0	0	19
7:30 AM	to	7:45 AM	0	0	0	9	0	0	5	0	0	0	0	16
7:45 AM	to	8:00 AM	1	0	0	14	0	0	2	0	0	0	0	17
8:00 AM	to	8:15 AM	2	0	0	10	0	0	5	1	0			18
8:15 AM	to	8:30 AM	3	0	0	15	0	0	7	0	0			25
8:30 AM	to	8:45 AM	2	1	0	15	0	0	0	0	0			19
8:45 AM	to	9:00 AM	0	0	0	11	0	0	0	0	0			11

HOURLY TOTALS														
7:00 AM	to	8:00 AM	2	0	0	41	0	0	3	0	16	0	1	63
7:15 AM	to	8:15 AM	4	0	0	44	0	0	2	0	19	1	0	70
7:30 AM	to	8:30 AM	6	0	0	48	0	0	2	0	19	1	0	76
7:45 AM	to	8:45 AM	8	1	0	54	0	0	0	0	14	1	0	79
8:00 AM	to	9:00 AM	7	1	0	51	0	0	0	0	12	1	0	73

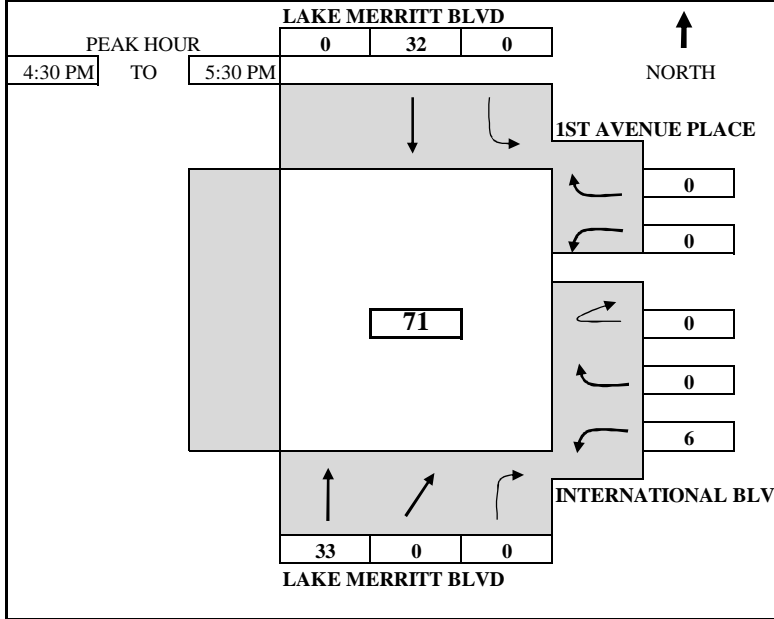
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BLVD - 1ST AVENUE PL	<b>SURVEY TIME:</b> 4:00 PM	<b>TO:</b> 6:00 PM
<b>E-W APPROACH:</b> INTERNATIONAL BLVD	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-34PM



**ARRIVAL / DEPARTURE VOLUMES**

N-LEG TOTAL	65	
	32	33
1ST AV PL-LEG TOTAL	0	
INT BLVD-LEG TOTAL	6	
S-LEG TOTAL	38	33
	71	

TIME	PERIOD	NB (LAKE MERRITT BL)			SB (LAKE MERRITT BL)			WB (1 ST AVENUE PL)			WB (INTERNATIONAL BL)			TOTAL
		THRU	1ST AV	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LM (SB)	LM (NB)	1ST AV	

**SURVEY DATA**

4:00 PM	to	4:15 PM	6			4				4	0		14
4:15 PM	to	4:30 PM	7			12				5	1		25
4:30 PM	to	4:45 PM	12			23				7	1		43
4:45 PM	to	5:00 PM	21			32				7	1		61
5:00 PM	to	5:15 PM	28			41				10	1		80
5:15 PM	to	5:30 PM	40			44				11	1		96
5:30 PM	to	5:45 PM	47			49				12	1		109
5:45 PM	to	6:00 PM	52			59				15	1		127

**TOTAL BY PERIOD**

4:00 PM	to	4:15 PM	6	0	0	0	4	0	0	0	4	0	0	14
4:15 PM	to	4:30 PM	1	0	0	0	8	0	0	0	1	1	0	11
4:30 PM	to	4:45 PM	5	0	0	0	11	0	0	0	2	0	0	18
4:45 PM	to	5:00 PM	9	0	0	0	9	0	0	0	0	0	0	18
5:00 PM	to	5:15 PM	7	0	0	0	9	0	0	0	3	0	0	19
5:15 PM	to	5:30 PM	12	0	0	0	3	0	0	0	1	0	0	16
5:30 PM	to	5:45 PM	7	0	0	0	5	0	0	0	1	0	0	13
5:45 PM	to	6:00 PM	5	0	0	0	10	0	0	0	3	0	0	18

**HOURLY TOTALS**

4:00 PM	to	5:00 PM	21	0	0	0	32	0	0	0	7	1	0	61
4:15 PM	to	5:15 PM	22	0	0	0	37	0	0	0	6	1	0	66
4:30 PM	to	5:30 PM	33	0	0	0	32	0	0	0	6	0	0	71
4:45 PM	to	5:45 PM	35	0	0	0	26	0	0	0	5	0	0	66
5:00 PM	to	6:00 PM	31	0	0	0	27	0	0	0	8	0	0	66

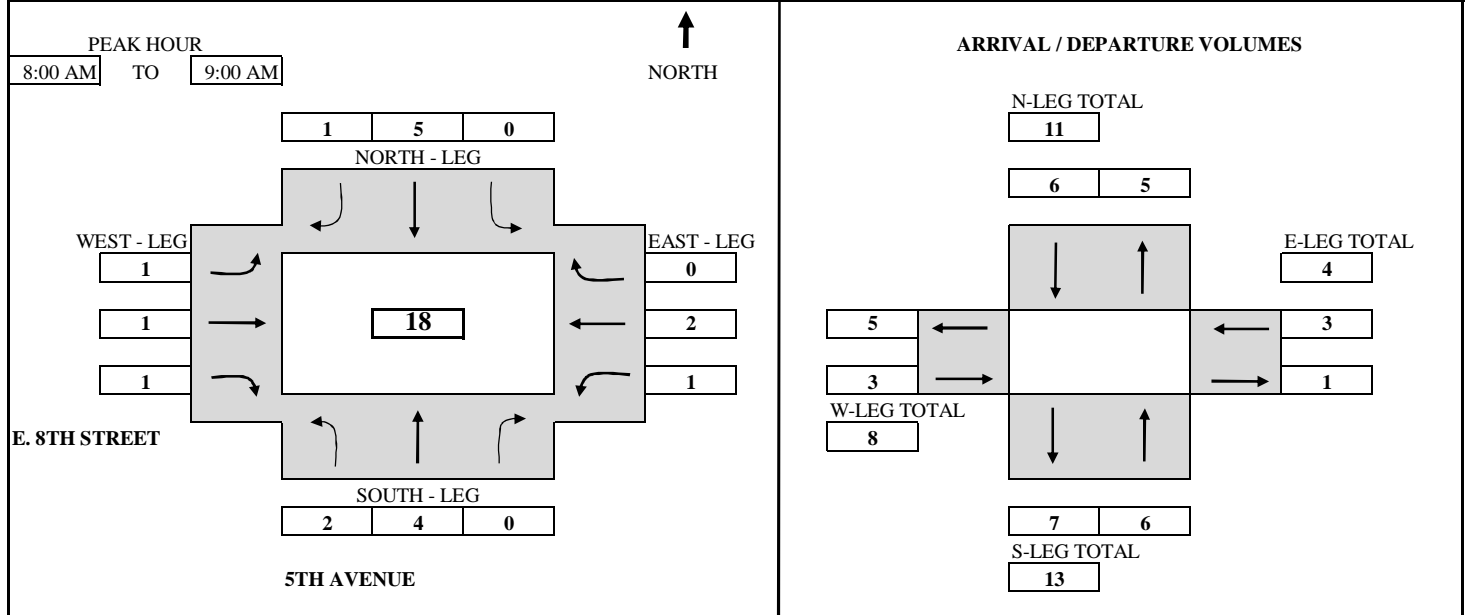
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> 5TH AVENUE	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> E. 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-35AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	2
7:15 AM	to 7:30 AM	0	2	0	1	1	0	0	1	0	1	0	1	6
7:30 AM	to 7:45 AM	0	2	0	3	2	0	0	1	0	2	0	2	10
7:45 AM	to 8:00 AM	0	2	0	4	2	0	0	1	0	4	0	4	13
8:00 AM	to 8:15 AM	1	3	0	5	2	1	0	1	0	4	0	4	17
8:15 AM	to 8:30 AM	2	4	0	5	2	1	1	2	0	4	0	4	21
8:30 AM	to 8:45 AM	2	5	0	7	3	1	1	2	1	5	1	5	27
8:45 AM	to 9:00 AM	2	6	0	9	3	1	1	2	1	6	1	6	31

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	2
7:15 AM	to 7:30 AM	0	1	0	0	0	1	0	0	1	0	1	0	4
7:30 AM	to 7:45 AM	0	0	0	0	2	1	0	0	0	0	1	0	4
7:45 AM	to 8:00 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
8:00 AM	to 8:15 AM	1	1	0	0	1	0	1	0	0	0	0	0	4
8:15 AM	to 8:30 AM	1	1	0	0	0	0	0	1	1	0	0	0	4
8:30 AM	to 8:45 AM	0	1	0	0	2	1	0	0	0	1	1	0	6
8:45 AM	to 9:00 AM	0	1	0	0	2	0	0	0	0	0	1	0	4

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM	to 8:00 AM	0	2	0	0	4	2	0	0	1	0	4	0	13
7:15 AM	to 8:15 AM	1	2	0	0	4	2	1	0	1	0	4	0	15
7:30 AM	to 8:30 AM	2	2	0	0	4	1	1	1	1	0	3	0	15
7:45 AM	to 8:45 AM	2	3	0	0	4	1	1	1	1	1	3	0	17
8:00 AM	to 9:00 AM	2	4	0	0	5	1	1	1	1	1	2	0	18

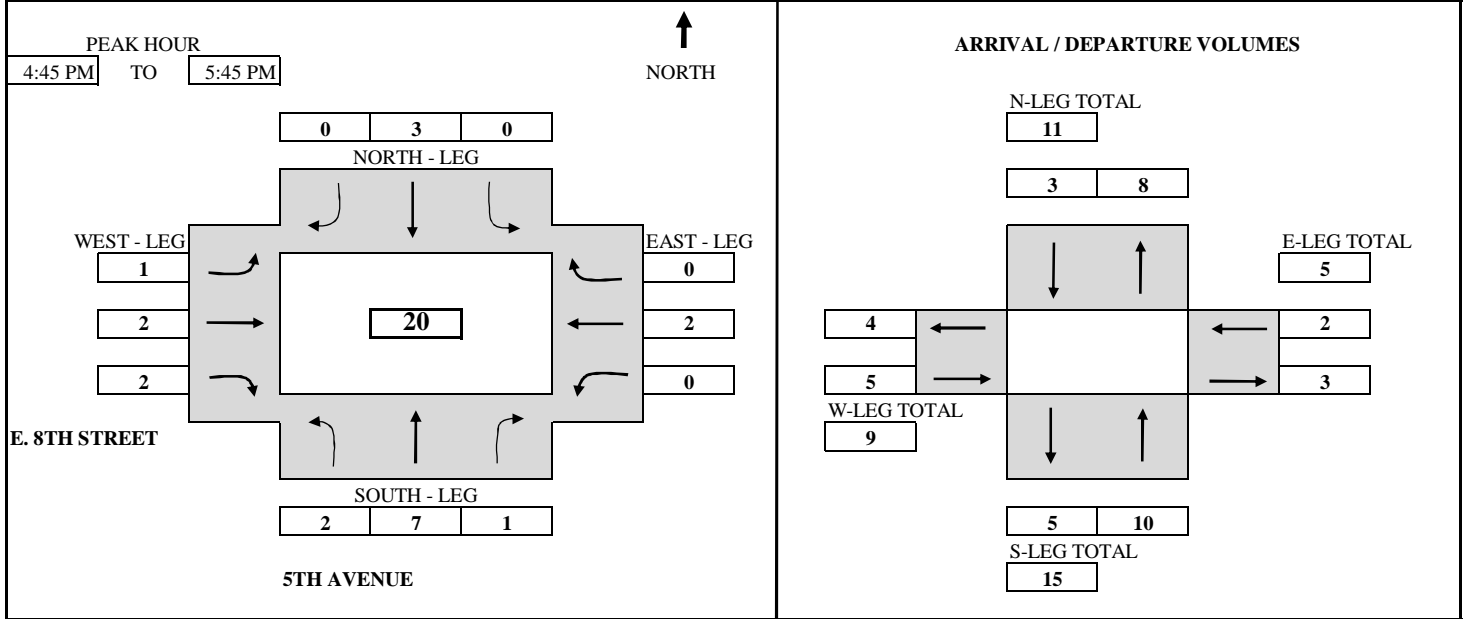
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> 5TH AVENUE	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH:</b> E. 8TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-35PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0		3		0	0	0		1		4
4:15 PM	to 4:30 PM	0	0	1		4		0	0	0		1		6
4:30 PM	to 4:45 PM	0	0	1		4		1	0	0		2		8
4:45 PM	to 5:00 PM	0	2	1		5		2	0	0		3		13
5:00 PM	to 5:15 PM	0	3	1		5		2	1	1		4		17
5:15 PM	to 5:30 PM	1	6	2		6		2	1	2		4		24
5:30 PM	to 5:45 PM	2	7	2		7		2	2	2		4		28
5:45 PM	to 6:00 PM	2	9	2		8		2	3	3		4		33

TOTAL BY PERIOD														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	0	0	0	3	0	0	0	0	0	1	0	4
4:15 PM	to 4:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	2
4:30 PM	to 4:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	2
4:45 PM	to 5:00 PM	0	2	0	0	1	0	1	0	0	0	1	0	5
5:00 PM	to 5:15 PM	0	1	0	0	0	0	0	1	1	0	1	0	4
5:15 PM	to 5:30 PM	1	3	1	0	1	0	0	0	1	0	0	0	7
5:30 PM	to 5:45 PM	1	1	0	0	1	0	0	1	0	0	0	0	4
5:45 PM	to 6:00 PM	0	2	0	0	1	0	0	1	1	0	0	0	5

HOURLY TOTALS														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	2	1	0	5	0	2	0	0	0	3	0	13
4:15 PM	to 5:15 PM	0	3	1	0	2	0	2	1	1	0	3	0	13
4:30 PM	to 5:30 PM	1	6	1	0	2	0	2	1	2	0	3	0	18
4:45 PM	to 5:45 PM	2	7	1	0	3	0	1	2	2	0	2	0	20
5:00 PM	to 6:00 PM	2	7	1	0	3	0	0	3	3	0	1	0	20

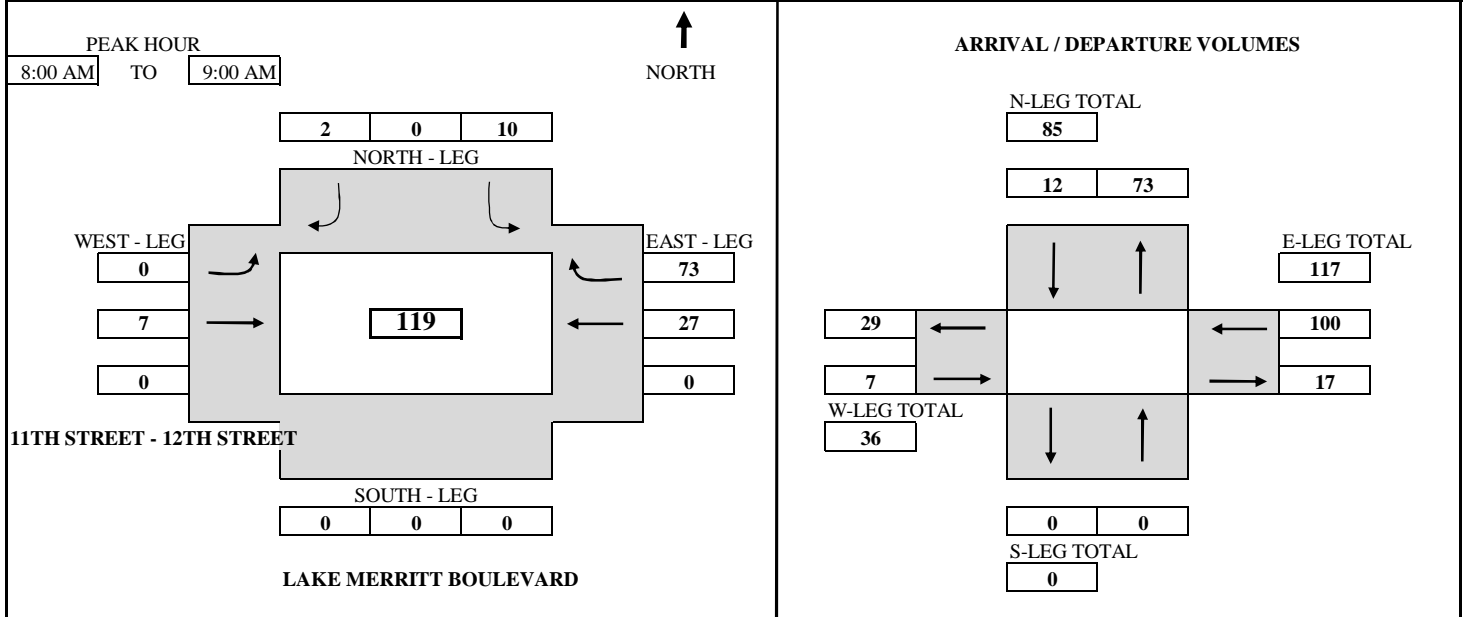
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKE MERRITT BOULEVARD	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH</b> 11TH STREET - 12TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-36AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM				2	0	0	0	0	0	5	8	15
7:15 AM	to	7:30 AM				5	0	0	0	0	0	13	18	36
7:30 AM	to	7:45 AM				6	0	0	0	0	0	19	28	53
7:45 AM	to	8:00 AM				7	0	0	0	0	0	25	39	71
8:00 AM	to	8:15 AM				9	1	2	30	59				101
8:15 AM	to	8:30 AM				12	1	3	38	75				129
8:30 AM	to	8:45 AM				15	2	7	46	94				164
8:45 AM	to	9:00 AM				17	2	7	52	112				190

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	2	0	0	0	0	0	5	8	15
7:15 AM	to	7:30 AM	0	0	0	3	0	0	0	0	0	8	10	21
7:30 AM	to	7:45 AM	0	0	0	1	0	0	0	0	0	6	10	17
7:45 AM	to	8:00 AM	0	0	0	1	0	0	0	0	0	6	11	18
8:00 AM	to	8:15 AM	0	0	0	2	0	1	0	2	0	5	20	30
8:15 AM	to	8:30 AM	0	0	0	3	0	0	0	1	0	8	16	28
8:30 AM	to	8:45 AM	0	0	0	3	0	1	0	4	0	8	19	35
8:45 AM	to	9:00 AM	0	0	0	2	0	0	0	0	0	6	18	26

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	7	0	0	0	0	0	25	39	71
7:15 AM	to	8:15 AM	0	0	0	7	0	1	0	2	0	25	51	86
7:30 AM	to	8:30 AM	0	0	0	7	0	1	0	3	0	25	57	93
7:45 AM	to	8:45 AM	0	0	0	9	0	2	0	7	0	27	66	111
8:00 AM	to	9:00 AM	0	0	0	10	0	2	0	7	0	27	73	119

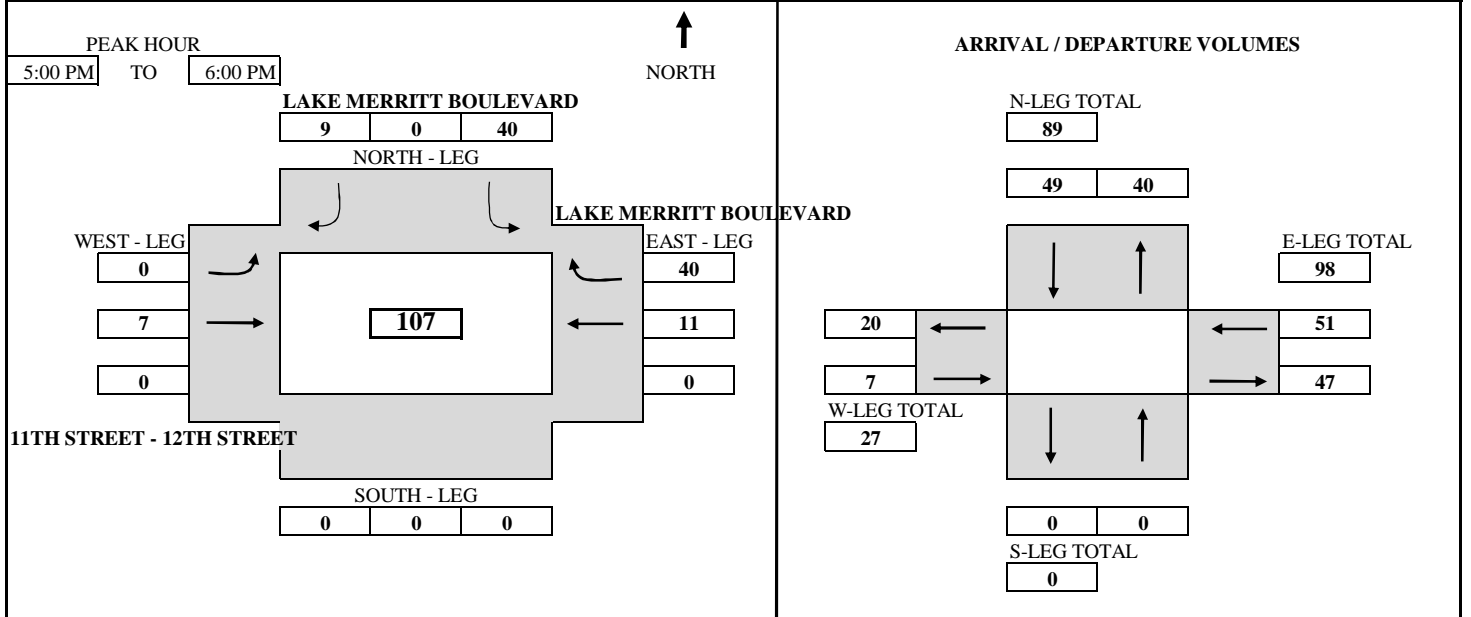
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: LAKE MERRITT BOULEVARD</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 11TH STREET - 12TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-36PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
4:00 PM	to	4:15 PM				10		1		0		1	7	19
4:15 PM	to	4:30 PM				11		1		1		6	9	28
4:30 PM	to	4:45 PM				19		1		1		9	21	51
4:45 PM	to	5:00 PM				27		2		4		10	33	76
5:00 PM	to	5:15 PM				34		5		7		14	41	101
5:15 PM	to	5:30 PM				45		6		10		14	47	122
5:30 PM	to	5:45 PM				57		9		10		17	56	149
5:45 PM	to	6:00 PM				67		11		11		21	73	183

TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	10	0	1	0	0	0	0	1	7	19
4:15 PM	to	4:30 PM	0	0	0	1	0	0	0	1	0	0	5	2	9
4:30 PM	to	4:45 PM	0	0	0	8	0	0	0	0	0	0	3	12	23
4:45 PM	to	5:00 PM	0	0	0	8	0	1	0	3	0	0	1	12	25
5:00 PM	to	5:15 PM	0	0	0	7	0	3	0	3	0	0	4	8	25
5:15 PM	to	5:30 PM	0	0	0	11	0	1	0	3	0	0	0	6	21
5:30 PM	to	5:45 PM	0	0	0	12	0	3	0	0	0	0	3	9	27
5:45 PM	to	6:00 PM	0	0	0	10	0	2	0	1	0	0	4	17	34

HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	27	0	2	0	4	0	0	10	33	76
4:15 PM	to	5:15 PM	0	0	0	24	0	4	0	7	0	0	13	34	82
4:30 PM	to	5:30 PM	0	0	0	34	0	5	0	9	0	0	8	38	94
4:45 PM	to	5:45 PM	0	0	0	38	0	8	0	9	0	0	8	35	98
5:00 PM	to	6:00 PM	0	0	0	40	0	9	0	7	0	0	11	40	107

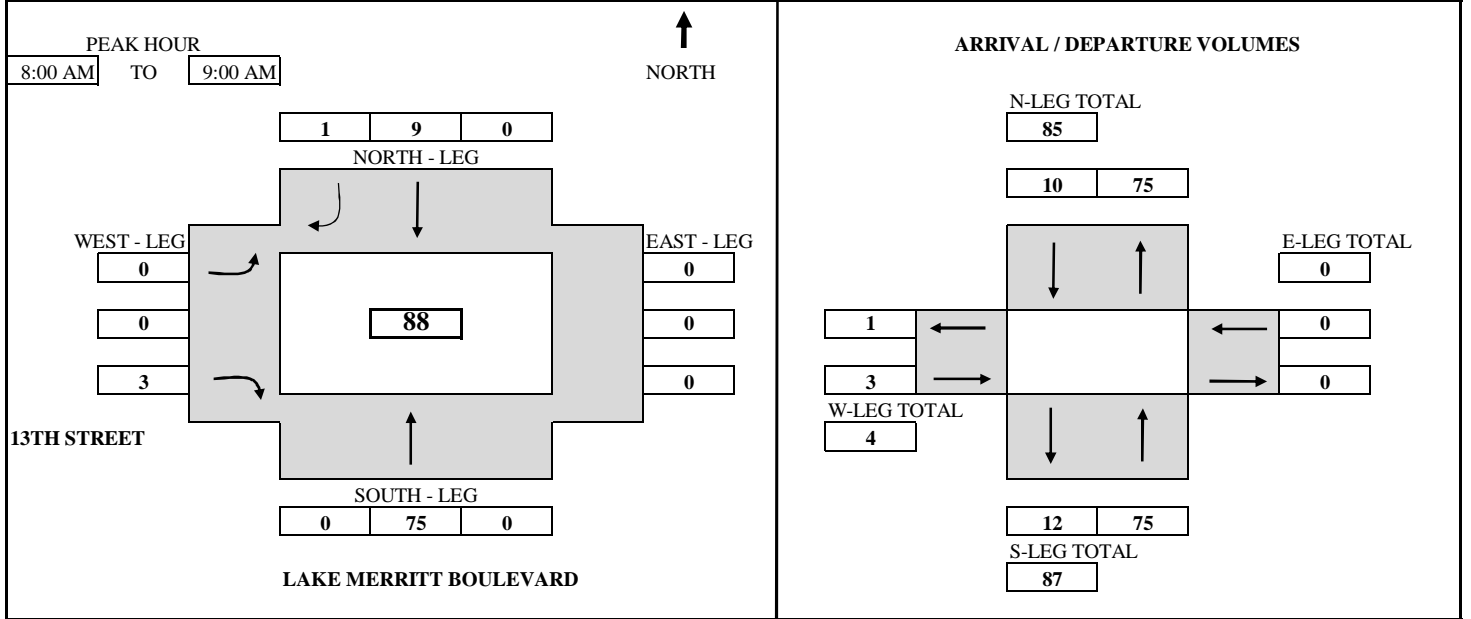
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: LAKE MERRITT BOULEVARD</b>	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH 13TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-37AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM	8			2	0			0				10
7:15 AM	to	7:30 AM	18			5	0			0				23
7:30 AM	to	7:45 AM	28			6	1			0				35
7:45 AM	to	8:00 AM	37			6	1			1				45
8:00 AM	to	8:15 AM	59			8	1			2				70
8:15 AM	to	8:30 AM	75			11	2			2				90
8:30 AM	to	8:45 AM	94			13	2			4				113
8:45 AM	to	9:00 AM	112			15	2			4				133

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	8	0	0	2	0	0	0	0	0	0	10
7:15 AM	to	7:30 AM	0	10	0	0	3	0	0	0	0	0	0	13
7:30 AM	to	7:45 AM	0	10	0	0	1	1	0	0	0	0	0	12
7:45 AM	to	8:00 AM	0	9	0	0	0	0	0	0	1	0	0	10
8:00 AM	to	8:15 AM	0	22	0	0	2	0	0	0	1	0	0	25
8:15 AM	to	8:30 AM	0	16	0	0	3	1	0	0	0	0	0	20
8:30 AM	to	8:45 AM	0	19	0	0	2	0	0	0	2	0	0	23
8:45 AM	to	9:00 AM	0	18	0	0	2	0	0	0	0	0	0	20

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	37	0	0	6	1	0	0	1	0	0	45
7:15 AM	to	8:15 AM	0	51	0	0	6	1	0	0	2	0	0	60
7:30 AM	to	8:30 AM	0	57	0	0	6	2	0	0	2	0	0	67
7:45 AM	to	8:45 AM	0	66	0	0	7	1	0	0	4	0	0	78
8:00 AM	to	9:00 AM	0	75	0	0	9	1	0	0	3	0	0	88

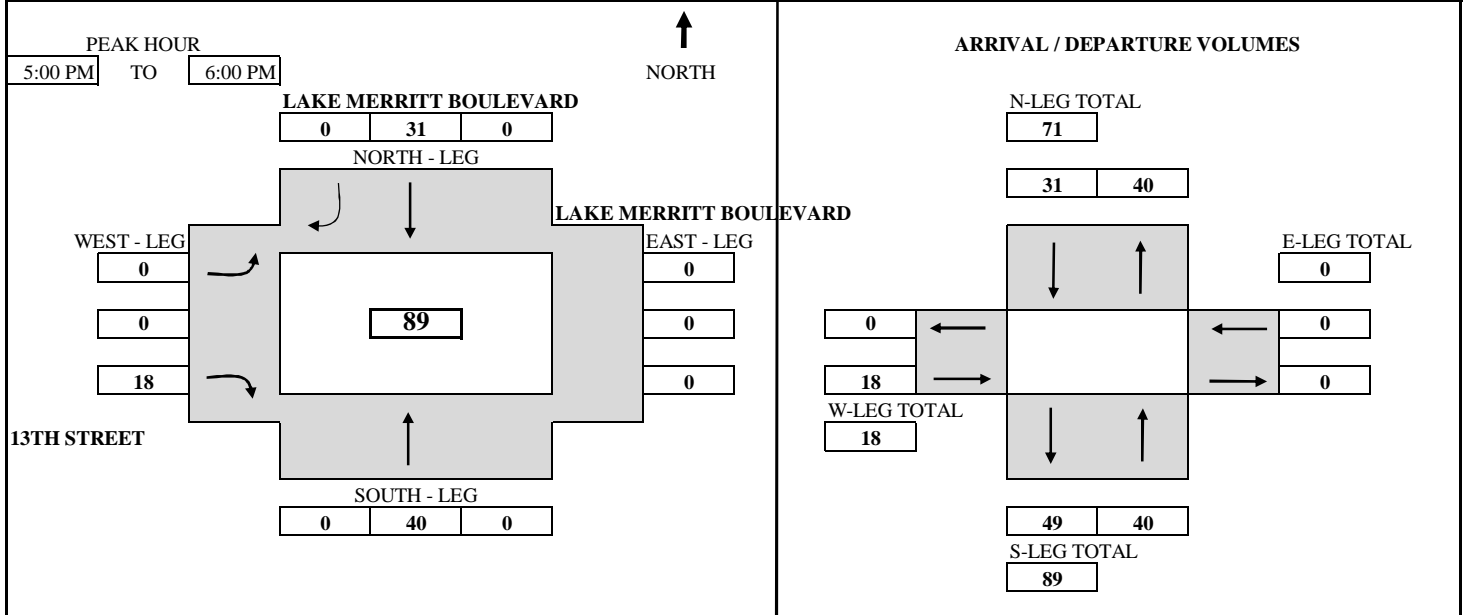
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: LAKE MERRITT BOULEVARD</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 13TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-37PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM		7			7			4					18
4:15 PM	to 4:30 PM		9			8			4					21
4:30 PM	to 4:45 PM		21			15			5					41
4:45 PM	to 5:00 PM		33			22			7					62
5:00 PM	to 5:15 PM		41			29			10					80
5:15 PM	to 5:30 PM		47			38			13					98
5:30 PM	to 5:45 PM		56			46			20					122
5:45 PM	to 6:00 PM		73			53			25					151

TOTAL BY PERIOD														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 4:15 PM	0	7	0	0	7	0	0	0	4	0	0	0	18
4:15 PM	to 4:30 PM	0	2	0	0	1	0	0	0	0	0	0	0	3
4:30 PM	to 4:45 PM	0	12	0	0	7	0	0	0	1	0	0	0	20
4:45 PM	to 5:00 PM	0	12	0	0	7	0	0	0	2	0	0	0	21
5:00 PM	to 5:15 PM	0	8	0	0	7	0	0	0	3	0	0	0	18
5:15 PM	to 5:30 PM	0	6	0	0	9	0	0	0	3	0	0	0	18
5:30 PM	to 5:45 PM	0	9	0	0	8	0	0	0	7	0	0	0	24
5:45 PM	to 6:00 PM	0	17	0	0	7	0	0	0	5	0	0	0	29

HOURLY TOTALS														
TIME	PERIOD	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
4:00 PM	to 5:00 PM	0	33	0	0	22	0	0	0	7	0	0	0	62
4:15 PM	to 5:15 PM	0	34	0	0	22	0	0	0	6	0	0	0	62
4:30 PM	to 5:30 PM	0	38	0	0	30	0	0	0	9	0	0	0	77
4:45 PM	to 5:45 PM	0	35	0	0	31	0	0	0	15	0	0	0	81
5:00 PM	to 6:00 PM	0	40	0	0	31	0	0	0	18	0	0	0	89

TEL: (510) 232 - 1271

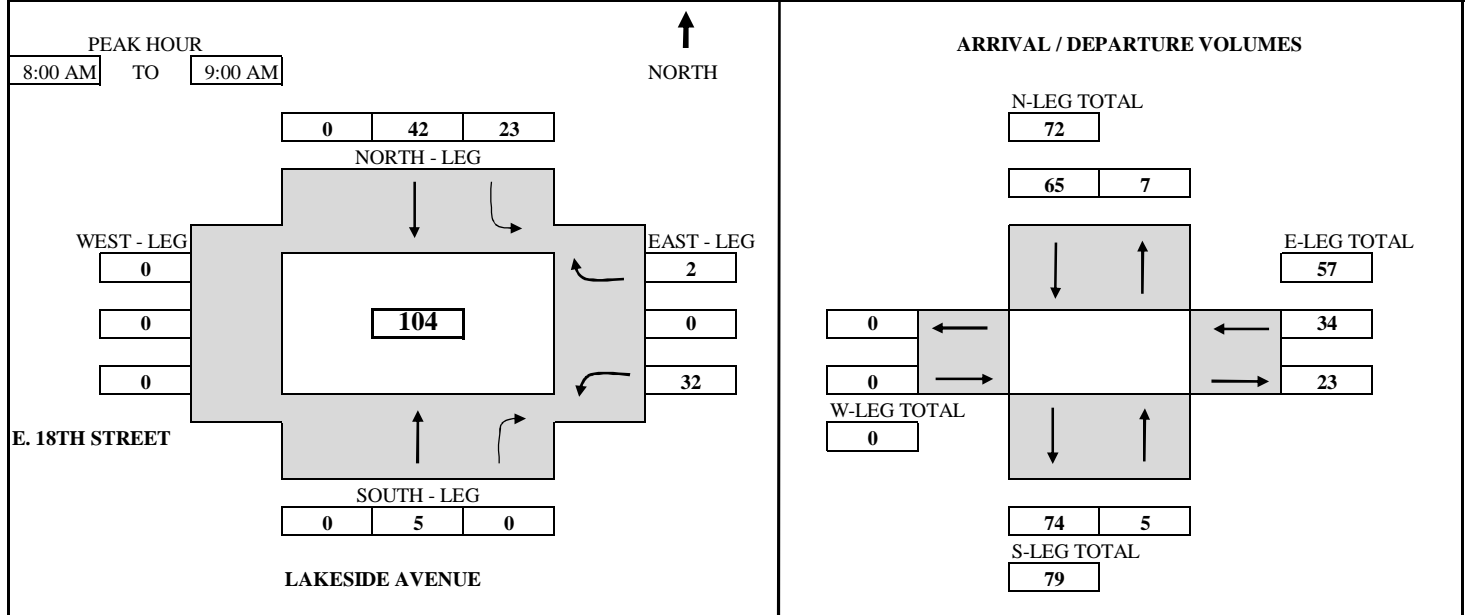
FAX: (510) 232 - 1272



# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> LAKESIDE AVENUE	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> E. 18TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-38AM



TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT						

SURVEY DATA												
7:00 AM	to	7:15 AM	0	0	3	0	0	0	2	0	0	5
7:15 AM	to	7:30 AM	0	0	11	0	0	0	2	0	1	14
7:30 AM	to	7:45 AM	0	3	21	0	0	0	2	0	1	27
7:45 AM	to	8:00 AM	0	6	31	0	0	0	9	0	1	47
8:00 AM	to	8:15 AM	3	9	44	0	0	0	18	0	1	75
8:15 AM	to	8:30 AM	3	15	56	0	0	0	23	0	2	99
8:30 AM	to	8:45 AM	3	22	63	0	0	0	34	0	3	125
8:45 AM	to	9:00 AM	5	29	73	0	0	0	41	0	3	151

TOTAL BY PERIOD													
7:00 AM	to	7:15 AM	0	0	0	0	3	0	0	0	0	0	5
7:15 AM	to	7:30 AM	0	0	0	0	8	0	0	0	0	1	9
7:30 AM	to	7:45 AM	0	0	0	3	10	0	0	0	0	0	13
7:45 AM	to	8:00 AM	0	0	0	3	10	0	0	0	0	0	20
8:00 AM	to	8:15 AM	0	3	0	3	13	0	0	0	0	0	28
8:15 AM	to	8:30 AM	0	0	0	6	12	0	0	0	0	1	24
8:30 AM	to	8:45 AM	0	0	0	7	7	0	0	0	0	1	26
8:45 AM	to	9:00 AM	0	2	0	7	10	0	0	0	0	0	26

HOURLY TOTALS													
7:00 AM	to	8:00 AM	0	0	0	6	31	0	0	0	0	1	47
7:15 AM	to	8:15 AM	0	3	0	9	41	0	0	0	0	1	70
7:30 AM	to	8:30 AM	0	3	0	15	45	0	0	0	0	1	85
7:45 AM	to	8:45 AM	0	3	0	19	42	0	0	0	0	2	98
8:00 AM	to	9:00 AM	0	5	0	23	42	0	0	0	0	2	104

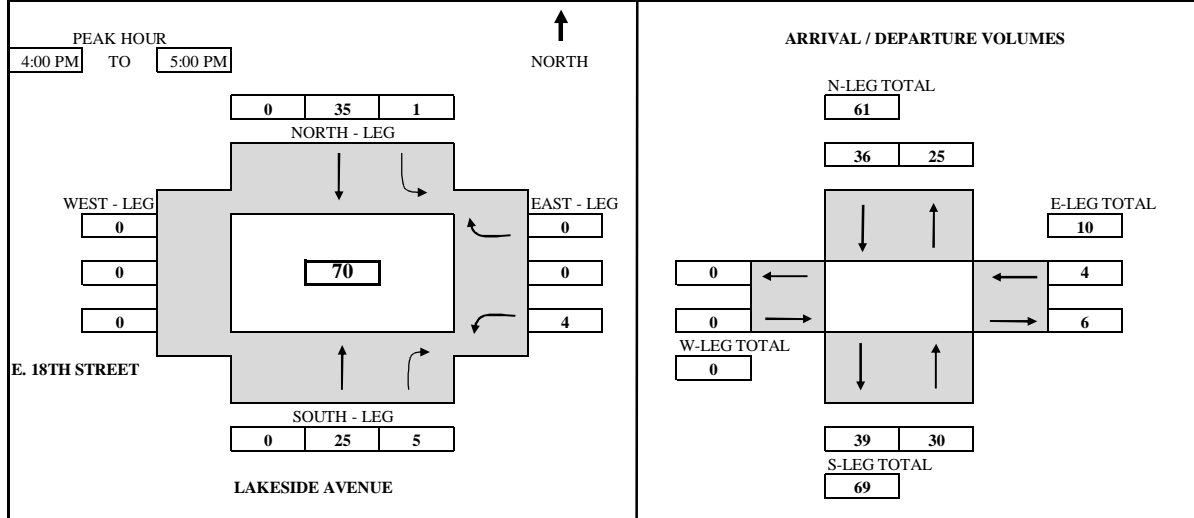
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

PROJECT: OAKLAND TRAFFIC STUDY	SURVEY DATE: 5/22/2012	DAY: TUESDAY
N-S APPROACH: LAKESIDE AVENUE	SURVEY TIME: 4:00 PM	TO 6:00 PM
E-W APPROACH: E. 18TH STREET	JURISDICTION: OAKLAND	FILE: 3205033-B-38PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>														
4:00 PM	to 4:15 PM	5	2	0	8					2	0	0	17	
4:15 PM	to 4:30 PM	11	3	0	18					2	0	0	34	
4:30 PM	to 4:45 PM	17	3	1	25					3	0	0	49	
4:45 PM	to 5:00 PM	25	5	1	35					4	0	0	70	
5:00 PM	to 5:15 PM	29	6	2	41					5	0	0	83	
5:15 PM	to 5:30 PM	34	13	4	44					5	1	0	101	
5:30 PM	to 5:45 PM	42	14	5	48					6	1	0	116	
5:45 PM	to 6:00 PM	49	16	5	57					8	2	0	137	
<b>TOTAL BY PERIOD</b>														
4:00 PM	to 4:15 PM	0	5	2	0	8	0	0	0	0	0	0	17	
4:15 PM	to 4:30 PM	0	6	1	0	10	0	0	0	0	0	0	17	
4:30 PM	to 4:45 PM	0	6	0	1	7	0	0	0	1	0	0	15	
4:45 PM	to 5:00 PM	0	8	2	0	10	0	0	0	1	0	0	21	
5:00 PM	to 5:15 PM	0	4	1	1	6	0	0	0	1	0	0	13	
5:15 PM	to 5:30 PM	0	5	7	2	3	0	0	0	0	0	1	18	
5:30 PM	to 5:45 PM	0	8	1	1	4	0	0	0	1	0	0	15	
5:45 PM	to 6:00 PM	0	7	2	0	9	0	0	0	2	0	1	21	
<b>HOURLY TOTALS</b>														
4:00 PM	to 5:00 PM	0	25	5	1	35	0	0	0	0	4	0	0	70
4:15 PM	to 5:15 PM	0	24	4	2	33	0	0	0	3	0	0	66	
4:30 PM	to 5:30 PM	0	23	10	4	26	0	0	0	3	0	1	67	
4:45 PM	to 5:45 PM	0	25	11	4	23	0	0	0	3	0	1	67	
5:00 PM	to 6:00 PM	0	24	11	4	22	0	0	0	4	0	2	67	

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

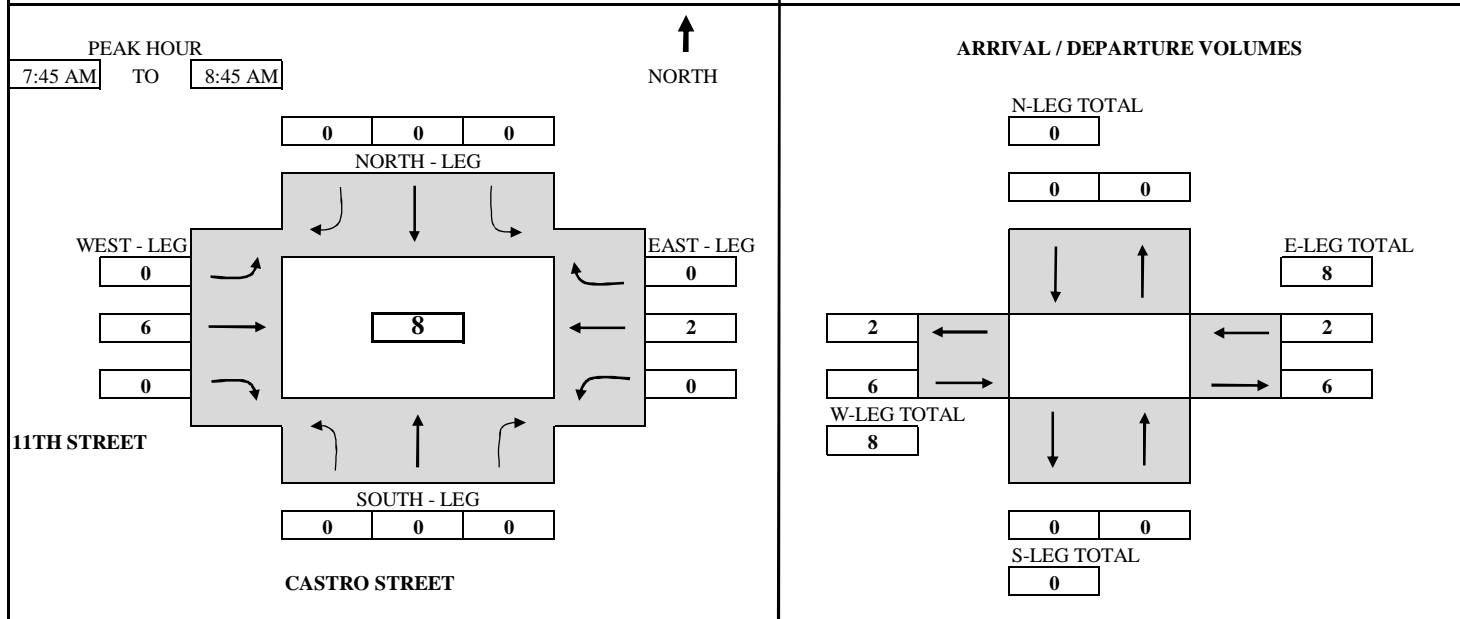
N in
7
7
6
10
5
12
9
9
<b>65</b>

E out
2
1
1
2
2
9
2
2
<b>21</b>

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> CASTRO STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> 11TH STREET	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-39AM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA														
7:00 AM	to	7:15 AM							2			0		2
7:15 AM	to	7:30 AM						3				0		3
7:30 AM	to	7:45 AM						3				1		4
7:45 AM	to	8:00 AM						5				1		6
8:00 AM	to	8:15 AM						6				3		9
8:15 AM	to	8:30 AM						7				3		10
8:30 AM	to	8:45 AM						9				3		12
8:45 AM	to	9:00 AM						9				4		13

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	2	0	0	0	0	2
7:15 AM	to	7:30 AM	0	0	0	0	0	0	1	0	0	0	0	1
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	to	8:00 AM	0	0	0	0	0	0	2	0	0	0	0	2
8:00 AM	to	8:15 AM	0	0	0	0	0	0	1	0	0	2	0	3
8:15 AM	to	8:30 AM	0	0	0	0	0	0	1	0	0	0	0	1
8:30 AM	to	8:45 AM	0	0	0	0	0	0	2	0	0	0	0	2
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	1	0	1

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	0	0	5	0	0	1	0	6
7:15 AM	to	8:15 AM	0	0	0	0	0	0	4	0	0	3	0	7
7:30 AM	to	8:30 AM	0	0	0	0	0	0	4	0	0	3	0	7
7:45 AM	to	8:45 AM	0	0	0	0	0	0	6	0	0	2	0	8
8:00 AM	to	9:00 AM	0	0	0	0	0	0	4	0	0	3	0	7

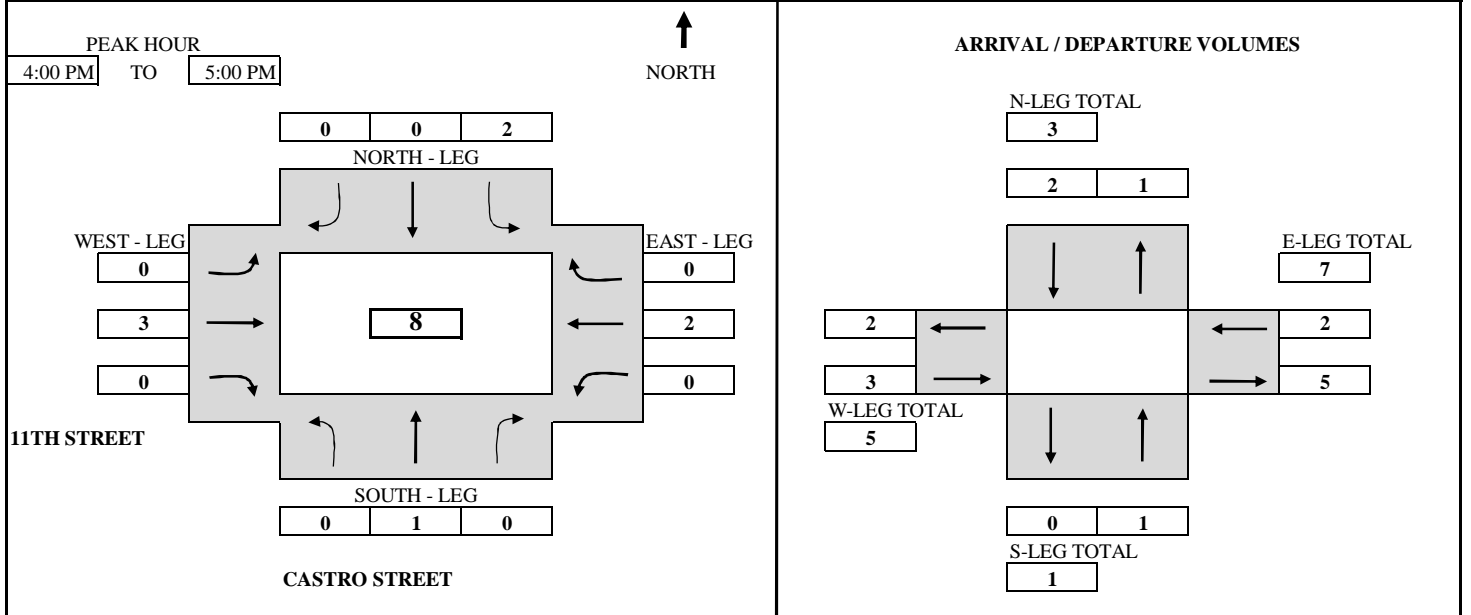
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH: CASTRO STREET</b>	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH 11TH STREET</b>	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-39PM



TIME	PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	

SURVEY DATA																							
4:00 PM	to	4:15 PM			1			0			0			1			0			0			2
4:15 PM	to	4:30 PM			1			0			0			3			0			0			4
4:30 PM	to	4:45 PM			1			2			0			3			0			0			6
4:45 PM	to	5:00 PM			1			2			0			3			2			0			8
5:00 PM	to	5:15 PM			1			2			0			3			2			0			8
5:15 PM	to	5:30 PM			1			2			0			3			3			0			9
5:30 PM	to	5:45 PM			1			2			0			3			3			0			9
5:45 PM	to	6:00 PM			2			2			0			3			3			0			10

TOTAL BY PERIOD																							
4:00 PM	to	4:15 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	to	4:45 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

HOURLY TOTALS																							
4:00 PM	to	5:00 PM	0	1	0	2	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0	0	8
4:15 PM	to	5:15 PM	0	0	0	2	0	0	0	2	0	0	2	0	0	2	0	0	0	0	0	0	6
4:30 PM	to	5:30 PM	0	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	5
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3
5:00 PM	to	6:00 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2

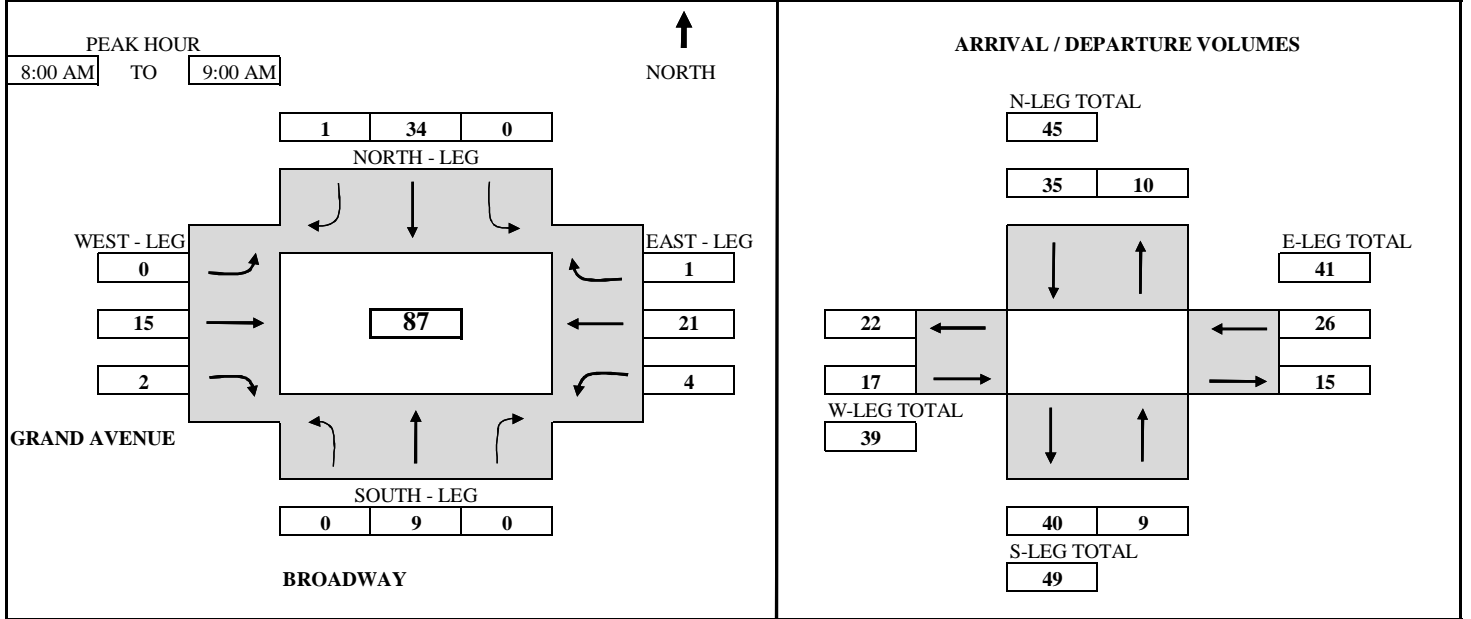
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> BROADWAY	<b>SURVEY TIME:</b> 7:00 AM	<b>TO</b> 9:00 AM
<b>E-W APPROACH:</b> GRAND AVENUE	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-40AM



TIME PERIOD	SOUTH - LEG			NORTH - LEG			WEST - LEG			EAST - LEG			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

SURVEY DATA															
TIME PERIOD	From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM to 7:15 AM	0	2	0	3	0	2	0	1	3	0	11				
7:15 AM to 7:30 AM	0	3	0	5	0	5	0	3	8	1	25				
7:30 AM to 7:45 AM	0	5	1	9	1	9	2	3	13	1	44				
7:45 AM to 8:00 AM	1	6	1	17	1	12	2	4	18	1	63				
8:00 AM to 8:15 AM	1	6	1	24	1	14	2	4	22	1	76				
8:15 AM to 8:30 AM	1	10	1	38	1	18	3	4	26	1	103				
8:30 AM to 8:45 AM	1	12	1	42	1	22	4	6	33	2	124				
8:45 AM to 9:00 AM	1	15	1	51	2	27	4	8	39	2	150				

TOTAL BY PERIOD															
TIME PERIOD	From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM to 7:15 AM	0	2	0	0	3	0	0	2	0	1	3	0	11		
7:15 AM to 7:30 AM	0	1	0	0	2	0	0	3	0	2	5	1	14		
7:30 AM to 7:45 AM	0	2	1	0	4	1	0	4	2	0	5	0	19		
7:45 AM to 8:00 AM	1	1	0	0	8	0	0	3	0	1	5	0	19		
8:00 AM to 8:15 AM	0	0	0	0	7	0	0	2	0	0	4	0	13		
8:15 AM to 8:30 AM	0	4	0	0	14	0	0	4	1	0	4	0	27		
8:30 AM to 8:45 AM	0	2	0	0	4	0	0	4	1	2	7	1	21		
8:45 AM to 9:00 AM	0	3	0	0	9	1	0	5	0	2	6	0	26		

HOURLY TOTALS															
TIME PERIOD	From	To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
7:00 AM to 8:00 AM	1	6	1	0	17	1	0	12	2	4	18	1	63		
7:15 AM to 8:15 AM	1	4	1	0	21	1	0	12	2	3	19	1	65		
7:30 AM to 8:30 AM	1	7	1	0	33	1	0	13	3	1	18	0	78		
7:45 AM to 8:45 AM	1	7	0	0	33	0	0	13	2	3	20	1	80		
8:00 AM to 9:00 AM	0	9	0	0	34	1	0	15	2	4	21	1	87		

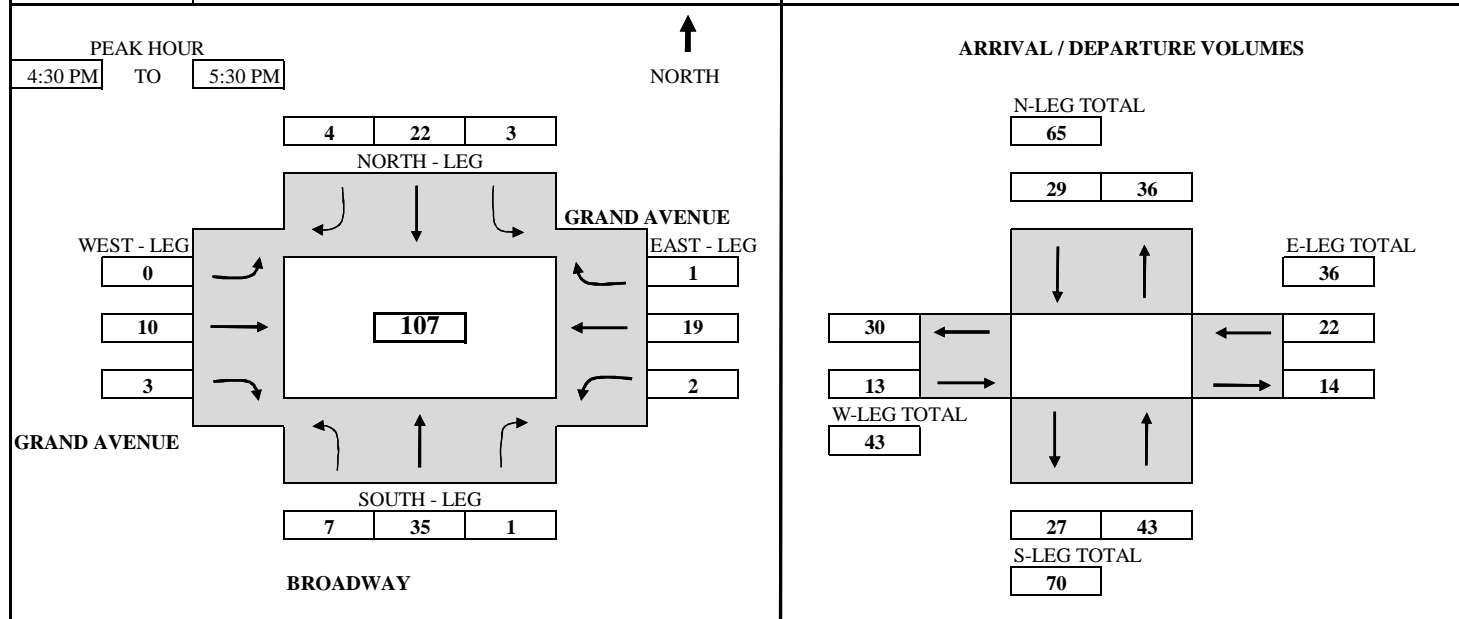
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/22/2012	<b>DAY:</b> TUESDAY
<b>N-S APPROACH:</b> BROADWAY	<b>SURVEY TIME:</b> 4:00 PM	<b>TO</b> 6:00 PM
<b>E-W APPROACH:</b> GRAND AVENUE	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-40PM



TIME PERIOD	SOUTH - LEG			NORTH - LEG			WEST - LEG			EAST - LEG			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					

### SURVEY DATA

4:00 PM	to	4:15 PM	1	8	3	1	2	1	1	1	0	1	1	1	21
4:15 PM	to	4:30 PM	2	13	4	1	6	1	1	5	1	2	4	3	43
4:30 PM	to	4:45 PM	2	20	4	2	10	3	1	8	3	4	8	4	69
4:45 PM	to	5:00 PM	4	29	5	2	15	3	1	12	4	4	12	4	95
5:00 PM	to	5:15 PM	7	39	5	2	20	4	1	14	4	4	18	4	122
5:15 PM	to	5:30 PM	9	48	5	4	28	5	1	15	4	4	23	4	150
5:30 PM	to	5:45 PM	10	54	6	4	35	5	2	16	5	6	28	4	175
5:45 PM	to	6:00 PM	12	59	7	5	38	5	2	19	7	7	35	5	201

### TOTAL BY PERIOD

4:00 PM	to	4:15 PM	1	8	3	1	2	1	1	1	0	1	1	1	21
4:15 PM	to	4:30 PM	1	5	1	0	4	0	0	4	1	1	3	2	22
4:30 PM	to	4:45 PM	0	7	0	1	4	2	0	3	2	2	4	1	26
4:45 PM	to	5:00 PM	2	9	1	0	5	0	0	4	1	0	4	0	26
5:00 PM	to	5:15 PM	3	10	0	0	5	1	0	2	0	0	6	0	27
5:15 PM	to	5:30 PM	2	9	0	2	8	1	0	1	0	0	5	0	28
5:30 PM	to	5:45 PM	1	6	1	0	7	0	1	1	1	2	5	0	25
5:45 PM	to	6:00 PM	2	5	1	1	3	0	0	3	2	1	7	1	26

### HOURLY TOTALS

4:00 PM	to	5:00 PM	4	29	5	2	15	3	1	12	4	4	12	4	95
4:15 PM	to	5:15 PM	6	31	2	1	18	3	0	13	4	3	17	3	101
4:30 PM	to	5:30 PM	7	35	1	3	22	4	0	10	3	2	19	1	107
4:45 PM	to	5:45 PM	8	34	2	2	25	2	1	8	2	2	20	0	106
5:00 PM	to	6:00 PM	8	30	2	3	23	2	1	7	3	3	23	1	106

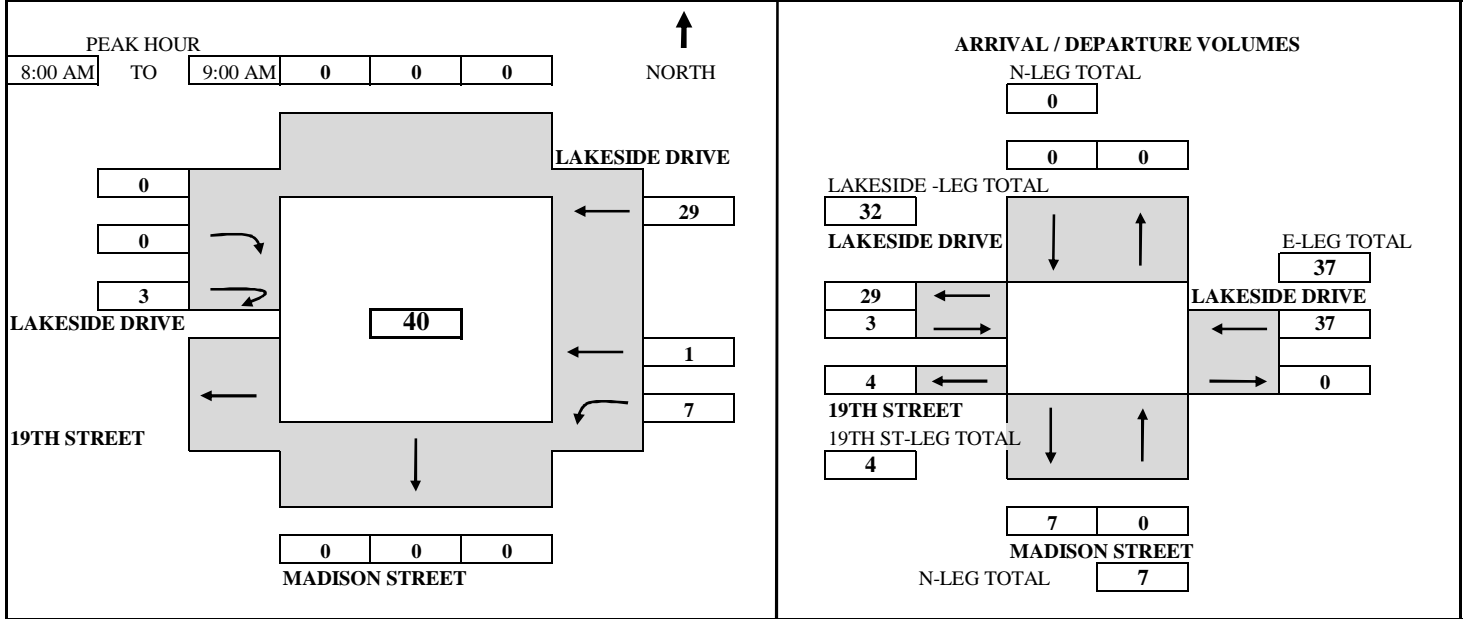
TEL: (510) 232 - 1271

FAX: (510) 232 - 1272

# B.A.Y.M.E.T.R.I.C.S.

## BICYCLE MOVEMENT SUMMARY

<b>PROJECT:</b> OAKLAND TRAFFIC STUDY	<b>SURVEY DATE:</b> 5/16/2012	<b>DAY:</b> WEDNESDAY
<b>N-S APPROACH:</b> MADISON STREET	<b>SURVEY TIME:</b> 7:00 AM	<b>TO:</b> 9:00 AM
<b>E-W APPROACH:</b> LAKESIDE DRIVE	<b>JURISDICTION:</b> OAKLAND	<b>FILE:</b> 3205033-B-42AM



TIME PERIOD	NORTHBOUND			SOUTHBOUND			EB (LAKESIDE DR)			WB (LAKESIDE DR)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT	Madison	19th St	LEFT	Madison	19th St	Lakeside		

SURVEY DATA														
7:00 AM	to	7:15 AM						0	0	0	0	0	4	4
7:15 AM	to	7:30 AM						0	0	0	0	0	9	9
7:30 AM	to	7:45 AM						0	0	1	0	10	11	11
7:45 AM	to	8:00 AM						1	0	1	0	18	20	20
8:00 AM	to	8:15 AM						1	0	2	0	22	25	25
8:15 AM	to	8:30 AM						1	0	3	0	32	36	36
8:30 AM	to	8:45 AM						1	2	6	0	36	45	45
8:45 AM	to	9:00 AM						1	3	8	1	47	60	60

TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	4	4	4
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	5	5	5
7:30 AM	to	7:45 AM	0	0	0	0	0	0	1	0	1	2	2	2
7:45 AM	to	8:00 AM	0	0	0	0	0	0	1	0	8	9	9	9
8:00 AM	to	8:15 AM	0	0	0	0	0	0	1	0	4	5	5	5
8:15 AM	to	8:30 AM	0	0	0	0	0	0	1	0	10	11	11	11
8:30 AM	to	8:45 AM	0	0	0	0	0	0	3	0	4	9	9	9
8:45 AM	to	9:00 AM	0	0	0	0	0	0	2	1	11	15	15	15

HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	0	0	1	0	1	0	18	20
7:15 AM	to	8:15 AM	0	0	0	0	0	0	1	0	2	0	18	21
7:30 AM	to	8:30 AM	0	0	0	0	0	0	1	0	3	0	23	27
7:45 AM	to	8:45 AM	0	0	0	0	0	0	1	2	5	0	26	34
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	3	7	1	29	40

TEL: (510) 232 - 1271

FAX: (510) 232 - 1272





**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Madison St / 17th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 8

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2211433	9/3/05	15:07	0	In Int.	Hit Object	Fixed Object	Not Stated	Ran Off Road			Improper Turning	0	0
2436080	9/6/05	12:35	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
2817364	10/2/06	05:00	20	West	Sideswipe	Parked Motor Vehicle	East	Proceeding Straight	East	Parked	Improper Turning	0	0
2947321	12/10/06	02:10	6	North	Sideswipe	Parked Motor Vehicle	South	Proceeding Straight	South	Parked	Improper Turning	0	0
3536372	12/27/07	15:35	0	In Int.	Rear-End	Other Motor Vehicle	West	Backing	North	Backing	Unsafe Starting or Backing	0	0
3782275	6/16/08	11:45	40	South	Rear-End	Parked Motor Vehicle	South	Proceeding Straight	South	Parked	Other Than Driver or Ped	0	0
4148751	2/27/09	14:47	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4475215	11/5/09	12:00	45	West	Other	Other Motor Vehicle	West	Backing	East	Parked	Unsafe Starting or Backing	0	0

**City of Oakland**  
**Traffic Engineering Department**  
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7/23/2012  
Page 2

Location: Madison St / 17th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 8

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 8

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**Settings Used For Query**

**Parameter**

**Setting**

Street Name	MADISON ST
Cross Street	17TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Page 1

**Location: Madison St / 14th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 30**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2245931	9/23/05	02:15	30	East	Head-On	Fixed Object	West	Ran Off Road			Improper Turning	0	0
2308195	10/31/05		0	In Int.	Sideswipe	Parked Motor Vehicle	East	Proceeding Straight	East	Parked	Unsafe Speed	0	0
2337956	10/31/05		0	In Int.	Not Stated	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Unsafe Lane Change	0	0
2360042	11/27/05	15:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Left Turn	Other Hazardous Movement	0	0
2632338	5/17/06	13:55	39	East	Sideswipe	Parked Motor Vehicle	West	Proceeding Straight	West	Merging	Improper Turning	0	0
2724217	7/13/06	11:00	0	In Int.	Rear-End	Parked Motor Vehicle	West	Stopped in Road	West	Parked	Improper Turning	0	0
9000271	8/26/06	15:27	0	In Int.	Head-On	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	1	0
3056526	2/21/07	11:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Left Turn	Other Hazardous Movement	0	0
3095061	3/22/07	17:15	15	East	Rear-End	Other Motor Vehicle	East	Slowing/Stopping	East	Slowing/Stopping	Unsafe Speed	0	0
3143467	4/20/07	13:30	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Improper Turning	0	0
3184175	5/12/07	19:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Unknown	0	0
3411836	6/6/07	23:00	10	East	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Driving Under Influence	0	0
3346832	8/25/07	11:29	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
3377718	9/10/07	00:11	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

Location: Madison St / 14th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 30

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3512175	10/4/07	02:50	36	East	Sideswipe	Parked Motor Vehicle	East	Proceeding Straight	Not Stated	Parked	Driving Under Influence	0	0
3540606	11/26/07	09:30	34	East	Sideswipe	Parked Motor Vehicle	West	Proceeding Straight	West	Parked	Improper Turning	0	0
3551084	12/30/07	12:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3569499	1/10/08	09:35	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Unsafe Speed	0	0
3610833	2/17/08	17:25	30	East	Sideswipe	Other Motor Vehicle	West	Stopped in Road	West	Proceeding Straight	Other Hazardous Movement	1	0
3796044	6/6/08	01:59	0	In Int.	Other	Non-Collision	East	Proceeding Straight			Traffic Signals and Signs	1	0
3918814	9/11/08	17:21	50	East	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	East	Proceeding Straight	Wrong Side of Road	1	0
3991112	10/8/08	15:49	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Making Right Turn	East	Not Stated	Ped R/W Violation	2	0
3998229	11/13/08	09:09	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	1	0
4135476	1/20/09	10:24	21	East	Sideswipe	Parked Motor Vehicle	West	Proceeding Straight	West	Parked	Improper Turning	0	0
4135468	1/20/09	10:25	21	East	Other	Other Motor Vehicle	West	Proceeding Straight	West	Parked	Improper Turning	0	0
4130132	2/21/09	00:07	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4427677	9/29/09	13:16	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Unsafe Lane Change	0	0
4525203	12/5/09	20:06	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 3

**Location: Madison St / 14th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 30**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4587491	2/4/10	20:00	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	South	Proceeding Straight	Ped R/W Violation	1	0
4736656	6/13/10	06:34	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0

**Total Number of Collisions: 30**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	14TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Madison St / 13th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 9

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2304406	10/14/05	07:55	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Proceeding Straight	East	Proceeding Straight	Pedestrian Violation	1	0
2530115	3/9/06	19:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2834292	10/9/06	16:42	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3010345	1/18/07	14:05	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	Not Stated	Proceeding Straight	Traffic Signals and Signs	0	0
3344020	9/14/07	11:58	40	North	Sideswipe	Parked Motor Vehicle	South	Proceeding Straight	South	Parked	Unsafe Speed	0	0
3478795	11/17/07	20:50	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3744981	4/16/08	17:06	20	North	Broadside	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
4340899	7/30/09	18:18	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Making Left Turn	South	Proceeding Straight	Ped R/W Violation	1	0
4386967	9/7/09	16:16	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012

Page 2

Location: Madison St / 13th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 9

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 9

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**Settings Used For Query**

**Parameter**

**Setting**

Street Name

MADISON ST

Cross Street

13TH ST

Starting Date

7/1/2005

Ending Date

6/30/2010

Intersection

Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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**Location: Madison St / 12th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 13**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2870504	10/28/06	02:11	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Making Left Turn	Traffic Signals and Signs	1	0
3020396	1/24/07	13:48	20	South	Sideswipe	Parked Motor Vehicle	South	Making Left Turn	South	Parked	Improper Turning	0	0
3056498	2/23/07	12:43	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	North	Not Stated	Ped R/W Violation	1	0
3330321	8/23/07	19:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3430186	10/11/07	10:17	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
3490853	12/1/07	10:55	3	North	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	0	0
3727588	5/7/08	00:50	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
3940247	7/8/08	10:50	50	East	Sideswipe	Parked Motor Vehicle	West	Parked	West	Backing	Unsafe Starting or Backing	0	0
3967380	11/13/08	14:22	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3986386	11/13/08	15:01	15	East	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
4105547	2/11/09	14:30	0	In Int.	Rear-End	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
4161825	3/9/09	10:08	3	South	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	Not Stated	Not Stated	Ped R/W Violation	1	0
4263471	6/5/09	12:30	0	In Int.	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Improper Turning	0	0



**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
Page 2

Location: Madison St / 12th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 13

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 13

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	12TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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Location: Madison St / 11th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 14

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2515430	2/26/06	18:41	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2713748	7/10/06	12:30	27	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
2724186	7/13/06	15:30	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2740774	7/17/06	17:59	0	In Int.	Rear-End	Other Motor Vehicle	South	Not Stated	South	Making Right Turn	Unsafe Speed	0	0
2817432	10/2/06	18:45	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
2871787	10/30/06	19:53	0	In Int.	Broadside	Motor Vehicle on Other	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3226794	6/11/07	09:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3596684	1/28/08	14:42	20	North	Sideswipe	Other Motor Vehicle	South	Stopped in Road	South	Proceeding Straight	Other Hazardous Movement	0	0
3915782	8/22/08	15:15	30	North	Other	Parked Motor Vehicle	South	Proceeding Straight	South	Parked	Unknown	0	0
3910331	9/1/08	12:25	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4014347	12/9/08	14:14	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Right Turn	East	Proceeding Straight	Improper Turning	0	0
4132999	2/21/09	19:56	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
4365181	8/7/09	16:45	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	North	Not Stated	Ped R/W Violation	1	0
4439369	10/4/09	17:14	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0

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Page 2

Location: Madison St / 11th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 14

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 14

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	11TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: Madison St / 10th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 14

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2942552	12/13/06	10:20	0	In Int.	Broadside	Bicycle	East	Proceeding Straight	West	Making Left Turn	Wrong Side of Road	1	0
3256509	7/9/07	07:10	0	In.Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3317334	8/15/07	10:45	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Proceeding Straight	South	Proceeding Straight	Ped R/W Violation	1	0
3374179	9/7/07	10:15	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3518485	12/18/07	12:45	0	In Int.	Rear-End	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Unsafe Speed	0	0
3557151	12/20/07	12:05	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Slowing/Stopping	Improper Turning	0	0
3704727	3/20/08	09:37	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight.	Improper Turning	0	0
3744400	5/9/08	17:28	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
3847620	7/10/08	20:31	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4003970	12/5/08	11:52	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4133019	2/12/09	17:51	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4190520	3/20/09	07:46	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4427967	9/28/09	08:15	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4695457	5/3/10	13:10	10	North	Overtaken	Non-Collision	South	Proceeding Straight			Unknown	1	0

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**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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Location: Madison St / 10th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 14

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 14

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	10TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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**Location: Madison St / 9th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 11**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2178978	8/10/05	12:45	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
2348287	11/11/05	12:30	0	In Int.	Rear-End	Other Motor Vehicle	West	Backing	East	Stopped in Road	Unsafe Starting or Backing	0	0
2508511	2/11/06	22:34	50	North	Broadside	Other Motor Vehicle	South	Parking Maneuver	South	Stopped in Road	Unsafe Starting or Backing	0	0
2879143	9/5/06	15:15	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Not Stated	Auto R/W Violation	0	0
2925178	12/5/06	11:50	0	In Int.	Sideswipe	Other Motor Vehicle	South	Changing Lanes	South	Proceeding Straight	Unsafe Lane Change	0	0
3622515	2/9/08	02:00	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Improper Turning	0	0
3639121	2/25/08	08:11	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3748508	5/10/08	14:00	25	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	1	0
4008465	10/28/08	13:50	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	South	Not Stated	Ped R/W Violation	1	0
4085647	1/21/09	07:45	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
4158597	3/9/09	16:05	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0

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Location: Madison St / 9th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 11

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 11

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**Settings Used For Query**

**Parameter**

**Setting**

Street Name

MADISON ST

Cross Street

9TH ST

Starting Date

7/1/2005

Ending Date

6/30/2010

Intersection

Intersection Related

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**Location: Madison St / 8th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 24**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2186170	8/13/05	11:15	30	South	Sideswipe	Other Motor Vehicle	South	Entering Traffic	South	Making Left Turn	Improper Turning	0	0
2241205	9/10/05	18:30	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Unknown	1	0
2329330	11/7/05	17:51	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	West	Not Stated	Ped R/W Violation	1	0
2538222	3/18/06	10:50	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
2631264	5/20/06	10:55	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
2855412	10/19/06	12:50	18	South	Broadside	Other Motor Vehicle	West	Making Left Turn	South	Proceeding Straight	Traffic Signals and Signs	0	0
2947294	12/11/06	22:29	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
2967685	12/16/06	22:15	30	East	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
3184543	5/16/07	14:15	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
3245809	6/30/07	09:39	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Auto R/W Violation	0	0
3648272	3/12/08	12:40	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3657086	3/15/08	09:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3879633	7/30/08	11:02	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3903866	9/10/08	12:00	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Right Turn	West	Proceeding Straight	Ped R/W Violation	1	0



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**Traffic Collision History Report**

7/23/2012  
Page 2

**Location: Madison St / 8th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 24**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3927466	9/19/08	12:25	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3991088	10/9/08	11:28	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
4274349	5/8/09	12:50	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	1	0
4306421	6/27/09	17:45	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4405043	9/19/09	16:37	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	3	0
4426800	10/5/09	14:53	0	In Int.	Sideswipe	Other Motor Vehicle	South	Parking Maneuver	South	Stopped in Road	Improper Turning	0	0
4451053	10/21/09	12:11	25	East	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Unsafe Speed	0	0
4474825	10/30/09	14:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4542972	12/2/09	13:12	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
4554661	1/4/10	13:40	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0

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Traffic Collision History Report**

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**Location: Madison St / 8th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 24**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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**Total Number of Collisions: 24**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	8TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: Madison St / 7th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 34

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2205406	8/28/05	04:03	15	South	Rear-End	Parked Motor Vehicle	South	Proceeding Straight	South	Parked	Improper Turning	0	0
2265787	10/9/05	11:40	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2359984	11/25/05	10:00	0	In Int.	Sideswipe	Other Motor Vehicle	East	Merging	East	Proceeding Straight	Unsafe Speed	0	0
2511822	2/18/06	20:13	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2511801	2/21/06	16:45	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
2544572	3/22/06	01:14	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
2703719	6/25/06	11:29	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
2740799	7/17/06	10:52	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2775962	8/14/06	13:45	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	East	Proceeding Straight	Traffic Signals and Signs	0	0
2985892	1/13/07	14:26	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3042915	2/3/07	12:53	0	In Int.	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Unsafe Lane Change	0	0
3260257	7/7/07	07:40	30	South	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Improper Turning	0	0
3388414	9/22/07	15:49	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	4	0
3442835	10/17/07	21:16	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	0	0

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7/23/2012

Page 2

Location: Madison St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 34

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3467813	11/1/07	09:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3467805	11/1/07	21:10	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3572592	1/31/08	18:37	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	0	0
3657094	3/13/08	14:30	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3675710	3/22/08	08:48	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3826900	6/12/08	17:53	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3865357	6/12/08	19:02	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3823450	7/5/08	00:01	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4019401	12/1/08	16:56	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4345347	8/3/09	22:10	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
4377897	8/20/09	10:14	10	North	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Unsafe Lane Change	0	0
4376834	8/25/09	11:41	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Auto R/W Violation	2	0
4455371	10/14/09	17:50	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
4471119	11/8/09	20:53	5	West	Rear-End	Other Motor Vehicle	East	Slowing/Stopping	East	Stopped in Road	Unsafe Speed	0	0

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Location: Madison St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 34

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4512071	11/21/09	16:26	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4510493	11/21/09	17:44	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4527567	12/26/09	13:19	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4624717	2/24/10	22:51	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4638898	3/10/10	16:35	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4765707	6/10/10	23:35	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0

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Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
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Location: Madison St / 7th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 34

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 34

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	7TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

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Location: Madison St / 6th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 16

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2391223	12/7/05	16:11	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
2468463	1/29/06	14:20	0	In Int.	Broadside	Other Motor Vehicle	South	Not Stated	West	Not Stated	Traffic Signals and Signs	3	0
2885285	11/7/06	16:45	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3150860	4/26/07	16:58	35	East	Rear-End	Other Motor Vehicle	West	Stopped in Road	West	Merging	Unsafe Starting or Backing	0	0
3250344	7/2/07	21:50	20	North	Rear-End	Other Motor Vehicle	South	Stopped in Road	South	Proceeding Straight	Unsafe Speed	0	0
3490869	12/3/07	08:53	0	In Int.	Head-On	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3491400	12/6/07	13:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3551646	12/29/07	09:01	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3850627	7/26/08	17:10	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4106631	1/22/09	22:31	0	In Int.	Broadside	Other Motor Vehicle	South	Making Right Turn	South	Proceeding Straight	Improper Turning	0	0
4120375	2/21/09	10:23	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4198690	3/11/09	09:48	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4206936	3/20/09	18:23	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4314188	7/10/09	07:59	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

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Page 2

**Location: Madison St / 6th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 16**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4475225	11/8/09	06:29	15	South	Rear-End	Parked Motor Vehicle	Not Stated	Other Unsafe Turning	Not Stated	Not Stated	Improper Turning	0	0
4735932	6/23/10	01:47	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0

**Total Number of Collisions: 16**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	6TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related



**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

**Location: Madison St / 5th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 10**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2349449	11/16/05	17:49	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	South	Proceeding Straight	Unknown	1	0
2682922	6/5/06	11:15	15	North	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Wrong Side of Road	0	0
2871783	10/26/06	19:46	0	In Int.	Broadside	Other Motor Vehicle	South	Stopped in Road	East	Stopped in Road	Traffic Signals and Signs	2	0
2988920	1/6/07	15:26	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Making Left Turn	Traffic Signals and Signs	0	0
3340045	9/3/07	10:20	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Left Turn	Improper Turning	0	0
3638685	3/3/08	10:28	0	In Int.	Broadside	Other Motor Vehicle	East	Making Right Turn	East	Proceeding Straight	Improper Turning	0	0
3870538	5/27/08	15:54	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
3866194	8/2/08	16:22	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	East	Proceeding Straight	Traffic Signals and Signs	0	0
4014595	11/4/08	17:21	0	In Int.	Vehicle - Pedestrian	Non-Collision	West	Making U Turn	Not Stated	Other	Unsafe Starting or Backing	0	0
4452705	10/21/09	14:21	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0

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**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

Location: Madison St / 5th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 10

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 10

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	MADISON ST
Cross Street	5TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Page 1

Location: Oak St / 5th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 18

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2211417	9/3/05	14:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2241221	9/10/05	09:30	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2342208	10/18/05	09:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2348279	11/11/05	18:30	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2484635	1/30/06	14:02	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
2660495	5/13/06	14:15	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	1	0
2671937	6/10/06	15:28	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2687233	6/21/06	13:18	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
2782747	8/21/06	10:50	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
2871796	10/23/06	09:14	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2942459	12/1/06	12:40	0	In Int.	Hit Object	Fixed Object	South	Proceeding Straight			Other Hazardous Movement	0	0
3122713	4/4/07	07:40	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	2	0
3641508	2/27/08	17:21	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Improper Turning	0	0
3694405	3/29/08	11:53	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Improper Turning	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
Page 2

Location: Oak St / 5th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 18

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4206928	3/18/09	09:45	19	West	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Making Right Turn	Improper Passing	0	0
4209075	3/21/09	12:01	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
4208345	4/11/09	10:44	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	North	Proceeding Straight	Improper Turning	0	0
4736644	6/17/10	07:30	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Right Turn	North	Proceeding Straight	Unknown	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

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Location: Oak St / 5th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 18

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 18

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	5TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
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Page 1

Location: Oak St / 6th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 16

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2409483	1/8/06	16:13	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Improper Turning	0	0
2513696	3/8/06	15:55	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Other Hazardous Movement	0	0
2674224	5/27/06	23:25	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	West	Entering Traffic	Traffic Signals and Signs	0	0
2871807	10/31/06	19:00	0	In Int.	Broadside	Not Stated	West	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
3143495	4/21/07	13:44	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3152830	4/30/07	12:00	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	West	Making Right Turn	Improper Turning	0	0
3331298	8/17/07	10:45	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Unknown	0	0
3732655	3/30/08	14:20	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3817148	6/19/08	19:55	20	North	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Lane Change	0	0
3915826	8/26/08	11:02	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4007387	10/26/08	16:30	20	North	Sideswipe	Parked Motor Vehicle	South	Backing	North	Parked	Unsafe Starting or Backing	0	0
4349209	7/16/09	13:50	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Improper Turning	0	0
4344777	8/5/09	12:13	0	In Int.	Broadside	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Improper Turning	0	0
4402361	9/24/09	15:10	0	In Int.	Broadside	Other Motor Vehicle	North	Making Right Turn	West	Stopped in Road	Improper Turning	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

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Location: Oak St / 6th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 16

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4527411	11/29/09	14:00	0	In Int.	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Unsafe Lane Change	0	0
4782302	5/7/10	22:50	15	West	Rear-End	Motor Vehicle on Other	East	Proceeding Straight	East	Slowing/Stopping	Driving Under Influence	0	0

Total Number of Collisions: 16

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	6TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: Oak St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 25

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2122698	7/1/05	23:20	20	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	1	0
2225794	9/2/05	13:10	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2438546	10/15/05	14:45	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
2494133	2/22/06	10:42	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2660526	5/15/06	06:00	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2740786	7/18/06	07:15	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2749530	8/1/06	19:50	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2822896	10/3/06	04:50	0	In Int.	Broadside	Motor Vehicle on Other	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3002151	1/20/07	10:05	0	In Int.	Sideswipe	Other Motor Vehicle	Not Stated	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3184362	4/29/07	16:42	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	East	Not Stated	Ped R/W Violation	1	0
3246209	6/30/07	21:25	0	In Int.	Sideswipe	Other Motor Vehicle	North	Changing Lanes	North	Proceeding Straight	Unsafe Lane Change	0	0
3412191	10/9/07	14:20	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3494932	11/3/07	09:28	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	East	Other	Ped R/W Violation	1	0
3590212	1/25/08	18:42	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Making Left Turn	East	Other	Ped R/W Violation	1	0



**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Page 2

Location: Oak St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 25

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3639555	3/5/08	11:17	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Right Turn	East	Proceeding Straight	Auto R/W Violation	0	0
3648274	3/5/08	20:39	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3658527	3/19/08	12:08	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
3731284	4/26/08	00:03	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3766463	5/31/08	17:30	20	West	Rear-End	Parked Motor Vehicle	East	Proceeding Straight	East	Parked	Improper Turning	0	0
3798645	7/6/08	15:10	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
3970022	11/6/08	21:25	40	West	Rear-End	Parked Motor Vehicle	East	Proceeding Straight	East	Parked	Unsafe Speed	1	0
4042432	1/8/09	17:34	10	West	Rear-End	Other Motor Vehicle	East	Slowing/Stopping	East	Slowing/Stopping	Unsafe Speed	0	0
4133595	1/23/09	08:00	0	In Int.	Not Stated	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4427443	10/3/09	09:44	0	In Int.	Other	Other Motor Vehicle	South	Backing	North	Stopped in Road	Unsafe Starting or Backing	0	0
4452647	10/24/09	12:32	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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Location: Oak St / 7th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 25

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 25

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	7TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Oak St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 23

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2209463	8/29/05	12:15	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
2308201	11/1/05	14:15	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	North	Proceeding Straight	Improper Turning	0	0
2348595	11/27/05	08:15	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2410973	12/30/05	13:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2817380	9/28/06	12:35	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
2967693	12/23/06	13:38	0	In Int.	Other	Bicycle	South	Traveling Wrong Way	West	Proceeding Straight	Wrong Side of Road	1	0
3214766	5/21/07	16:00	30	North	Sideswipe	Other Motor Vehicle	North	Changing Lanes	North	Proceeding Straight	Unsafe Lane Change	0	0
3282994	7/16/07	19:45	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3384275	9/13/07	11:45	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3444307	9/30/07	07:42	0	In Int.	Other	Bicycle	North	Making Right Turn	South	Traveling Wrong Way	Wrong Side of Road	1	0
3446087	11/12/07	23:20	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3546374	12/23/07	16:09	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Improper Turning	0	0
3639479	2/19/08	09:28	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3706899	4/10/08	12:38	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

Page 2

Location: Oak St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 23

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3905932	8/24/08	16:50	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3998082	11/15/08	15:44	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4379408	8/27/09	20:41	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
4527361	12/11/09	14:26	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
4577901	1/17/10	21:10	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4587984	1/22/10	13:30	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4636191	2/10/10	11:24	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
4765723	6/10/10	10:32	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4786107	6/12/10	07:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0

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Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
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Location: Oak St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 23

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 23

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	8TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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Location: Oak St / 9th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 7

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3184552	5/1/07	02:10	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3495265	12/4/07	17:41	0	In Int.	Broadside	Other Motor Vehicle	North	Making Right Turn	East	Proceeding Straight	Auto R/W Violation	0	0
3670092	3/21/08	15:55	0	In Int.	Rear-End	Other Motor Vehicle	North	Slowing/Stopping	North	Proceeding Straight	Unsafe Speed	0	0
3796028	6/8/08	08:45	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3903881	9/14/08	07:13	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4131031	2/22/09	13:45	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4356314	3/14/09	11:50	24	North	Rear-End	Parked Motor Vehicle	North	Parking Maneuver	North	Parked	Unsafe Speed	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Page 2

Location: Oak St / 9th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 7

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 7

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	9TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
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Page 1

Location: Oak St / 10th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2195088	8/15/05	10:15	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
2241213	9/10/05	17:10	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Auto R/W Violation	0	0
2531667	3/13/06	09:27	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2712689	7/8/06	19:20	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2737214	7/14/06	16:05	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
9002464	8/24/06	12:50	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	2	0
9008344	8/30/06	08:45	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	0	0
3033630	2/9/07	18:13	0	In Int.	Other	Bicycle	East	Traveling Wrong Way	North	Making Left Turn	Wrong Side of Road	1	0
3071133	2/28/07	05:51	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
3093361	3/21/07	07:55	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3165398	5/7/07	10:10	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Auto R/W Violation	1	0
3349811	8/24/07	12:23	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	1	0
3491404	12/8/07	10:15	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3563544	1/20/08	14:37	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0



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**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

Location: Oak St / 10th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3570853	1/24/08	15:35	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3630211	3/20/08	10:40	50	South	Other	Parked Motor Vehicle	North	Backing	North	Parked	Unsafe Starting or Backing	0	0
3994430	11/3/08	10:39	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Making Right Turn	Unsafe Speed	0	0
4214888	4/29/09	16:15	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	North	Proceeding Straight	Improper Turning	0	0
4386952	9/3/09	12:35	20	South	Sideswipe	Other Motor Vehicle	North	Changing Lanes	North	Proceeding Straight	Improper Turning	0	0
4386960	9/4/09	09:20	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	North	Proceeding Straight	Improper Turning	0	0

**City of Oakland**  
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Location: Oak St / 10th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 20

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### Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	10TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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**Traffic Collision History Report**

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Location: Oak St / 12th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 43

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2152392	7/27/05	13:00	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
2359936	12/3/05	17:28	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
2579363	4/12/06	11:27	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2688917	6/15/06	12:11	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Traveling Wrong Way	East	Not Stated	Other Hazardous Movement	2	0
2693331	6/26/06	22:34	0	In Int.	Overturned	Motor Vehicle on Other	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
2703794	7/4/06	13:15	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
2806375	9/21/06	07:45	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
3042957	2/18/07	09:00	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	North	Not Stated	Ped R/W Violation	1	0
3179786	4/20/07	09:20	6	West	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Stopped in Road	Improper Turning	4	0
3467809	11/2/07	16:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3446072	11/13/07	07:07	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3488152	12/3/07	18:30	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	North	Proceeding Straight	Ped R/W Violation	1	0
3518505	12/14/07	14:45	44	East	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0
3569495	1/6/08	13:58	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0

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**Traffic Engineering Department**  
**Traffic Collision History Report**

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Page 2

Location: Oak St / 12th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 43

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3569455	1/15/08	11:20	0	In Int.	Broadside	Other Motor Vehicle	North	Stopped in Road	West	Stopped in Road	Traffic Signals and Signs	1	0
3603741	1/29/08	17:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3610647	2/26/08	15:35	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	West	Proceeding Straight	Traffic Signals and Signs	0	0
3657107	3/18/08	07:05	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3716578	4/16/08	08:23	0	In Int.	Broadside	Motor Vehicle on Other	North	Making Left Turn	West	Proceeding Straight	Traffic Signals and Signs	0	0
3737244	5/7/08	10:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3744899	5/23/08	17:51	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3827899	7/1/08	15:35	20	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Traffic Signals and Signs	0	0
3901491	7/22/08	07:00	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3831552	7/22/08	08:41	10	North	Other	Parked Motor Vehicle	North	Slowing/Stopping	North	Stopped in Road	Other Than Driver or Ped	0	0
3847410	7/30/08	06:05	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3881847	8/15/08	07:14	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
3901481	8/17/08	17:11	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
3961899	10/9/08	13:45	12	West	Other	Parked Motor Vehicle	West	Parking Maneuver	West	Parked	Unsafe Starting or Backing	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: Oak St / 12th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 43

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4209189	4/7/09	18:32	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4244444	5/6/09	19:36	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
4302741	5/30/09	18:45	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4269304	6/3/09	17:25	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	North	Proceeding Straight	Improper Turning	0	0
4312686	6/19/09	23:46	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4319154	7/5/09	21:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4319174	7/10/09	17:28	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4362078	7/26/09	16:57	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	2	0
4375449	8/16/09	23:28	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4405119	9/28/09	23:20	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4458102	10/20/09	17:03	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	5	0
4452717	10/21/09	21:25	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
4543096	12/19/09	18:56	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4616667	2/18/10	09:05	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	North	Not Stated	Ped R/W Violation	1	0

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Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
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Location: Oak St / 12th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 43

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4633421	3/3/10	10:42	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0

Total Number of Collisions: 43

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	12TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: Oak St / 13th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 16

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2209513	9/1/05	16:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2770732	8/14/06	13:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2881278	11/7/06	19:10	25	South	Sideswipe	Parked Motor Vehicle	South	Proceeding Straight	North	Parked	Improper Turning	0	0
2911785	11/27/06	08:52	0	In Int.	Broadside	Other Motor Vehicle	North	Making Right Turn	East	Proceeding Straight	Traffic Signals and Signs	0	0
3193763	5/22/07	11:00	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3283143	7/14/07	13:07	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3296999	7/25/07	14:50	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3300140	8/3/07	14:15	0	In Int.	Rear-End	Parked Motor Vehicle	North	Making Left Turn	North	Parked	Improper Turning	1	0
3317282	8/16/07	01:33	0	In Int.	Broadside	Other Motor Vehicle	South	Traveling Wrong Way	East	Proceeding Straight	Other Hazardous Movement	0	0
3325403	8/18/07	13:30	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
3495209	12/5/07	11:39	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	-1	0
3781604	5/29/08	19:16	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	3	0
3766246	6/4/08	15:41	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3770028	6/11/08	10:55	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0

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Traffic Engineering Department  
Traffic Collision History Report**

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**Location: Oak St / 13th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 16**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4003946	12/5/08	10:25	50	South	Sideswipe	Other Motor Vehicle	North	Changing Lanes	North	Proceeding Straight	Improper Turning	0	0
4260927	5/31/09	11:00	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	4	0

**Total Number of Collisions: 16**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	13TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related



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**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

Page 1

Location: Oak St / 14th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 18

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2260239	10/6/05	20:55	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2329313	11/5/05	17:21	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2494121	2/15/06	09:10	0	In Int.	Head-On	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	4	0
2537563	3/19/06	22:25	86	West	Rear-End	Parked Motor Vehicle	East	Proceeding Straight	East	Parked	Improper Turning	0	0
2567296	3/31/06	17:19	0	In Int.	Head-On	Motor Vehicle on Other	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	0	0
2830483	10/8/06	09:40	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	2	0
3184730	5/23/07	09:05	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3317326	8/15/07	14:20	0	In Int.	Sideswipe	Bicycle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	1	0
3423238	10/21/07	10:32	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3488160	12/3/07	09:10	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3721879	4/14/08	19:06	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3851700	8/2/08	15:36	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	1	0
4128629	12/17/08	12:20	40	West	Sideswipe	Not Stated	West	Passing Other Vehicle	West	Parked	Improper Turning	0	0
4083281	1/16/09	07:39	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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**Location: Oak St / 14th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 18**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4098095	1/27/09	06:05	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	3	0
4120999	2/2/09	13:00	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4389600	7/26/09	12:50	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4429450	10/6/09	08:50	24	East	Sideswipe	Parked Motor Vehicle	West	Not Stated	East	Parked	Improper Turning	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
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Location: Oak St / 14th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 18

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 18

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	14TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: Jackson St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2144830	7/22/05	17:45	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2329342	11/3/05	09:25	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
2455957	1/15/06	08:05	0	In Int.	Not Stated	Motor Vehicle on Other	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
2579438	4/12/06	17:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2903724	11/20/06	12:55	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3011320	1/25/07	14:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3056520	2/19/07	12:06	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3071121	2/26/07	06:28	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	East	Not Stated	Ped R/W Violation	1	0
3185246	4/9/07	11:15	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	4	0
3172543	5/2/07	14:20	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3250379	7/2/07	10:30	27	East	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Unsafe Lane Change	0	0
3494998	12/2/07	13:00	50	East	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Unsafe Lane Change	0	0
3551622	12/20/07	08:21	0	In Int.	Sideswipe	Other Motor Vehicle	South	Passing Other Vehicle	South	Proceeding Straight	Improper Passing	0	0
3586540	1/6/08	14:26	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0

**City of Oakland**  
**Traffic Engineering Department**  
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7/23/2012

Page 2

Location: Jackson St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3841099	7/5/08	15:50	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3850580	7/19/08	12:45	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3967347	11/22/08	13:19	12	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Making Left Turn	Unsafe Speed	0	0
4026139	12/24/08	19:41	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4026118	12/26/08	16:09	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4084005	1/7/09	05:13	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Left Turn	North	Making Left Turn	Wrong Side of Road	0	0
4133895	1/9/09	20:22	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4420891	10/1/09	02:22	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4601885	1/15/10	12:10	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
4624646	2/22/10	07:37	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4624526	3/4/10	12:23	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
4759085	6/1/10	16:30	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	East	Proceeding Straight	Ped R/W Violation	0	0

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Traffic Engineering Department  
Traffic Collision History Report**

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Page 3

Location: Jackson St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 26

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	JACKSON ST
Cross Street	8TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Harrison St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2356762	11/29/05	10:40	20	West	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Unsafe Lane Change	0	0
2444867	1/23/06	17:31	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Improper Turning	0	0
2467637	2/2/06	09:00	0	In Int.	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Improper Turning	0	0
2530107	3/9/06	13:00	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Traffic Signals and Signs	0	0
2537534	3/17/06	00:35	24	South	Sideswipe	Fixed Object	North	Ran Off Road			Improper Turning	0	0
2703667	6/29/06	15:15	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Left Turn	West	Making Left Turn	Unknown	0	0
2717906	7/4/06	22:30	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Making Left Turn	Unsafe Lane Change	0	0
3149915	4/26/07	18:45	0	In Int.	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Unsafe Lane Change	0	0
3296807	7/14/07	11:00	9	South	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Stopped in Road	Improper Turning	0	0
3346804	8/21/07	06:40	0	In Int.	Not Stated	Other Motor Vehicle	North	Proceeding Straight	West	Making Left Turn	Traffic Signals and Signs	0	0
3422019	10/17/07	11:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Auto R/W Violation	3	0
3538891	12/16/07	11:42	0	In Int.	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Unsafe Lane Change	0	0
3590224	1/23/08	09:15	10	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Making Left Turn	Unsafe Speed	0	0
3594832	2/1/08	13:20	30	East	Sideswipe	Other Motor Vehicle	West	Changing Lanes	West	Proceeding Straight	Improper Turning	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

Location: Harrison St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3782329	6/2/08	19:11	30	West	Sideswipe	Other Motor Vehicle	West	Other	West	Proceeding Straight	Unsafe Lane Change	0	0
3901499	7/11/08	22:55	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	West	Stopped in Road	Driving Under Influence	1	0
4085529	1/13/09	13:49	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	1	0
4304580	7/4/09	00:13	40	West	Rear-End	Other Motor Vehicle	Not Stated	Parking Maneuver	Not Stated	Parked	Unsafe Starting or Backing	0	0
4990006	12/12/09		0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Proceeding Straight	Not Stated	Not Stated	Unknown	0	1
4693169	3/11/10	12:58	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0



**City of Oakland**  
**Traffic Engineering Department**  
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7/23/2012  
Page 3

Location: Harrison St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 20

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**Settings Used For Query**

**Parameter**

**Setting**

Street Name	HARRISON ST
Cross Street	8TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
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7/23/2012  
Page 1

**Location: Brush St / 12th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 16**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2205417	8/26/05	10:25	10	South	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	West	Other	Ped R/W Violation	0	0
2391258	12/6/05	08:33	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Unknown	0	0
2479256	2/14/06	15:50	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Unknown	0	0
2779711	8/18/06	15:00	0	In Int.	Rear-End	Other Motor Vehicle	North	Backing	South	Stopped in Road	Unsafe Starting or Backing	0	0
2806911	9/24/06	11:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3093344	3/3/07	17:13	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	West	Not Stated	Ped R/W Violation	1	0
3283173	7/18/07	09:10	0	In Int.	Broadside	Other Motor Vehicle	South	Making Right Turn	West	Proceeding Straight	Auto R/W Violation	0	0
3650374	3/9/08	22:10	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Improper Turning	0	0
3855230	6/15/08	14:49	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	1	0
3674057	7/9/08	13:10	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
3881863	8/11/08	15:42	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3983333	10/29/08	15:40	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4269538	4/2/09	17:13	15	South	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	West	Proceeding Straight	Ped R/W Violation	1	0
4263455	6/3/09	14:20	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	West	Proceeding Straight	Ped R/W Violation	1	0

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Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
Page 2

Location: Brush St / 12th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 16

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4695230	4/29/10	19:20	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4784274	5/8/10	16:44	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	1	0

Total Number of Collisions: 16

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	BRUSH ST
Cross Street	12TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
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7/23/2012  
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Location: Broadway / 11th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2304461	10/14/05	14:10	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Proceeding Straight	Improper Turning	0	0
2356746	11/29/05	07:48	31	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	1	0
2391274	12/7/05	09:35	0	In Int.	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Proceeding Straight	Unsafe Speed	0	0
2396847	12/26/05	15:30	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Proceeding Straight	West	Proceeding Straight	Unknown	1	0
2632312	5/18/06	15:30	0	In Int.	Sideswipe	Other Motor Vehicle	East	Entering Traffic	East	Proceeding Straight	Unsafe Starting or Backing	0	0
2631305	5/21/06	21:30	15	West	Sideswipe	Other Motor Vehicle	East	Other Unsafe Turning	East	Proceeding Straight	Improper Turning	0	0
2775954	8/16/06	07:30	38	East	Vehicle - Pedestrian	Pedestrian	South	Proceeding Straight	East	Making Left Turn	Pedestrian Violation	1	0
3587687	1/31/08	10:15	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
3541717	2/1/08	11:08	19	South	Broadside	Other Motor Vehicle	North	Passing Other Vehicle	North	Proceeding Straight	Improper Passing	0	0
3698709	4/20/08	20:03	60	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	1	0
3755449	6/3/08	15:04	100	West	Rear-End	Parked Motor Vehicle	East	Backing	East	Parked	Unsafe Starting or Backing	0	0
3859807	7/30/08	18:59	0	In Int.	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Improper Turning	0	0
4105749	2/3/09	06:03	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	1	0
4117768	2/12/09	11:35	0	In Int.	Other	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Wrong Side of Road	1	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

Location: **Broadway / 11th St**  
Date Range Reported: **7/1/2005 - 6/30/2010**  
Total Number of Collisions: **20**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4366947	8/2/09	14:18	17	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Other Improper Driving	0	0
4404730	9/16/09	07:39	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Other	North	Proceeding Straight	Pedestrian Violation	0	0
4421188	9/29/09	15:45	50	South	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Slowing/Stopping	Other Improper Driving	0	0
4710303	5/5/10	12:51	35	West	Sideswipe	Other Motor Vehicle	East	Entering Traffic	East	Proceeding Straight	Improper Turning	0	0
4809285	6/8/10	11:50	0	In Int.	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0
4782856	6/11/10	02:50	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	0	0

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Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
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Location: Broadway / 11th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 20

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	BROADWAY
Cross Street	11TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Broadway / 12th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2225811	8/1/05	14:59	25	South	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Parked	Improper Turning	0	0
2234866	8/9/05	11:35	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	South	Stopped in Road	Unsafe Speed	0	0
2209478	9/1/05	00:06	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
2330811	10/12/05	20:26	3	South	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	East	Not Stated	Ped R/W Violation	1	0
2329343	11/9/05	21:23	0	In Int.	Not Stated	Other Motor Vehicle	West	Stopped in Road	West	Stopped in Road	Improper Turning	0	0
2348311	11/11/05	14:40	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Proceeding Straight	West	Other	Ped R/W Violation	1	0
2453816	1/16/06	23:25	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0
2511782	2/19/06	12:45	50	North	Rear-End	Other Motor Vehicle	North	Proceeding Straight	South	Backing	Unsafe Speed	0	0
2584211	4/13/06	13:35	21	North	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Improper Turning	0	0
2597109	4/15/06	02:03	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	Not Stated	Stopped in Road	Driving Under Influence	1	0
2834277	8/12/06	16:00	10	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	1	0
2985895	12/13/06	18:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3039380	2/14/07	02:03	0	In Int.	Broadside	Motor Vehicle on Other	West	Proceeding Straight	South	Proceeding Straight	Auto R/W Violation	3	0
3049374	2/20/07	16:42	50	East	Sideswipe	Other Motor Vehicle	East	Backing	West	Stopped in Road	Unsafe Starting or Backing	0	0

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7/23/2012  
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**Location: Broadway / 12th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 26**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3472338	11/10/07	11:35	40	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	3	0
3543416	12/29/07	07:37	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Making Left Turn	East	Not Stated	Ped R/W Violation	1	0
3624824	2/19/08	13:05	25	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Starting or Backing	1	0
3640368	2/21/08	19:15	0	In Int.	Rear-End	Other Motor Vehicle	South	Slowing/Stopping	South	Stopped in Road	Unsafe Speed	0	0
3660579	4/8/08	10:37	15	North	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Improper Turning	0	0
3744891	5/24/08	21:35	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
4039969	1/15/09	12:18	0	In Int.	Sideswipe	Other Motor Vehicle	East	Changing Lanes	South	Proceeding Straight	Unsafe Lane Change	0	0
4282832	6/10/09	11:10	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Other	North	Proceeding Straight	Pedestrian Violation	1	0
4340617	6/29/09	11:30	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Improper Turning	0	0
4317193	6/30/09	09:30	0	In Int.	Sideswipe	Bicycle	North	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
4458122	10/16/09	22:28	5	North	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
4698303	4/30/10	21:13	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0



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Location: Broadway / 12th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 26

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### Settings Used For Query

<u>Parameter</u>	<u>Setting</u>
Street Name	BROADWAY
Cross Street	12TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

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Location: Webster St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2122707	7/3/05	12:40	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Unsafe Lane Change	0	0
2179146	8/12/05	13:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Improper Turning	0	0
2225902	8/31/05	12:15	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Improper Turning	0	0
2234792	9/13/05	14:50	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	0	0
2342353	10/30/05	10:28	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0
2349485	11/16/05	14:20	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Making Left Turn	Improper Turning	0	0
2348702	11/19/05	09:50	50	North	Broadside	Other Motor Vehicle	South	Entering Traffic	South	Proceeding Straight	Improper Turning	0	0
2349558	11/22/05	10:30	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Proceeding Straight	Improper Turning	0	0
2349562	11/22/05	12:50	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Making Right Turn	Improper Turning	0	0
2515796	3/3/06	12:20	75	North	Rear-End	Other Motor Vehicle	South	Stopped in Road	South	Stopped in Road	Unsafe Starting or Backing	0	0
2522321	3/13/06	14:05	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Unsafe Speed	0	0
2555847	3/24/06	20:35	0	In Int.	Broadside	Not Stated	West	Proceeding Straight	West	Making Left Turn	Unknown	0	0
2555848	3/26/06	15:25	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Making Right Turn	Other Hazardous Movement	0	0
2569812	3/30/06	16:10	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Other Hazardous Movement	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

Page 2

Location: Webster St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2579631	4/8/06	08:35	45	East	Rear-End	Other Motor Vehicle	East	Backing	West	Parking Maneuver	Unsafe Starting or Backing	1	0
2598554	4/17/06	15:25	21	West	Sideswipe	Other Motor Vehicle	West	Parked	West	Slowing/Stopping	Other Hazardous Movement	0	0
2632360	5/18/06	09:20	0	In Int.	Sideswipe	Motor Vehicle on Other	South	Making Left Turn	South	Making Left Turn	Improper Turning	0	0
2631268	5/20/06	09:32	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	West	Making Right Turn	Improper Turning	0	0
2682967	6/1/06	09:50	45	Not Stated	Sideswipe	Other Motor Vehicle	West	Merging	West	Proceeding Straight	Improper Turning	0	0
2687167	6/8/06	00:15	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Making Left Turn	Unsafe Lane Change	0	0
2734893	7/18/06	13:10	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Improper Turning	0	0
2817989	9/23/06	13:05	0	In Int.	Sideswipe	Other Motor Vehicle	South	Not Stated	South	Not Stated	Improper Turning	0	0
2881250	11/5/06	02:12	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	6	0
2920729	11/30/06	13:53	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Making Right Turn	Other Hazardous Movement	0	0
2931238	12/4/06	22:32	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
2925776	12/5/06	10:00	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
2942465	12/9/06	15:00	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Making Left Turn	Improper Turning	0	0
2942419	12/9/06	19:20	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Improper Turning	0	0

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Location: Webster St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2989905	1/8/07	12:00	5	West	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Unknown	0	0
3027025	2/1/07	09:35	30	East	Sideswipe	Other Motor Vehicle	West	Entering Traffic	West	Proceeding Straight	Unsafe Starting or Backing	0	0
3059098	2/18/07	12:10	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Changing Lanes	Unsafe Lane Change	0	0
3156658	4/28/07	12:55	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Improper Turning	1	0
3259274	7/8/07	17:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
3283182	7/15/07	06:34	0	In Int.	Broadside	Motor Vehicle on Other	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3325134	7/27/07	17:48	10	South	Other	Parked Motor Vehicle	South	Backing	South	Parked	Unsafe Starting or Backing	0	0
3300146	8/1/07	11:20	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
3349767	8/26/07	16:33	0	In Int.	Sideswipe	Other Motor Vehicle	South	Changing Lanes	South	Proceeding Straight	Unsafe Lane Change	0	0
3349788	8/27/07	09:26	0	In Int.	Sideswipe	Other Motor Vehicle	South	Passing Other Vehicle	South	Stopped in Road	Unknown	0	0
3377885	9/24/07	11:15	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0
3423265	10/18/07	13:30	2	North	Broadside	Motor Vehicle on Other	South	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
3467536	10/28/07	12:45	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Making Left Turn	Improper Turning	0	0
3504985	12/12/07	10:25	0	In Int.	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0

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Location: Webster St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3546397	12/21/07	16:10	10	East	Sideswipe	Other Motor Vehicle	West	Parking Maneuver	West	Proceeding Straight	Unsafe Starting or Backing	0	0
3639169	2/29/08	09:40	150	East	Rear-End	Other Motor Vehicle	West	Parked	West	Parking Maneuver	Unsafe Starting or Backing	0	0
3657054	3/17/08	08:30	30	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	4	0
3755517	5/30/08	19:55	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Other Hazardous Movement	0	0
3781790	6/6/08	11:50	50	North	Sideswipe	Other Motor Vehicle	South	Changing Lanes	South	Proceeding Straight	Unsafe Lane Change	0	0
3827887	7/2/08	07:06	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Making Left Turn	Improper Turning	0	0
3830961	7/18/08	12:50	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Improper Turning	0	0
3856907	8/29/08	17:45	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
3943500	9/27/08	12:39	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Improper Turning	0	0
3991382	11/9/08	15:57	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Other Hazardous Movement	0	0
3967414	11/13/08	16:45	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Improper Turning	0	0
4060833	11/21/08	09:45	0	In Int.	Sideswipe	Other Motor Vehicle	South	Changing Lanes	South	Proceeding Straight	Improper Turning	0	0
4014001	12/9/08	19:00	5	South	Broadside	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Improper Turning	0	0
4014379	12/21/08	13:19	35	West	Other	Parked Motor Vehicle	West	Backing	West	Parked	Unsafe Starting or Backing	0	0

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Location: Webster St / 8th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4047608	1/3/09	20:29	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Right Turn	Other Hazardous Movement	0	0
4083340	1/12/09	12:38	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	0	0
4237068	4/6/09	12:59	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Improper Turning	0	0
4125757	4/11/09	20:55	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Proceeding Straight	Improper Turning	0	0
4266753	6/7/09	14:59	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	West	Making Left Turn	Improper Turning	0	0
4124244	6/16/09	16:56	25	North	Other	Other Motor Vehicle	South	Backing	South	Stopped in Road	Unsafe Starting or Backing	0	0
4306425	6/25/09	16:26	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	0	0
4340916	7/12/09	04:36	50	East	Other	Other Motor Vehicle	West	Parking Maneuver	West	Parked	Unsafe Starting or Backing	0	0
4370782	8/20/09	14:56	50	North	Rear-End	Other Motor Vehicle	South	Stopped in Road	South	Stopped in Road	Unknown	0	0
4404774	9/11/09	14:08	0	In Int.	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Making Left Turn	Other Hazardous Movement	0	0
4402353	9/20/09	18:16	20	South	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Improper Turning	0	0
4402345	9/24/09	09:30	0	In Int.	Sideswipe	Other Motor Vehicle	Not Stated	Proceeding Straight	South	Making Right Turn	Improper Turning	0	0
4458114	10/19/09	12:34	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Proceeding Straight	Improper Turning	0	0
4491401	11/23/09	17:45	0	In Int.	Broadside	Other Motor Vehicle	South	Making Right Turn	South	Proceeding Straight	Unknown	0	0

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Location: Webster St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4543117	12/4/09	13:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	0	0
4656703	3/18/10	14:23	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
4663468	3/24/10	16:30	24	South	Rear-End	Parked Motor Vehicle	South	Parking Maneuver	South	Parked	Unsafe Starting or Backing	0	0
4674678	4/6/10	14:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Right Turn	South	Making Right Turn	Improper Turning	1	0
4698312	4/21/10	20:25	45	South	Other	Parked Motor Vehicle	North	Backing	North	Parked	Unsafe Starting or Backing	0	0
4731861	5/13/10	14:54	10	South	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Unknown	0	0

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Traffic Collision History Report**

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Location: Webster St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 76

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 76

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	WEBSTER ST
Cross Street	8TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related



**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

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Location: Webster St / 9th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 29

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2218744	9/6/05	22:15	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Other	0	0
2241124	9/9/05	09:55	25	North	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Improper Turning	0	0
2289860	10/20/05	15:15	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
2391265	11/30/05	15:40	30	West	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Improper Turning	0	0
2438539	1/18/06	17:35	0	In Int.	Sideswipe	Other Motor Vehicle	South	Changing Lanes	South	Proceeding Straight	Improper Turning	0	0
2444860	1/23/06	15:40	0	In Int.	Sideswipe	Other Motor Vehicle	South	Entering Traffic	South	Changing Lanes	Improper Turning	0	0
2511539	3/2/06	03:00	0	In Int.	Hit Object	Other Object	West	Proceeding Straight			Other	0	0
2660519	5/23/06	16:00	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	East	Proceeding Straight	Traffic Signals and Signs	0	0
2683591	5/24/06	17:16	0	In Int.	Not Stated	Other Motor Vehicle	East	Stopped in Road	East	Stopped in Road	Improper Turning	0	0
2682942	6/5/06	18:00	30	North	Rear-End	Other Motor Vehicle	South	Changing Lanes	South	Stopped in Road	Unsafe Speed	1	0
9000321	8/26/06	12:45	45	North	Rear-End	Other Motor Vehicle	South	Changing Lanes	South	Stopped in Road	Unsafe Speed	0	0
2917524	11/29/06	10:45	30	North	Sideswipe	Parked Motor Vehicle	South	Other	South	Proceeding Straight	Other Hazardous Movement	0	0
3087221	12/13/06	08:45	0	In Int.	Broadside	Motor Vehicle on Other	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2985916	12/23/06	00:22	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

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Location: Webster St / 9th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 29

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3039376	2/13/07	18:45	25	East	Broadside	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Unknown	0	0
3233759	4/5/07	14:49	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Proceeding Straight	West	Not Stated	Unknown	1	0
3134974	4/16/07	14:25	0	In Int.	Broadside	Motor Vehicle on Other	South	Proceeding Straight	East	Proceeding Straight	Unknown	0	0
3152822	4/27/07	13:30	0	In Int.	Sideswipe	Other Motor Vehicle	South	Merging	South	Proceeding Straight	Improper Turning	0	0
3203712	6/2/07	07:25	0	In Int.	Other	Bicycle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
3412226	10/9/07	13:30	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	South	Not Stated	Ped R/W Violation	0	0
3449239	10/18/07	18:52	0	In Int.	Other	Other Motor Vehicle	South	Backing	South	Stopped in Road	Unknown	0	0
3582819	1/4/08	12:50	20	North	Sideswipe	Other Motor Vehicle	South	Entering Traffic	South	Proceeding Straight	Unsafe Starting or Backing	0	0
3545151	1/8/08	13:15	50	West	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Stopped in Road	Unsafe Lane Change	0	0
3639165	2/29/08	10:35	25	West	Sideswipe	Other Motor Vehicle	East	Passing Other Vehicle	East	Stopped in Road	Improper Turning	0	0
3675706	3/23/08	14:20	0	In Int.	Other	Other Motor Vehicle	South	Making Left Turn	South	Proceeding Straight	Improper Turning	0	0
4071681	9/25/08	11:20	12	East	Rear-End	Parked Motor Vehicle	East	Parking Maneuver	East	Parked	Improper Turning	0	0
4083282	1/28/09	13:30	30	West	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Improper Turning	0	0
4538209	11/30/09	13:50	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Other	South	Making Left Turn	Pedestrian Violation	1	0

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Location: Webster St / 9th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 29

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4759192	5/27/10	11:19	40	West	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Unsafe Lane Change	0	0

Total Number of Collisions: 29

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**Settings Used For Query**

**Parameter**

**Setting**

Street Name	WEBSTER ST
Cross Street	9TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: Harrison St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 54

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2122694	7/1/05	08:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Other	1	0
2119707	7/9/05	13:10	10	West	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Improper Turning	0	0
2139098	7/17/05	09:45	35	North	Rear-End	Parked Motor Vehicle	North	Parking Maneuver	North	Parked	Unsafe Speed	0	0
2152357	7/26/05	14:10	6	South	Vehicle - Pedestrian	Pedestrian	North	Proceeding Straight	West	Proceeding Straight	Ped R/W Violation	1	0
2179173	8/14/05	21:00	0	In Int.	Not Stated	Fixed Object	East	Making Left Turn	East	Proceeding Straight	Unsafe Lane Change	1	0
2209485	8/29/05	13:15	25	South	Rear-End	Other Motor Vehicle	North	Stopped in Road	North	Proceeding Straight	Other	0	0
2330831	10/8/05	17:05	0	In Int.	Rear-End	Parked Motor Vehicle	East	Parked	East	Not Stated	Unsafe Starting or Backing	0	0
2265771	10/9/05	09:25	30	South	Rear-End	Other Motor Vehicle	North	Stopped in Road	North	Proceeding Straight	Unsafe Speed	1	0
2279241	10/11/05	04:52	15	South	Sideswipe	Fixed Object	North	Making Right Turn			Unknown	0	0
2348605	11/23/05	09:21	0	In Int.	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Unsafe Lane Change	0	0
2458134	1/24/06	08:25	0	In Int.	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Unsafe Lane Change	0	0
2523340	3/10/06	11:35	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	East	Proceeding Straight	Auto R/W Violation	0	0
2671936	6/9/06	10:39	0	In Int.	Hit Object	Fixed Object	North	Making Right Turn			Improper Turning	0	0
2703549	6/15/06	16:00	100	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Other	0	0

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Location: Harrison St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 54

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2798456	9/7/06	08:50	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Other	0	0
2821966	9/30/06	23:36	69	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
2901424	11/3/06	11:12	30	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
2916327	11/19/06	10:26	0	In Int.	Rear-End	Other Motor Vehicle	East	Making Right Turn	East	Making Right Turn	Following Too Closely	0	0
2908601	11/20/06	16:46	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	East	Proceeding Straight	Unsafe Speed	0	0
2968637	12/28/06	16:15	50	East	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0
3123363	4/6/07	11:00	22	South	Sideswipe	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Improper Turning	0	0
3165842	4/19/07	16:30	20	East	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0
3193791	5/25/07	16:10	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Proceeding Straight	Not Stated	Not Stated	Other	1	0
3236991	6/18/07	15:14	100	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	1	0
3250375	7/3/07	07:30	42	South	Rear-End	Other Motor Vehicle	North	Making Right Turn	North	Stopped in Road	Unsafe Speed	0	0
3256513	7/9/07	14:30	0	In Int.	Sideswipe	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Improper Turning	0	0
3392367	10/2/07	18:05	30	Not Stated	Sideswipe	Other Motor Vehicle	Not Stated	Backing	East	Proceeding Straight	Unknown	0	0
3698642	4/17/08	10:43	0	In Int.	Sideswipe	Motor Vehicle on Other	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

Page 3

Location: Harrison St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 54

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3699250	4/18/08	14:07	30	West	Rear-End	Other Motor Vehicle	East	Backing	East	Proceeding Straight	Unsafe Starting or Backing	0	0
3803851	7/15/08	09:50	0	In Int.	Hit Object	Fixed Object	North	Making Right Turn			Improper Turning	0	0
3830993	7/19/08	19:30	30	East	Rear-End	Other Motor Vehicle	East	Merging	East	Stopped in Road	Unsafe Speed	0	0
3860321	7/30/08	15:52	0	In Int.	Rear-End	Other Motor Vehicle	North	Making Right Turn	East	Stopped in Road	Unsafe Speed	0	0
3931687	9/22/08	08:10	70	South	Rear-End	Other Motor Vehicle	North	Changing Lanes	North	Stopped in Road	Unsafe Speed	2	0
3975218	10/28/08	18:56	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
3998746	12/10/08	18:08	4	North	Rear-End	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Unsafe Speed	0	0
4020530	12/12/08	09:32	10	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0
4065807	12/17/08	16:00	0	In Int.	Rear-End	Other Motor Vehicle	North	Making Right Turn	North	Making Right Turn	Unsafe Speed	0	0
4042439	1/7/09	14:57	25	East	Hit Object	Fixed Object	East	Not Stated			Unknown	0	0
4038592	1/22/09	15:45	50	East	Rear-End	Other Motor Vehicle	East	Merging	East	Slowing/Stopping	Unsafe Speed	0	0
4130700	1/30/09	11:19	10	South	Rear-End	Not Stated	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
4138378	2/20/09	07:06	0	In Int.	Sideswipe	Other Motor Vehicle	East	Merging	East	Proceeding Straight	Unsafe Lane Change	0	0
4136957	2/20/09	15:00	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Changing Lanes	Improper Turning	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

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Location: Harrison St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 54

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4168694	3/13/09	21:50	12	South	Hit Object	Fixed Object	Not Stated	Ran Off Road			Improper Turning	0	0
4340920	7/1/09	18:00	15	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
4353647	8/9/09	07:42	15	South	Head-On	Fixed Object	North	Proceeding Straight			Improper Turning	0	0
4404738	9/16/09	17:56	0	In Int.	Rear-End	Other Motor Vehicle	East	Making Right Turn	East	Making Right Turn	Following Too Closely	1	0
4406058	9/24/09	14:17	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
4406319	9/25/09	15:30	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	1	0
4427857	10/1/09	06:10	0	In Int.	Hit Object	Fixed Object	Not Stated	Proceeding Straight			Unsafe Speed	0	0
4430375	10/6/09	21:56	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Driving Under Influence	2	0
4464490	10/20/09	11:36	12	East	Rear-End	Other Motor Vehicle	East	Making Right Turn	East	Proceeding Straight	Unsafe Speed	0	0
4527524	12/18/09	15:30	35	West	Sideswipe	Other Motor Vehicle	East	Entering Traffic	East	Proceeding Straight	Unsafe Starting or Backing	0	0
4691445	3/31/10	18:02	2	South	Vehicle - Pedestrian	Pedestrian	North	Making Right Turn	West	Not Stated	Auto R/W Violation	1	0
4678203	4/14/10	12:42	0	In Int.	Rear-End	Other Motor Vehicle	East	Making Right Turn	East	Making Right Turn	Following Too Closely	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
Page 5

Location: Harrison St / 7th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 54

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 54

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**Settings Used For Query**

**Parameter**

**Setting**

Street Name	HARRISON ST
Cross Street	7TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related



**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: Harrison St / 20th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 17

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2202154	8/22/05	11:15	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	East	Proceeding Straight	Other Hazardous Movement	1	0
2632288	5/18/06	17:00	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Following Too Closely	0	0
2687144	6/19/06	12:29	15	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Unsafe Speed	0	0
3240692	6/21/07	09:00	50	West	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Improper Turning	0	0
3297003	7/25/07	09:45	10	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
3472387	10/22/07	16:27	15	South	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3451104	10/30/07	15:19	30	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	3	0
3472256	11/17/07	11:10	10	North	Rear-End	Other Motor Vehicle	South	Backing	South	Stopped in Road	Unsafe Starting or Backing	0	0
3795441	6/24/08	13:33	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3890481	8/23/08	01:49	10	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
4187781	2/21/09	23:46	0	In Int.	Hit Object	Fixed Object	South	Other Unsafe Turning			Other Improper Driving	0	0
4452686	10/3/09	08:00	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Auto R/W Violation	0	0
4474838	10/28/09	16:56	0	In Int.	Sideswipe	Bicycle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
4561726	1/29/10	16:30	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

**Location: Harrison St / 20th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 17**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4782013	4/11/10	19:34	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	South	Making Left Turn	Unknown	0	0
4768916	4/29/10	14:57	0	In Int.	Vehicle - Pedestrian	Pedestrian	West	Proceeding Straight	South	Not Stated	Ped R/W Violation	1	0
4698850	5/15/10	19:15	20	North	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Other	0	0

**Total Number of Collisions: 17**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	HARRISON ST
Cross Street	20TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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**Location: Jackson St / 5th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 20**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2225769	9/2/05	17:50	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2329302	11/6/05	23:35	0	In Int.	Broadside	Other Motor Vehicle	South	Stopped in Road	North	Stopped in Road	Auto R/W Violation	0	0
2660514	5/15/06	10:20	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	0	0
2687138	6/15/06	19:41	0	In Int.	Broadside	Other Motor Vehicle	North	Stopped in Road	East	Stopped in Road	Traffic Signals and Signs	0	0
2864399	10/24/06	13:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3010325	1/18/07	07:50	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Making Left Turn	South	Not Stated	Ped R/W Violation	0	0
3184241	5/15/07	13:30	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	Not Stated	Proceeding Straight	Traffic Signals and Signs	1	0
3388599	9/26/07	16:00	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
3524813	1/2/08	11:25	15	West	Sideswipe	Other Motor Vehicle	East	Making Right Turn	East	Proceeding Straight	Unknown	0	0
3918331	9/12/08	09:12	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	2	0
4047616	1/10/09	02:45	5	South	Hit Object	Fixed Object	South	Ran Off Road			Improper Turning	0	0
4182814	3/31/09	14:37	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	0	0
4271790	6/11/09	09:48	0	In Int.	Sideswipe	Other Motor Vehicle	South	Making Left Turn	North	Stopped in Road	Improper Turning	0	0
4332866	7/15/09	20:17	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Improper Turning	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 2

Location: Jackson St / 5th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4445851	9/3/09	19:55	31	West	Sideswipe	Parked Motor Vehicle	East	Making Right Turn	East	Parked	Driving Under Influence	0	0
4439477	9/18/09	21:20	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
4477073	11/12/09	10:53	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
4578359	1/7/10	08:54	0	In Int.	Head-On	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	1	0
4772469	5/10/10	14:32	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	2	0
4778406	6/11/10	08:25	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Making Left Turn	East	Not Stated	Ped R/W Violation	1	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
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Location: Jackson St / 5th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 20

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
Total Number of Collisions: 20													

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	JACKSON ST
Cross Street	5TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
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Location: Jackson St / 6th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 31

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2186166	8/18/05	20:05	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2304430	10/2/05	15:42	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
2396867	12/26/05	19:00	0	In Int.	Broadside	Motor Vehicle on Other	West	Proceeding Straight	North	Proceeding Straight	Unknown	0	0
2563542	4/3/06	06:40	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
2687202	6/22/06	12:25	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
2734880	7/18/06	18:30	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
2804367	9/17/06	16:50	0	In Int.	Not Stated	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
2845846	10/13/06	01:00	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
2845916	10/15/06	14:00	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	1	0
3009851	1/3/07	22:55	60	East	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0
3026970	1/30/07	13:49	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3078715	3/10/07	11:25	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
3092653	3/16/07	18:45	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3145287	4/10/07	18:10	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 3

**Location: Jackson St / 6th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 31**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4464963	10/10/09	07:26	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4476992	11/24/09	15:36	40	Not Stated	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0
4577853	1/29/10	07:14	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0

**Total Number of Collisions: 31**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	JACKSON ST
Cross Street	6TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Jackson St / 7th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 27

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2144817	7/23/05	09:00	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
2494951	2/24/06	12:44	0	In Int.	Hit Object	Fixed Object	South	Proceeding Straight	Not Stated	Other	Improper Turning	0	0
2567352	4/1/06	08:43	15	West	Rear-End	Other Motor Vehicle	East	Stopped in Road	East	Proceeding Straight	Unsafe Speed	0	0
2577921	4/10/06	13:49	48	South	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Merging	Unsafe Speed	0	0
2687176	6/19/06	16:30	0	In Int.	Broadside	Other Motor Vehicle	East	Stopped in Road	South	Stopped in Road	Traffic Signals and Signs	0	0
2750400	7/31/06	12:05	30	South	Hit Object	Fixed Object	South	Making Right Turn			Improper Turning	0	0
2916374	11/18/06	10:29	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Making Right Turn	Traffic Signals and Signs	1	0
3025164	1/31/07	07:33	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3249904	6/30/07	23:20	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3284037	7/23/07	09:42	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	1	0
3466433	10/19/07	21:49	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Making Right Turn	Improper Turning	0	0
3463170	11/7/07	17:10	0	In Int.	Broadside	Pedestrian	East	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	1	0
3472280	11/15/07	09:00	20	West	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Unsafe Lane Change	0	0
3743086	5/20/08	12:11	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0



**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012

Page 2

Location: Jackson St / 7th St

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 27

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3821644	7/10/08	08:09	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
3893421	9/2/08	09:15	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	West	Proceeding Straight	Ped R/W Violation	3	0
3967403	11/20/08	14:04	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
3967398	11/24/08	10:22	0	In Int.	Sideswipe	Other Motor Vehicle	East	Passing Other Vehicle	East	Proceeding Straight	Improper Passing	0	0
4047612	1/3/09	15:21	12	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Slowing/Stopping	Unsafe Speed	0	0
4207123	3/31/09	13:10	0	In Int.	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Improper Turning	0	0
4222592	4/25/09	20:57	0	In Int.	Vehicle - Pedestrian	Pedestrian	East	Making Left Turn	North	Not Stated	Ped R/W Violation	1	0
4231053	5/1/09	17:00	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
4243796	5/5/09	18:54	50	West	Sideswipe	Parked Motor Vehicle	East	Other	East	Parked	Improper Turning	0	0
4317181	6/25/09	09:39	15	North	Head-On	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	2	0
4452682	10/11/09	14:42	0	In Int.	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	1	0
4625253	3/5/10	22:47	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Right Turn	West	Proceeding Straight	Other	0	0
4765708	6/12/10	02:00	10	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
Page 3

Location: Jackson St / 7th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 27

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 27

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	JACKSON ST
Cross Street	7TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: Fallon St / 8th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 1

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2329327	11/9/05	13:30	25	West	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Improper Turning	0	0

Total Number of Collisions: 1

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	FALLON ST
Cross Street	8TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: International Blvd / 1st Avenue PI (S)  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 0

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 0

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	INTERNATIONAL BLVD
Cross Street	1ST AVENUE PL (S)
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: 5th Av / E 8th St (W)

Date Range Reported: 7/1/2005 - 6/30/2010

Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2330812	10/13/05	13:18	0	In Int.	Sideswipe	Bicycle	East	Making Right Turn	North	Proceeding Straight	Improper Turning	0	0
2289900	10/18/05	15:23	10	East	Rear-End	Other Motor Vehicle	West	Proceeding Straight	West	Proceeding Straight	Following Too Closely	0	0
2329339	11/9/05	13:10	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	0	0
2563271	4/4/06	13:10	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	0	0
2585913	4/18/06	18:00	0	In Int.	Rear-End	Parked Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Starting or Backing	0	0
2674468	6/12/06	13:15	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Unknown	2	0
2985912	12/15/06	17:23	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	0	0
3025077	2/2/07	16:30	10	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
3112593	3/29/07	07:43	100	North	Rear-End	Parked Motor Vehicle	South	Stopped in Road	South	Parked	Hazardous Parking	0	0
3179845	4/13/07	11:57	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	3	0
3236717	6/4/07	08:00	0	In Int.	Broadside	Other Motor Vehicle	West	Proceeding Straight	South	Proceeding Straight	Traffic Signals and Signs	0	0
3346707	8/26/07	18:00	0	In Int.	Broadside	Other Motor Vehicle	South	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	0	0
3406237	9/5/07	21:40	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	0	0
3479708	11/23/07	13:50	0	In Int.	Broadside	Other Motor Vehicle	East	Making U Turn	West	Proceeding Straight	Auto R/W Violation	0	0

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Location: 5th Av / E 8th St (W)  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3701414	4/9/08	22:25	0	In Int.	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0
3743093	5/15/08	10:18	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	0	0
3924636	9/11/08	13:31	5	South	Broadside	Other Motor Vehicle	North	Proceeding Straight	North	Making Right Turn	Improper Turning	0	0
4014583	11/30/08	13:30	10	East	Rear-End	Parked Motor Vehicle	East	Proceeding Straight	East	Parked	Improper Turning	0	0
4038266	1/13/09	17:38	5	West	Broadside	Other Motor Vehicle	West	Making U Turn	East	Slowing/Stopping	Improper Turning	0	0
4039952	1/14/09	09:59	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	1	0
4044700	1/26/09	10:10	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Parked	Improper Turning	0	0
4237096	4/18/09	23:27	0	In Int.	Head-On	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	0	0
4246212	5/19/09	15:58	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	0	0
4446326	10/18/09	18:30	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Driving Under Influence	0	0
4587394	1/21/10	13:51	0	In Int.	Rear-End	Other Motor Vehicle	South	Making Right Turn	East	Stopped in Road	Unsafe Speed	0	0
4689176	4/14/10	18:47	15	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0

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Location: 5th Av / E 8th St (W)  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 26

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 26

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	5TH AV
Cross Street	E 8TH ST (W)
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: 5th Av / E 8th St (E)  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 0

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 0

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	5TH AV
Cross Street	E 8TH ST (E)
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related



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**Location: Lakeshore Av / E 18th St (W)**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 14**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2329299	11/8/05	18:10	35	North	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Merging	Auto R/W Violation	0	0
2348659	11/20/05	20:10	0	In Int.	Broadside	Not Stated	West	Making Left Turn	North	Proceeding Straight	Traffic Signals and Signs	0	0
2496688	2/22/06	14:50	26	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
2754188	8/7/06	21:07	0	In Int.	Broadside	Other Motor Vehicle	East	Making Left Turn	North	Proceeding Straight	Auto R/W Violation	0	0
2806347	9/25/06	14:05	0	In Int.	Rear-End	Other Motor Vehicle	East	Making Left Turn	West	Making Left Turn	Unsafe Speed	0	0
2968582	12/27/06	10:15	0	In Int.	Other	Bicycle	West	Making Right Turn	West	Proceeding Straight	Improper Turning	0	0
3002139	1/17/07	20:10	25	North	Rear-End	Other Motor Vehicle	North	Merging	North	Stopped in Road	Unsafe Speed	0	0
3444480	10/27/07	20:55	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
3639137	2/27/08	18:23	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	1	0
3823478	7/6/08	09:45	100	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
3904954	8/21/08	18:20	0	In Int.	Sideswipe	Parked Motor Vehicle	North	Proceeding Straight	North	Parked	Improper Turning	0	0
4244448	5/12/09	23:50	20	North	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Lane Change	0	0
4365222	8/15/09	23:54	5	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Unsafe Speed	0	0
4601861	1/16/10	20:01	100	North	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Proceeding Straight	Following Too Closely	0	0

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Location: Lakeshore Av / E 18th St (W)  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 14

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 14

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	LAKESHORE AV
Cross Street	E 18TH ST (W)
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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Location: Castro St / 11th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 49

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2144808	7/25/05	14:40	45	West	Sideswipe	Other Motor Vehicle	East	Changing Lanes	East	Proceeding Straight	Improper Turning	0	0
2225778	9/2/05	21:08	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2329288	11/3/05	11:45	44	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
2396850	12/23/05	15:05	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2409091	12/28/05	13:45	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2458122	1/17/06	07:55	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Making Right Turn	Traffic Signals and Signs	0	0
2479255	1/30/06	18:36	0	In Int.	Broadside	Other Motor Vehicle	West	Stopped in Road	North	Stopped in Road	Improper Turning	0	0
2484638	2/2/06	17:05	0	In Int.	Broadside	Other Motor Vehicle	North	Stopped in Road	East	Stopped in Road	Traffic Signals and Signs	0	0
2467677	2/5/06	11:44	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2489918	2/8/06	15:35	0	In Int.	Broadside	Other Motor Vehicle	North	Stopped in Road	East	Stopped in Road	Traffic Signals and Signs	0	0
2511540	3/1/06	14:30	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Pedestrian Violation	1	0
2555874	3/29/06	13:30	0	In Int.	Rear-End	Other Motor Vehicle	North	Proceeding Straight	West	Stopped in Road	Unsafe Speed	0	0
2579639	4/8/06	06:45	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2579643	4/8/06	09:50	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0

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Location: Castro St / 11th St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 49

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2584237	4/16/06	14:55	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	2	0
2615472	4/29/06	11:30	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2651133	5/14/06	18:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2683962	5/31/06	07:55	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2703671	6/30/06	18:44	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2734925	7/19/06	10:55	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	2	0
2734860	7/24/06	22:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2742480	7/28/06	13:45	0	In Int.	Sideswipe	Other Motor Vehicle	North	Changing Lanes	North	Proceeding Straight	Improper Turning	0	0
2749557	8/1/06	18:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	2	0
2759241	8/8/06	10:54	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2942464	12/7/06	18:05	0	In Int.	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	East	Proceeding Straight	Unsafe Speed	0	0
2942469	12/12/06	11:40	0	In Int.	Broadside	Motor Vehicle on Other	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3145344	4/11/07	16:59	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0
3197965	5/31/07	13:00	6	East	Other	Bicycle	East	Proceeding Straight	East	Proceeding Straight	Improper Turning	1	0

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**Location: Castro St / 11th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 49**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3250395	7/2/07	09:44	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3315271	8/14/07	20:40	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3624870	2/16/08	08:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	North	Making Left Turn	Traffic Signals and Signs	0	0
3610683	2/17/08	17:42	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Making Left Turn	East	Not Stated	Ped R/W Violation	1	0
3620669	2/19/08	16:10	15	North	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0
3881852	8/17/08	16:45	50	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Other	0	0
3904921	8/28/08	07:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Other	1	0
3945876	10/9/08	06:30	0	In Int.	Other	Non-Collision	North	Proceeding Straight			Unsafe Starting or Backing	0	0
4148913	3/4/09	01:31	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4209111	3/30/09	00:14	0	In Int.	Sideswipe	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4208557	4/21/09	15:30	20	West	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Slowing/Stopping	Unsafe Speed	0	0
4271175	5/20/09	06:35	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4317198	6/30/09	11:52	4	South	Rear-End	Other Motor Vehicle	North	Stopped in Road	North	Stopped in Road	Unsafe Starting or Backing	0	0
4543084	12/18/09	10:46	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0

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**Location: Castro St / 11th St**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 49**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4633033	2/10/10	16:00	10	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	1	0
4611748	2/26/10	17:33	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	2	0
4687571	3/9/10		0	In Int.	Hit Object	Fixed Object	East	Passing Other Vehicle			Unsafe Speed	0	0
4760137	4/2/10	20:09	15	South	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Proceeding Straight	Driving Under Influence	1	0
4689140	4/21/10	06:55	0	In Int.	Sideswipe	Other Motor Vehicle	East	Making Left Turn	East	Proceeding Straight	Improper Turning	0	0
4695275	4/24/10	00:54	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
4772417	5/23/10	02:05	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	North	Proceeding Straight	Traffic Signals and Signs	0	0

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Location: **Castro St / 11th St**  
Date Range Reported: **7/1/2005 - 6/30/2010**  
Total Number of Collisions: **49**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: **49**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	CASTRO ST
Cross Street	11TH ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

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**Location: Broadway / Grand Av**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 32**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2186169	8/17/05	18:10	0	In Int.	Broadside	Bicycle	West	Making Left Turn	East	Proceeding Straight	Auto R/W Violation	1	0
2265819	10/8/05	16:50	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	2	0
2496680	2/27/06	12:35	0	In Int.	Rear-End	Other Motor Vehicle	South	Proceeding Straight	South	Stopped in Road	Following Too Closely	0	0
2555915	3/25/06	02:00	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
2683923	6/9/06	02:32	0	In Int.	Hit Object	Fixed Object	West	Making Left Turn			Driving Under Influence	0	0
2798223	9/18/06	11:43	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
2806372	9/20/06	20:20	0	In Int.	Broadside	Other Motor Vehicle	East	Proceeding Straight	South	Proceeding Straight	Driving Under Influence	0	0
2834493	10/5/06	14:48	5	East	Hit Object	Fixed Object	North	Making Left Turn			Improper Turning	0	0
2830499	10/8/06	16:47	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	1	0
2856518	10/21/06	13:12	18	East	Head-On	Bicycle	West	Making Left Turn	North	Making Right Turn	Wrong Side of Road	1	0
2914017	11/22/06	17:18	0	In Int.	Head-On	Other Motor Vehicle	North	Proceeding Straight	South	Stopped in Road	Other Than Driver or Ped	1	0
2965252	12/16/06	21:50	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
3067040	2/26/07	19:30	0	In Int.	Head-On	Other Motor Vehicle	East	Making Left Turn	West	Proceeding Straight	Auto R/W Violation	0	0
3071252	3/3/07	22:35	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	4	0



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**Location: Broadway / Grand Av**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 32**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
3184231	5/8/07	12:00	0	In Int.	Rear-End	Other Motor Vehicle	North	Making Left Turn	North	Making Left Turn	Unsafe Speed	0	0
3283022	7/17/07	11:05	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	0	0
3346820	8/24/07	19:47	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	East	Proceeding Straight	Traffic Signals and Signs	3	0
3608533	2/24/08	01:05	50	South	Sideswipe	Parked Motor Vehicle	South	Parking Maneuver	South	Parked	Improper Turning	0	0
3648684	3/7/08	14:16	0	In Int.	Broadside	Other Motor Vehicle	North	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	0	0
3668815	3/12/08	14:20	0	In Int.	Broadside	Other Motor Vehicle	West	Making Right Turn	North	Proceeding Straight	Auto R/W Violation	0	0
3827859	7/1/08	08:36	0	In Int.	Broadside	Other Motor Vehicle	East	Making Right Turn	West	Proceeding Straight	Auto R/W Violation	0	0
3841079	7/15/08	16:57	50	East	Rear-End	Other Motor Vehicle	East	Proceeding Straight	East	Stopped in Road	Unsafe Speed	0	0
3995892	10/22/08	14:30	30	East	Sideswipe	Parked Motor Vehicle	West	Proceeding Straight	West	Parked	Improper Turning	0	0
4013914	12/9/08	18:42	0	In Int.	Other	Bicycle	North	Parked	East	Proceeding Straight	Other Hazardous Movement	0	0
4397037	8/25/09	09:37	36	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Proceeding Straight	Unsafe Speed	0	0
4395998	8/29/09	18:13	15	West	Other	Bicycle	East	Traveling Wrong Way	North	Making Left Turn	Wrong Side of Road	1	0
4454324	10/28/09	14:02	50	South	Sideswipe	Other Motor Vehicle	North	Changing Lanes	North	Stopped in Road	Improper Turning	0	0
4485783	11/10/09	19:21	10	South	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Stopped in Road	Unsafe Speed	0	0

**City of Oakland  
Traffic Engineering Department  
Traffic Collision History Report**

7/23/2012  
Page 3

**Location: Broadway / Grand Av**  
**Date Range Reported: 7/1/2005 - 6/30/2010**  
**Total Number of Collisions: 32**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4606901	1/31/10	01:30	48	West	Other	Parked Motor Vehicle	East	Backing	East	Parked	Driving Under Influence	0	0
4631127	3/8/10	11:43	0	In Int.	Broadside	Other Motor Vehicle	South	Proceeding Straight	West	Proceeding Straight	Traffic Signals and Signs	1	0
4631180	3/13/10	09:45	30	South	Other	Bicycle	North	Parked	North	Proceeding Straight	Other Hazardous Movement	1	0
4804404	3/31/10	20:56	15	East	Sideswipe	Other Motor Vehicle	East	Entering Traffic	East	Proceeding Straight	Unsafe Starting or Backing	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Location: **Broadway / Grand Av**  
Date Range Reported: **7/1/2005 - 6/30/2010**  
Total Number of Collisions: **32**

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: **32**

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	<b>BROADWAY</b>
Cross Street	<b>GRAND AV</b>
Starting Date	<b>7/1/2005</b>
Ending Date	<b>6/30/2010</b>
Intersection	<b>Intersection Related</b>

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Oak St / Embarcadero  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 10

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2750368	7/25/06	20:34	0	In Int.	Hit Object	Other Object	South	Proceeding Straight			Traffic Signals and Signs	0	0
2753872	8/3/06	16:45	0	In Int.	Other	Other Object	North	Stopped in Road			Other Than Driver or Ped	1	0
2881234	11/2/06	21:50	0	In Int.	Hit Object	Fixed Object	East	Stopped in Road			Unsafe Speed	2	0
3376448	10/10/07	08:30	0	In Int.	Sideswipe	Other Motor Vehicle	West	Making Right Turn	West	Making Right Turn	Improper Turning	0	0
4120425	9/5/08	17:50	25	East	Overtaken	Non-Collision	East	Slowing/Stopping			Other Than Driver or Ped	0	0
3908991	9/8/08	09:00	0	In Int.	Sideswipe	Pedestrian	East	Making Right Turn	North	Proceeding Straight	Ped R/W Violation	1	0
4245736	5/21/09	19:45	0	In Int.	Broadside	Other Motor Vehicle	North	Making Left Turn	South	Proceeding Straight	Auto R/W Violation	1	0
4452683	10/13/09	03:45	0	In Int.	Hit Object	Fixed Object	West	Making Left Turn			Other Improper Driving	0	0
4538189	11/28/09	00:59	50	East	Hit Object	Fixed Object	West	Proceeding Straight			Unsafe Speed	0	0
4678219	4/14/10	17:54	0	In Int.	Broadside	Other Motor Vehicle	West	Making Left Turn	South	Proceeding Straight	Auto R/W Violation	0	0

**City of Oakland**  
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**Traffic Collision History Report**

7/23/2012  
Page 2

Location: Oak St / Embarcadero  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 10

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
Total Number of Collisions: 10													

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**Settings Used For Query**

<u>Parameter</u>	<u>Setting</u>
Street Name	OAK ST
Cross Street	EMBARCADERO
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

7/23/2012  
Page 1

Location: Lakeside Dr / Madison St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 6

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
2349464	11/15/05	17:45	0	In Int.	Rear-End	Not Stated	Not Stated	Proceeding Straight	Not Stated	Stopped in Road	Unsafe Speed	0	0
2409044	12/28/05	23:59	0	In Int.	Vehicle - Pedestrian	Pedestrian	North	Proceeding Straight	West	Proceeding Straight	Ped R/W Violation	1	0
2614693	5/9/06	16:10	0	In Int.	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Making Left Turn	Improper Turning	0	0
3084278	3/9/07	08:58	0	In Int.	Vehicle - Pedestrian	Pedestrian	South	Making Left Turn	South	Proceeding Straight	Ped R/W Violation	1	0
4014038	12/21/08	15:20	50	East	Rear-End	Other Motor Vehicle	North	Proceeding Straight	North	Slowing/Stopping	Unsafe Speed	0	0
4342372	7/29/09	08:30	3	East	Sideswipe	Parked Motor Vehicle	North	Proceeding Straight	North	Parked	Other Than Driver or Ped	0	0

**City of Oakland**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

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Page 2

Location: Lakeside Dr / Madison St  
Date Range Reported: 7/1/2005 - 6/30/2010  
Total Number of Collisions: 6

Report No.	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
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Total Number of Collisions: 6

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**Settings Used For Query**









<u>Parameter</u>	<u>Setting</u>
Street Name	LAKESIDE DR
Cross Street	MADISON ST
Starting Date	7/1/2005
Ending Date	6/30/2010
Intersection	Intersection Related

# **EXISTING CONDITIONS**



Queues  
1: W Grand Ave & Broadway

Existing  
Timing Plan: AM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	531	514	80	372	110	37	418
v/c Ratio	0.40	0.58	0.84	0.16	0.19	0.15	0.07	0.22
Control Delay	30.7	27.0	39.6	9.6	8.3	2.4	8.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	27.0	39.6	9.6	8.3	2.4	8.7	7.2
Queue Length 50th (ft)	25	113	119	19	47	0	8	45
Queue Length 95th (ft)	62	161	179	42	70	21	22	69
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	264	1517	1004	499	1962	711	524	1869
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	0.24	0.35	0.51	0.16	0.19	0.15	0.07	0.22
<b>Intersection Summary</b>								

# HCM Signalized Intersection Capacity Analysis

## 1: W Grand Ave & Broadway

Existing  
Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	11	47	447	36	89	322	51	74	342	101	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		1.00	0.95			0.95		1.00	0.95	1.00		1.00
Frbp, ped/bikes		1.00	0.99			0.99		1.00	1.00	0.91		1.00
Flpb, ped/bikes		0.97	1.00			0.99		0.96	1.00	1.00		0.95
Frt		1.00	0.99			0.98		1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00			0.99		0.95	1.00	1.00		0.95
Satd. Flow (prot)		1545	3129			3054		1530	3185	1087		1518
Flt Permitted		0.34	1.00			0.67		0.50	1.00	1.00		0.53
Satd. Flow (perm)		548	3129			2056		809	3185	1087		848
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	491	40	99	358	57	80	372	110	1	36
RTOR Reduction (vph)	0	0	10	0	0	16	0	0	0	42	0	0
Lane Group Flow (vph)	0	64	521	0	0	498	0	80	372	68	0	37
Confl. Peds. (#/hr)		71		73	73		71	84		80		80
Confl. Bikes (#/hr)				15			21			9		
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	10	0	0
Parking (#/hr)				5			5			5		
Turn Type	Perm	Perm			Perm			Perm		Perm	Perm	Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2		2	6	6
Actuated Green, G (s)		24.6	24.6			24.6		52.4	52.4	52.4		52.4
Effective Green, g (s)		24.6	24.6			24.6		52.4	52.4	52.4		52.4
Actuated g/C Ratio		0.29	0.29			0.29		0.62	0.62	0.62		0.62
Clearance Time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		2.0	2.0			2.0		2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		159	906			595		499	1963	670		523
v/s Ratio Prot			0.17						0.12			
v/s Ratio Perm		0.12				0.24		0.10		0.06		0.04
v/c Ratio		0.40	0.58			0.84		0.16	0.19	0.10		0.07
Uniform Delay, d1		24.3	25.7			28.3		6.9	7.1	6.7		6.5
Progression Factor		1.00	1.00			1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		0.6	0.6			9.6		0.7	0.2	0.3		0.3
Delay (s)		24.9	26.3			37.9		7.6	7.3	7.0		6.8
Level of Service		C	C			D		A	A	A		A
Approach Delay (s)			26.1			37.9			7.3			
Approach LOS			C			D			A			
<b>Intersection Summary</b>												
HCM Average Control Delay			20.0			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			87.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis












## 1: W Grand Ave & Broadway

Existing  
Timing Plan: AM PEAK

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	290	95
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	2997	
Flt Permitted	1.00	
Satd. Flow (perm)	2997	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	315	103
RTOR Reduction (vph)	25	0
Lane Group Flow (vph)	393	0
Confl. Peds. (#/hr)		84
Confl. Bikes (#/hr)		34
Bus Blockages (#/hr)	0	10
Parking (#/hr)		5
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	52.4	
Effective Green, g (s)	52.4	
Actuated g/C Ratio	0.62	
Clearance Time (s)	4.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1848	
v/s Ratio Prot	c0.13	
v/s Ratio Perm		
v/c Ratio	0.21	
Uniform Delay, d1	7.2	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	7.5	
Level of Service	A	
Approach Delay (s)	7.4	
Approach LOS	A	
<b>Intersection Summary</b>		

Queues  
2: 20th St & Kaiser DWY

Existing  
Timing Plan: AM PEAK

											
Lane Group	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBR	NWL2	NWL	NWR
Lane Group Flow (vph)	90	94	202	430	8	178	167	9	8	116	71
v/c Ratio	0.21	0.21	1.52	1.06dl	0.02	0.41	0.41	0.01	0.05	0.73	0.49
Control Delay	23.9	11.1	297.4	34.2	10.9	25.9	25.3	0.0	33.4	62.7	44.5
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	23.9	11.1	297.4	34.2	10.9	25.9	25.3	0.0	33.4	62.7	44.5
Queue Length 50th (ft)	35	11	~157	92	0	74	67	0	4	57	32
Queue Length 95th (ft)	74	46	#273	124	9	125	117	0	11	74	48
Internal Link Dist (ft)	337			348			577			363	
Turn Bay Length (ft)					90				180		180
Base Capacity (vph)	438	438	133	609	450	433	410	650	159	159	146
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	0.21	0.21	1.52	0.71	0.02	0.41	0.41	0.01	0.05	0.73	0.49

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing  
Timing Plan: AM PEAK

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	0	80	28	56	2	337	192	7	57	17	210	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00			0.91	0.91	1.00		0.95	0.95	
Frb, ped/bikes		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	
Frt		1.00	0.85			1.00	1.00	0.85		0.92	0.85	
Flt Protected		1.00	1.00			0.95	0.98	1.00		0.98	1.00	
Satd. Flow (prot)		1593	1425			1449	2981	1368		1443	1354	
Flt Permitted		1.00	1.00			0.70	0.79	1.00		0.98	1.00	
Satd. Flow (perm)		1593	1425			1061	2400	1368		1443	1354	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.84	0.84	0.84	0.84	0.85	0.85	0.85	0.85
Adj. Flow (vph)	0	90	31	63	2	401	229	8	67	20	247	11
RTOR Reduction (vph)	0	0	46	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	0	90	48	0	0	202	430	3	0	178	164	0
Confl. Peds. (#/hr)				20					117			22
Confl. Bikes (#/hr)				1								
Bus Blockages (#/hr)	0	0	0	10	0	0	0	10	0	0	0	0
Parking (#/hr)				5								5
Turn Type	custom		custom		custom	Prot		Perm	Split			Prot
Protected Phases			1			2	6		8	8	8	
Permitted Phases	1	1			2			6				
Actuated Green, G (s)		22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Effective Green, g (s)		22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Actuated g/C Ratio		0.28	0.28			0.12	0.32	0.32		0.30	0.30	
Clearance Time (s)		4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		438	392			133	853	445		433	406	
v/s Ratio Prot			0.03				0.06			c0.12	0.12	
v/s Ratio Perm		c0.06				c0.19	c0.10	0.00				
v/c Ratio		0.21	0.12			1.52	1.06dl	0.01		0.41	0.40	
Uniform Delay, d1		22.3	21.8			35.0	21.8	18.3		22.4	22.3	
Progression Factor		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.6			268.0	2.1	0.0		2.9	3.0	
Delay (s)		23.3	22.4			303.0	23.9	18.3		25.2	25.2	
Level of Service		C	C			F	C	B		C	C	
Approach Delay (s)		22.9					111.9			25.2		
Approach LOS		C					F			C		

Intersection Summary		
HCM Average Control Delay	69.4	HCM Level of Service E
HCM Volume to Capacity ratio	0.65	
Actuated Cycle Length (s)	80.0	Sum of lost time (s) 20.0
Intersection Capacity Utilization	55.4%	ICU Level of Service B
Analysis Period (min)	15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.  
c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing  
Timing Plan: AM PEAK



Movement	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations					
Volume (vph)	8	5	72	41	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	
Frt	0.86	1.00	1.00	0.85	
Flt Protected	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	1450	1593	1593	1425	
Flt Permitted	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	1450	1593	1593	1425	
Peak-hour factor, PHF	0.92	0.62	0.62	0.62	0.62
Adj. Flow (vph)	9	8	116	66	5
RTOR Reduction (vph)	8	0	0	4	0
Lane Group Flow (vph)	1	8	116	67	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Bus Blockages (#/hr)	0	0	0	0	0
Parking (#/hr)					
Turn Type	custom	Split		Perm	
Protected Phases	5	7	7		
Permitted Phases				7	
Actuated Green, G (s)	6.0	8.0	8.0	8.0	
Effective Green, g (s)	6.0	8.0	8.0	8.0	
Actuated g/C Ratio	0.08	0.10	0.10	0.10	
Clearance Time (s)	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	109	159	159	143	
v/s Ratio Prot	0.00	0.01	c0.07		
v/s Ratio Perm				0.05	
v/c Ratio	0.01	0.05	0.73	0.47	
Uniform Delay, d1	34.2	32.6	34.9	34.0	
Progression Factor	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.6	25.3	10.7	
Delay (s)	34.3	33.2	60.2	44.7	
Level of Service	C	C	E	D	
Approach Delay (s)			53.5		
Approach LOS			D		
<b>Intersection Summary</b>					

Queues  
3: 19th St & Madison Street

Existing  
Timing Plan: AM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	158	527	324
v/c Ratio	0.12	0.50	0.22
Control Delay	10.5	2.4	8.7
Queue Delay	0.0	0.0	0.0
Total Delay	10.5	2.4	8.7
Queue Length 50th (ft)	4	0	9
Queue Length 95th (ft)	50	35	85
Internal Link Dist (ft)	259		536
Turn Bay Length (ft)			
Base Capacity (vph)	2453	1163	2721
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.06	0.45	0.12
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 3: 19th St & Madison Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	147	490	0	0	0	0	292	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	0.98					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1219					3173	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1219					3173	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	158	527	0	0	0	0	317	7
RTOR Reduction (vph)	0	0	0	0	0	167	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	158	360	0	0	0	0	322	0
Confl. Peds. (#/hr)				38		3						29
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					4.8	16.4					9.1	
Effective Green, g (s)					4.8	16.4					9.1	
Actuated g/C Ratio					0.20	0.68					0.38	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					637	833					1203	
v/s Ratio Prot					0.05						0.10	
v/s Ratio Perm						c0.30						
v/c Ratio					0.25	0.43					0.27	
Uniform Delay, d1					8.1	1.7					5.1	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.2	0.4					0.1	
Delay (s)					8.3	2.1					5.3	
Level of Service					A	A					A	
Approach Delay (s)		0.0			3.5			0.0			5.3	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.1		HCM Level of Service						A	
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			24.0		Sum of lost time (s)					4.0		
Intersection Capacity Utilization			37.4%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
4: 17th St & Madison Street


















Existing  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	96	391
v/c Ratio	0.14	0.14
Control Delay	9.1	4.7
Queue Delay	0.0	0.0
Total Delay	9.1	4.7
Queue Length 50th (ft)	4	17
Queue Length 95th (ft)	20	27
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	692	2702
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.14	0.14
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

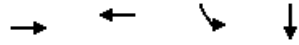
## 4: 17th St & Madison Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									  	
Volume (vph)	0	30	55	0	0	0	0	0	0	23	349	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.90									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2584									4366	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2584									4366	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	34	62	0	0	0	0	0	0	24	367	0
RTOR Reduction (vph)	0	47	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	50	0	0	0	0	0	0	0	0	382	0
Confl. Peds. (#/hr)	52		45							52		9
Confl. Bikes (#/hr)									1			7
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0									37.0	
Effective Green, g (s)		15.0									37.0	
Actuated g/C Ratio		0.25									0.62	
Clearance Time (s)		4.0									4.0	
Lane Grp Cap (vph)		646									2692	
v/s Ratio Prot		c0.02										
v/s Ratio Perm											0.09	
v/c Ratio		0.08									0.14	
Uniform Delay, d1		17.2									4.8	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.2									0.1	
Delay (s)		17.4									4.9	
Level of Service		B									A	
Approach Delay (s)		17.4			0.0			0.0			4.9	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.4								A	
HCM Volume to Capacity ratio			0.12									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			50.0%							A		
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Existing  
Timing Plan: AM PEAK























Lane Group	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	231	616	78	337
v/c Ratio	0.13	0.37	0.22	0.40
Control Delay	3.6	8.4	15.8	15.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.6	8.4	15.8	15.3
Queue Length 50th (ft)	10	78	22	49
Queue Length 95th (ft)	20	89	53	84
Internal Link Dist (ft)	285	315		1054
Turn Bay Length (ft)				
Base Capacity (vph)	1771	1659	360	840
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.37	0.22	0.40

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 					 	 	
Volume (vph)	0	121	73	62	406	0	0	0	0	72	280	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0					4.5	4.5	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frb, ped/bikes		0.98			1.00					1.00	0.99	
Flpb, ped/bikes		1.00			1.00					0.91	1.00	
Frt		0.94			1.00					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		2932			3151					1271	2917	
Flt Permitted		1.00			0.88					0.95	1.00	
Satd. Flow (perm)		2932			2803					1271	2917	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	144	87	82	534	0	0	0	0	78	304	33
RTOR Reduction (vph)	0	36	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	195	0	0	616	0	0	0	0	78	323	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		35.5			35.5					17.0	17.0	
Effective Green, g (s)		35.5			35.5					17.0	17.0	
Actuated g/C Ratio		0.59			0.59					0.28	0.28	
Clearance Time (s)		3.0			3.0					4.5	4.5	
Lane Grp Cap (vph)		1735			1658					360	826	
v/s Ratio Prot		0.07									c0.11	
v/s Ratio Perm					c0.22					0.06		
v/c Ratio		0.11			0.37					0.22	0.39	
Uniform Delay, d1		5.4			6.4					16.4	17.3	
Progression Factor		1.00			1.18					0.85	0.83	
Incremental Delay, d2		0.1			0.6					1.4	1.4	
Delay (s)		5.5			8.2					15.3	15.8	
Level of Service		A			A					B	B	
Approach Delay (s)		5.5			8.2			0.0			15.7	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.2		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5		
Intersection Capacity Utilization			50.7%		ICU Level of Service					A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Existing  
Timing Plan: AM PEAK























Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	236	354	198	738	18
v/c Ratio	0.34	0.37	0.37	0.45	0.03
Control Delay	16.0	10.2	3.7	10.5	4.4
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	16.0	10.2	3.7	10.7	4.4
Queue Length 50th (ft)	28	37	12	82	0
Queue Length 95th (ft)	51	52	20	80	0
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	700	956	530	1651	647
Starvation Cap Reductn	0	0	0	258	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.37	0.37	0.53	0.03

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 6: 14th St & Oak Street

Existing  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 					
Volume (vph)	54	168	0	0	333	186	177	436	15	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0				
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00				
Frbp, ped/bikes		1.00			1.00	0.92		1.00	0.96				
Flpb, ped/bikes		0.99			1.00	1.00		0.99	1.00				
Frt		1.00			1.00	0.85		1.00	0.85				
Flt Protected		0.99			1.00	1.00		0.99	1.00				
Satd. Flow (prot)		2871			3185	1306		3094	1197				
Flt Permitted		0.80			1.00	1.00		0.99	1.00				
Satd. Flow (perm)		2334			3185	1306		3094	1197				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92	
Adj. Flow (vph)	57	179	0	0	354	198	213	525	18	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	139	0	0	8	0	0	0	
Lane Group Flow (vph)	0	236	0	0	354	59	0	738	10	0	0	0	
Confl. Peds. (#/hr)	49					49	90		44				
Confl. Bikes (#/hr)						35			9				
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)		5							5				
Turn Type	Perm					Perm	Perm		Perm				
Protected Phases		1			1			2					
Permitted Phases	1					1	2		2				
Actuated Green, G (s)		18.0			18.0	18.0		32.0	32.0				
Effective Green, g (s)		18.0			18.0	18.0		32.0	32.0				
Actuated g/C Ratio		0.30			0.30	0.30		0.53	0.53				
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0				
Lane Grp Cap (vph)		700			956	392		1650	638				
v/s Ratio Prot					c0.11								
v/s Ratio Perm		0.10				0.05		0.24	0.01				
v/c Ratio		0.34			0.37	0.15		0.45	0.02				
Uniform Delay, d1		16.4			16.5	15.4		8.6	6.6				
Progression Factor		0.88			0.55	0.55		1.10	1.25				
Incremental Delay, d2		1.3			1.0	0.8		0.9	0.0				
Delay (s)		15.6			10.1	9.3		10.3	8.3				
Level of Service		B			B	A		B	A				
Approach Delay (s)		15.6			9.8			10.3			0.0		
Approach LOS		B			A			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			10.9		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					10.0			
Intersection Capacity Utilization			62.8%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
7: 13th St & Madison Street















Existing  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	136	450
v/c Ratio	0.10	0.17
Control Delay	10.9	8.8
Queue Delay	0.0	0.0
Total Delay	10.9	8.8
Queue Length 50th (ft)	6	41
Queue Length 95th (ft)	9	63
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1406	2629
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.10	0.17
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street

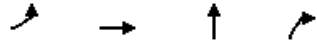
Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	52	35	0	0	0	0	0	0	22	392	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		5124									4366	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		5124									4366	
Peak-hour factor, PHF	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	81	55	0	0	0	0	0	0	24	426	0
RTOR Reduction (vph)	0	40	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	96	0	0	0	0	0	0	0	0	440	0
Confl. Peds. (#/hr)			42							32		
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1366									2620	
v/s Ratio Prot		c0.02										
v/s Ratio Perm											0.10	
v/c Ratio		0.07									0.17	
Uniform Delay, d1		16.4									5.3	
Progression Factor		1.00									1.71	
Incremental Delay, d2		0.1									0.1	
Delay (s)		16.5									9.2	
Level of Service		B									A	
Approach Delay (s)		16.5			0.0			0.0			9.2	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.9								B	
HCM Volume to Capacity ratio			0.14									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			40.8%								A	
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
8: 13th St & Oak Street

Existing  
Timing Plan: AM PEAK



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	17	100	665	23
v/c Ratio	0.05	0.09	0.25	0.03
Control Delay	5.0	12.8	9.1	7.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.0	12.8	9.1	7.0
Queue Length 50th (ft)	1	6	42	0
Queue Length 95th (ft)	1	8	76	m6
Internal Link Dist (ft)		317	231	
Turn Bay Length (ft)	50			
Base Capacity (vph)	373	1170	2632	732
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.05	0.09	0.25	0.03





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

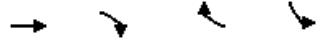
## 8: 13th St & Oak Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	10	59	0	0	0	0	0	632	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0	3.0			
Lane Util. Factor	1.00	0.91						0.91	1.00			
Frbp, ped/bikes	1.00	1.00						1.00	0.97			
Flpb, ped/bikes	0.97	1.00						1.00	1.00			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1353	4386						4386	1205			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1353	4386						4386	1205			
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	17	100	0	0	0	0	0	665	23	0	0	0
RTOR Reduction (vph)	12	0	0	0	0	0	0	0	9	0	0	0
Lane Group Flow (vph)	5	100	0	0	0	0	0	665	14	0	0	0
Confl. Peds. (#/hr)	26								36			
Confl. Bikes (#/hr)									11			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm								Perm			
Protected Phases		2						1				
Permitted Phases	2								1			
Actuated Green, G (s)	16.0	16.0						36.0	36.0			
Effective Green, g (s)	16.0	16.0						36.0	36.0			
Actuated g/C Ratio	0.27	0.27						0.60	0.60			
Clearance Time (s)	5.0	5.0						3.0	3.0			
Lane Grp Cap (vph)	361	1170						2632	723			
v/s Ratio Prot		c0.02						c0.15				
v/s Ratio Perm	0.00								0.01			
v/c Ratio	0.01	0.09						0.25	0.02			
Uniform Delay, d1	16.2	16.5						5.7	4.9			
Progression Factor	0.55	0.76						1.55	2.85			
Incremental Delay, d2	0.1	0.1						0.2	0.0			
Delay (s)	8.9	12.6						9.0	13.9			
Level of Service	A	B						A	B			
Approach Delay (s)		12.1			0.0			9.1			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.6				HCM Level of Service		A			
HCM Volume to Capacity ratio			0.20									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			62.7%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Existing  
Timing Plan: AM PEAK




















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	122	58	775	184
v/c Ratio	0.27	0.16	0.37	0.43
Control Delay	11.0	2.0	0.4	38.3
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.0	2.0	0.6	38.3
Queue Length 50th (ft)	15	0	0	76
Queue Length 95th (ft)	31	0	0	127
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	447	367	2077	425
Starvation Cap Reductn	0	0	562	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.16	0.51	0.43
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 9: 13th St & Lake Merritt Blvd






Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 						
Volume (vph)	0	104	49	0	0	527	0	0	0	158	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		1.00	1.00			0.88				1.00		
Frbp, ped/bikes		1.00	0.98			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frft		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		1676	1217			2508				1593		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		1676	1217			2508				1593		
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.25	0.25	0.25	0.86	0.86	0.86
Adj. Flow (vph)	0	122	58	0	0	775	0	0	0	184	0	0
RTOR Reduction (vph)	0	0	43	0	0	568	0	0	0	0	0	0
Lane Group Flow (vph)	0	122	15	0	0	207	0	0	0	184	0	0
Confl. Bikes (#/hr)			3									
Parking (#/hr)			5									
Turn Type		custom				custom				Prot		
Protected Phases						2				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			16.0				16.0		
Effective Green, g (s)		16.0	16.0			16.0				16.0		
Actuated g/C Ratio		0.27	0.27			0.27				0.27		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		447	325			669				425		
v/s Ratio Prot						c0.08				c0.12		
v/s Ratio Perm		c0.07	0.01									
v/c Ratio		0.27	0.05			0.31				0.43		
Uniform Delay, d1		17.4	16.3			17.6				18.2		
Progression Factor		0.53	0.18			1.00				1.86		
Incremental Delay, d2		1.5	0.3			1.0				3.1		
Delay (s)		10.7	3.3			18.6				37.1		
Level of Service		B	A			B				D		
Approach Delay (s)		8.3			18.6			0.0			37.1	
Approach LOS		A			B			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			23.8%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Existing  
Timing Plan: AM PEAK














					
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	62	136	659	1931
v/c Ratio	0.03	0.19	0.14	0.97	1.21
Control Delay	22.0	35.3	37.6	75.4	126.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	35.3	37.6	75.4	126.2
Queue Length 50th (ft)	1	34	30	171	-898
Queue Length 95th (ft)	1	68	46	#189	#1034
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	286	318	955	676	1602
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.19	0.14	0.97	1.21

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Existing  
 Timing Plan: AM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	2	53	116	418	89	1816	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1346	1496	4577	4253		3094	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1346	1496	4577	4253		3094	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	62	136	543	116	1912	19
RTOR Reduction (vph)	6	6	0	29	0	0	0
Lane Group Flow (vph)	2	56	136	630	0	1931	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	24.0	24.0	24.0	17.5		59.5	
Effective Green, g (s)	24.0	24.0	24.0	17.5		59.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.15		0.52	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	281	312	955	647		1601	
v/s Ratio Prot			0.03	c0.15		c0.62	
v/s Ratio Perm	0.00	c0.04					
v/c Ratio	0.01	0.18	0.14	0.97		1.21	
Uniform Delay, d1	36.1	37.4	37.1	48.5		27.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.3	0.3	29.6		98.9	
Delay (s)	36.1	38.7	37.4	78.1		126.7	
Level of Service	D	D	D	E		F	
Approach Delay (s)			37.8	78.1		126.7	
Approach LOS			D	E		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			108.7		HCM Level of Service		F
HCM Volume to Capacity ratio			0.92				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			85.7%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
11: 12th St & Broadway

Existing  
Timing Plan: AM PEAK



Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	558	97	411	462
v/c Ratio	0.39	0.82	0.26	0.42
Control Delay	13.8	86.1	19.5	14.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.8	86.1	19.5	14.8
Queue Length 50th (ft)	47	40	77	59
Queue Length 95th (ft)	65	m#109	121	95
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1443	119	1587	1092
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.82	0.26	0.42













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.

# HCM Signalized Intersection Capacity Analysis

## 11: 12th St & Broadway

Existing  
Timing Plan: AM PEAK

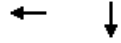
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	94	303	71	93	395	0	0	400	53	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.98		1.00	1.00			0.96		
Flpb, ped/bikes					0.97		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4000		1593	3122			2933		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4000		1593	3122			2933		
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.96	0.96	0.96	0.98	0.98	0.98	
Adj. Flow (vph)	0	0	0	112	361	85	97	411	0	0	408	54	
RTOR Reduction (vph)	0	0	0	0	43	0	0	0	0	0	17	0	
Lane Group Flow (vph)	0	0	0	0	515	0	97	411	0	0	445	0	
Confl. Peds. (#/hr)				164		113	522					522	
Confl. Bikes (#/hr)						6						10	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type				Perm			Prot						
Protected Phases					4		5	2			6		
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1400		119	1587			1075		
v/s Ratio Prot							c0.06	0.13			c0.15		
v/s Ratio Perm					0.13								
v/c Ratio					0.37		0.82	0.26			0.41		
Uniform Delay, d1					14.5		27.3	8.4			14.2		
Progression Factor					1.00		1.55	2.26			1.00		
Incremental Delay, d2					0.7		40.1	0.4			1.2		
Delay (s)					15.3		82.5	19.2			15.4		
Level of Service					B		F	B			B		
Approach Delay (s)		0.0			15.3			31.3			15.4		
Approach LOS		A			B			C			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			20.6		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			49.2%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group



Queues  
12: 12th St & Madison Street

Existing  
Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	1131	440
v/c Ratio	0.34	0.37
Control Delay	4.4	22.1
Queue Delay	0.0	0.0
Total Delay	4.4	22.1
Queue Length 50th (ft)	30	52
Queue Length 95th (ft)	39	78
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3328	1204
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.37
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

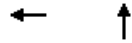
## 12: 12th St & Madison Street

Existing  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					<b>4TTL</b>						<b>4TTL</b>		
Volume (vph)	0	0	0	194	778	0	0	0	0	0	358	64	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5424						4224		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5424						4224		
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96	
Adj. Flow (vph)	0	0	0	226	905	0	0	0	0	0	373	67	
RTOR Reduction (vph)	0	0	0	0	74	0	0	0	0	0	43	0	
Lane Group Flow (vph)	0	0	0	0	1057	0	0	0	0	0	397	0	
Confl. Peds. (#/hr)				50								65	
Confl. Bikes (#/hr)												10	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					36.0						16.5		
Effective Green, g (s)					36.0						16.5		
Actuated g/C Ratio					0.60						0.28		
Clearance Time (s)					3.5						4.0		
Lane Grp Cap (vph)					3254						1162		
v/s Ratio Prot											c0.09		
v/s Ratio Perm					0.19								
v/c Ratio					0.32						0.34		
Uniform Delay, d1					6.0						17.4		
Progression Factor					0.84						1.40		
Incremental Delay, d2					0.3						0.8		
Delay (s)					5.3						25.1		
Level of Service					A						C		
Approach Delay (s)		0.0			5.3			0.0			25.1		
Approach LOS		A			A			A			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			10.8		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.33										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			35.0%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
13: 12th St & Oak Street

Existing  
Timing Plan: AM PEAK





















Lane Group	WBT	NBT
Lane Group Flow (vph)	767	1004
v/c Ratio	0.26	0.60
Control Delay	7.7	16.1
Queue Delay	0.0	0.1
Total Delay	7.7	16.2
Queue Length 50th (ft)	38	71
Queue Length 95th (ft)	53	101
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2921	1660
Starvation Cap Reductn	0	77
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.26	0.63

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	692	29	322	621	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.92				
Frt					0.99			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					5457			4985				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					5457			4985				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	736	31	343	661	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	124	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	757	0	0	880	0	0	0	0
Confl. Peds. (#/hr)						151	217					
Confl. Bikes (#/hr)						9						
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					32.0			18.5				
Effective Green, g (s)					32.0			18.5				
Actuated g/C Ratio					0.53			0.31				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2910			1537				
v/s Ratio Prot					c0.14							
v/s Ratio Perm								0.18				
v/c Ratio					0.26			0.57				
Uniform Delay, d1					7.6			17.4				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.2			1.6				
Delay (s)					7.8			19.0				
Level of Service					A			B				
Approach Delay (s)		0.0			7.8			19.0			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			9.5		
Intersection Capacity Utilization			41.1%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

14: 12th St / 11th St & Lake Merritt Blvd

Existing

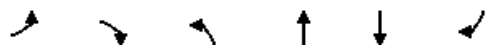
Timing Plan: AM PEAK

	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	358	909	659	301
v/c Ratio	0.37	0.50	0.67	0.63
Control Delay	2.9	8.6	13.0	17.9
Queue Delay	0.6	0.0	0.0	0.0
Total Delay	3.6	8.6	13.0	17.9
Queue Length 50th (ft)	12	87	144	88
Queue Length 95th (ft)	37	105	198	136
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)				
Base Capacity (vph)	960	1803	978	475
Starvation Cap Reductn	301	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.50	0.67	0.63
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 14: 12th St / 11th St & Lake Merritt Blvd

Existing  
Timing Plan: AM PEAK



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	304	727	527	261	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	0.97	1.00	1.00	
Frb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1450	3090	1676	1676	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1450	3090	1676	1676	
Peak-hour factor, PHF	0.85	0.85	0.80	0.80	0.87	0.87
Adj. Flow (vph)	0	358	909	659	300	1
RTOR Reduction (vph)	0	115	0	0	0	0
Lane Group Flow (vph)	0	243	909	659	301	0
Confl. Bikes (#/hr)		7				
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		35.0	35.0	35.0	17.0	
Effective Green, g (s)		35.0	35.0	35.0	17.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.28	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		846	1803	978	475	
v/s Ratio Prot		0.17	0.29	c0.39	c0.18	
v/s Ratio Perm						
v/c Ratio		0.29	0.50	0.67	0.63	
Uniform Delay, d1		6.3	7.4	8.6	18.8	
Progression Factor		1.00	1.00	1.00	0.61	
Incremental Delay, d2		0.9	1.0	3.7	6.0	
Delay (s)		7.1	8.4	12.3	17.4	
Level of Service		A	A	B	B	
Approach Delay (s)	7.1			10.0	17.4	
Approach LOS	A			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			10.6		HCM Level of Service	B
HCM Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			45.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

15: International Blvd & Lake Merritt Blvd

Existing  
Timing Plan: AM PEAK















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	507	122	338	203	911
v/c Ratio	0.69	0.20	0.21	0.28	1.22
Control Delay	21.6	3.7	10.3	2.9	132.4
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	21.6	3.7	10.3	3.2	132.4
Queue Length 50th (ft)	158	0	40	0	-456
Queue Length 95th (ft)	256	26	63	32	#650
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)					
Base Capacity (vph)	735	598	1617	716	746
Starvation Cap Reductn	0	0	0	179	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.20	0.21	0.38	1.22

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.

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Existing  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			
Volume (vph)	451	109	321	193	0	811
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	1.00	1.00	0.91	0.91		1.00
Frbp, ped/bikes	1.00	0.95	1.00	0.92		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1770	1267	3390	1278		1565
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	1770	1267	3390	1278		1565
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	507	122	338	203	0	911
RTOR Reduction (vph)	0	71	0	106	0	0
Lane Group Flow (vph)	507	51	338	97	0	911
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm		
Protected Phases	1		2			2
Permitted Phases		1		2		
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	735	526	1617	610		746
v/s Ratio Prot	c0.29		0.10			c0.58
v/s Ratio Perm		0.04		0.08		
v/c Ratio	0.69	0.10	0.21	0.16		1.22
Uniform Delay, d1	15.6	11.6	9.9	9.6		17.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	5.2	0.4	0.3	0.6		111.4
Delay (s)	20.8	11.9	10.2	10.2		128.4
Level of Service	C	B	B	B		F
Approach Delay (s)	19.1		10.2			128.4
Approach LOS	B		B			F

Intersection Summary			
HCM Average Control Delay		64.6	HCM Level of Service E
HCM Volume to Capacity ratio		0.97	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		74.3%	ICU Level of Service D
Analysis Period (min)		15	

c Critical Lane Group



Queues  
16: E 18th St & Lakeshore Ave

Existing  
Timing Plan: AM PEAK



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	400	168	382	148	136	470
v/c Ratio	0.34	0.29	0.32	0.25	0.33	0.23
Control Delay	25.7	5.2	25.3	5.2	34.9	9.6
Queue Delay	0.0	0.0	0.9	0.0	0.0	0.0
Total Delay	25.7	5.2	26.3	5.2	34.9	9.6
Queue Length 50th (ft)	97	0	93	0	73	67
Queue Length 95th (ft)	125	36	131	40	126	91
Internal Link Dist (ft)	677		204			677
Turn Bay Length (ft)		100		125	200	
Base Capacity (vph)	1167	572	1203	586	407	2081
Starvation Cap Reductn	0	0	549	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	0.29	0.58	0.25	0.33	0.23

Intersection Summary





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Existing  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	336	141	340	132	121	418
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	0.89	1.00	0.94	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	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1355	3539	1436	1770	3468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1355	3539	1436	1770	3468
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.89	0.89
Adj. Flow (vph)	400	168	382	148	136	470
RTOR Reduction (vph)	0	111	0	98	0	0
Lane Group Flow (vph)	400	57	382	50	136	470
Confl. Peds. (#/hr)	19	82		33	33	
Confl. Bikes (#/hr)				5		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm		Perm	Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	34.0	34.0	34.0	34.0	23.0	60.0
Effective Green, g (s)	34.0	34.0	34.0	34.0	23.0	60.0
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.23	0.60
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1167	461	1203	488	407	2081
v/s Ratio Prot	c0.12		c0.11		c0.08	0.14
v/s Ratio Perm		0.04		0.04		
v/c Ratio	0.34	0.12	0.32	0.10	0.33	0.23
Uniform Delay, d1	24.7	22.7	24.4	22.6	32.1	9.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.6	0.7	0.4	2.2	0.3
Delay (s)	25.5	23.3	25.1	23.0	34.3	9.5
Level of Service	C	C	C	C	C	A
Approach Delay (s)	24.8		24.5			15.1
Approach LOS	C		C			B
<b>Intersection Summary</b>						
HCM Average Control Delay			21.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.33			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			57.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Existing  
Timing Plan: AM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	146	866	468	144
v/c Ratio	0.22	0.33	0.51	0.28
Control Delay	3.5	18.4	42.0	42.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	18.4	42.0	42.5
Queue Length 50th (ft)	0	116	111	47
Queue Length 95th (ft)	41	143	146	78
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	665	2645	912	521
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.33	0.51	0.28
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 17: 11th St & Castro St

Existing  
Timing Plan: AM PEAK



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	134	797	393	23	73	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.94	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1212	5432	4344		2922	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1212	5432	4344		2922	
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93
Adj. Flow (vph)	146	866	442	26	78	66
RTOR Reduction (vph)	75	0	6	0	0	0
Lane Group Flow (vph)	71	866	462	0	144	0
Confl. Peds. (#/hr)	37			5	37	5
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	56.0	56.0	24.0		20.5	
Effective Green, g (s)	56.0	56.0	24.0		20.5	
Actuated g/C Ratio	0.49	0.49	0.21		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	590	2645	907		521	
v/s Ratio Prot			c0.11		c0.05	
v/s Ratio Perm	0.06	0.16				
v/c Ratio	0.12	0.33	0.51		0.28	
Uniform Delay, d1	16.1	18.0	40.3		40.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.3	2.0		1.3	
Delay (s)	16.5	18.3	42.3		42.2	
Level of Service	B	B	D		D	
Approach Delay (s)		18.1	42.3		42.2	
Approach LOS		B	D		D	

### Intersection Summary

HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
18: 11th St & Broadway

Existing  
Timing Plan: AM PEAK

	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	692	507	99	453
v/c Ratio	0.34	0.51	0.74	0.30
Control Delay	11.9	17.0	53.5	10.5
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	11.9	17.2	53.5	10.5
Queue Length 50th (ft)	42	69	37	69
Queue Length 95th (ft)	62	110	#108	109
Internal Link Dist (ft)	1829	193		185
Turn Bay Length (ft)			85	
Base Capacity (vph)	2028	992	133	1509
Starvation Cap Reductn	0	100	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.57	0.74	0.30





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 18: 11th St & Broadway

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	85	448	97	0	0	0	0	402	74	88	403	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.86						0.95		1.00	0.95	
Frbp, ped/bikes		0.98						0.95		1.00	1.00	
Flpb, ped/bikes		0.98						1.00		1.00	1.00	
Frt		0.98						0.98		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		5149						2898		1593	3122	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		5149						2898		1593	3122	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	93	492	107	0	0	0	0	428	79	99	453	0
RTOR Reduction (vph)	0	55	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	637	0	0	0	0	0	482	0	99	453	0
Confl. Peds. (#/hr)	139		172						313	313		
Confl. Bikes (#/hr)			11						3			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		23.0						20.0		5.0	29.0	
Effective Green, g (s)		23.0						20.0		5.0	29.0	
Actuated g/C Ratio		0.38						0.33		0.08	0.48	
Clearance Time (s)		4.0						4.0		4.0	4.0	
Lane Grp Cap (vph)		1974						966		133	1509	
v/s Ratio Prot								c0.17		c0.06	0.15	
v/s Ratio Perm		0.12										
v/c Ratio		0.32						0.50		0.74	0.30	
Uniform Delay, d1		13.0						16.0		26.9	9.4	
Progression Factor		1.00						1.00		0.67	1.05	
Incremental Delay, d2		0.4						1.8		29.4	0.5	
Delay (s)		13.5						17.8		47.3	10.3	
Level of Service		B						B		D	B	
Approach Delay (s)		13.5			0.0			17.8			17.0	
Approach LOS		B			A			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.8								B	
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			60.0							12.0		
Intersection Capacity Utilization			49.2%							A		
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group













Queues  
19: 11th St &

Existing  
Timing Plan: AM PEAK

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	27	433	619
v/c Ratio	0.03	0.21	0.47
Control Delay	7.6	7.2	13.2
Queue Delay	0.0	0.0	0.0
Total Delay	7.6	7.2	13.2
Queue Length 50th (ft)	5	24	66
Queue Length 95th (ft)	15	38	99
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	810	2061	1322
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.21	0.47
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Existing  
 Timing Plan: AM PEAK

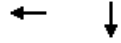
					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		  			  
Volume (vph)	25	245	131	50	501
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.91			0.91
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.95			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	3994			4291
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	3994			4291
Peak-hour factor, PHF	0.92	0.87	0.87	0.89	0.89
Adj. Flow (vph)	27	282	151	56	563
RTOR Reduction (vph)	0	30	0	0	0
Lane Group Flow (vph)	27	404	0	0	619
Confl. Peds. (#/hr)			52	38	
Confl. Bikes (#/hr)			4		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	30.5	30.5			18.5
Effective Green, g (s)	30.5	30.5			18.5
Actuated g/C Ratio	0.51	0.51			0.31
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	810	2030			1323
v/s Ratio Prot		c0.10			
v/s Ratio Perm	0.02				0.14
v/c Ratio	0.03	0.20			0.47
Uniform Delay, d1	7.4	8.1			16.8
Progression Factor	1.00	1.00			0.71
Incremental Delay, d2	0.1	0.2			1.1
Delay (s)	7.5	8.3			13.0
Level of Service	A	A			B
Approach Delay (s)		8.2			13.0
Approach LOS		A			B
<b>Intersection Summary</b>					
HCM Average Control Delay			11.0	HCM Level of Service	B
HCM Volume to Capacity ratio			0.30		
Actuated Cycle Length (s)			60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			35.0%	ICU Level of Service	A
Analysis Period (min)			15		

c Critical Lane Group



Queues  
 20: 10th St & Madison Street

Existing  
 Timing Plan: AM PEAK




















Lane Group	WBT	SBT
Lane Group Flow (vph)	538	683
v/c Ratio	0.62	0.27
Control Delay	22.3	10.5
Queue Delay	0.0	0.0
Total Delay	22.3	10.5
Queue Length 50th (ft)	107	75
Queue Length 95th (ft)	m137	107
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	861	2490
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.27

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Existing  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 						  		
Volume (vph)	0	0	0	73	384	0	0	0	0	88	486	88	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						3.5		
Lane Util. Factor					0.95						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					1.00						0.99		
Frt					1.00						0.98		
Flt Protected					0.99						0.99		
Satd. Flow (prot)					2951						4153		
Flt Permitted					0.99						0.99		
Satd. Flow (perm)					2951						4153		
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97	
Adj. Flow (vph)	0	0	0	86	452	0	0	0	0	91	501	91	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	34	0	
Lane Group Flow (vph)	0	0	0	0	538	0	0	0	0	0	649	0	
Confl. Peds. (#/hr)				23						52		60	
Confl. Bikes (#/hr)												14	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10	
Parking (#/hr)					5					5	5	5	
Turn Type					Perm						Perm		
Protected Phases					4						2		
Permitted Phases				4						2			
Actuated Green, G (s)					17.5						35.5		
Effective Green, g (s)					17.5						35.5		
Actuated g/C Ratio					0.29						0.59		
Clearance Time (s)					3.5						3.5		
Lane Grp Cap (vph)					861						2457		
v/s Ratio Prot													
v/s Ratio Perm					0.18						0.16		
v/c Ratio					0.62						0.26		
Uniform Delay, d1					18.4						5.9		
Progression Factor					1.06						1.96		
Incremental Delay, d2					2.4						0.2		
Delay (s)					21.9						11.9		
Level of Service					C						B		
Approach Delay (s)		0.0			21.9			0.0			11.9		
Approach LOS		A			C			A			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			16.3		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.38										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0			
Intersection Capacity Utilization			39.1%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
21: 10th St & Oak Street

Existing  
Timing Plan: AM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	185	647	1008
v/c Ratio	0.29	0.81	0.29
Control Delay	12.9	26.6	1.5
Queue Delay	0.0	0.0	0.0
Total Delay	12.9	26.6	1.5
Queue Length 50th (ft)	16	90	9
Queue Length 95th (ft)	21	#138	14
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	635	799	3445
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.81	0.29

**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Existing  
Timing Plan: AM PEAK



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔↔↔				
Volume (vph)	13	100	0	0	353	191	116	714	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			0.86				
Frbp, ped/bikes		1.00			0.98			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.95			0.99				
Flt Protected		0.99			1.00			0.99				
Satd. Flow (prot)		2966			2781			5537				
Flt Permitted		0.85			1.00			0.99				
Satd. Flow (perm)		2538			2781			5537				
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	21	164	0	0	420	227	127	785	96	0	0	0
RTOR Reduction (vph)	0	0	0	0	104	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	185	0	0	544	0	0	979	0	0	0	0
Confl. Peds. (#/hr)	26					26	72		91			
Confl. Bikes (#/hr)						7			11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		635			695			3414				
v/s Ratio Prot					c0.20							
v/s Ratio Perm		0.07						0.18				
v/c Ratio		0.29			0.78			0.29				
Uniform Delay, d1		18.2			21.0			5.4				
Progression Factor		0.63			1.00			0.26				
Incremental Delay, d2		1.2			8.5			0.2				
Delay (s)		12.7			29.5			1.6				
Level of Service		B			C			A				
Approach Delay (s)		12.7			29.5			1.6			0.0	
Approach LOS		B			C			A			A	

### Intersection Summary

HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group













Queues  
22: 9th Street & Webster Street

Existing  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	115	60	904
v/c Ratio	0.13	0.17	0.50
Control Delay	23.5	7.9	23.9
Queue Delay	0.0	0.0	0.7
Total Delay	23.5	7.9	24.6
Queue Length 50th (ft)	24	0	110
Queue Length 95th (ft)	42	24	127
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	352	1794
Starvation Cap Reductn	0	0	513
Spillback Cap Reductn	0	0	57
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.13	0.17	0.71
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑								↓↓↓	
Volume (vph)	0	97	50	0	0	0	0	0	0	137	613	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.86								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1034								5430	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1034								5430	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	115	60	0	0	0	0	0	0	165	739	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	0	0	45	0
Lane Group Flow (vph)	0	115	18	0	0	0	0	0	0	0	859	0
Confl. Peds. (#/hr)			124							55		
Confl. Bikes (#/hr)			4									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	310								1750	
v/s Ratio Prot		c0.04										
v/s Ratio Perm			0.02								0.16	
v/c Ratio		0.13	0.06								0.49	
Uniform Delay, d1		22.9	22.4								24.6	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.3	0.4								1.0	
Delay (s)		23.2	22.8								25.5	
Level of Service		C	C								C	
Approach Delay (s)		23.1			0.0			0.0			25.5	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			25.1									C
HCM Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			90.0							34.0		
Intersection Capacity Utilization			41.4%								A	
Analysis Period (min)			15									

c Critical Lane Group













Queues  
23: 9th Street & Madison Street

Existing  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	229	612
v/c Ratio	0.22	0.24
Control Delay	10.6	6.0
Queue Delay	0.0	0.0
Total Delay	10.6	6.0
Queue Length 50th (ft)	12	31
Queue Length 95th (ft)	29	47
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1058	2600
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.22	0.24
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	116	97	0	0	0	0	0	0	67	496	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.93									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3920									4284	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3920									4284	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	125	104	0	0	0	0	0	0	73	539	0
RTOR Reduction (vph)	0	78	0	0	0	0	0	0	0	0	29	0
Lane Group Flow (vph)	0	151	0	0	0	0	0	0	0	0	583	0
Confl. Peds. (#/hr)			62								43	
Confl. Bikes (#/hr)			7									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		980									2570	
v/s Ratio Prot		c0.04										
v/s Ratio Perm											0.14	
v/c Ratio		0.15									0.23	
Uniform Delay, d1		17.6									5.6	
Progression Factor		1.00									1.19	
Incremental Delay, d2		0.3									0.2	
Delay (s)		17.9									6.8	
Level of Service		B									A	
Approach Delay (s)		17.9			0.0			0.0			6.8	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.8								A	
HCM Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			32.2%								A	
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group



Queues  
24: 9th Street & Oak Street



















Existing  
Timing Plan: AM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	240	897
v/c Ratio	0.20	0.26
Control Delay	9.5	2.0
Queue Delay	0.0	0.0
Total Delay	9.5	2.0
Queue Length 50th (ft)	10	11
Queue Length 95th (ft)	18	14
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1207	3418
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.20	0.26
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 24: 9th Street & Oak Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	87	110	0	0	0	0	0	776	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.86				
Frbp, ped/bikes		1.00						1.00				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.99				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		4236						5518				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		4236						5518				
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	106	134	0	0	0	0	0	843	54	0	0	0
RTOR Reduction (vph)	0	78	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	162	0	0	0	0	0	881	0	0	0	0
Confl. Peds. (#/hr)	26								84			
Confl. Bikes (#/hr)									11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1130						3403				
v/s Ratio Prot								c0.16				
v/s Ratio Perm		0.04										
v/c Ratio		0.14						0.26				
Uniform Delay, d1		16.8						5.2				
Progression Factor		0.94						0.36				
Incremental Delay, d2		0.3						0.2				
Delay (s)		16.0						2.1				
Level of Service		B						A				
Approach Delay (s)		16.0			0.0			2.1			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			5.0									A
HCM Volume to Capacity ratio			0.22									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			42.9%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
25: 8th Street & Webster Street

Existing  
Timing Plan: AM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	300	665	481	249
v/c Ratio	0.53	0.54	0.36	0.50
Control Delay	6.8	28.3	4.9	6.9
Queue Delay	0.0	0.0	0.0	2.4
Total Delay	6.8	28.3	4.9	9.3
Queue Length 50th (ft)	0	122	10	0
Queue Length 95th (ft)	52	148	14	215
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	569	1227	1336	494
Starvation Cap Reductn	0	0	0	140
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.54	0.36	0.70

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 25: 8th Street & Webster Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	252	559	0	0	0	0	0	423	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1010
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1010
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	300	665	0	0	0	0	0	481	249
RTOR Reduction (vph)	0	0	0	210	0	0	0	0	0	0	0	169
Lane Group Flow (vph)	0	0	0	90	665	0	0	0	0	0	481	80
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	325
v/s Ratio Prot											c0.12	
v/s Ratio Perm				0.08	0.16							0.08
v/c Ratio				0.25	0.54						0.36	0.25
Uniform Delay, d1				23.8	26.3						23.4	22.5
Progression Factor				1.00	1.00						0.18	1.04
Incremental Delay, d2				1.7	1.7						0.7	1.6
Delay (s)				25.5	28.1						4.9	24.9
Level of Service				C	C						A	C
Approach Delay (s)		0.0			27.3			0.0			11.7	
Approach LOS		A			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.6	HCM Level of Service							C	
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0		
Intersection Capacity Utilization			32.4%	ICU Level of Service						A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 26: 8th Street & Harrison Street

Existing  
 Timing Plan: AM PEAK























Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	773	204	560
v/c Ratio	0.44	0.27	0.24
Control Delay	15.5	1.2	0.8
Queue Delay	0.0	0.0	0.0
Total Delay	15.5	1.2	0.8
Queue Length 50th (ft)	56	1	1
Queue Length 95th (ft)	61	0	4
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1740	757	2336
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.27	0.24

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 26: 8th Street & Harrison Street

Existing  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  		 	  					
Volume (vph)	0	0	0	0	484	88	319	277	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.86		0.86	0.86					
Frbp, ped/bikes					0.98		1.00	1.00					
Flpb, ped/bikes					1.00		0.96	0.99					
Frt					0.98		1.00	1.00					
Flt Protected					1.00		0.95	0.98					
Satd. Flow (prot)					5322		1320	4192					
Flt Permitted					1.00		0.95	0.98					
Satd. Flow (perm)					5322		1320	4192					
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	654	119	409	355	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	55	0	31	31	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	718	0	173	529	0	0	0	0	
Confl. Peds. (#/hr)							88	65					
Confl. Bikes (#/hr)							7						
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type							Perm						
Protected Phases					8			1					
Permitted Phases							1						
Actuated Green, G (s)					19.0		32.5	32.5					
Effective Green, g (s)					19.0		33.0	33.0					
Actuated g/C Ratio					0.32		0.55	0.55					
Clearance Time (s)					4.0		4.5	4.5					
Lane Grp Cap (vph)					1685		726	2306					
v/s Ratio Prot					c0.13								
v/s Ratio Perm							c0.13	0.13					
v/c Ratio					0.43		0.24	0.23					
Uniform Delay, d1					16.2		7.0	7.0					
Progression Factor					1.00		0.06	0.09					
Incremental Delay, d2					0.8		0.7	0.2					
Delay (s)					17.0		1.2	0.9					
Level of Service					B		A	A					
Approach Delay (s)		0.0			17.0			1.0			0.0		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			9.0		HCM Level of Service				A				
HCM Volume to Capacity ratio			0.31										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			32.4%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
27: 8th Street & Jackson Street

Existing  
Timing Plan: AM PEAK





















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	622	340	343
v/c Ratio	0.41	0.50	0.41
Control Delay	14.6	14.1	8.1
Queue Delay	0.0	2.6	1.2
Total Delay	14.7	16.7	9.3
Queue Length 50th (ft)	59	125	53
Queue Length 95th (ft)	87	m160	79
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1503	674	830
Starvation Cap Reductn	0	219	281
Spillback Cap Reductn	83	0	2
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.75	0.62

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

Existing  
 Timing Plan: AM PEAK

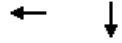
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						 		
Volume (vph)	0	0	0	56	443	61	98	208	0	0	211	53	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.86			1.00			1.00		
Frbp, ped/bikes					0.98			1.00			0.99		
Flpb, ped/bikes					0.98			0.99			1.00		
Frt					0.98			1.00			0.97		
Flt Protected					1.00			0.98			1.00		
Satd. Flow (prot)					5177			1436			1416		
Flt Permitted					1.00			0.80			1.00		
Satd. Flow (perm)					5177			1172			1416		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77	
Adj. Flow (vph)	0	0	0	62	492	68	109	231	0	0	274	69	
RTOR Reduction (vph)	0	0	0	0	36	0	0	0	0	0	15	0	
Lane Group Flow (vph)	0	0	0	0	586	0	0	340	0	0	328	0	
Confl. Peds. (#/hr)				129		97	51					51	
Confl. Bikes (#/hr)						8						1	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type					Perm			Perm					
Protected Phases						1		2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					17.0			34.0			34.0		
Effective Green, g (s)					17.0			34.5			34.5		
Actuated g/C Ratio					0.28			0.58			0.58		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1467			674			814		
v/s Ratio Prot											0.23		
v/s Ratio Perm					0.11			c0.29					
v/c Ratio					0.40			0.50			0.40		
Uniform Delay, d1					17.4			7.6			7.1		
Progression Factor					0.86			1.52			1.00		
Incremental Delay, d2					0.8			1.6			1.5		
Delay (s)					15.7			13.2			8.5		
Level of Service					B			B			A		
Approach Delay (s)		0.0			15.7			13.2			8.5		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			13.2		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.5		
Intersection Capacity Utilization			71.1%		ICU Level of Service						C		
Analysis Period (min)			15										

c Critical Lane Group



Queues  
 28: 8th Street & Madison Street

Existing  
 Timing Plan: AM PEAK

















Lane Group	WBT	SBT
Lane Group Flow (vph)	775	609
v/c Ratio	0.34	0.30
Control Delay	5.3	3.1
Queue Delay	0.0	0.0
Total Delay	5.3	3.1
Queue Length 50th (ft)	18	15
Queue Length 95th (ft)	27	21
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	2278	2001
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.30
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

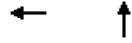
## 28: 8th Street & Madison Street

Existing  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	204	501	0	0	0	0	0	508	65	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5388						4231		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5388						4231		
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	
Adj. Flow (vph)	0	0	0	224	551	0	0	0	0	0	540	69	
RTOR Reduction (vph)	0	0	0	0	122	0	0	0	0	0	27	0	
Lane Group Flow (vph)	0	0	0	0	653	0	0	0	0	0	582	0	
Confl. Peds. (#/hr)				36								34	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					23.5						27.5		
Effective Green, g (s)					24.0						28.0		
Actuated g/C Ratio					0.40						0.47		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					2155						1974		
v/s Ratio Prot											c0.14		
v/s Ratio Perm					0.12								
v/c Ratio					0.30						0.30		
Uniform Delay, d1					12.3						9.9		
Progression Factor					0.54						0.29		
Incremental Delay, d2					0.3						0.4		
Delay (s)					7.0						3.3		
Level of Service					A						A		
Approach Delay (s)		0.0			7.0			0.0			3.3		
Approach LOS		A			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			5.3		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.30										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			34.2%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
 29: 8th Street & Oak Street

Existing  
 Timing Plan: AM PEAK

















Lane Group	WBT	NBT
Lane Group Flow (vph)	694	969
v/c Ratio	0.36	0.34
Control Delay	13.3	1.6
Queue Delay	0.0	0.0
Total Delay	13.3	1.6
Queue Length 50th (ft)	45	0
Queue Length 95th (ft)	66	0
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1927	2855
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.34
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 29: 8th Street & Oak Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	539	99	97	736	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.86			0.86				
Frb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.98			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5346			5450				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5346			5450				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	586	108	113	856	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	55	0	0	40	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	639	0	0	929	0	0	0	0
Confl. Peds. (#/hr)						62	131					
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					21.0			31.0				
Effective Green, g (s)					21.0			31.0				
Actuated g/C Ratio					0.35			0.52				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1871			2816				
v/s Ratio Prot					c0.12							
v/s Ratio Perm								0.17				
v/c Ratio					0.34			0.33				
Uniform Delay, d1					14.4			8.4				
Progression Factor					1.00			0.17				
Incremental Delay, d2					0.5			0.3				
Delay (s)					14.9			1.7				
Level of Service					B			A				
Approach Delay (s)		0.0			14.9			1.7			0.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.2									A
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0									8.0
Intersection Capacity Utilization			37.7%									A
Analysis Period (min)			15									
c Critical Lane Group												

Intersection Sign configuration not allowed in HCM analysis.













Queues  
31: 7th Street & Harrison Street

Existing  
Timing Plan: AM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	342	638	1869
v/c Ratio	0.17	0.35	0.76
Control Delay	7.8	13.2	2.3
Queue Delay	0.0	0.0	0.0
Total Delay	7.8	13.2	2.3
Queue Length 50th (ft)	20	56	0
Queue Length 95th (ft)	28	62	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2030	1831	2457
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	0.35	0.76
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	46	221	0	0	0	0	0	459	1346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.98			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4285						4577	2457			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4285						4577	2457			
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.72	0.72	0.72	0.92	0.92	0.92
Adj. Flow (vph)	59	283	0	0	0	0	0	638	1869	0	0	0
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	311	0	0	0	0	0	638	1869	0	0	0
Confl. Peds. (#/hr)	12								29			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm								Free			
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		28.0						24.0	60.0			
Actuated g/C Ratio		0.47						0.40	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2000						1831	2457			
v/s Ratio Prot								0.14				
v/s Ratio Perm		0.07							c0.76			
v/c Ratio		0.16						0.35	0.76			
Uniform Delay, d1		9.2						12.5	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.2						0.5	2.3			
Delay (s)		9.4						13.1	2.3			
Level of Service		A						B	A			
Approach Delay (s)		9.4			0.0			5.0			0.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			5.5									A
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0									0.0
Intersection Capacity Utilization			32.4%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
32: 7th Street & Jackson Street

Existing  
Timing Plan: AM PEAK

	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1202	585	365	306
v/c Ratio	0.55	0.87	0.84	0.73
Control Delay	6.4	19.3	38.6	35.6
Queue Delay	0.0	0.0	1.5	0.0
Total Delay	6.4	19.3	40.1	35.6
Queue Length 50th (ft)	61	62	115	111
Queue Length 95th (ft)	67	#154	#253	#211
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2183	670	436	420
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	82	0	15	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.87	0.87	0.73

Intersection Summary













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



# HCM Signalized Intersection Capacity Analysis

## 32: 7th Street & Jackson Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	32	442	902	0	0	0	0	265	67	20	249	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.96	0.91					0.98			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.93	0.85					0.97			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3607	937					1401			1457	
Flt Permitted		1.00	1.00					1.00			0.96	
Satd. Flow (perm)		3607	937					1401			1401	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	42	574	1171	0	0	0	0	291	74	23	283	0
RTOR Reduction (vph)	0	139	139	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	1063	446	0	0	0	0	350	0	0	306	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2044	531					420			420	
v/s Ratio Prot								c0.25				
v/s Ratio Perm		0.29	c0.48								0.22	
v/c Ratio		0.52	0.84					0.83			0.73	
Uniform Delay, d1		8.0	10.7					19.6			18.8	
Progression Factor		0.97	0.95					1.00			1.26	
Incremental Delay, d2		0.7	11.6					17.3			9.9	
Delay (s)		8.4	21.8					36.9			33.6	
Level of Service		A	C					D			C	
Approach Delay (s)		12.8			0.0			36.9			33.6	
Approach LOS		B			A			D			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.0									B
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			69.0%									C
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 33: 7th Street & Madison Street

Existing  
 Timing Plan: AM PEAK















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	624	735
v/c Ratio	0.23	0.48
Control Delay	8.7	18.5
Queue Delay	0.0	0.0
Total Delay	8.7	18.5
Queue Length 50th (ft)	35	76
Queue Length 95th (ft)	m50	114
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	2704	1547
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.48

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	331	193	0	0	0	0	0	0	121	578	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5130									4269	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5130									4269	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	394	230	0	0	0	0	0	0	127	608	0
RTOR Reduction (vph)	0	53	0	0	0	0	0	0	0	0	54	0
Lane Group Flow (vph)	0	571	0	0	0	0	0	0	0	0	681	0
Confl. Peds. (#/hr)			33							31		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		31.0									22.0	
Effective Green, g (s)		31.0									21.0	
Actuated g/C Ratio		0.52									0.35	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		2651									1494	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.16	
v/c Ratio		0.22									0.46	
Uniform Delay, d1		7.9									15.1	
Progression Factor		1.31									1.29	
Incremental Delay, d2		0.2									1.0	
Delay (s)		10.5									20.4	
Level of Service		B									C	
Approach Delay (s)		10.5			0.0			0.0			20.4	
Approach LOS		B			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.9								HCM Level of Service	B
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			35.1%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												




















Queues  
34: 7th Street & Oak Street

Existing  
Timing Plan: AM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	395	1018
v/c Ratio	0.16	0.55
Control Delay	7.2	13.5
Queue Delay	0.0	0.3
Total Delay	7.2	13.8
Queue Length 50th (ft)	10	91
Queue Length 95th (ft)	15	118
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2401	1859
Starvation Cap Reductn	0	290
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.16	0.65
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street








Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	65	274	0	0	0	0	0	791	84	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5459						4238				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5459						4238				
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	76	319	0	0	0	0	0	920	98	0	0	0
RTOR Reduction (vph)	0	36	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	359	0	0	0	0	0	996	0	0	0	0
Confl. Peds. (#/hr)	26								75			
Confl. Bikes (#/hr)									3			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		25.0						25.0				
Effective Green, g (s)		26.0						26.0				
Actuated g/C Ratio		0.43						0.43				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2366						1836				
v/s Ratio Prot								c0.24				
v/s Ratio Perm		0.07										
v/c Ratio		0.15						0.54				
Uniform Delay, d1		10.3						12.6				
Progression Factor		0.81						1.00				
Incremental Delay, d2		0.1						1.2				
Delay (s)		8.5						13.8				
Level of Service		A						B				
Approach Delay (s)		8.5			0.0			13.8			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.3				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			33.0%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
35: 7th Street & 5th Ave





















Existing  
Timing Plan: AM PEAK

							
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	125	290	23	114	579	298	422
v/c Ratio	0.39	0.13	0.04	0.25	0.26	0.46	0.58
Control Delay	17.3	11.4	5.2	13.7	12.2	14.1	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	11.4	5.2	13.7	12.2	14.1	15.5
Queue Length 50th (ft)	32	24	0	28	51	71	105
Queue Length 95th (ft)	72	37	11	60	73	114	186
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		50	110			
Base Capacity (vph)	320	2190	595	454	2187	646	729
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.13	0.04	0.25	0.26	0.46	0.58
<b>Intersection Summary</b>							

# HCM Signalized Intersection Capacity Analysis

## 35: 7th Street & 5th Ave

Existing  
Timing Plan: AM PEAK

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	34	76	255	20	108	544	6	50	158	36	17	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91			1.00			1.00
Frbp, ped/bikes		1.00	1.00	0.97	1.00	1.00			1.00			0.99
Flpb, ped/bikes		0.99	1.00	1.00	1.00	1.00			1.00			1.00
Frt		1.00	1.00	0.85	1.00	1.00			0.98			0.96
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.99			1.00
Satd. Flow (prot)		1761	5085	1350	1764	5076			1577			1559
Flt Permitted		0.40	1.00	1.00	0.57	1.00			0.87			0.98
Satd. Flow (perm)		744	5085	1350	1053	5076			1379			1534
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90
Adj. Flow (vph)	39	86	290	23	114	573	6	61	193	44	19	289
RTOR Reduction (vph)	0	0	0	13	0	2	0	0	10	0	0	20
Lane Group Flow (vph)	0	125	290	10	114	577	0	0	288	0	0	402
Confl. Peds. (#/hr)		10		4	4		10	8		3	3	
Confl. Bikes (#/hr)				1			2			4		
Parking (#/hr)				5				5	5	5	5	5
Turn Type	Perm	Perm		Perm	Perm			Perm				Perm
Protected Phases			1			1			2			2
Permitted Phases	1	1		1	1			2			2	
Actuated Green, G (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Effective Green, g (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Actuated g/C Ratio		0.43	0.43	0.43	0.43	0.43			0.46			0.46
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Grp Cap (vph)		320	2190	582	454	2187			636			708
v/s Ratio Prot			0.06			0.11						
v/s Ratio Perm		c0.17		0.01	0.11				0.21			c0.26
v/c Ratio		0.39	0.13	0.02	0.25	0.26			0.45			0.57
Uniform Delay, d1		12.7	11.2	10.6	11.8	11.9			11.9			12.8
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00			1.00
Incremental Delay, d2		3.6	0.1	0.1	1.3	0.3			2.3			3.3
Delay (s)		16.2	11.3	10.7	13.1	12.2			14.2			16.0
Level of Service		B	B	B	B	B			B			B
Approach Delay (s)			12.7			12.3			14.2			16.0
Approach LOS			B			B			B			B
<b>Intersection Summary</b>												
HCM Average Control Delay			13.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			7.0			
Intersection Capacity Utilization			70.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Existing  
 Timing Plan: AM PEAK



Movement	SBR
Lane Configurations	
Volume (vph)	103
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	0.90
Adj. Flow (vph)	114
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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	



Queues  
 36: I-880 NB On-Ramp & Jackson Street

Existing  
 Timing Plan: AM PEAK



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	3	350	227	282	660	583
v/c Ratio	0.00	0.52	1.52	0.46	0.83	0.78
Control Delay	8.0	13.7	284.5	15.9	17.6	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	13.7	284.5	15.9	17.6	14.5
Queue Length 50th (ft)	1	65	~93	68	58	42
Queue Length 95th (ft)	4	124	m#156	m106	#207	#131
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	149	619	797	749
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	0.00	0.52	1.52	0.46	0.83	0.78



















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.

# HCM Signalized Intersection Capacity Analysis

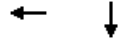
## 36: I-880 NB On-Ramp & Jackson Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	3	315	0	204	254	0	0	134	886
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frb, ped/bikes				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
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1588	1676		1593	1467			1413	1300
Flt Permitted				0.95	1.00		0.21	1.00			1.00	1.00
Satd. Flow (perm)				1588	1676		353	1467			1413	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	3	350	0	227	282	0	0	163	1080
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	200	200
Lane Group Flow (vph)	0	0	0	3	350	0	227	282	0	0	460	383
Confl. Peds. (#/hr)				2		2						
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				635	670		149	619			597	549
v/s Ratio Prot					c0.21			0.19			0.33	
v/s Ratio Perm				0.00			c0.64					0.29
v/c Ratio				0.00	0.52		1.52	0.46			0.77	0.70
Uniform Delay, d1				8.1	10.2		13.0	9.3			11.1	10.6
Progression Factor				1.00	1.00		1.38	1.41			1.00	1.00
Incremental Delay, d2				0.0	2.9		261.2	1.9			9.3	7.2
Delay (s)				8.1	13.1		279.1	15.1			20.4	17.8
Level of Service				A	B		F	B			C	B
Approach Delay (s)		0.0			13.1			132.8			19.2	
Approach LOS		A			B			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			45.7				HCM Level of Service				D	
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			45.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			81.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 37: 6th Street & Madison Street

Existing  
 Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	228	882
v/c Ratio	0.16	0.37
Control Delay	13.2	4.3
Queue Delay	0.0	0.0
Total Delay	13.2	4.3
Queue Length 50th (ft)	18	20
Queue Length 95th (ft)	32	30
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	1399	2391
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.16	0.37
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 37: 6th Street & Madison Street

Existing  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	26	174	0	0	0	0	0	605	206	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					1.00						1.00		
Frt					1.00						0.96		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					4356						4164		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					4356						4164		
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	30	198	0	0	0	0	0	658	224	
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	101	0	
Lane Group Flow (vph)	0	0	0	0	208	0	0	0	0	0	781	0	
Confl. Peds. (#/hr)				2		11						45	
Confl. Bikes (#/hr)												9	
Parking (#/hr)					5						5	5	
Turn Type				Perm									
Protected Phases					4						2		
Permitted Phases				4									
Actuated Green, G (s)					19.0						33.0		
Effective Green, g (s)					19.0						33.0		
Actuated g/C Ratio					0.32						0.55		
Clearance Time (s)					4.0						4.0		
Lane Grp Cap (vph)					1379						2290		
v/s Ratio Prot											c0.19		
v/s Ratio Perm					0.05								
v/c Ratio					0.15						0.34		
Uniform Delay, d1					14.7						7.5		
Progression Factor					1.00						0.70		
Incremental Delay, d2					0.2						0.4		
Delay (s)					14.9						5.6		
Level of Service					B						A		
Approach Delay (s)		0.0			14.9			0.0			5.6		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			7.5		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.27										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			38.2%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
38: 6th Street & Oak Street

Existing  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	506	524	352	27
v/c Ratio	0.49	0.39	0.58	0.04
Control Delay	14.1	8.8	13.4	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.1	8.8	13.4	0.1
Queue Length 50th (ft)	53	41	65	0
Queue Length 95th (ft)	m95	59	116	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	1034	1355	611	742
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.39	0.58	0.04

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 38: 6th Street & Oak Street

Existing  
Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↔↑		↔↓	↔↓	↔↓
Volume (vph)	119	337	84	57	577	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.90	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		2945		2877	1297	1269
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		2945		2877	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	132	374	102	70	704	27
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	506	0	524	352	13
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		1034		1355	611	598
v/s Ratio Prot				0.18	c0.27	
v/s Ratio Perm		0.17				0.01
v/c Ratio		0.49		0.39	0.58	0.02
Uniform Delay, d1		11.4		7.7	8.6	6.4
Progression Factor		1.08		1.00	1.00	1.00
Incremental Delay, d2		1.3		0.8	3.9	0.1
Delay (s)		13.7		8.5	12.6	6.4
Level of Service		B		A	B	A
Approach Delay (s)		13.7		10.2		
Approach LOS		B		B		

### Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Existing  
 Timing Plan: AM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1116	244	163
v/c Ratio	0.79	0.31	0.26
Control Delay	15.6	6.5	9.7
Queue Delay	0.0	0.0	0.0
Total Delay	15.6	6.5	9.7
Queue Length 50th (ft)	64	27	26
Queue Length 95th (ft)	#112	50	m38
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1416	778	618
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.79	0.31	0.26


















**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.

# HCM Signalized Intersection Capacity Analysis

## 39: I-880 SB Off-Ramp & Jackson Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	274	360	371	0	0	0	0	172	28	68	69	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.94						0.98			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		4083						1435			1431	
Flt Permitted		0.99						1.00			0.79	
Satd. Flow (perm)		4083						1435			1158	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	304	400	412	0	0	0	0	210	34	81	82	0
RTOR Reduction (vph)	0	235	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	881	0	0	0	0	0	231	0	0	163	0
Confl. Peds. (#/hr)	4								21			
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		13.0						24.0			24.0	
Actuated g/C Ratio		0.29						0.53			0.53	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1180						765			618	
v/s Ratio Prot								c0.16				
v/s Ratio Perm		0.22									0.14	
v/c Ratio		0.75						0.30			0.26	
Uniform Delay, d1		14.5						5.8			5.7	
Progression Factor		1.00						1.00			1.49	
Incremental Delay, d2		4.3						1.0			0.6	
Delay (s)		18.8						6.9			9.1	
Level of Service		B						A			A	
Approach Delay (s)		18.8			0.0			6.9			9.1	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.9								B	
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			61.0%								B	
Analysis Period (min)			15									

c Critical Lane Group



Queues  
40: 5th Street & Madison Street













Existing  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	500	290	427
v/c Ratio	0.34	0.39	0.28
Control Delay	15.7	2.3	1.9
Queue Delay	0.0	0.1	0.0
Total Delay	15.7	2.5	1.9
Queue Length 50th (ft)	48	0	0
Queue Length 95th (ft)	70	0	0
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1461	741	1536
Starvation Cap Reductn	0	59	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.43	0.28
Intersection Summary			

# HCM Signalized Intersection Capacity Analysis

## 40: 5th Street & Madison Street

Existing  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↙	
Volume (vph)	0	430	10	0	0	0	0	0	0	476	112	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.99	0.99	
Frt		1.00								1.00	1.00	
Flt Protected		1.00								0.95	0.97	
Satd. Flow (prot)		4370								1251	2741	
Flt Permitted		1.00								0.95	0.97	
Satd. Flow (perm)		4370								1251	2741	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	489	11	0	0	0	0	0	0	580	137	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	74	74	0
Lane Group Flow (vph)	0	496	0	0	0	0	0	0	0	216	353	0
Confl. Peds. (#/hr)			4							16		
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		20.0								32.0	32.0	
Effective Green, g (s)		20.0								32.0	32.0	
Actuated g/C Ratio		0.33								0.53	0.53	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		1457								667	1462	
v/s Ratio Prot		c0.11										
v/s Ratio Perm										c0.17	0.13	
v/c Ratio		0.34								0.32	0.24	
Uniform Delay, d1		15.0								7.9	7.5	
Progression Factor		1.00								0.22	0.32	
Incremental Delay, d2		0.6								1.2	0.4	
Delay (s)		15.7								3.0	2.8	
Level of Service		B								A	A	
Approach Delay (s)		15.7			0.0			0.0			2.8	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.1								A	
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			38.2%								A	
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Existing  
Timing Plan: AM PEAK





















	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	803	134	337	132
v/c Ratio	0.52	0.18	0.68	0.27
Control Delay	9.5	2.3	21.1	16.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.5	2.3	21.1	16.5
Queue Length 50th (ft)	67	0	65	35
Queue Length 95th (ft)	104	18	#165	65
Internal Link Dist (ft)	295		80	205
Turn Bay Length (ft)				
Base Capacity (vph)	1534	746	494	488
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.18	0.68	0.27

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 41: 5th Street & Oak Street

Existing  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 			 	
Volume (vph)	224	547	129	0	0	0	0	242	65	1	98	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.95	1.00					1.00			1.00	
Frb, ped/bikes		1.00	0.97					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Fr t		1.00	0.85					0.97			1.00	
Flt Protected		0.99	1.00					1.00			1.00	
Satd. Flow (prot)		3136	1385					1417			1466	
Flt Permitted		0.99	1.00					1.00			1.00	
Satd. Flow (perm)		3136	1385					1417			1464	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	233	570	134	0	0	0	0	266	71	1	131	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	803	66	0	0	0	0	316	0	0	132	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		1						2			2	
Permitted Phases	1	1	1							2		
Actuated Green, G (s)		22.5	22.5					15.5			15.5	
Effective Green, g (s)		22.0	22.0					15.0			15.0	
Actuated g/C Ratio		0.49	0.49					0.33			0.33	
Clearance Time (s)		3.5	3.5					3.5			3.5	
Lane Grp Cap (vph)		1533	677					472			488	
v/s Ratio Prot								c0.22				
v/s Ratio Perm		0.26	0.05								0.09	
v/c Ratio		0.52	0.10					0.67			0.27	
Uniform Delay, d1		7.9	6.2					12.9			11.0	
Progression Factor		1.00	1.00					1.00			1.32	
Incremental Delay, d2		1.3	0.3					7.3			1.3	
Delay (s)		9.2	6.5					20.2			15.8	
Level of Service		A	A					C			B	
Approach Delay (s)		8.8			0.0			20.2			15.8	
Approach LOS		A			A			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.2								B	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			49.6%								A	
Analysis Period (min)			15									

c Critical Lane Group

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	6.4	32.6	0.15	16.1	C
Madison Street	IV	25	18.9	8.7	27.6	0.07	9.3	D
Oak Street	IV	25	19.3	7.2	26.5	0.07	9.9	D
Total	IV		64.4	22.3	86.7	0.29	12.0	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	13.3	29.3	0.06	7.4	E
Madison Street	IV	25	19.5	5.3	24.8	0.07	10.7	D
Jackson Street	IV	25	18.8	14.6	33.4	0.07	7.6	E
Alice Street	IV	25	19.7	8.3	28.0	0.07	9.6	D
Harrison Street	IV	25	19.0	15.5	34.5	0.07	7.5	E
Webster Street	IV	25	18.8	28.3	47.1	0.07	5.4	F
Total	IV		111.8	85.3	197.1	0.42	7.7	E

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	10.5	25.8	0.06	8.1	E
9th Street	IV	25	13.2	6.0	19.2	0.05	9.4	D
8th Street	IV	25	13.9	3.1	17.0	0.05	11.1	D
7th Street	IV	25	13.6	18.5	32.1	0.05	5.7	F
Total	IV		56.0	38.1	94.1	0.21	8.1	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	1.6	15.1	0.05	12.1	D
9th Street	IV	25	14.7	2.0	16.7	0.06	11.9	D
10th St	IV	25	13.3	1.5	14.8	0.05	12.2	D
11th St	IV	25	14.7	9.2	23.9	0.06	8.3	E
12th St	IV	25	12.5	16.1	28.6	0.05	5.9	F
Total	IV		68.7	30.4	99.1	0.26	9.4	D

Queues  
1: W Grand Ave & Broadway

Existing  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	172	1213	798	181	493	149	65	492
v/c Ratio	0.80	0.80	1.49dl	0.62	0.37	0.31	0.22	0.37
Control Delay	48.2	23.3	62.0	30.6	17.7	14.4	18.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	23.3	62.0	30.6	17.7	14.4	18.3	16.1
Queue Length 50th (ft)	74	271	~227	74	91	38	22	82
Queue Length 95th (ft)	58	132	106	#155	130	83	49	117
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	216	1514	780	291	1349	481	289	1319
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	0.80	0.80	1.02	0.62	0.37	0.31	0.22	0.37

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCM Signalized Intersection Capacity Analysis

## 1: W Grand Ave & Broadway

Existing  
Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	78	518	52	73	282	28	1	166	454	137	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frbp, ped/bikes		1.00	0.99			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		0.99	1.00			1.00			0.98	1.00	1.00	
Frt		1.00	0.99			0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1573	3122			3102			1565	3185	1087	
Flt Permitted		0.27	1.00			0.51			0.42	1.00	1.00	
Satd. Flow (perm)		447	3122			1602			687	3185	1087	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	166	1102	111	152	588	58	1	180	493	149	1
RTOR Reduction (vph)	0	0	9	0	0	7	0	0	0	0	20	0
Lane Group Flow (vph)	0	172	1204	0	0	791	0	0	181	493	129	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Effective Green, g (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Actuated g/C Ratio		0.48	0.48			0.48			0.42	0.42	0.42	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		216	1506			773			291	1349	460	
v/s Ratio Prot			0.39							0.15		
v/s Ratio Perm		0.38				c0.49			c0.26		0.12	
v/c Ratio		0.80	0.80			1.49dl			0.62	0.37	0.28	
Uniform Delay, d1		18.5	18.5			22.0			19.2	16.7	16.0	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		17.0	2.9			38.5			9.6	0.8	1.5	
Delay (s)		35.5	21.4			60.5			28.8	17.5	17.5	
Level of Service		D	C			E			C	B	B	
Approach Delay (s)			23.2			60.5				20.0		
Approach LOS			C			E				B		
<b>Intersection Summary</b>												
HCM Average Control Delay			29.9			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			91.7%			ICU Level of Service			F			
Analysis Period (min)			15									

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 1: W Grand Ave & Broadway













Existing  
Timing Plan: PM PEAK



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	56	346	87
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.99	
Flpb, ped/bikes	0.98	1.00	
Frt	1.00	0.97	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1559	3053	
Flt Permitted	0.42	1.00	
Satd. Flow (perm)	683	3053	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	64	393	99
RTOR Reduction (vph)	0	26	0
Lane Group Flow (vph)	65	466	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	36.0	36.0	
Effective Green, g (s)	36.0	36.0	
Actuated g/C Ratio	0.42	0.42	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	289	1293	
v/s Ratio Prot		0.15	
v/s Ratio Perm	0.10		
v/c Ratio	0.22	0.36	
Uniform Delay, d1	15.6	16.7	
Progression Factor	1.00	1.00	
Incremental Delay, d2	1.8	0.8	
Delay (s)	17.4	17.5	
Level of Service	B	B	
Approach Delay (s)		17.4	
Approach LOS		B	
<b>Intersection Summary</b>			

Queues  
2: 20th St & Kaiser DWY

Existing  
Timing Plan: PM PEAK

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBR	NWL2	NWL	NWR
Lane Group Flow (vph)	11	251	97	79	206	2	347	334	34	12	59	46
v/c Ratio	0.07	0.57	0.24	0.69	0.33	0.01	0.83	0.82	0.06	0.08	0.37	0.32
Control Delay	23.2	31.1	20.4	66.3	24.2	13.5	44.8	44.4	0.2	34.0	40.9	40.1
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	23.2	31.1	20.4	66.3	24.2	13.5	44.8	44.4	0.2	34.0	40.9	40.1
Queue Length 50th (ft)	4	113	30	41	40	0	168	161	0	6	28	22
Queue Length 95th (ft)	16	184	66	#100	59	4	#295	#286	0	18	55	46
Internal Link Dist (ft)		337			517		577				375	
Turn Bay Length (ft)						90				180	180	
Base Capacity (vph)	148	438	405	114	619	358	420	408	554	159	159	143
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	0.07	0.57	0.24	0.69	0.33	0.01	0.83	0.82	0.06	0.08	0.37	0.32






















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	10	218	65	19	1	108	122	2	66	12	500	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00			0.91	0.91	1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00	1.00			1.00	1.00	0.80		1.00	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	0.85		0.89	0.85	
Flt Protected	0.95	1.00	1.00			0.95	0.99	1.00		0.99	1.00	
Satd. Flow (prot)	1513	1593	1425			1449	3011	1098		1401	1354	
Flt Permitted	0.34	1.00	1.00			0.60	0.85	1.00		0.99	1.00	
Satd. Flow (perm)	536	1593	1425			910	2604	1098		1401	1354	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.81	0.81	0.81	0.81	0.86	0.86	0.86	0.86
Adj. Flow (vph)	11	251	75	22	1	133	151	2	77	14	581	9
RTOR Reduction (vph)	0	0	13	0	0	0	0	1	0	0	1	0
Lane Group Flow (vph)	11	251	84	0	0	79	206	1	0	347	333	0
Confl. Peds. (#/hr)				54				181	125			36
Confl. Bikes (#/hr)				9								14
Bus Blockages (#/hr)	0	0	0	10	0	0	0	10	0	0	0	0
Parking (#/hr)				5								5
Turn Type	custom		custom		custom	Prot		Perm	Split			Prot
Protected Phases			1			2	6		8	8		8
Permitted Phases	1	1			2			6				
Actuated Green, G (s)	22.0	22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Effective Green, g (s)	22.0	22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Actuated g/C Ratio	0.28	0.28	0.28			0.12	0.32	0.32		0.30	0.30	
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	147	438	392			114	897	357		420	406	
v/s Ratio Prot			0.06				0.03			c0.25	0.25	
v/s Ratio Perm	0.02	c0.16				c0.09	0.05	0.00				
v/c Ratio	0.07	0.57	0.21			0.69	0.23	0.00		0.83	0.82	
Uniform Delay, d1	21.5	25.0	22.3			33.5	19.7	18.2		26.1	26.0	
Progression Factor	1.00	1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	5.4	1.2			29.4	0.6	0.0		16.8	16.7	
Delay (s)	22.5	30.3	23.6			62.9	20.3	18.2		42.8	42.7	
Level of Service	C	C	C			E	C	B		D	D	
Approach Delay (s)		28.3					32.0			42.7		
Approach LOS		C					C			D		

Intersection Summary		
HCM Average Control Delay	36.7	HCM Level of Service D
HCM Volume to Capacity ratio	0.66	
Actuated Cycle Length (s)	80.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	73.3%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing  
Timing Plan: PM PEAK



Movement	SBR	NWL2	NWL	NWR
Lane Configurations				
Volume (vph)	31	9	46	36
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00
Frt	0.86	1.00	1.00	0.85
Flt Protected	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1450	1593	1593	1425
Flt Permitted	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1450	1593	1593	1425
Peak-hour factor, PHF	0.92	0.78	0.78	0.78
Adj. Flow (vph)	34	12	59	46
RTOR Reduction (vph)	31	0	0	0
Lane Group Flow (vph)	3	12	59	46
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Bus Blockages (#/hr)	0	0	0	0
Parking (#/hr)				
Turn Type	custom	Split		Perm
Protected Phases	5	7	7	
Permitted Phases				7
Actuated Green, G (s)	6.0	8.0	8.0	8.0
Effective Green, g (s)	6.0	8.0	8.0	8.0
Actuated g/C Ratio	0.08	0.10	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	109	159	159	143
v/s Ratio Prot	0.00	0.01	c0.04	
v/s Ratio Perm				0.03
v/c Ratio	0.02	0.08	0.37	0.32
Uniform Delay, d1	34.3	32.6	33.6	33.5
Progression Factor	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.9	6.5	5.9
Delay (s)	34.7	33.6	40.2	39.3
Level of Service	C	C	D	D
Approach Delay (s)			39.2	
Approach LOS			D	
<b>Intersection Summary</b>				

Queues  
3: 19th St & Madison Street

Existing  
Timing Plan: PM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	83	596	510
v/c Ratio	0.06	0.53	0.24
Control Delay	11.9	2.6	6.1
Queue Delay	0.0	0.0	0.0
Total Delay	11.9	2.6	6.1
Queue Length 50th (ft)	0	0	0
Queue Length 95th (ft)	31	40	108
Internal Link Dist (ft)	259		346
Turn Bay Length (ft)			
Base Capacity (vph)	2558	1206	2721
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.49	0.19

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 3: 19th St & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	75	536	0	0	0	0	446	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frb, ped/bikes					1.00	1.00					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1247					3176	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1247					3176	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	83	596	0	0	0	0	501	9
RTOR Reduction (vph)	0	0	0	0	0	204	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	83	392	0	0	0	0	508	0
Confl. Peds. (#/hr)				22								22
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					1.9	14.8					10.4	
Effective Green, g (s)					1.9	14.8					10.4	
Actuated g/C Ratio					0.08	0.66					0.46	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					269	820					1468	
v/s Ratio Prot					0.03						0.16	
v/s Ratio Perm						c0.31						
v/c Ratio					0.31	0.48					0.35	
Uniform Delay, d1					9.7	1.9					3.9	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.7	0.4					0.1	
Delay (s)					10.3	2.4					4.0	
Level of Service					B	A					A	
Approach Delay (s)		0.0			3.3			0.0			4.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			3.6		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			22.5		Sum of lost time (s)				4.0			
Intersection Capacity Utilization			40.2%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
4: 17th St & Madison Street













Existing  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	160	651
v/c Ratio	0.23	0.24
Control Delay	7.0	4.9
Queue Delay	0.0	0.3
Total Delay	7.0	5.2
Queue Length 50th (ft)	5	29
Queue Length 95th (ft)	25	43
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	698	2711
Starvation Cap Reductn	0	1336
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.47
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 4: 17th St & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑↑↑	
Volume (vph)	0	32	115	0	0	0	0	0	0	57	535	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.92									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.88									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2416									4363	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2416									4363	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	35	125	0	0	0	0	0	0	63	588	0
RTOR Reduction (vph)	0	94	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	66	0	0	0	0	0	0	0	0	630	0
Confl. Peds. (#/hr)	34		78							8		18
Confl. Bikes (#/hr)			4						1			
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0									37.0	
Effective Green, g (s)		15.0									37.0	
Actuated g/C Ratio		0.25									0.62	
Clearance Time (s)		4.0									4.0	
Lane Grp Cap (vph)		604									2691	
v/s Ratio Prot		c0.03										
v/s Ratio Perm											0.14	
v/c Ratio		0.11									0.23	
Uniform Delay, d1		17.4									5.2	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.4									0.2	
Delay (s)		17.7									5.4	
Level of Service		B									A	
Approach Delay (s)		17.7			0.0			0.0			5.4	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.8									A
HCM Volume to Capacity ratio			0.20									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			50.0%									A
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
5: 14th St & Madison Street





















Existing  
Timing Plan: PM PEAK

	→	←	↘	↓
Lane Group	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	348	292	163	624
v/c Ratio	0.20	0.18	0.44	0.74
Control Delay	5.2	3.4	28.2	31.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.2	3.4	28.2	31.9
Queue Length 50th (ft)	22	10	60	126
Queue Length 95th (ft)	38	15	101	164
Internal Link Dist (ft)	285	315		1054
Turn Bay Length (ft)				
Base Capacity (vph)	1763	1666	370	842
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.18	0.44	0.74
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 					 	 	
Volume (vph)	0	236	95	32	210	0	0	0	0	137	482	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0					4.5	4.5	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frbp, ped/bikes		0.97			1.00					1.00	0.99	
Flpb, ped/bikes		1.00			0.99					0.94	1.00	
Frt		0.96			1.00					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		2948			3138					1307	2933	
Flt Permitted		1.00			0.89					0.95	1.00	
Satd. Flow (perm)		2948			2814					1307	2933	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	248	100	39	253	0	0	0	0	163	574	50
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	329	0	0	292	0	0	0	0	163	613	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4							2
Permitted Phases				4							2	
Actuated Green, G (s)		35.5			35.5					17.0	17.0	
Effective Green, g (s)		35.5			35.5					17.0	17.0	
Actuated g/C Ratio		0.59			0.59					0.28	0.28	
Clearance Time (s)		3.0			3.0					4.5	4.5	
Lane Grp Cap (vph)		1744			1665					370	831	
v/s Ratio Prot		c0.11									c0.21	
v/s Ratio Perm					0.10					0.12		
v/c Ratio		0.19			0.18					0.44	0.74	
Uniform Delay, d1		5.6			5.6					17.6	19.5	
Progression Factor		1.00			0.56					1.33	1.33	
Incremental Delay, d2		0.2			0.2					3.7	5.7	
Delay (s)		5.9			3.3					27.1	31.7	
Level of Service		A			A					C	C	
Approach Delay (s)		5.9			3.3			0.0			30.7	
Approach LOS		A			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				7.5		
Intersection Capacity Utilization			53.7%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Existing  
Timing Plan: PM PEAK















Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	282	216	178	477	101
v/c Ratio	0.43	0.25	0.37	0.27	0.14
Control Delay	22.5	12.3	6.0	2.4	0.4
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	22.5	12.3	6.0	2.6	0.4
Queue Length 50th (ft)	51	32	28	8	0
Queue Length 95th (ft)	85	42	42	16	0
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	663	849	486	1788	729
Starvation Cap Reductn	0	0	0	611	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.25	0.37	0.41	0.14

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔	↗		↔↔	↗			
Volume (vph)	50	210	0	0	173	142	46	402	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.94		1.00	0.97			
Flpb, ped/bikes		0.99			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2883			3185	1333		3155	1209			
Flt Permitted		0.85			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2485			3185	1333		3155	1209			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	54	228	0	0	216	178	49	428	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	131	0	0	44	0	0	0
Lane Group Flow (vph)	0	282	0	0	216	47	0	477	57	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		16.0			16.0	16.0		34.0	34.0			
Effective Green, g (s)		16.0			16.0	16.0		34.0	34.0			
Actuated g/C Ratio		0.27			0.27	0.27		0.57	0.57			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		663			849	355		1788	685			
v/s Ratio Prot					0.07							
v/s Ratio Perm		c0.11				0.04		0.15	0.05			
v/c Ratio		0.43			0.25	0.13		0.27	0.08			
Uniform Delay, d1		18.2			17.3	16.7		6.6	5.9			
Progression Factor		1.11			0.66	1.05		0.29	0.02			
Incremental Delay, d2		1.9			0.7	0.8		0.4	0.2			
Delay (s)		22.1			12.1	18.3		2.3	0.3			
Level of Service		C			B	B		A	A			
Approach Delay (s)		22.1			14.9			2.0			0.0	
Approach LOS		C			B			A			A	

Intersection Summary		
HCM Average Control Delay	10.5	HCM Level of Service B
HCM Volume to Capacity ratio	0.32	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

Queues  
7: 13th St & Madison Street















Existing  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	447	780
v/c Ratio	0.30	0.30
Control Delay	13.9	6.2
Queue Delay	0.0	0.6
Total Delay	13.9	6.8
Queue Length 50th (ft)	27	59
Queue Length 95th (ft)	37	44
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1506	2631
Starvation Cap Reductn	0	1357
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.61
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	263	81	0	0	0	0	0	0	17	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		5355									4375	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		5355									4375	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	342	105	0	0	0	0	0	0	22	758	0
RTOR Reduction (vph)	0	77	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	370	0	0	0	0	0	0	0	0	775	0
Confl. Peds. (#/hr)	14		11							38		28
Confl. Bikes (#/hr)			4									8
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1428									2625	
v/s Ratio Prot		c0.07										
v/s Ratio Perm											0.18	
v/c Ratio		0.26									0.30	
Uniform Delay, d1		17.3									5.8	
Progression Factor		1.00									1.03	
Incremental Delay, d2		0.4									0.2	
Delay (s)		17.8									6.3	
Level of Service		B									A	
Approach Delay (s)		17.8			0.0			0.0			6.3	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.4									B
HCM Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
8: 13th St & Oak Street

Existing  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	87	344	517	67
v/c Ratio	0.20	0.29	0.20	0.09
Control Delay	9.2	18.9	17.8	12.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.2	18.9	17.8	12.5
Queue Length 50th (ft)	0	25	65	0
Queue Length 95th (ft)	19	40	97	m41
Internal Link Dist (ft)		132	231	
Turn Bay Length (ft)	50			
Base Capacity (vph)	428	1170	2632	752
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.29	0.20	0.09





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 8: 13th St & Oak Street

Existing  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						  					
Volume (vph)	62	244	0	0	0	0	0	491	64	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0						3.0	3.0				
Lane Util. Factor	1.00	0.91						0.91	1.00				
Frbp, ped/bikes	1.00	1.00						1.00	0.97				
Flpb, ped/bikes	0.98	1.00						1.00	1.00				
Frt	1.00	1.00						1.00	0.85				
Flt Protected	0.95	1.00						1.00	1.00				
Satd. Flow (prot)	1367	4386						4386	1209				
Flt Permitted	0.95	1.00						1.00	1.00				
Satd. Flow (perm)	1367	4386						4386	1209				
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	
Adj. Flow (vph)	87	344	0	0	0	0	0	517	67	0	0	0	
RTOR Reduction (vph)	64	0	0	0	0	0	0	0	27	0	0	0	
Lane Group Flow (vph)	23	344	0	0	0	0	0	517	40	0	0	0	
Confl. Peds. (#/hr)	17		17				86		18				
Confl. Bikes (#/hr)			1						27				
Parking (#/hr)	5	5						5	5				
Turn Type	Perm								Perm				
Protected Phases		2						1					
Permitted Phases	2								1				
Actuated Green, G (s)	16.0	16.0						36.0	36.0				
Effective Green, g (s)	16.0	16.0						36.0	36.0				
Actuated g/C Ratio	0.27	0.27						0.60	0.60				
Clearance Time (s)	5.0	5.0						3.0	3.0				
Lane Grp Cap (vph)	365	1170						2632	725				
v/s Ratio Prot		c0.08						c0.12					
v/s Ratio Perm	0.02								0.03				
v/c Ratio	0.06	0.29						0.20	0.06				
Uniform Delay, d1	16.4	17.5						5.4	5.0				
Progression Factor	1.59	1.03						3.20	7.35				
Incremental Delay, d2	0.3	0.6						0.2	0.1				
Delay (s)	26.5	18.6						17.6	36.6				
Level of Service	C	B						B	D				
Approach Delay (s)		20.2			0.0			19.8			0.0		
Approach LOS		C			A			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			20.0									HCM Level of Service	B
HCM Volume to Capacity ratio			0.23										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			74.9%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
9: 13th St & Lake Merritt Blvd

Existing  
Timing Plan: PM PEAK




















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	416	51	383	362
v/c Ratio	0.93	0.14	0.18	0.85
Control Delay	51.9	6.9	0.2	51.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	51.9	6.9	0.2	51.4
Queue Length 50th (ft)	91	0	0	147
Queue Length 95th (ft)	#297	0	0	#204
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	447	370	2077	425
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.93	0.14	0.18	0.85

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 9: 13th St & Lake Merritt Blvd

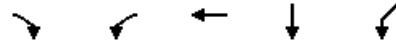
Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 						
Volume (vph)	0	362	44	0	0	329	0	0	0	275	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		1.00	1.00			0.88				1.00		
Frb, ped/bikes		1.00	1.00			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		1676	1247			2508				1593		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		1676	1247			2508				1593		
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.25	0.25	0.25	0.76	0.76	0.76
Adj. Flow (vph)	0	416	51	0	0	383	0	0	0	362	0	0
RTOR Reduction (vph)	0	0	37	0	0	281	0	0	0	0	0	0
Lane Group Flow (vph)	0	416	14	0	0	102	0	0	0	362	0	0
Confl. Peds. (#/hr)	20					20						
Parking (#/hr)			5									
Turn Type		custom				custom				Prot		
Protected Phases						2				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			16.0				16.0		
Effective Green, g (s)		16.0	16.0			16.0				16.0		
Actuated g/C Ratio		0.27	0.27			0.27				0.27		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		447	333			669				425		
v/s Ratio Prot						c0.04				c0.23		
v/s Ratio Perm		c0.25	0.01									
v/c Ratio		0.93	0.04			0.15				0.85		
Uniform Delay, d1		21.5	16.3			16.8				20.9		
Progression Factor		0.92	0.99			1.00				1.47		
Incremental Delay, d2		28.0	0.2			0.5				18.4		
Delay (s)		47.9	16.4			17.3				49.1		
Level of Service		D	B			B				D		
Approach Delay (s)		44.4			17.3			0.0			49.1	
Approach LOS		D			B			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			37.2			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			44.8%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Existing  
Timing Plan: PM PEAK



Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	105	140	353	1072
v/c Ratio	0.03	0.20	0.10	0.32	1.26
Control Delay	0.0	5.8	21.4	23.9	155.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	5.8	21.4	23.9	155.7
Queue Length 50th (ft)	0	0	19	49	~375
Queue Length 95th (ft)	0	30	32	75	#496
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	470	527	1400	1105	851
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.10	0.32	1.26

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Existing  
 Timing Plan: PM PEAK

	↘	↙	←	↓	↘	↙	↙
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↘	↑↑↑	↑↑↑		↘↙	
Volume (vph)	3	89	119	275	46	986	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.98		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1337	1485	4577	4260		3079	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1337	1485	4577	4260		3079	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	105	140	302	51	1027	45
RTOR Reduction (vph)	8	73	0	28	0	0	0
Lane Group Flow (vph)	4	32	140	325	0	1072	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	26.0	26.0	26.0	21.5		23.5	
Effective Green, g (s)	26.0	26.0	26.0	21.5		23.5	
Actuated g/C Ratio	0.31	0.31	0.31	0.25		0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	409	454	1400	1078		851	
v/s Ratio Prot			c0.03	c0.08		c0.35	
v/s Ratio Perm	0.00	0.02					
v/c Ratio	0.01	0.07	0.10	0.30		1.26	
Uniform Delay, d1	20.5	20.9	21.1	25.7		30.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3	0.1	0.7		126.4	
Delay (s)	20.6	21.2	21.3	26.4		157.1	
Level of Service	C	C	C	C		F	
Approach Delay (s)			21.3	26.4		157.1	
Approach LOS			C	C		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			108.9		HCM Level of Service		F
HCM Volume to Capacity ratio			0.54				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			62.5%		ICU Level of Service		B
Analysis Period (min)			15				

c Critical Lane Group

Queues  
11: 12th St & Broadway

Existing  
Timing Plan: PM PEAK



Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1044	123	498	777
v/c Ratio	0.72	1.13	0.31	0.71
Control Delay	20.0	153.1	9.9	20.0
Queue Delay	0.0	0.0	0.5	0.5
Total Delay	20.0	153.1	10.4	20.6
Queue Length 50th (ft)	114	-56	82	118
Queue Length 95th (ft)	115	m#126	125	165
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1447	109	1587	1094
Starvation Cap Reductn	0	0	639	83
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	1.13	0.53	0.77













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.

# HCM Signalized Intersection Capacity Analysis

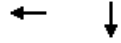
## 11: 12th St & Broadway

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↑	↑↑			↑↑	
Volume (vph)	0	0	0	142	509	101	112	453	0	0	589	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.5			4.5	
Lane Util. Factor					0.91		1.00	0.95			0.95	
Frbp, ped/bikes					0.99		1.00	1.00			0.96	
Flpb, ped/bikes					0.98		1.00	1.00			1.00	
Frt					0.98		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4085		1450	3122			2937	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					4085		1450	3122			2937	
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.91	0.91	0.91	0.86	0.86	0.86
Adj. Flow (vph)	0	0	0	197	707	140	123	498	0	0	685	92
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	0	0	0	1028	0	123	498	0	0	760	0
Confl. Peds. (#/hr)				125		48	446		455	455		446
Confl. Bikes (#/hr)						6			10			9
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	12%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10
Parking (#/hr)				5	5	5						
Turn Type					Perm			Prot				
Protected Phases						4		5	2			6
Permitted Phases					4							
Actuated Green, G (s)						21.0		4.5	30.5			22.0
Effective Green, g (s)						21.0		4.5	30.5			22.0
Actuated g/C Ratio						0.35		0.08	0.51			0.37
Clearance Time (s)						4.0		4.0	4.5			4.5
Lane Grp Cap (vph)						1430		109	1587			1077
v/s Ratio Prot								c0.08	0.16			c0.26
v/s Ratio Perm						0.25						
v/c Ratio						0.72		1.13	0.31			0.71
Uniform Delay, d1						16.9		27.8	8.6			16.2
Progression Factor						1.00		1.14	1.08			1.00
Incremental Delay, d2						3.1		117.1	0.4			3.9
Delay (s)						20.1		148.8	9.8			20.1
Level of Service						C		F	A			C
Approach Delay (s)		0.0				20.1			37.3			20.1
Approach LOS		A				C			D			C
<b>Intersection Summary</b>												
HCM Average Control Delay			24.5									C
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			60.0							12.5		
Intersection Capacity Utilization			56.8%									B
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
12: 12th St & Madison Street

Existing  
Timing Plan: PM PEAK

















Lane Group	WBT	SBT
Lane Group Flow (vph)	790	818
v/c Ratio	0.24	0.68
Control Delay	4.4	25.7
Queue Delay	0.0	0.0
Total Delay	4.4	25.7
Queue Length 50th (ft)	23	113
Queue Length 95th (ft)	30	138
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3225	1201
Starvation Cap Reductn	0	0
Spillback Cap Reductn	64	1
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.25	0.68
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 12: 12th St & Madison Street

Existing  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	188	491	0	0	0	0	0	601	70	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					0.98						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5356						4284		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5356						4284		
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.82	0.82	0.82	
Adj. Flow (vph)	0	0	0	219	571	0	0	0	0	0	733	85	
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	24	0	
Lane Group Flow (vph)	0	0	0	0	778	0	0	0	0	0	794	0	
Confl. Peds. (#/hr)				69		76						45	
Confl. Bikes (#/hr)						5						15	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					36.0						16.5		
Effective Green, g (s)					36.0						16.5		
Actuated g/C Ratio					0.60						0.28		
Clearance Time (s)					3.5						4.0		
Lane Grp Cap (vph)					3214						1178		
v/s Ratio Prot											c0.19		
v/s Ratio Perm					0.15								
v/c Ratio					0.24						0.67		
Uniform Delay, d1					5.6						19.4		
Progression Factor					0.78						1.20		
Incremental Delay, d2					0.2						3.0		
Delay (s)					4.6						26.2		
Level of Service					A						C		
Approach Delay (s)		0.0			4.6			0.0			26.2		
Approach LOS		A			A			A			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			15.6		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.38										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			37.5%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
13: 12th St & Oak Street















Existing  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	584	791
v/c Ratio	0.20	0.46
Control Delay	7.2	13.8
Queue Delay	0.0	0.0
Total Delay	7.2	13.8
Queue Length 50th (ft)	27	50
Queue Length 95th (ft)	37	72
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2900	1713
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.20	0.46
Intersection Summary		





HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	459	32	203	501	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.95				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5418			5159				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5418			5159				
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	546	38	228	563	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	122	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	572	0	0	669	0	0	0	0
Confl. Peds. (#/hr)						140	166		148			
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					32.0			18.5				
Effective Green, g (s)					32.0			18.5				
Actuated g/C Ratio					0.53			0.31				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2890			1591				
v/s Ratio Prot					c0.11							
v/s Ratio Perm								0.13				
v/c Ratio					0.20			0.42				
Uniform Delay, d1					7.3			16.5				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.2			0.8				
Delay (s)					7.5			17.3				
Level of Service					A			B				
Approach Delay (s)		0.0			7.5			17.3			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		9.5			
Intersection Capacity Utilization			34.6%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Existing  
Timing Plan: PM PEAK













				
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	735	466	366	42
v/c Ratio	0.60	0.25	0.36	0.09
Control Delay	2.3	6.1	7.4	11.8
Queue Delay	0.9	0.0	0.0	0.0
Total Delay	3.2	6.1	7.4	11.8
Queue Length 50th (ft)	0	35	59	6
Queue Length 95th (ft)	6	55	102	m7
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)				
Base Capacity (vph)	1232	1854	1006	445
Starvation Cap Reductn	239	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.25	0.36	0.09

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Existing  
 Timing Plan: PM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 		 	
Volume (vph)	0	647	419	329	34	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	0.97	1.00	1.00	
Flt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1450	3090	1676	1660	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1450	3090	1676	1660	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	735	466	366	39	3
RTOR Reduction (vph)	0	294	0	0	2	0
Lane Group Flow (vph)	0	441	466	366	40	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		36.0	36.0	36.0	16.0	
Effective Green, g (s)		36.0	36.0	36.0	16.0	
Actuated g/C Ratio		0.60	0.60	0.60	0.27	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		870	1854	1006	443	
v/s Ratio Prot		c0.30	0.15	0.22	c0.02	
v/s Ratio Perm						
v/c Ratio		0.51	0.25	0.36	0.09	
Uniform Delay, d1		6.9	5.7	6.1	16.5	
Progression Factor		1.00	1.00	1.00	0.72	
Incremental Delay, d2		2.1	0.3	1.0	0.2	
Delay (s)		9.0	6.0	7.2	12.2	
Level of Service		A	A	A	B	
Approach Delay (s)	9.0			6.5	12.2	
Approach LOS	A			A	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			7.8		HCM Level of Service	A
HCM Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			54.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

15: International Blvd & Lake Merritt Blvd

Existing  
Timing Plan: PM PEAK















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	323	135	877	483	556
v/c Ratio	0.44	0.24	0.54	0.57	0.75
Control Delay	16.0	9.3	13.6	4.1	21.7
Queue Delay	0.0	0.0	2.7	0.6	0.0
Total Delay	16.0	9.3	16.3	4.7	21.7
Queue Length 50th (ft)	88	20	126	0	168
Queue Length 95th (ft)	146	50	178	49	253
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)					
Base Capacity (vph)	735	552	1617	854	746
Starvation Cap Reductn	0	0	599	120	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.24	0.86	0.66	0.75

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Existing  
 Timing Plan: PM PEAK







						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			
Volume (vph)	284	119	842	464	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	1.00	1.00	0.91	0.91		1.00
Frbp, ped/bikes	1.00	0.94	1.00	0.91		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1770	1255	3390	1260		1565
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	1770	1255	3390	1260		1565
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.84	0.84
Adj. Flow (vph)	323	135	877	483	0	556
RTOR Reduction (vph)	0	30	0	253	0	0
Lane Group Flow (vph)	323	105	877	230	0	556
Confl. Peds. (#/hr)		63		103		
Confl. Bikes (#/hr)				33		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm		
Protected Phases	1		2			2
Permitted Phases		1		2		
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	735	521	1617	601		746
v/s Ratio Prot	c0.18		0.26			c0.36
v/s Ratio Perm		0.08		0.18		
v/c Ratio	0.44	0.20	0.54	0.38		0.75
Uniform Delay, d1	13.6	12.1	12.0	10.9		13.8
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.9	0.9	1.3	1.8		6.7
Delay (s)	15.5	13.0	13.3	12.7		20.5
Level of Service	B	B	B	B		C
Approach Delay (s)	14.8		13.1			20.5
Approach LOS	B		B			C

Intersection Summary			
HCM Average Control Delay		15.1	HCM Level of Service B
HCM Volume to Capacity ratio		0.60	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		58.3%	ICU Level of Service B
Analysis Period (min)		15	

c Critical Lane Group

















Queues  
16: E 18th St & Lakeshore Ave

Existing  
Timing Plan: PM PEAK

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	215	172	630	347	273	402
v/c Ratio	0.18	0.30	0.52	0.49	0.67	0.19
Control Delay	23.8	5.2	28.4	5.4	44.3	9.3
Queue Delay	0.0	0.0	5.5	0.8	0.0	0.0
Total Delay	23.8	5.2	34.0	6.2	44.3	9.3
Queue Length 50th (ft)	49	0	167	2	159	56
Queue Length 95th (ft)	72	37	223	64	242	77
Internal Link Dist (ft)	677		204			677
Turn Bay Length (ft)		100		125	200	
Base Capacity (vph)	1167	570	1203	713	407	2081
Starvation Cap Reductn	0	0	502	144	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.30	0.90	0.61	0.67	0.19
<b>Intersection Summary</b>						

HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave





Existing  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	183	146	573	316	240	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	0.88	1.00	0.94	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	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1343	3539	1433	1770	3468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1343	3539	1433	1770	3468
Peak-hour factor, PHF	0.85	0.85	0.91	0.91	0.88	0.88
Adj. Flow (vph)	215	172	630	347	273	402
RTOR Reduction (vph)	0	114	0	226	0	0
Lane Group Flow (vph)	215	58	630	121	273	402
Confl. Peds. (#/hr)	28	89		24	24	
Confl. Bikes (#/hr)				25		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm		Perm	Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	34.0	34.0	34.0	34.0	23.0	60.0
Effective Green, g (s)	34.0	34.0	34.0	34.0	23.0	60.0
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.23	0.60
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1167	457	1203	487	407	2081
v/s Ratio Prot	c0.06		c0.18		c0.15	0.12
v/s Ratio Perm		0.04		0.08		
v/c Ratio	0.18	0.13	0.52	0.25	0.67	0.19
Uniform Delay, d1	23.2	22.8	26.5	23.8	35.1	9.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.6	1.6	1.2	8.5	0.2
Delay (s)	23.6	23.3	28.1	25.0	43.6	9.3
Level of Service	C	C	C	C	D	A
Approach Delay (s)	23.5		27.0			23.1
Approach LOS	C		C			C
<b>Intersection Summary</b>						
HCM Average Control Delay			25.1		HCM Level of Service	C
HCM Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			64.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						



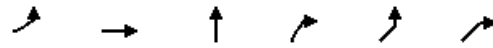
Queues  
17: 11th St & Castro St

Existing  
Timing Plan: PM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	161	536	1290	103
v/c Ratio	0.36	0.36	0.78	0.19
Control Delay	6.8	26.0	27.5	30.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.8	26.0	27.5	30.6
Queue Length 50th (ft)	0	71	217	24
Queue Length 95th (ft)	46	91	247	42
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	450	1470	1647	540
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.36	0.78	0.19
<b>Intersection Summary</b>				

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Existing  
 Timing Plan: PM PEAK



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	137	456	1056	28	56	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.95	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1229	5432	4366		2959	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1229	5432	4366		2959	
Peak-hour factor, PHF	0.85	0.85	0.84	0.84	0.83	0.83
Adj. Flow (vph)	161	536	1257	33	67	36
RTOR Reduction (vph)	117	0	3	0	0	0
Lane Group Flow (vph)	44	536	1287	0	103	0
Confl. Peds. (#/hr)	39			8		8
Confl. Bikes (#/hr)				1		
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	23.0	23.0	32.0		15.5	
Effective Green, g (s)	23.0	23.0	32.0		15.5	
Actuated g/C Ratio	0.27	0.27	0.38		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	333	1470	1644		540	
v/s Ratio Prot			c0.29		c0.03	
v/s Ratio Perm	0.04	0.10				
v/c Ratio	0.13	0.36	0.78		0.19	
Uniform Delay, d1	23.4	25.1	23.4		29.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.8	0.7	3.8		0.8	
Delay (s)	24.3	25.8	27.2		30.2	
Level of Service	C	C	C		C	
Approach Delay (s)		25.4	27.2		30.2	
Approach LOS		C	C		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			26.8		HCM Level of Service	C
HCM Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			56.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
18: 11th St & Broadway

Existing  
Timing Plan: PM PEAK





















	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	713	603	124	668
v/c Ratio	0.38	0.61	0.93	0.44
Control Delay	13.9	19.1	81.2	17.5
Queue Delay	0.0	0.4	0.0	0.9
Total Delay	13.9	19.5	81.2	18.5
Queue Length 50th (ft)	51	88	52	113
Queue Length 95th (ft)	72	134	m#90	153
Internal Link Dist (ft)	1829	193		185
Turn Bay Length (ft)			85	
Base Capacity (vph)	1873	982	133	1509
Starvation Cap Reductn	0	91	0	539
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.68	0.93	0.69

**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.

HCM Signalized Intersection Capacity Analysis  
 18: 11th St & Broadway

Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	95	428	148	0	0	0	0	457	80	112	601	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.86						0.95		1.00	0.95	
Frbp, ped/bikes		0.93						0.95		1.00	1.00	
Flpb, ped/bikes		0.99						1.00		1.00	1.00	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		4869						2884		1593	3122	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		4869						2884		1593	3122	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	101	455	157	0	0	0	0	513	90	124	668	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	707	0	0	0	0	0	582	0	124	668	0
Confl. Peds. (#/hr)	77		535					490		535	535	490
Confl. Bikes (#/hr)			6							9		16
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		23.0						20.0		5.0	29.0	
Effective Green, g (s)		23.0						20.0		5.0	29.0	
Actuated g/C Ratio		0.38						0.33		0.08	0.48	
Clearance Time (s)		4.0						4.0		4.0	4.0	
Lane Grp Cap (vph)		1866						961		133	1509	
v/s Ratio Prot								c0.20		c0.08	0.21	
v/s Ratio Perm		0.15										
v/c Ratio		0.38						0.61		0.93	0.44	
Uniform Delay, d1		13.3						16.7		27.3	10.2	
Progression Factor		1.00						1.00		0.89	1.62	
Incremental Delay, d2		0.6						2.8		49.0	0.6	
Delay (s)		13.9						19.5		73.3	17.1	
Level of Service		B						B		E	B	
Approach Delay (s)		13.9			0.0			19.5			25.9	
Approach LOS		B			A			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.0									C
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			60.0							12.0		
Intersection Capacity Utilization			56.8%									B
Analysis Period (min)			15									

c Critical Lane Group













Queues  
19: 11th St &

Existing  
Timing Plan: PM PEAK

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	897	938
v/c Ratio	0.13	0.43	0.71
Control Delay	8.3	9.9	18.0
Queue Delay	0.0	0.0	1.4
Total Delay	8.3	9.9	19.4
Queue Length 50th (ft)	18	67	121
Queue Length 95th (ft)	40	81	150
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	810	2109	1323
Starvation Cap Reductn	0	0	201
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.13	0.43	0.84
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

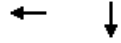
Existing  
 Timing Plan: PM PEAK

					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		  			  
Volume (vph)	97	572	155	75	704
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.91			0.91
Frbp, ped/bikes	1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.97			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	4135			4291
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	4135			4291
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	706	191	90	848
RTOR Reduction (vph)	0	7	0	0	0
Lane Group Flow (vph)	105	890	0	0	938
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	30.5	30.5			18.5
Effective Green, g (s)	30.5	30.5			18.5
Actuated g/C Ratio	0.51	0.51			0.31
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	810	2102			1323
v/s Ratio Prot		c0.22			
v/s Ratio Perm	0.07				0.22
v/c Ratio	0.13	0.42			0.71
Uniform Delay, d1	7.8	9.2			18.4
Progression Factor	1.00	1.00			0.82
Incremental Delay, d2	0.3	0.6			2.7
Delay (s)	8.1	9.9			17.8
Level of Service	A	A			B
Approach Delay (s)		9.7			17.8
Approach LOS		A			B
<b>Intersection Summary</b>					
HCM Average Control Delay			13.6	HCM Level of Service	B
HCM Volume to Capacity ratio			0.53		
Actuated Cycle Length (s)			60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			42.8%	ICU Level of Service	A
Analysis Period (min)			15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street


















Existing  
Timing Plan: PM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	337	1097
v/c Ratio	0.40	0.44
Control Delay	12.1	9.2
Queue Delay	0.0	0.0
Total Delay	12.1	9.2
Queue Length 50th (ft)	28	70
Queue Length 95th (ft)	39	104
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	853	2500
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.40	0.44
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
20: 10th St & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						  	
Volume (vph)	0	0	0	69	251	0	0	0	0	154	632	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					2926						4171	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					2926						4171	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	73	264	0	0	0	0	188	771	138
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	0	0	0	337	0	0	0	0	0	1066	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					853						2468	
v/s Ratio Prot												
v/s Ratio Perm					0.12						0.26	
v/c Ratio					0.40						0.43	
Uniform Delay, d1					17.0						6.7	
Progression Factor					0.62						1.38	
Incremental Delay, d2					1.2						0.4	
Delay (s)					11.9						9.7	
Level of Service					B						A	
Approach Delay (s)		0.0			11.9			0.0			9.7	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.2		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			40.9%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
21: 10th St & Oak Street

Existing  
Timing Plan: PM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	196	410	746
v/c Ratio	0.28	0.52	0.22
Control Delay	14.4	16.6	2.0
Queue Delay	0.0	0.0	0.0
Total Delay	14.4	16.6	2.0
Queue Length 50th (ft)	22	47	9
Queue Length 95th (ft)	41	85	13
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	696	787	3380
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.28	0.52	0.22
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Existing  
Timing Plan: PM PEAK



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔↔↔				
Volume (vph)	7	146	0	0	256	113	76	487	123	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			0.86				
Frb, ped/bikes		1.00			0.99			0.98				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.95			0.97				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2977			2811			5401				
Flt Permitted		0.93			1.00			0.99				
Satd. Flow (perm)		2784			2811			5401				
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	187	0	0	284	126	83	529	134	0	0	0
RTOR Reduction (vph)	0	0	0	0	84	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	196	0	0	326	0	0	695	0	0	0	0
Confl. Peds. (#/hr)	22		35	35		22	62		168			
Confl. Bikes (#/hr)			14			6			45			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		696			703			3331				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.07						0.13				
v/c Ratio		0.28			0.46			0.21				
Uniform Delay, d1		18.2			19.1			5.1				
Progression Factor		0.73			1.00			0.45				
Incremental Delay, d2		0.9			2.2			0.1				
Delay (s)		14.1			21.3			2.4				
Level of Service		B			C			A				
Approach Delay (s)		14.1			21.3			2.4			0.0	
Approach LOS		B			C			A			A	

### Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
22: 9th Street & Webster Street













Existing  
Timing Plan: PM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	240	123	1391
v/c Ratio	0.27	0.28	0.77
Control Delay	25.0	6.5	29.6
Queue Delay	0.0	0.0	23.8
Total Delay	25.0	6.5	53.3
Queue Length 50th (ft)	54	0	196
Queue Length 95th (ft)	81	35	240
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	439	1810
Starvation Cap Reductn	0	0	470
Spillback Cap Reductn	0	1	60
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.28	1.04
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 22: 9th Street & Webster Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↓↑↑	
Volume (vph)	0	206	106	0	0	0	0	0	0	225	1027	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.98								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1176								5482	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1176								5482	
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	240	123	0	0	0	0	0	0	250	1141	0
RTOR Reduction (vph)	0	0	86	0	0	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	240	37	0	0	0	0	0	0	0	1347	0
Confl. Bikes (#/hr)			8									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	353								1766	
v/s Ratio Prot		c0.08										
v/s Ratio Perm			0.03								0.25	
v/c Ratio		0.27	0.10								0.76	
Uniform Delay, d1		24.0	22.8								27.4	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.7	0.6								3.2	
Delay (s)		24.7	23.4								30.6	
Level of Service		C	C								C	
Approach Delay (s)		24.3			0.0			0.0			30.6	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.3								HCM Level of Service	C
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			90.0							Sum of lost time (s)	34.0	
Intersection Capacity Utilization			34.3%							ICU Level of Service	A	
Analysis Period (min)			15									
c Critical Lane Group												













Queues  
23: 9th Street & Madison Street

Existing  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	472	870
v/c Ratio	0.42	0.33
Control Delay	12.2	2.3
Queue Delay	0.0	0.1
Total Delay	12.2	2.4
Queue Length 50th (ft)	29	10
Queue Length 95th (ft)	53	10
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1130	2605
Starvation Cap Reductn	0	606
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.42	0.44
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	248	172	0	0	0	0	0	0	101	656	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3939									4285	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3939									4285	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	279	193	0	0	0	0	0	0	116	754	0
RTOR Reduction (vph)	0	145	0	0	0	0	0	0	0	0	34	0
Lane Group Flow (vph)	0	327	0	0	0	0	0	0	0	0	836	0
Confl. Peds. (#/hr)			68							29		20
Confl. Bikes (#/hr)			18									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		985									2571	
v/s Ratio Prot		c0.08										
v/s Ratio Perm											0.19	
v/c Ratio		0.33									0.33	
Uniform Delay, d1		18.4									6.0	
Progression Factor		1.00									0.37	
Incremental Delay, d2		0.9									0.3	
Delay (s)		19.3									2.5	
Level of Service		B									A	
Approach Delay (s)		19.3			0.0			0.0			2.5	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.4								A	
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			38.3%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
24: 9th Street & Oak Street













Existing  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	388	726
v/c Ratio	0.32	0.22
Control Delay	19.9	1.1
Queue Delay	0.0	0.0
Total Delay	19.9	1.1
Queue Length 50th (ft)	42	4
Queue Length 95th (ft)	70	7
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1225	3358
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.32	0.22
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 24: 9th Street & Oak Street

Existing  
Timing Plan: PM PEAK

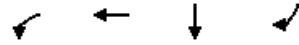
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	85	260	0	0	0	0	0	566	109	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.86				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4328						5371				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4328						5371				
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	96	292	0	0	0	0	0	609	117	0	0	0
RTOR Reduction (vph)	0	70	0	0	0	0	0	45	0	0	0	0
Lane Group Flow (vph)	0	318	0	0	0	0	0	681	0	0	0	0
Confl. Peds. (#/hr)	4		5					69		146		
Confl. Bikes (#/hr)										31		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1154						3312				
v/s Ratio Prot								c0.13				
v/s Ratio Perm		0.07										
v/c Ratio		0.28						0.21				
Uniform Delay, d1		17.4						5.0				
Progression Factor		1.45						0.22				
Incremental Delay, d2		0.6						0.1				
Delay (s)		25.8						1.3				
Level of Service		C						A				
Approach Delay (s)		25.8			0.0			1.3			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.8									A
HCM Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			60.0							7.0		
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									

c Critical Lane Group



Queues  
25: 8th Street & Webster Street

Existing  
Timing Plan: PM PEAK



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	380	529	966	291
v/c Ratio	0.61	0.43	0.72	0.56
Control Delay	7.4	26.7	7.8	5.6
Queue Delay	0.0	0.0	0.8	3.8
Total Delay	7.4	26.7	8.6	9.4
Queue Length 50th (ft)	0	93	20	0
Queue Length 95th (ft)	52	115	27	m0
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	625	1227	1336	523
Starvation Cap Reductn	0	0	142	153
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.43	0.81	0.79





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 25: 8th Street & Webster Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	315	439	0	0	0	0	0	860	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frbp, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1011
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1011
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	380	529	0	0	0	0	0	966	291
RTOR Reduction (vph)	0	0	0	266	0	0	0	0	0	0	0	197
Lane Group Flow (vph)	0	0	0	114	529	0	0	0	0	0	966	94
Confl. Bikes (#/hr)												9
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	326
v/s Ratio Prot											c0.23	
v/s Ratio Perm				0.10	0.13							0.09
v/c Ratio				0.32	0.43						0.72	0.29
Uniform Delay, d1				24.4	25.3						27.0	22.8
Progression Factor				1.00	1.00						0.20	0.83
Incremental Delay, d2				2.3	1.1						2.3	1.5
Delay (s)				26.7	26.4						7.7	20.4
Level of Service				C	C						A	C
Approach Delay (s)		0.0			26.5			0.0			10.6	
Approach LOS		A			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.3	HCM Level of Service							B	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)				34.0				
Intersection Capacity Utilization			49.6%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 26: 8th Street & Harrison Street

Existing  
 Timing Plan: PM PEAK























Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	652	154	547
v/c Ratio	0.31	0.24	0.27
Control Delay	11.9	6.1	6.1
Queue Delay	0.0	0.0	0.0
Total Delay	11.9	6.1	6.1
Queue Length 50th (ft)	40	44	59
Queue Length 95th (ft)	57	95	87
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	2094	648	2056
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.24	0.27

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 26: 8th Street & Harrison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  		 	  				
Volume (vph)	0	0	0	0	500	74	277	354	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.86		0.86	0.86				
Frbp, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.89	0.97				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	0.99				
Satd. Flow (prot)					5347		1215	4129				
Flt Permitted					1.00		0.95	0.99				
Satd. Flow (perm)					5347		1215	4129				
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	568	84	308	393	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	44	0	60	60	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	608	0	94	487	0	0	0	0
Confl. Peds. (#/hr)				40		125	179		40	40		179
Confl. Bikes (#/hr)						6						
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)					5	5						
Turn Type							Perm					
Protected Phases					8			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		29.0	29.0				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					2050		587	1996				
v/s Ratio Prot					c0.11							
v/s Ratio Perm							0.08	0.12				
v/c Ratio					0.30		0.16	0.24				
Uniform Delay, d1					12.9		8.7	9.1				
Progression Factor					1.00		1.60	0.81				
Incremental Delay, d2					0.4		0.5	0.3				
Delay (s)					13.2		14.4	7.7				
Level of Service					B		B	A				
Approach Delay (s)		0.0			13.2			9.1			0.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.1		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			49.6%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 27: 8th Street & Jackson Street

Existing  
 Timing Plan: PM PEAK



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	562	268	375
v/c Ratio	0.25	0.58	0.59
Control Delay	8.0	21.0	16.3
Queue Delay	0.0	0.1	2.0
Total Delay	8.0	21.1	18.3
Queue Length 50th (ft)	47	63	89
Queue Length 95th (ft)	72	m92	167
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	2254	463	639
Starvation Cap Reductn	0	6	141
Spillback Cap Reductn	0	0	75
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.59	0.75



















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 27: 8th Street & Jackson Street

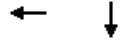
Existing  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						 		
Volume (vph)	0	0	0	43	435	28	98	152	0	0	276	69	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.86			1.00			1.00		
Frbp, ped/bikes					0.99			1.00			0.99		
Flpb, ped/bikes					0.99			0.99			1.00		
Frt					0.99			1.00			0.97		
Flt Protected					1.00			0.98			1.00		
Satd. Flow (prot)					5373			1428			1413		
Flt Permitted					1.00			0.72			1.00		
Satd. Flow (perm)					5373			1049			1413		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	48	483	31	105	163	0	0	300	75	
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	15	0	
Lane Group Flow (vph)	0	0	0	0	548	0	0	268	0	0	360	0	
Confl. Peds. (#/hr)				88		91	53					53	
Confl. Bikes (#/hr)						9						7	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type				Perm			Perm						
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					25.0			26.0			26.0		
Effective Green, g (s)					25.0			26.5			26.5		
Actuated g/C Ratio					0.42			0.44			0.44		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					2239			463			624		
v/s Ratio Prot											0.25		
v/s Ratio Perm					0.10			c0.26					
v/c Ratio					0.24			0.58			0.58		
Uniform Delay, d1					11.4			12.6			12.5		
Progression Factor					0.70			1.31			1.00		
Incremental Delay, d2					0.2			3.1			3.9		
Delay (s)					8.3			19.6			16.4		
Level of Service					A			B			B		
Approach Delay (s)		0.0			8.3			19.6			16.4		
Approach LOS		A			A			B			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			13.3		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			67.8%		ICU Level of Service					C			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
 28: 8th Street & Madison Street

Existing  
 Timing Plan: PM PEAK

















Lane Group	WBT	SBT
Lane Group Flow (vph)	673	909
v/c Ratio	0.34	0.41
Control Delay	12.3	7.8
Queue Delay	0.0	0.1
Total Delay	12.3	7.9
Queue Length 50th (ft)	48	36
Queue Length 95th (ft)	70	43
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1965	2216
Starvation Cap Reductn	0	399
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.50
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 28: 8th Street & Madison Street

Existing  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	186	433	0	0	0	0	0	725	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.99		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5368						4249		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5368						4249		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	202	471	0	0	0	0	0	824	85	
RTOR Reduction (vph)	0	0	0	0	86	0	0	0	0	0	21	0	
Lane Group Flow (vph)	0	0	0	0	587	0	0	0	0	0	888	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					20.5						30.5		
Effective Green, g (s)					21.0						31.0		
Actuated g/C Ratio					0.35						0.52		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1879						2195		
v/s Ratio Prot											c0.21		
v/s Ratio Perm					0.11								
v/c Ratio					0.31						0.40		
Uniform Delay, d1					14.2						8.9		
Progression Factor					1.03						0.84		
Incremental Delay, d2					0.4						0.5		
Delay (s)					15.1						8.0		
Level of Service					B						A		
Approach Delay (s)		0.0			15.1			0.0			8.0		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.0		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.37										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			35.8%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group



Queues  
29: 8th Street & Oak Street

Existing  
Timing Plan: PM PEAK





















Lane Group	WBT	NBT
Lane Group Flow (vph)	537	1037
v/c Ratio	0.31	0.34
Control Delay	13.4	13.6
Queue Delay	0.0	0.0
Total Delay	13.4	13.6
Queue Length 50th (ft)	34	106
Queue Length 95th (ft)	53	135
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1740	3034
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.31	0.34
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 29: 8th Street & Oak Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	415	85	122	822	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.98			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.97			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5298			5433				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5298			5433				
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	446	91	134	903	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	62	0	0	45	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	476	0	0	992	0	0	0	0
Confl. Peds. (#/hr)						92	160					
Confl. Bikes (#/hr)						6						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0			33.0				
Effective Green, g (s)					19.0			33.0				
Actuated g/C Ratio					0.32			0.55				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1678			2988				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.18				
v/c Ratio					0.28			0.33				
Uniform Delay, d1					15.4			7.4				
Progression Factor					1.00			1.98				
Incremental Delay, d2					0.4			0.2				
Delay (s)					15.8			15.0				
Level of Service					B			B				
Approach Delay (s)		0.0			15.8			15.0			0.0	
Approach LOS		A			B			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.3				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			37.8%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Queues  
31: 7th Street & Harrison Street













Existing  
Timing Plan: PM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	617	572	917
v/c Ratio	0.24	0.44	0.37
Control Delay	5.6	18.9	0.4
Queue Delay	0.0	0.0	0.0
Total Delay	5.6	18.9	0.4
Queue Length 50th (ft)	30	61	0
Queue Length 95th (ft)	41	89	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2526	1297	2475
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.44	0.37
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 31: 7th Street & Harrison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	99	426	0	0	0	0	0	543	871	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.99			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4275						4577	2475			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4275						4577	2475			
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	116	501	0	0	0	0	0	572	917	0	0	0
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	586	0	0	0	0	0	572	917	0	0	0
Confl. Peds. (#/hr)	28								3			
Confl. Bikes (#/hr)			1						1			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm								Free			
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		35.0						17.0	60.0			
Actuated g/C Ratio		0.58						0.28	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2494						1297	2475			
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.14							c0.37			
v/c Ratio		0.24						0.44	0.37			
Uniform Delay, d1		6.0						17.6	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.2						1.1	0.4			
Delay (s)		6.3						18.7	0.4			
Level of Service		A						B	A			
Approach Delay (s)		6.3			0.0			7.4			0.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.1									A
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0									0.0
Intersection Capacity Utilization			43.4%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
32: 7th Street & Jackson Street

Existing  
Timing Plan: PM PEAK



















	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1161	233	365	350
v/c Ratio	0.51	0.36	0.82	0.89
Control Delay	5.9	2.0	29.0	38.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.9	2.0	29.0	38.1
Queue Length 50th (ft)	50	0	41	124
Queue Length 95th (ft)	67	11	#226	#259
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2280	644	445	395
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.36	0.82	0.89

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 32: 7th Street & Jackson Street

Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	32	839	439	0	0	0	0	225	110	30	281	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.99	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.97	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3905	958					1384			1458	
Flt Permitted		1.00	1.00					1.00			0.90	
Satd. Flow (perm)		3905	958					1384			1316	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	34	893	467	0	0	0	0	245	120	34	316	0
RTOR Reduction (vph)	0	65	101	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	1096	132	0	0	0	0	336	0	0	350	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2213	543					415			395	
v/s Ratio Prot								0.24				
v/s Ratio Perm		0.28	0.14								c0.27	
v/c Ratio		0.50	0.24					0.81			0.89	
Uniform Delay, d1		7.8	6.5					19.4			20.0	
Progression Factor		0.74	0.41					0.68			0.61	
Incremental Delay, d2		0.8	1.0					14.3			21.3	
Delay (s)		6.6	3.7					27.5			33.5	
Level of Service		A	A					C			C	
Approach Delay (s)		6.1			0.0			27.5			33.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues  
 33: 7th Street & Madison Street

Existing  
 Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1083	1000
v/c Ratio	0.37	0.73
Control Delay	6.2	18.2
Queue Delay	0.0	0.0
Total Delay	6.2	18.2
Queue Length 50th (ft)	40	102
Queue Length 95th (ft)	m60	145
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	2966	1371
Starvation Cap Reductn	0	7
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.73















**Intersection Summary**

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



HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	662	291	0	0	0	0	0	0	242	668	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.98	
Frt		0.95									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5204									4205	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5204									4205	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	752	331	0	0	0	0	0	0	266	734	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	109	0
Lane Group Flow (vph)	0	1065	0	0	0	0	0	0	0	0	891	0
Confl. Peds. (#/hr)			30								61	
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		34.0									19.0	
Effective Green, g (s)		34.0									18.0	
Actuated g/C Ratio		0.57									0.30	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		2949									1262	
v/s Ratio Prot		c0.20										
v/s Ratio Perm											0.21	
v/c Ratio		0.36									0.71	
Uniform Delay, d1		7.1									18.6	
Progression Factor		0.86									0.93	
Incremental Delay, d2		0.3									3.1	
Delay (s)		6.4									20.6	
Level of Service		A									C	
Approach Delay (s)		6.4			0.0			0.0			20.6	
Approach LOS		A			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.2									B
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			43.4%									A
Analysis Period (min)			15									

c Critical Lane Group




















Queues  
34: 7th Street & Oak Street

Existing  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	771	1181
v/c Ratio	0.29	0.72
Control Delay	12.7	17.8
Queue Delay	0.0	0.3
Total Delay	12.7	18.2
Queue Length 50th (ft)	54	121
Queue Length 95th (ft)	78	155
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2663	1647
Starvation Cap Reductn	0	115
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.29	0.77
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street








Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	99	618	0	0	0	0	0	869	147	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5478						4195				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5478						4195				
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	106	665	0	0	0	0	0	1010	171	0	0	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	39	0	0	0	0
Lane Group Flow (vph)	0	755	0	0	0	0	0	1142	0	0	0	0
Confl. Peds. (#/hr)	31								57			
Confl. Bikes (#/hr)									10			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		28.0						22.0				
Effective Green, g (s)		29.0						23.0				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2648						1608				
v/s Ratio Prot								c0.27				
v/s Ratio Perm		0.14										
v/c Ratio		0.29						0.71				
Uniform Delay, d1		9.3						15.7				
Progression Factor		1.39						1.00				
Incremental Delay, d2		0.2						2.7				
Delay (s)		13.1						18.4				
Level of Service		B						B				
Approach Delay (s)		13.1			0.0			18.4			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.3				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			41.2%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
35: 7th Street & 5th Ave

Existing  
Timing Plan: PM PEAK

							
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	193	1015	206	63	298	467	442
v/c Ratio	0.43	0.46	0.30	0.37	0.14	0.70	0.63
Control Delay	16.7	14.0	3.3	20.6	11.2	20.3	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	14.0	3.3	20.6	11.2	20.3	17.3
Queue Length 50th (ft)	51	100	0	16	24	134	117
Queue Length 95th (ft)	88	115	24	42	35	239	159
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		60	110			
Base Capacity (vph)	449	2190	698	169	2188	668	701
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.46	0.30	0.37	0.14	0.70	0.63
<b>Intersection Summary</b>							

# HCM Signalized Intersection Capacity Analysis

35: 7th Street & 5th Ave

Existing  
Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	41	115	822	167	2	50	241	3	65	295	60	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00		
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00		
Flpb, ped/bikes		0.99	1.00	1.00		1.00	1.00			1.00		
Frt		1.00	1.00	0.85		1.00	1.00			0.98		
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.99		
Satd. Flow (prot)		1759	5085	1349		1768	5073			1582		
Flt Permitted		0.56	1.00	1.00		0.21	1.00			0.89		
Satd. Flow (perm)		1042	5085	1349		393	5073			1426		
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77
Adj. Flow (vph)	51	142	1015	206	2	61	294	4	72	328	67	38
RTOR Reduction (vph)	0	0	0	117	0	0	2	0	0	9	0	0
Lane Group Flow (vph)	0	193	1015	89	0	63	296	0	0	458	0	0
Confl. Peds. (#/hr)		8		4		4		8	7		1	1
Confl. Bikes (#/hr)				2				2			7	
Parking (#/hr)				5					5	5	5	5
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm
Protected Phases			1				1			2		
Permitted Phases	1	1		1	1	1			2			2
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43			0.46		
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Grp Cap (vph)		449	2190	581		169	2185			658		
v/s Ratio Prot			c0.20				0.06					
v/s Ratio Perm		0.19		0.07		0.16				c0.32		
v/c Ratio		0.43	0.46	0.15		0.37	0.14			0.70		
Uniform Delay, d1		12.9	13.2	11.3		12.5	11.2			13.9		
Progression Factor		1.00	1.00	1.00		1.00	1.00			1.00		
Incremental Delay, d2		3.0	0.7	0.6		6.2	0.1			6.0		
Delay (s)		15.9	13.9	11.8		18.7	11.3			19.9		
Level of Service		B	B	B		B	B			B		
Approach Delay (s)			13.8				12.6			19.9		
Approach LOS			B				B			B		
<b>Intersection Summary</b>												
HCM Average Control Delay			15.3				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			65.0				Sum of lost time (s)			7.0		
Intersection Capacity Utilization			78.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Existing  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↕	
Volume (vph)	235	76
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	1568	
Flt Permitted	0.94	
Satd. Flow (perm)	1483	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	305	99
RTOR Reduction (vph)	16	0
Lane Group Flow (vph)	426	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	684	
v/s Ratio Prot		
v/s Ratio Perm	0.29	
v/c Ratio	0.62	
Uniform Delay, d1	13.2	
Progression Factor	1.00	
Incremental Delay, d2	4.2	
Delay (s)	17.5	
Level of Service	B	
Approach Delay (s)	17.5	
Approach LOS	B	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Existing  
 Timing Plan: PM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	10	385	375	441	450	289
v/c Ratio	0.02	0.86	0.87	0.50	0.48	0.34
Control Delay	15.1	42.5	35.2	9.3	5.6	3.9
Queue Delay	0.0	0.0	0.7	2.3	0.6	0.0
Total Delay	15.1	42.5	35.8	11.6	6.2	3.9
Queue Length 50th (ft)	3	146	98	79	41	16
Queue Length 95th (ft)	m9	#234	#234	123	m62	m32
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	431	880	942	845
Starvation Cap Reductn	0	0	5	300	198	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.86	0.88	0.76	0.60	0.34

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.

HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

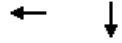
Existing  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	8	312	0	311	366	0	0	163	428	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0	
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95	
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00	
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00	
Frt				1.00	1.00		1.00	1.00			0.92	0.85	
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00	
Satd. Flow (prot)				1570	1676		1593	1467			1462	1300	
Flt Permitted				0.95	1.00		0.43	1.00			1.00	1.00	
Satd. Flow (perm)				1570	1676		720	1467			1462	1300	
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80	
Adj. Flow (vph)	0	0	0	10	385	0	375	441	0	0	204	535	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	65	65	
Lane Group Flow (vph)	0	0	0	10	385	0	375	441	0	0	385	224	
Confl. Peds. (#/hr)				7		1				34			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10	
Parking (#/hr)								5					
Turn Type				Perm			Perm					Perm	
Protected Phases					1			2			2		
Permitted Phases				1			2					2	
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5	
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0	
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60	
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5	
Lane Grp Cap (vph)				419	447		432	880			877	780	
v/s Ratio Prot					c0.23			0.30			0.26		
v/s Ratio Perm				0.01			c0.52					0.17	
v/c Ratio				0.02	0.86		0.87	0.50			0.44	0.29	
Uniform Delay, d1				16.2	20.9		10.0	6.9			6.5	5.8	
Progression Factor				0.91	0.99		1.00	1.00			0.98	1.07	
Incremental Delay, d2				0.1	18.7		20.4	2.0			1.3	0.7	
Delay (s)				14.9	39.4		30.4	8.9			7.6	7.0	
Level of Service				B	D		C	A			A	A	
Approach Delay (s)		0.0			38.8			18.8			7.4		
Approach LOS		A			D			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			18.5	HCM Level of Service							B		
HCM Volume to Capacity ratio			0.87										
Actuated Cycle Length (s)			60.0	Sum of lost time (s)						8.0			
Intersection Capacity Utilization			67.0%	ICU Level of Service						C			
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
 37: 6th Street & Madison Street

Existing  
 Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	216	1118
v/c Ratio	0.17	0.44
Control Delay	15.5	7.9
Queue Delay	0.0	0.2
Total Delay	15.5	8.1
Queue Length 50th (ft)	19	61
Queue Length 95th (ft)	35	102
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	1249	2525
Starvation Cap Reductn	0	552
Spillback Cap Reductn	0	37
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.17	0.57
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 37: 6th Street & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←						←←←	
Volume (vph)	0	0	0	14	191	0	0	0	0	0	757	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.97	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					4370						4176	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					4370						4176	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	201	0	0	0	0	0	860	258
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	90	0
Lane Group Flow (vph)	0	0	0	0	205	0	0	0	0	0	1028	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					17.0						35.0	
Effective Green, g (s)					17.0						35.0	
Actuated g/C Ratio					0.28						0.58	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					1238						2436	
v/s Ratio Prot											c0.25	
v/s Ratio Perm					0.05							
v/c Ratio					0.17						0.42	
Uniform Delay, d1					16.2						6.9	
Progression Factor					1.00						1.34	
Incremental Delay, d2					0.3						0.4	
Delay (s)					16.5						9.7	
Level of Service					B						A	
Approach Delay (s)		0.0			16.5			0.0			9.7	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.8								B	
HCM Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			42.0%							A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Existing  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	719	421	270	73
v/c Ratio	0.70	0.31	0.44	0.11
Control Delay	8.7	8.2	10.9	1.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.7	8.2	10.9	1.0
Queue Length 50th (ft)	39	31	46	0
Queue Length 95th (ft)	m39	50	91	5
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	1034	1359	611	659
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.31	0.44	0.11

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 38: 6th Street & Oak Street

Existing  
Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↔↑		↔↓	↔↓	↔↓
Volume (vph)	138	509	87	42	465	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.90	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		2947		2887	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		2947		2887	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	153	566	101	49	541	73
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	0	719	0	421	270	34
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		1035		1360	611	590
v/s Ratio Prot				0.15	c0.21	
v/s Ratio Perm		0.24				0.03
v/c Ratio		0.69		0.31	0.44	0.06
Uniform Delay, d1		12.5		7.4	7.9	6.5
Progression Factor		0.64		1.00	1.00	1.00
Incremental Delay, d2		0.4		0.6	2.3	0.2
Delay (s)		8.4		8.0	10.3	6.7
Level of Service		A		A	B	A
Approach Delay (s)		8.4		8.9		
Approach LOS		A		A		

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Existing  
 Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1088	568	256
v/c Ratio	0.58	0.87	0.97
Control Delay	12.1	32.5	69.8
Queue Delay	0.0	0.0	0.0
Total Delay	12.1	32.5	69.8
Queue Length 50th (ft)	82	172	84
Queue Length 95th (ft)	117	#281	#147
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1862	651	265
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.87	0.97

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Existing  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	228	468	272	0	0	0	0	421	28	96	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4149						1453			1427	
Flt Permitted		0.99						1.00			0.41	
Satd. Flow (perm)		4149						1453			595	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	256	526	306	0	0	0	0	533	35	137	119	0
RTOR Reduction (vph)	0	119	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	564	0	0	256	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						26.0			26.0	
Effective Green, g (s)		25.0						26.5			26.5	
Actuated g/C Ratio		0.42						0.45			0.45	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1743						647			265	
v/s Ratio Prot								0.39				
v/s Ratio Perm		0.23									c0.43	
v/c Ratio		0.56						0.87			0.97	
Uniform Delay, d1		13.1						15.0			16.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		1.3						15.0			47.2	
Delay (s)		14.3						30.0			63.3	
Level of Service		B						C			E	
Approach Delay (s)		14.3			0.0			30.0			63.3	
Approach LOS		B			A			C			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			25.5								C	
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			59.5							8.0		
Intersection Capacity Utilization			69.3%								C	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street













Existing  
Timing Plan: PM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	589	450	533
v/c Ratio	0.47	0.59	0.33
Control Delay	18.9	11.3	7.4
Queue Delay	0.0	0.0	0.1
Total Delay	18.9	11.3	7.5
Queue Length 50th (ft)	62	67	39
Queue Length 95th (ft)	91	70	40
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1243	762	1615
Starvation Cap Reductn	0	0	288
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.59	0.40
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 40: 5th Street & Madison Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↙	
Volume (vph)	0	510	26	0	0	0	0	0	0	729	67	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.99	0.99	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	0.96	
Satd. Flow (prot)		4351								1252	2715	
Flt Permitted		1.00								0.95	0.96	
Satd. Flow (perm)		4351								1252	2715	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	560	29	0	0	0	0	0	0	900	83	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	32	32	0
Lane Group Flow (vph)	0	580	0	0	0	0	0	0	0	418	501	0
Confl. Peds. (#/hr)	2		1							15		45
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		17.0								35.0	35.0	
Effective Green, g (s)		17.0								35.0	35.0	
Actuated g/C Ratio		0.28								0.58	0.58	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		1233								730	1584	
v/s Ratio Prot		c0.13										
v/s Ratio Perm										c0.33	0.18	
v/c Ratio		0.47								0.57	0.32	
Uniform Delay, d1		17.8								7.8	6.4	
Progression Factor		1.00								1.16	1.24	
Incremental Delay, d2		1.3								3.0	0.5	
Delay (s)		19.1								12.1	8.4	
Level of Service		B								B	A	
Approach Delay (s)		19.1			0.0			0.0			10.1	
Approach LOS		B			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.5								B	
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			42.0%							A		
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group



Queues  
41: 5th Street & Oak Street

Existing  
Timing Plan: PM PEAK

	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1151	126	577	124
v/c Ratio	0.75	0.17	1.18	0.29
Control Delay	13.2	2.3	122.0	8.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	2.3	122.0	8.3
Queue Length 50th (ft)	113	0	~188	24
Queue Length 95th (ft)	175	18	#327	50
Internal Link Dist (ft)	295		80	205
Turn Bay Length (ft)				
Base Capacity (vph)	1535	744	488	435
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.75	0.17	1.18	0.29





















**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.

# HCM Signalized Intersection Capacity Analysis

## 41: 5th Street & Oak Street

Existing  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 			 	
Volume (vph)	206	864	117	0	0	0	0	426	76	6	95	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.95	1.00					1.00			1.00	
Frb, ped/bikes		1.00	0.98					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		1.00	0.85					0.98			1.00	
Flt Protected		0.99	1.00					1.00			1.00	
Satd. Flow (prot)		3141	1390					1422			1462	
Flt Permitted		0.99	1.00					1.00			0.89	
Satd. Flow (perm)		3141	1390					1422			1304	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	222	929	126	0	0	0	0	490	87	7	117	0
RTOR Reduction (vph)	0	0	64	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	1151	62	0	0	0	0	563	0	0	124	0
Confl. Peds. (#/hr)	37		5				45		56	56		45
Confl. Bikes (#/hr)									19			
Parking (#/hr)								5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		1						2			2	
Permitted Phases	1	1	1							2		
Actuated Green, G (s)		22.5	22.5					15.5			15.5	
Effective Green, g (s)		22.0	22.0					15.0			15.0	
Actuated g/C Ratio		0.49	0.49					0.33			0.33	
Clearance Time (s)		3.5	3.5					3.5			3.5	
Lane Grp Cap (vph)		1536	680					474			435	
v/s Ratio Prot								c0.40				
v/s Ratio Perm		0.37	0.04								0.10	
v/c Ratio		0.75	0.09					1.19			0.29	
Uniform Delay, d1		9.3	6.2					15.0			11.0	
Progression Factor		1.00	1.00					1.00			0.57	
Incremental Delay, d2		3.4	0.3					104.0			1.6	
Delay (s)		12.7	6.4					119.0			7.9	
Level of Service		B	A					F			A	
Approach Delay (s)		12.1			0.0			119.0			7.9	
Approach LOS		B			A			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			43.0									HCM Level of Service D
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			70.5%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	5.9	32.1	0.15	16.4	C
Madison Street	IV	25	18.9	6.2	25.1	0.07	10.2	D
Oak Street	IV	25	19.3	12.7	32.0	0.07	8.2	E
Total	IV		64.4	24.8	89.2	0.29	11.7	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	13.4	29.4	0.06	7.4	E
Madison Street	IV	25	19.5	12.3	31.8	0.07	8.3	E
Jackson Street	IV	25	18.8	8.0	26.8	0.07	9.5	D
Alice Street	IV	25	19.7	8.4	28.1	0.07	9.5	D
Harrison Street	IV	25	19.0	11.9	30.9	0.07	8.3	E
Webster Street	IV	25	18.8	26.7	45.5	0.07	5.6	F
Total	IV		111.8	80.7	192.5	0.42	7.9	E

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	9.2	24.5	0.06	8.5	E
9th Street	IV	25	13.2	2.3	15.5	0.05	11.6	D
8th Street	IV	25	13.9	7.8	21.7	0.05	8.7	E
7th Street	IV	25	13.6	18.2	31.8	0.05	5.8	F
Total	IV		56.0	37.5	93.5	0.21	8.1	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	13.6	27.1	0.05	6.7	F
9th Street	IV	25	14.7	1.1	15.8	0.06	12.6	D
10th St	IV	25	13.3	2.0	15.3	0.05	11.8	D
11th St	IV	25	14.7	8.4	23.1	0.06	8.6	E
12th St	IV	25	12.5	13.8	26.3	0.05	6.5	F
Total	IV		68.7	38.9	107.6	0.26	8.7	E

# **TRIP GENERATION**









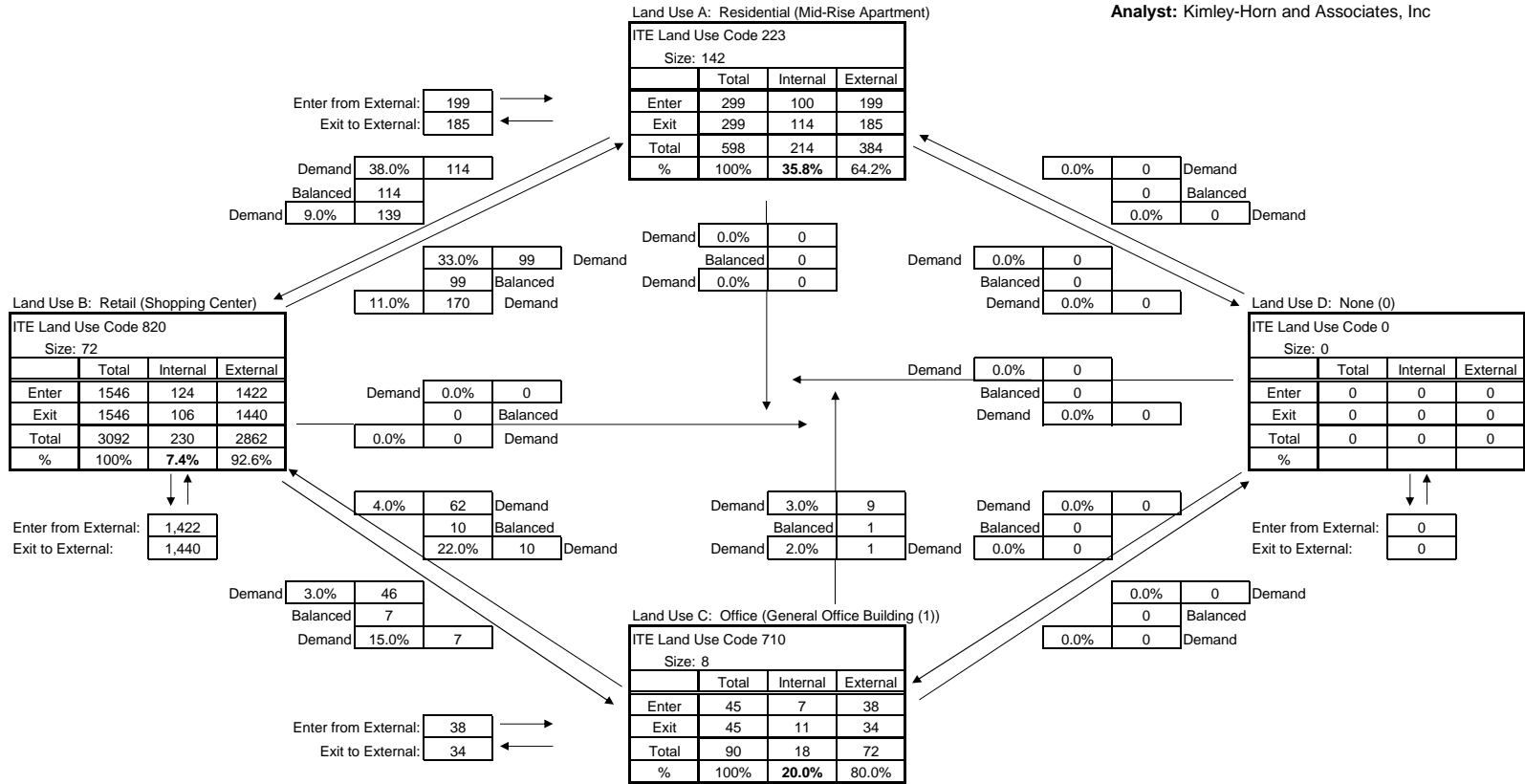


Site #	Land Use	Units <sup>1</sup>	Trip Rate						Trips								
			Daily	AM Peak			PM Peak			Daily	AM Peak			PM Peak			
				In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total	
47	Mid-Rise Apartment (Land Use 223)	203	4.20	0.09	0.21	0.30	0.23	0.16	0.39	854	19	42	61	46	33	79	
	Internal Capture Reduction		6.70%			2.82%			6.90%	-57	-1	-1	-2	-3	-2	-5	
	Net Trips After Internal Capture Reduction									797	18	41	59	43	31	74	
	Mode Split Reduction		55.6%			55.6%			55.6%	-443	-10	-23	-33	-24	-17	-41	
	Net Trips After Mode Split Reduction									354	8	18	26	19	14	33	
	General Office Building (Land Use 710)	-26.2	11.01	1.36	0.19	1.55	0.25	1.24	1.49	-290	-36	-5	-41	-7	-32	-39	
	Internal Capture Reduction									0	0	0	0	0	0	0	
	Net Trips After Internal Capture Reduction									-290	-36	-5	-41	-7	-32	-39	
	Mode Split Reduction		43.0%			43.0%			43.0%	125	15	3	18	3	14	17	
	Net Trips After Mode Split Reduction									-165	-21	-2	-23	-4	-18	-22	
	Shopping Center (Land Use 820)	10	42.94	0.61	0.39	1.00	1.83	1.90	3.73	430	6	4	10	18	19	37	
	Internal Capture Reduction		6.70%			2.82%			6.90%	-29	0	0	0	-1	-2	-3	
	Net Trips After Internal Capture Reduction									401	6	4	10	17	17	34	
	Mode Split Reduction		40.0%			41.0%			40.0%	-160	-2	-2	-4	-7	-7	-14	
	Net Trips After Mode Split Reduction									241	4	2	6	10	10	20	
Pass-by Reduction	15.0%				15.0%			34.0%	-36	-1	0	-1	-3	-4	-7		
Net Trips After Pass-by Reduction									205	3	2	5	7	6	13		
Net New Vehicle Trips for Land Use								394	-10	18	8	22	2	24			
1331 Harrison St	Mid-Rise Apartment (Land Use 223)	98	4.20	0.09	0.21	0.30	0.23	0.16	0.39	412	9	20	29	22	16	38	
	Internal Capture Reduction		9.50%			0.00%			11.11%	-39	0	0	0	-2	-2	-4	
	Net Trips After Internal Capture Reduction									373	9	20	29	20	14	34	
	Mode Split Reduction		55.6%			55.6%			55.6%	-207	-5	-11	-16	-11	-8	-19	
	Net Trips After Mode Split Reduction									166	4	9	13	9	6	15	
	Shopping Center (Land Use 820)	9	42.94	0.61	0.39	1.00	1.83	1.90	3.73	388	5	4	9	16	18	34	
	Internal Capture Reduction		9.50%			0.00%			11.11%	-37	0	0	0	-2	-2	-4	
	Net Trips After Internal Capture Reduction									351	5	4	9	14	16	30	
	Mode Split Reduction		40.0%			41.0%			40.0%	-140	-2	-2	-4	-6	-6	-12	
	Net Trips After Mode Split Reduction									211	3	2	5	8	10	18	
	Pass-by Reduction		15.0%			15.0%			34.0%	-32	0	-1	-1	-3	-3	-6	
	Net Trips After Pass-by Reduction									179	3	1	4	5	7	12	
	Net New Vehicle Trips for Land Use								345	7	10	17	14	13	27		
	630 Webster St	Mid-Rise Apartment (Land Use 223)	27	4.20	0.09	0.21	0.30	0.23	0.16	0.39	114	3	5	8	6	5	11
		Internal Capture Reduction		9.00%			0.00%			0.00%	-10	0	0	0	0	0	0
Net Trips After Internal Capture Reduction										104	3	5	8	6	5	11	
Mode Split Reduction		55.6%				55.6%			55.6%	-58	-2	-2	-4	-3	-3	-6	
Net Trips After Mode Split Reduction										46	1	3	4	3	2	5	
Shopping Center (Land Use 820)		2	42.94	0.61	0.39	1.00	1.83	1.90	3.73	86	1	1	2	4	3	7	
Internal Capture Reduction			9.00%			0.00%			0.00%	-8	0	0	0	0	0	0	
Net Trips After Internal Capture Reduction										78	1	1	2	4	3	7	
Mode Split Reduction			40.0%			41.0%			40.0%	-31	0	-1	-1	-2	-1	-3	
Net Trips After Mode Split Reduction										47	1	0	1	2	2	4	
Pass-by Reduction			15.0%			15.0%			34.0%	-7	0	0	0	-1	0	-1	
Net Trips After Pass-by Reduction										40	1	0	1	1	2	3	
Net New Vehicle Trips for Land Use									86	2	3	5	4	4	8		
<b>Total New Vehicle Trips</b>									<b>26837</b>	<b>1370</b>	<b>725</b>	<b>2095</b>	<b>996</b>	<b>1399</b>	<b>2395</b>		

<sup>1</sup>The units are dependent on the land use:  
 - Mid-Rise Apartment - Dwelling Units  
 - High-Rise Apartment - Dwelling Units  
 - General Office Building - 1,000 Square Feet  
 - Shopping Center - 1,000 Square Feet  
 - Automobile Care Center - 1,000 Square Feet  
 - Hotel - # of Rooms  
 - Middle School/Junior High School - 1,000 Square Feet  
 - High School - 1,000 Square Feet  
 - Junior/Community College - 1,000 Square Feet  
 - General Light Industrial - 1,000 Square Feet  
 - Furniture Store - 1,000 Square Feet  
 - Copy, Print and Express Ship Store - 1,000 Square Feet

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

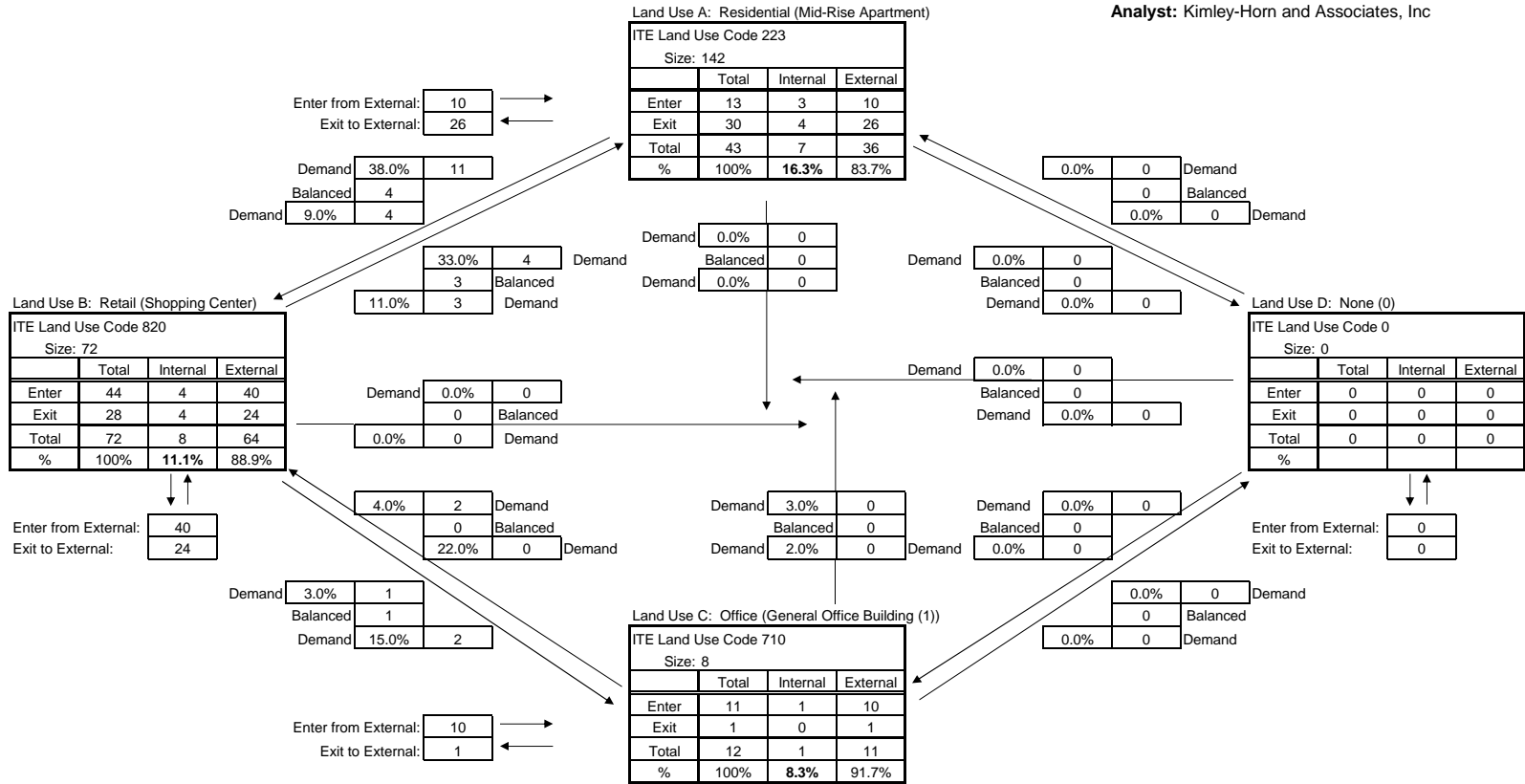


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	199	1,422	38	0	1,659
Exit	185	1,440	34	0	1,659
Total	384	2,862	72	0	3,318
Single Use Trip Gen Estimate	598	3,092	90	0	3,780

Overall Internal Capture = **12.22%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

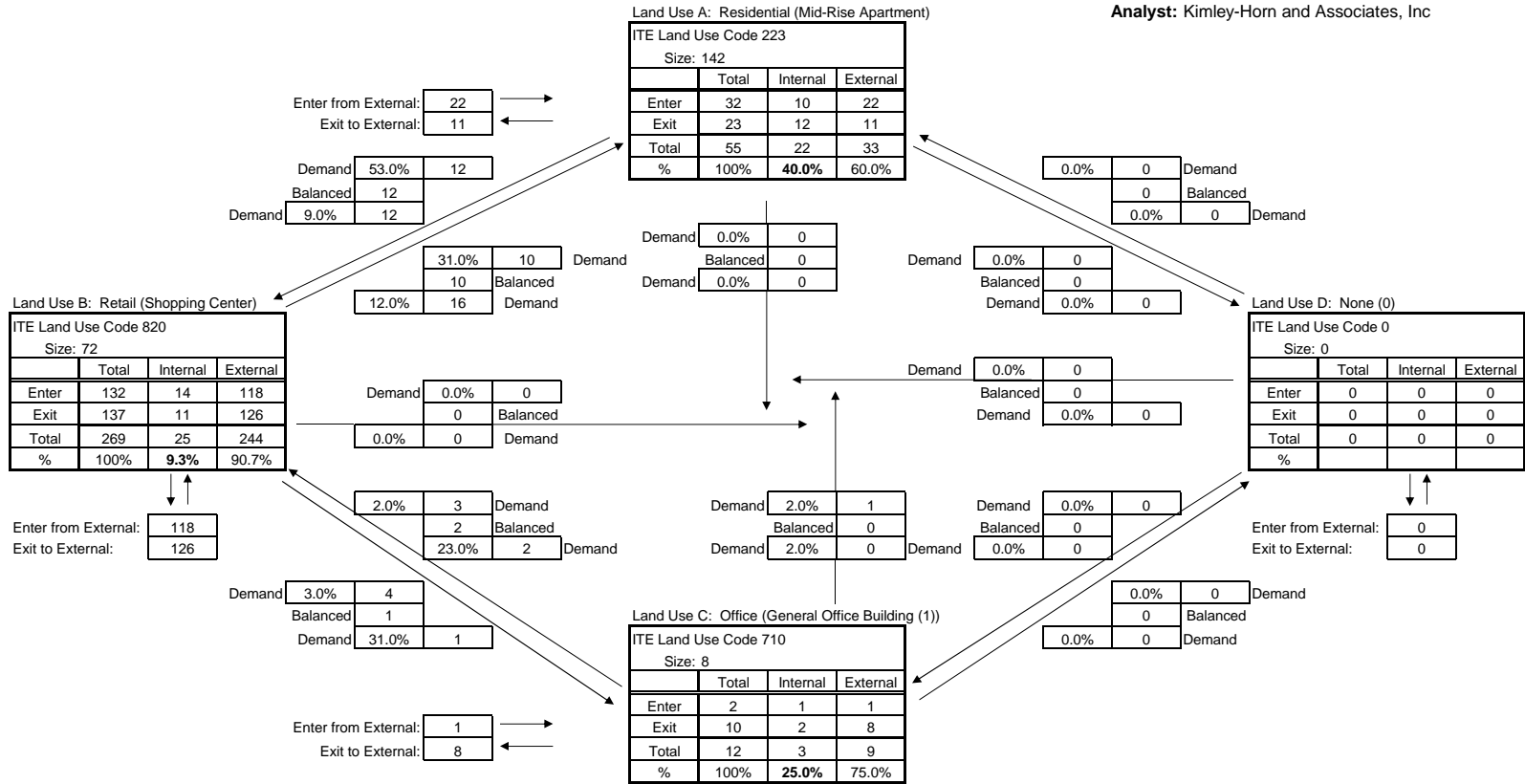


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	10	40	10	0	60
Exit	26	24	1	0	51
Total	36	64	11	0	111
Single Use Trip Gen Estimate	43	72	12	0	127

Overall Internal Capture = **12.60%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

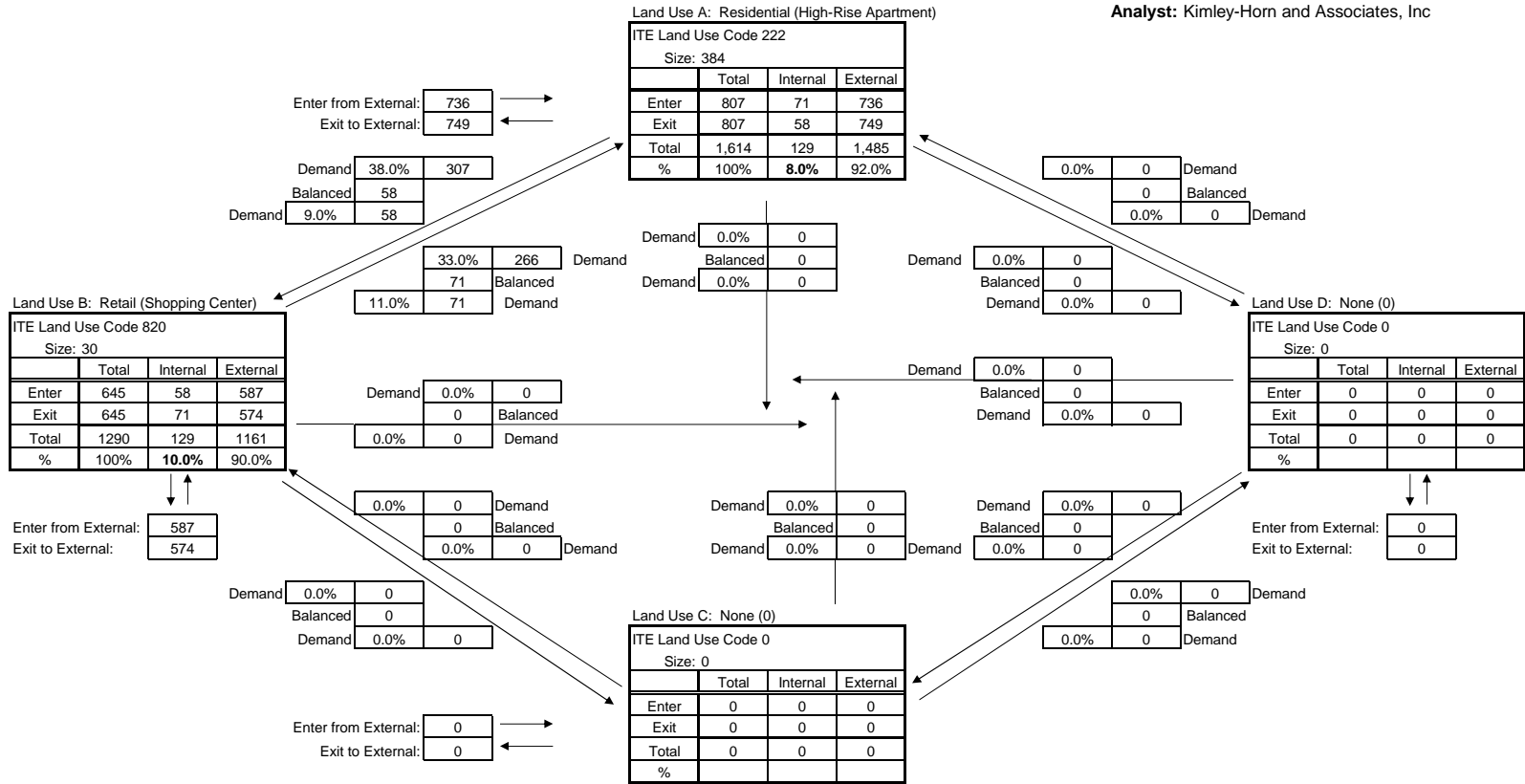


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	22	118	1	0	141
Exit	11	126	8	0	145
Total	33	244	9	0	286
Single Use Trip Gen Estimate	55	269	12	0	336

Overall Internal Capture = **14.88%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

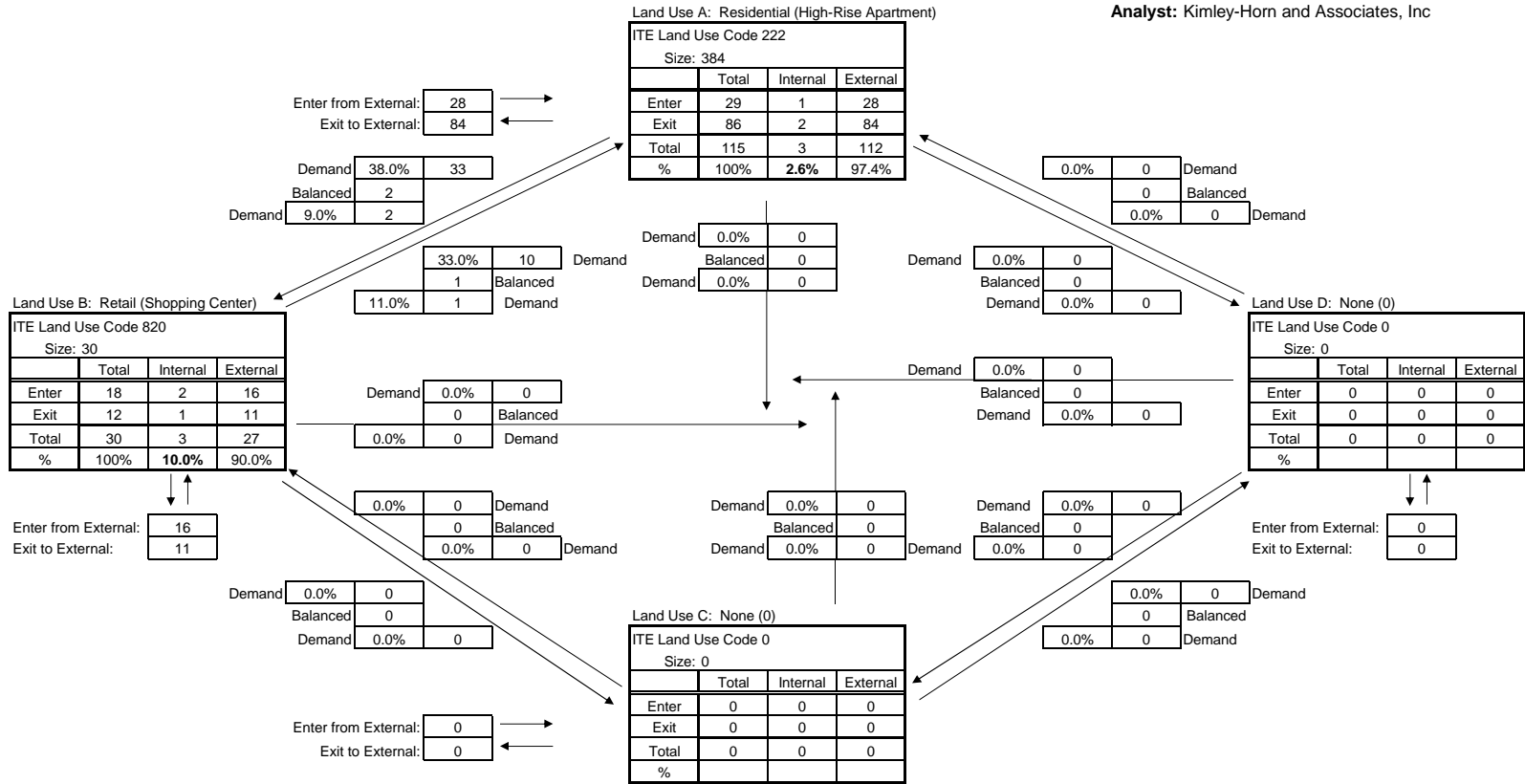


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	736	587	0	0	1,323
Exit	749	574	0	0	1,323
Total	1,485	1,161	0	0	2,646
Single Use Trip Gen Estimate	1,614	1,290	0	0	2,904

Overall Internal Capture = **8.88%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

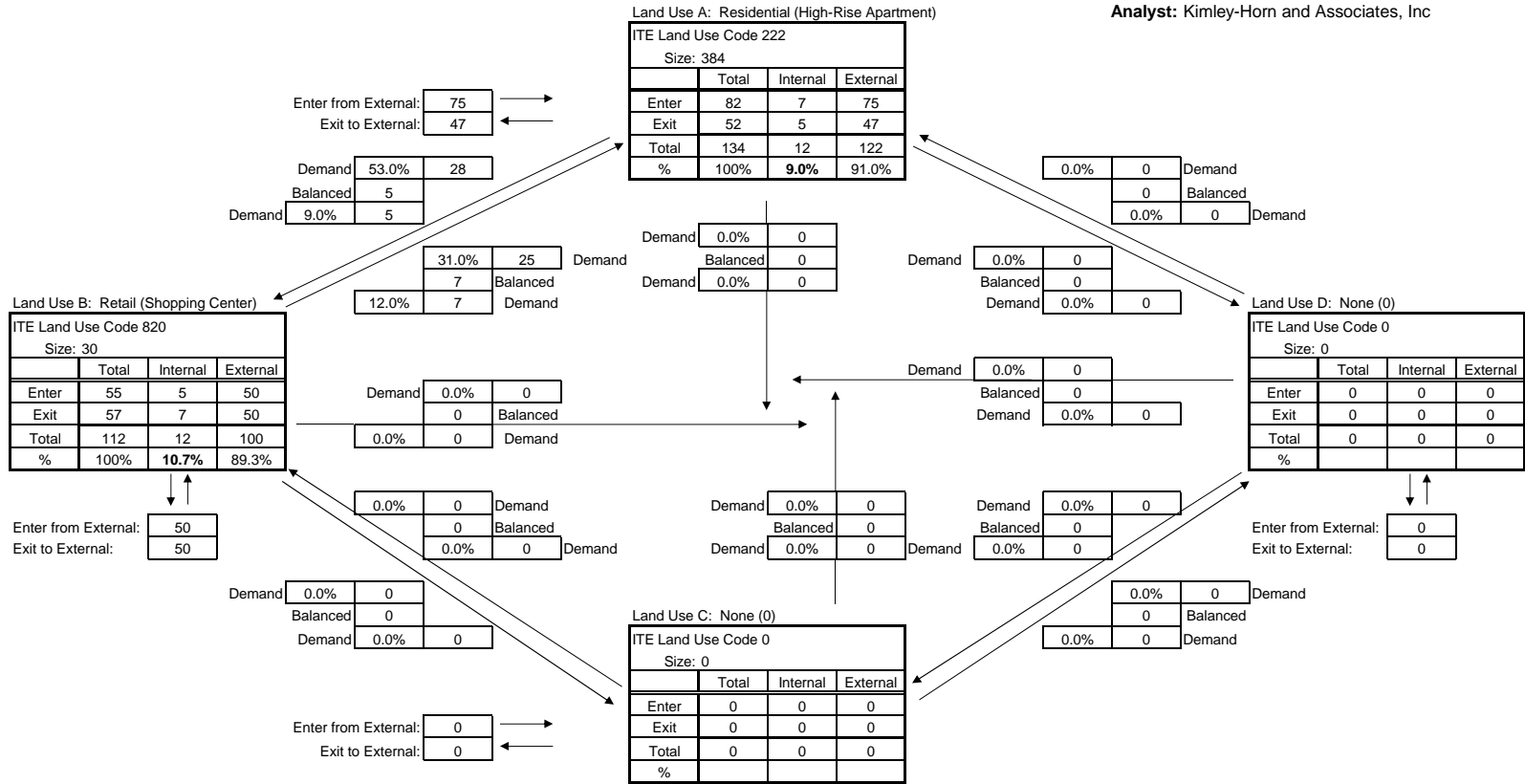


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	28	16	0	0	44
Exit	84	11	0	0	95
Total	112	27	0	0	139
Single Use Trip Gen Estimate	115	30	0	0	145

Overall Internal Capture = **4.14%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc



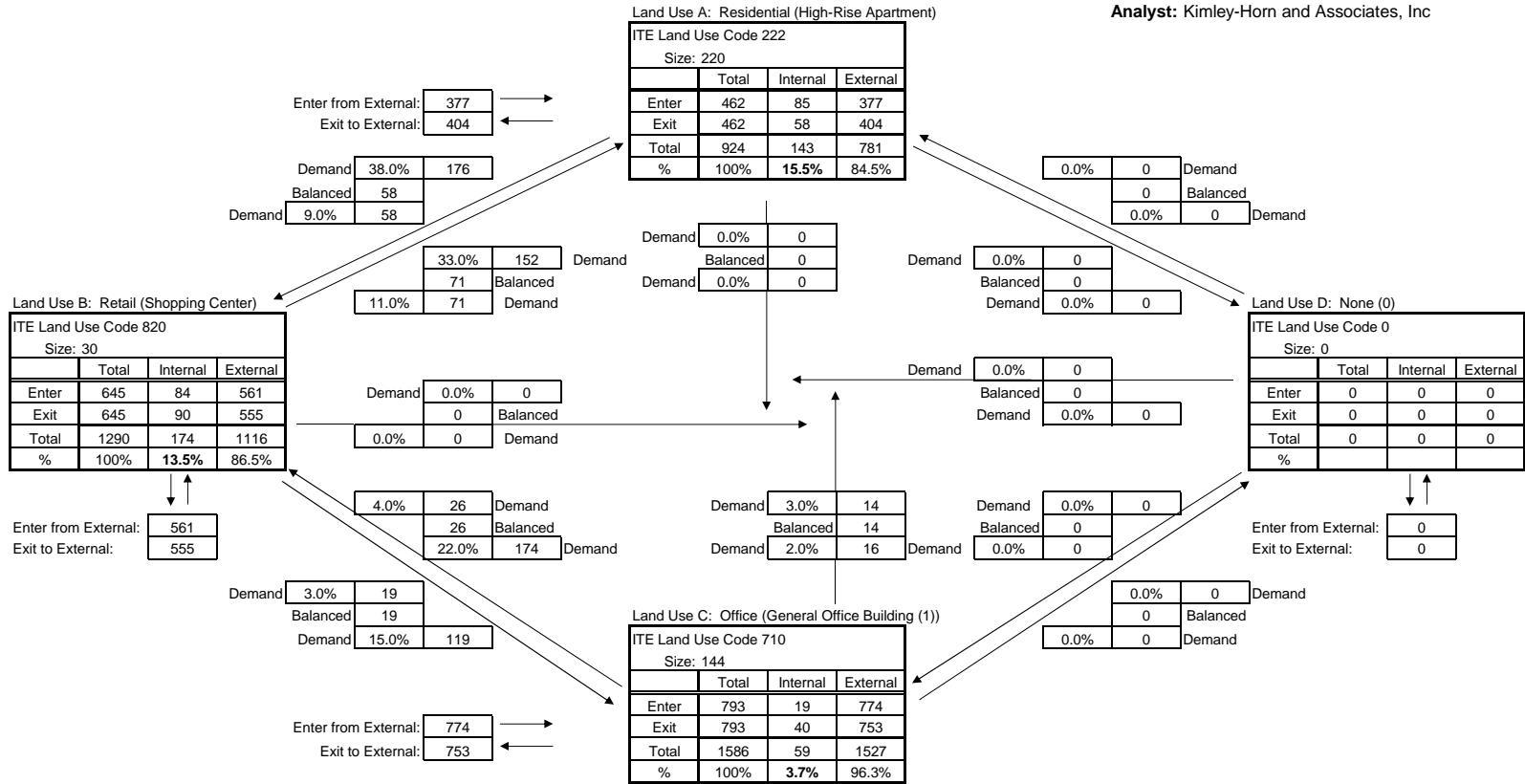
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	75	50	0	0	125
Exit	47	50	0	0	97
Total	122	100	0	0	222
Single Use Trip Gen Estimate	134	112	0	0	246

Overall Internal Capture = **9.76%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

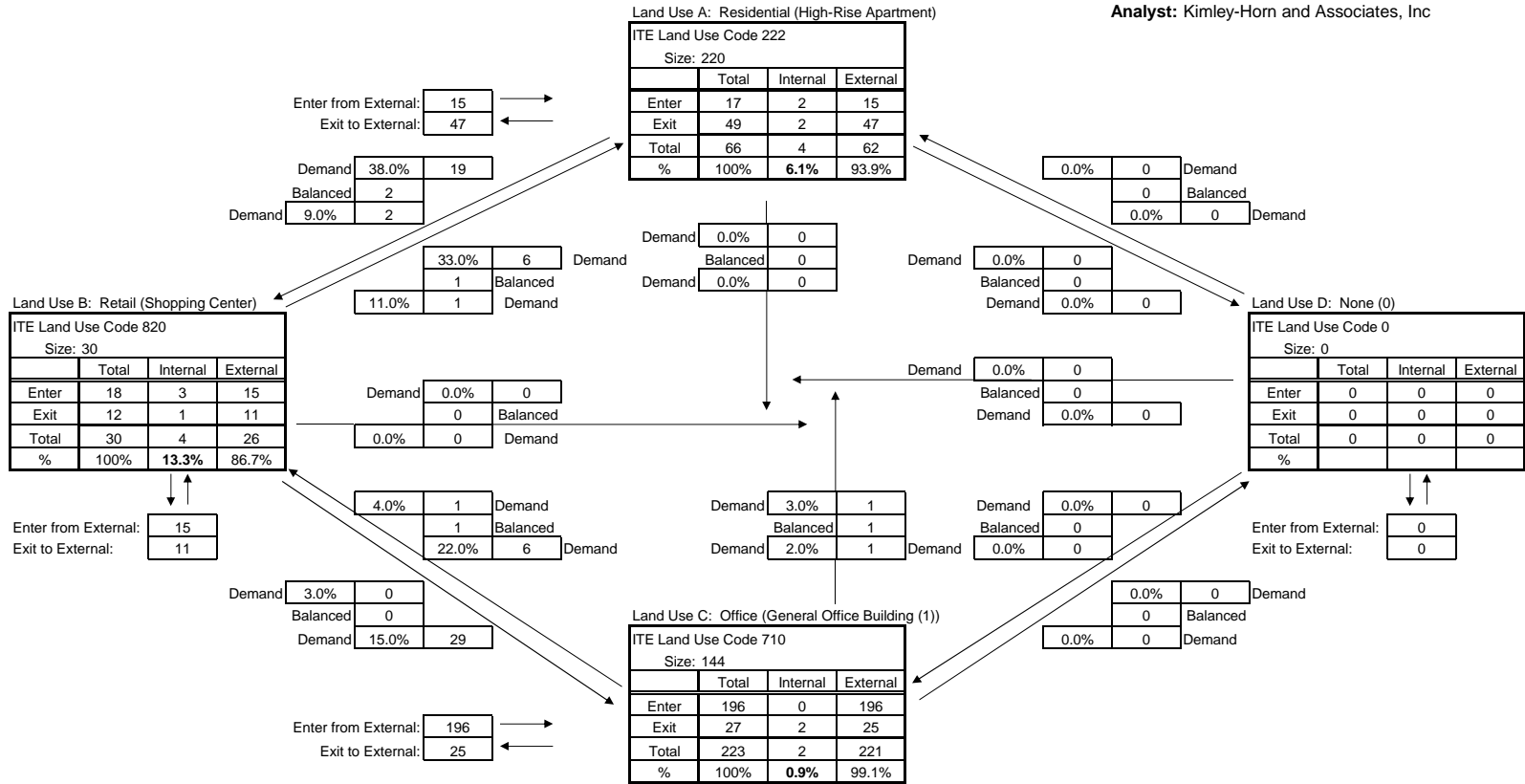


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	377	561	774	0	1,712
Exit	404	555	753	0	1,712
Total	781	1,116	1,527	0	3,424
Single Use Trip Gen Estimate	924	1,290	1,586	0	3,800

Overall Internal Capture = **9.89%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

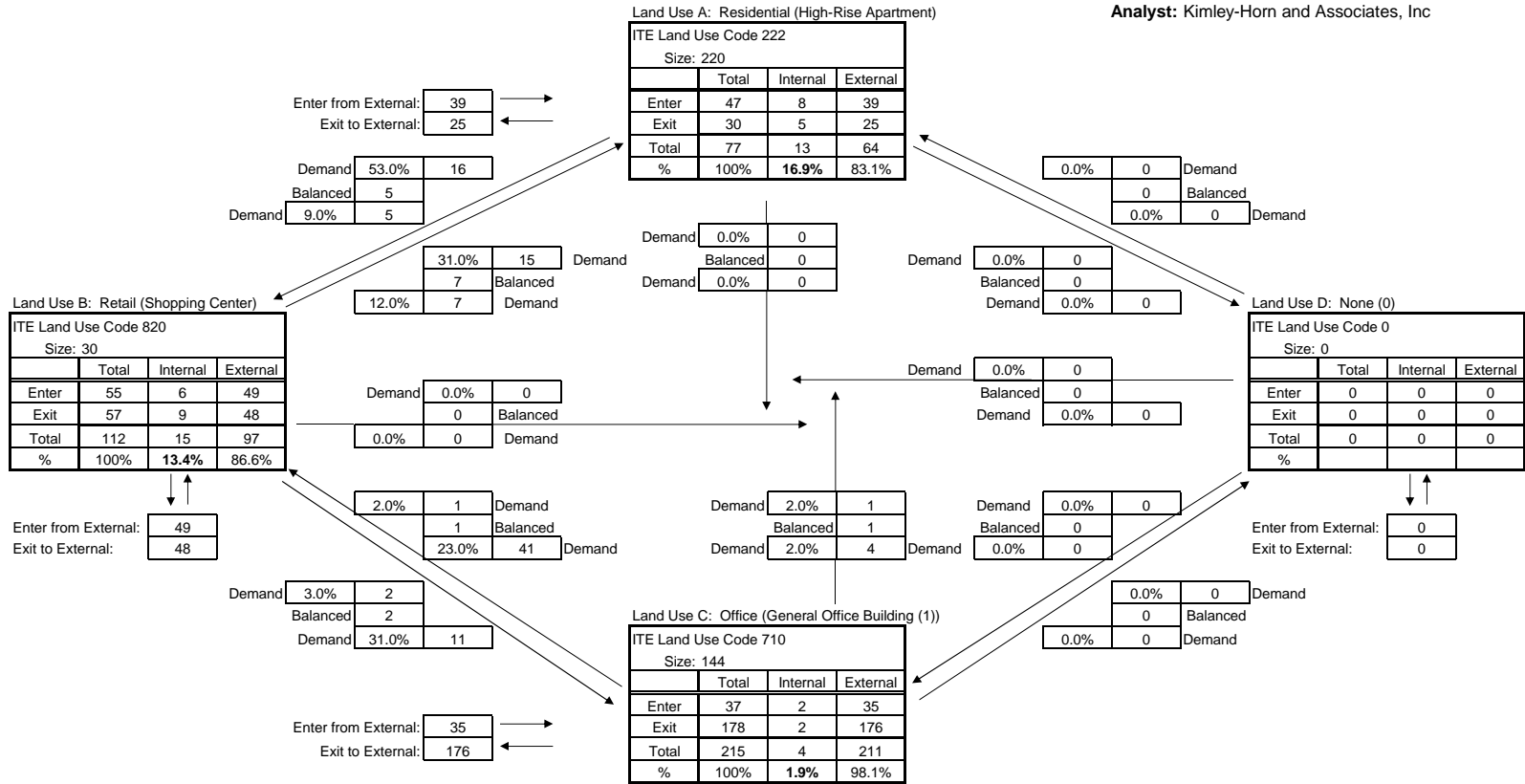


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	15	15	196	0	226
Exit	47	11	25	0	83
Total	62	26	221	0	309
Single Use Trip Gen Estimate	66	30	223	0	319

Overall Internal Capture = **3.13%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: BART Station  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

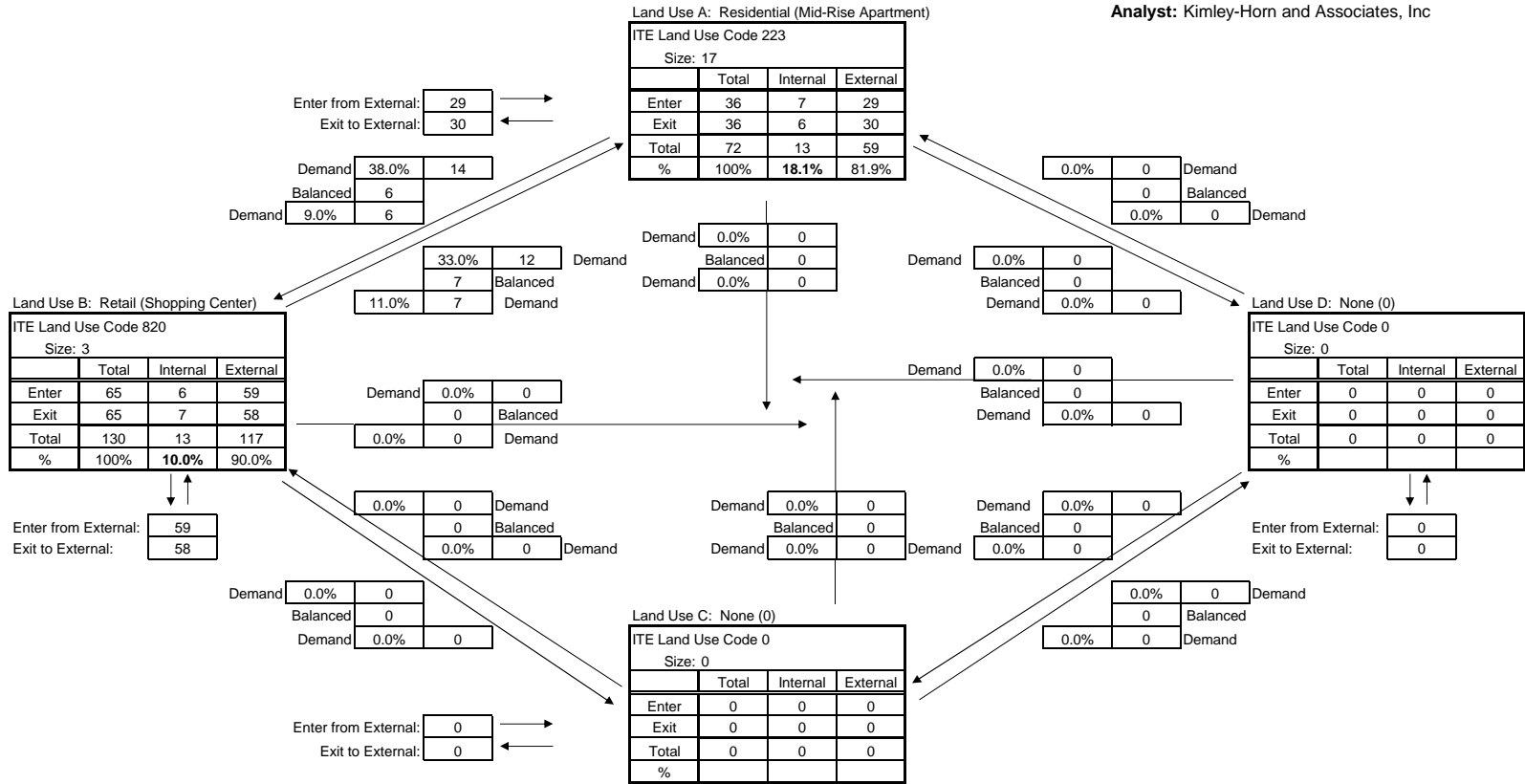


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	39	49	35	0	123
Exit	25	48	176	0	249
Total	64	97	211	0	372
Single Use Trip Gen Estimate	77	112	215	0	404

Overall Internal Capture = **7.92%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #3  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

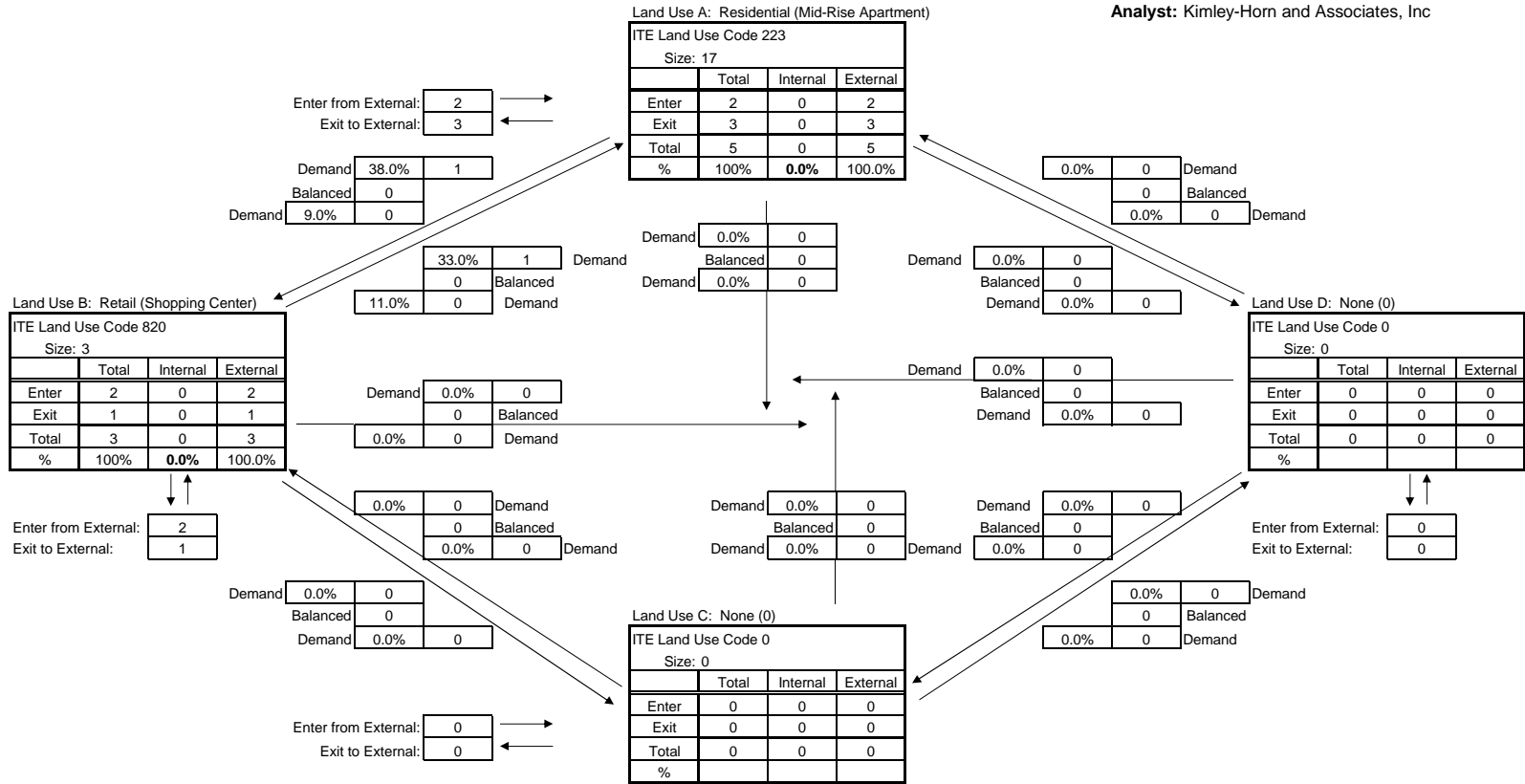


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	29	59	0	0	88
Exit	30	58	0	0	88
Total	59	117	0	0	176
Single Use Trip Gen Estimate	72	130	0	0	202

Overall Internal Capture = **12.87%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #3  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

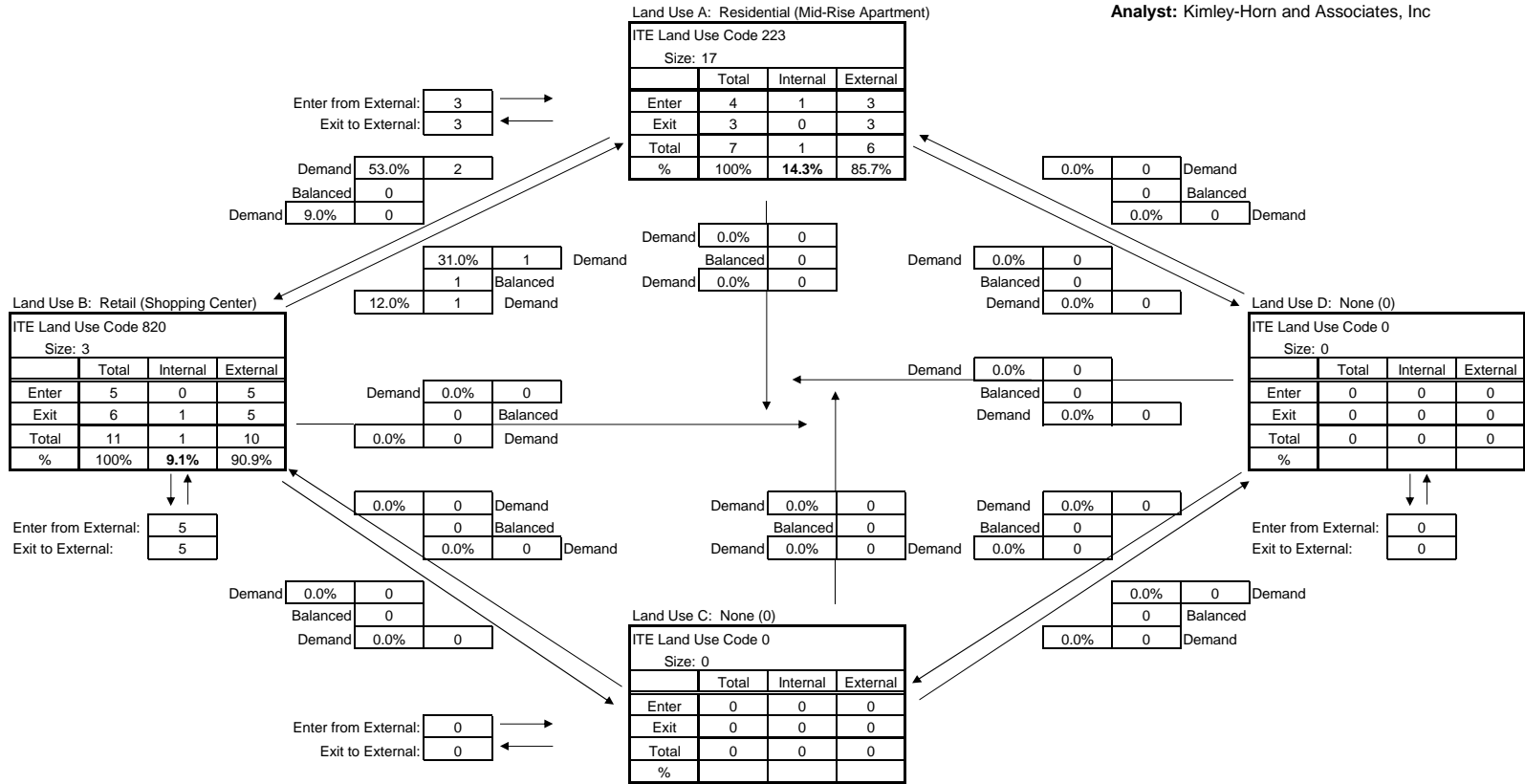


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	2	2	0	0	4
Exit	3	1	0	0	4
Total	5	3	0	0	8
Single Use Trip Gen Estimate	5	3	0	0	8

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #3  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

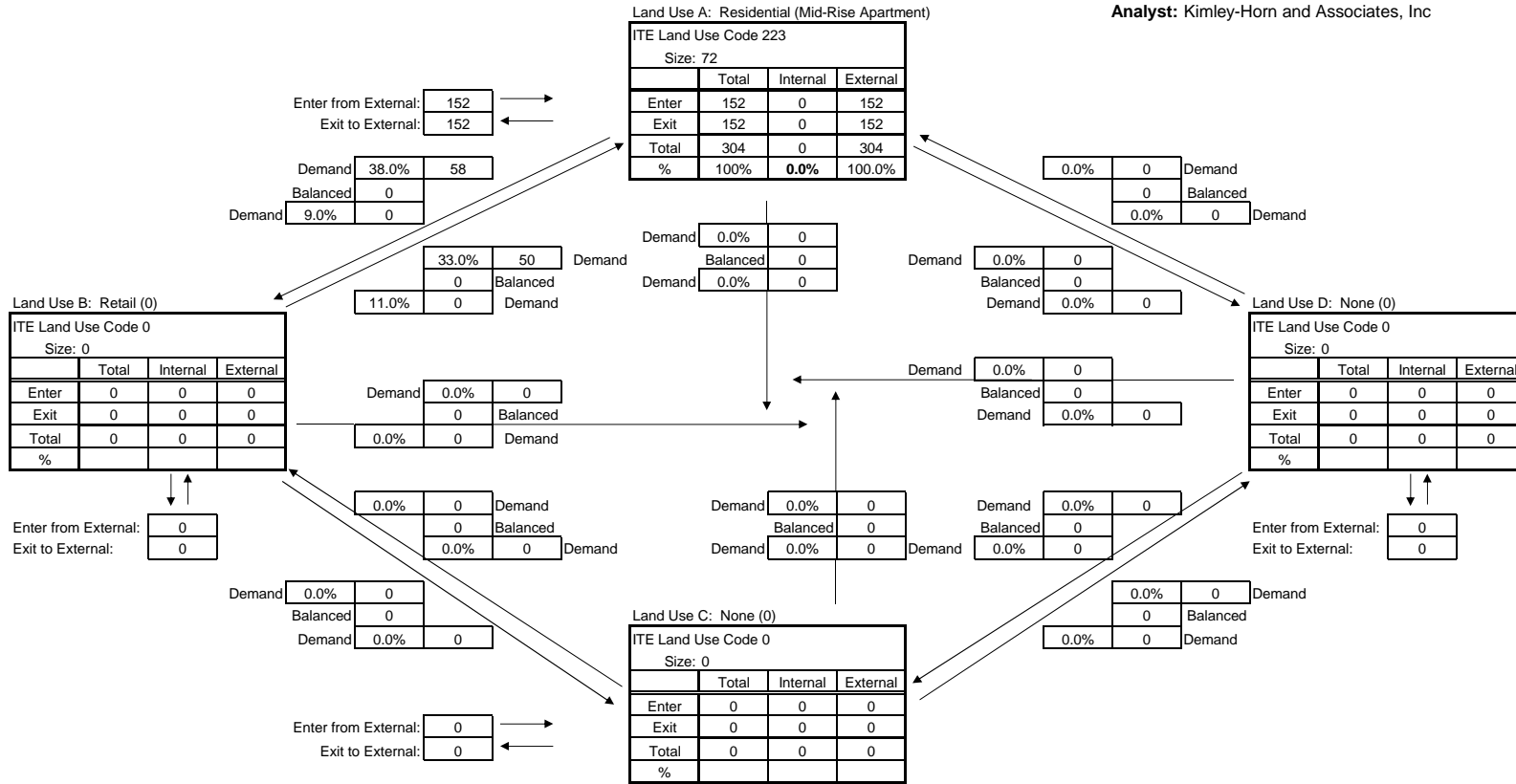


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	3	5	0	0	8
Exit	3	5	0	0	8
Total	6	10	0	0	16
Single Use Trip Gen Estimate	7	11	0	0	18

Overall Internal Capture = **11.11%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #5  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

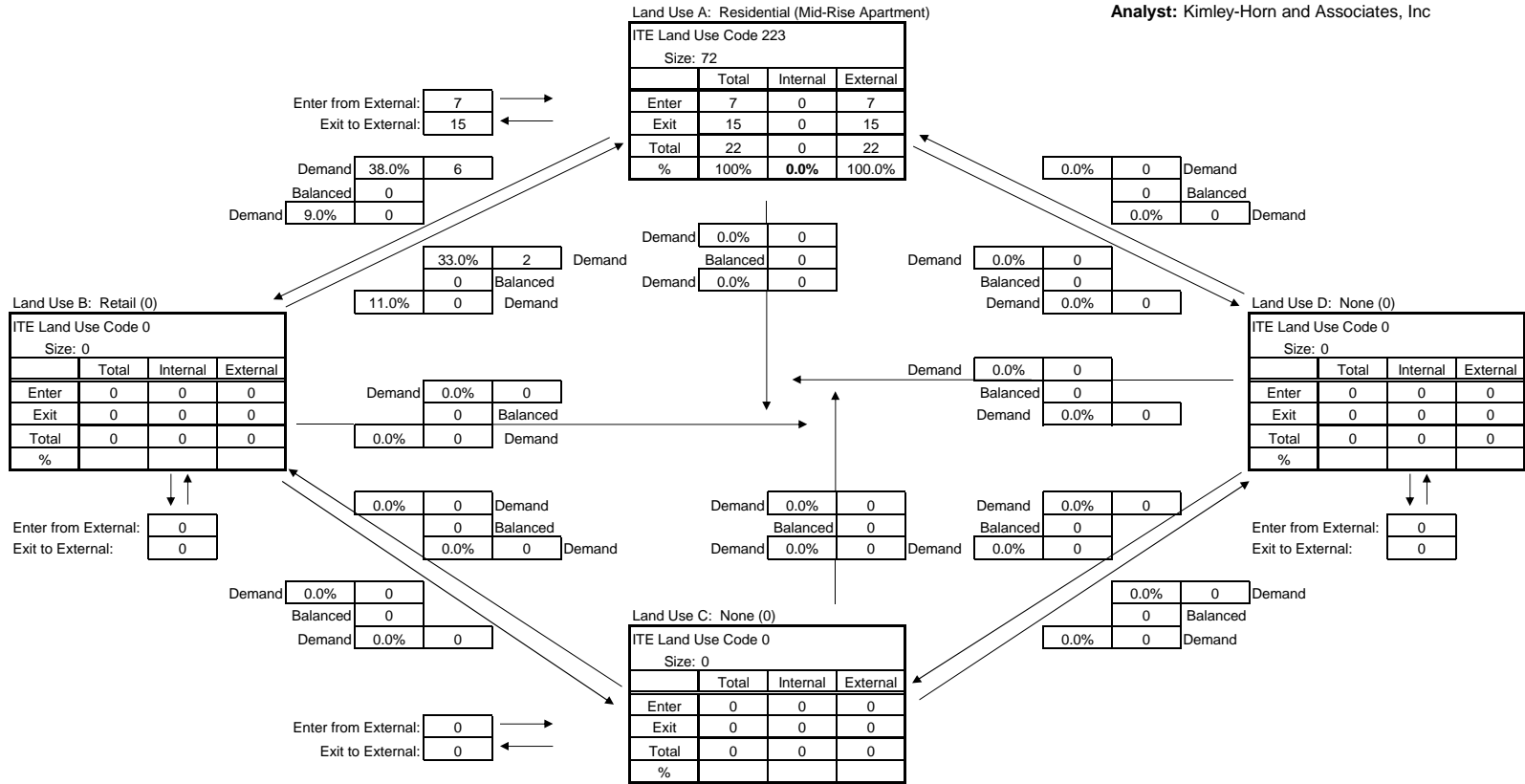


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	152	0	0	0	152
Exit	152	0	0	0	152
Total	304	0	0	0	304
Single Use Trip Gen Estimate	304	0	0	0	304

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #5  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc



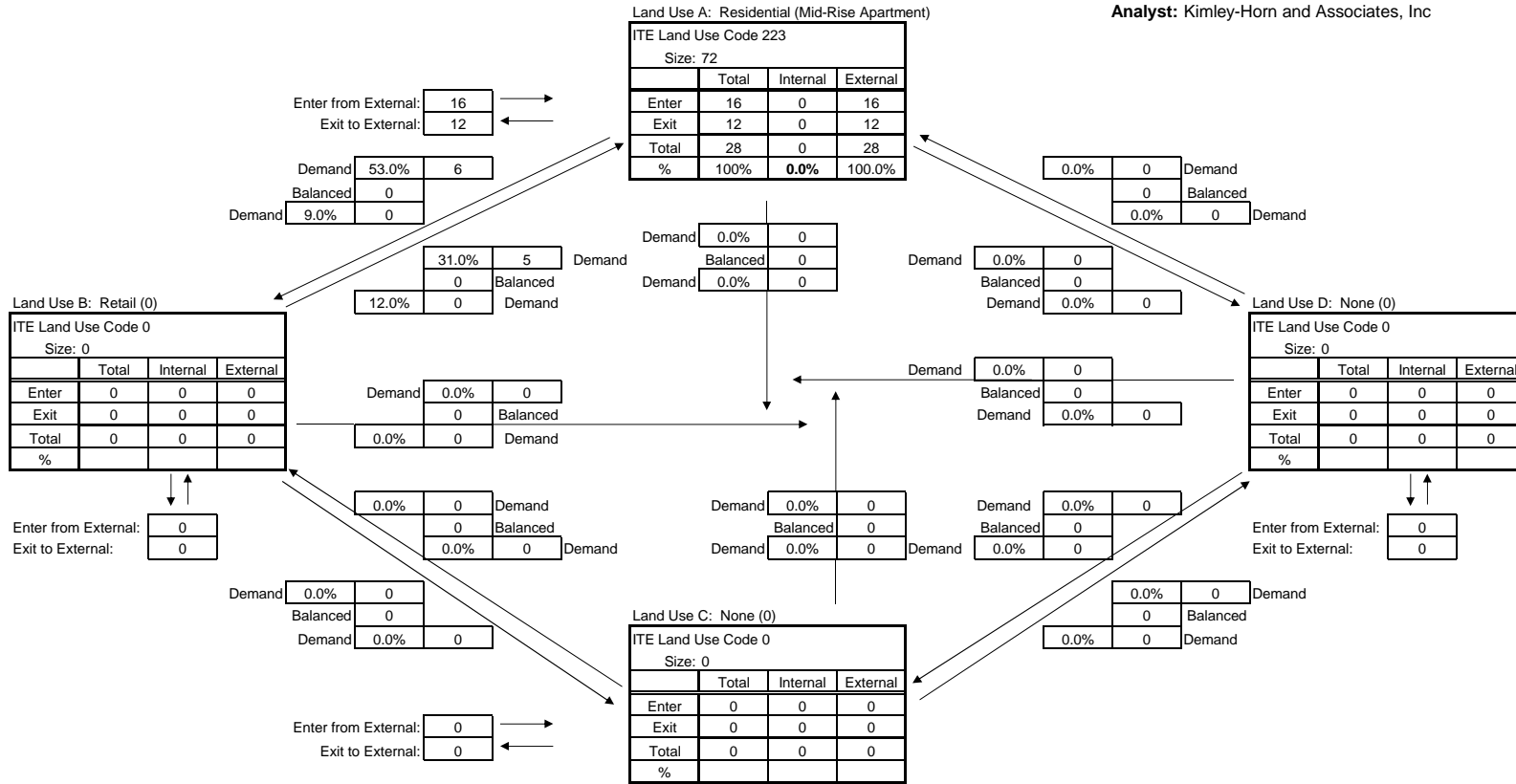
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	7	0	0	0	7
Exit	15	0	0	0	15
Total	22	0	0	0	22
Single Use Trip Gen Estimate	22	0	0	0	22

Overall Internal Capture = **0.00%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #5  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

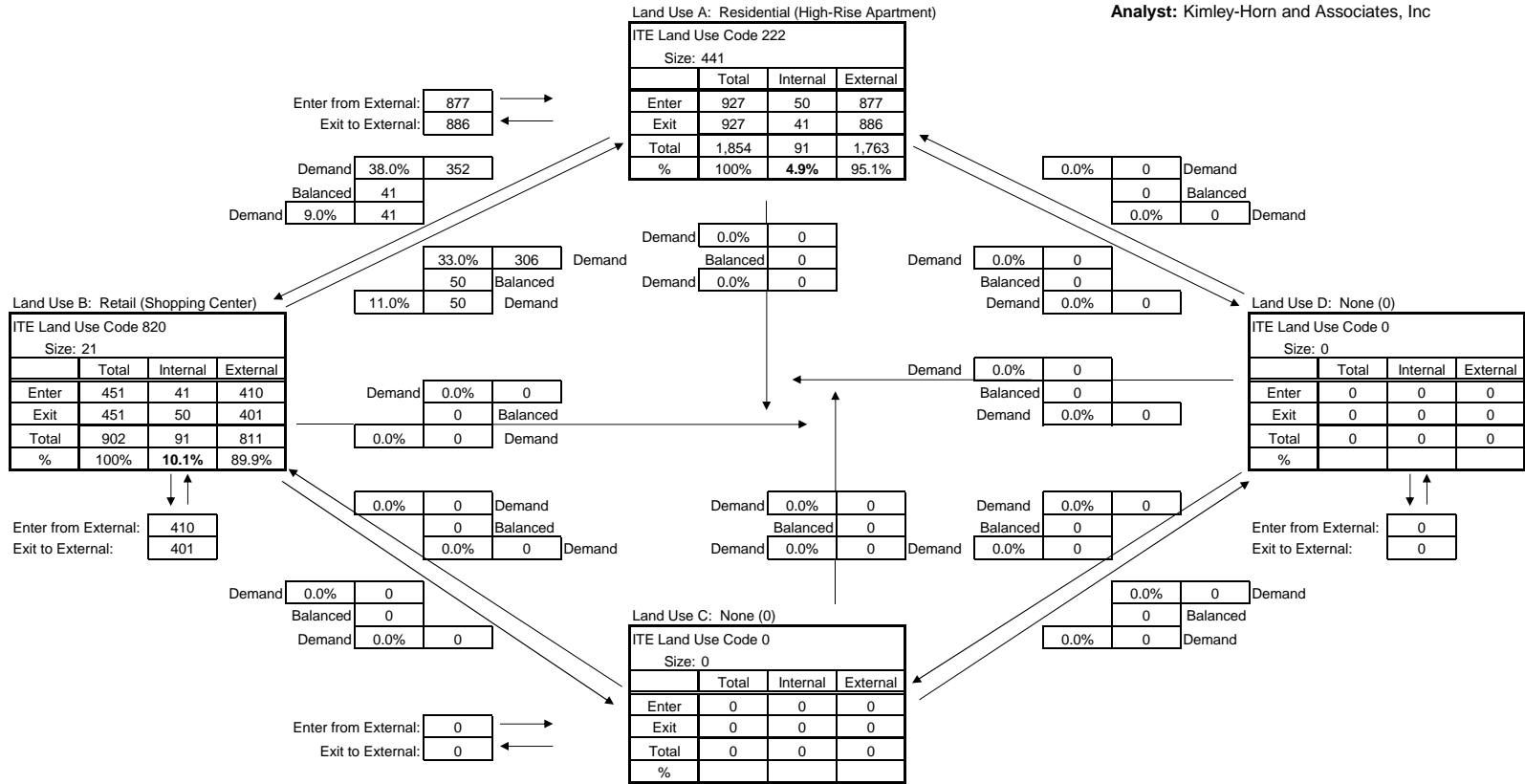


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	16	0	0	0	16
Exit	12	0	0	0	12
Total	28	0	0	0	28
Single Use Trip Gen Estimate	28	0	0	0	28

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #6  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

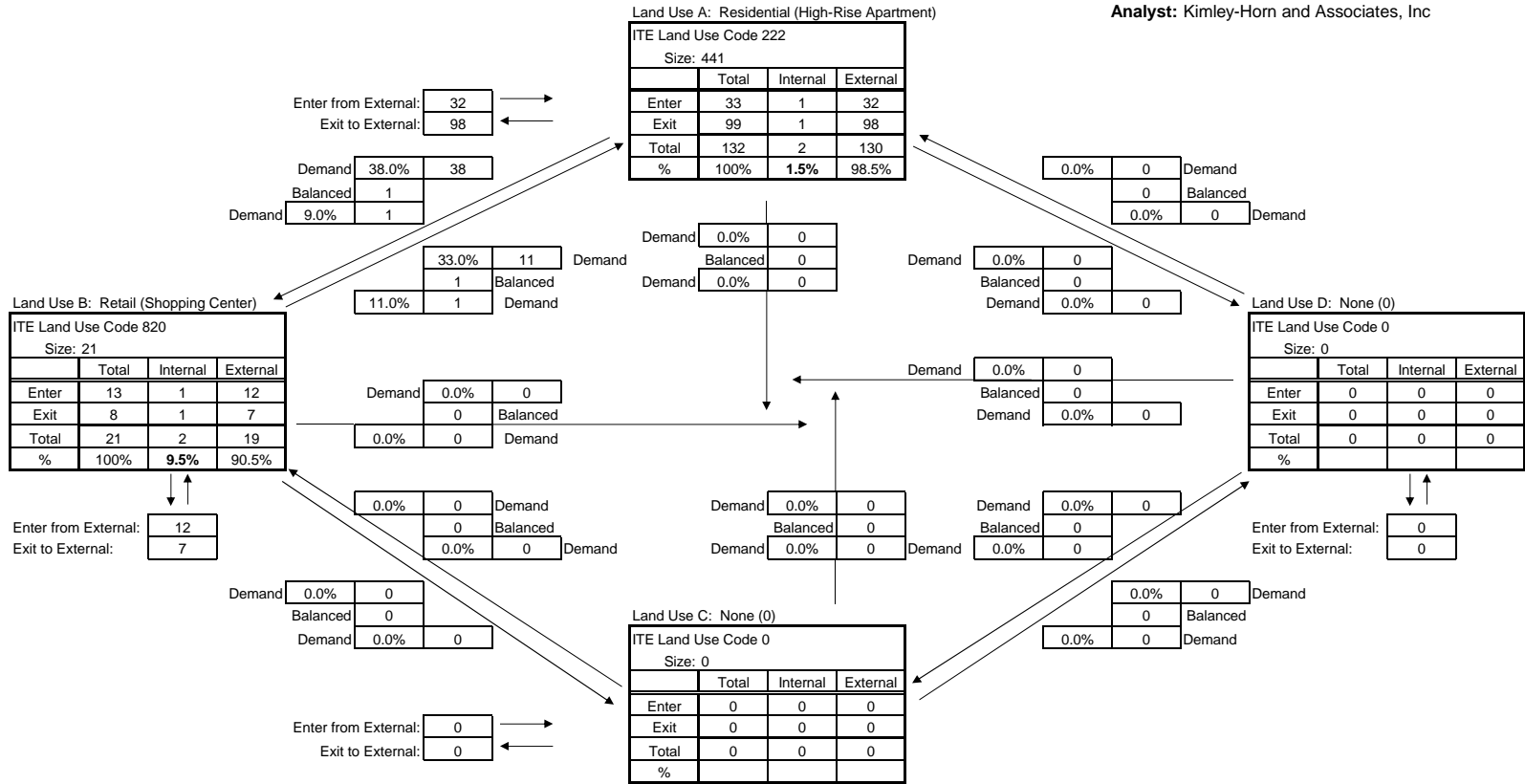


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	877	410	0	0	1,287
Exit	886	401	0	0	1,287
Total	1,763	811	0	0	2,574
Single Use Trip Gen Estimate	1,854	902	0	0	2,756

Overall Internal Capture = **6.60%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #6  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

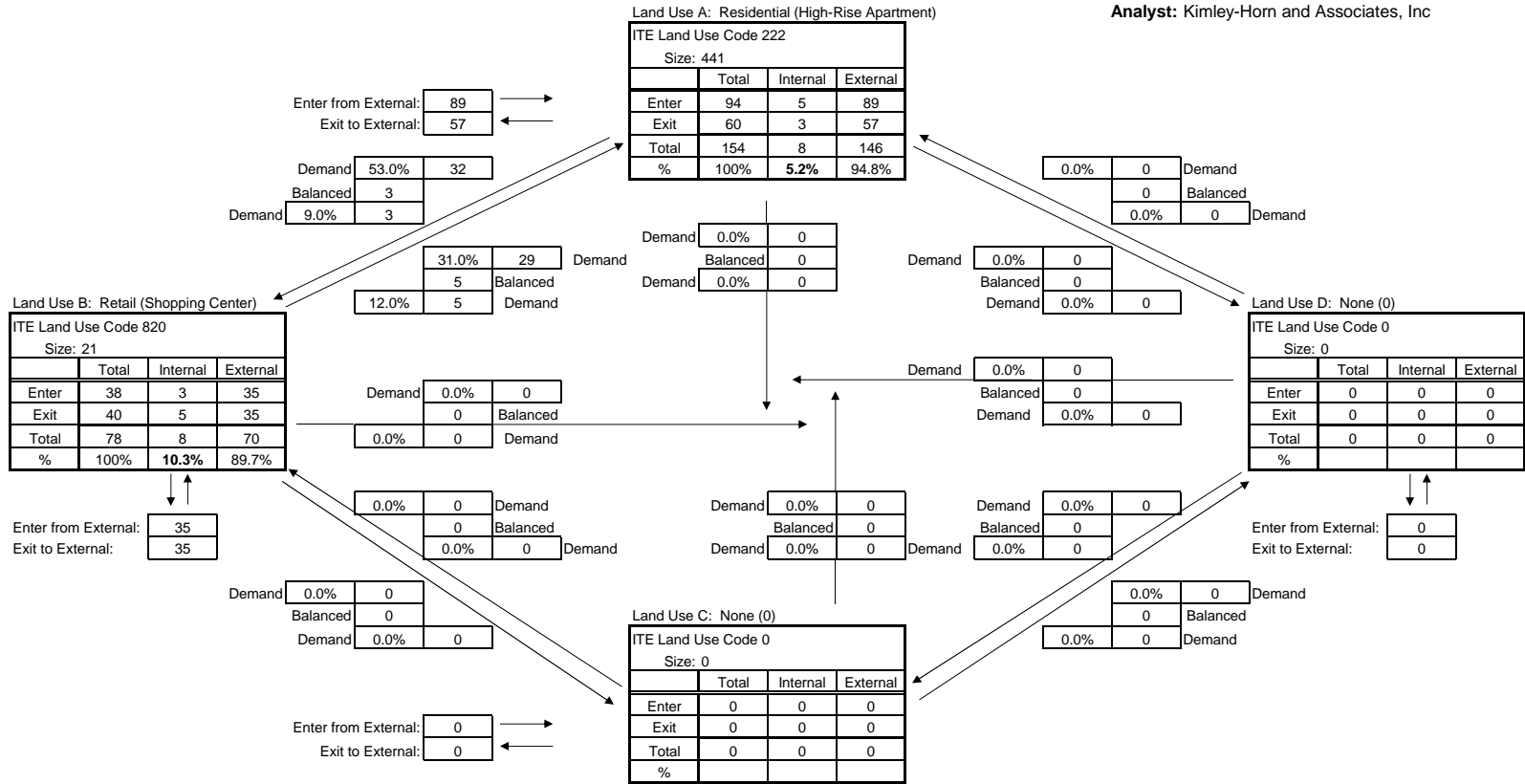


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	32	12	0	0	44
Exit	98	7	0	0	105
Total	130	19	0	0	149
Single Use Trip Gen Estimate	132	21	0	0	153

Overall Internal Capture = **2.61%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #6  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

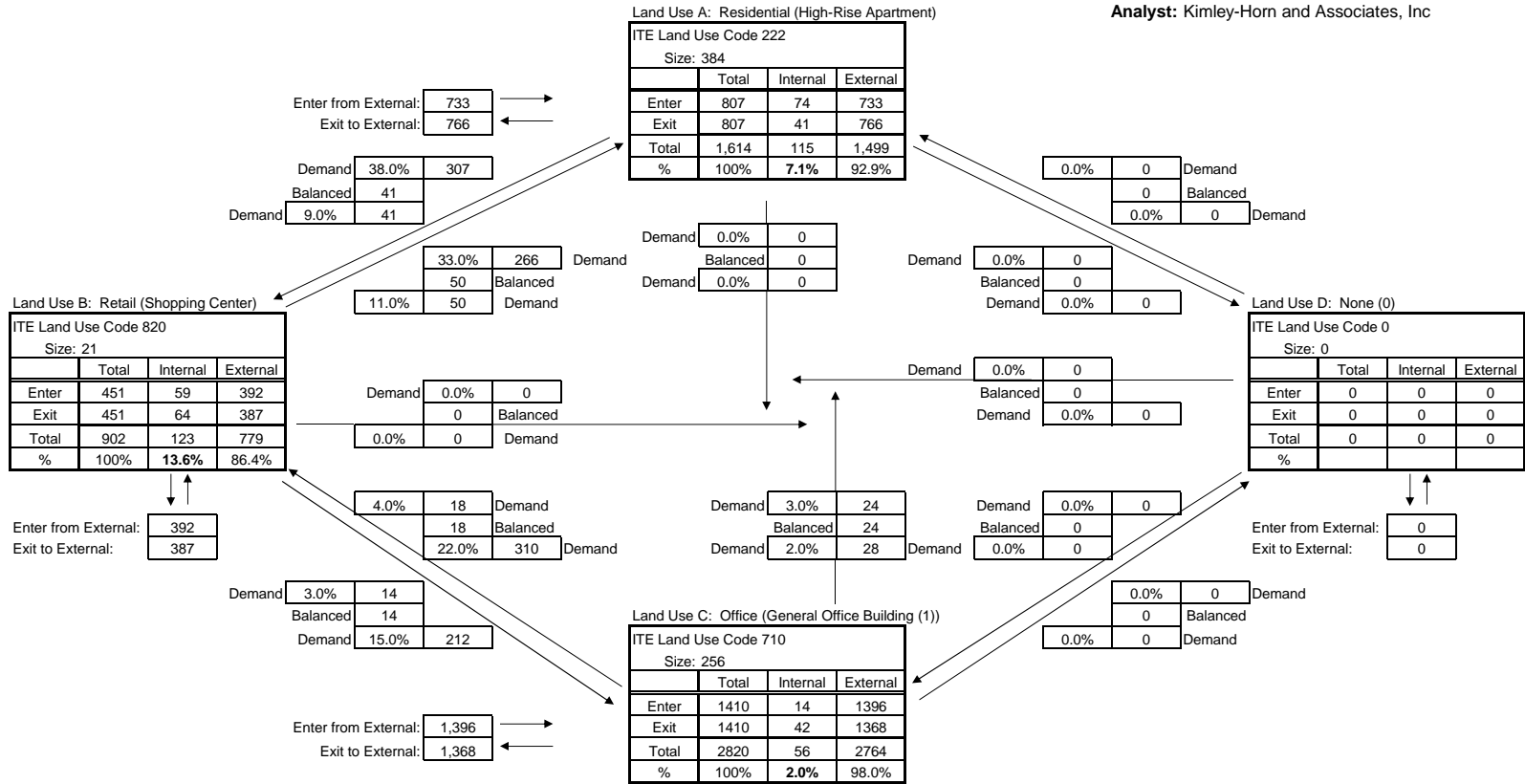


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	89	35	0	0	124
Exit	57	35	0	0	92
Total	146	70	0	0	216
Single Use Trip Gen Estimate	154	78	0	0	232

Overall Internal Capture = **6.90%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #8  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

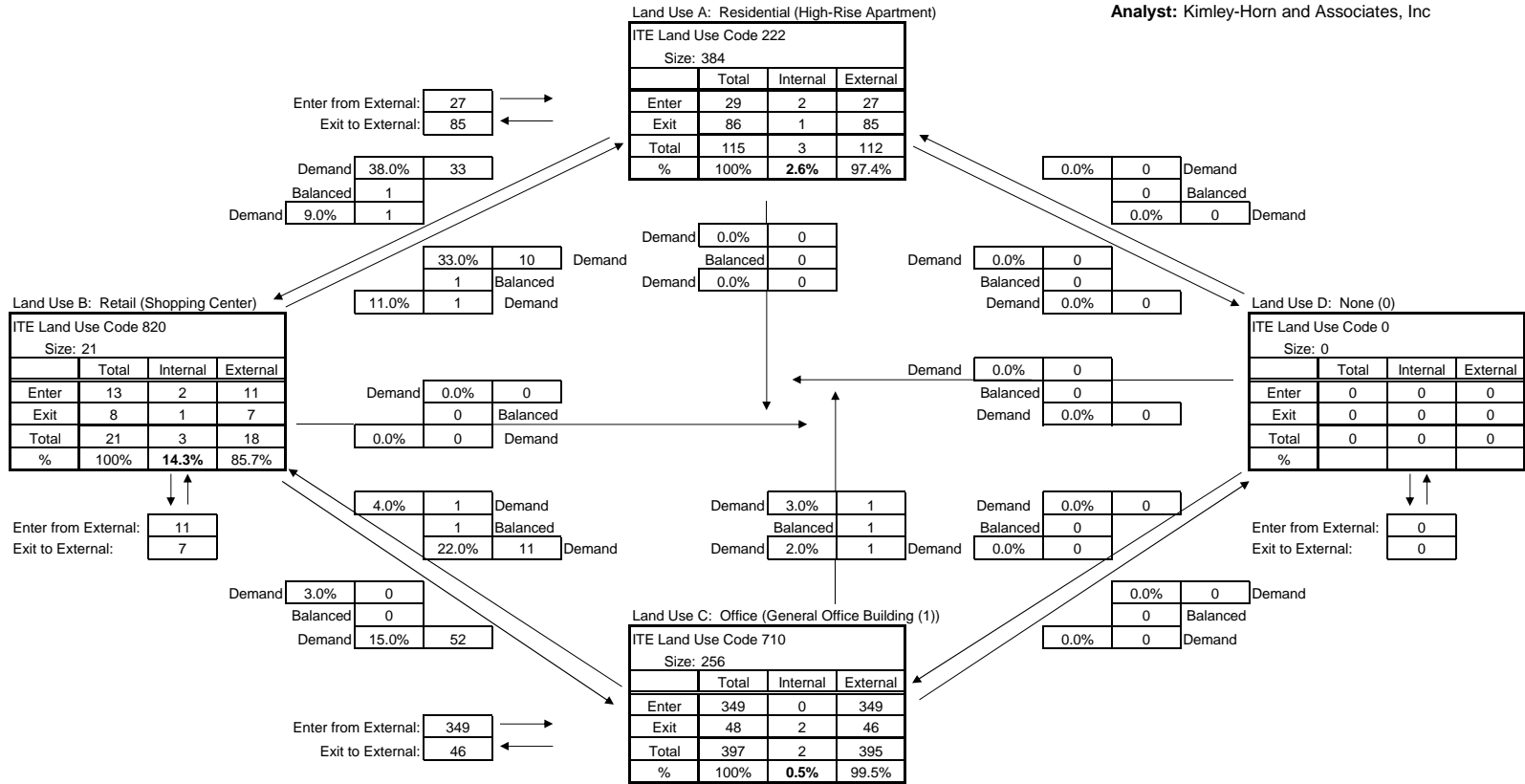


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	733	392	1,396	0	2,521
Exit	766	387	1,368	0	2,521
Total	1,499	779	2,764	0	5,042
Single Use Trip Gen Estimate	1,614	902	2,820	0	5,336

Overall Internal Capture = **5.51%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #8  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

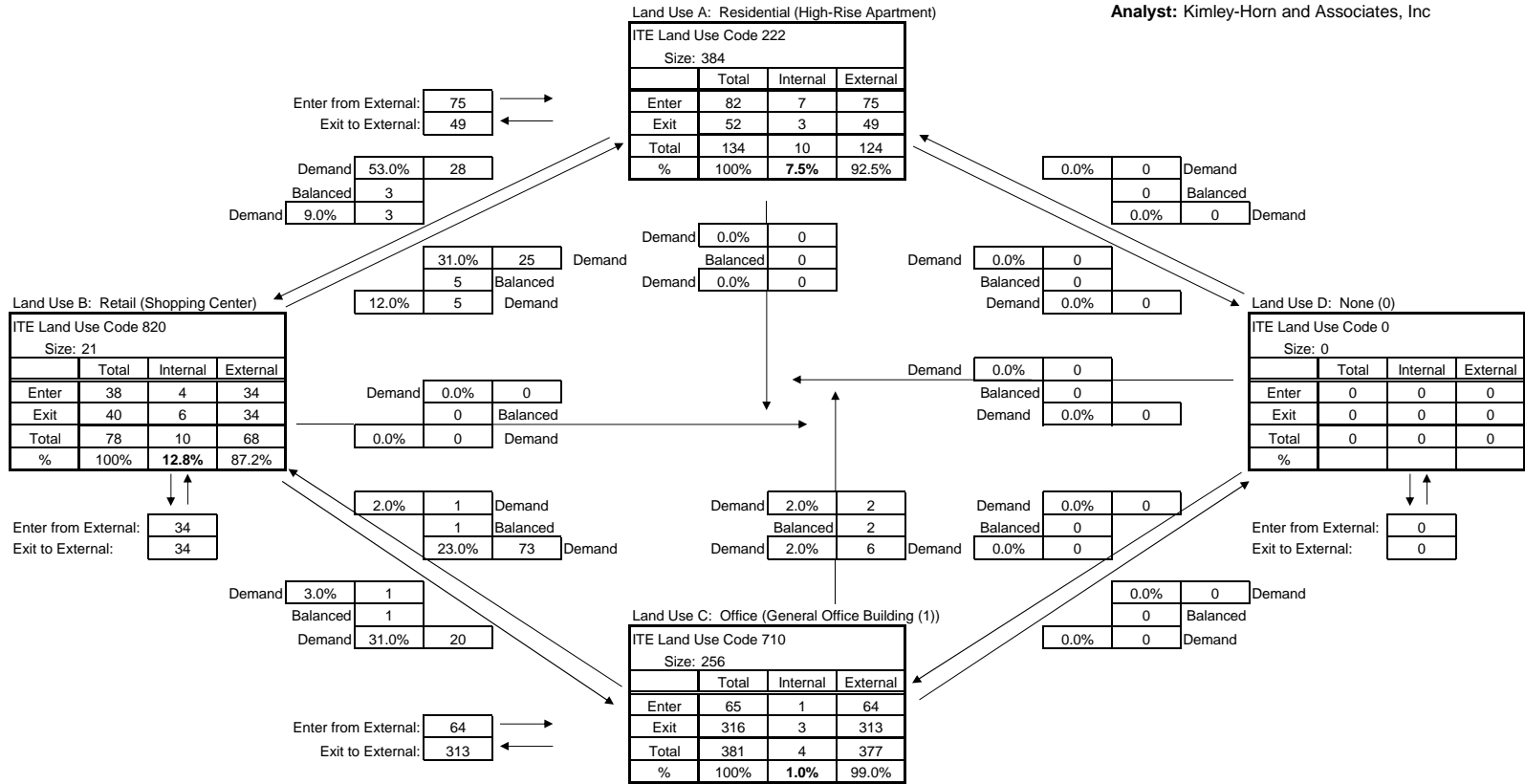


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	27	11	349	0	387
Exit	85	7	46	0	138
Total	112	18	395	0	525
Single Use Trip Gen Estimate	115	21	397	0	533

Overall Internal Capture = **1.50%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #8  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

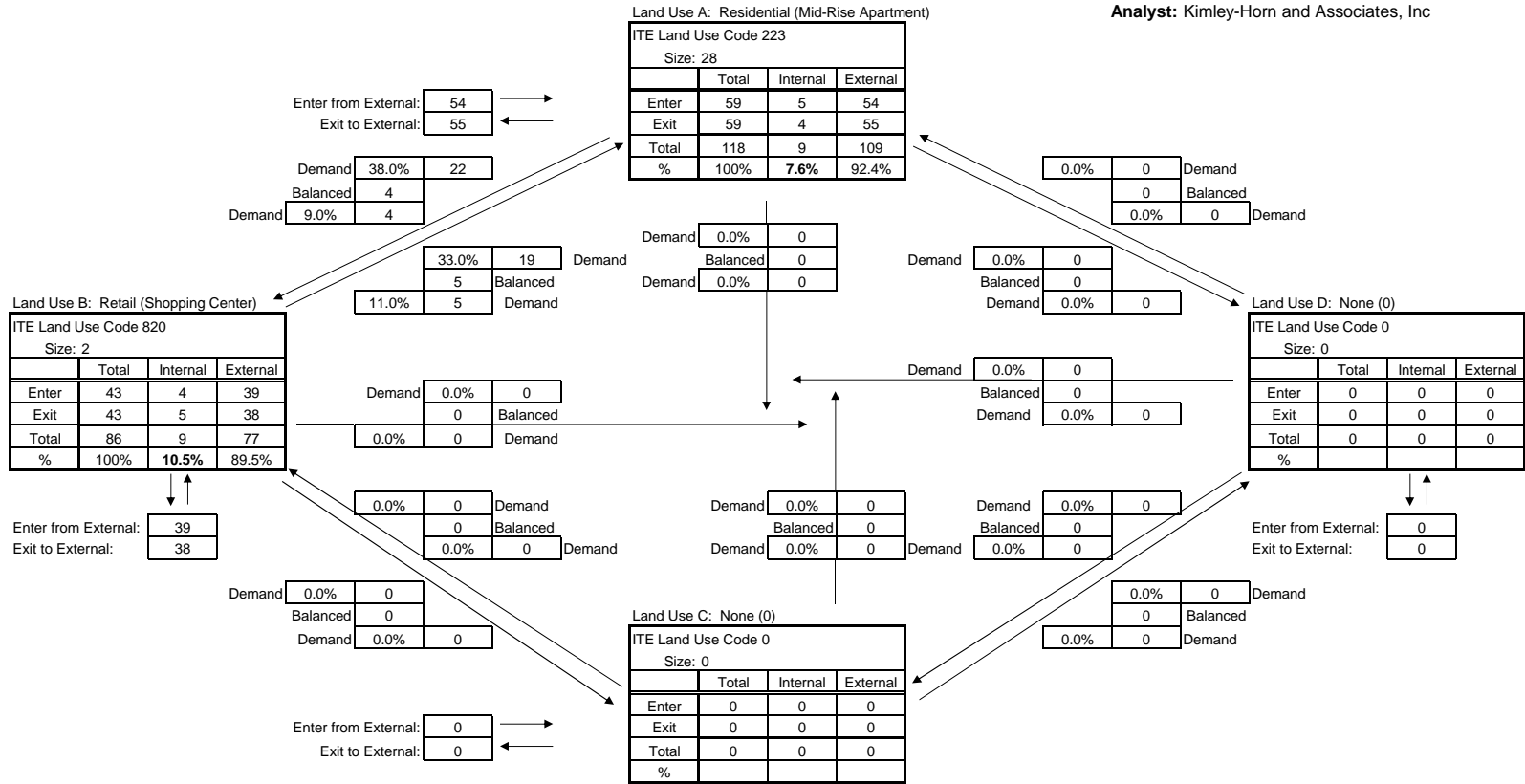


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	75	34	64	0	173
Exit	49	34	313	0	396
Total	124	68	377	0	569
Single Use Trip Gen Estimate	134	78	381	0	593

Overall Internal Capture = **4.05%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #9  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc



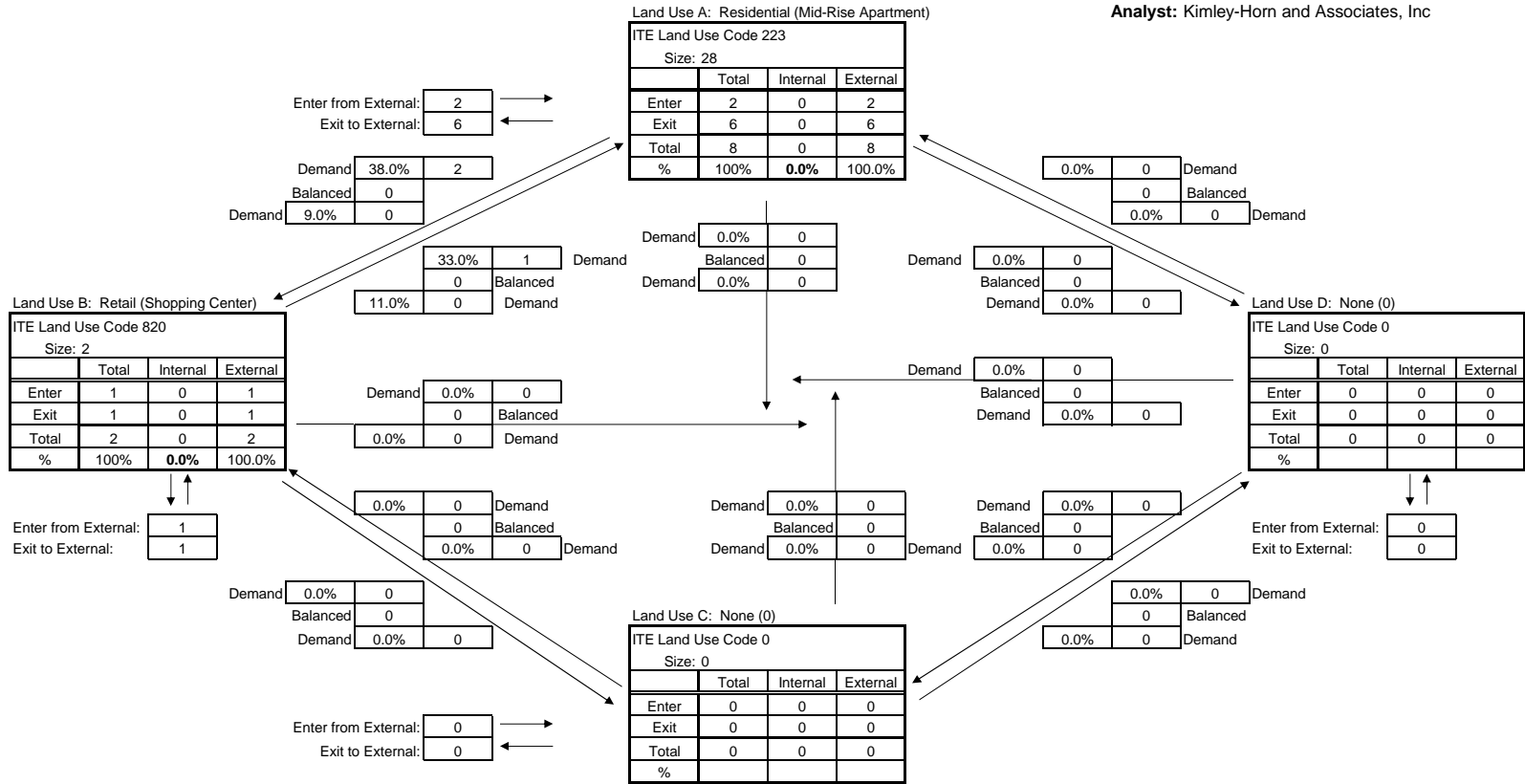
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	54	39	0	0	93
Exit	55	38	0	0	93
Total	109	77	0	0	186
Single Use Trip Gen Estimate	118	86	0	0	204

Overall Internal Capture = **8.82%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #9  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

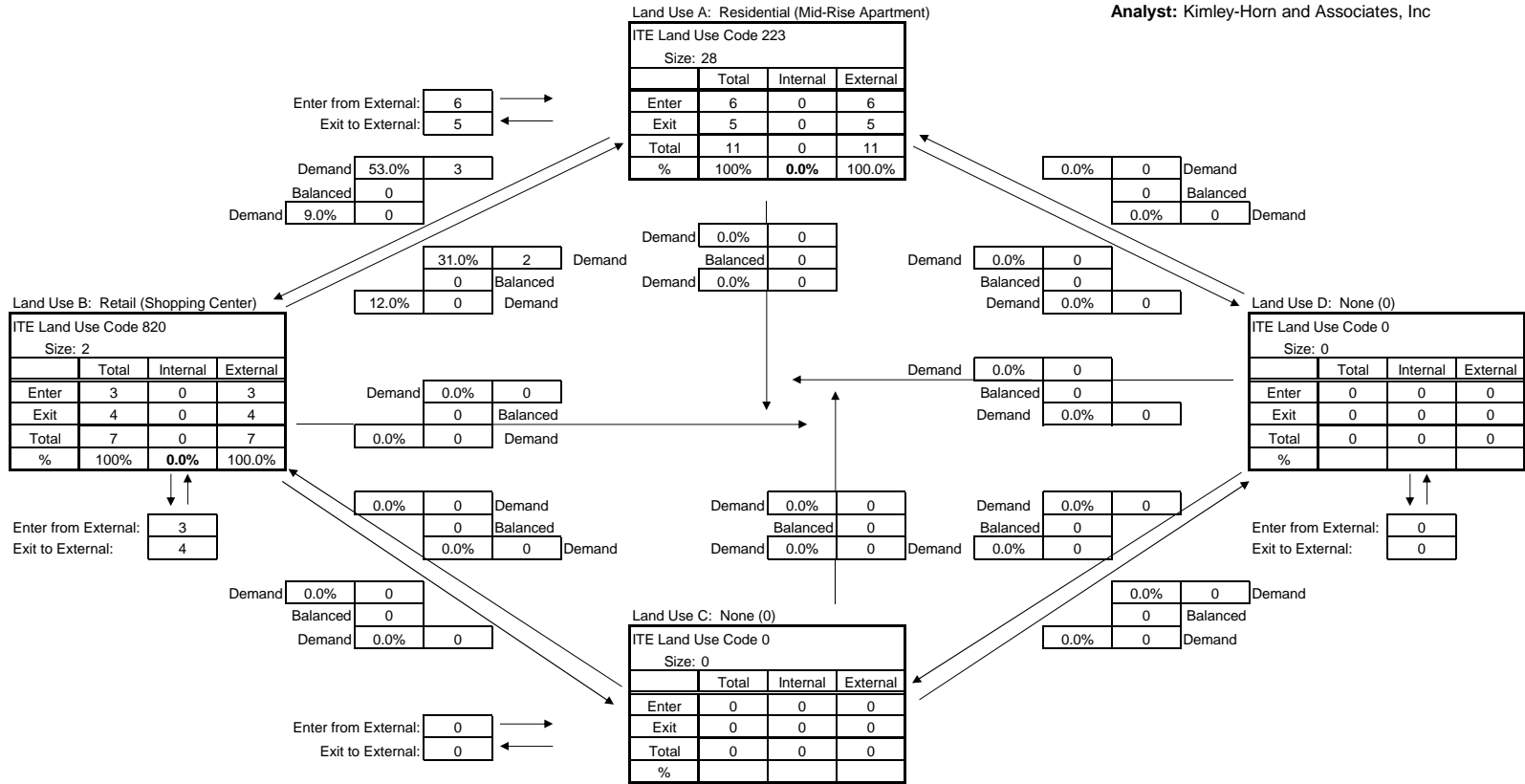


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	2	1	0	0	3
Exit	6	1	0	0	7
Total	8	2	0	0	10
Single Use Trip Gen Estimate	8	2	0	0	10

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #9  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

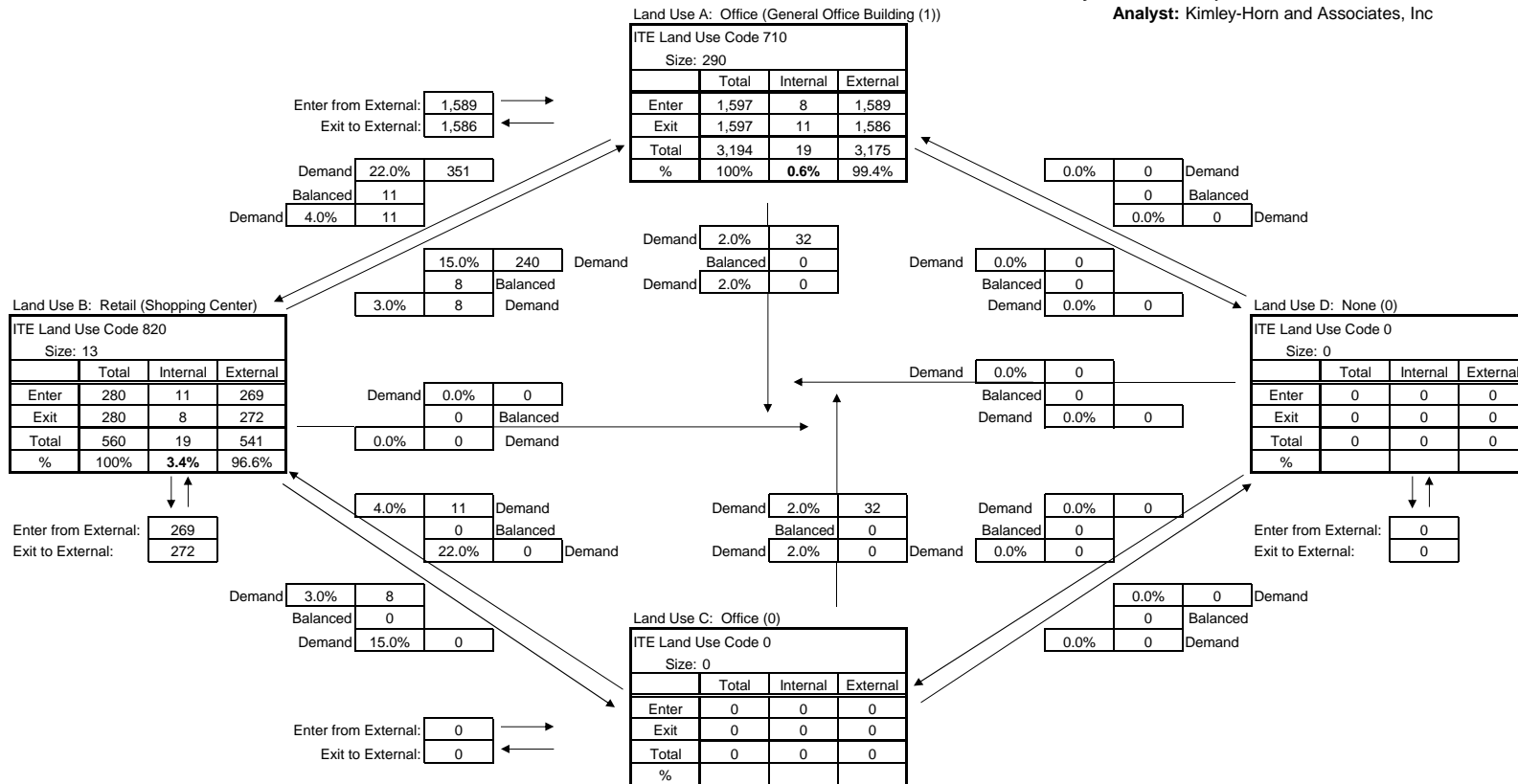


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	3	0	0	9
Exit	5	4	0	0	9
Total	11	7	0	0	18
Single Use Trip Gen Estimate	11	7	0	0	18

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #11  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

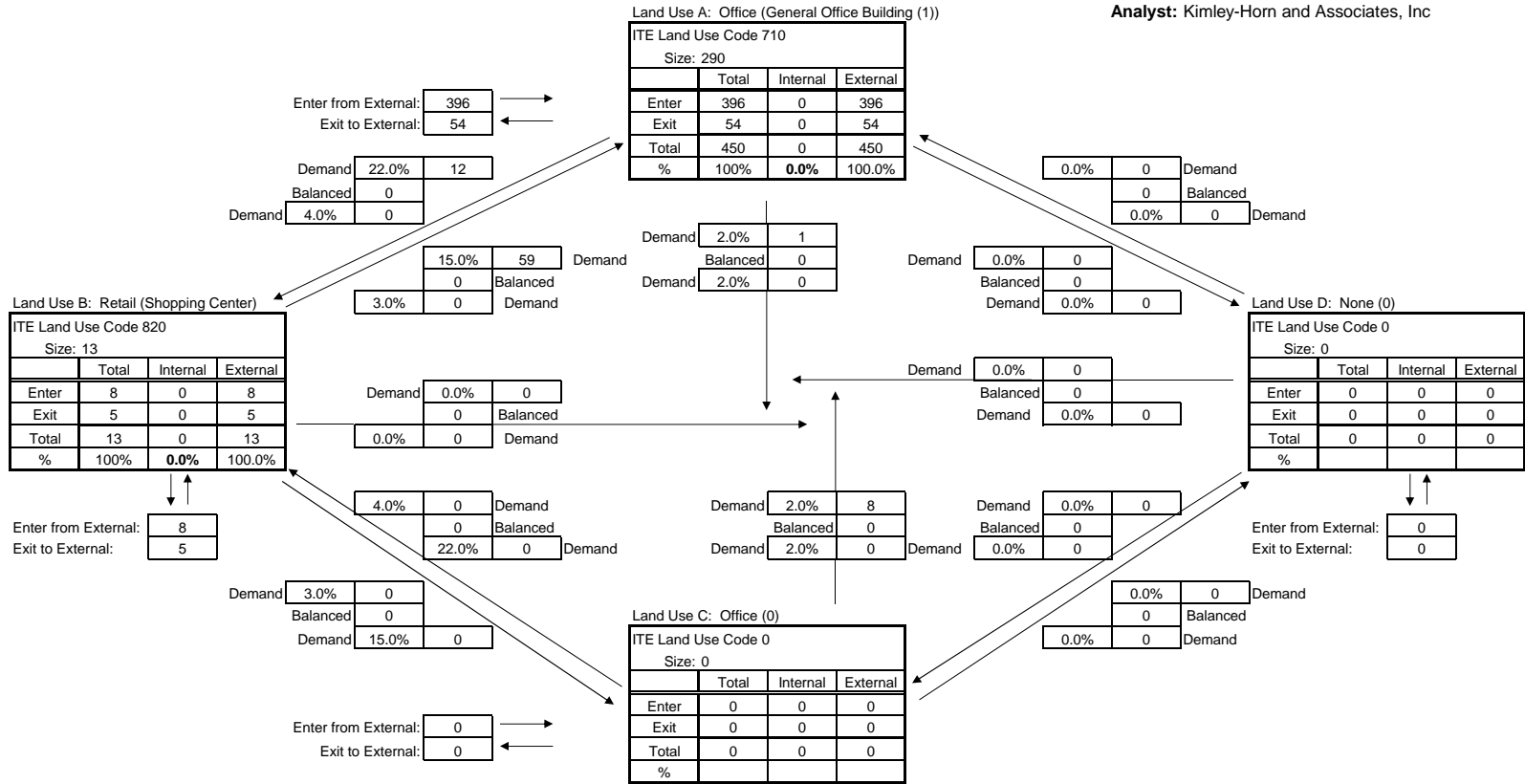


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	1,589	269	0	0	1,858
Exit	1,586	272	0	0	1,858
Total	3,175	541	0	0	3,716
Single Use Trip Gen Estimate	3,194	560	0	0	3,754

Overall Internal Capture = 1.01%

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #11  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

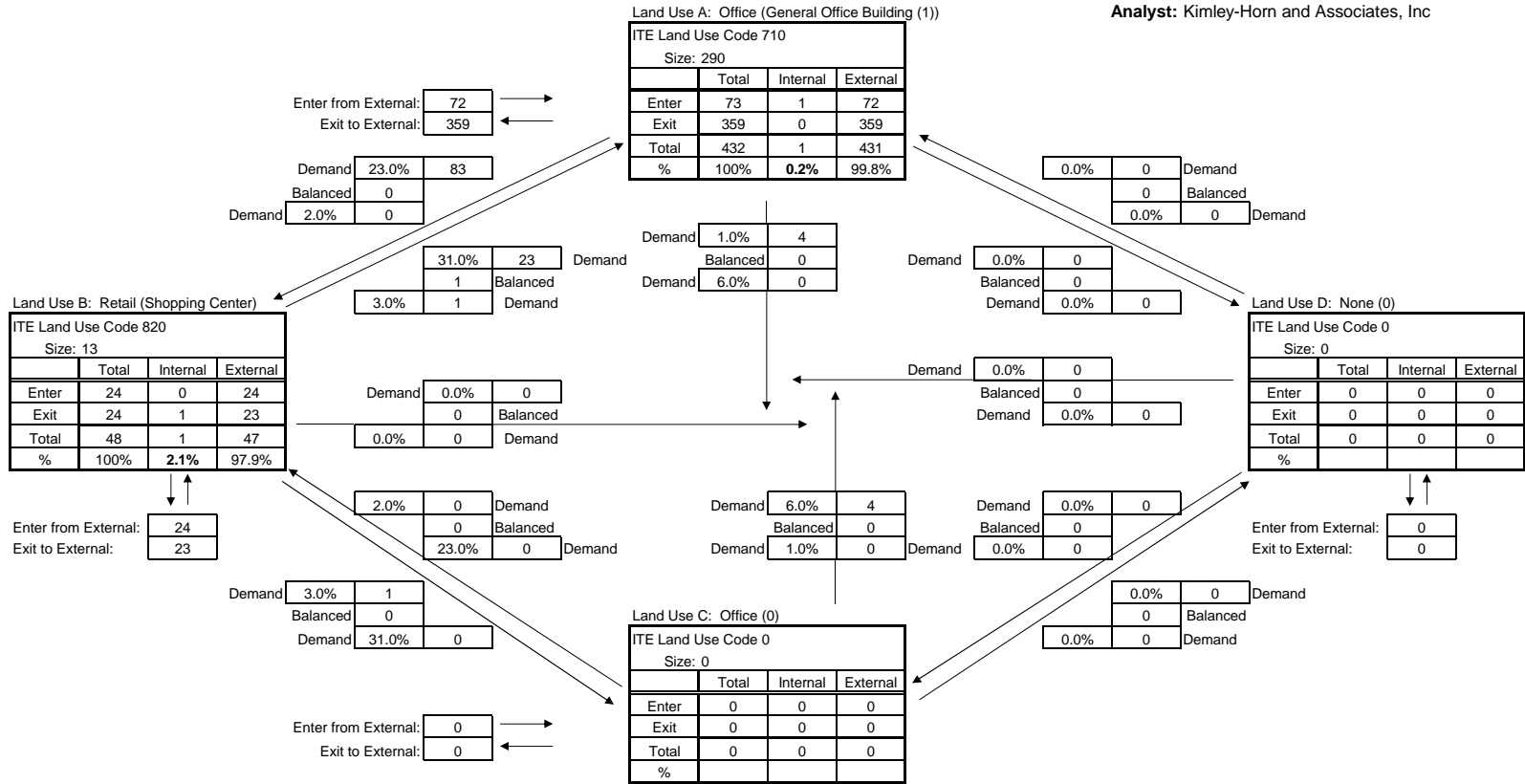


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	396	8	0	0	404
Exit	54	5	0	0	59
Total	450	13	0	0	463
Single Use Trip Gen Estimate	450	13	0	0	463

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #11  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

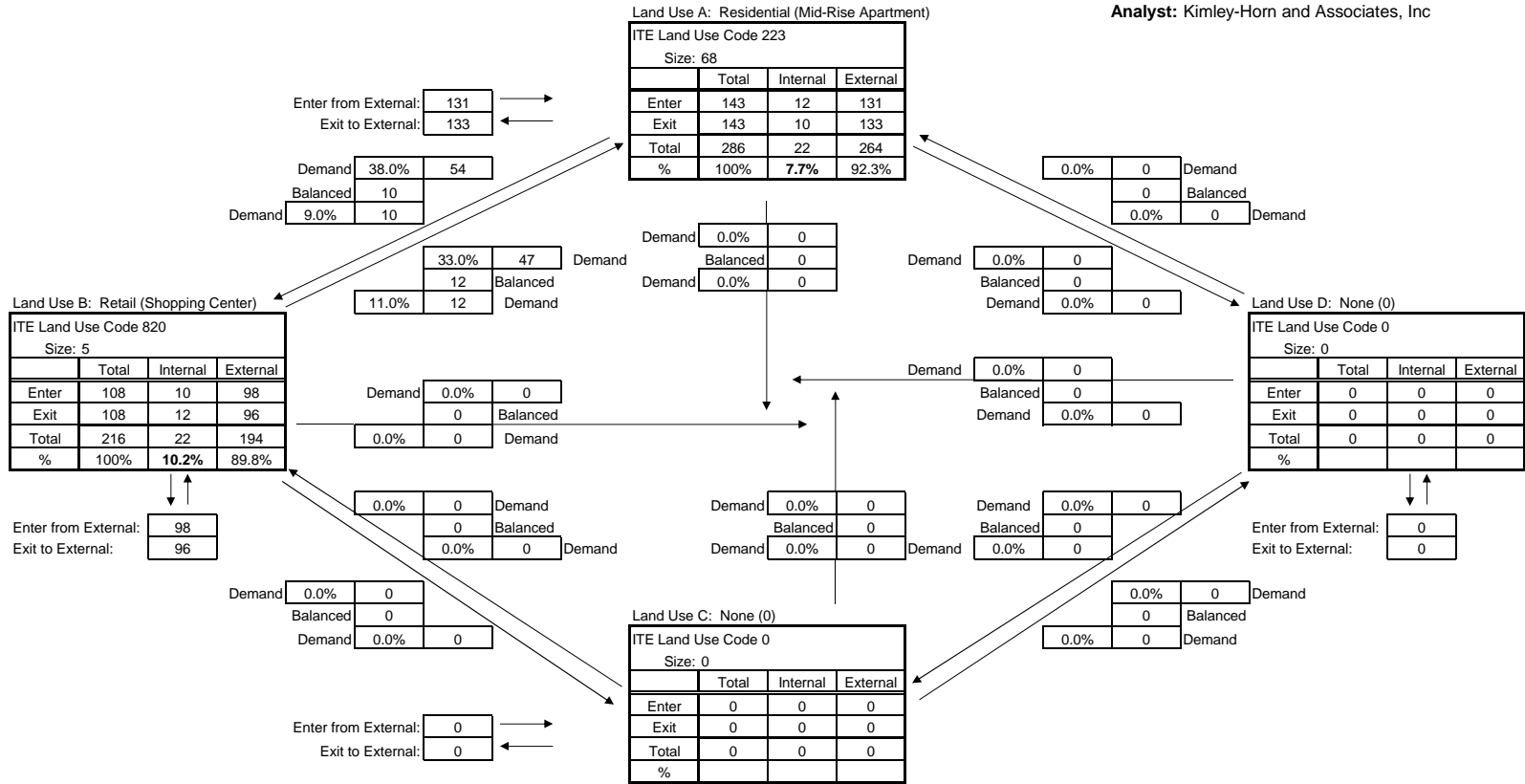


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	72	24	0	0	96
Exit	359	23	0	0	382
Total	431	47	0	0	478
Single Use Trip Gen Estimate	432	48	0	0	480

Overall Internal Capture = **0.42%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #12  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

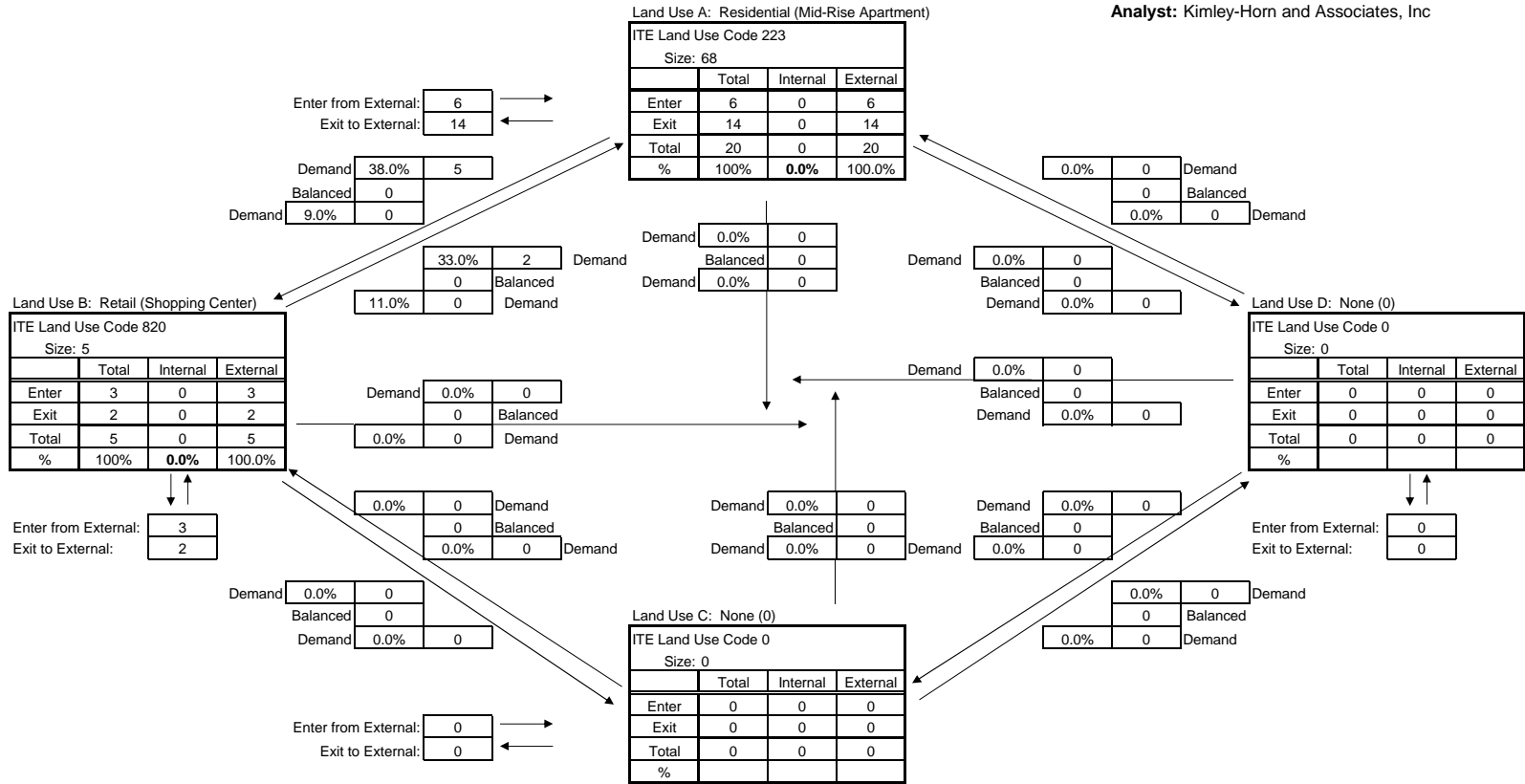


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	131	98	0	0	229
Exit	133	96	0	0	229
Total	264	194	0	0	458
Single Use Trip Gen Estimate	286	216	0	0	502

Overall Internal Capture = **8.76%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #12  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

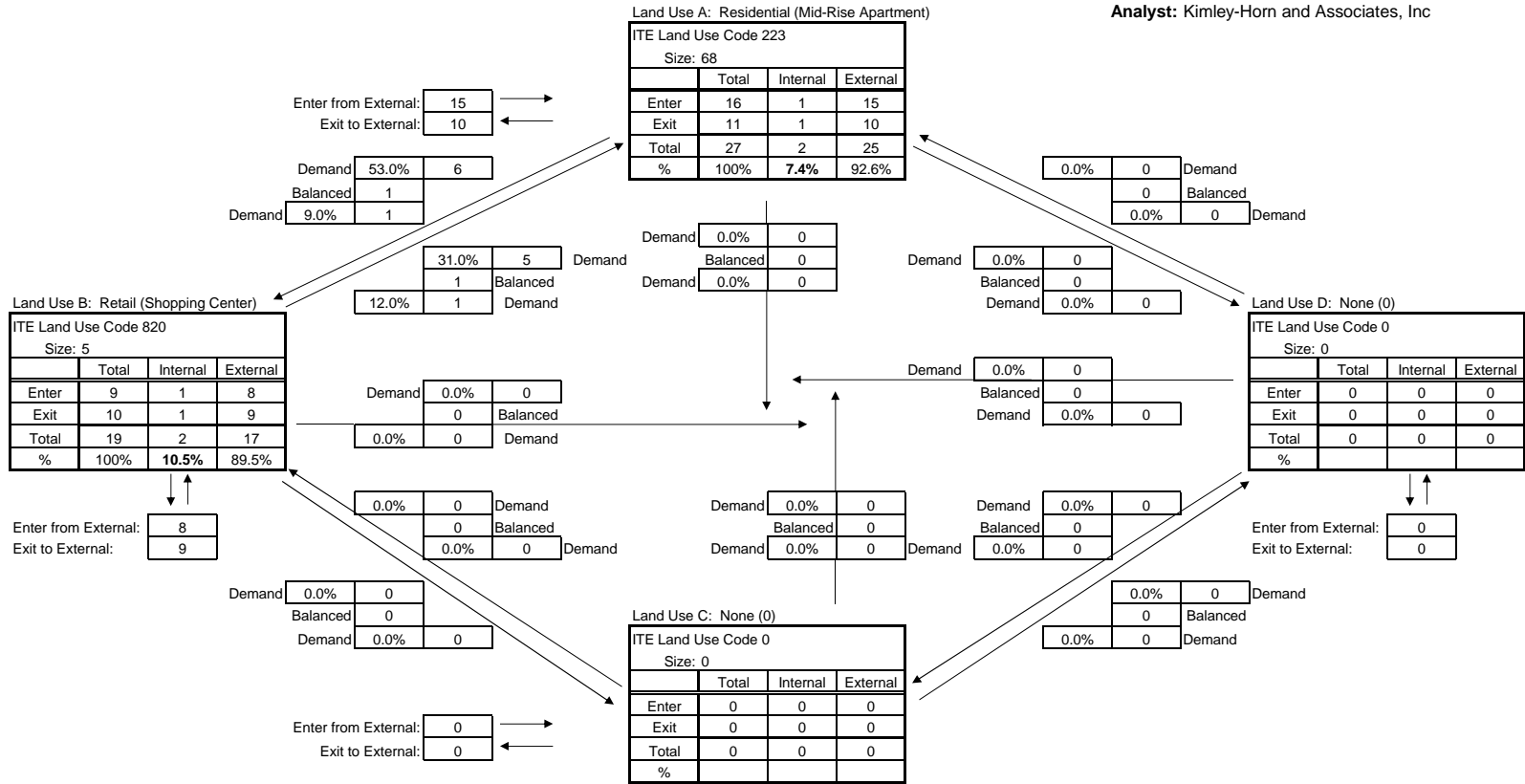


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	3	0	0	9
Exit	14	2	0	0	16
Total	20	5	0	0	25
Single Use Trip Gen Estimate	20	5	0	0	25

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #12  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc



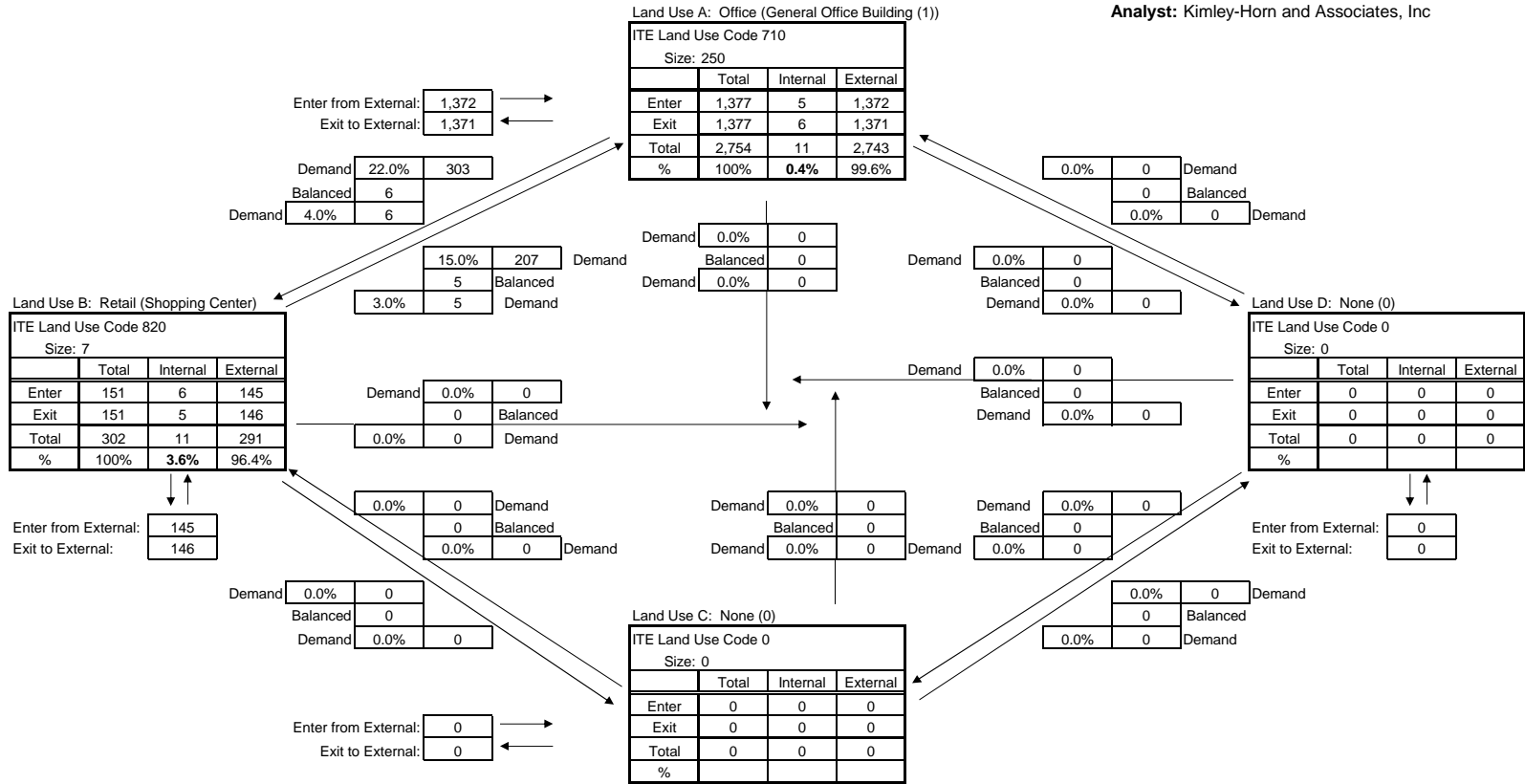
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	15	8	0	0	23
Exit	10	9	0	0	19
Total	25	17	0	0	42
Single Use Trip Gen Estimate	27	19	0	0	46

Overall Internal Capture = **8.70%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #13  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

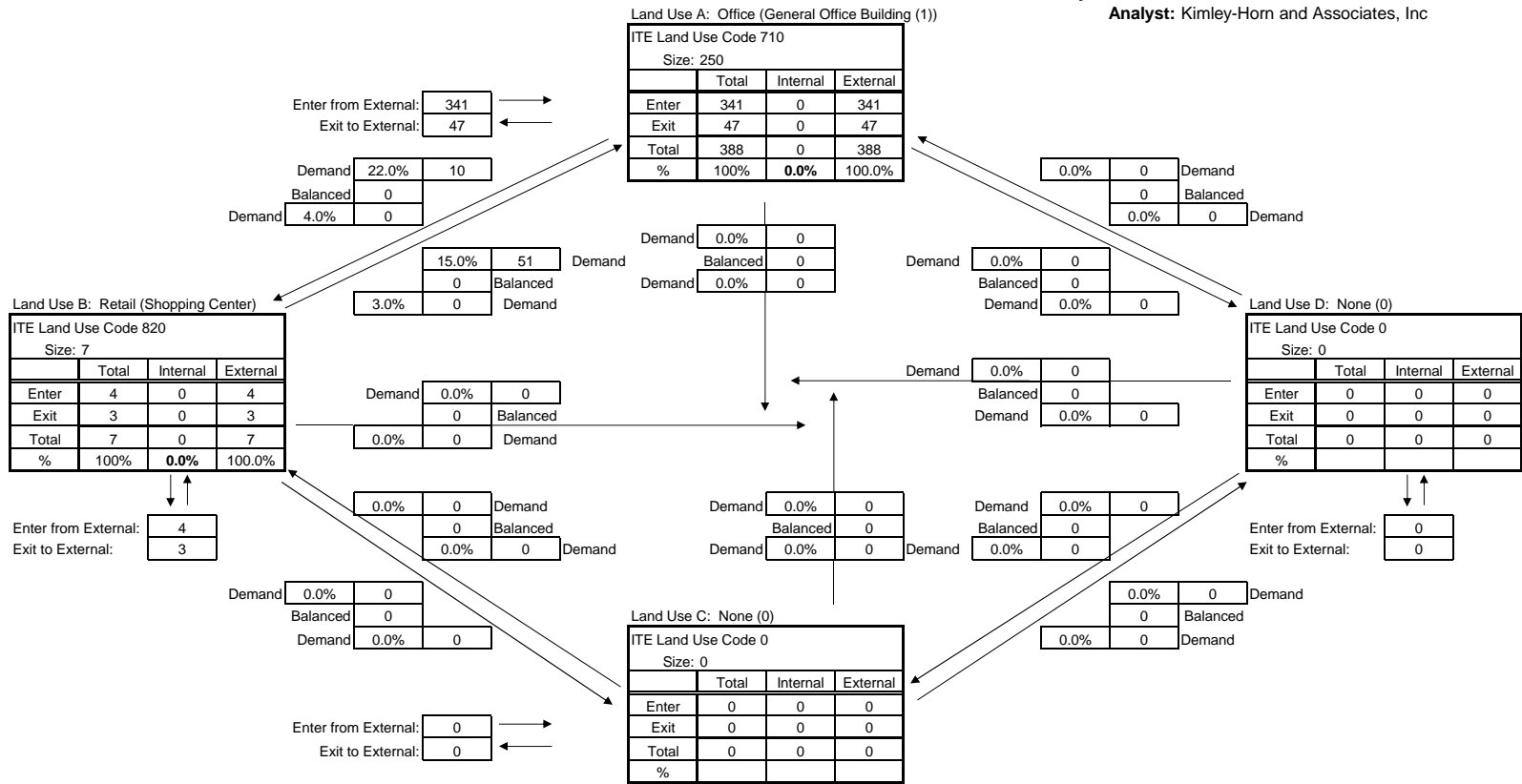


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	1,372	145	0	0	1,517
Exit	1,371	146	0	0	1,517
Total	2,743	291	0	0	3,034
Single Use Trip Gen Estimate	2,754	302	0	0	3,056

Overall Internal Capture = **0.72%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #13  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

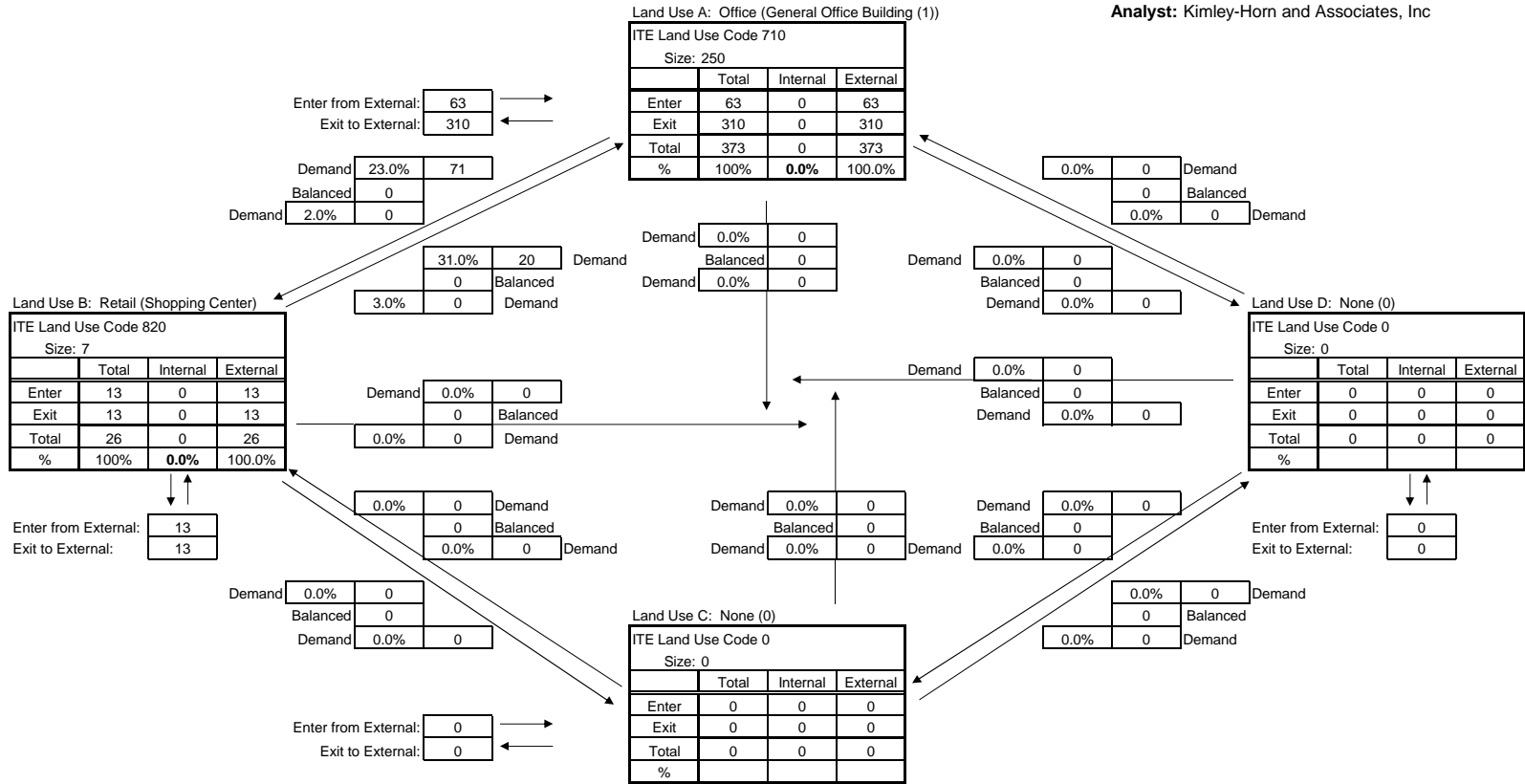


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	341	4	0	0	345
Exit	47	3	0	0	50
Total	388	7	0	0	395
Single Use Trip Gen Estimate	388	7	0	0	395

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #13  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

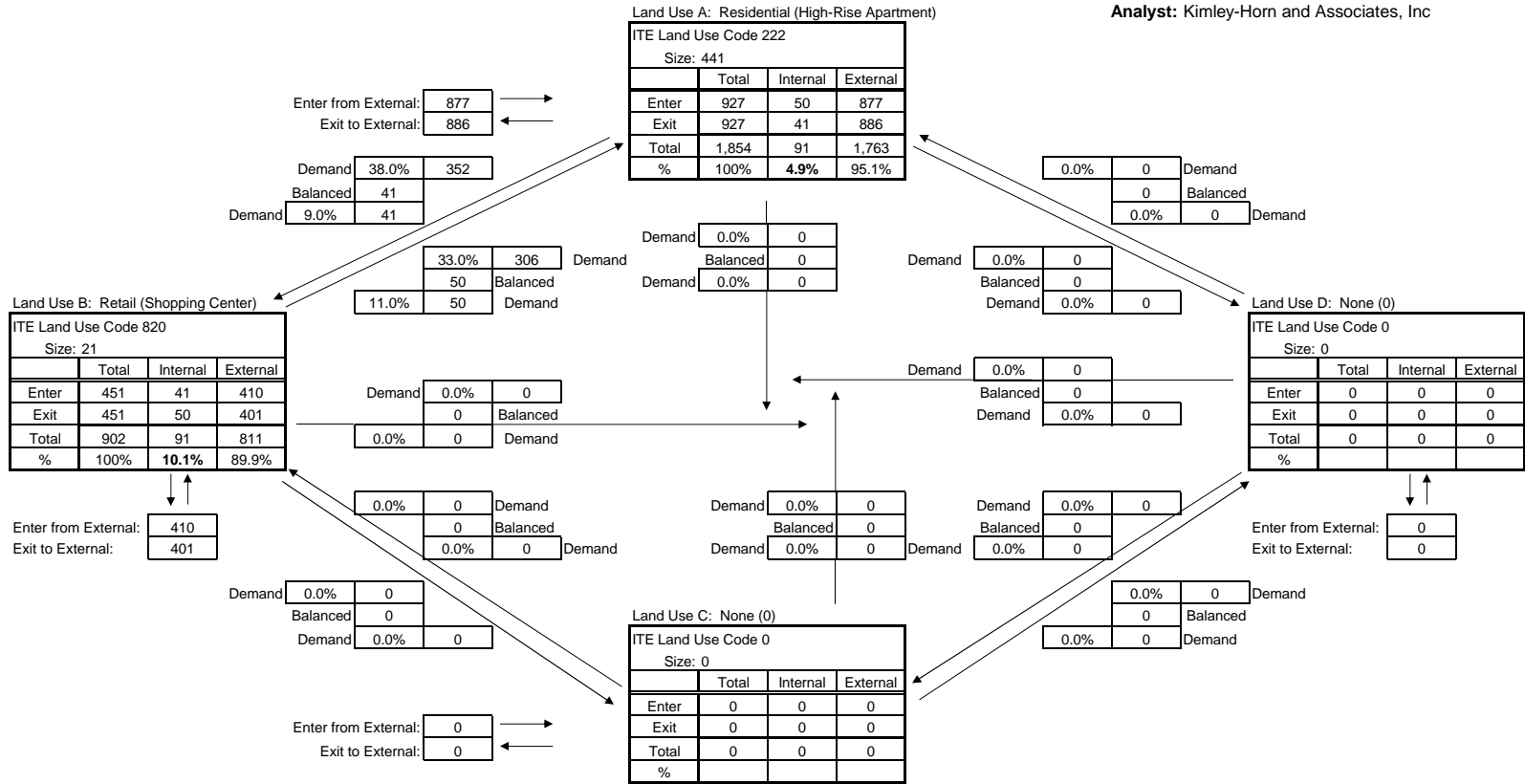


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	63	13	0	0	76
Exit	310	13	0	0	323
Total	373	26	0	0	399
Single Use Trip Gen Estimate	373	26	0	0	399

Overall Internal Capture = 0.00%

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #15  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

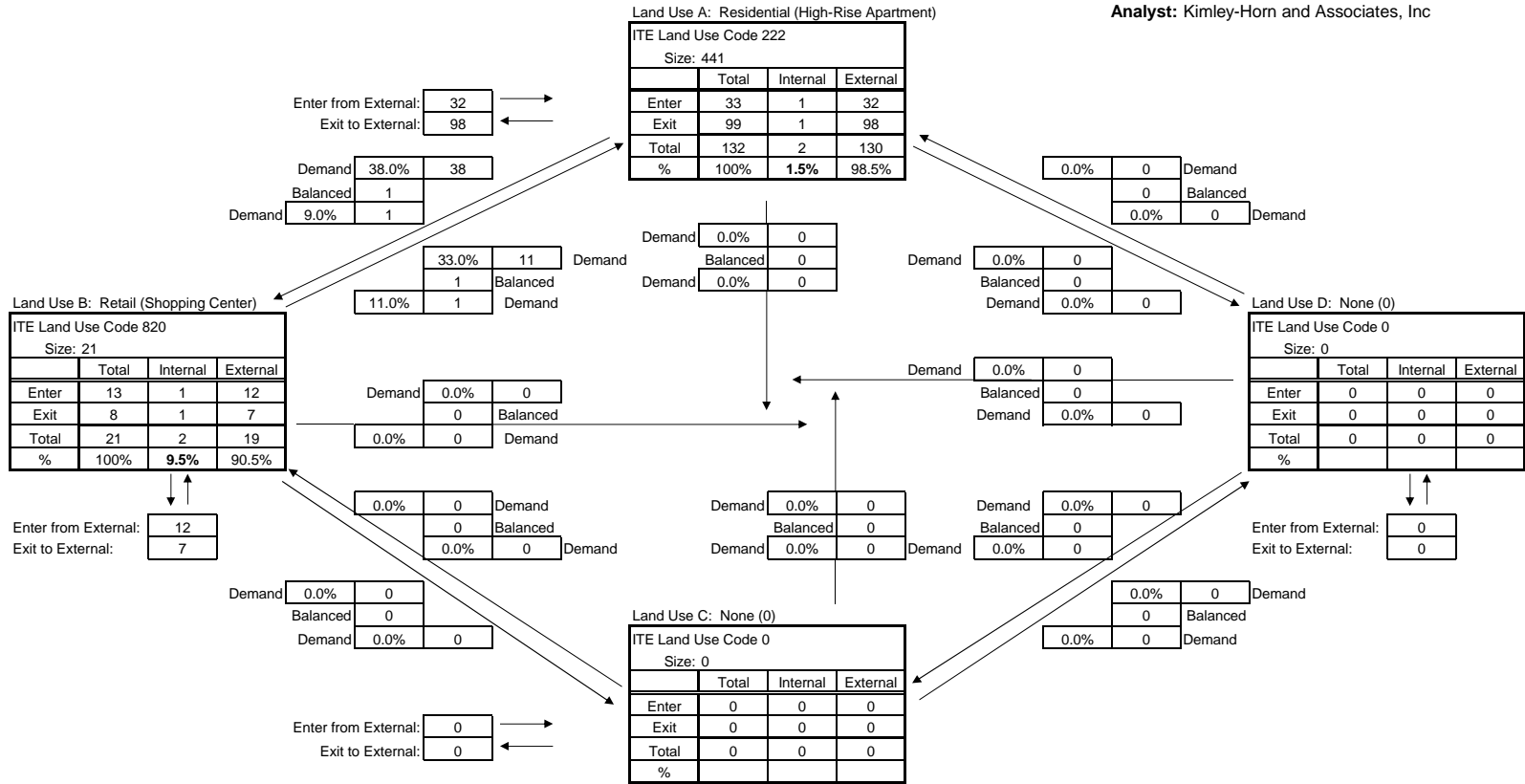


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	877	410	0	0	1,287
Exit	886	401	0	0	1,287
Total	1,763	811	0	0	2,574
Single Use Trip Gen Estimate	1,854	902	0	0	2,756

Overall Internal Capture = **6.60%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #15  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

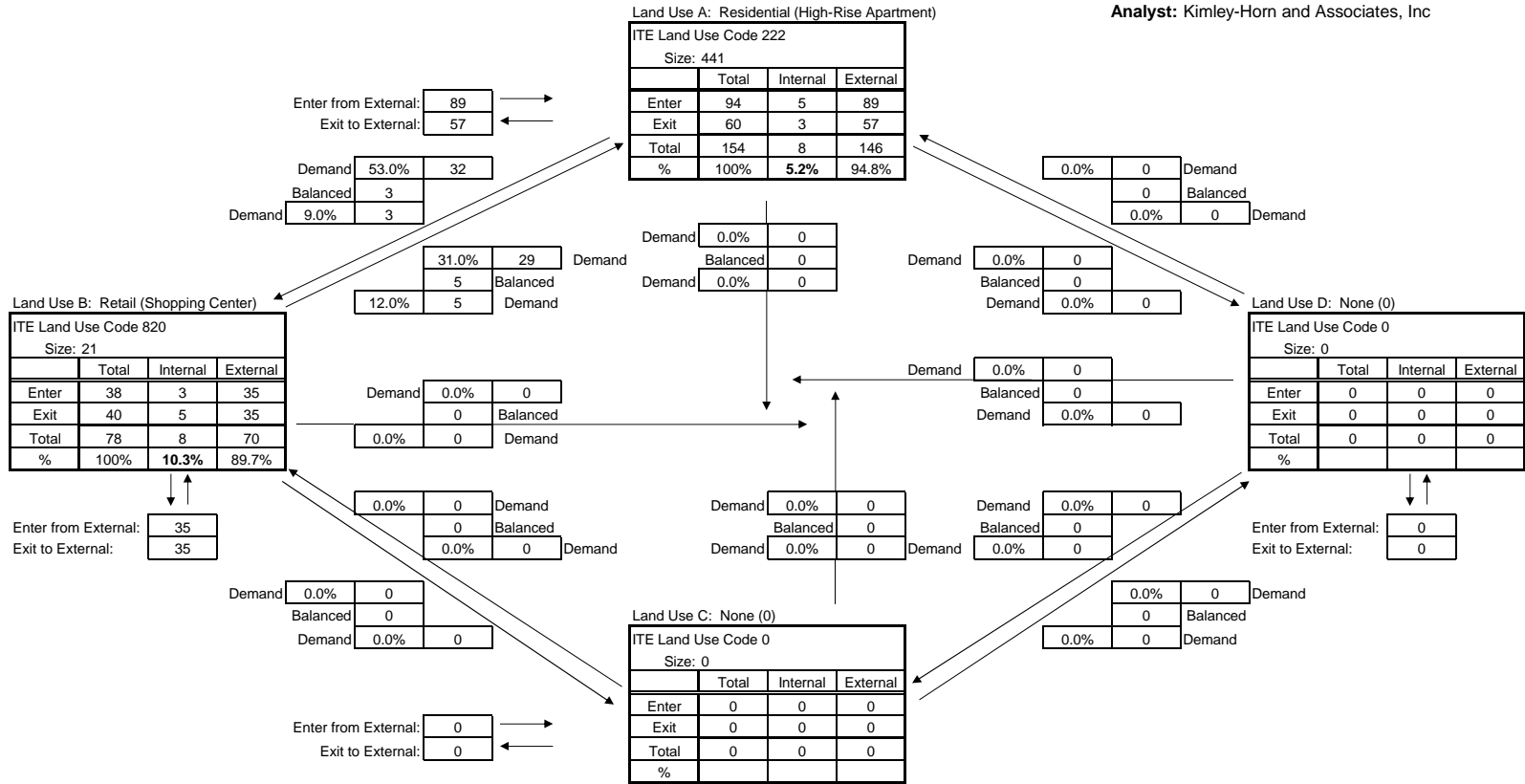


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	32	12	0	0	44
Exit	98	7	0	0	105
Total	130	19	0	0	149
Single Use Trip Gen Estimate	132	21	0	0	153

Overall Internal Capture = **2.61%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #15  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

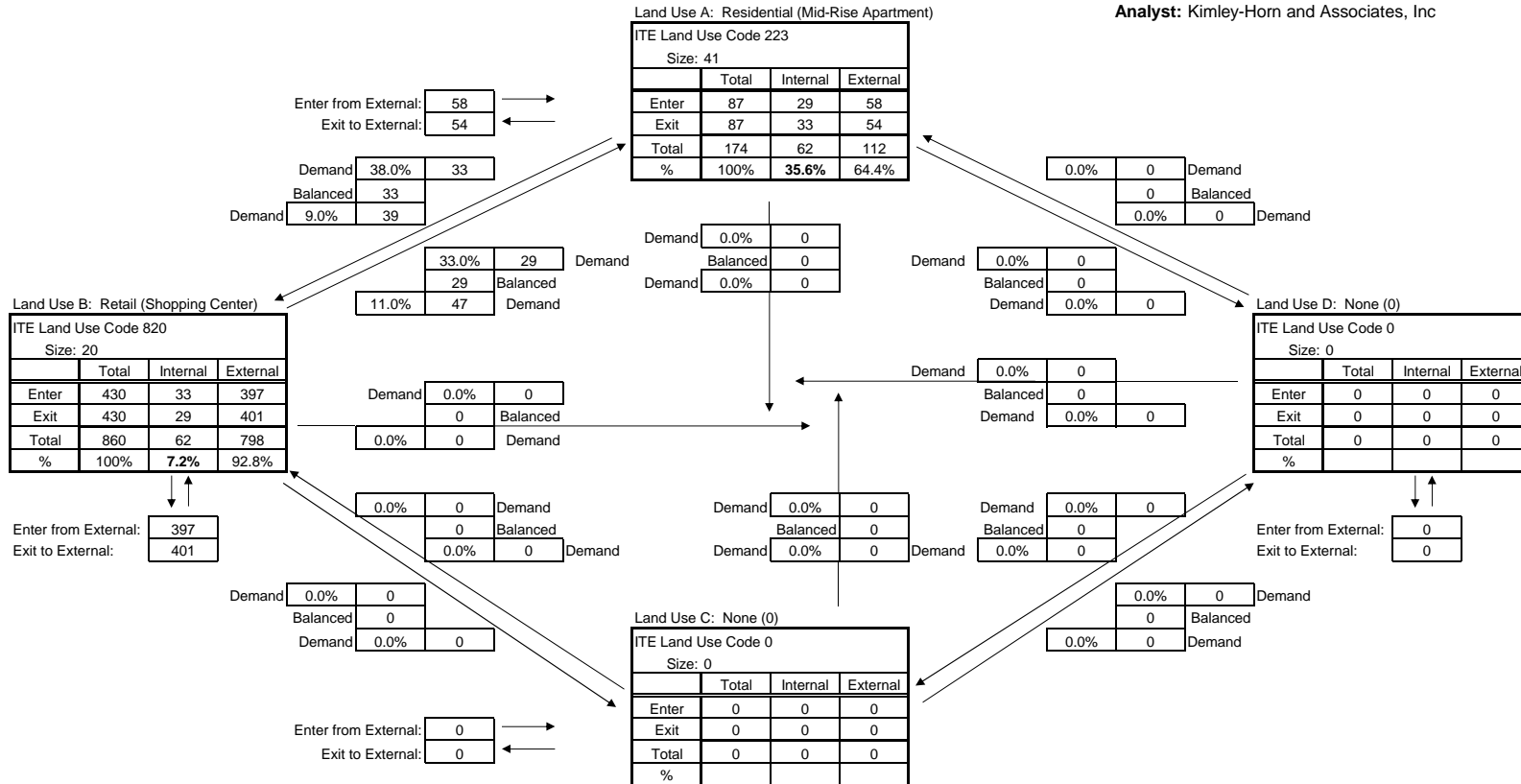


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	89	35	0	0	124
Exit	57	35	0	0	92
Total	146	70	0	0	216
Single Use Trip Gen Estimate	154	78	0	0	232

Overall Internal Capture = **6.90%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #18  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

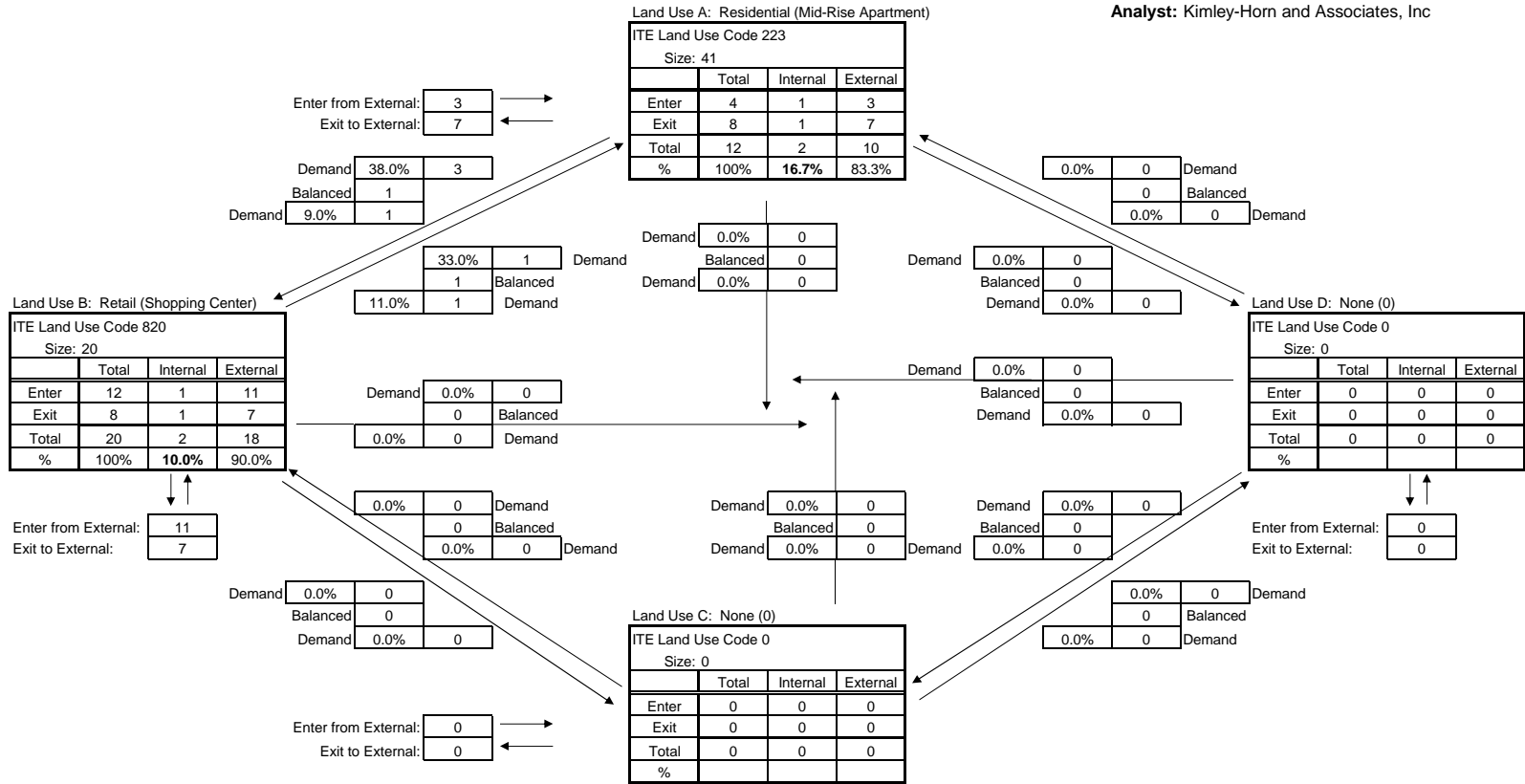


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	58	397	0	0	455
Exit	54	401	0	0	455
Total	112	798	0	0	910
Single Use Trip Gen Estimate	174	860	0	0	1,034

Overall Internal Capture = **11.99%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #18  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc



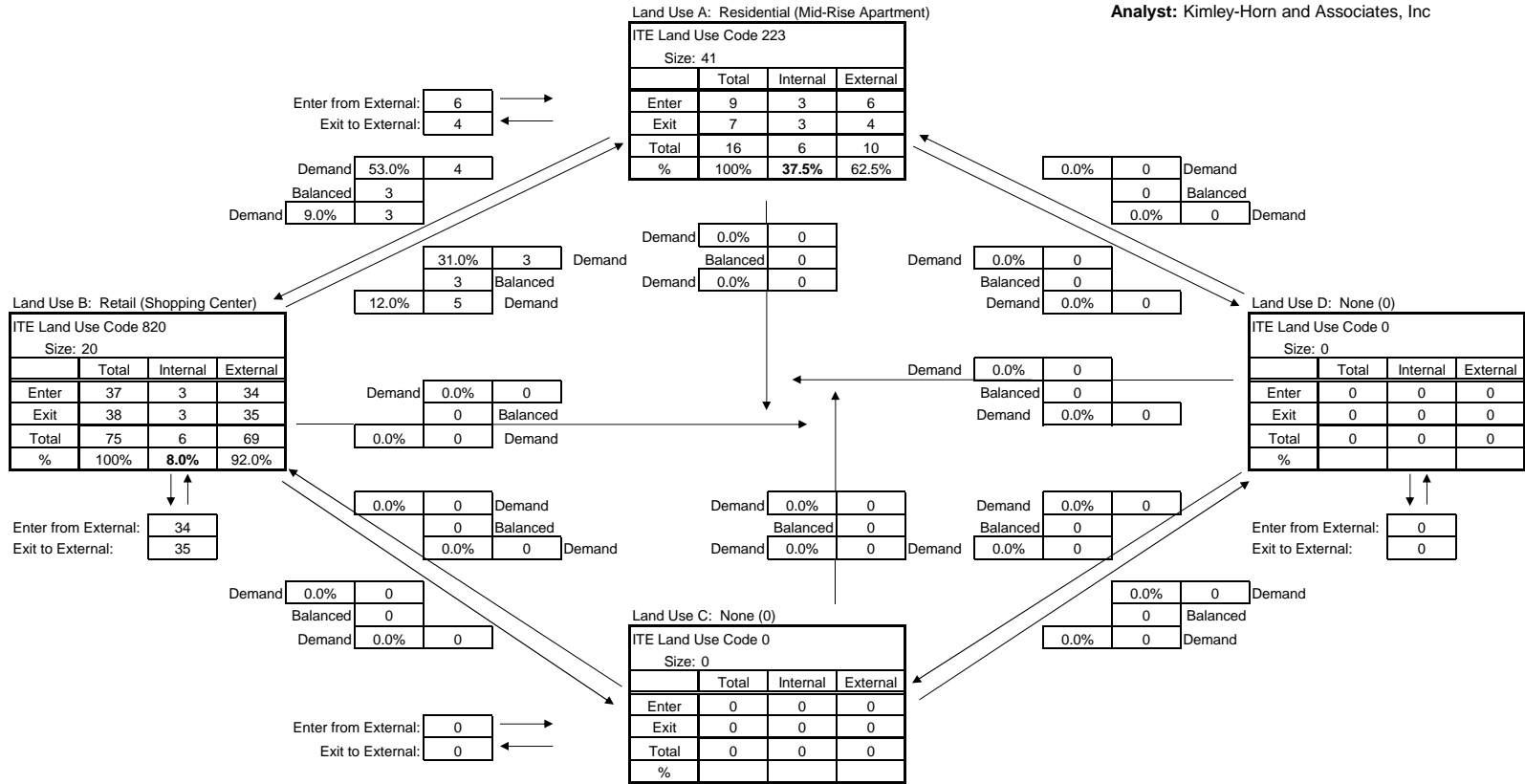
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	3	11	0	0	14
Exit	7	7	0	0	14
Total	10	18	0	0	28
Single Use Trip Gen Estimate	12	20	0	0	32

Overall Internal Capture = **12.50%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #18  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

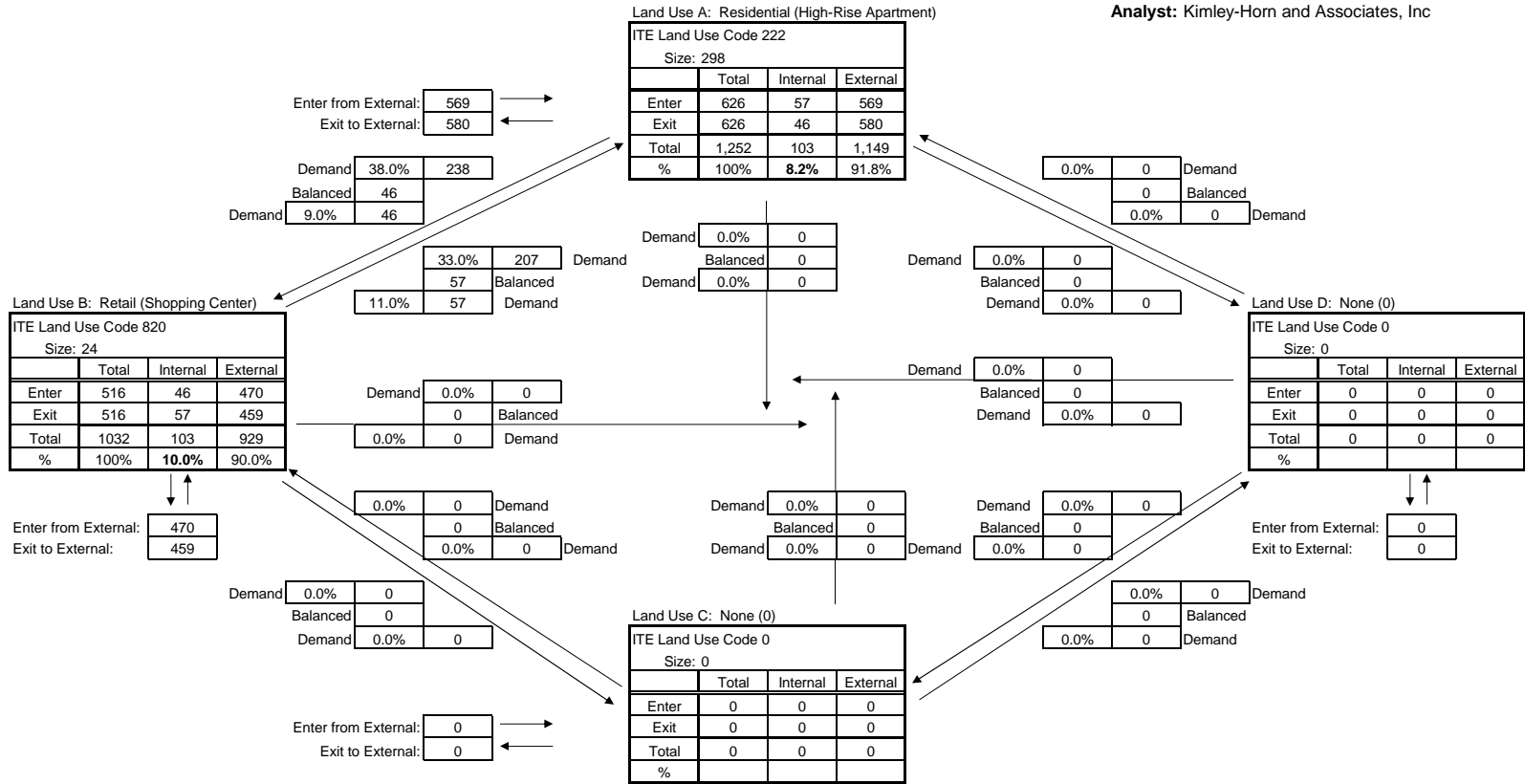


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	34	0	0	40
Exit	4	35	0	0	39
Total	10	69	0	0	79
Single Use Trip Gen Estimate	16	75	0	0	91

Overall Internal Capture = **13.19%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #19  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

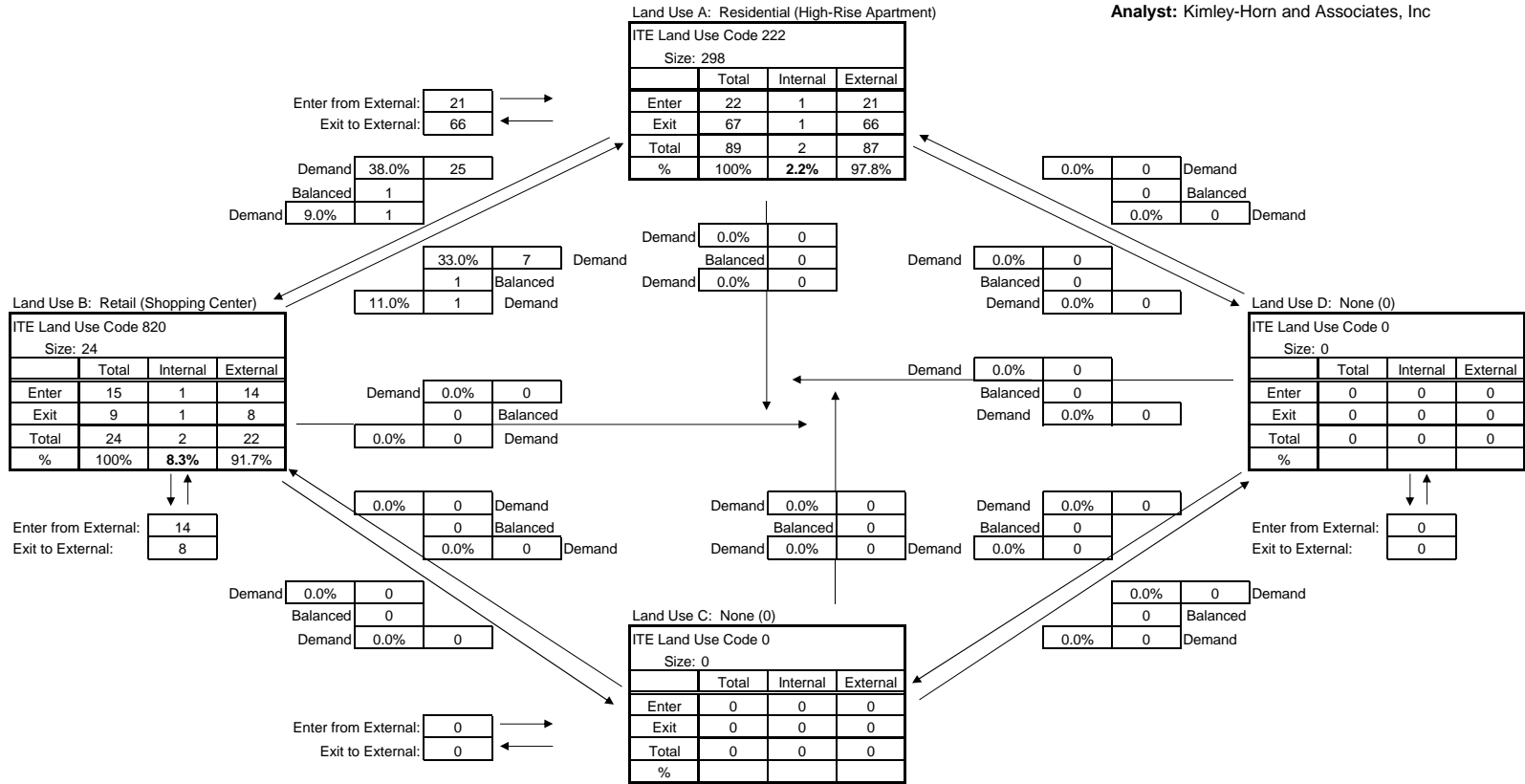


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	569	470	0	0	1,039
Exit	580	459	0	0	1,039
Total	1,149	929	0	0	2,078
Single Use Trip Gen Estimate	1,252	1,032	0	0	2,284

Overall Internal Capture = **9.02%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #19  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

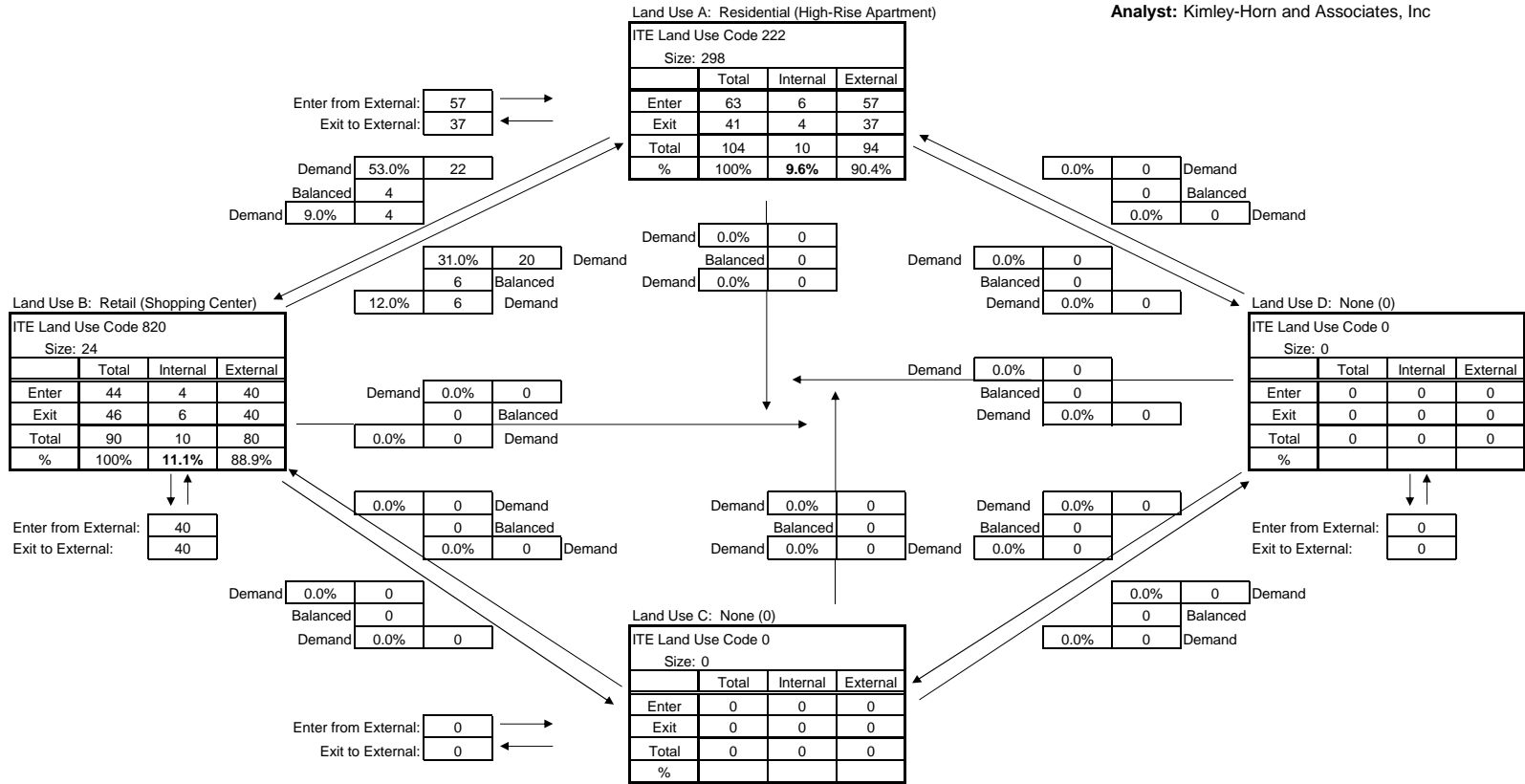


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	21	14	0	0	35
Exit	66	8	0	0	74
Total	87	22	0	0	109
Single Use Trip Gen Estimate	89	24	0	0	113

Overall Internal Capture = **3.54%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #19  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

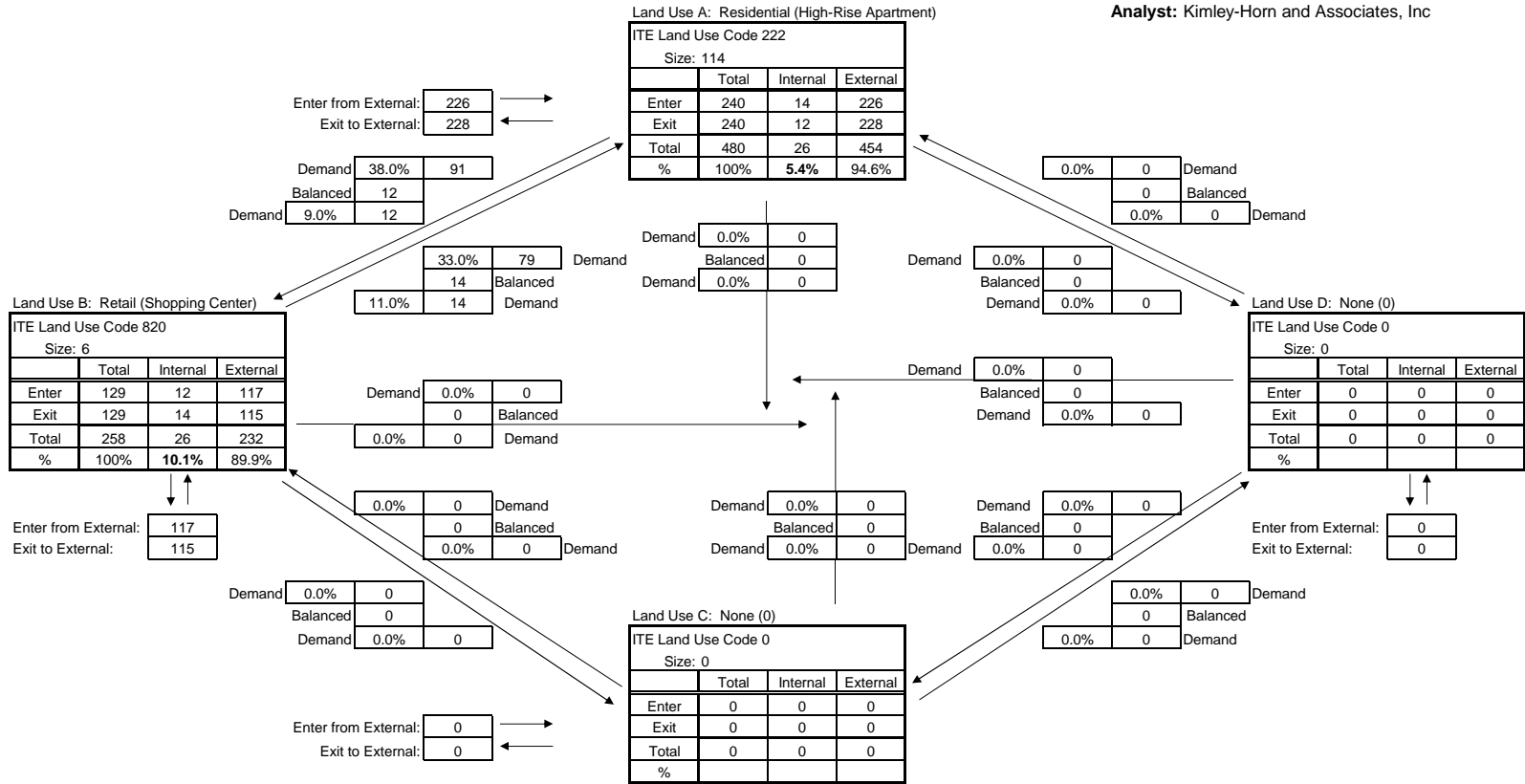


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	57	40	0	0	97
Exit	37	40	0	0	77
Total	94	80	0	0	174
Single Use Trip Gen Estimate	104	90	0	0	194

Overall Internal Capture = **10.31%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #21  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

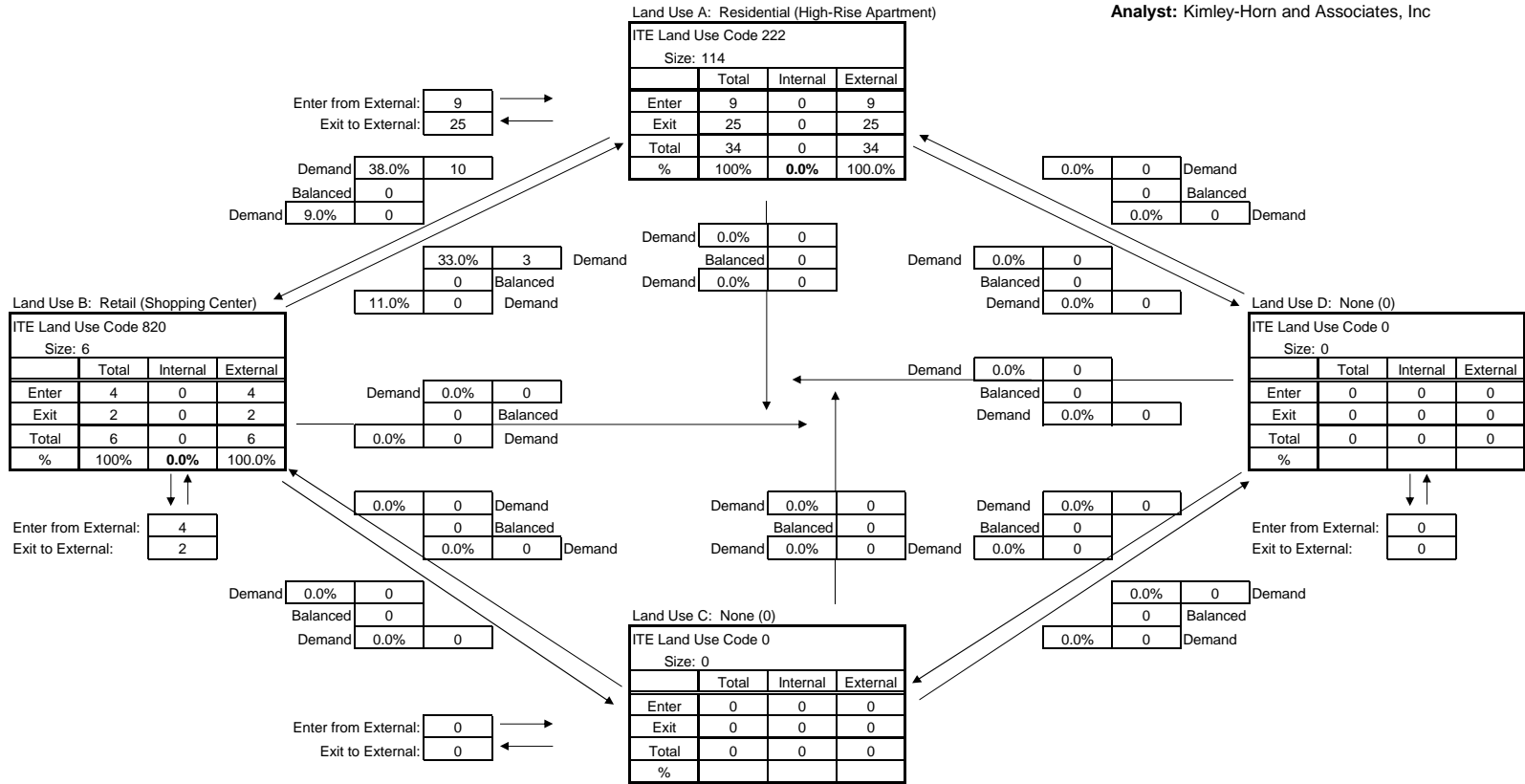


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	226	117	0	0	343
Exit	228	115	0	0	343
Total	454	232	0	0	686
Single Use Trip Gen Estimate	480	258	0	0	738

Overall Internal Capture = **7.05%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #21  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

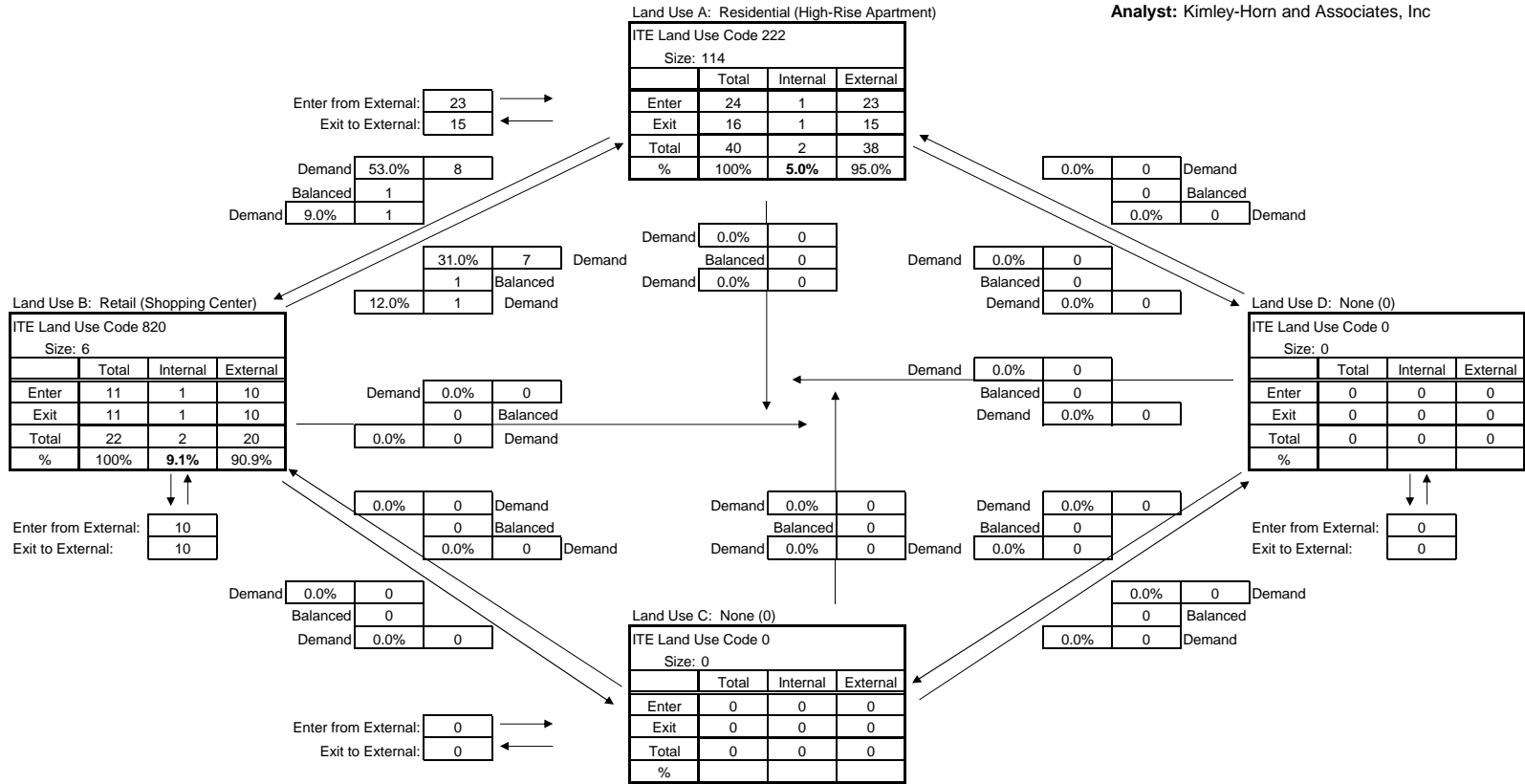


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	9	4	0	0	13
Exit	25	2	0	0	27
Total	34	6	0	0	40
Single Use Trip Gen Estimate	34	6	0	0	40

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #21  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

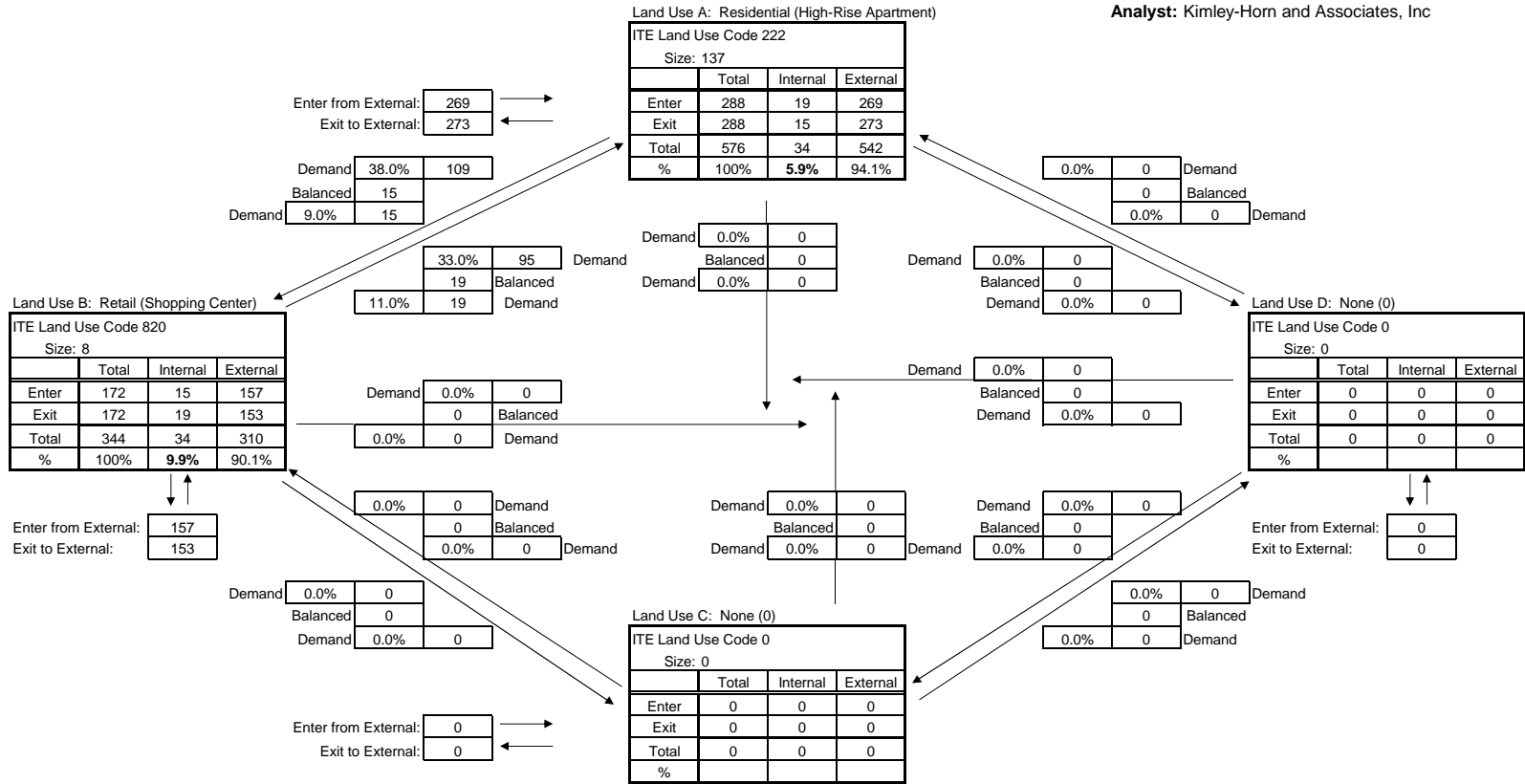


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	23	10	0	0	33
Exit	15	10	0	0	25
Total	38	20	0	0	58
Single Use Trip Gen Estimate	40	22	0	0	62

Overall Internal Capture = **6.45%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #22  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc



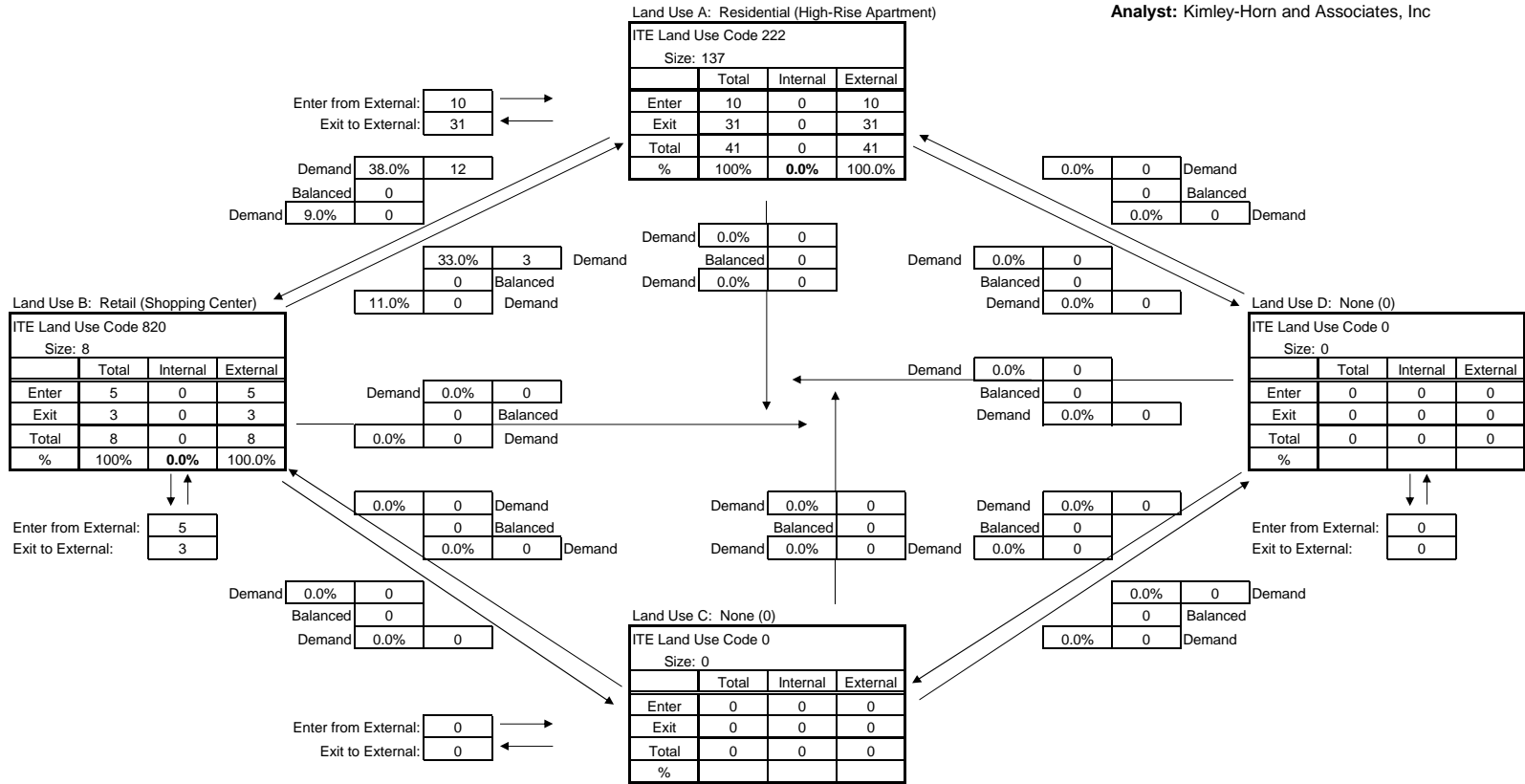
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	269	157	0	0	426
Exit	273	153	0	0	426
Total	542	310	0	0	852
Single Use Trip Gen Estimate	576	344	0	0	920

Overall Internal Capture = **7.39%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #22  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

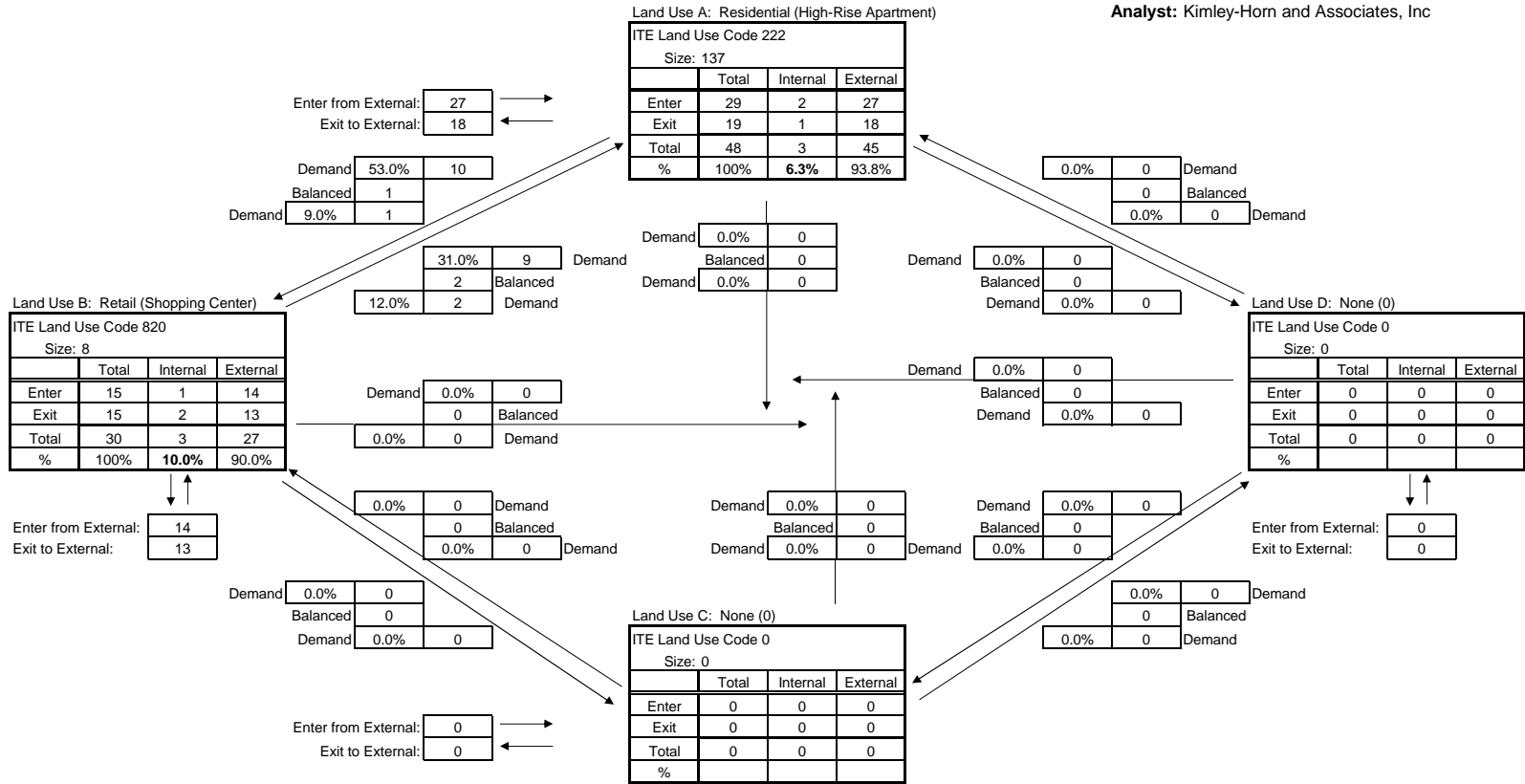


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	10	5	0	0	15
Exit	31	3	0	0	34
Total	41	8	0	0	49
Single Use Trip Gen Estimate	41	8	0	0	49

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #22  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

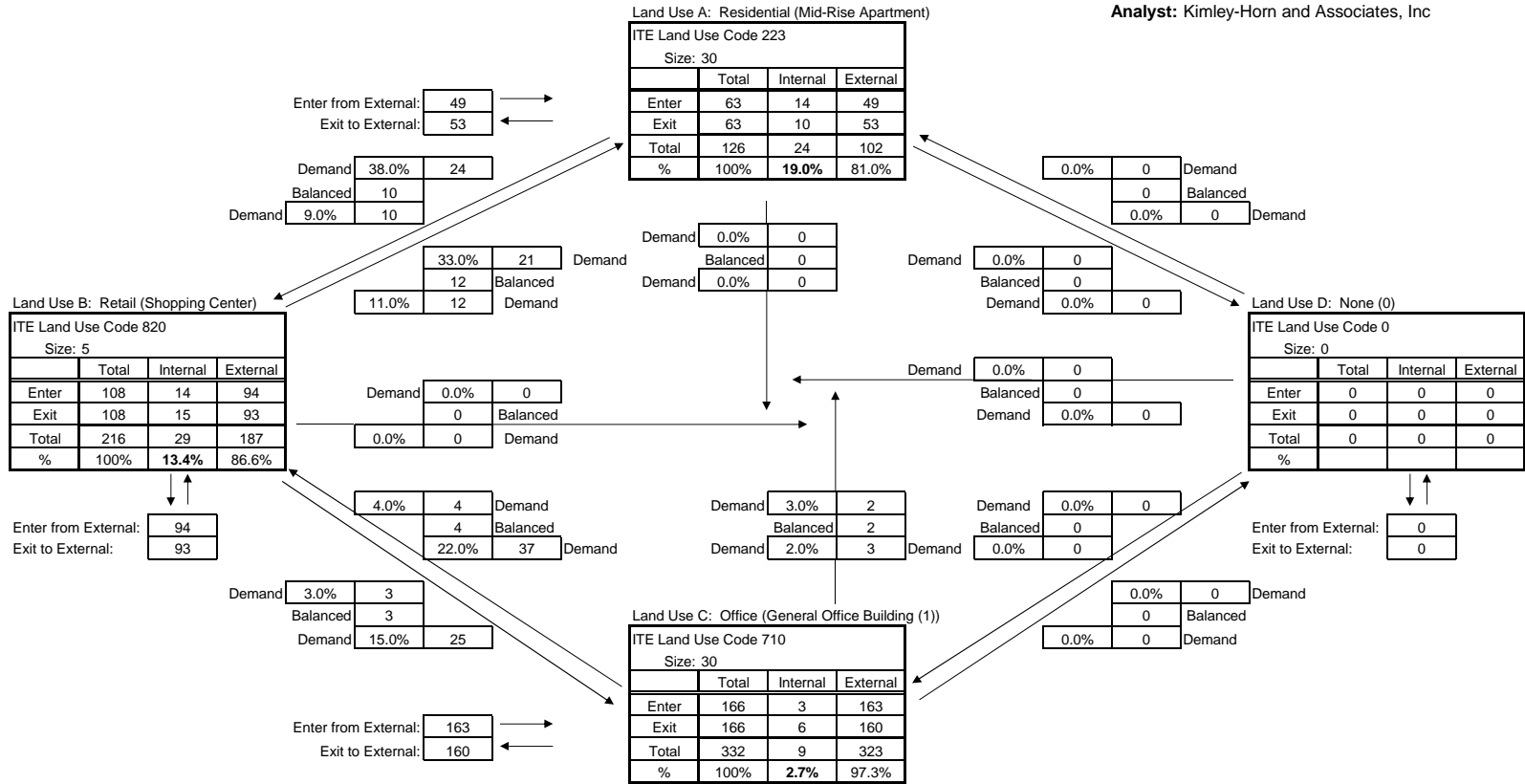


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	27	14	0	0	41
Exit	18	13	0	0	31
Total	45	27	0	0	72
Single Use Trip Gen Estimate	48	30	0	0	78

Overall Internal Capture = **7.69%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #28  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

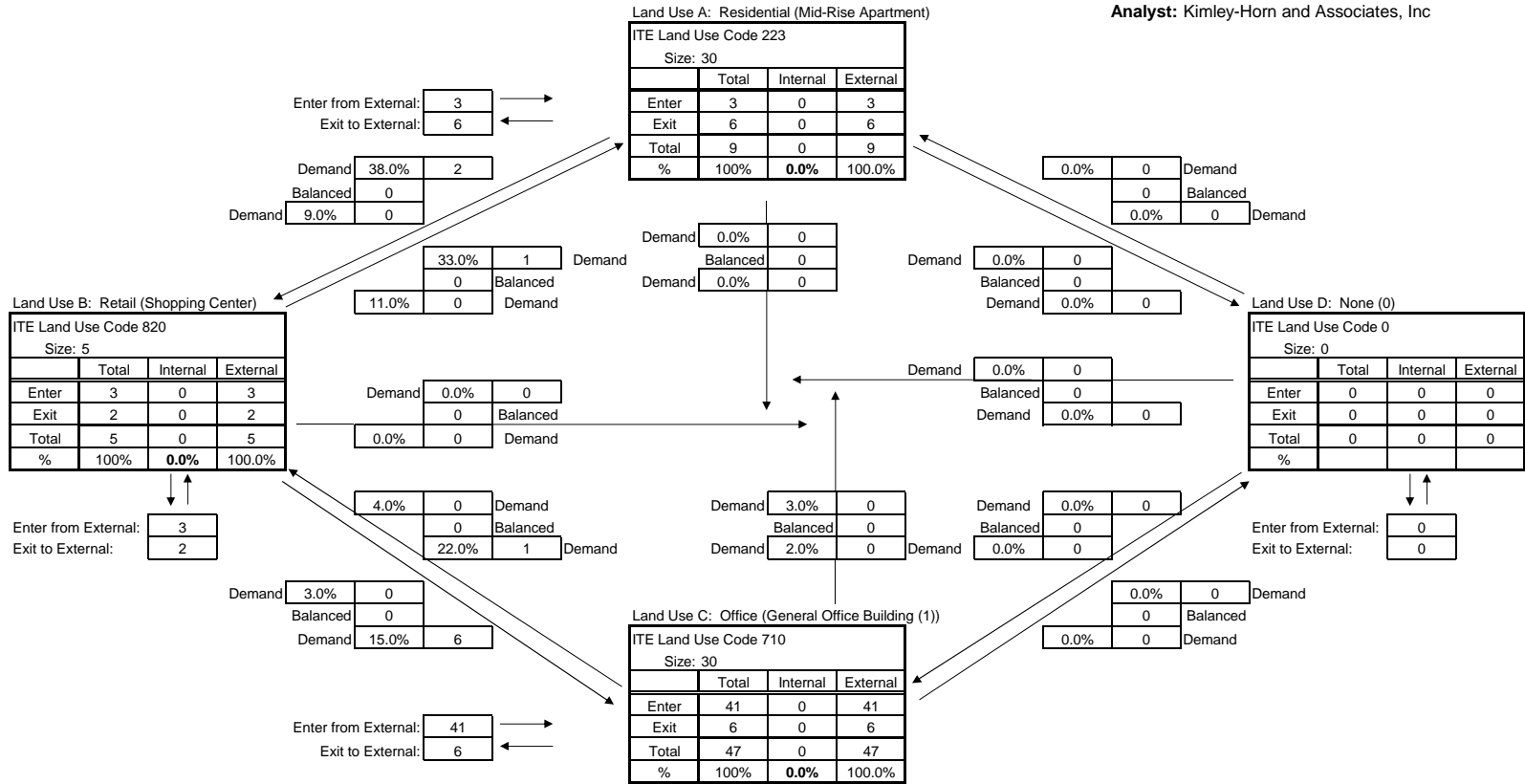


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	49	94	163	0	306
Exit	53	93	160	0	306
Total	102	187	323	0	612
Single Use Trip Gen Estimate	126	216	332	0	674

Overall Internal Capture = **9.20%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #28  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

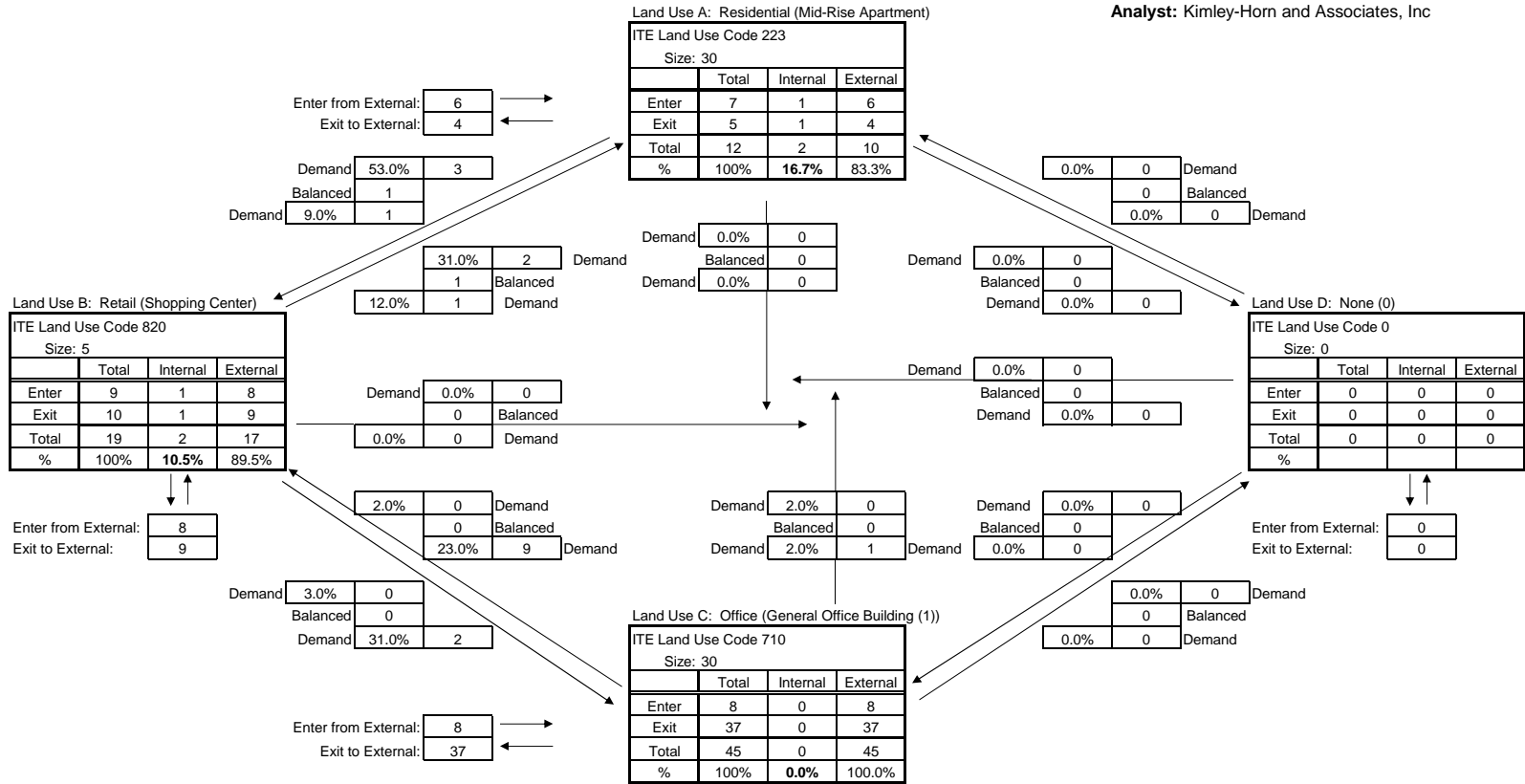


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	3	3	41	0	47
Exit	6	2	6	0	14
<b>Total</b>	<b>9</b>	<b>5</b>	<b>47</b>	<b>0</b>	<b>61</b>
Single Use Trip Gen Estimate	9	5	47	0	61

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #28  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

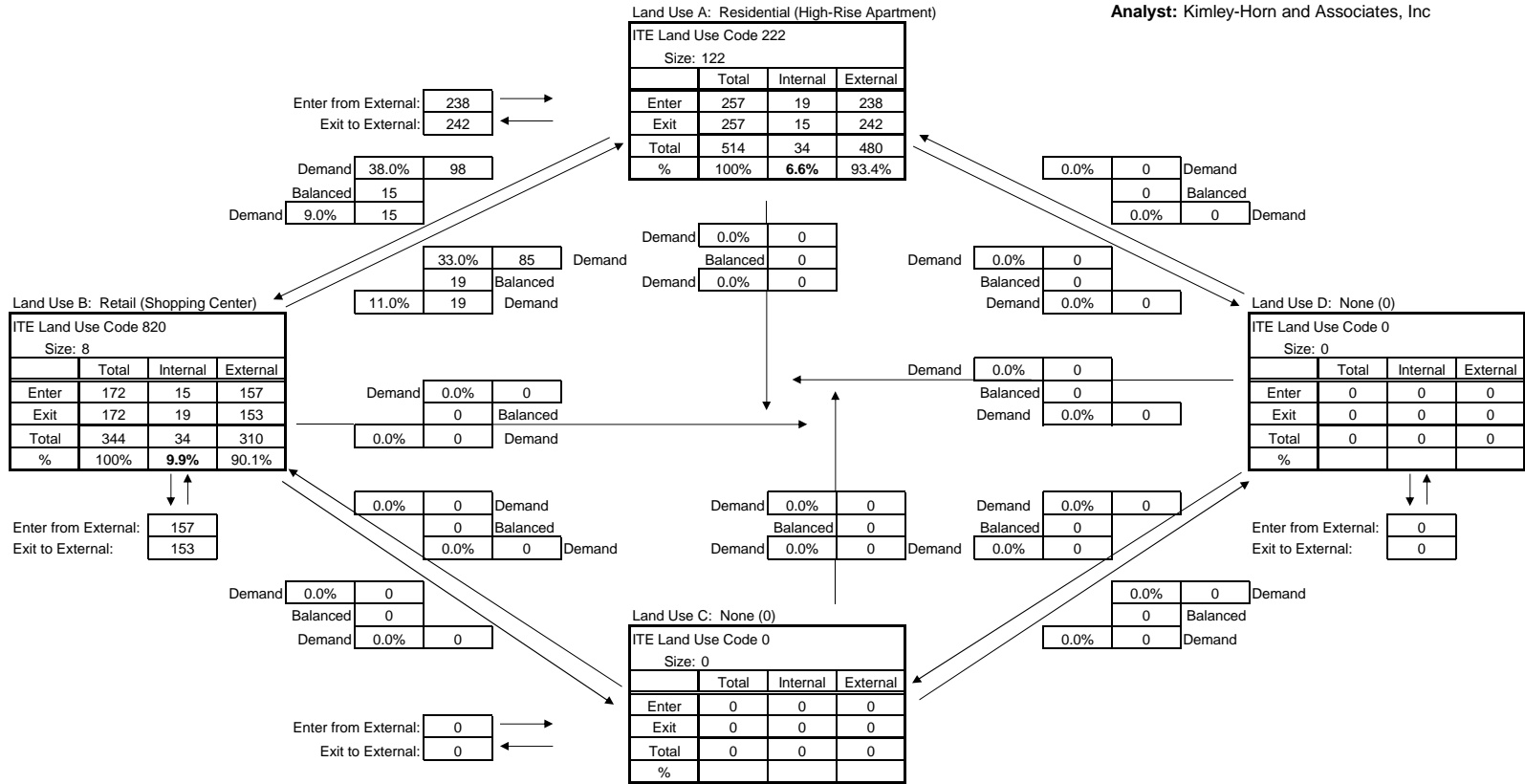


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	8	8	0	22
Exit	4	9	37	0	50
Total	10	17	45	0	72
Single Use Trip Gen Estimate	12	19	45	0	76

Overall Internal Capture = **5.26%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #30  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

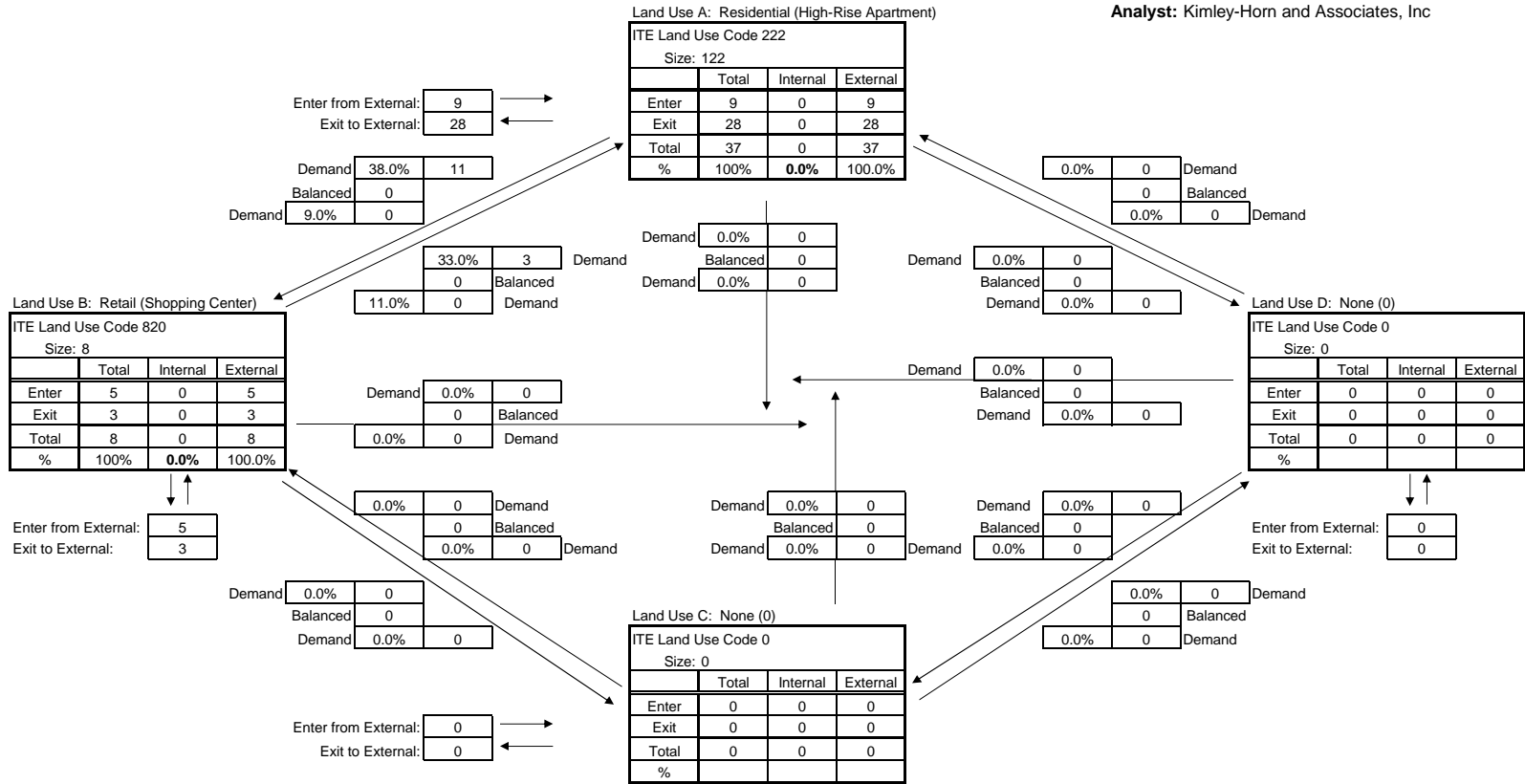


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	238	157	0	0	395
Exit	242	153	0	0	395
Total	480	310	0	0	790
Single Use Trip Gen Estimate	514	344	0	0	858

Overall Internal Capture = **7.93%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #30  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

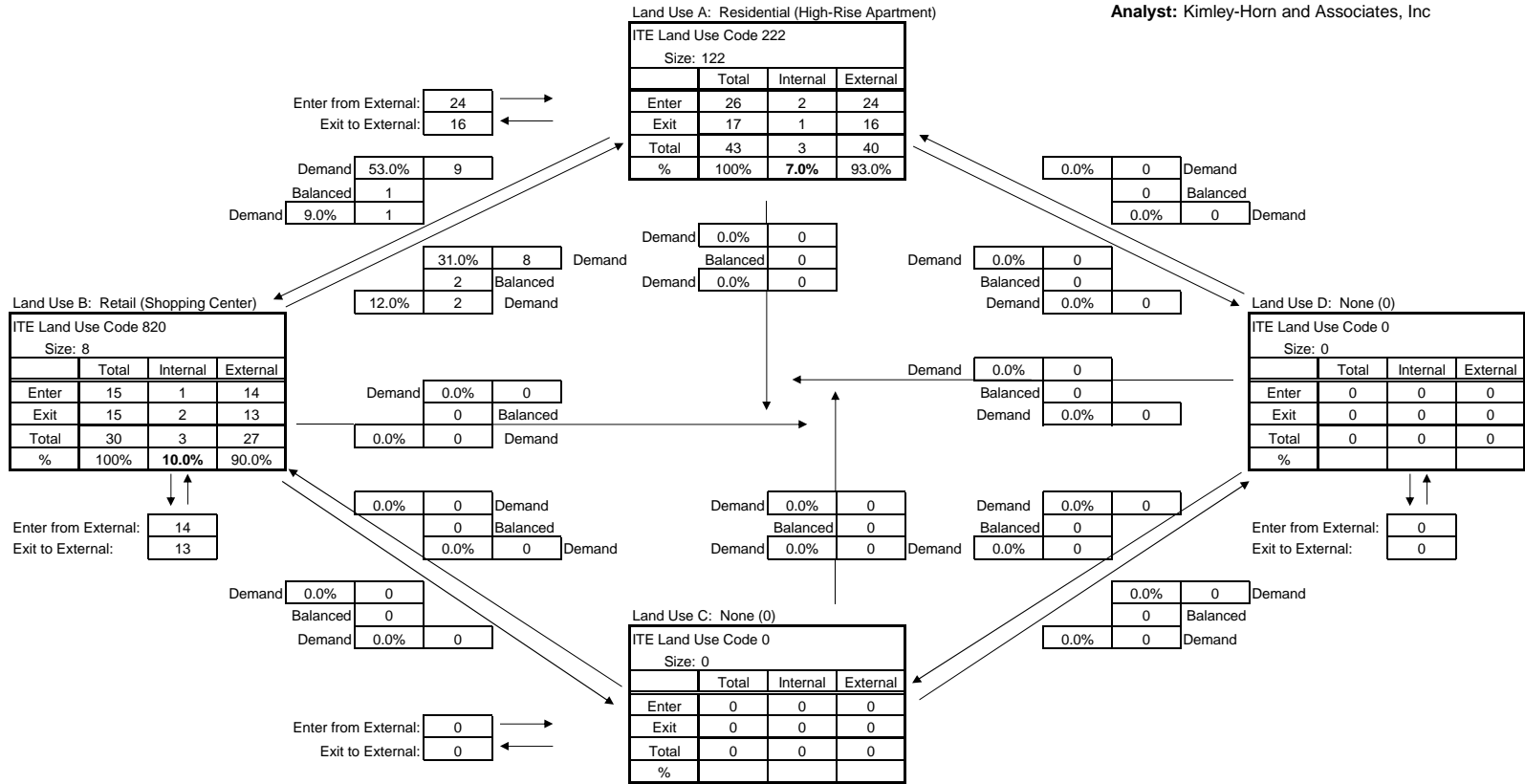


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	9	5	0	0	14
Exit	28	3	0	0	31
Total	37	8	0	0	45
Single Use Trip Gen Estimate	37	8	0	0	45

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #30  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc



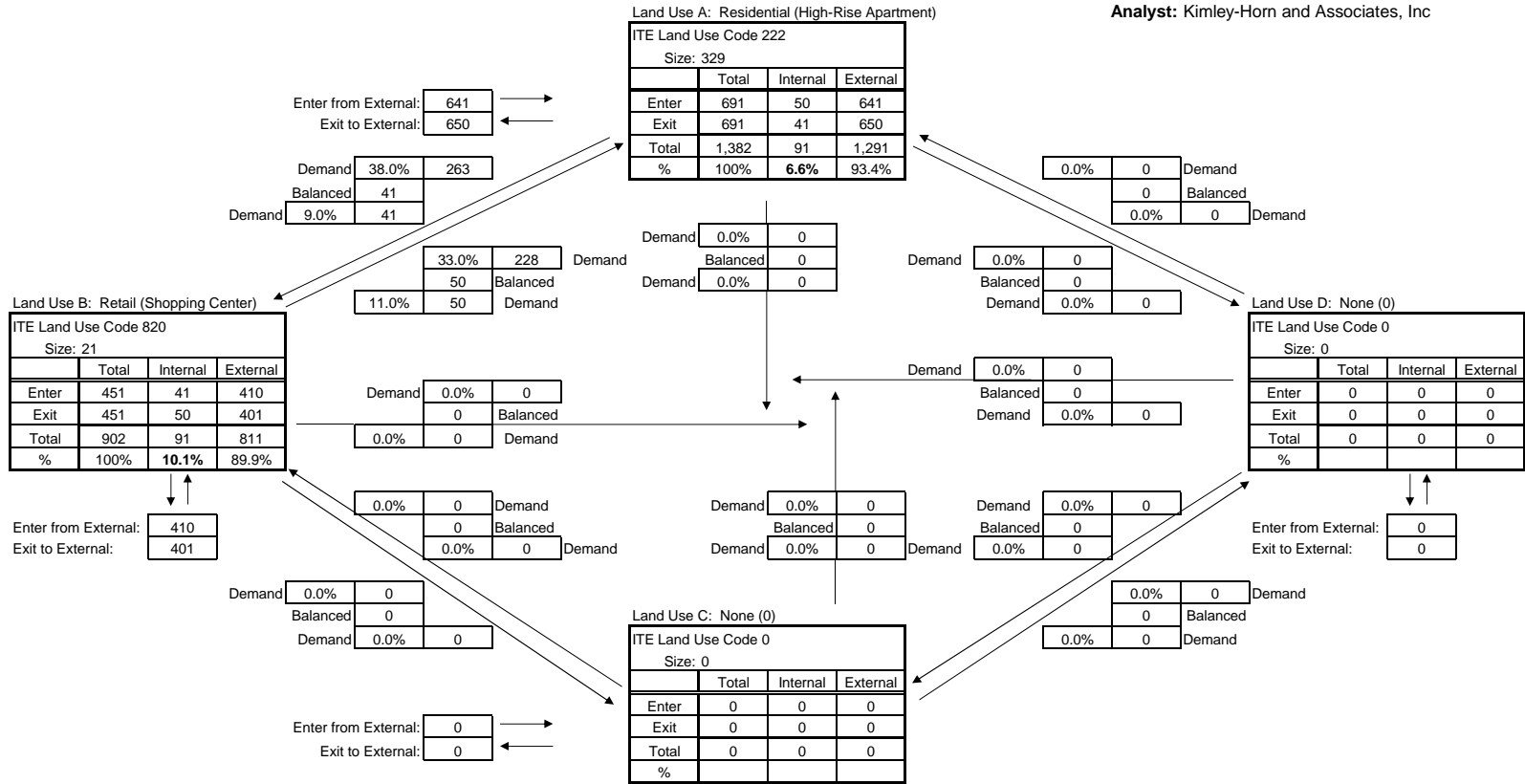
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	24	14	0	0	38
Exit	16	13	0	0	29
Total	40	27	0	0	67
Single Use Trip Gen Estimate	43	30	0	0	73

Overall Internal Capture = **8.22%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #31  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

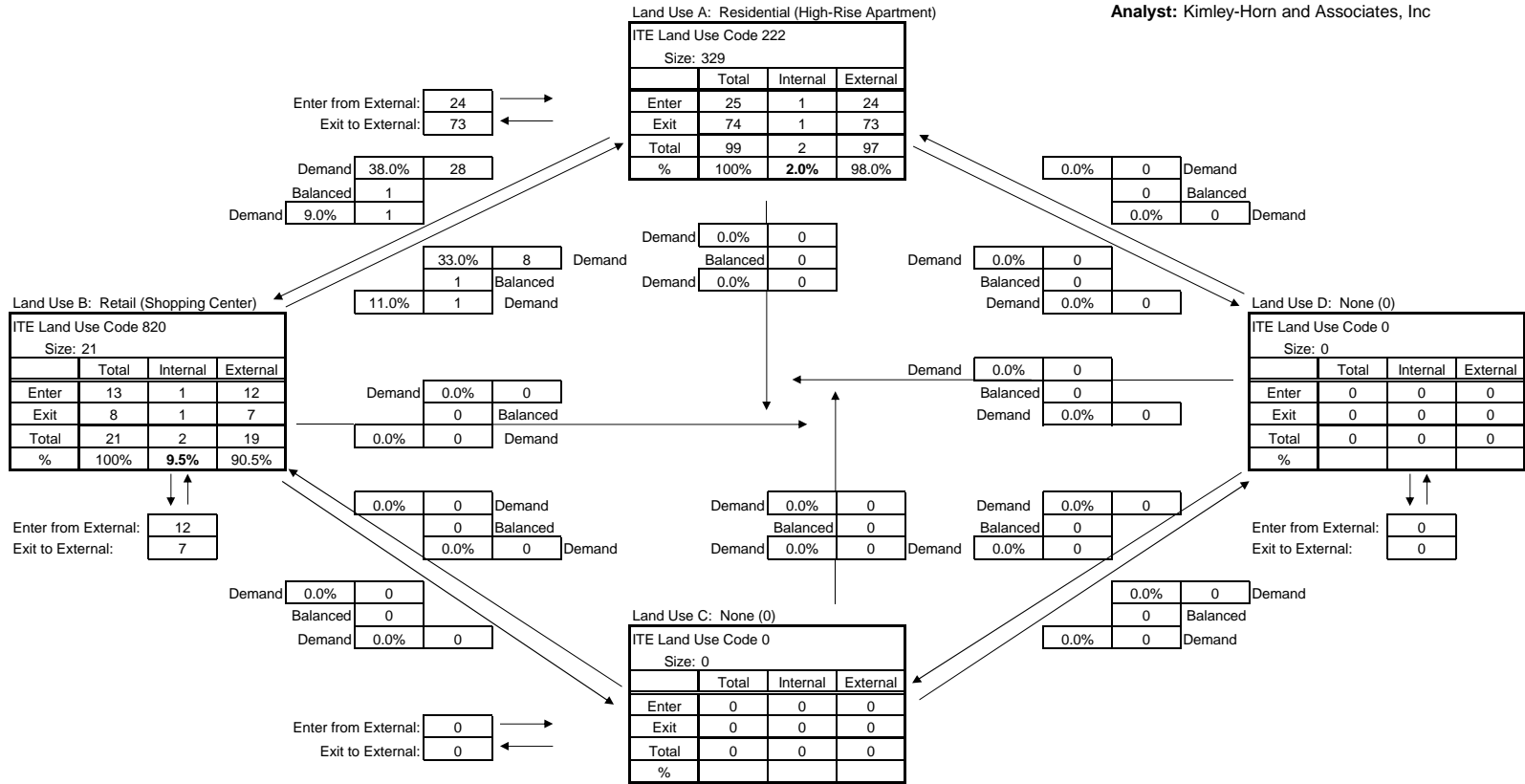


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	641	410	0	0	1,051
Exit	650	401	0	0	1,051
Total	1,291	811	0	0	2,102
Single Use Trip Gen Estimate	1,382	902	0	0	2,284

Overall Internal Capture = **7.97%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #31  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

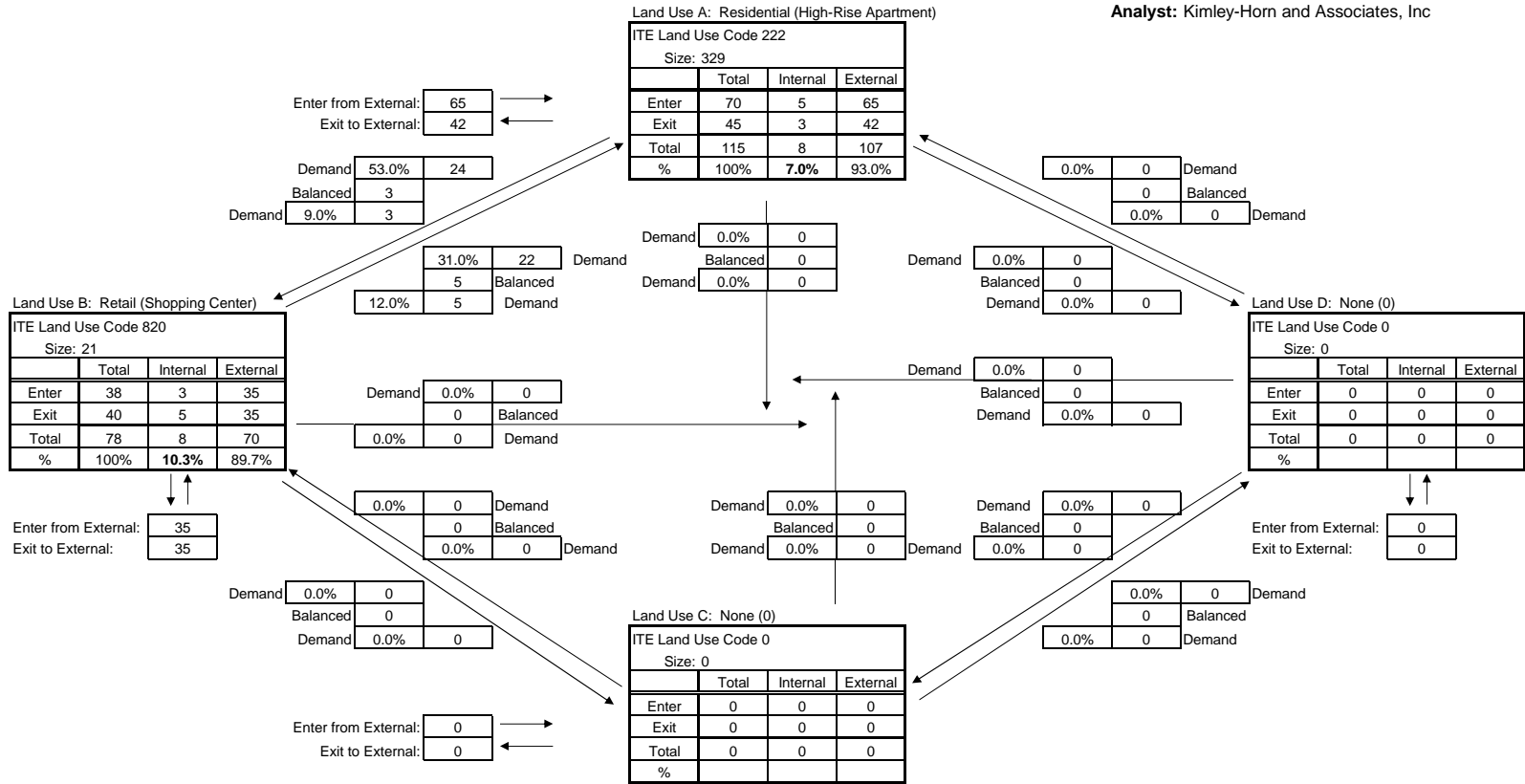


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	24	12	0	0	36
Exit	73	7	0	0	80
Total	97	19	0	0	116
Single Use Trip Gen Estimate	99	21	0	0	120

Overall Internal Capture = **3.33%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

**Project Number:** 097897000  
**Project Name:** Site #31  
**Scenario:**  
**Analysis Period:** PM Peak  
**Analyst:** Kimley-Horn and Associates, Inc

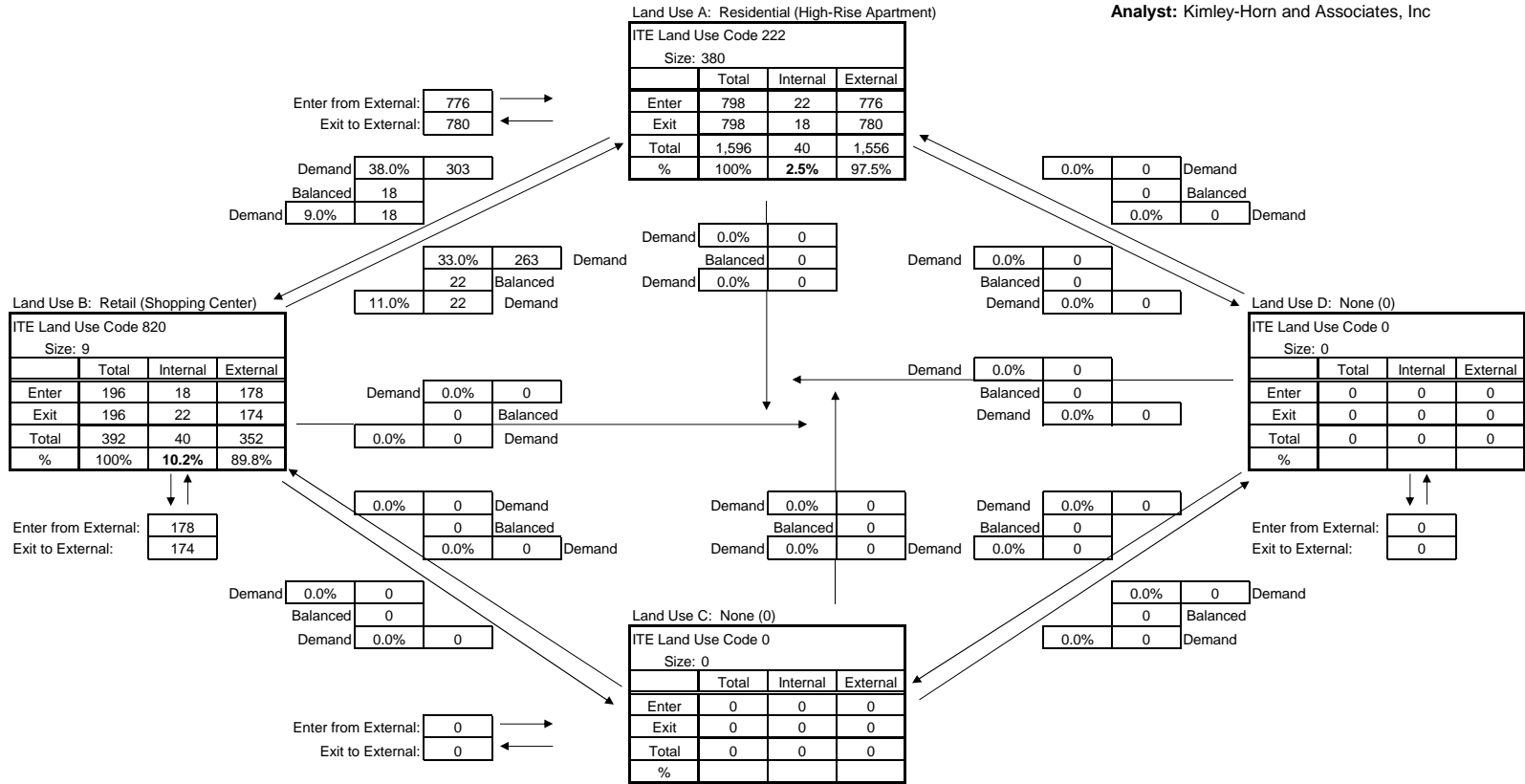


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	65	35	0	0	100
Exit	42	35	0	0	77
Total	107	70	0	0	177
Single Use Trip Gen Estimate	115	78	0	0	193

**Overall Internal Capture = 8.29%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #32  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

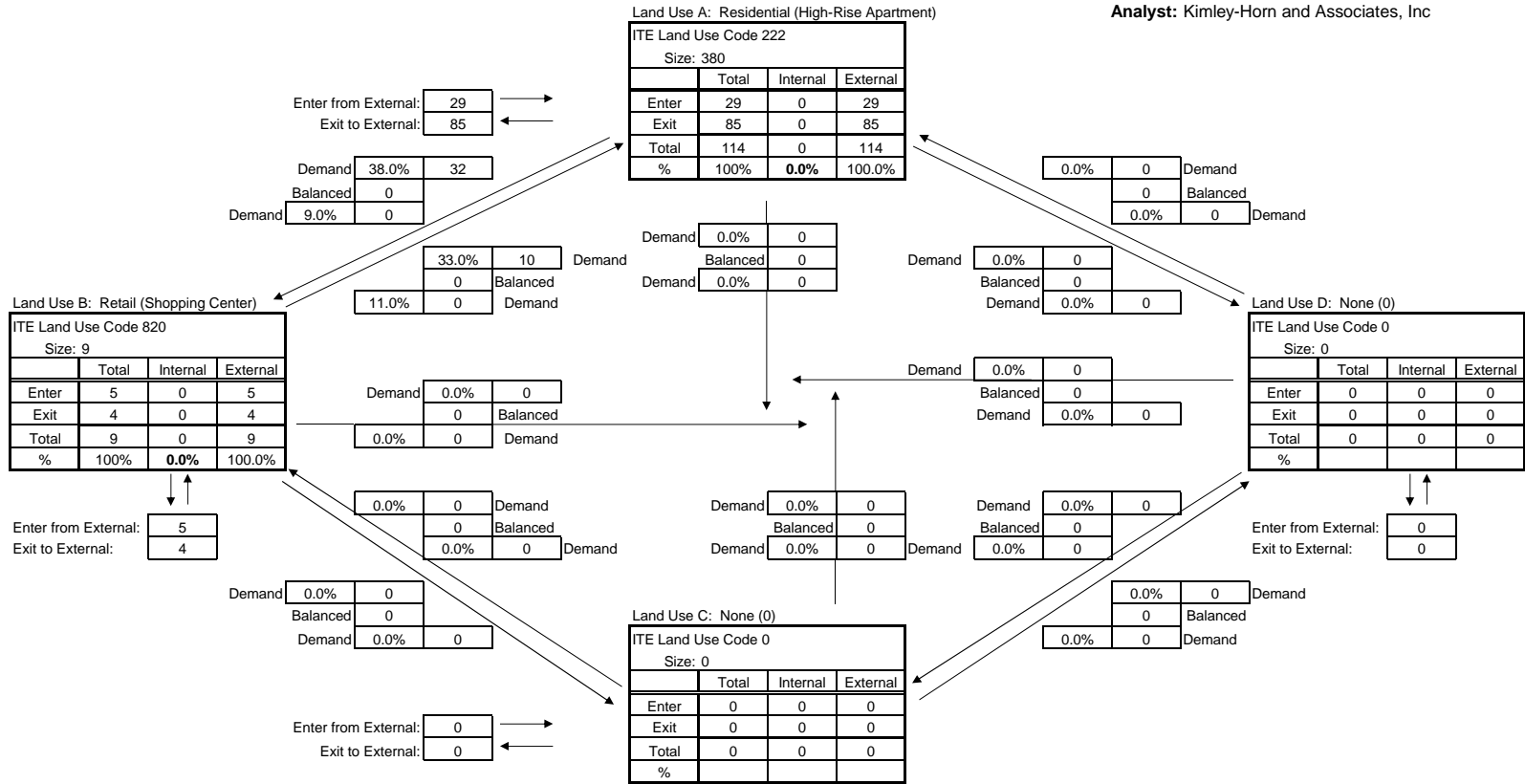


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	776	178	0	0	954
Exit	780	174	0	0	954
Total	1,556	352	0	0	1,908
Single Use Trip Gen Estimate	1,596	392	0	0	1,988

Overall Internal Capture = **4.02%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

**Project Number:** 097897000  
**Project Name:** Site #32  
**Scenario:**  
**Analysis Period:** AM Peak  
**Analyst:** Kimley-Horn and Associates, Inc

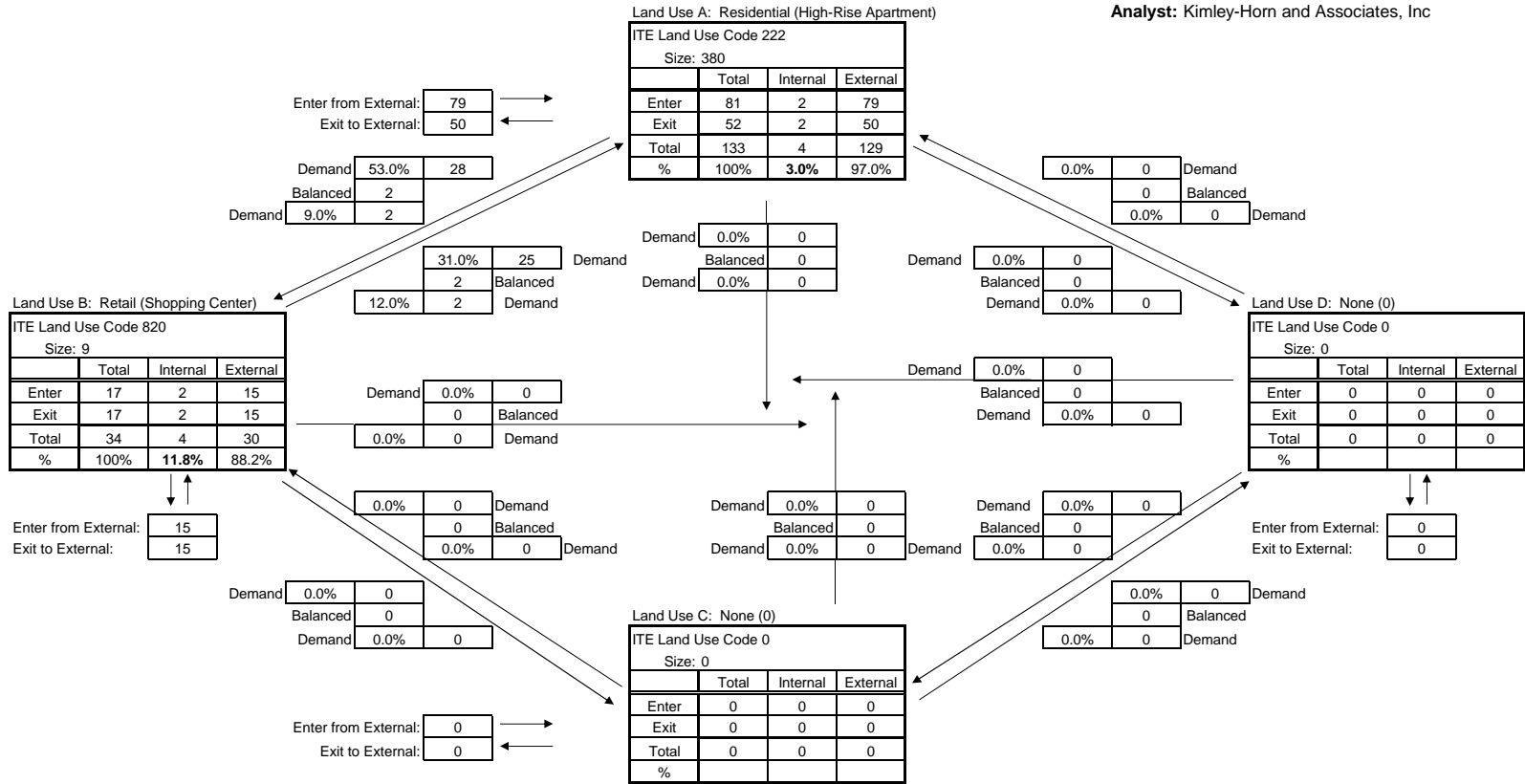


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	29	5	0	0	34
Exit	85	4	0	0	89
Total	114	9	0	0	123
Single Use Trip Gen Estimate	114	9	0	0	123

**Overall Internal Capture = 0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #32  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

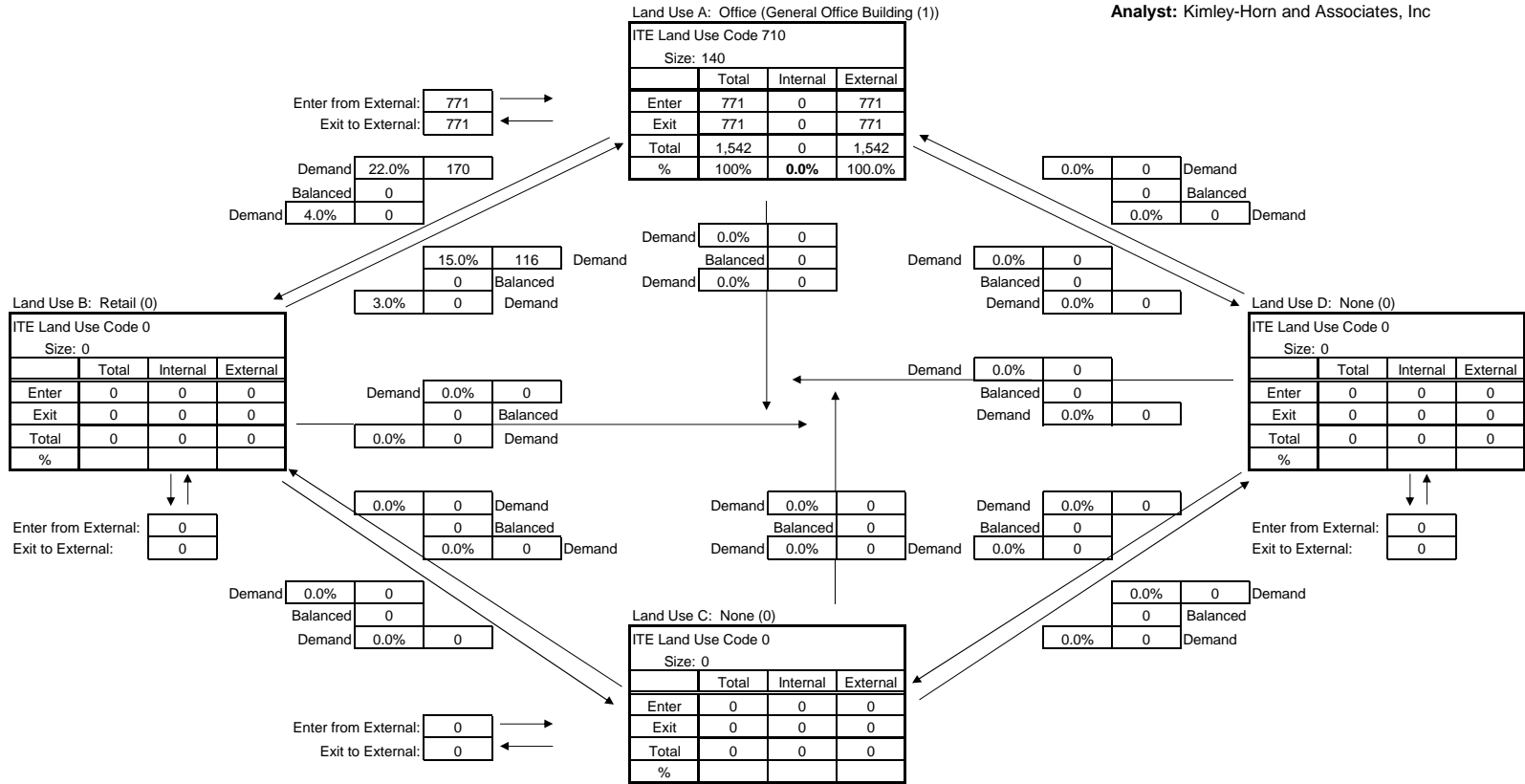


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	79	15	0	0	94
Exit	50	15	0	0	65
Total	129	30	0	0	159
Single Use Trip Gen Estimate	133	34	0	0	167

Overall Internal Capture = **4.79%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #36  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

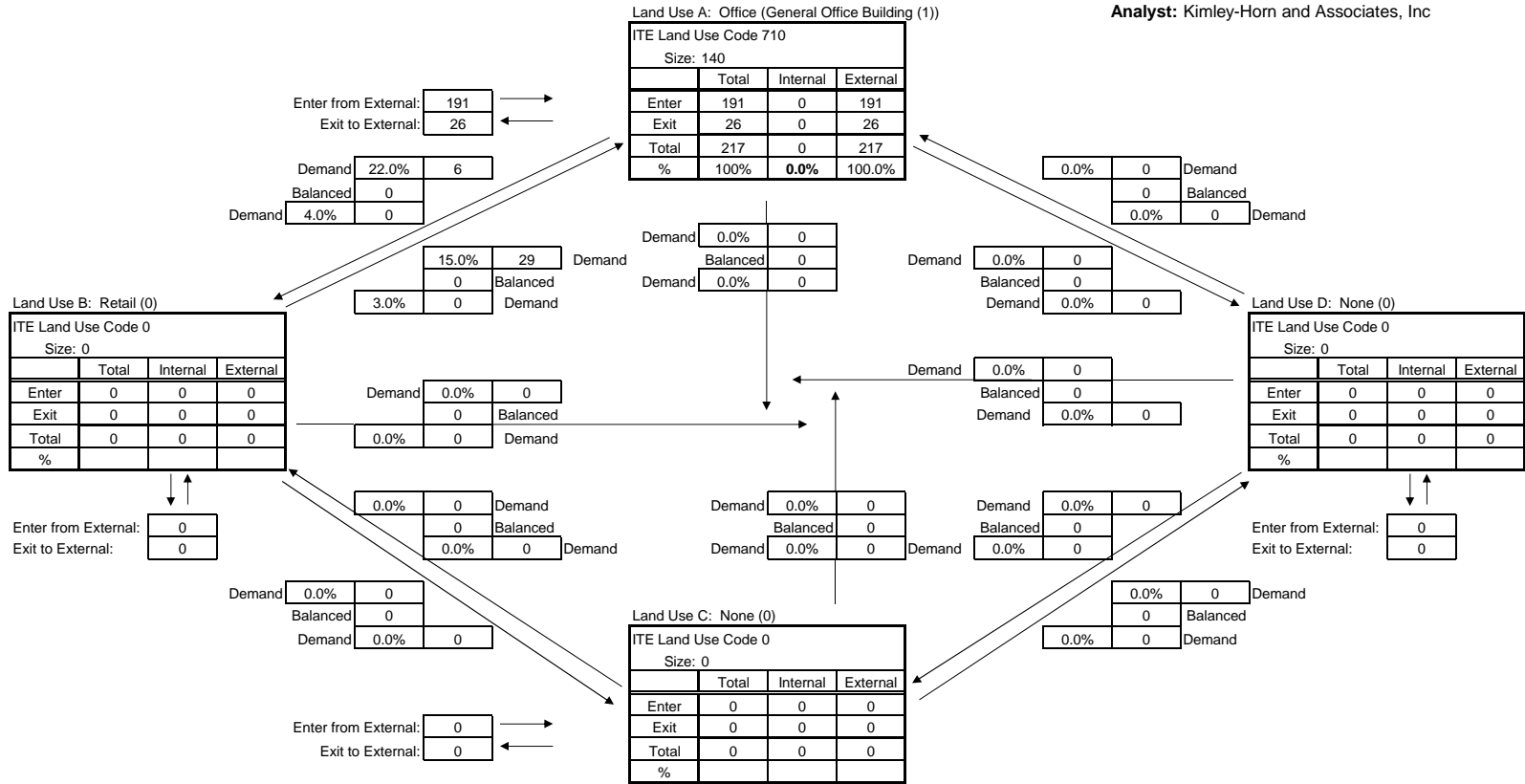


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	771	0	0	0	771
Exit	771	0	0	0	771
Total	1,542	0	0	0	1,542
Single Use Trip Gen Estimate	1,542	0	0	0	1,542

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #36  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc



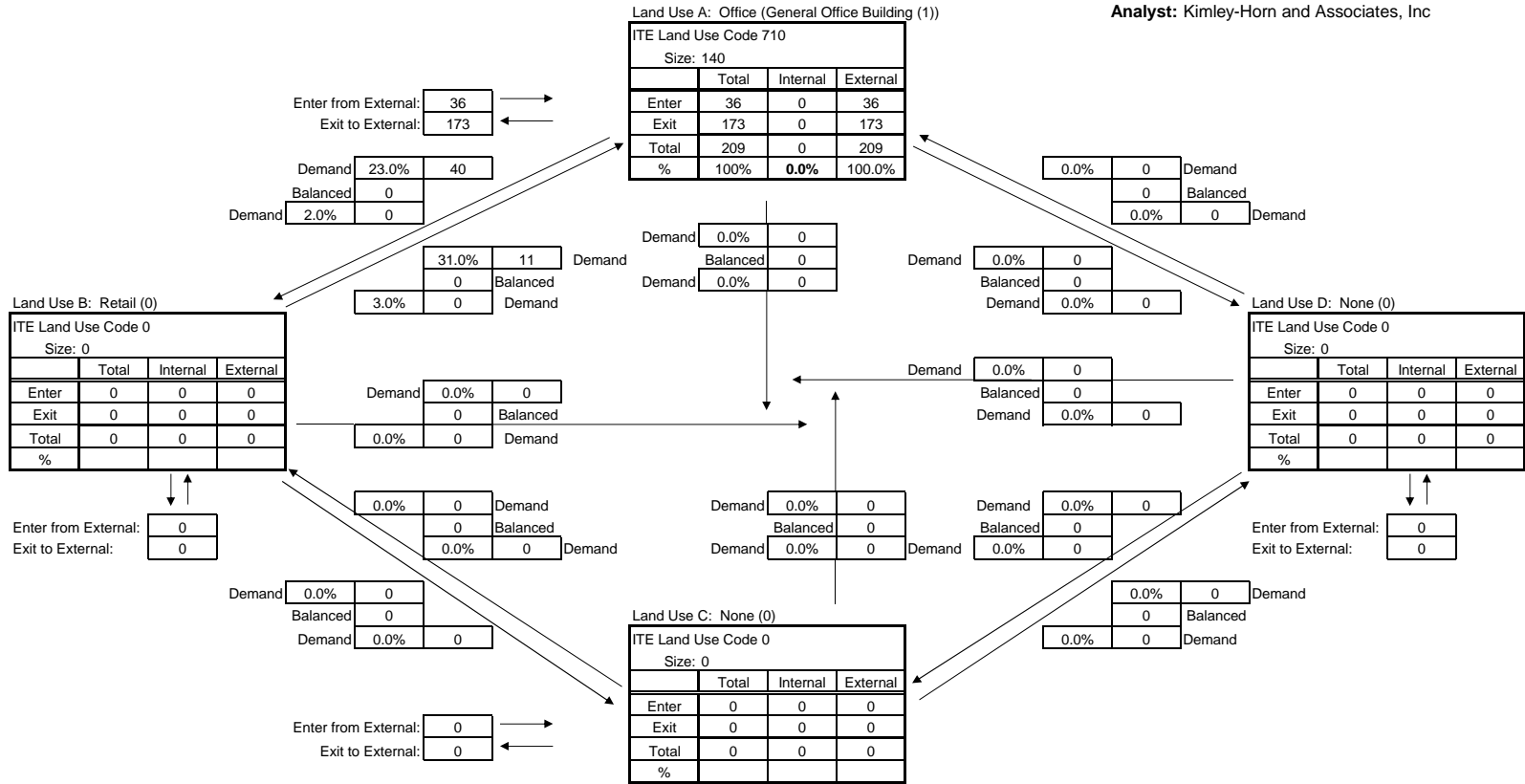
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	191	0	0	0	191
Exit	26	0	0	0	26
Total	217	0	0	0	217
Single Use Trip Gen Estimate	217	0	0	0	217

Overall Internal Capture = **0.00%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #36  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

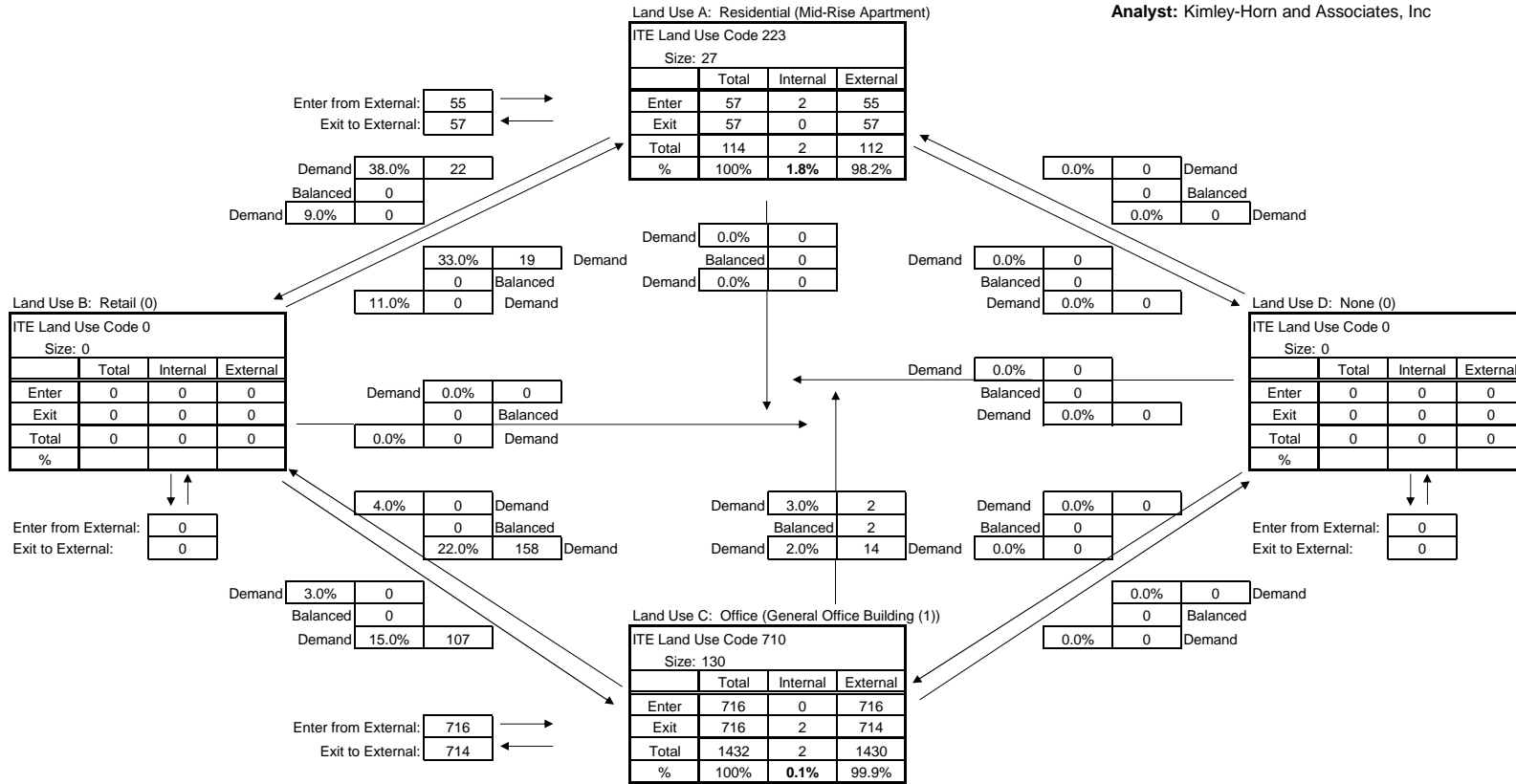


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	36	0	0	0	36
Exit	173	0	0	0	173
Total	209	0	0	0	209
Single Use Trip Gen Estimate	209	0	0	0	209

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #37  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

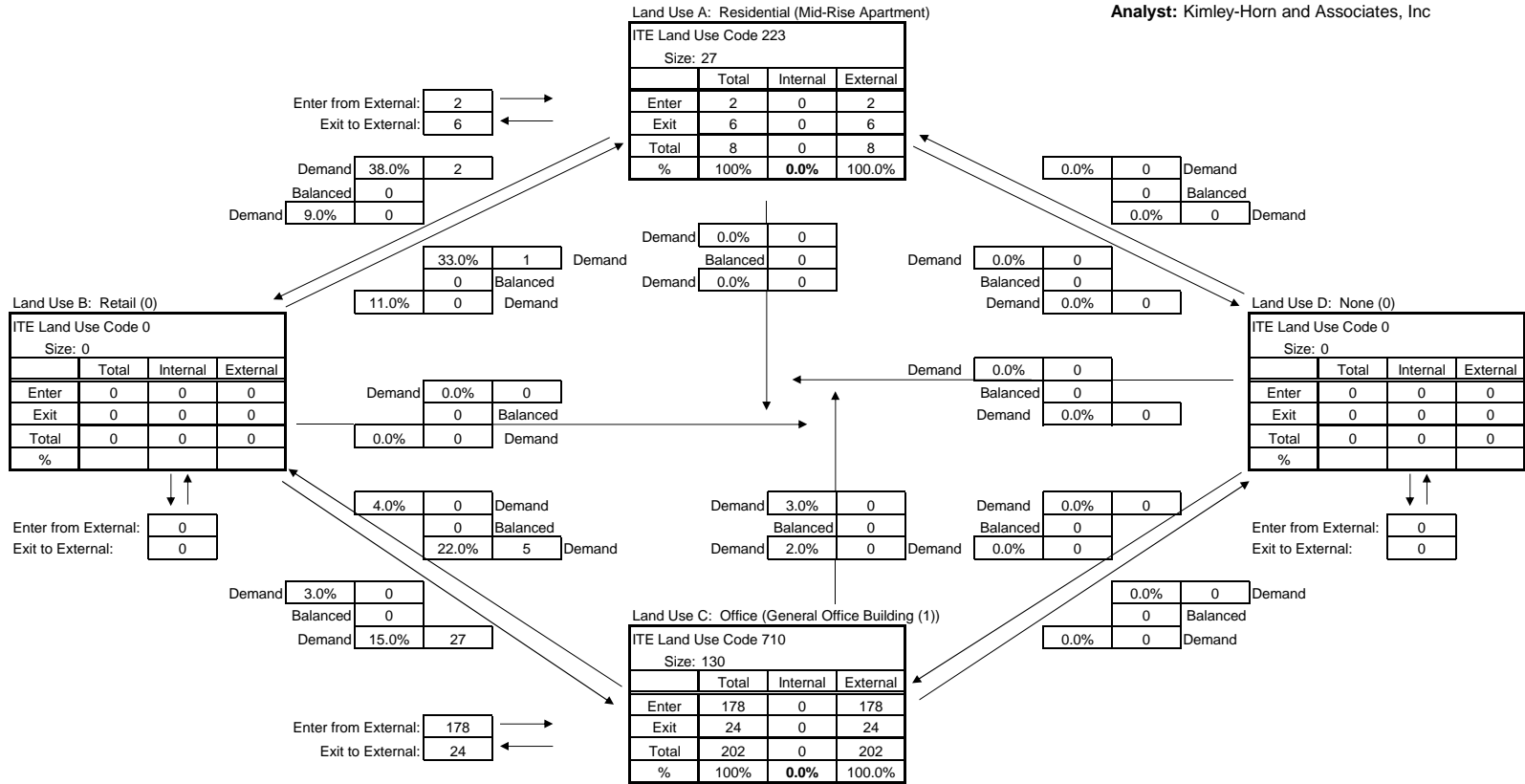


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	55	0	716	0	771
Exit	57	0	714	0	771
Total	112	0	1,430	0	1,542
Single Use Trip Gen Estimate	114	0	1,432	0	1,546

Overall Internal Capture = **0.26%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #37  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

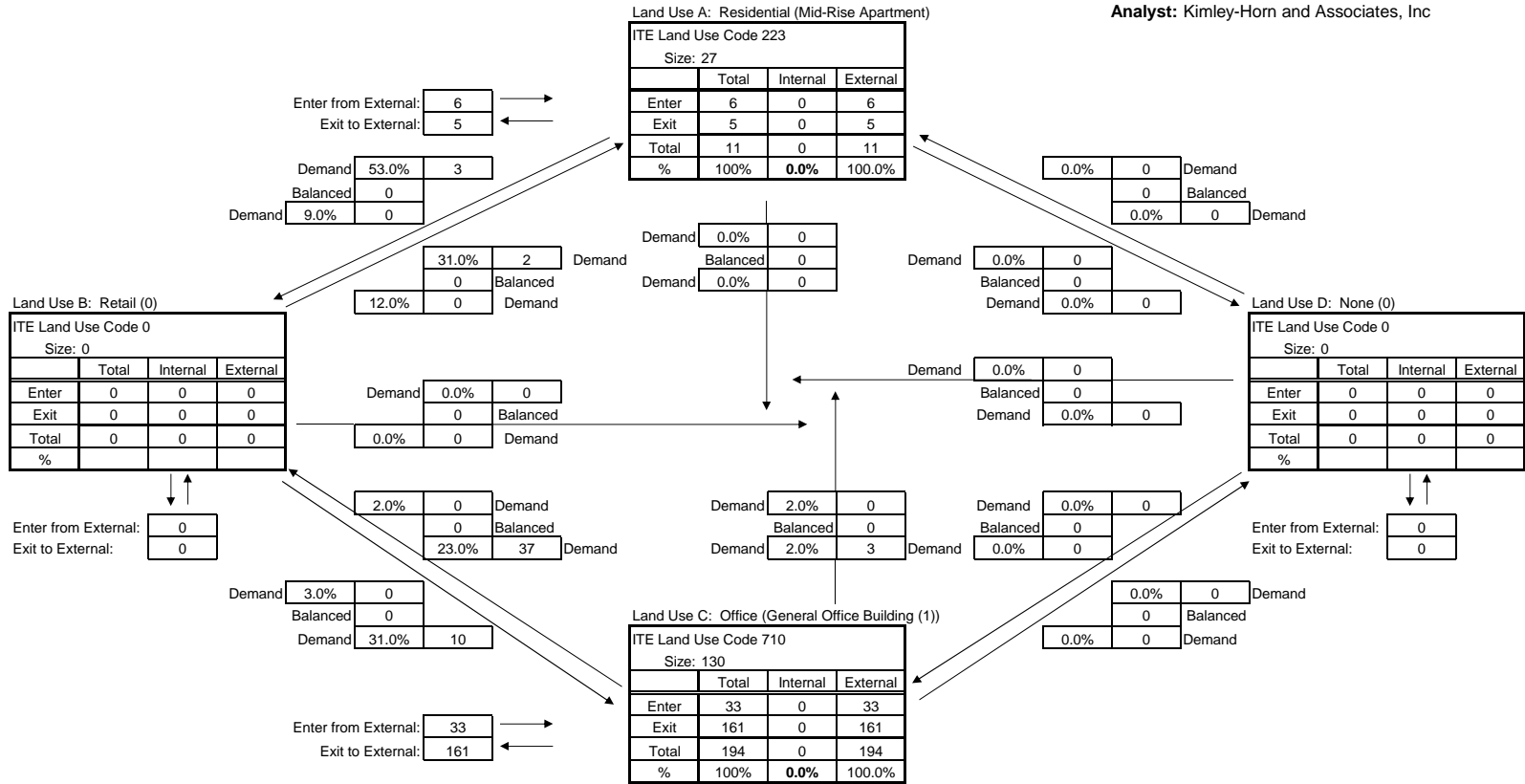


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	2	0	178	0	180
Exit	6	0	24	0	30
Total	8	0	202	0	210
Single Use Trip Gen Estimate	8	0	202	0	210

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #37  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

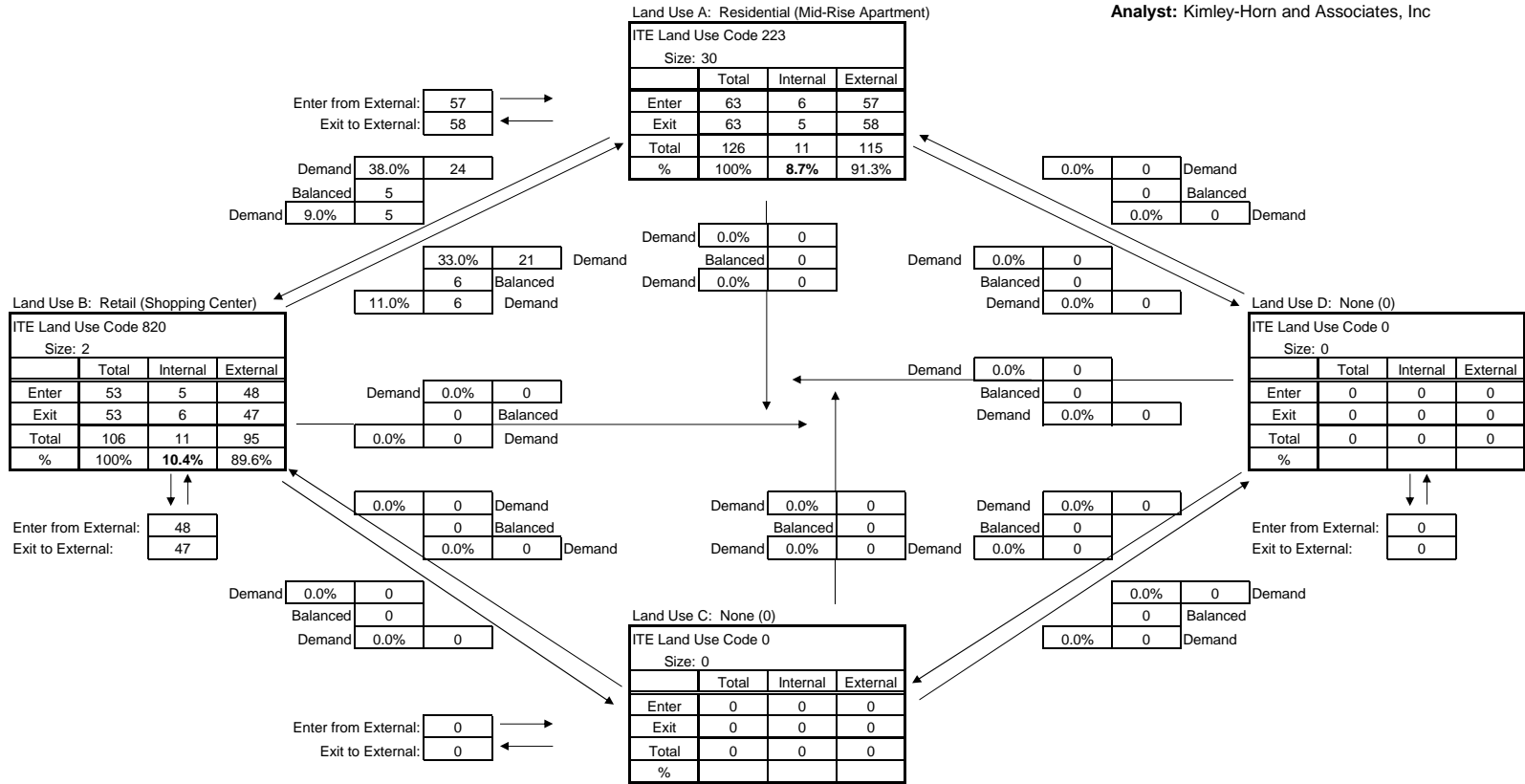


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	0	33	0	39
Exit	5	0	161	0	166
Total	11	0	194	0	205
Single Use Trip Gen Estimate	11	0	194	0	205

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #38  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

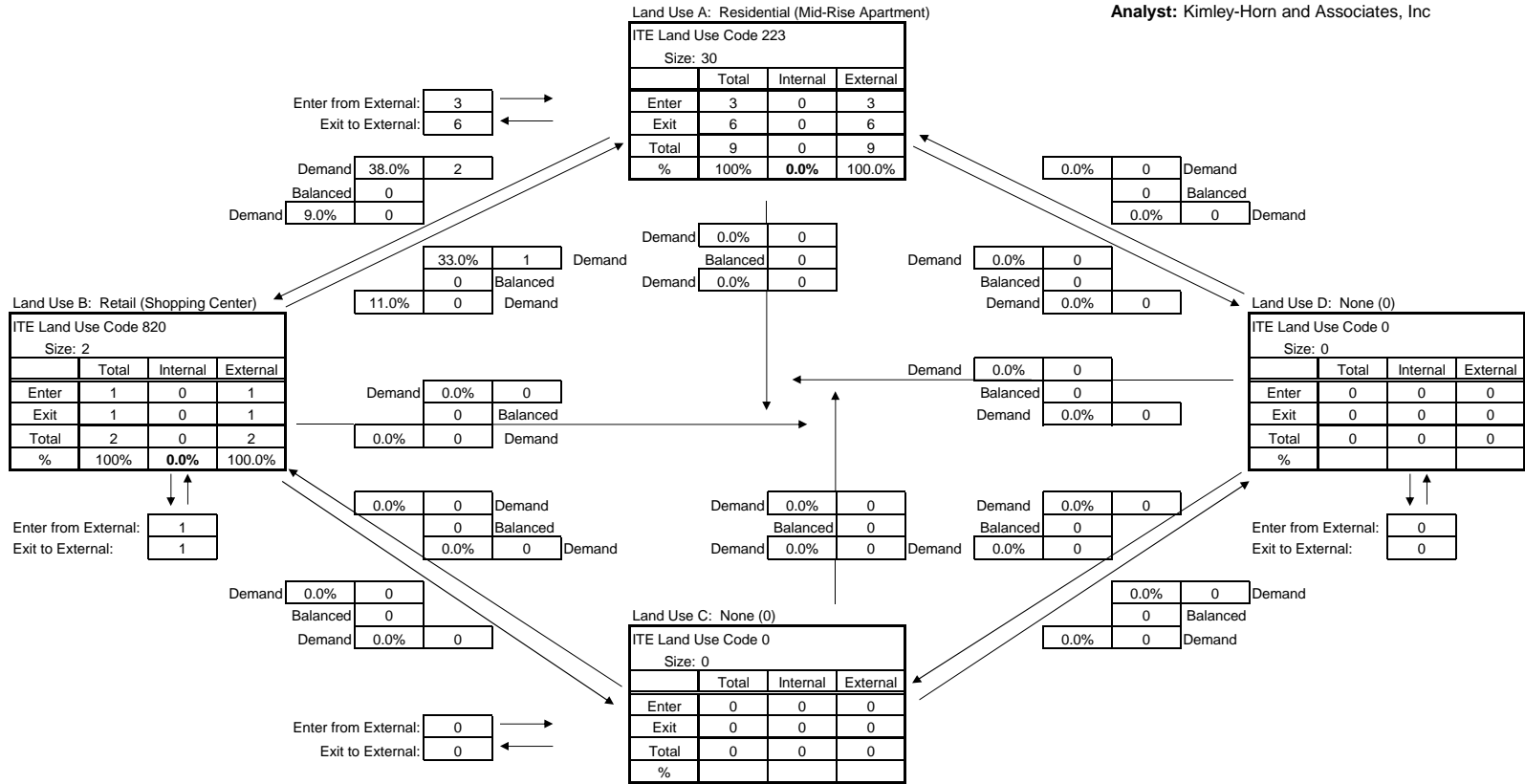


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	57	48	0	0	105
Exit	58	47	0	0	105
Total	115	95	0	0	210
Single Use Trip Gen Estimate	126	106	0	0	232

Overall Internal Capture = **9.48%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #38  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

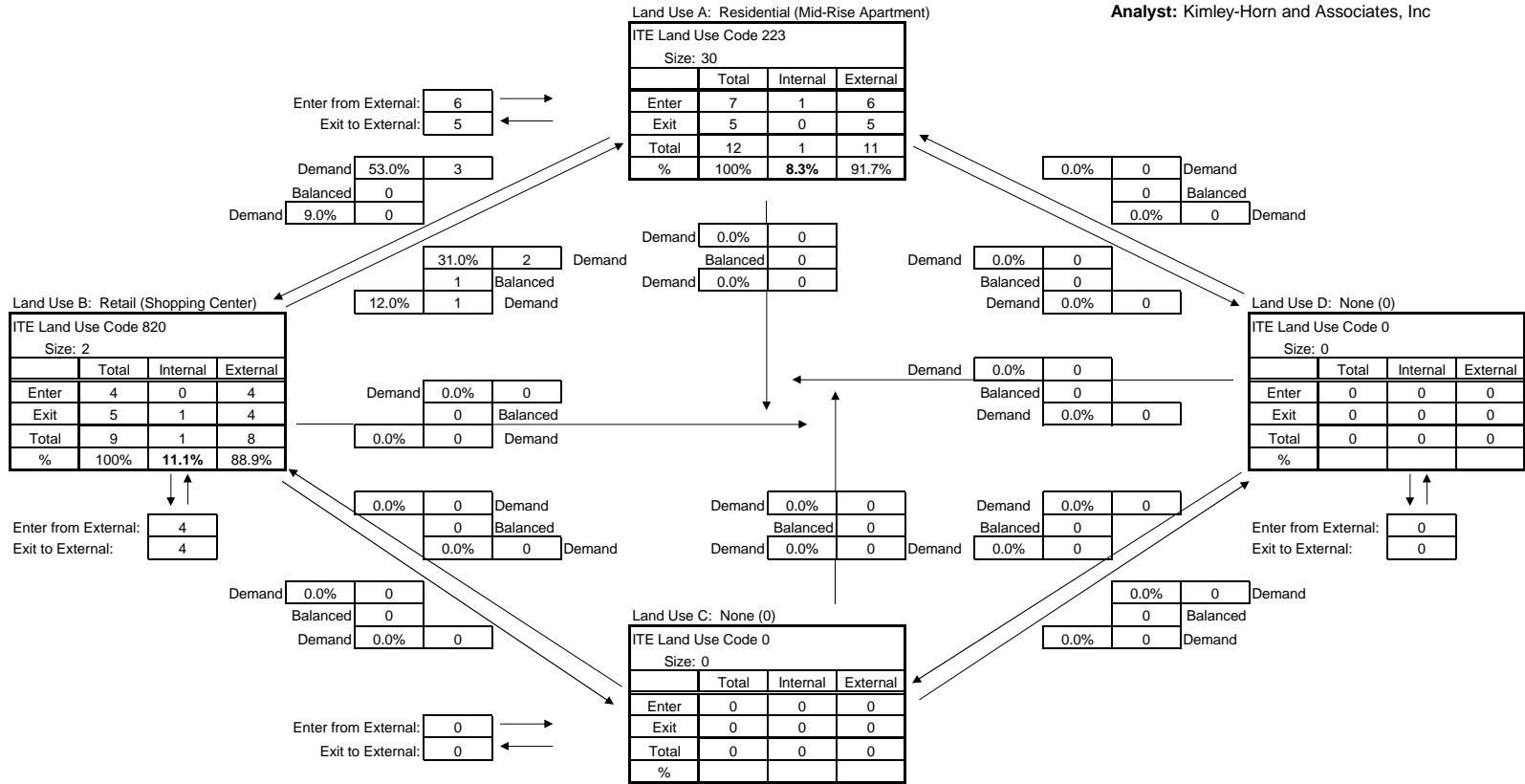


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	3	1	0	0	4
Exit	6	1	0	0	7
Total	9	2	0	0	11
Single Use Trip Gen Estimate	9	2	0	0	11

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #38  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

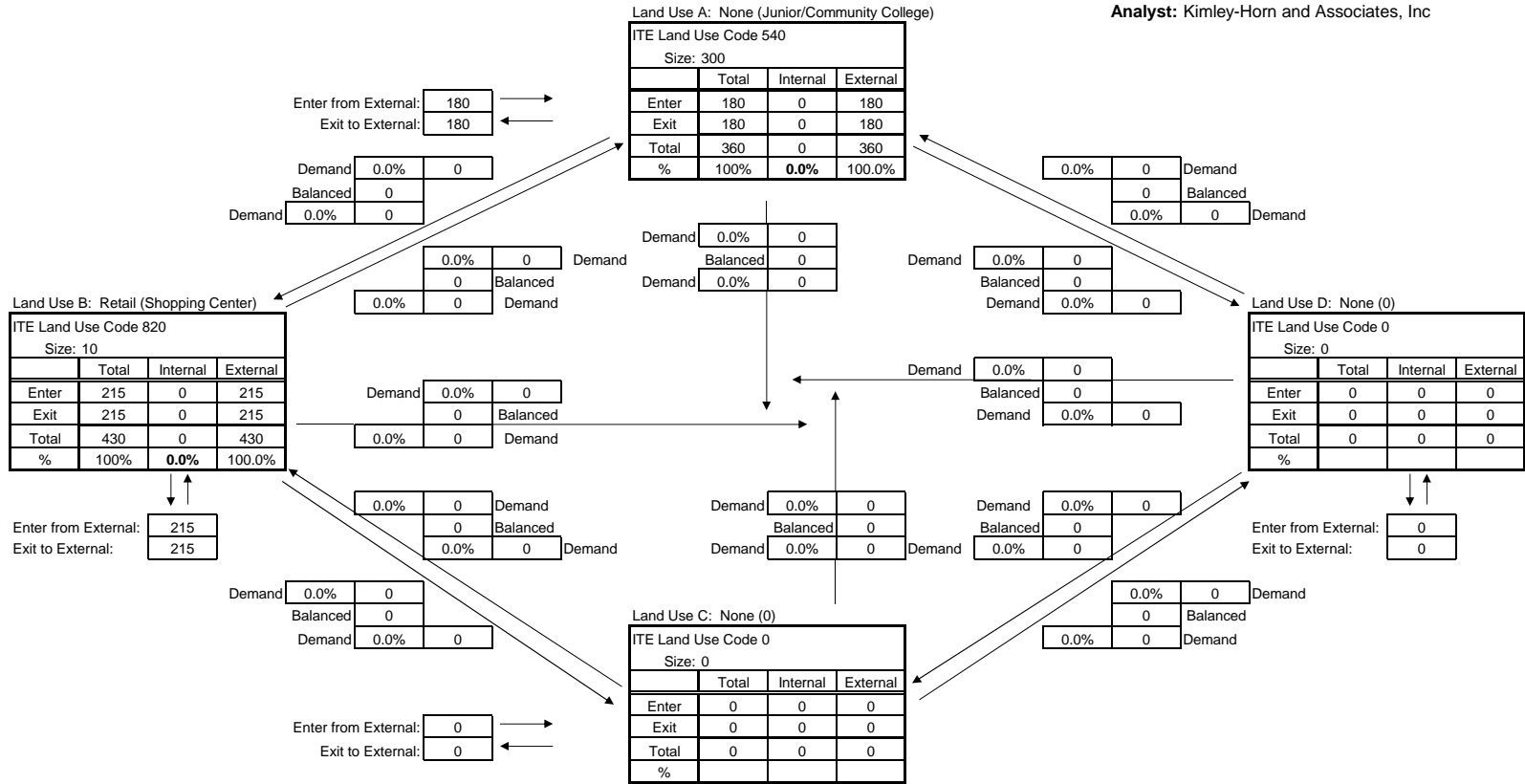


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	4	0	0	10
Exit	5	4	0	0	9
Total	11	8	0	0	19
Single Use Trip Gen Estimate	12	9	0	0	21

Overall Internal Capture = **9.52%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #39  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc



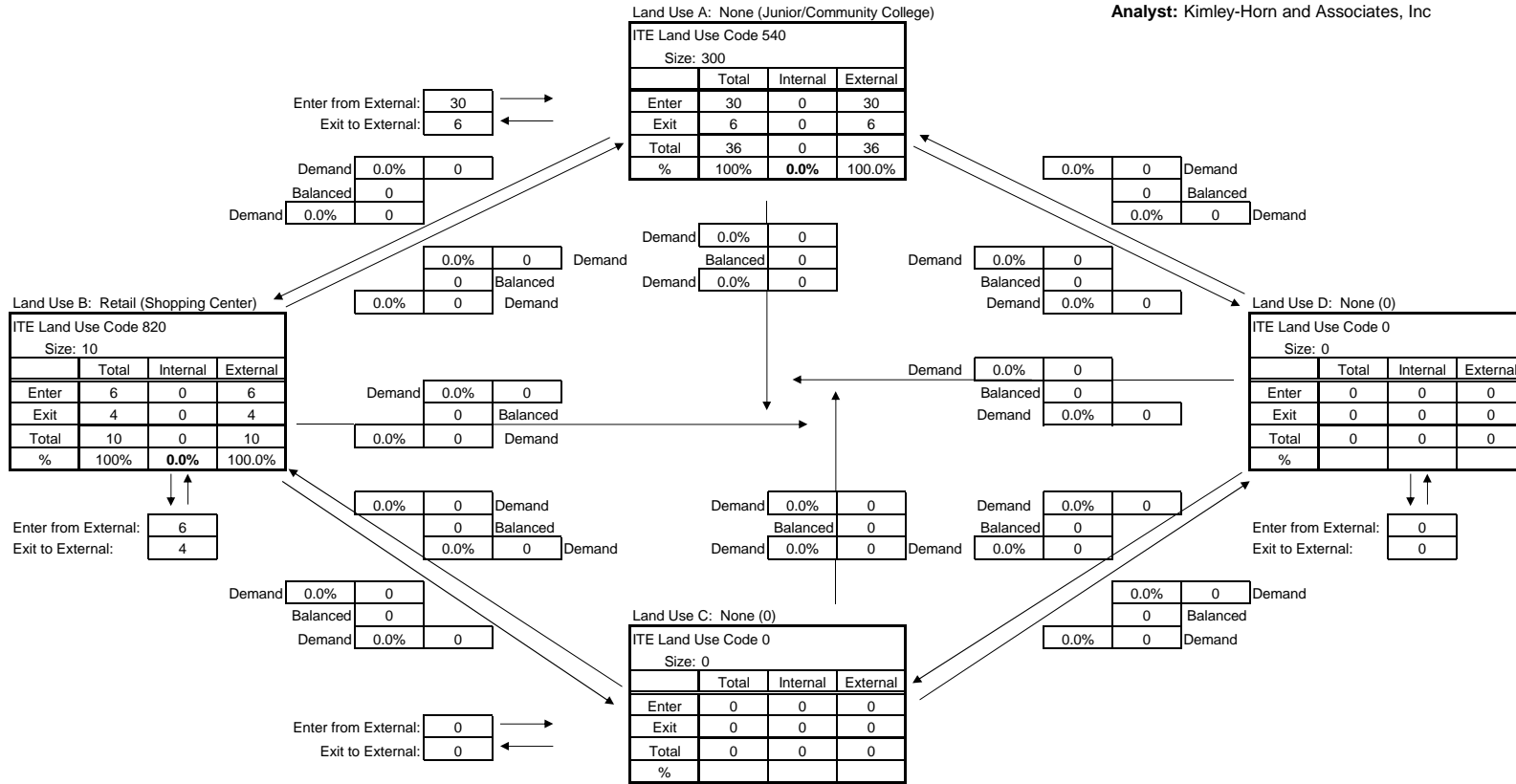
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	180	215	0	0	395
Exit	180	215	0	0	395
Total	360	430	0	0	790
Single Use Trip Gen Estimate	360	430	0	0	790

Overall Internal Capture = **0.00%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #39  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

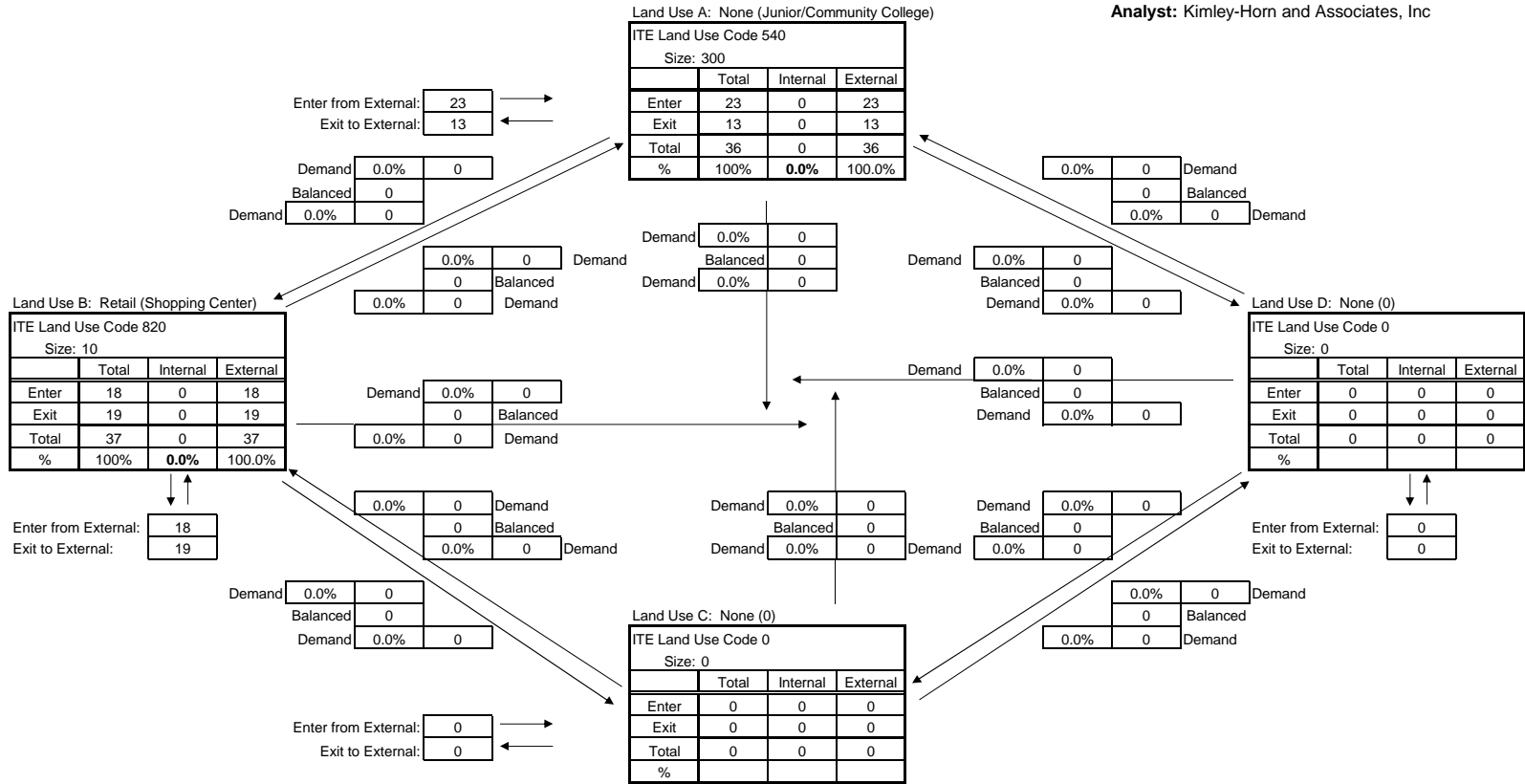


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	30	6	0	0	36
Exit	6	4	0	0	10
Total	36	10	0	0	46
Single Use Trip Gen Estimate	36	10	0	0	46

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #39  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

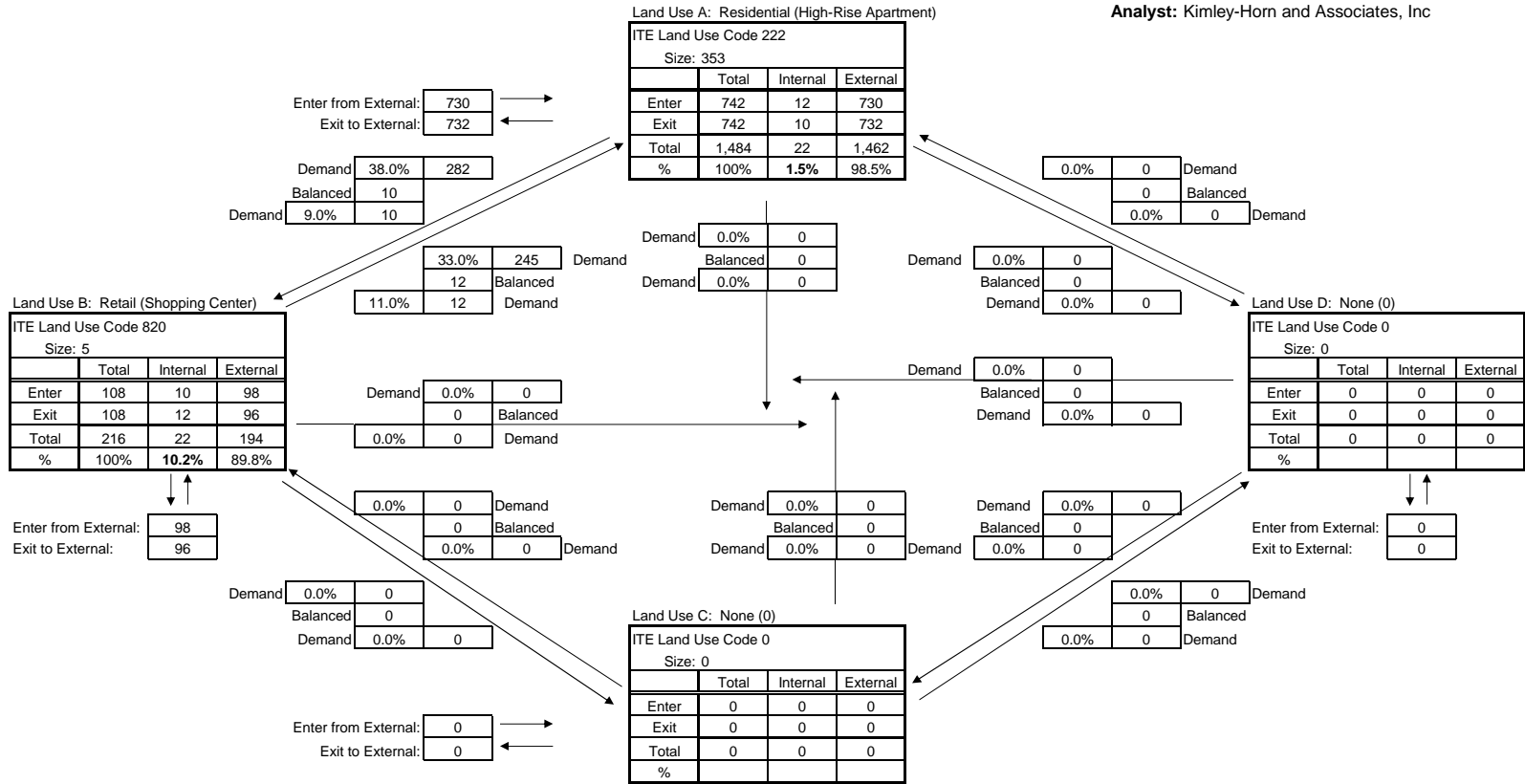


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	23	18	0	0	41
Exit	13	19	0	0	32
Total	36	37	0	0	73
Single Use Trip Gen Estimate	36	37	0	0	73

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #43  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

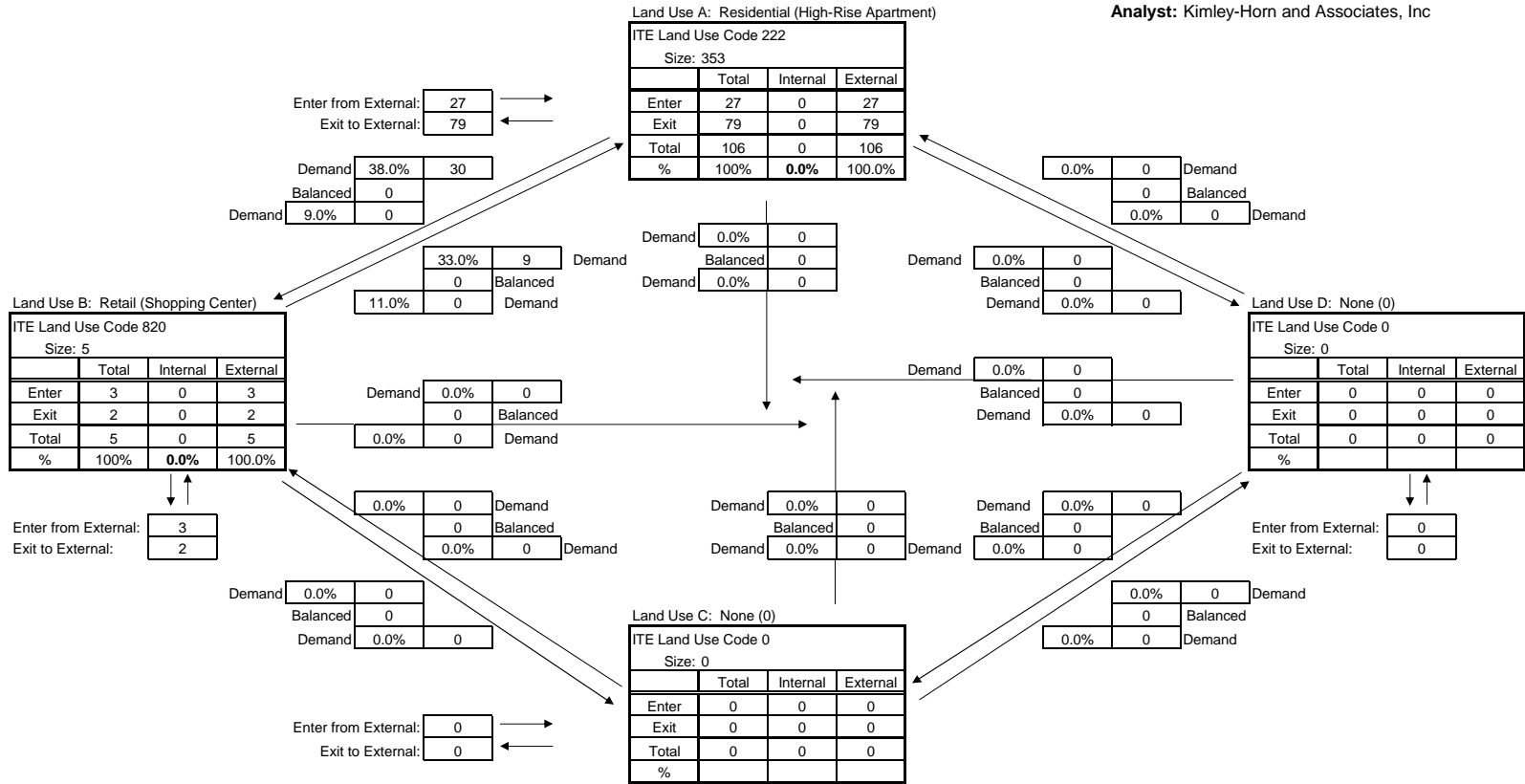


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	730	98	0	0	828
Exit	732	96	0	0	828
Total	1,462	194	0	0	1,656
Single Use Trip Gen Estimate	1,484	216	0	0	1,700

Overall Internal Capture = **2.59%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #43  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

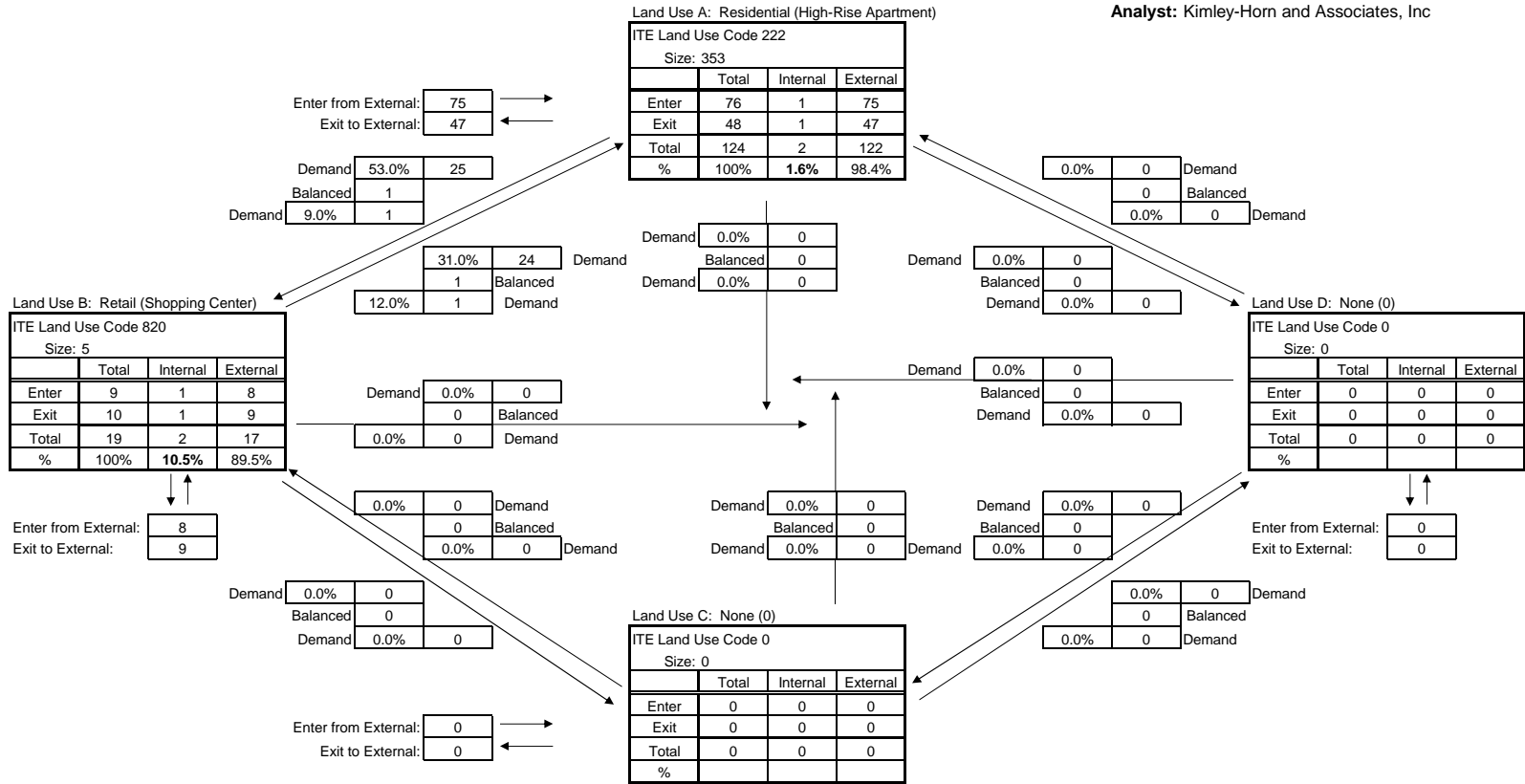


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	27	3	0	0	30
Exit	79	2	0	0	81
Total	106	5	0	0	111
Single Use Trip Gen Estimate	106	5	0	0	111

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #43  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

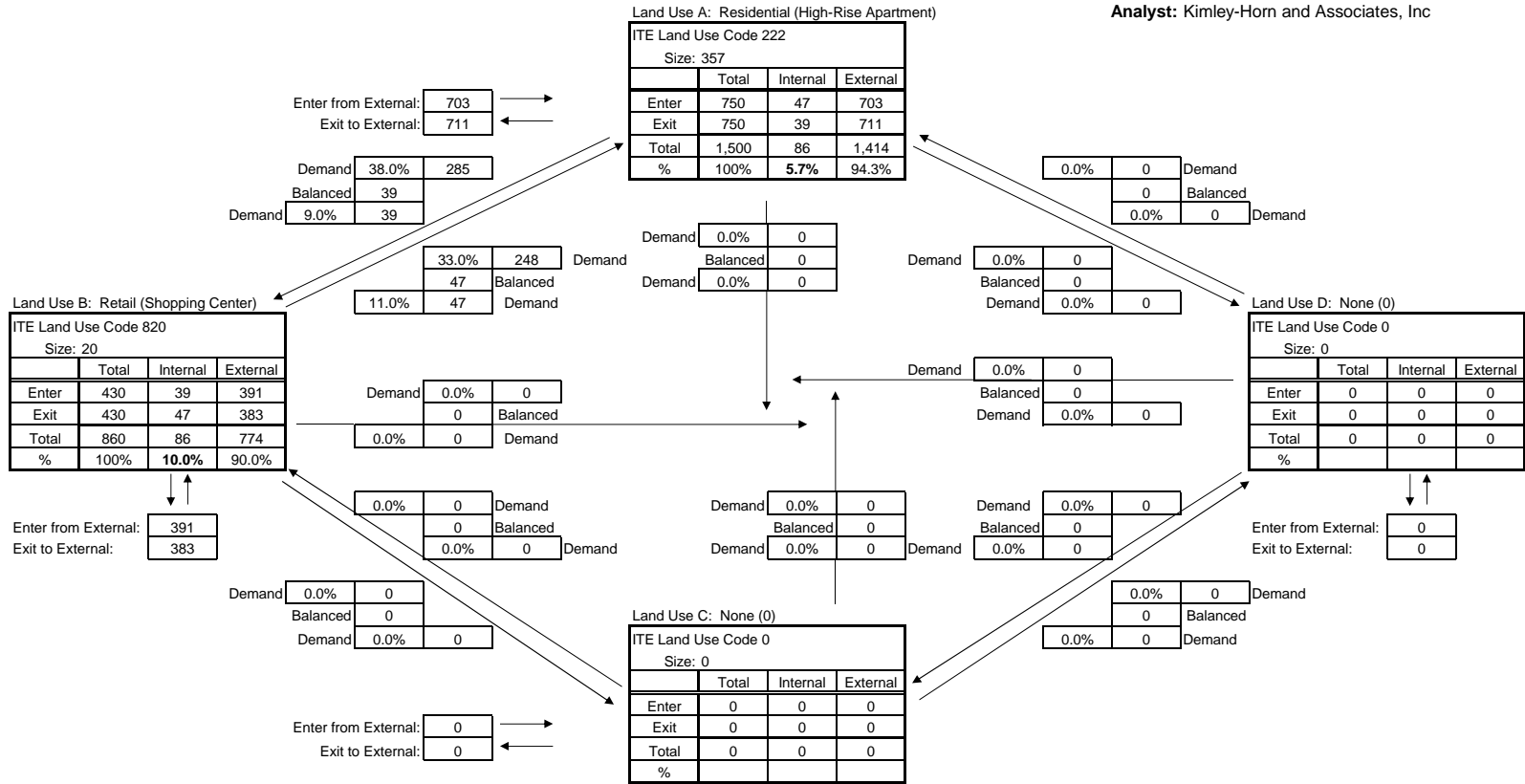


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	75	8	0	0	83
Exit	47	9	0	0	56
Total	122	17	0	0	139
Single Use Trip Gen Estimate	124	19	0	0	143

Overall Internal Capture = **2.80%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #44  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

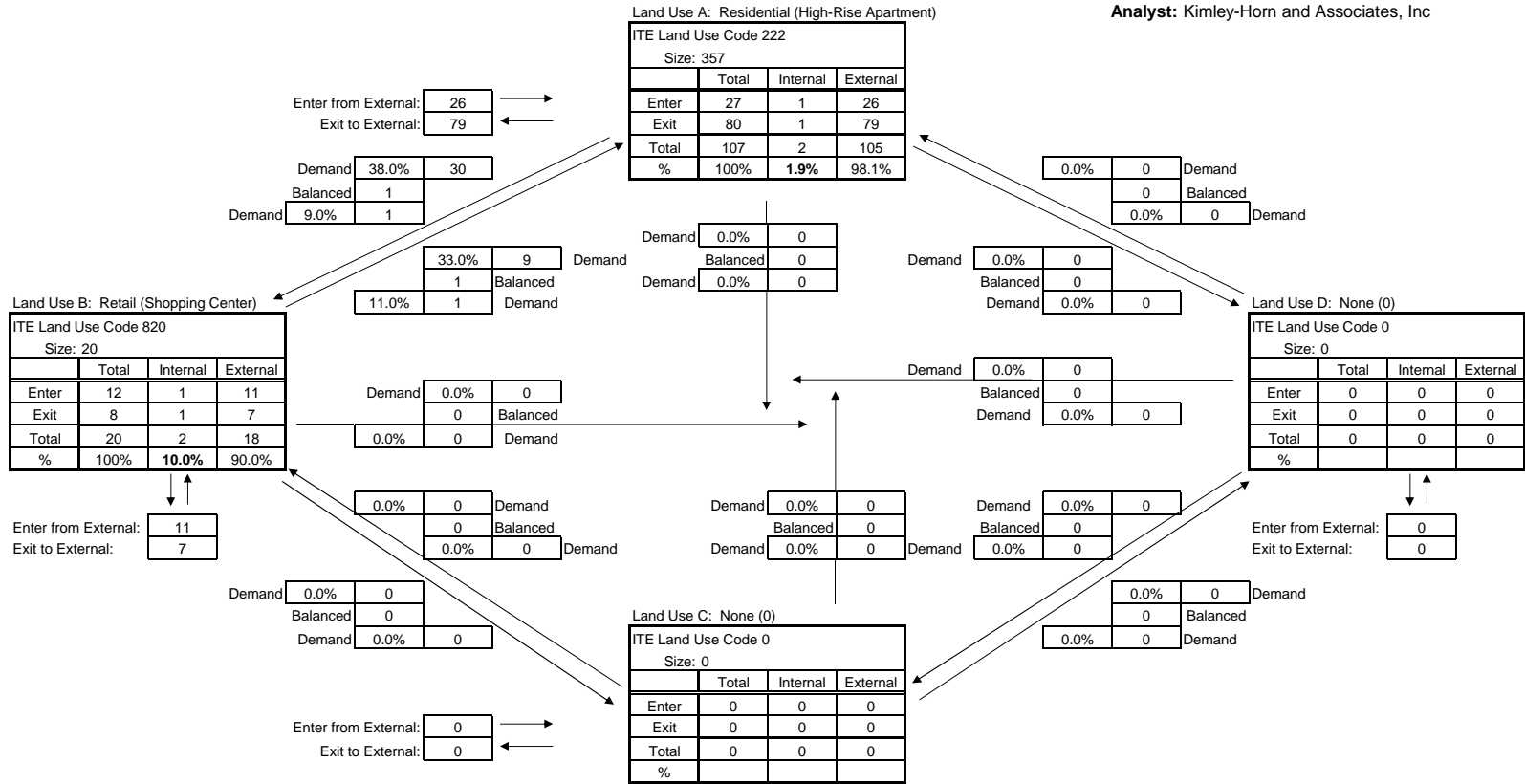


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	703	391	0	0	1,094
Exit	711	383	0	0	1,094
Total	1,414	774	0	0	2,188
Single Use Trip Gen Estimate	1,500	860	0	0	2,360

Overall Internal Capture = **7.29%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #44  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

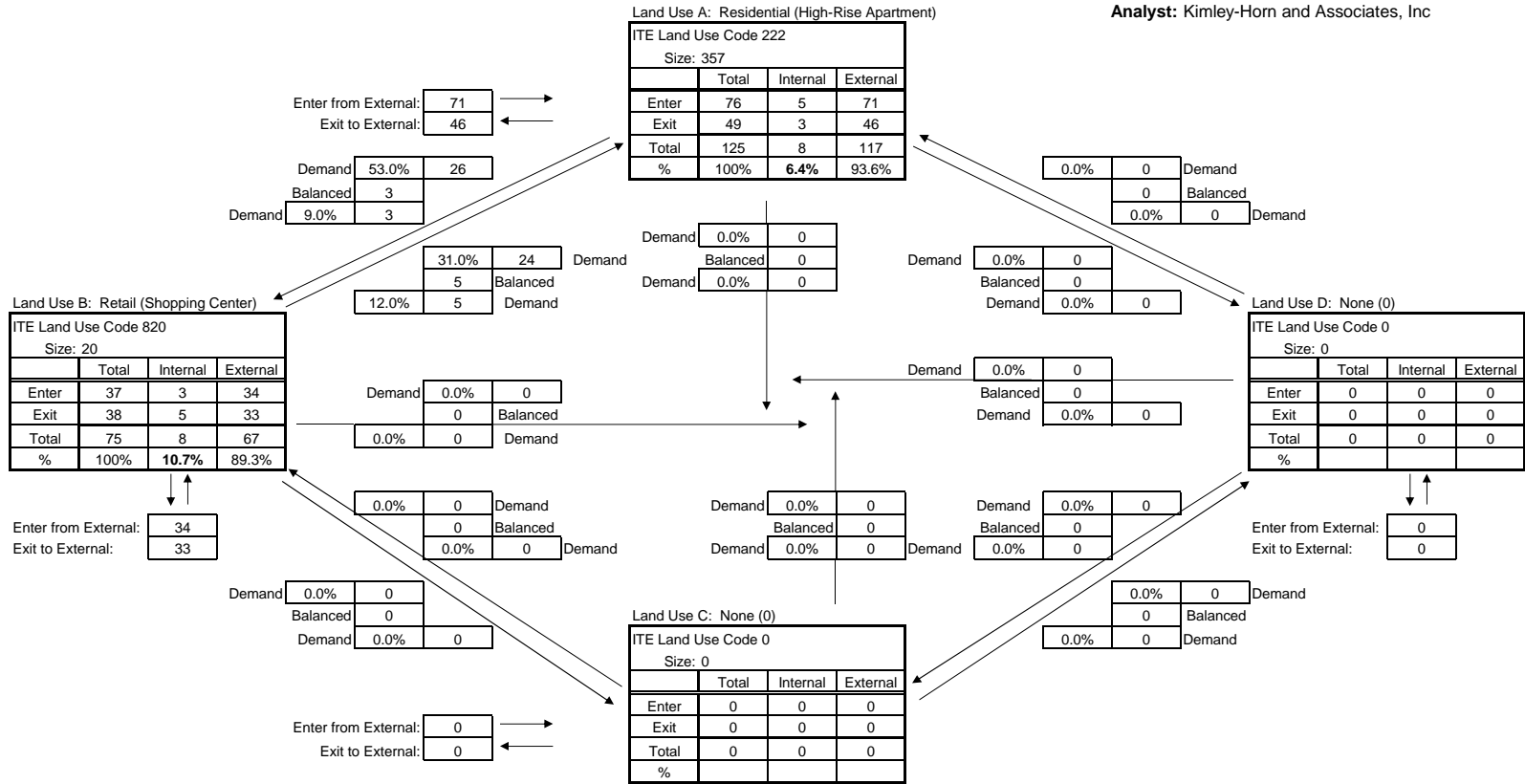


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	26	11	0	0	37
Exit	79	7	0	0	86
Total	105	18	0	0	123
Single Use Trip Gen Estimate	107	20	0	0	127

Overall Internal Capture = **3.15%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #44  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc



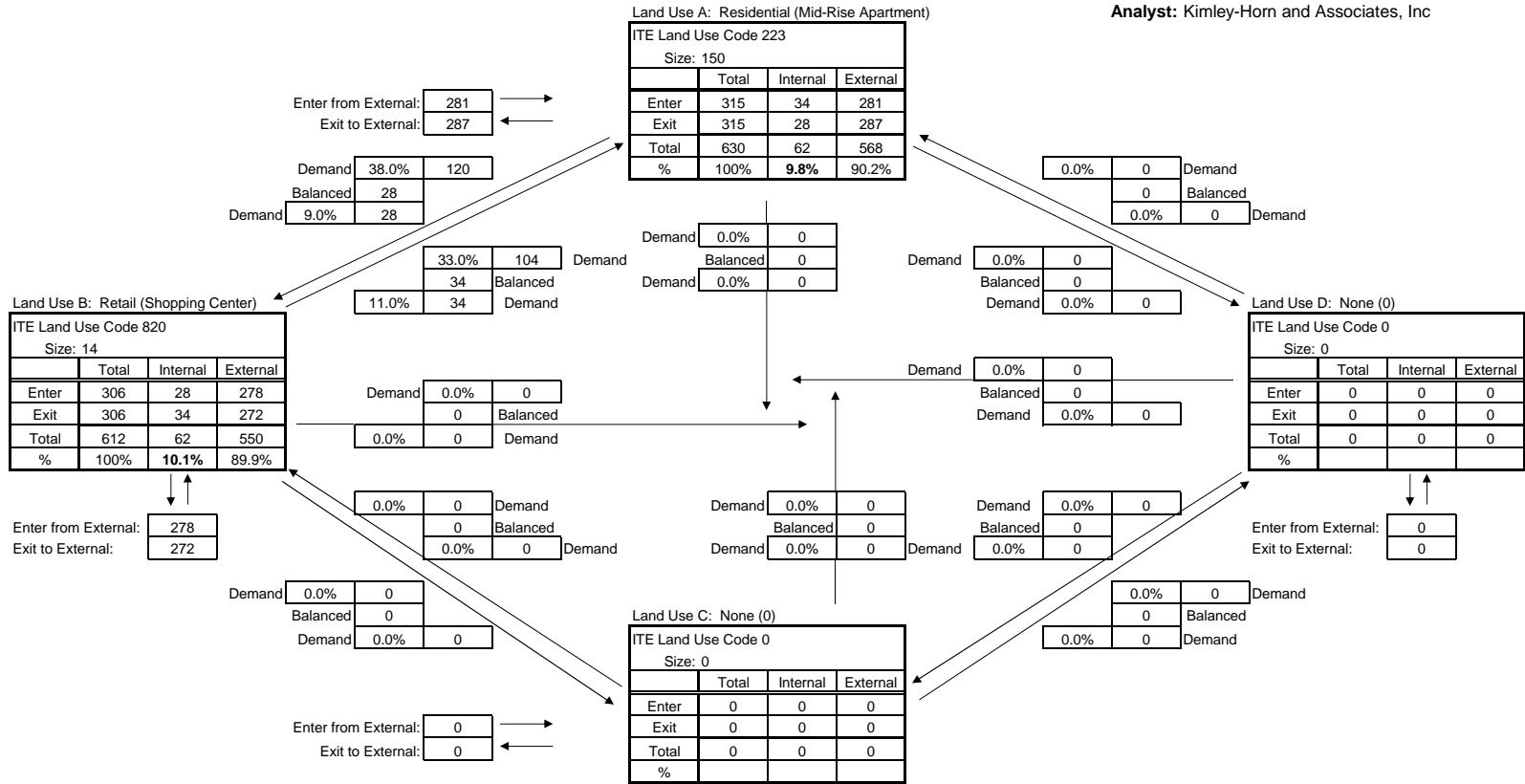
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	71	34	0	0	105
Exit	46	33	0	0	79
Total	117	67	0	0	184
Single Use Trip Gen Estimate	125	75	0	0	200

Overall Internal Capture = **8.00%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #45  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

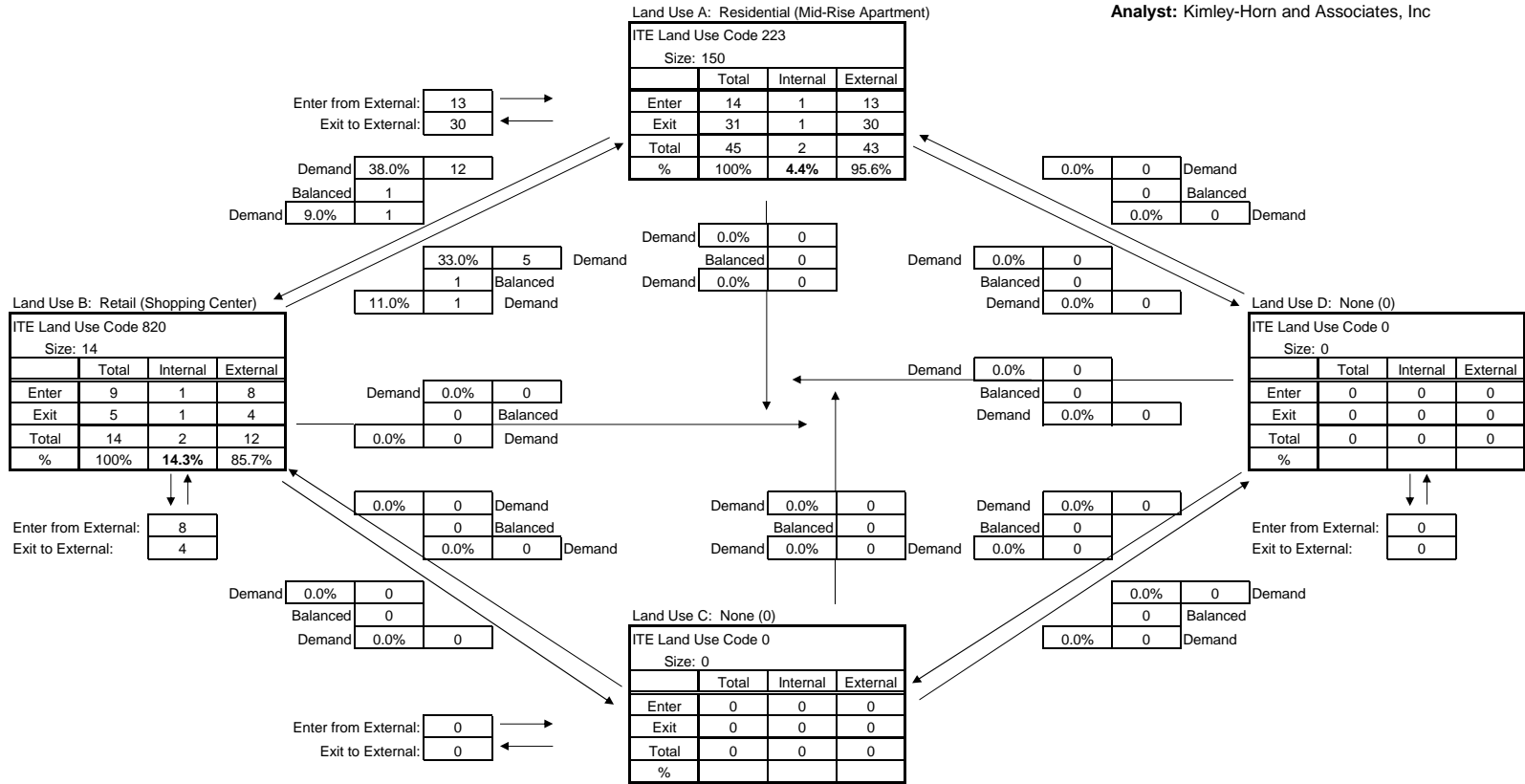


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	281	278	0	0	559
Exit	287	272	0	0	559
Total	568	550	0	0	1,118
Single Use Trip Gen Estimate	630	612	0	0	1,242

Overall Internal Capture = **9.98%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #45  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

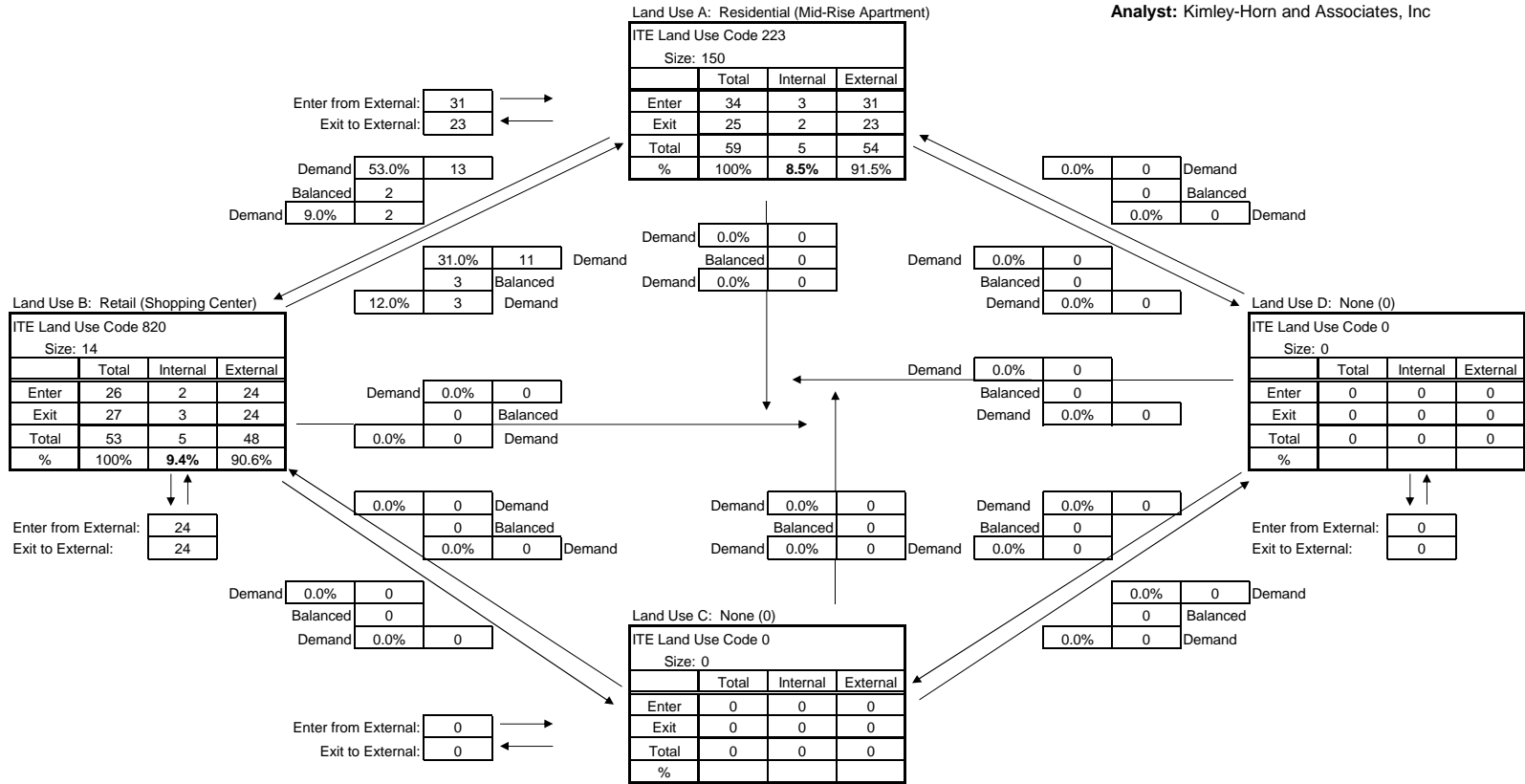


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	13	8	0	0	21
Exit	30	4	0	0	34
Total	43	12	0	0	55
Single Use Trip Gen Estimate	45	14	0	0	59

Overall Internal Capture = **6.78%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #45  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

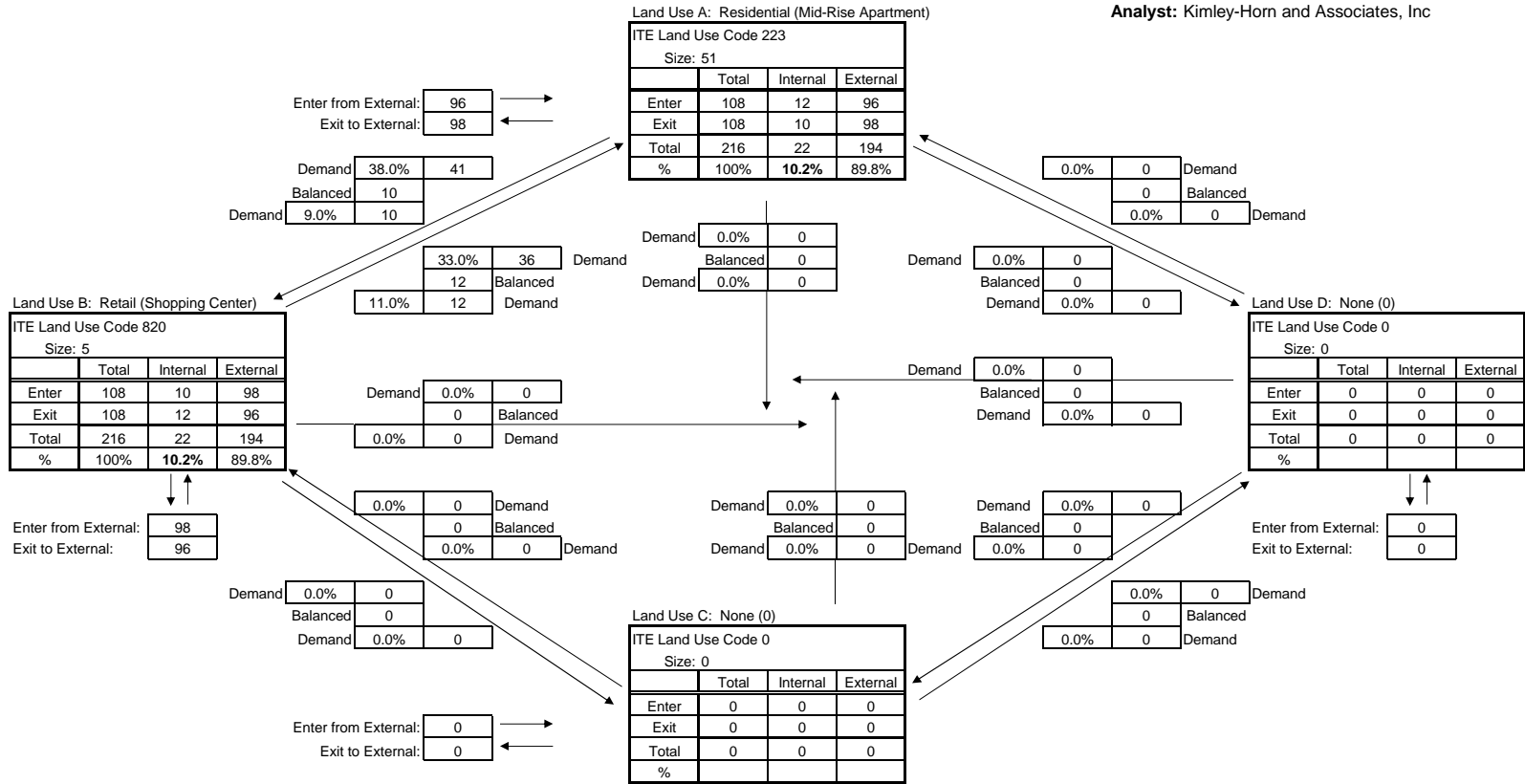


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	31	24	0	0	55
Exit	23	24	0	0	47
Total	54	48	0	0	102
Single Use Trip Gen Estimate	59	53	0	0	112

Overall Internal Capture = **8.93%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #46  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

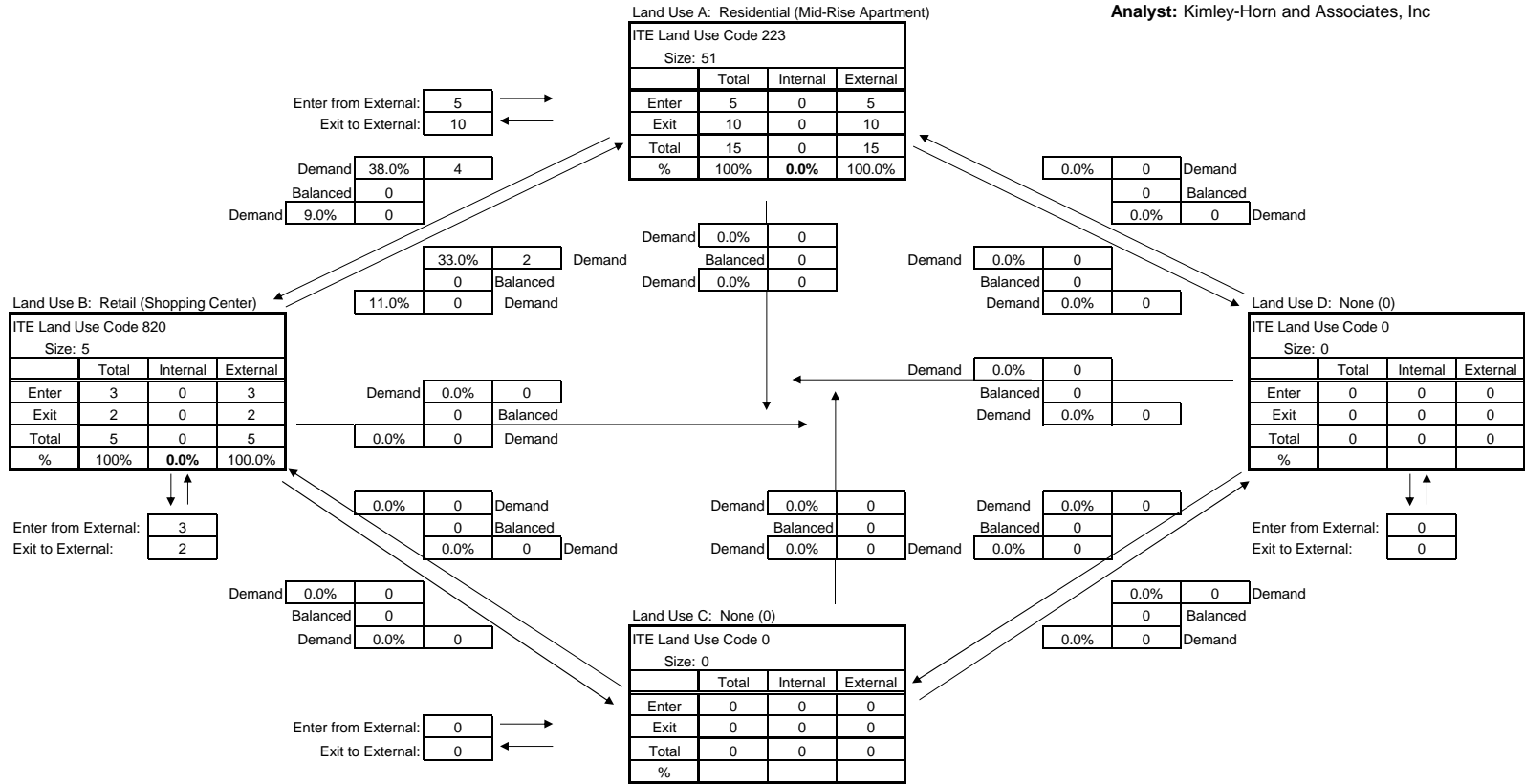


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	96	98	0	0	194
Exit	98	96	0	0	194
Total	194	194	0	0	388
Single Use Trip Gen Estimate	216	216	0	0	432

Overall Internal Capture = **10.19%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #46  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

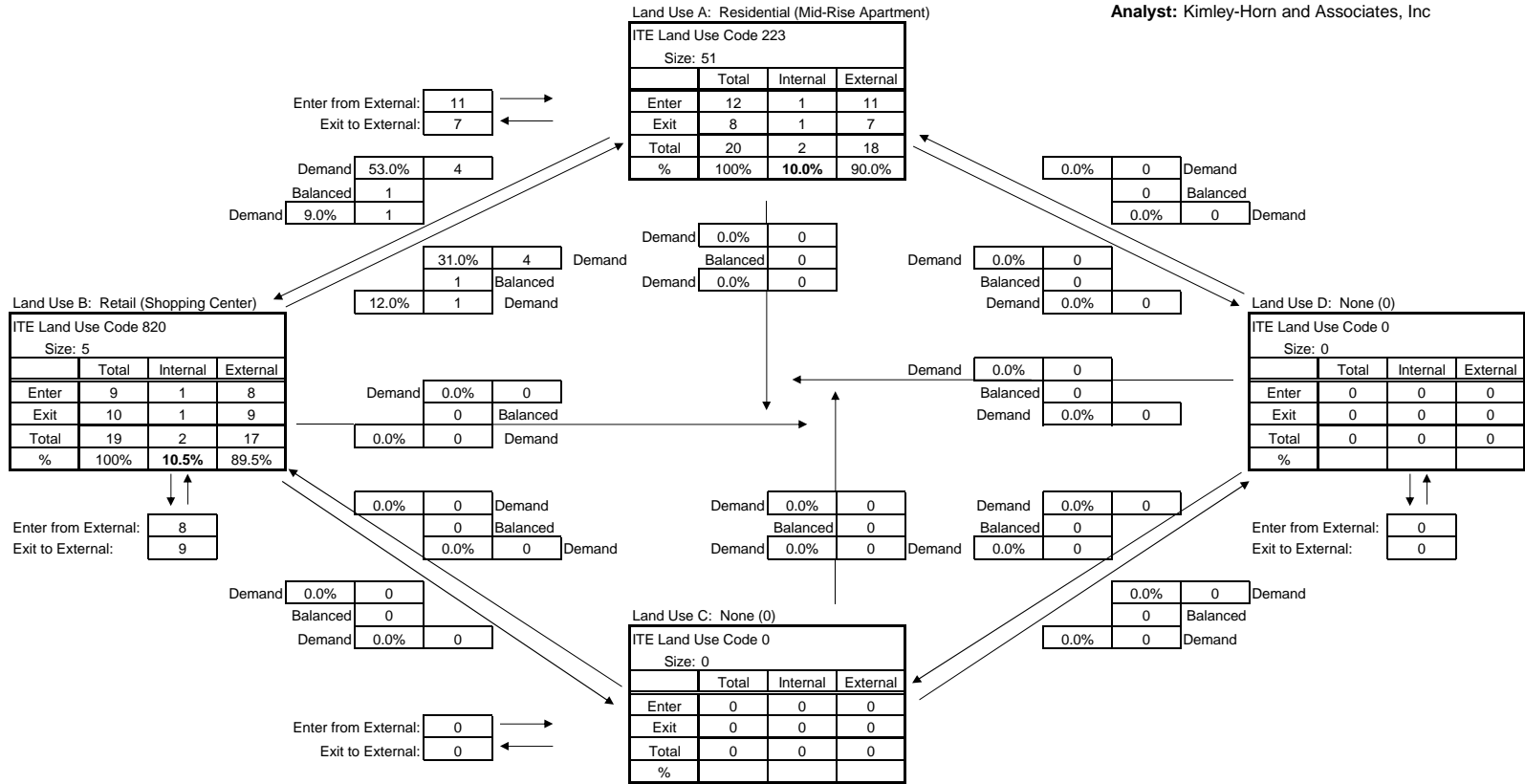


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	5	3	0	0	8
Exit	10	2	0	0	12
Total	15	5	0	0	20
Single Use Trip Gen Estimate	15	5	0	0	20

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #46  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

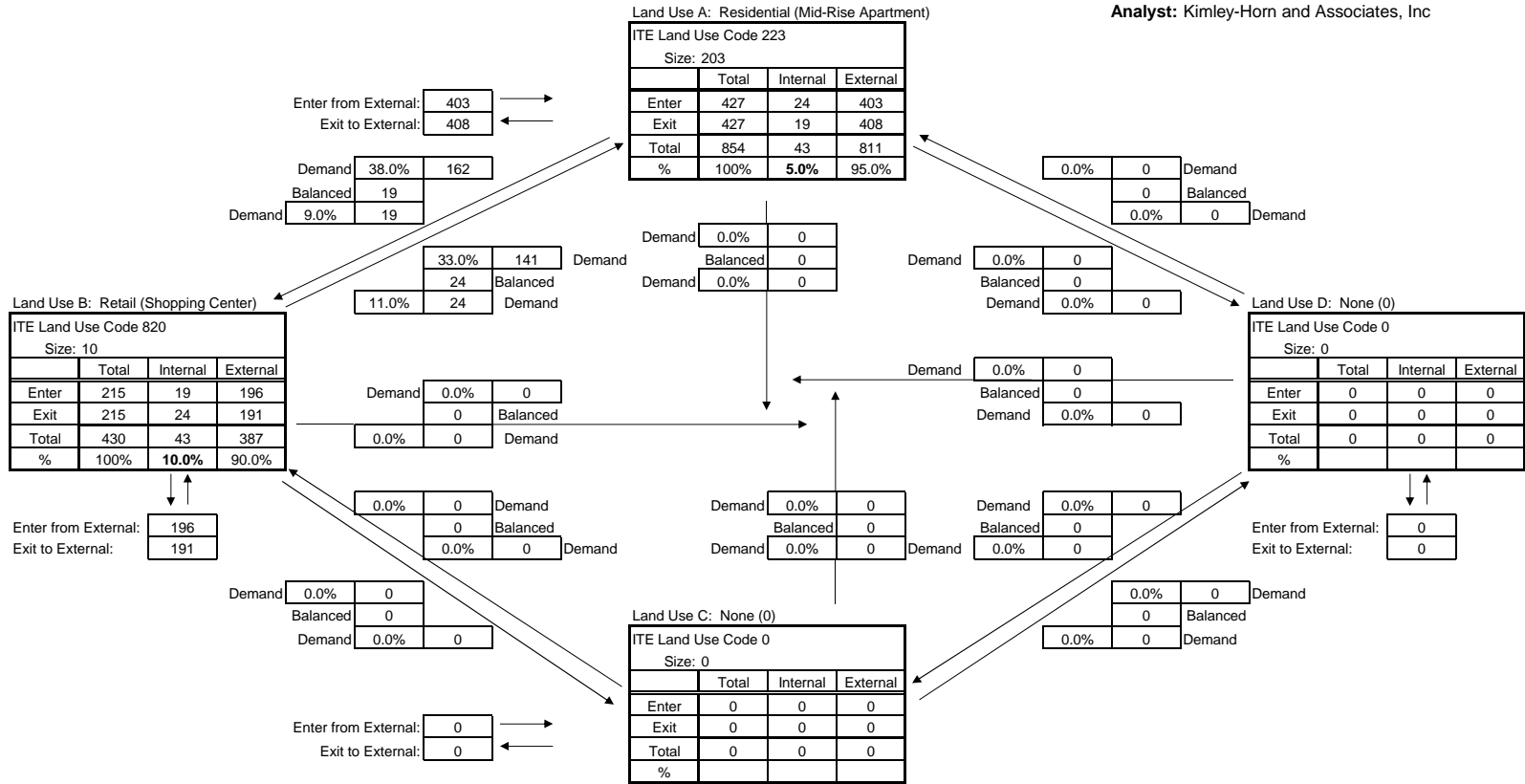


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	11	8	0	0	19
Exit	7	9	0	0	16
Total	18	17	0	0	35
Single Use Trip Gen Estimate	20	19	0	0	39

Overall Internal Capture = **10.26%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #47  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

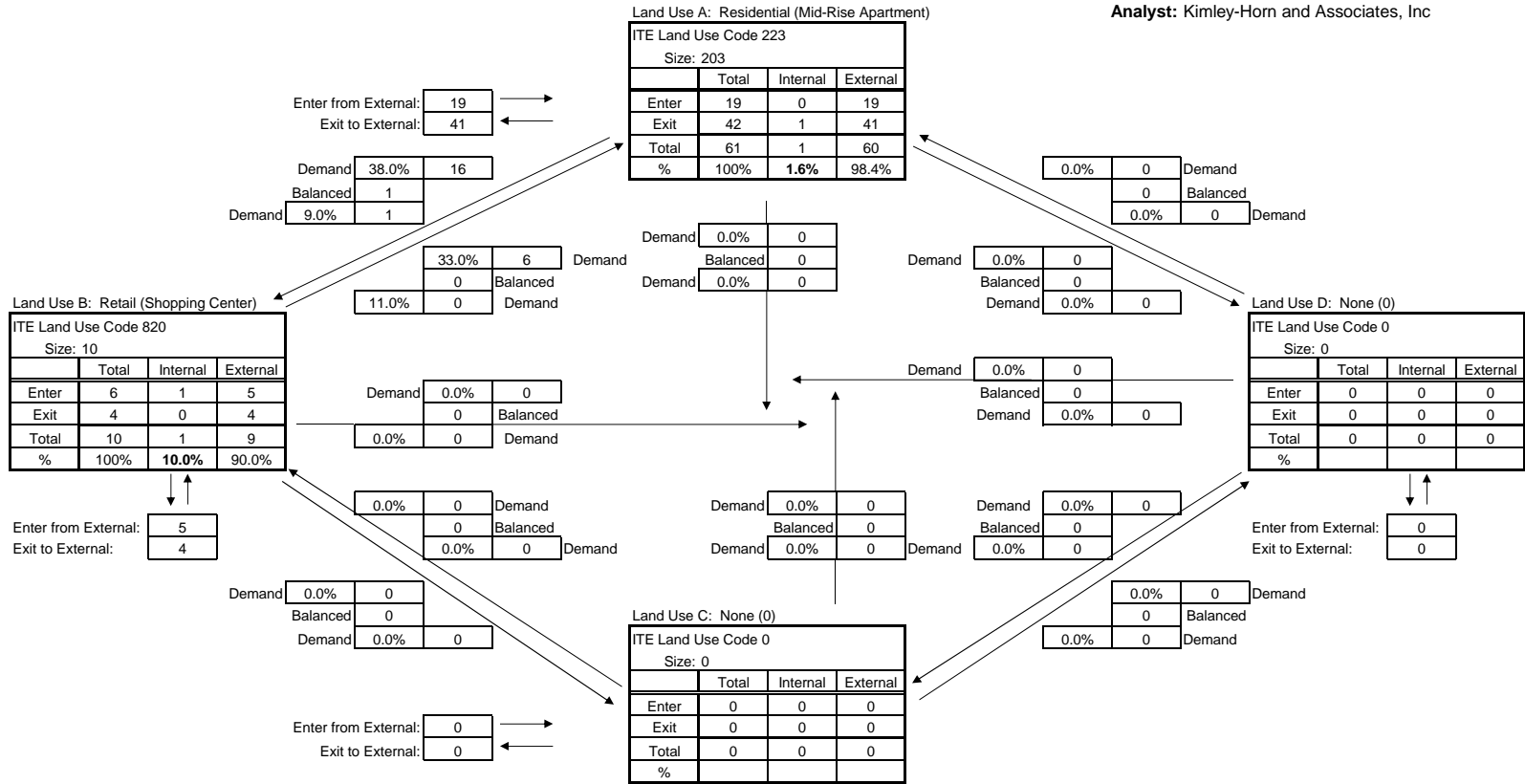


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	403	196	0	0	599
Exit	408	191	0	0	599
Total	811	387	0	0	1,198
Single Use Trip Gen Estimate	854	430	0	0	1,284

Overall Internal Capture = **6.70%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #47  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc



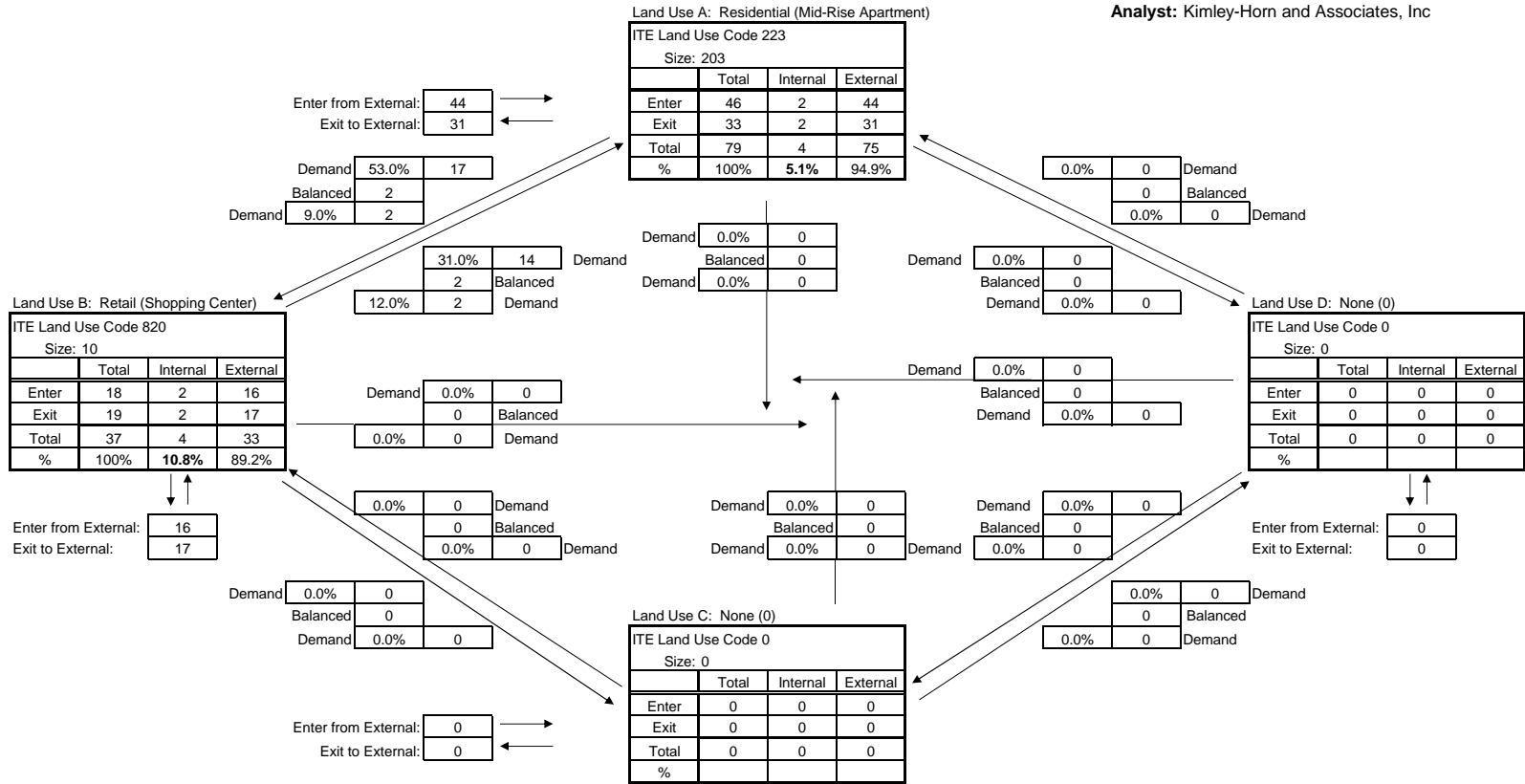
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	19	5	0	0	24
Exit	41	4	0	0	45
Total	60	9	0	0	69
Single Use Trip Gen Estimate	61	10	0	0	71

Overall Internal Capture = **2.82%**



**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: Site #47  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

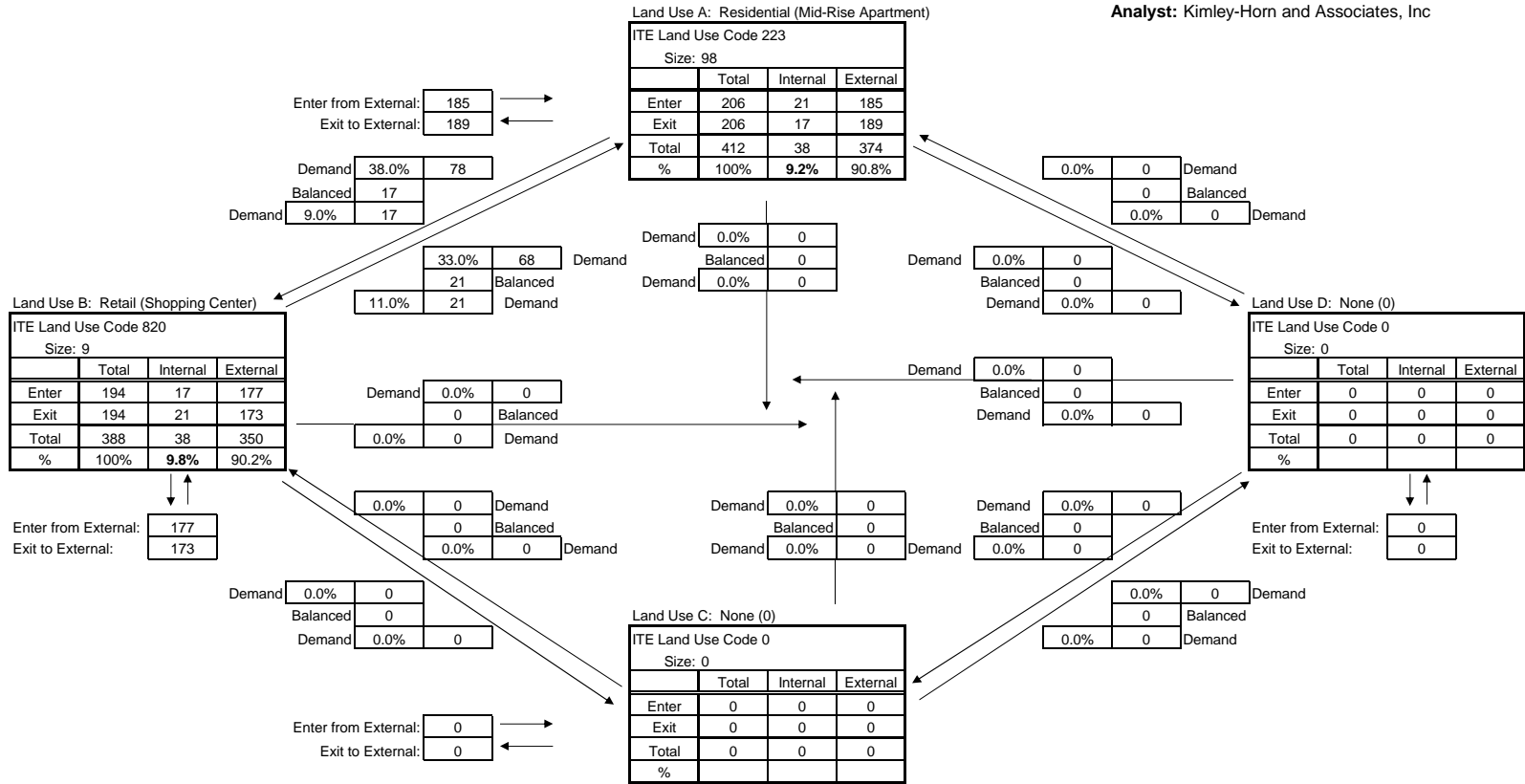


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	44	16	0	0	60
Exit	31	17	0	0	48
Total	75	33	0	0	108
Single Use Trip Gen Estimate	79	37	0	0	116

Overall Internal Capture = **6.90%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: 1331 Harrison St  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

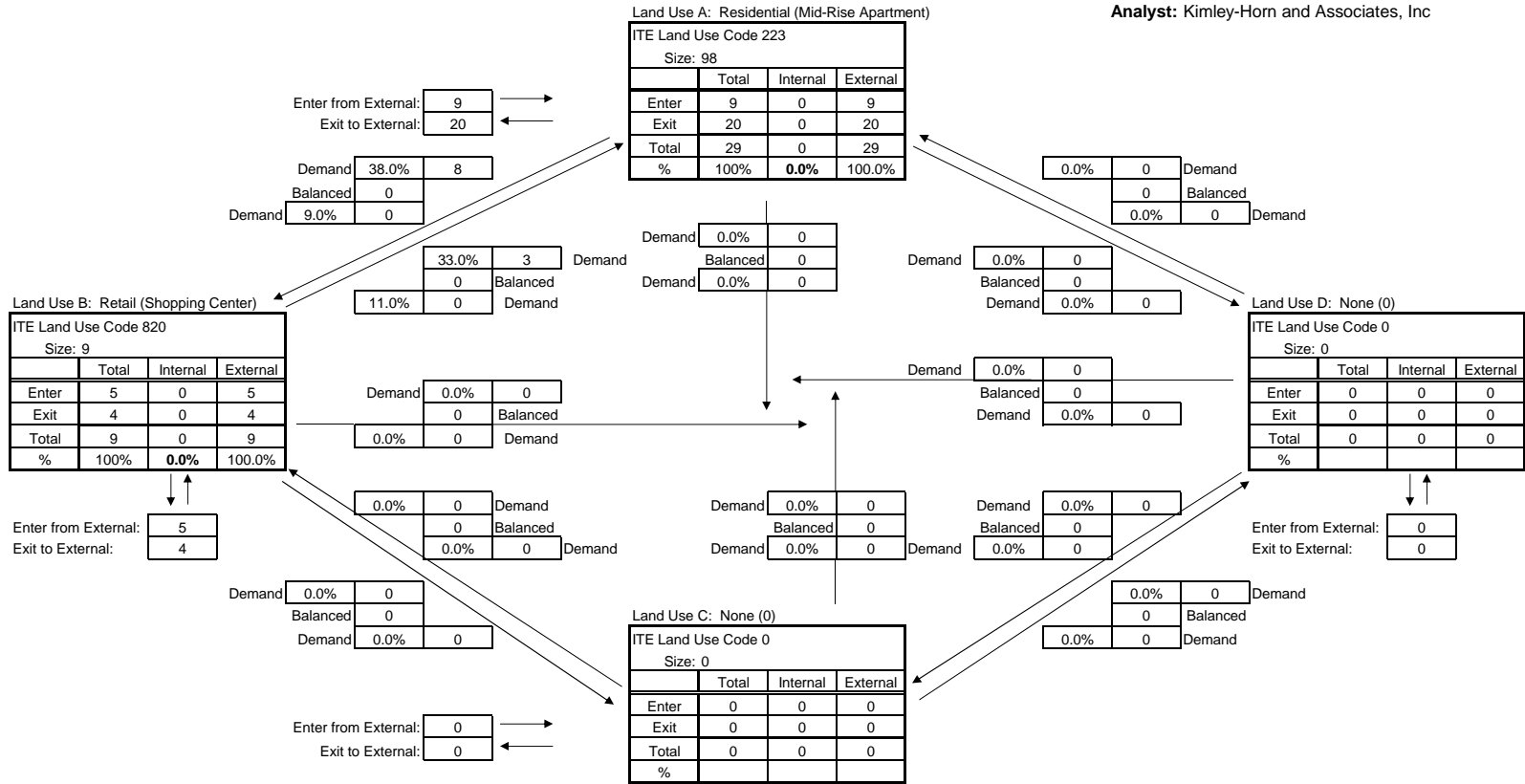


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	185	177	0	0	362
Exit	189	173	0	0	362
Total	374	350	0	0	724
Single Use Trip Gen Estimate	412	388	0	0	800

Overall Internal Capture = **9.50%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: 1331 Harrison St  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

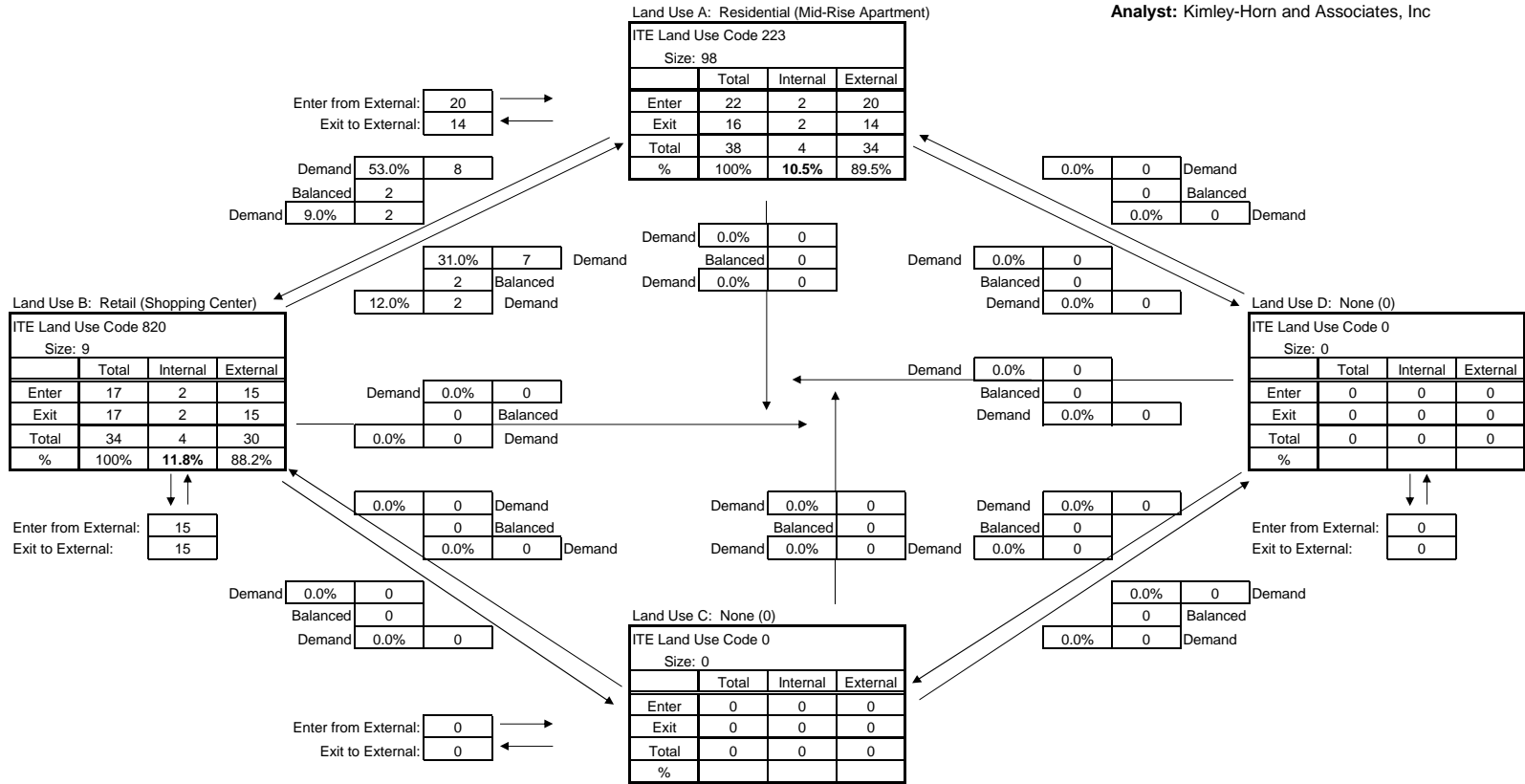


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	9	5	0	0	14
Exit	20	4	0	0	24
<b>Total</b>	<b>29</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>38</b>
Single Use Trip Gen Estimate	29	9	0	0	38

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: 1331 Harrison St  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc

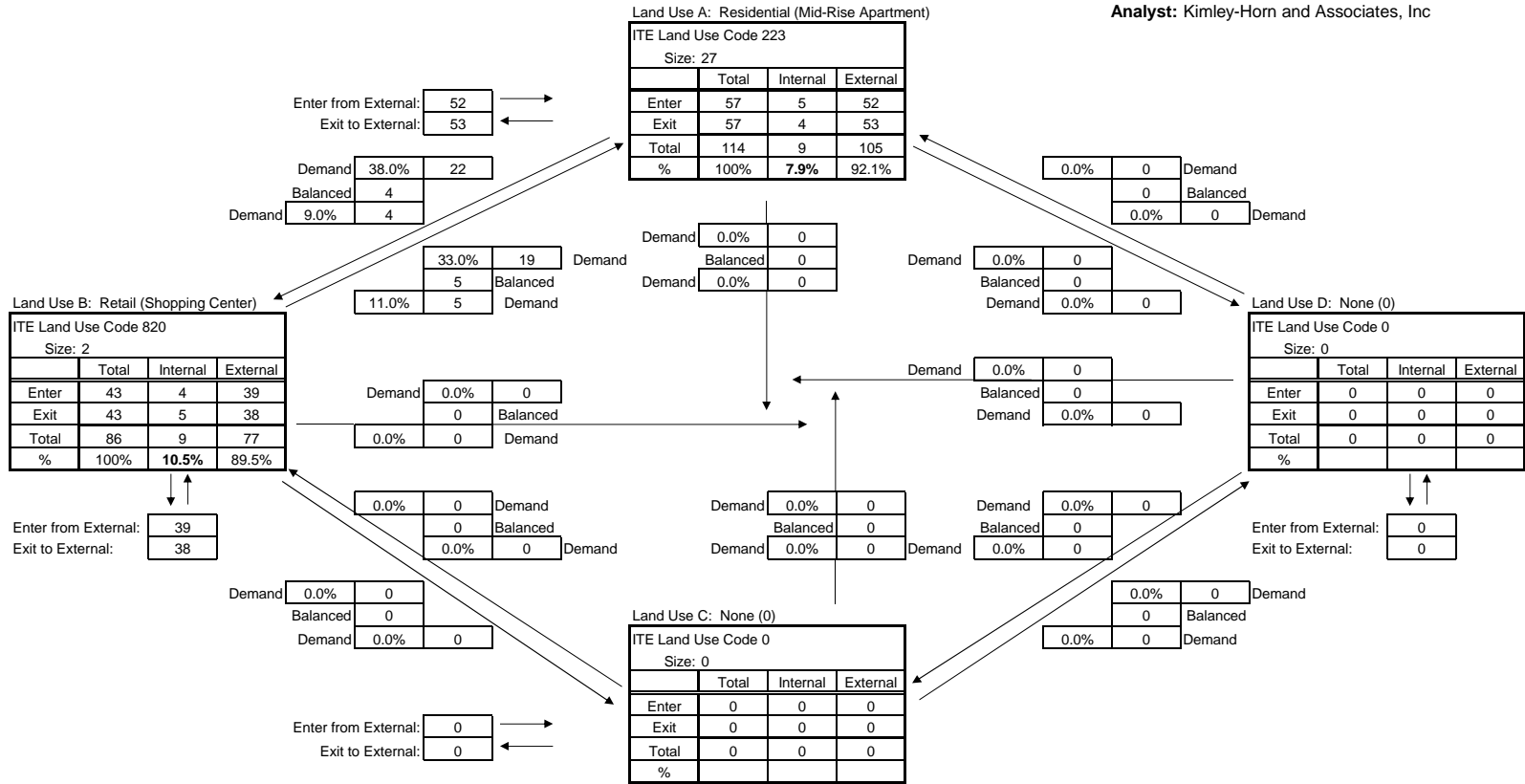


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	20	15	0	0	35
Exit	14	15	0	0	29
Total	34	30	0	0	64
Single Use Trip Gen Estimate	38	34	0	0	72

Overall Internal Capture = 11.11%

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: 630 Webster St  
 Scenario:  
 Analysis Period: Daily  
 Analyst: Kimley-Horn and Associates, Inc

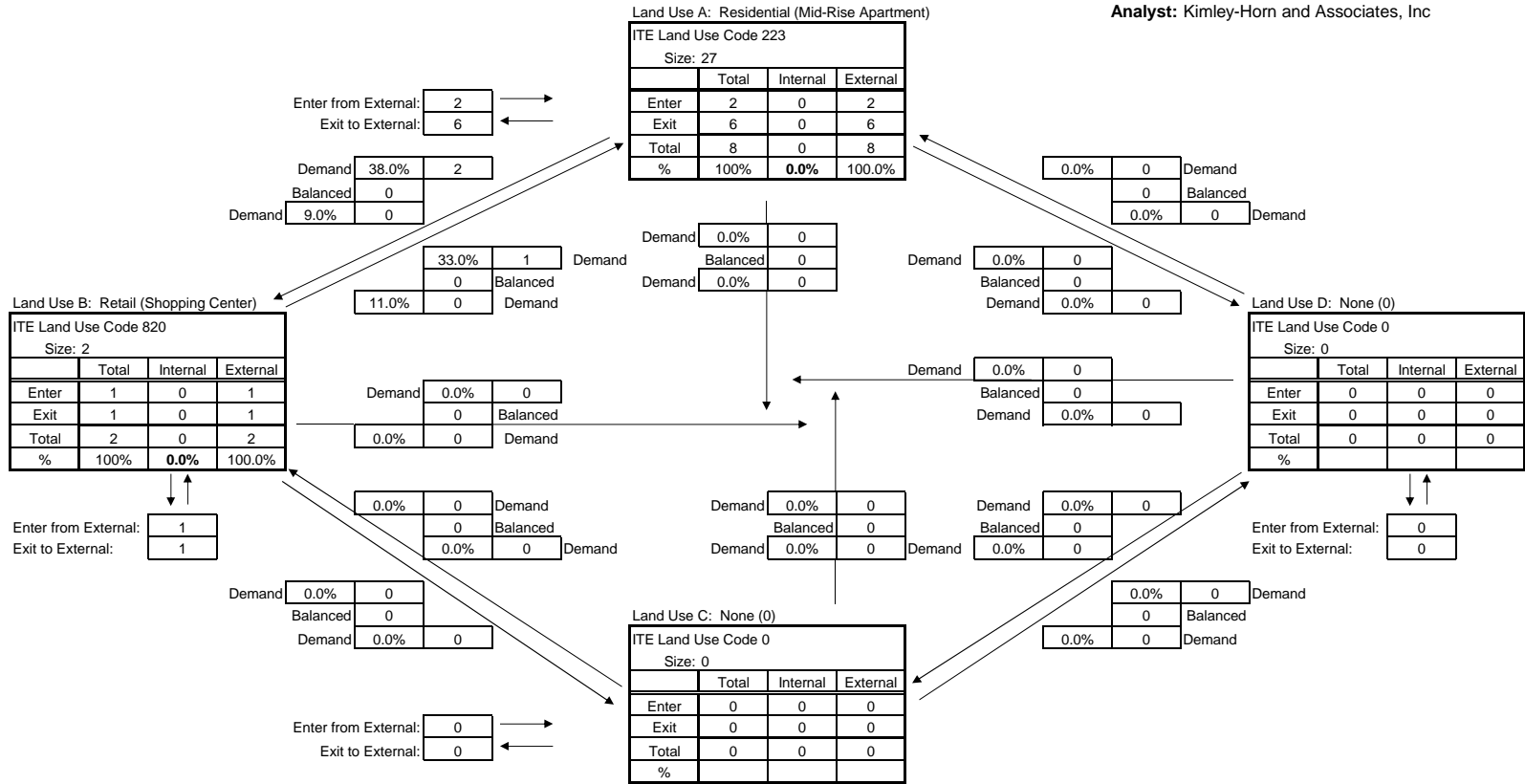


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	52	39	0	0	91
Exit	53	38	0	0	91
Total	105	77	0	0	182
Single Use Trip Gen Estimate	114	86	0	0	200

Overall Internal Capture = **9.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: 630 Webster St  
 Scenario:  
 Analysis Period: AM Peak  
 Analyst: Kimley-Horn and Associates, Inc

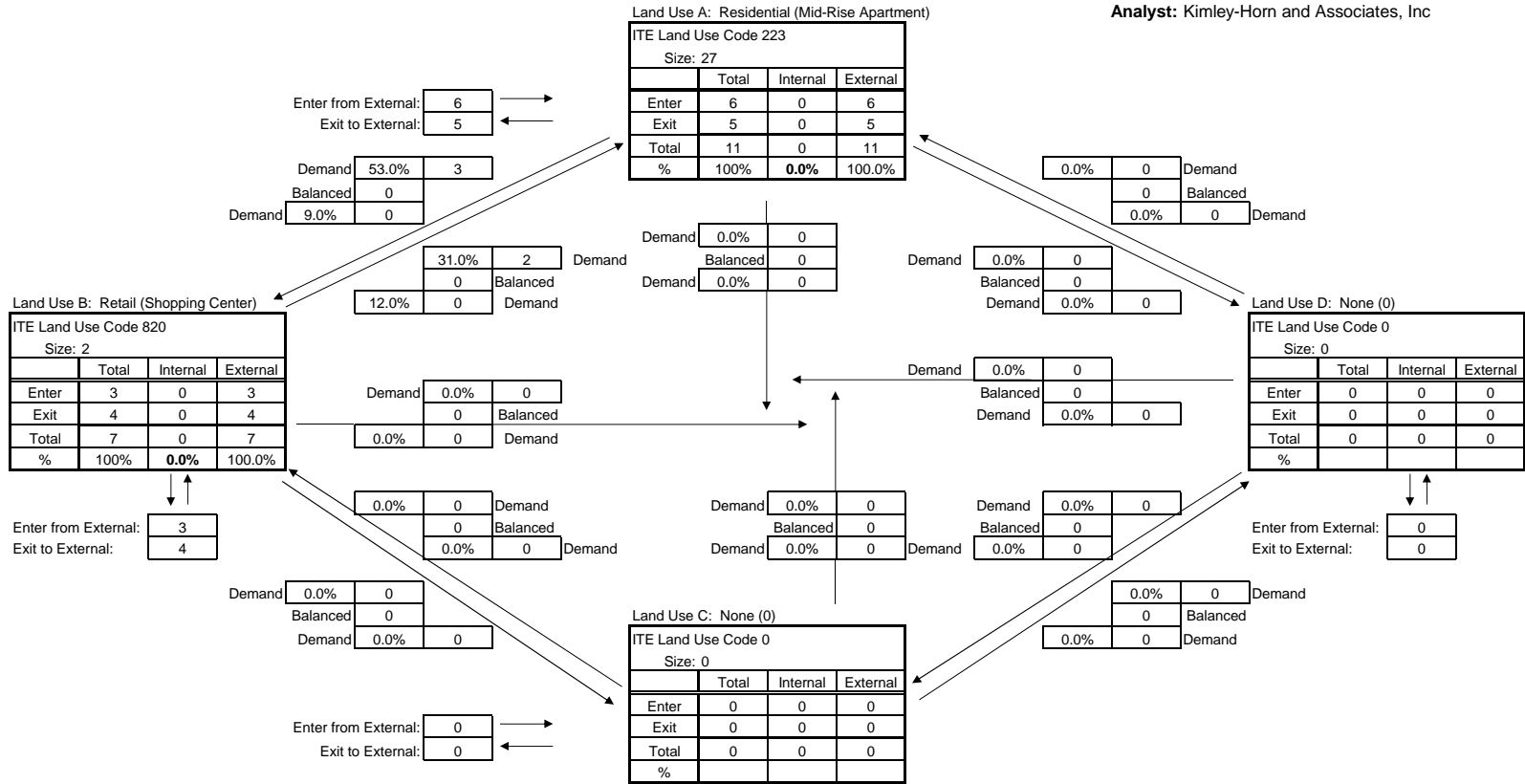


NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	2	1	0	0	3
Exit	6	1	0	0	7
Total	8	2	0	0	10
Single Use Trip Gen Estimate	8	2	0	0	10

Overall Internal Capture = **0.00%**

**ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET**  
 (Source: Chapter 7, ITE Trip Generation Handbook, June 2004)

Project Number: 097897000  
 Project Name: 630 Webster St  
 Scenario:  
 Analysis Period: PM Peak  
 Analyst: Kimley-Horn and Associates, Inc



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
Category	Land Use				Total
	A	B	C	D	
Enter	6	3	0	0	9
Exit	5	4	0	0	9
Total	11	7	0	0	18
Single Use Trip Gen Estimate	11	7	0	0	18

Overall Internal Capture = **0.00%**

Site #	Parking Spaces Available	Peak Spaces Occupied	Displaced / Diverted	Trips							
				Daily	AM Peak			PM Peak			
					In	Out	Total	In	Out	Total	
BART Station	0	0	Displaced	0	0	0	0	0	0	0	0
			Diverted	0	0	0	0	0	0	0	0
BART Parking	117	112	Displaced	-112	-50	-7	-57	-8	-36	-44	
			Diverted	56	25	3	28	4	18	22	
MTC-ABAG	84	79	Displaced	-79	-36	-5	-40	-6	-25	-31	
			Diverted	40	18	2	20	3	13	16	
3	71	61	Displaced	-61	-27	-4	-31	-4	-20	-24	
			Diverted	31	14	2	16	2	10	12	
5	74	69	Displaced	-69	-31	-4	-35	-5	-22	-27	
			Diverted	35	16	2	18	2	11	13	
6	230	139	Displaced	-139	-63	-8	-71	-10	-44	-54	
			Diverted	70	31	4	35	5	22	27	
8	174	122	Displaced	-122	-55	-7	-62	-9	-39	-48	
			Diverted	61	27	4	31	4	20	24	
9	54	51	Displaced	-51	-23	-3	-26	-4	-16	-20	
			Diverted	26	11	2	13	2	8	10	
11	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
13	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
15	75	68	Displaced	-68	-31	-4	-35	-5	-22	-27	
			Diverted	34	15	2	17	2	11	13	
18	10	15	Displaced	-15	-7	-1	-8	-1	-5	-6	
			Diverted	8	3	0	3	1	2	3	
19	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
21	37	26	Displaced	-26	-12	-2	-13	-2	-8	-10	
			Diverted	13	6	1	7	1	4	5	
22	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
28	53	45	Displaced	-45	-20	-3	-23	-3	-14	-18	
			Diverted	23	10	1	11	2	7	9	
30	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
31	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
36	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
37	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
38	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
39	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
43	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
44	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
45	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
46	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
47	0	0	Displaced	0	0	0	0	0	0	0	
			Diverted	0	0	0	0	0	0	0	
TOTAL	979	787	Displaced	-787	-355	-48	-401	-57	-251	-309	
			Diverted	397	176	23	199	28	126	154	



Remaining Parking Lots on non-Redevelopment Sites

Site #	Parking Spaces Available	Peak Spaces Occupied	Peak Spaces Available	Displaced / Replaced	Trips						
					Daily	AM Peak		PM Peak		Total	
						In	Out	In	Out		
501	40	17	23	Displaced							
				Replaced	23	10	1	11	2	7	9
502	22	17	5	Displaced							
				Replaced	5	2	0	2	0	2	2
503	36	23	13	Displaced							
				Replaced	13	6	1	7	1	4	5
504	62	57	5	Displaced							
				Replaced	5	2	0	2	0	2	2
505	50	35	15	Displaced							
				Replaced	15	7	1	8	1	5	6
506	100	72	28	Displaced							
				Replaced	28	13	2	15	2	9	11
507	32	25	7	Displaced							
				Replaced	7	3	0	3	0	2	2
508	45	37	8	Displaced							
				Replaced	8	4	0	4	1	3	4
509	135	125	10	Displaced							
				Replaced	10	5	1	6	1	3	4
510	75	47	28	Displaced							
				Replaced	28	13	2	15	2	9	11
511	75	70	5	Displaced							
				Replaced	5	2	0	2	0	2	2
512	200	181	19	Displaced							
				Replaced	19	9	1	10	1	6	7
513	250	235	15	Displaced							
				Replaced	15	7	1	8	1	5	6
TOTAL	2101	1728	181	Displaced							
				Replaced	181	83	10	93	12	59	71

## **Traffic Forecasting Procedure for the Interim 2020 Plus Project and 2035 Plus Project Scenarios**

A step by step process was used to determine the net number of trips to add onto the without plan volumes. The net number of trips could be negative if the Alameda CTC projections are greater than the Plan's projections.

1. Determine the number of households and jobs for each TAZ within the project study area for the Alameda CTC projections (no project).
2. Determine the number of households and jobs for each TAZ within the project study area for the Lake Merritt SAP projections (project).
3. Convert the employment numbers for the Alameda CTC projections (no project) to building floor areas using conversion factors:
  - a. Retail – 350 square feet per employee
  - b. Office – 400 square feet per employee
  - c. Institutional – 1000 square feet per employee
  - d. Manufacturing – 400 square feet per employee
  - e. Wholesale (retail) - 350 square feet per employee
4. Convert the employment numbers for the Lake Merritt SAP projections (project) to building floor areas using conversion factors.
5. Determine the net difference in floor area between the two scenarios for each land use category.
6. Using the net floor area differences, calculate the AM and PM peak hour trip generation of each TAZ using the trip generation rates assumed for each land use.
7. Apply the same trip reduction factors by land use.
8. These are the net vehicle trips for the proposed Plan.

TAZ	AM Peak Hour Trip Generation of Difference (2020 LMSAP - 2020 ACTC) with Reduction Factors					
	Households	Tot Retail	Office	Instit	Manuf	Total Net Trips
238	(19)	5	(24)	-	117	79
239	(3)	7	(69)	-	(27)	(92)
240	(1)	9	(2)	-	(38)	(32)
241	(22)	5	(35)	-	(7)	(58)
242	(27)	(6)	4	-	(5)	(34)
243	53	12	25	-	(8)	82
262	33	11	(4)	-	(3)	38
263	-	(1)	2	-	-	2
274	35	18	109	-	-	163
275	(13)	1	-	-	-	(12)
276	6	13	5	-	(3)	22
277	(9)	10	(52)	-	9	(42)
280	1	9	344	-	-	353
<b>Total</b>	<b>35</b>	<b>95</b>	<b>303</b>	<b>-</b>	<b>35</b>	<b>468</b>

TAZ	PM Peak Hour Trip Generation of Difference (2020 LMSAP - 2020 ACTC) with Reduction Factors					
	Households	Tot Retail	Office	Instit	Manuf	Total Net Trips
238	(22)	16	(23)	-	123	94
239	(4)	21	(66)	-	(28)	(77)
240	(2)	25	(2)	-	(40)	(18)
241	(25)	16	(34)	-	(7)	(51)
242	(31)	(17)	4	-	(5)	(50)
243	62	34	24	-	(9)	111
262	39	33	(4)	-	(3)	65
263	-	(2)	2	-	-	1
274	41	53	105	-	-	199
275	(15)	2	-	-	-	(13)
276	7	39	5	-	(3)	48
277	(11)	30	(50)	-	10	(21)
280	1	25	331	-	-	356
<b>Total</b>	<b>41</b>	<b>274</b>	<b>291</b>	<b>-</b>	<b>37</b>	<b>644</b>









TAZ	AM Peak Hour Trip Generation of Difference (2020 LMSAP - 2020 ACTC) with Reduction Factors					
	Households	Tot Retail	Office	Instit	Manuf	Total Net Trips
238	(60)	8	(86)	-	251	114
239	(49)	(17)	(65)	-	(151)	(280)
240	(0)	(11)	(46)	-	(166)	(224)
241	(4)	(25)	(243)	-	(29)	(302)
242	(51)	(49)	(2)	-	(27)	(129)
243	55	1	(1)	-	(41)	15
262	118	34	(85)	-	(5)	63
263	-	(2)	1	-	-	(1)
274	20	27	101	449	-	596
275	(54)	(1)	(8)	-	-	(63)
276	22	52	151	-	(17)	208
277	73	24	62	-	(2)	157
280	(69)	18	53	-	-	2
<b>Total</b>	<b>2</b>	<b>59</b>	<b>(168)</b>	<b>449</b>	<b>(187)</b>	<b>155</b>

TAZ	PM Peak Hour Trip Generation of Difference (2020 LMSAP - 2020 ACTC) with Reduction Factors					
	Households	Tot Retail	Office	Instit	Manuf	Total Net Trips
238	(70)	23	(82)	-	265	136
239	(57)	(48)	(62)	-	(159)	(326)
240	(0)	(33)	(45)	-	(175)	(253)
241	(5)	(72)	(234)	-	(31)	(342)
242	(59)	(143)	(2)	-	(29)	(233)
243	64	4	(1)	-	(43)	24
262	138	99	(81)	-	(5)	150
263	-	(6)	1	-	-	(5)
274	23	77	97	381	-	579
275	(63)	(3)	(8)	-	-	(73)
276	25	151	145	-	(18)	304
277	85	70	59	-	(2)	213
280	(80)	52	51	-	-	23
<b>Total</b>	<b>2</b>	<b>172</b>	<b>(162)</b>	<b>381</b>	<b>(197)</b>	<b>197</b>

**EXISTING PLUS PROJECT TRAFFIC  
CONDITIONS**

Queues  
1: W Grand Ave & Broadway

Existing + Project  
Timing Plan: AM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	531	514	80	425	110	37	513
v/c Ratio	0.40	0.58	0.84	0.18	0.22	0.15	0.08	0.27
Control Delay	30.7	27.0	39.6	9.9	8.4	2.4	8.8	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	27.0	39.6	9.9	8.4	2.4	8.8	8.1
Queue Length 50th (ft)	25	113	119	19	55	0	8	62
Queue Length 95th (ft)	62	161	179	44	80	21	22	91
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	264	1517	1004	446	1962	711	493	1883
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	0.24	0.35	0.51	0.18	0.22	0.15	0.08	0.27
<b>Intersection Summary</b>								

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Existing + Project  
 Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	11	47	447	36	89	322	51	74	391	101	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		1.00	0.95			0.95		1.00	0.95	1.00		1.00
Frb, ped/bikes		1.00	0.99			0.99		1.00	1.00	0.91		1.00
Flpb, ped/bikes		0.97	1.00			0.99		0.97	1.00	1.00		0.96
Fr t		1.00	0.99			0.98		1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00			0.99		0.95	1.00	1.00		0.95
Satd. Flow (prot)		1545	3129			3054		1539	3185	1087		1524
Flt Permitted		0.34	1.00			0.67		0.45	1.00	1.00		0.50
Satd. Flow (perm)		548	3129			2056		724	3185	1087		799
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	491	40	99	358	57	80	425	110	1	36
RTOR Reduction (vph)	0	0	10	0	0	16	0	0	0	42	0	0
Lane Group Flow (vph)	0	64	521	0	0	498	0	80	425	68	0	37
Confl. Peds. (#/hr)		71		73	73		71	84		80		80
Confl. Bikes (#/hr)				15			21			9		
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	10	0	0
Parking (#/hr)				5			5			5		
Turn Type	Perm	Perm			Perm			Perm		Perm	Perm	Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2		2	6	6
Actuated Green, G (s)		24.6	24.6			24.6		52.4	52.4	52.4		52.4
Effective Green, g (s)		24.6	24.6			24.6		52.4	52.4	52.4		52.4
Actuated g/C Ratio		0.29	0.29			0.29		0.62	0.62	0.62		0.62
Clearance Time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		2.0	2.0			2.0		2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		159	906			595		446	1963	670		493
v/s Ratio Prot			0.17						0.13			
v/s Ratio Perm		0.12				0.24		0.11		0.06		0.05
v/c Ratio		0.40	0.58			0.84		0.18	0.22	0.10		0.08
Uniform Delay, d1		24.3	25.7			28.3		7.0	7.2	6.7		6.6
Progression Factor		1.00	1.00			1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		0.6	0.6			9.6		0.9	0.3	0.3		0.3
Delay (s)		24.9	26.3			37.9		7.9	7.5	7.0		6.9
Level of Service		C	C			D		A	A	A		A
Approach Delay (s)			26.1			37.9			7.4			
Approach LOS			C			D			A			
<b>Intersection Summary</b>												
HCM Average Control Delay			19.3			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			87.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway













Existing + Project  
 Timing Plan: AM PEAK

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	377	95
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	3032	
Flt Permitted	1.00	
Satd. Flow (perm)	3032	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	410	103
RTOR Reduction (vph)	17	0
Lane Group Flow (vph)	496	0
Confl. Peds. (#/hr)		84
Confl. Bikes (#/hr)		34
Bus Blockages (#/hr)	0	10
Parking (#/hr)		5
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	52.4	
Effective Green, g (s)	52.4	
Actuated g/C Ratio	0.62	
Clearance Time (s)	4.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1869	
v/s Ratio Prot	c0.16	
v/s Ratio Perm		
v/c Ratio	0.27	
Uniform Delay, d1	7.5	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	7.8	
Level of Service	A	
Approach Delay (s)	7.8	
Approach LOS	A	
<b>Intersection Summary</b>		



Queues  
2: 20th St & Kaiser DWY

Existing + Project  
Timing Plan: AM PEAK

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBR	NWL2	NWL	NWR
Lane Group Flow (vph)	16	90	95	206	433	8	183	170	9	8	116	71
v/c Ratio	0.20	0.21	0.22	1.55	1.08dl	0.02	0.42	0.42	0.01	0.05	0.73	0.49
Control Delay	29.7	23.9	11.1	309.6	34.4	10.9	26.1	25.7	0.0	33.4	62.7	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	23.9	11.1	309.6	34.4	10.9	26.1	25.7	0.0	33.4	62.7	44.5
Queue Length 50th (ft)	6	35	11	-162	92	0	76	69	0	4	57	32
Queue Length 95th (ft)	24	74	46	#278	125	9	128	120	0	11	74	48
Internal Link Dist (ft)		337			348		577				363	
Turn Bay Length (ft)						90				180	180	
Base Capacity (vph)	80	438	438	133	609	450	433	409	647	159	159	146
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	0.20	0.21	0.22	1.55	0.71	0.02	0.42	0.42	0.01	0.05	0.73	0.49

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 2: 20th St & Kaiser DWY

Existing + Project  
 Timing Plan: AM PEAK

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	14	80	28	57	2	343	192	7	59	17	215	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00			0.91	0.91	1.00		0.95	0.95	
Frbp, ped/bikes	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	
Frt	1.00	1.00	0.85			1.00	1.00	0.85		0.92	0.85	
Flt Protected	0.95	1.00	1.00			0.95	0.98	1.00		0.98	1.00	
Satd. Flow (prot)	1513	1593	1425			1449	2981	1368		1443	1354	
Flt Permitted	0.18	1.00	1.00			0.70	0.79	1.00		0.98	1.00	
Satd. Flow (perm)	290	1593	1425			1061	2397	1368		1443	1354	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.84	0.84	0.84	0.84	0.85	0.85	0.85	0.85
Adj. Flow (vph)	16	90	31	64	2	408	229	8	69	20	253	11
RTOR Reduction (vph)	0	0	46	0	0	0	0	5	0	0	3	0
Lane Group Flow (vph)	16	90	49	0	0	206	433	3	0	183	167	0
Confl. Peds. (#/hr)				20					117			22
Confl. Bikes (#/hr)				1								
Bus Blockages (#/hr)	0	0	0	10	0	0	0	10	0	0	0	0
Parking (#/hr)				5								5
Turn Type	custom		custom		custom	Prot		Perm	Split			Prot
Protected Phases			1			2	6		8	8	8	
Permitted Phases	1	1			2			6				
Actuated Green, G (s)	22.0	22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Effective Green, g (s)	22.0	22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Actuated g/C Ratio	0.28	0.28	0.28			0.12	0.32	0.32		0.30	0.30	
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	80	438	392			133	852	445		433	406	
v/s Ratio Prot			0.03				0.06			c0.13	0.12	
v/s Ratio Perm	0.06	c0.06				c0.19	c0.10	0.00				
v/c Ratio	0.20	0.21	0.12			1.55	1.08dl	0.01		0.42	0.41	
Uniform Delay, d1	22.2	22.3	21.8			35.0	21.8	18.3		22.4	22.4	
Progression Factor	1.00	1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	1.1	0.6			280.6	2.2	0.0		3.0	3.1	
Delay (s)	27.8	23.3	22.4			315.6	24.0	18.3		25.5	25.4	
Level of Service	C	C	C			F	C	B		C	C	
Approach Delay (s)		23.3					116.8			25.4		
Approach LOS		C					F			C		

Intersection Summary		
HCM Average Control Delay	71.1	HCM Level of Service E
HCM Volume to Capacity ratio	0.67	
Actuated Cycle Length (s)	80.0	Sum of lost time (s) 20.0
Intersection Capacity Utilization	55.5%	ICU Level of Service B
Analysis Period (min)	15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.  
 c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing + Project  
Timing Plan: AM PEAK



Movement	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations					
Volume (vph)	8	5	72	41	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	
Frt	0.86	1.00	1.00	0.85	
Flt Protected	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	1450	1593	1593	1425	
Flt Permitted	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	1450	1593	1593	1425	
Peak-hour factor, PHF	0.92	0.62	0.62	0.62	0.62
Adj. Flow (vph)	9	8	116	66	5
RTOR Reduction (vph)	8	0	0	4	0
Lane Group Flow (vph)	1	8	116	67	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Bus Blockages (#/hr)	0	0	0	0	0
Parking (#/hr)					
Turn Type	custom	Split		Perm	
Protected Phases	5	7	7		
Permitted Phases				7	
Actuated Green, G (s)	6.0	8.0	8.0	8.0	
Effective Green, g (s)	6.0	8.0	8.0	8.0	
Actuated g/C Ratio	0.08	0.10	0.10	0.10	
Clearance Time (s)	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	109	159	159	143	
v/s Ratio Prot	0.00	0.01	c0.07		
v/s Ratio Perm				0.05	
v/c Ratio	0.01	0.05	0.73	0.47	
Uniform Delay, d1	34.2	32.6	34.9	34.0	
Progression Factor	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.6	25.3	10.7	
Delay (s)	34.3	33.2	60.2	44.7	
Level of Service	C	C	E	D	
Approach Delay (s)			53.5		
Approach LOS			D		
<b>Intersection Summary</b>					

Queues  
3: 19th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	161	537	345
v/c Ratio	0.12	0.49	0.21
Control Delay	10.6	2.2	8.6
Queue Delay	0.0	0.0	0.0
Total Delay	10.6	2.2	8.6
Queue Length 50th (ft)	4	0	10
Queue Length 95th (ft)	51	35	90
Internal Link Dist (ft)	259		536
Turn Bay Length (ft)			
Base Capacity (vph)	2555	1164	2715
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.06	0.46	0.13

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 3: 19th St & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	150	499	0	0	0	0	311	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	0.98					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1219					3174	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1219					3174	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	161	537	0	0	0	0	338	7
RTOR Reduction (vph)	0	0	0	0	0	169	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	161	368	0	0	0	0	343	0
Confl. Peds. (#/hr)				38		3						29
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					4.8	16.5					9.2	
Effective Green, g (s)					4.8	16.5					9.2	
Actuated g/C Ratio					0.20	0.68					0.38	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					634	835					1212	
v/s Ratio Prot					0.05						0.11	
v/s Ratio Perm						c0.30						
v/c Ratio					0.25	0.44					0.28	
Uniform Delay, d1					8.1	1.7					5.2	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.2	0.4					0.1	
Delay (s)					8.4	2.1					5.3	
Level of Service					A	A					A	
Approach Delay (s)		0.0			3.5			0.0			5.3	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.1		HCM Level of Service						A	
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			24.1		Sum of lost time (s)					4.0		
Intersection Capacity Utilization			50.0%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												



















Queues  
4: 17th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	92	411
v/c Ratio	0.13	0.23
Control Delay	9.3	5.3
Queue Delay	0.0	0.4
Total Delay	9.3	5.7
Queue Length 50th (ft)	4	29
Queue Length 95th (ft)	20	47
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	692	1764
Starvation Cap Reductn	0	860
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.13	0.45
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 4: 17th St & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 	 	
Volume (vph)	0	30	52	0	0	0	0	0	0	23	368	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.91									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2593									2848	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2593									2848	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	34	58	0	0	0	0	0	0	24	387	0
RTOR Reduction (vph)	0	44	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	49	0	0	0	0	0	0	0	0	404	0
Confl. Peds. (#/hr)	52		45							52		9
Confl. Bikes (#/hr)									1			7
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0									37.0	
Effective Green, g (s)		15.0									37.0	
Actuated g/C Ratio		0.25									0.62	
Clearance Time (s)		4.0									4.0	
Lane Grp Cap (vph)		648									1756	
v/s Ratio Prot		c0.02										
v/s Ratio Perm											0.14	
v/c Ratio		0.07									0.23	
Uniform Delay, d1		17.2									5.1	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.2									0.3	
Delay (s)		17.4									5.4	
Level of Service		B									A	
Approach Delay (s)		17.4			0.0			0.0			5.4	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.6									A
HCM Volume to Capacity ratio			0.19									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			50.0%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK



















	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	256	650	432
v/c Ratio	0.15	0.39	0.53
Control Delay	3.4	8.5	16.8
Queue Delay	0.0	0.0	0.0
Total Delay	3.4	8.5	16.8
Queue Length 50th (ft)	10	85	66
Queue Length 95th (ft)	21	96	108
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1762	1670	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.39	0.53
<b>Intersection Summary</b>			



# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	124	91	58	436	0	0	0	0	71	292	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.97			1.00						0.99	
Flpb, ped/bikes		1.00			1.00						0.98	
Frt		0.94			1.00						0.99	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		2903			3156						2853	
Flt Permitted		1.00			0.89						0.99	
Satd. Flow (perm)		2903			2823						2853	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	148	108	76	574	0	0	0	0	77	317	38
RTOR Reduction (vph)	0	44	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	212	0	0	650	0	0	0	0	0	420	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		35.5			35.5						17.0	
Effective Green, g (s)		35.5			35.5						17.0	
Actuated g/C Ratio		0.59			0.59						0.28	
Clearance Time (s)		3.0			3.0						4.5	
Lane Grp Cap (vph)		1718			1670						808	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.23						0.15	
v/c Ratio		0.12			0.39						0.52	
Uniform Delay, d1		5.4			6.5						18.1	
Progression Factor		1.00			1.18						0.81	
Incremental Delay, d2		0.1			0.6						2.4	
Delay (s)		5.5			8.3						17.1	
Level of Service		A			A						B	
Approach Delay (s)		5.5			8.3			0.0			17.1	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.6		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				7.5			
Intersection Capacity Utilization			51.9%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Existing + Project  
Timing Plan: AM PEAK















Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	237	378	201	754	18
v/c Ratio	0.34	0.40	0.38	0.46	0.03
Control Delay	16.9	10.7	3.7	8.3	3.1
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	16.9	10.7	3.7	8.5	3.1
Queue Length 50th (ft)	29	40	11	62	0
Queue Length 95th (ft)	58	59	18	68	0
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	696	956	533	1651	647
Starvation Cap Reductn	0	0	0	245	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.40	0.38	0.54	0.03

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔	↗		↔↔	↗			
Volume (vph)	54	169	0	0	355	189	181	445	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.92		1.00	0.96			
Flpb, ped/bikes		0.99			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2872			3185	1306		3094	1197			
Flt Permitted		0.80			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2319			3185	1306		3094	1197			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	57	180	0	0	378	201	218	536	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	141	0	0	8	0	0	0
Lane Group Flow (vph)	0	237	0	0	378	60	0	754	10	0	0	0
Confl. Peds. (#/hr)	49					49	90		44			
Confl. Bikes (#/hr)						35			9			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		18.0			18.0	18.0		32.0	32.0			
Effective Green, g (s)		18.0			18.0	18.0		32.0	32.0			
Actuated g/C Ratio		0.30			0.30	0.30		0.53	0.53			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		696			956	392		1650	638			
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.10				0.05		0.24	0.01			
v/c Ratio		0.34			0.40	0.15		0.46	0.02			
Uniform Delay, d1		16.4			16.7	15.4		8.6	6.6			
Progression Factor		0.93			0.56	0.55		0.83	0.86			
Incremental Delay, d2		1.3			1.2	0.8		0.9	0.0			
Delay (s)		16.5			10.5	9.3		8.1	5.7			
Level of Service		B			B	A		A	A			
Approach Delay (s)		16.5			10.1			8.0			0.0	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			63.0%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group















Queues  
7: 13th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	166	491
v/c Ratio	0.12	0.27
Control Delay	10.9	9.9
Queue Delay	0.0	0.5
Total Delay	10.9	10.4
Queue Length 50th (ft)	8	70
Queue Length 95th (ft)	11	102
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1419	1790
Starvation Cap Reductn	0	848
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.12	0.52
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 7: 13th St & Madison Street

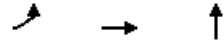
Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	65	41	0	0	0	0	0	0	23	429	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.95	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		5145									2973	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		5145									2973	
Peak-hour factor, PHF	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	102	64	0	0	0	0	0	0	25	466	0
RTOR Reduction (vph)	0	47	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	119	0	0	0	0	0	0	0	0	485	0
Confl. Peds. (#/hr)			42								32	
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1372									1784	
v/s Ratio Prot		c0.02										
v/s Ratio Perm											0.16	
v/c Ratio		0.09									0.27	
Uniform Delay, d1		16.5									5.7	
Progression Factor		1.00									1.69	
Incremental Delay, d2		0.1									0.3	
Delay (s)		16.6									10.0	
Level of Service		B									B	
Approach Delay (s)		16.6			0.0			0.0			10.0	
Approach LOS		B			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.7									B
HCM Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			40.8%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
8: 13th St & Oak Street

Existing + Project  
Timing Plan: AM PEAK






















Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	19	120	710
v/c Ratio	0.05	0.10	0.27
Control Delay	3.8	11.8	12.1
Queue Delay	0.0	0.0	0.0
Total Delay	3.8	11.8	12.1
Queue Length 50th (ft)	0	7	63
Queue Length 95th (ft)	1	8	m79
Internal Link Dist (ft)		317	231
Turn Bay Length (ft)	50		
Base Capacity (vph)	375	1170	2618
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.05	0.10	0.27

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 8: 13th St & Oak Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	11	71	0	0	0	0	0	644	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0				
Lane Util. Factor	1.00	0.91						0.91				
Frbp, ped/bikes	1.00	1.00						1.00				
Flpb, ped/bikes	0.97	1.00						1.00				
Frt	1.00	1.00						0.99				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1353	4386						4350				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1353	4386						4350				
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	19	120	0	0	0	0	0	678	32	0	0	0
RTOR Reduction (vph)	14	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	5	120	0	0	0	0	0	702	0	0	0	0
Confl. Peds. (#/hr)	26								36			
Confl. Bikes (#/hr)									11			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)	16.0	16.0						36.0				
Effective Green, g (s)	16.0	16.0						36.0				
Actuated g/C Ratio	0.27	0.27						0.60				
Clearance Time (s)	5.0	5.0						3.0				
Lane Grp Cap (vph)	361	1170						2610				
v/s Ratio Prot		c0.03						c0.16				
v/s Ratio Perm	0.00											
v/c Ratio	0.01	0.10						0.27				
Uniform Delay, d1	16.2	16.6						5.7				
Progression Factor	0.42	0.69						2.14				
Incremental Delay, d2	0.1	0.2						0.1				
Delay (s)	6.9	11.7						12.4				
Level of Service	A	B						B				
Approach Delay (s)		11.0			0.0			12.4			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.22									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			67.7%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Existing + Project  
Timing Plan: AM PEAK



Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	146	58	809	185
v/c Ratio	0.33	0.16	0.39	0.44
Control Delay	11.9	2.1	0.4	37.9
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.9	2.1	0.7	37.9
Queue Length 50th (ft)	20	1	0	75
Queue Length 95th (ft)	36	2	0	128
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	447	367	2077	425
Starvation Cap Reductn	0	0	560	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.16	0.53	0.44


















Intersection Summary



# HCM Signalized Intersection Capacity Analysis

## 9: 13th St & Lake Merritt Blvd






Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 						
Volume (vph)	0	124	49	0	0	550	0	0	0	159	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		1.00	1.00			0.88				1.00		
Frb, ped/bikes		1.00	0.98			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		1676	1217			2508				1593		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		1676	1217			2508				1593		
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.25	0.25	0.25	0.86	0.86	0.86
Adj. Flow (vph)	0	146	58	0	0	809	0	0	0	185	0	0
RTOR Reduction (vph)	0	0	43	0	0	593	0	0	0	0	0	0
Lane Group Flow (vph)	0	146	15	0	0	216	0	0	0	185	0	0
Confl. Bikes (#/hr)			3									
Parking (#/hr)			5									
Turn Type		custom				custom				Prot		
Protected Phases						2				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			16.0				16.0		
Effective Green, g (s)		16.0	16.0			16.0				16.0		
Actuated g/C Ratio		0.27	0.27			0.27				0.27		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		447	325			669				425		
v/s Ratio Prot						c0.09				c0.12		
v/s Ratio Perm		c0.09	0.01									
v/c Ratio		0.33	0.05			0.32				0.44		
Uniform Delay, d1		17.7	16.3			17.7				18.3		
Progression Factor		0.55	0.20			1.00				1.84		
Incremental Delay, d2		1.9	0.3			1.0				3.1		
Delay (s)		11.6	3.5			18.7				36.7		
Level of Service		B	A			B				D		
Approach Delay (s)		9.3			18.7			0.0			36.7	
Approach LOS		A			B			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			24.7%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Existing + Project  
Timing Plan: AM PEAK








					
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	62	136	659	2092
v/c Ratio	0.03	0.20	0.14	0.97	1.31
Control Delay	26.0	36.4	37.6	75.4	169.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	36.4	37.6	75.4	169.3
Queue Length 50th (ft)	2	35	30	171	~1026
Queue Length 95th (ft)	2	69	46	#189	#1161
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	285	316	955	676	1602
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.14	0.97	1.31

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Existing + Project  
 Timing Plan: AM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↖	↑↑↑	↑↑↑		↘↙	
Volume (vph)	2	53	116	418	89	1970	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1346	1496	4577	4253		3094	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1346	1496	4577	4253		3094	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	62	136	543	116	2074	18
RTOR Reduction (vph)	4	4	0	29	0	0	0
Lane Group Flow (vph)	4	58	136	630	0	2092	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	24.0	24.0	24.0	17.5		59.5	
Effective Green, g (s)	24.0	24.0	24.0	17.5		59.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.15		0.52	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	281	312	955	647		1601	
v/s Ratio Prot			0.03	c0.15		c0.68	
v/s Ratio Perm	0.00	c0.04					
v/c Ratio	0.01	0.19	0.14	0.97		1.31	
Uniform Delay, d1	36.1	37.5	37.1	48.5		27.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.3	0.3	29.6		142.6	
Delay (s)	36.2	38.8	37.4	78.1		170.4	
Level of Service	D	D	D	E		F	
Approach Delay (s)			37.8	78.1		170.4	
Approach LOS			D	E		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			140.6		HCM Level of Service		F
HCM Volume to Capacity ratio			0.98				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			90.5%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
11: 12th St & Broadway

Existing + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	652	105	522	524
v/c Ratio	0.45	0.88	0.33	0.48
Control Delay	14.7	94.5	20.7	15.7
Queue Delay	0.0	0.0	0.7	0.0
Total Delay	14.7	94.5	21.5	15.7
Queue Length 50th (ft)	58	44	104	70
Queue Length 95th (ft)	79	m#95	152	110
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1448	119	1587	1099
Starvation Cap Reductn	0	0	710	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.88	0.60	0.48

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.

HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

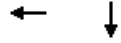
Existing + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	97	371	80	101	501	0	0	461	53	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.98		1.00	1.00			0.96		
Flpb, ped/bikes					0.98		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4026		1593	3122			2955		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4026		1593	3122			2955		
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.96	0.96	0.96	0.98	0.98	0.98	
Adj. Flow (vph)	0	0	0	115	442	95	105	522	0	0	470	54	
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	0	0	15	0	
Lane Group Flow (vph)	0	0	0	0	612	0	105	522	0	0	509	0	
Confl. Peds. (#/hr)				164		113	522					522	
Confl. Bikes (#/hr)						6						10	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type				Perm			Prot						
Protected Phases					4		5	2			6		
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1409		119	1587			1084		
v/s Ratio Prot							c0.07	0.17			c0.17		
v/s Ratio Perm					0.15								
v/c Ratio					0.43		0.88	0.33			0.47		
Uniform Delay, d1					14.9		27.5	8.7			14.5		
Progression Factor					1.00		1.56	2.28			1.00		
Incremental Delay, d2					1.0		47.9	0.4			1.5		
Delay (s)					15.9		90.8	20.3			16.0		
Level of Service					B		F	C			B		
Approach Delay (s)		0.0			15.9			32.1			16.0		
Approach LOS		A			B			C			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			21.6		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.49										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			53.3%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK


















Lane Group	WBT	SBT
Lane Group Flow (vph)	1356	484
v/c Ratio	0.41	0.62
Control Delay	5.2	27.2
Queue Delay	0.0	0.4
Total Delay	5.2	27.5
Queue Length 50th (ft)	43	94
Queue Length 95th (ft)	m49	139
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3315	780
Starvation Cap Reductn	0	0
Spillback Cap Reductn	36	58
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.67

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	235	931	0	0	0	0	0	395	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						4.0	
Lane Util. Factor					0.86						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.98	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					5424						2756	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					5424						2756	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	273	1083	0	0	0	0	0	411	73
RTOR Reduction (vph)	0	0	0	0	61	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	0	0	0	1295	0	0	0	0	0	462	0
Confl. Peds. (#/hr)				50								65
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0
Parking (#/hr)				5	5						5	5
Turn Type					Perm							Perm
Protected Phases						6						4
Permitted Phases				6								4
Actuated Green, G (s)					36.0						16.5	
Effective Green, g (s)					36.0						16.5	
Actuated g/C Ratio					0.60						0.28	
Clearance Time (s)					3.5						4.0	
Lane Grp Cap (vph)					3254						758	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.24							
v/c Ratio					0.40						0.61	
Uniform Delay, d1					6.3						18.9	
Progression Factor					0.87						1.30	
Incremental Delay, d2					0.3						3.6	
Delay (s)					5.8						28.1	
Level of Service					A						C	
Approach Delay (s)		0.0			5.8			0.0			28.1	
Approach LOS		A			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.7		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5		
Intersection Capacity Utilization			38.9%		ICU Level of Service					A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
13: 12th St & Oak Street

Existing + Project  
Timing Plan: AM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	885	1114
v/c Ratio	0.30	0.93dl
Control Delay	8.0	26.9
Queue Delay	0.0	2.0
Total Delay	8.0	28.8
Queue Length 50th (ft)	45	122
Queue Length 95th (ft)	62	#200
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2925	1277
Starvation Cap Reductn	0	70
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.92













Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.



HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Existing + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					<b>↑↑↑</b>			<b>↑↑↑</b>					
Volume (vph)	0	0	0	0	804	28	405	642	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.5			4.0					
Lane Util. Factor					0.86			0.91					
Frb, ped/bikes					0.99			1.00					
Flpb, ped/bikes					1.00			0.91					
Frt					0.99			1.00					
Flt Protected					1.00			0.98					
Satd. Flow (prot)					5469			3844					
Flt Permitted					1.00			0.98					
Satd. Flow (perm)					5469			3844					
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	855	30	431	683	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	8	0	0	91	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	877	0	0	1023	0	0	0	0	
Confl. Peds. (#/hr)						151	217						
Confl. Bikes (#/hr)						9							
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0	
Parking (#/hr)					5	5	5	5					
Turn Type								Perm					
Protected Phases					6			4					
Permitted Phases							4						
Actuated Green, G (s)					32.0			18.5					
Effective Green, g (s)					32.0			18.5					
Actuated g/C Ratio					0.53			0.31					
Clearance Time (s)					5.5			4.0					
Lane Grp Cap (vph)					2917			1185					
v/s Ratio Prot					c0.16								
v/s Ratio Perm								0.27					
v/c Ratio					0.30			0.93dl					
Uniform Delay, d1					7.8			19.6					
Progression Factor					1.00			1.00					
Incremental Delay, d2					0.3			8.4					
Delay (s)					8.0			28.0					
Level of Service					A			C					
Approach Delay (s)		0.0			8.0			28.0			0.0		
Approach LOS		A			A			C			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			19.2		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.51										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						9.5		
Intersection Capacity Utilization			46.6%		ICU Level of Service						A		
Analysis Period (min)			15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.													
c Critical Lane Group													

Queues  
 14: 12th St / 11th St & Lake Merritt Blvd

Existing + Project  
 Timing Plan: AM PEAK













	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	380	1048	690	326
v/c Ratio	0.40	0.58	0.71	0.69
Control Delay	3.8	9.5	13.9	20.5
Queue Delay	0.8	0.0	0.0	0.0
Total Delay	4.5	9.5	13.9	20.5
Queue Length 50th (ft)	20	108	155	91
Queue Length 95th (ft)	48	127	212	#145
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)				
Base Capacity (vph)	948	1803	978	475
Starvation Cap Reductn	294	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.58	0.71	0.69

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Existing + Project  
 Timing Plan: AM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 			
Volume (vph)	0	323	838	552	283	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	0.97	1.00	1.00	
Frb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1450	3090	1676	1676	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1450	3090	1676	1676	
Peak-hour factor, PHF	0.85	0.85	0.80	0.80	0.87	0.87
Adj. Flow (vph)	0	380	1048	690	325	1
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	0	278	1048	690	326	0
Confl. Bikes (#/hr)		7				
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		35.0	35.0	35.0	17.0	
Effective Green, g (s)		35.0	35.0	35.0	17.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.28	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		846	1803	978	475	
v/s Ratio Prot		0.19	0.34	c0.41	c0.19	
v/s Ratio Perm						
v/c Ratio		0.33	0.58	0.71	0.69	
Uniform Delay, d1		6.4	7.9	8.9	19.1	
Progression Factor		1.00	1.00	1.00	0.62	
Incremental Delay, d2		1.0	1.4	4.3	7.4	
Delay (s)		7.5	9.3	13.1	19.3	
Level of Service		A	A	B	B	
Approach Delay (s)	7.5			10.8	19.3	
Approach LOS	A			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			11.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.70			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
15: International Blvd & Lake Merritt Blvd

Existing + Project  
Timing Plan: AM PEAK















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	563	131	379	209	1011
v/c Ratio	0.77	0.22	0.23	0.29	1.36
Control Delay	25.1	3.7	10.5	2.9	192.0
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	25.1	3.7	10.5	3.2	192.0
Queue Length 50th (ft)	184	0	45	0	-542
Queue Length 95th (ft)	#312	27	70	32	#742
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)					
Base Capacity (vph)	735	603	1617	719	743
Starvation Cap Reductn	0	0	0	177	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.22	0.23	0.39	1.36

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.

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Existing + Project  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			
Volume (vph)	501	117	360	199	11	889
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	1.00	1.00	0.91	0.91		1.00
Frbp, ped/bikes	1.00	0.95	1.00	0.92		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1770	1267	3390	1278		1564
Flt Permitted	0.95	1.00	1.00	1.00		0.99
Satd. Flow (perm)	1770	1267	3390	1278		1557
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	563	131	379	209	12	999
RTOR Reduction (vph)	0	77	0	109	0	0
Lane Group Flow (vph)	563	54	379	100	0	1011
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	735	526	1617	610		743
v/s Ratio Prot	c0.32		0.11			
v/s Ratio Perm		0.04		0.08		c0.65
v/c Ratio	0.77	0.10	0.23	0.16		1.36
Uniform Delay, d1	16.3	11.6	10.0	9.6		17.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	7.5	0.4	0.3	0.6		171.0
Delay (s)	23.8	12.0	10.4	10.2		188.0
Level of Service	C	B	B	B		F
Approach Delay (s)	21.6		10.3			188.0
Approach LOS	C		B			F

Intersection Summary			
HCM Average Control Delay		92.1	HCM Level of Service F
HCM Volume to Capacity ratio		1.08	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		90.0%	ICU Level of Service E
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Existing + Project  
Timing Plan: AM PEAK



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	446	168	413	171	136	526
v/c Ratio	0.38	0.29	0.34	0.28	0.33	0.25
Control Delay	26.2	5.2	25.7	5.1	34.9	9.8
Queue Delay	0.0	0.0	1.1	0.5	0.0	0.0
Total Delay	26.2	5.2	26.8	5.5	34.9	9.8
Queue Length 50th (ft)	110	0	102	0	73	76
Queue Length 95th (ft)	140	36	141	43	126	103
Internal Link Dist (ft)	677		204			677
Turn Bay Length (ft)		100		125	200	
Base Capacity (vph)	1167	572	1203	601	407	2081
Starvation Cap Reductn	0	0	543	170	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.29	0.63	0.40	0.33	0.25

Intersection Summary





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Existing + Project  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	375	141	368	152	121	468
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	0.89	1.00	0.94	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	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1355	3539	1436	1770	3468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1355	3539	1436	1770	3468
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.89	0.89
Adj. Flow (vph)	446	168	413	171	136	526
RTOR Reduction (vph)	0	111	0	113	0	0
Lane Group Flow (vph)	446	57	413	58	136	526
Confl. Peds. (#/hr)	19	82		33	33	
Confl. Bikes (#/hr)				5		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm		Perm	Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	34.0	34.0	34.0	34.0	23.0	60.0
Effective Green, g (s)	34.0	34.0	34.0	34.0	23.0	60.0
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.23	0.60
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1167	461	1203	488	407	2081
v/s Ratio Prot	c0.13		c0.12		c0.08	0.15
v/s Ratio Perm		0.04		0.04		
v/c Ratio	0.38	0.12	0.34	0.12	0.33	0.25
Uniform Delay, d1	25.0	22.7	24.7	22.7	32.1	9.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.6	0.8	0.5	2.2	0.3
Delay (s)	26.0	23.3	25.4	23.2	34.3	9.7
Level of Service	C	C	C	C	C	A
Approach Delay (s)	25.2		24.8			14.8
Approach LOS	C		C			B
<b>Intersection Summary</b>						
HCM Average Control Delay			21.4		HCM Level of Service	C
HCM Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			57.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

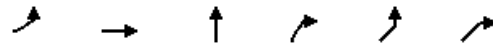
Existing + Project  
Timing Plan: AM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	146	1035	468	145
v/c Ratio	0.22	0.39	0.51	0.28
Control Delay	3.5	19.2	42.0	42.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	19.2	42.0	42.5
Queue Length 50th (ft)	0	145	111	48
Queue Length 95th (ft)	41	174	146	78
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	665	2645	912	521
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.39	0.51	0.28
<b>Intersection Summary</b>				



HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Existing + Project  
 Timing Plan: AM PEAK



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	134	952	393	23	73	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.94	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1212	5432	4344		2920	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1212	5432	4344		2920	
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93
Adj. Flow (vph)	146	1035	442	26	78	67
RTOR Reduction (vph)	75	0	6	0	0	0
Lane Group Flow (vph)	71	1035	462	0	145	0
Confl. Peds. (#/hr)	37			5	37	5
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	56.0	56.0	24.0		20.5	
Effective Green, g (s)	56.0	56.0	24.0		20.5	
Actuated g/C Ratio	0.49	0.49	0.21		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	590	2645	907		521	
v/s Ratio Prot			c0.11		c0.05	
v/s Ratio Perm	0.06	0.19				
v/c Ratio	0.12	0.39	0.51		0.28	
Uniform Delay, d1	16.1	18.7	40.3		40.9	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.4	2.0		1.3	
Delay (s)	16.5	19.1	42.3		42.2	
Level of Service	B	B	D		D	
Approach Delay (s)		18.8	42.3		42.2	
Approach LOS		B	D		D	

Intersection Summary			
HCM Average Control Delay		26.8	HCM Level of Service C
HCM Volume to Capacity ratio		0.40	
Actuated Cycle Length (s)		115.0	Sum of lost time (s) 14.5
Intersection Capacity Utilization		53.2%	ICU Level of Service A
Analysis Period (min)		15	

c Critical Lane Group

Queues  
18: 11th St & Broadway

Existing + Project  
Timing Plan: AM PEAK





















	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	872	627	113	510
v/c Ratio	0.43	0.63	0.85	0.34
Control Delay	13.2	19.4	68.4	11.1
Queue Delay	0.0	0.5	0.0	0.6
Total Delay	13.2	19.9	68.4	11.6
Queue Length 50th (ft)	59	93	43	81
Queue Length 95th (ft)	82	143	#123	127
Internal Link Dist (ft)	1829	193		185
Turn Bay Length (ft)			85	
Base Capacity (vph)	2045	998	133	1509
Starvation Cap Reductn	0	103	0	597
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.70	0.85	0.56

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 18: 11th St & Broadway

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	87	603	103	0	0	0	0	513	76	101	454	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.86						0.95		1.00	0.95	
Frbp, ped/bikes		0.98						0.96		1.00	1.00	
Flpb, ped/bikes		0.99						1.00		1.00	1.00	
Frt		0.98						0.98		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		5212						2936		1593	3122	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		5212						2936		1593	3122	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	96	663	113	0	0	0	0	546	81	113	510	0
RTOR Reduction (vph)	0	45	0	0	0	0	0	19	0	0	0	0
Lane Group Flow (vph)	0	827	0	0	0	0	0	608	0	113	510	0
Confl. Peds. (#/hr)	139		172						313	313		
Confl. Bikes (#/hr)			11						3			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		23.0						20.0		5.0	29.0	
Effective Green, g (s)		23.0						20.0		5.0	29.0	
Actuated g/C Ratio		0.38						0.33		0.08	0.48	
Clearance Time (s)		4.0						4.0		4.0	4.0	
Lane Grp Cap (vph)		1998						979		133	1509	
v/s Ratio Prot								c0.21		c0.07	0.16	
v/s Ratio Perm		0.16										
v/c Ratio		0.41						0.62		0.85	0.34	
Uniform Delay, d1		13.6						16.8		27.1	9.6	
Progression Factor		1.00						1.00		0.64	1.08	
Incremental Delay, d2		0.6						3.0		42.8	0.6	
Delay (s)		14.2						19.8		60.2	10.9	
Level of Service		B						B		E	B	
Approach Delay (s)		14.2			0.0			19.8			19.8	
Approach LOS		B			A			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.5								B	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0							12.0		
Intersection Capacity Utilization			53.3%								A	
Analysis Period (min)			15									

c Critical Lane Group

	↙	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	27	514	707
v/c Ratio	0.03	0.25	0.79
Control Delay	7.6	8.0	20.8
Queue Delay	0.0	0.0	3.6
Total Delay	7.6	8.0	24.4
Queue Length 50th (ft)	5	32	118
Queue Length 95th (ft)	15	47	#178
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	810	2023	896
Starvation Cap Reductn	0	0	115
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.25	0.91

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

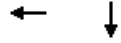
Existing + Project  
 Timing Plan: AM PEAK

	↖	→	↘	↙	↓
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations	↖	↑↑↘			↙↑
Volume (vph)	25	265	182	50	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.91			0.95
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.94			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	3940			2905
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	3940			2905
Peak-hour factor, PHF	0.92	0.87	0.87	0.89	0.89
Adj. Flow (vph)	27	305	209	56	651
RTOR Reduction (vph)	0	20	0	0	0
Lane Group Flow (vph)	27	494	0	0	707
Confl. Peds. (#/hr)			52	38	
Confl. Bikes (#/hr)			4		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	30.5	30.5			18.5
Effective Green, g (s)	30.5	30.5			18.5
Actuated g/C Ratio	0.51	0.51			0.31
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	810	2003			896
v/s Ratio Prot		c0.13			
v/s Ratio Perm	0.02				0.24
v/c Ratio	0.03	0.25			0.79
Uniform Delay, d1	7.4	8.3			19.0
Progression Factor	1.00	1.00			0.71
Incremental Delay, d2	0.1	0.3			6.1
Delay (s)	7.5	8.6			19.6
Level of Service	A	A			B
Approach Delay (s)		8.5			19.6
Approach LOS		A			B
<b>Intersection Summary</b>					
HCM Average Control Delay			14.8	HCM Level of Service	B
HCM Volume to Capacity ratio			0.45		
Actuated Cycle Length (s)			60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			41.1%	ICU Level of Service	A
Analysis Period (min)			15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Existing + Project  
Timing Plan: AM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	608	841
v/c Ratio	1.44	0.50
Control Delay	223.7	12.6
Queue Delay	0.0	0.6
Total Delay	223.7	13.2
Queue Length 50th (ft)	~326	140
Queue Length 95th (ft)	m166	m206
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	422	1686
Starvation Cap Reductn	0	432
Spillback Cap Reductn	0	72
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.44	0.67

Intersection Summary

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

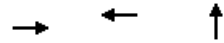
HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											  	
Volume (vph)	0	0	0	96	421	0	0	0	0	88	640	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						0.99	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					1447						2822	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					1447						2822	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	113	495	0	0	0	0	91	660	90
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	608	0	0	0	0	0	826	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type					Perm						Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					422						1670	
v/s Ratio Prot												
v/s Ratio Perm					0.42						0.29	
v/c Ratio					1.44						0.49	
Uniform Delay, d1					21.2						7.1	
Progression Factor					1.07						1.70	
Incremental Delay, d2					199.6						0.8	
Delay (s)					222.4						12.8	
Level of Service					F						B	
Approach Delay (s)		0.0			222.4			0.0			12.8	
Approach LOS		A			F			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			100.8								HCM Level of Service	F
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	7.0
Intersection Capacity Utilization			63.2%								ICU Level of Service	B
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
21: 10th St & Oak Street

Existing + Project  
Timing Plan: AM PEAK



Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	187	717	1057
v/c Ratio	1.43	1.91	0.39
Control Delay	254.6	440.7	1.8
Queue Delay	0.0	0.0	0.1
Total Delay	254.6	440.7	1.9
Queue Length 50th (ft)	~90	~409	12
Queue Length 95th (ft)	#118	#548	18
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	131	375	2733
Starvation Cap Reductn	0	0	484
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.43	1.91	0.47

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.



# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	14	100	0	0	402	200	104	808	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frbp, ped/bikes		1.00			0.98			1.00				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.96			0.99				
Flt Protected		0.99			1.00			0.99				
Satd. Flow (prot)		1457			1379			4415				
Flt Permitted		0.36			1.00			0.99				
Satd. Flow (perm)		525			1379			4415				
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	23	164	0	0	479	238	114	888	55	0	0	0
RTOR Reduction (vph)	0	0	0	0	30	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	187	0	0	687	0	0	1047	0	0	0	0
Confl. Peds. (#/hr)	26					26	72		91			
Confl. Bikes (#/hr)						7			11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		131			345			2723				
v/s Ratio Prot					c0.50							
v/s Ratio Perm		0.36						0.24				
v/c Ratio		1.43			1.99			0.38				
Uniform Delay, d1		22.5			22.5			5.8				
Progression Factor		0.88			1.00			0.24				
Incremental Delay, d2		230.1			456.3			0.4				
Delay (s)		249.8			478.8			1.8				
Level of Service		F			F			A				
Approach Delay (s)		249.8			478.8			1.8			0.0	
Approach LOS		F			F			A			A	

### Intersection Summary

HCM Average Control Delay	199.9	HCM Level of Service	F
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group













Queues  
22: 9th Street & Webster Street

Existing + Project  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	113	60	1003
v/c Ratio	0.13	0.17	0.56
Control Delay	23.4	7.9	25.0
Queue Delay	0.0	0.0	1.0
Total Delay	23.4	7.9	26.0
Queue Length 50th (ft)	24	0	127
Queue Length 95th (ft)	41	24	144
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	352	1793
Starvation Cap Reductn	0	0	501
Spillback Cap Reductn	0	0	50
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.13	0.17	0.78
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↓↓↓	
Volume (vph)	0	95	50	0	0	0	0	0	0	146	686	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.86								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1034								5434	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1034								5434	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	113	60	0	0	0	0	0	0	176	827	0
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	113	18	0	0	0	0	0	0	0	960	0
Confl. Peds. (#/hr)			124							55		
Confl. Bikes (#/hr)			4									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	310								1751	
v/s Ratio Prot		c0.04										
v/s Ratio Perm			0.02								0.18	
v/c Ratio		0.13	0.06								0.55	
Uniform Delay, d1		22.9	22.4								25.1	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.3	0.4								1.2	
Delay (s)		23.2	22.8								26.4	
Level of Service		C	C								C	
Approach Delay (s)		23.1			0.0			0.0			26.4	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			25.9									HCM Level of Service C
HCM Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			90.0							34.0		
Intersection Capacity Utilization			42.7%									ICU Level of Service A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 23: 9th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK













	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	228	803
v/c Ratio	0.22	0.46
Control Delay	9.8	7.6
Queue Delay	0.0	0.4
Total Delay	9.8	8.0
Queue Length 50th (ft)	11	92
Queue Length 95th (ft)	27	m88
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1054	1755
Starvation Cap Reductn	0	422
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.22	0.60

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↔↑	
Volume (vph)	0	104	108	0	0	0	0	0	0	58	681	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.95	
Frbp, ped/bikes		0.95									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.92									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3865									2907	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3865									2907	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	112	116	0	0	0	0	0	0	63	740	0
RTOR Reduction (vph)	0	87	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	141	0	0	0	0	0	0	0	0	793	0
Confl. Peds. (#/hr)			62							43		
Confl. Bikes (#/hr)			7									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		966									1744	
v/s Ratio Prot		c0.04										
v/s Ratio Perm											0.27	
v/c Ratio		0.15									0.45	
Uniform Delay, d1		17.5									6.6	
Progression Factor		1.00									1.06	
Incremental Delay, d2		0.3									0.7	
Delay (s)		17.8									7.7	
Level of Service		B									A	
Approach Delay (s)		17.8			0.0			0.0			7.7	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.9								A	
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			42.8%								A	
Analysis Period (min)			15									

c Critical Lane Group













Queues  
24: 9th Street & Oak Street

Existing + Project  
Timing Plan: AM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	209	937
v/c Ratio	0.17	0.35
Control Delay	8.6	2.3
Queue Delay	0.0	0.0
Total Delay	8.6	2.3
Queue Length 50th (ft)	9	16
Queue Length 95th (ft)	16	21
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1199	2687
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.17	0.35
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

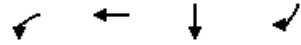
Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	79	93	0	0	0	0	0	820	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						1.00				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.99				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		4230						4342				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		4230						4342				
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	113	0	0	0	0	0	891	46	0	0	0
RTOR Reduction (vph)	0	70	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	139	0	0	0	0	0	928	0	0	0	0
Confl. Peds. (#/hr)	26								84			
Confl. Bikes (#/hr)									11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1128						2678				
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.03										
v/c Ratio		0.12						0.35				
Uniform Delay, d1		16.7						5.6				
Progression Factor		0.86						0.36				
Incremental Delay, d2		0.2						0.3				
Delay (s)		14.6						2.3				
Level of Service		B						A				
Approach Delay (s)		14.6			0.0			2.3			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.5									A
HCM Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			42.4%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Existing + Project  
Timing Plan: AM PEAK



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	324	701	564	249
v/c Ratio	0.55	0.57	0.42	0.50
Control Delay	7.0	28.8	4.7	6.4
Queue Delay	0.0	0.0	0.2	2.6
Total Delay	7.0	28.8	4.9	9.0
Queue Length 50th (ft)	0	129	10	0
Queue Length 95th (ft)	53	157	14	218
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	586	1227	1336	494
Starvation Cap Reductn	0	0	203	144
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.57	0.50	0.71





















Intersection Summary



# HCM Signalized Intersection Capacity Analysis

## 25: 8th Street & Webster Street

Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	272	589	0	0	0	0	0	496	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frbp, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1010
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1010
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	324	701	0	0	0	0	0	564	249
RTOR Reduction (vph)	0	0	0	227	0	0	0	0	0	0	0	169
Lane Group Flow (vph)	0	0	0	97	701	0	0	0	0	0	564	80
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	325
v/s Ratio Prot											c0.14	
v/s Ratio Perm				0.08	0.17							0.08
v/c Ratio				0.27	0.57						0.42	0.25
Uniform Delay, d1				24.0	26.6						23.9	22.5
Progression Factor				1.00	1.00						0.16	0.94
Incremental Delay, d2				1.9	1.9						0.8	1.5
Delay (s)				25.9	28.5						4.7	22.7
Level of Service				C	C						A	C
Approach Delay (s)		0.0			27.7			0.0			10.2	
Approach LOS		A			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.0	HCM Level of Service							B	
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0		
Intersection Capacity Utilization			33.4%	ICU Level of Service						A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 26: 8th Street & Harrison Street

Existing + Project  
 Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	851	206	642
v/c Ratio	0.62	0.27	0.27
Control Delay	18.4	1.5	1.5
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	1.5	1.5
Queue Length 50th (ft)	86	0	5
Queue Length 95th (ft)	94	0	8
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1362	750	2338
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.27	0.27

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↖	↑↑↑				
Volume (vph)	0	0	0	0	530	100	322	339	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.91		0.86	0.86				
Frbp, ped/bikes					0.98		1.00	1.00				
Flpb, ped/bikes					1.00		0.96	0.99				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	0.98				
Satd. Flow (prot)					4159		1320	4207				
Flt Permitted					1.00		0.95	0.98				
Satd. Flow (perm)					4159		1320	4207				
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	716	135	413	435	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	46	0	24	24	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	805	0	182	618	0	0	0	0
Confl. Peds. (#/hr)							88	65				
Confl. Bikes (#/hr)							7					
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)					5	5						
Turn Type								Perm				
Protected Phases					8			1				
Permitted Phases								1				
Actuated Green, G (s)					19.0			32.5	32.5			
Effective Green, g (s)					19.0			33.0	33.0			
Actuated g/C Ratio					0.32			0.55	0.55			
Clearance Time (s)					4.0			4.5	4.5			
Lane Grp Cap (vph)					1317			726	2314			
v/s Ratio Prot					c0.19							
v/s Ratio Perm								0.14	0.15			
v/c Ratio					0.61			0.25	0.27			
Uniform Delay, d1					17.4			7.0	7.1			
Progression Factor					1.00			0.11	0.18			
Incremental Delay, d2					2.1			0.8	0.3			
Delay (s)					19.5			1.6	1.6			
Level of Service					B			A	A			
Approach Delay (s)		0.0			19.5			1.6			0.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.5		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			33.4%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
27: 8th Street & Jackson Street

Existing + Project  
Timing Plan: AM PEAK



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	749	480	433
v/c Ratio	0.64	0.70	0.52
Control Delay	19.0	15.8	10.0
Queue Delay	0.0	38.1	2.1
Total Delay	19.0	53.9	12.1
Queue Length 50th (ft)	101	187	77
Queue Length 95th (ft)	140	m147	109
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1163	685	832
Starvation Cap Reductn	0	231	258
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.64	1.06	0.75



















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

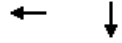
## 27: 8th Street & Jackson Street

Existing + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						 		
Volume (vph)	0	0	0	88	503	83	104	328	0	0	279	55	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.91			1.00			1.00		
Frb, ped/bikes					0.98			1.00			0.99		
Flpb, ped/bikes					0.97			1.00			1.00		
Frt					0.98			1.00			0.98		
Flt Protected					0.99			0.99			1.00		
Satd. Flow (prot)					3996			1445			1425		
Flt Permitted					0.99			0.82			1.00		
Satd. Flow (perm)					3996			1192			1425		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77	
Adj. Flow (vph)	0	0	0	98	559	92	116	364	0	0	362	71	
RTOR Reduction (vph)	0	0	0	0	30	0	0	0	0	0	12	0	
Lane Group Flow (vph)	0	0	0	0	719	0	0	480	0	0	421	0	
Confl. Peds. (#/hr)				129		97	51					51	
Confl. Bikes (#/hr)						8						1	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type				Perm			Perm						
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					17.0			34.0			34.0		
Effective Green, g (s)					17.0			34.5			34.5		
Actuated g/C Ratio					0.28			0.58			0.58		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1132			685			819		
v/s Ratio Prot											0.30		
v/s Ratio Perm					0.18			c0.40					
v/c Ratio					0.64			0.70			0.51		
Uniform Delay, d1					18.8			9.1			7.7		
Progression Factor					0.92			1.49			1.00		
Incremental Delay, d2					2.3			0.6			2.3		
Delay (s)					19.7			14.1			10.0		
Level of Service					B			B			A		
Approach Delay (s)		0.0			19.7			14.1			10.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			15.5		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.5		
Intersection Capacity Utilization			79.9%		ICU Level of Service						D		
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
28: 8th Street & Madison Street













Existing + Project  
Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	997	820
v/c Ratio	0.57	0.41
Control Delay	8.4	3.0
Queue Delay	0.4	0.1
Total Delay	8.8	3.1
Queue Length 50th (ft)	36	16
Queue Length 95th (ft)	70	25
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1761	2003
Starvation Cap Reductn	0	318
Spillback Cap Reductn	320	98
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.69	0.49
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	298	610	0	0	0	0	0	699	71	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.99		
Flt Protected					0.98						1.00		
Satd. Flow (prot)					4201						4248		
Flt Permitted					0.98						1.00		
Satd. Flow (perm)					4201						4248		
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	
Adj. Flow (vph)	0	0	0	327	670	0	0	0	0	0	744	76	
RTOR Reduction (vph)	0	0	0	0	80	0	0	0	0	0	20	0	
Lane Group Flow (vph)	0	0	0	0	917	0	0	0	0	0	800	0	
Confl. Peds. (#/hr)				36								34	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					23.5						27.5		
Effective Green, g (s)					24.0						28.0		
Actuated g/C Ratio					0.40						0.47		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1680						1982		
v/s Ratio Prot											c0.19		
v/s Ratio Perm					0.22								
v/c Ratio					0.55						0.40		
Uniform Delay, d1					13.8						10.5		
Progression Factor					0.60						0.24		
Incremental Delay, d2					1.1						0.6		
Delay (s)					9.4						3.1		
Level of Service					A						A		
Approach Delay (s)		0.0			9.4			0.0			3.1		
Approach LOS		A			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			6.5		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			43.5%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
29: 8th Street & Oak Street

Existing + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBT
Lane Group Flow (vph)	893	1036
v/c Ratio	0.59	0.47
Control Delay	16.9	3.5
Queue Delay	0.0	0.4
Total Delay	16.9	4.0
Queue Length 50th (ft)	87	9
Queue Length 95th (ft)	124	14
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1506	2224
Starvation Cap Reductn	0	651
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.59	0.66
Intersection Summary		



HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	707	115	130	761	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.98			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4197			4249				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4197			4249				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	768	125	151	885	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	856	0	0	1008	0	0	0	0
Confl. Peds. (#/hr)						62	131					
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					21.0			31.0				
Effective Green, g (s)					21.0			31.0				
Actuated g/C Ratio					0.35			0.52				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1469			2195				
v/s Ratio Prot					c0.20							
v/s Ratio Perm								0.24				
v/c Ratio					0.58			0.46				
Uniform Delay, d1					15.9			9.2				
Progression Factor					1.00			0.34				
Incremental Delay, d2					1.7			0.5				
Delay (s)					17.6			3.7				
Level of Service					B			A				
Approach Delay (s)		0.0			17.6			3.7			0.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.1								B	
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			44.6%								A	
Analysis Period (min)			15									
c Critical Lane Group												

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Intersection Sign configuration not allowed in HCM analysis.

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










Queues  
31: 7th Street & Harrison Street

Existing + Project  
Timing Plan: AM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	549	704	1940
v/c Ratio	0.27	0.38	0.79
Control Delay	8.6	13.5	2.7
Queue Delay	0.0	0.0	0.0
Total Delay	8.6	13.5	2.7
Queue Length 50th (ft)	34	63	0
Queue Length 95th (ft)	44	68	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2045	1831	2457
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.38	0.79
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Existing + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑						↑↑↑	↑↑				
Volume (vph)	66	362	0	0	0	0	0	507	1397	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0						4.0	3.0				
Lane Util. Factor		0.91						0.91	0.88				
Frbp, ped/bikes		1.00						1.00	0.98				
Flpb, ped/bikes		1.00						1.00	1.00				
Frt		1.00						1.00	0.85				
Flt Protected		0.99						1.00	1.00				
Satd. Flow (prot)		4289						4577	2457				
Flt Permitted		0.99						1.00	1.00				
Satd. Flow (perm)		4289						4577	2457				
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.72	0.72	0.72	0.92	0.92	0.92	
Adj. Flow (vph)	85	464	0	0	0	0	0	704	1940	0	0	0	
RTOR Reduction (vph)	0	44	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	505	0	0	0	0	0	704	1940	0	0	0	
Confl. Peds. (#/hr)	12								29				
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	5	5											
Turn Type	Perm								Free				
Protected Phases		2						4					
Permitted Phases	2								Free				
Actuated Green, G (s)		27.0						23.0	60.0				
Effective Green, g (s)		28.0						24.0	60.0				
Actuated g/C Ratio		0.47						0.40	1.00				
Clearance Time (s)		5.0						5.0					
Lane Grp Cap (vph)		2002						1831	2457				
v/s Ratio Prot								0.15					
v/s Ratio Perm		0.12							c0.79				
v/c Ratio		0.25						0.38	0.79				
Uniform Delay, d1		9.7						12.8	0.0				
Progression Factor		1.00						1.00	1.00				
Incremental Delay, d2		0.3						0.6	2.7				
Delay (s)		10.0						13.4	2.7				
Level of Service		A						B	A				
Approach Delay (s)		10.0			0.0			5.5			0.0		
Approach LOS		A			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			6.3									HCM Level of Service	A
HCM Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	0.0
Intersection Capacity Utilization			35.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
32: 7th Street & Jackson Street

Existing + Project  
Timing Plan: AM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1421	615	593	420
v/c Ratio	0.87dr	1.00	1.36	2.16
Control Delay	8.5	44.5	199.2	558.7
Queue Delay	0.3	0.0	98.9	0.0
Total Delay	8.8	44.5	298.1	558.7
Queue Length 50th (ft)	94	146	~287	~268
Queue Length 95th (ft)	98	#316	#464	#405
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2158	616	436	194
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	238	0	61	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	1.00	1.58	2.16

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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	35	586	947	0	0	0	0	389	151	24	346	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.96	0.91					0.97			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.94	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3659	937					1376			1460	
Flt Permitted		1.00	1.00					1.00			0.44	
Satd. Flow (perm)		3659	937					1376			646	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	45	761	1230	0	0	0	0	427	166	27	393	0
RTOR Reduction (vph)	0	85	85	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1336	530	0	0	0	0	570	0	0	420	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2073	531					413			194	
v/s Ratio Prot								0.41				
v/s Ratio Perm		0.36	c0.57								c0.65	
v/c Ratio		0.87dr	1.00					1.38			2.16	
Uniform Delay, d1		8.9	13.0					21.0			21.0	
Progression Factor		0.94	0.97					1.00			1.19	
Incremental Delay, d2		1.2	33.4					185.5			538.4	
Delay (s)		9.5	46.0					206.5			563.4	
Level of Service		A	D					F			F	
Approach Delay (s)		20.5			0.0			206.5			563.4	
Approach LOS		C			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			131.5								HCM Level of Service	F
HCM Volume to Capacity ratio			1.40									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			76.9%								ICU Level of Service	D
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
 33: 7th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK
















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	900	1035
v/c Ratio	0.33	1.03
Control Delay	10.1	58.8
Queue Delay	0.0	26.4
Total Delay	10.1	85.2
Queue Length 50th (ft)	60	~202
Queue Length 95th (ft)	m68	#339
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	2687	1004
Starvation Cap Reductn	0	63
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.33	1.10

**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.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	492	264	0	0	0	0	0	0	218	766	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.95									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5152									2755	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5152									2755	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	586	314	0	0	0	0	0	0	229	806	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	876	0	0	0	0	0	0	0	0	995	0
Confl. Peds. (#/hr)			33							31		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		31.0									22.0	
Effective Green, g (s)		31.0									21.0	
Actuated g/C Ratio		0.52									0.35	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		2662									964	
v/s Ratio Prot		c0.17										
v/s Ratio Perm											0.36	
v/c Ratio		0.33									1.03	
Uniform Delay, d1		8.4									19.5	
Progression Factor		1.23									1.15	
Incremental Delay, d2		0.2									36.1	
Delay (s)		10.6									58.4	
Level of Service		B									E	
Approach Delay (s)		10.6			0.0			0.0			58.4	
Approach LOS		B			A			A			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			36.2		HCM Level of Service					D		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			43.5%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group



Queues  
34: 7th Street & Oak Street

Existing + Project  
Timing Plan: AM PEAK




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	619	1281
v/c Ratio	0.26	0.68
Control Delay	7.5	13.7
Queue Delay	0.0	0.5
Total Delay	7.5	14.1
Queue Length 50th (ft)	14	108
Queue Length 95th (ft)	m18	141
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2398	1879
Starvation Cap Reductn	0	214
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.26	0.77

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street








Existing + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		   						  					
Volume (vph)	105	427	0	0	0	0	0	805	297	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0						4.0					
Lane Util. Factor		0.86						0.91					
Frbp, ped/bikes		1.00						0.98					
Flpb, ped/bikes		1.00						1.00					
Frt		1.00						0.96					
Flt Protected		0.99						1.00					
Satd. Flow (prot)		5457						4079					
Flt Permitted		0.99						1.00					
Satd. Flow (perm)		5457						4079					
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	
Adj. Flow (vph)	122	497	0	0	0	0	0	936	345	0	0	0	
RTOR Reduction (vph)	0	35	0	0	0	0	0	111	0	0	0	0	
Lane Group Flow (vph)	0	584	0	0	0	0	0	1171	0	0	0	0	
Confl. Peds. (#/hr)	26								75				
Confl. Bikes (#/hr)									3				
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0	
Parking (#/hr)	5	5						5	5				
Turn Type	Perm												
Protected Phases		1						2					
Permitted Phases	1												
Actuated Green, G (s)		25.0						25.0					
Effective Green, g (s)		26.0						26.0					
Actuated g/C Ratio		0.43						0.43					
Clearance Time (s)		5.0						5.0					
Lane Grp Cap (vph)		2365						1768					
v/s Ratio Prot								c0.29					
v/s Ratio Perm		0.11											
v/c Ratio		0.25						0.66					
Uniform Delay, d1		10.8						13.5					
Progression Factor		0.74						1.00					
Incremental Delay, d2		0.2						2.0					
Delay (s)		8.2						15.5					
Level of Service		A						B					
Approach Delay (s)		8.2			0.0			15.5			0.0		
Approach LOS		A			A			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			13.1		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.45										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			41.4%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
35: 7th Street & 5th Ave

Existing + Project  
Timing Plan: AM PEAK

							
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	140	324	23	114	644	298	469
v/c Ratio	0.48	0.15	0.04	0.26	0.29	0.46	0.65
Control Delay	20.1	11.5	5.2	13.9	12.5	14.1	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	11.5	5.2	13.9	12.5	14.1	17.0
Queue Length 50th (ft)	38	27	0	28	57	71	119
Queue Length 95th (ft)	86	41	11	61	81	114	215
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		50	110			
Base Capacity (vph)	293	2190	595	439	2188	647	725
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.15	0.04	0.26	0.29	0.46	0.65
<b>Intersection Summary</b>							

HCM Signalized Intersection Capacity Analysis  
35: 7th Street & 5th Ave

Existing + Project  
Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Volume (vph)	34	89	285	20	108	609	3	50	158	36	22	260	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91			1.00			1.00	
Frbp, ped/bikes		1.00	1.00	0.97	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			0.98			0.96	
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)		1762	5085	1350	1764	5081			1577			1543	
Flt Permitted		0.37	1.00	1.00	0.55	1.00			0.87			0.98	
Satd. Flow (perm)		680	5085	1350	1018	5081			1381			1512	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90	
Adj. Flow (vph)	39	101	324	23	114	641	3	61	193	44	24	289	
RTOR Reduction (vph)	0	0	0	13	0	1	0	0	10	0	0	27	
Lane Group Flow (vph)	0	140	324	10	114	643	0	0	288	0	0	442	
Confl. Peds. (#/hr)		10		4	4		10	8		3	3		
Confl. Bikes (#/hr)				1			2			4			
Parking (#/hr)				5				5	5	5	5	5	
Turn Type	Perm	Perm		Perm	Perm			Perm			Perm		
Protected Phases			1			1			2			2	
Permitted Phases	1	1		1	1			2			2		
Actuated Green, G (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0	
Effective Green, g (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0	
Actuated g/C Ratio		0.43	0.43	0.43	0.43	0.43			0.46			0.46	
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5	
Lane Grp Cap (vph)		293	2190	582	439	2189			637			698	
v/s Ratio Prot			0.06			0.13							
v/s Ratio Perm		c0.21		0.01	0.11				0.21			c0.29	
v/c Ratio		0.48	0.15	0.02	0.26	0.29			0.45			0.63	
Uniform Delay, d1		13.3	11.2	10.6	11.9	12.1			11.9			13.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		5.5	0.1	0.1	1.4	0.3			2.3			4.3	
Delay (s)		18.8	11.4	10.7	13.3	12.4			14.2			17.6	
Level of Service		B	B	B	B	B			B			B	
Approach Delay (s)			13.5			12.5			14.2			17.6	
Approach LOS			B			B			B			B	
<b>Intersection Summary</b>													
HCM Average Control Delay			14.2		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			65.0		Sum of lost time (s)					7.0			
Intersection Capacity Utilization			69.9%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													



Movement	SBR
<b>Lane Configurations</b>	
Volume (vph)	140
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	0.90
Adj. Flow (vph)	156
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
<b>Turn Type</b>	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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>	

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Existing + Project  
 Timing Plan: AM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	3	398	227	391	771	647
v/c Ratio	0.00	0.59	1.52	0.63	1.00	0.90
Control Delay	8.0	15.2	282.3	17.2	45.5	26.9
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	8.0	15.2	282.3	17.9	45.5	26.9
Queue Length 50th (ft)	1	76	~92	98	~124	76
Queue Length 95th (ft)	4	145	m#145	m148	#298	#233
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	149	619	771	719
Starvation Cap Reductn	0	0	0	56	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.59	1.52	0.69	1.00	0.90

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.

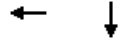
HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	3	358	0	204	352	0	0	180	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frbp, ped/bikes				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
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1588	1676		1593	1467			1422	1300
Flt Permitted				0.95	1.00		0.21	1.00			1.00	1.00
Satd. Flow (perm)				1588	1676		353	1467			1422	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	3	398	0	227	391	0	0	220	1198
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	170	170
Lane Group Flow (vph)	0	0	0	3	398	0	227	391	0	0	601	477
Confl. Peds. (#/hr)				2		2						
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				635	670		149	619			600	549
v/s Ratio Prot					c0.24			0.27			0.42	
v/s Ratio Perm				0.00			c0.64					0.37
v/c Ratio				0.00	0.59		1.52	0.63			1.00	0.87
Uniform Delay, d1				8.1	10.6		13.0	10.2			13.0	11.9
Progression Factor				1.00	1.00		1.23	1.22			1.00	1.00
Incremental Delay, d2				0.0	3.8		259.7	3.7			37.0	16.8
Delay (s)				8.1	14.5		275.7	16.2			50.0	28.7
Level of Service				A	B		F	B			D	C
Approach Delay (s)		0.0			14.4			111.5			40.2	
Approach LOS		A			B			F			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			54.1	HCM Level of Service				D				
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			45.0	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			88.5%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 37: 6th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	350	1068
v/c Ratio	0.37	0.66
Control Delay	16.4	6.2
Queue Delay	0.0	0.8
Total Delay	16.4	7.0
Queue Length 50th (ft)	47	46
Queue Length 95th (ft)	77	m50
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	953	1616
Starvation Cap Reductn	0	260
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.79

















Intersection Summary

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



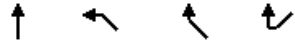
HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						 	
Volume (vph)	0	0	0	26	282	0	0	0	0	0	731	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.96	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					2973						2834	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					2973						2834	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	30	320	0	0	0	0	0	795	273
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	0	0	0	338	0	0	0	0	0	1011	0
Confl. Peds. (#/hr)				2		11						45
Confl. Bikes (#/hr)												9
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					19.0						33.0	
Effective Green, g (s)					19.0						33.0	
Actuated g/C Ratio					0.32						0.55	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					941						1559	
v/s Ratio Prot											c0.36	
v/s Ratio Perm					0.11							
v/c Ratio					0.36						0.65	
Uniform Delay, d1					15.8						9.4	
Progression Factor					1.00						0.59	
Incremental Delay, d2					1.1						1.1	
Delay (s)					16.9						6.7	
Level of Service					B						A	
Approach Delay (s)		0.0			16.9			0.0			6.7	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.2								A	
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			51.5%								A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Existing + Project  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	624	739	436	27
v/c Ratio	1.23	0.54	0.71	0.04
Control Delay	135.4	10.3	18.5	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	135.4	10.3	18.5	0.1
Queue Length 50th (ft)	~198	63	89	0
Queue Length 95th (ft)	m#329	87	156	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	509	1370	611	689
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.23	0.54	0.71	0.04

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.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Existing + Project  
 Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↶		↷	↶	↷
Volume (vph)	119	443	84	165	715	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Fr		1.00		0.91	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1450		2905	1297	1269
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1450		2905	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	132	492	102	201	872	27
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	624	0	739	436	13
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		509		1369	611	598
v/s Ratio Prot				0.25	c0.34	
v/s Ratio Perm		0.43				0.01
v/c Ratio		1.23		0.54	0.71	0.02
Uniform Delay, d1		14.6		8.4	9.5	6.4
Progression Factor		1.05		1.00	1.00	1.00
Incremental Delay, d2		114.4		1.5	7.0	0.1
Delay (s)		129.8		10.0	16.4	6.4
Level of Service		F		A	B	A
Approach Delay (s)		129.8		12.4		
Approach LOS		F		B		

Intersection Summary			
HCM Average Control Delay	52.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Existing + Project  
 Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1183	360	218
v/c Ratio	0.84	0.46	0.42
Control Delay	18.9	8.6	11.5
Queue Delay	0.0	0.1	0.0
Total Delay	18.9	8.7	11.5
Queue Length 50th (ft)	75	47	44
Queue Length 95th (ft)	#147	82	m44
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1400	779	520
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	4	33	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.85	0.48	0.42

**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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Existing + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	277	415	373	0	0	0	0	267	28	114	69	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.95						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4098						1445			1423	
Flt Permitted		0.99						1.00			0.67	
Satd. Flow (perm)		4098						1445			976	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	308	461	414	0	0	0	0	326	34	136	82	0
RTOR Reduction (vph)	0	216	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	967	0	0	0	0	0	352	0	0	218	0
Confl. Peds. (#/hr)	4								21			
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		13.0						24.0			24.0	
Actuated g/C Ratio		0.29						0.53			0.53	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1184						771			521	
v/s Ratio Prot								c0.24				
v/s Ratio Perm		0.24									0.22	
v/c Ratio		0.82						0.46			0.42	
Uniform Delay, d1		14.9						6.5			6.3	
Progression Factor		1.00						1.00			1.56	
Incremental Delay, d2		6.3						1.9			0.6	
Delay (s)		21.2						8.4			10.5	
Level of Service		C						A			B	
Approach Delay (s)		21.2			0.0			8.4			10.5	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.2								B	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			65.1%								C	
Analysis Period (min)			15									

c Critical Lane Group













Queues  
40: 5th Street & Madison Street

Existing + Project  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	614	366	505
v/c Ratio	0.42	0.51	0.34
Control Delay	16.5	5.7	4.4
Queue Delay	0.0	0.3	0.2
Total Delay	16.5	5.9	4.6
Queue Length 50th (ft)	61	0	0
Queue Length 95th (ft)	86	23	28
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1461	713	1504
Starvation Cap Reductn	0	60	326
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.56	0.43
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 40: 5th Street & Madison Street

Existing + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↕↑		
Volume (vph)	0	531	10	0	0	0	0	0	0	601	113	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.91	0.91		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.99	0.99		
Frt		1.00								1.00	1.00		
Flt Protected		1.00								0.95	0.96		
Satd. Flow (prot)		4373								1251	2733		
Flt Permitted		1.00								0.95	0.96		
Satd. Flow (perm)		4373								1251	2733		
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82	
Adj. Flow (vph)	0	603	11	0	0	0	0	0	0	733	138	0	
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	46	46	0	
Lane Group Flow (vph)	0	611	0	0	0	0	0	0	0	320	459	0	
Confl. Peds. (#/hr)			4							16			
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		20.0								32.0	32.0		
Effective Green, g (s)		20.0								32.0	32.0		
Actuated g/C Ratio		0.33								0.53	0.53		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		1458								667	1458		
v/s Ratio Prot		c0.14											
v/s Ratio Perm										c0.26	0.17		
v/c Ratio		0.42								0.48	0.31		
Uniform Delay, d1		15.5								8.8	7.9		
Progression Factor		1.00								0.53	0.62		
Incremental Delay, d2		0.9								1.9	0.4		
Delay (s)		16.4								6.6	5.3		
Level of Service		B								A	A		
Approach Delay (s)		16.4			0.0			0.0			5.8		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			10.2		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.46										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			51.5%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Existing + Project  
Timing Plan: AM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1173	392	133
v/c Ratio	0.53	0.80	0.27
Control Delay	8.5	28.4	15.7
Queue Delay	0.0	0.0	0.0
Total Delay	8.5	28.4	15.7
Queue Length 50th (ft)	63	83	35
Queue Length 95th (ft)	92	#208	65
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2199	493	488
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.53	0.80	0.27

Intersection Summary


















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



# HCM Signalized Intersection Capacity Analysis

## 41: 5th Street & Oak Street

Existing + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	279	718	129	0	0	0	0	292	65	1	99	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4421						1424			1466	
Flt Permitted		0.99						1.00			1.00	
Satd. Flow (perm)		4421						1424			1463	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	291	748	134	0	0	0	0	321	71	1	132	0
RTOR Reduction (vph)	0	36	0	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	1137	0	0	0	0	0	374	0	0	133	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2161						475			488	
v/s Ratio Prot								c0.26				
v/s Ratio Perm		0.26									0.09	
v/c Ratio		0.53						0.79			0.27	
Uniform Delay, d1		7.9						13.6			11.0	
Progression Factor		1.00						1.00			1.25	
Incremental Delay, d2		0.9						12.4			1.3	
Delay (s)		8.8						26.0			15.1	
Level of Service		A						C			B	
Approach Delay (s)		8.8			0.0			26.0			15.1	
Approach LOS		A			A			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.3								B	
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			53.5%								A	
Analysis Period (min)			15									

c Critical Lane Group

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	8.5	34.7	0.15	15.1	C
Madison Street	IV	25	18.9	10.1	29.0	0.07	8.8	E
Oak Street	IV	25	19.3	7.5	26.8	0.07	9.8	D
Total	IV		64.4	26.1	90.5	0.29	11.5	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	16.9	32.9	0.06	6.6	F
Madison Street	IV	25	19.5	8.4	27.9	0.07	9.5	D
Jackson Street	IV	25	18.8	19.0	37.8	0.07	6.7	F
Alice Street	IV	25	19.7	9.0	28.7	0.07	9.3	D
Harrison Street	IV	25	19.0	18.4	37.4	0.07	6.9	F
Webster Street	IV	25	18.8	28.8	47.6	0.07	5.4	F
Total	IV		111.8	100.5	212.3	0.42	7.1	E

## Arterial Level of Service: SB Madison Street









Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	12.6	27.9	0.06	7.5	E
9th Street	IV	25	13.2	7.6	20.8	0.05	8.7	E
8th Street	IV	25	13.9	3.0	16.9	0.05	11.1	D
7th Street	IV	25	13.6	58.8	72.4	0.05	2.5	F
Total	IV		56.0	82.0	138.0	0.21	5.5	F

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	3.5	17.0	0.05	10.7	D
9th Street	IV	25	14.7	2.3	17.0	0.06	11.7	D
10th St	IV	25	13.3	1.8	15.1	0.05	12.0	D
11th St	IV	25	14.7	10.5	25.2	0.06	7.9	E
12th St	IV	25	12.5	26.9	39.4	0.05	4.3	F
Total	IV		68.7	45.0	113.7	0.26	8.2	E

Queues  
1: W Grand Ave & Broadway

Existing + Project  
Timing Plan: PM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	172	1213	798	181	592	149	65	569
v/c Ratio	0.80	0.80	1.49dl	0.70	0.44	0.31	0.26	0.43
Control Delay	48.2	23.3	62.0	37.7	18.6	14.4	19.6	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	23.3	62.0	37.7	18.6	14.4	19.6	17.3
Queue Length 50th (ft)	74	271	~227	77	114	38	22	102
Queue Length 95th (ft)	58	132	106	#185	158	83	52	140
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	216	1514	780	258	1349	481	247	1321
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	0.80	0.80	1.02	0.70	0.44	0.31	0.26	0.43

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Existing + Project  
 Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	78	518	52	73	282	28	1	166	545	137	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frbp, ped/bikes		1.00	0.99			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		0.99	1.00			1.00			0.99	1.00	1.00	
FrT		1.00	0.99			0.99			1.00	1.00	0.85	
FlT Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1573	3122			3102			1569	3185	1087	
FlT Permitted		0.27	1.00			0.51			0.37	1.00	1.00	
Satd. Flow (perm)		447	3122			1602			607	3185	1087	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	166	1102	111	152	588	58	1	180	592	149	1
RTOR Reduction (vph)	0	0	9	0	0	7	0	0	0	0	20	0
Lane Group Flow (vph)	0	172	1204	0	0	791	0	0	181	592	129	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Effective Green, g (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Actuated g/C Ratio		0.48	0.48			0.48			0.42	0.42	0.42	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		216	1506			773			257	1349	460	
v/s Ratio Prot			0.39							0.19		
v/s Ratio Perm		0.38				c0.49			c0.30		0.12	
v/c Ratio		0.80	0.80			1.49dl			0.70	0.44	0.28	
Uniform Delay, d1		18.5	18.5			22.0			20.1	17.3	16.0	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		17.0	2.9			38.5			15.0	1.0	1.5	
Delay (s)		35.5	21.4			60.5			35.1	18.4	17.5	
Level of Service		D	C			E			D	B	B	
Approach Delay (s)			23.2			60.5				21.5		
Approach LOS			C			E				C		

Intersection Summary		
HCM Average Control Delay	29.9	HCM Level of Service C
HCM Volume to Capacity ratio	0.87	
Actuated Cycle Length (s)	85.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	91.7%	ICU Level of Service F
Analysis Period (min)	15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Existing + Project  
 Timing Plan: PM PEAK















Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	56	414	87
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.99	
Flpb, ped/bikes	0.98	1.00	
Frt	1.00	0.97	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1564	3071	
Flt Permitted	0.35	1.00	
Satd. Flow (perm)	583	3071	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	64	470	99
RTOR Reduction (vph)	0	21	0
Lane Group Flow (vph)	65	548	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	36.0	36.0	
Effective Green, g (s)	36.0	36.0	
Actuated g/C Ratio	0.42	0.42	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	247	1301	
v/s Ratio Prot		0.18	
v/s Ratio Perm	0.11		
v/c Ratio	0.26	0.42	
Uniform Delay, d1	15.9	17.2	
Progression Factor	1.00	1.00	
Incremental Delay, d2	2.6	1.0	
Delay (s)	18.5	18.2	
Level of Service	B	B	
Approach Delay (s)		18.2	
Approach LOS		B	

Intersection Summary

Queues  
2: 20th St & Kaiser DWY

Existing + Project  
Timing Plan: PM PEAK

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBR	NWL2	NWL	NWR
Lane Group Flow (vph)	11	251	99	81	212	2	353	339	34	12	59	46
v/c Ratio	0.07	0.57	0.24	0.71	0.34	0.01	0.84	0.83	0.06	0.08	0.37	0.32
Control Delay	23.3	31.1	20.1	68.3	24.5	13.5	46.0	45.6	0.2	34.0	40.9	40.1
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	23.3	31.1	20.1	68.3	24.5	13.5	46.0	45.6	0.2	34.0	40.9	40.1
Queue Length 50th (ft)	4	113	30	43	41	0	172	164	0	6	28	22
Queue Length 95th (ft)	16	184	66	#103	61	4	#302	#292	0	18	55	46
Internal Link Dist (ft)		337			517		577				375	
Turn Bay Length (ft)						90				180	180	
Base Capacity (vph)	147	438	406	114	618	358	421	408	551	159	159	143
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	0.07	0.57	0.24	0.71	0.34	0.01	0.84	0.83	0.06	0.08	0.37	0.32





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	10	218	65	21	1	114	122	2	68	12	507	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00			0.91	0.91	1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00	1.00			1.00	1.00	0.80		1.00	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	0.85		0.89	0.85	
Flt Protected	0.95	1.00	1.00			0.95	0.99	1.00		0.99	1.00	
Satd. Flow (prot)	1513	1593	1425			1449	3008	1098		1401	1354	
Flt Permitted	0.33	1.00	1.00			0.60	0.84	1.00		0.99	1.00	
Satd. Flow (perm)	533	1593	1425			910	2563	1098		1401	1354	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.81	0.81	0.81	0.81	0.86	0.86	0.86	0.86
Adj. Flow (vph)	11	251	75	24	1	141	151	2	79	14	590	9
RTOR Reduction (vph)	0	0	15	0	0	0	0	1	0	0	1	0
Lane Group Flow (vph)	11	251	85	0	0	81	212	1	0	353	338	0
Confl. Peds. (#/hr)				54				181	125			36
Confl. Bikes (#/hr)				9								14
Bus Blockages (#/hr)	0	0	0	10	0	0	0	10	0	0	0	0
Parking (#/hr)				5								5
Turn Type	custom		custom		custom	Prot		Perm	Split			Prot
Protected Phases			1			2	6		8	8	8	
Permitted Phases	1	1			2			6				
Actuated Green, G (s)	22.0	22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Effective Green, g (s)	22.0	22.0	22.0			10.0	26.0	26.0		24.0	24.0	
Actuated g/C Ratio	0.28	0.28	0.28			0.12	0.32	0.32		0.30	0.30	
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	147	438	392			114	889	357		420	406	
v/s Ratio Prot			0.06				0.03			c0.25	0.25	
v/s Ratio Perm	0.02	c0.16				c0.09	0.05	0.00				
v/c Ratio	0.07	0.57	0.22			0.71	0.24	0.00		0.84	0.83	
Uniform Delay, d1	21.5	25.0	22.3			33.6	19.8	18.2		26.2	26.1	
Progression Factor	1.00	1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	5.4	1.3			31.3	0.6	0.0		18.0	17.7	
Delay (s)	22.5	30.3	23.6			64.9	20.4	18.2		44.3	43.8	
Level of Service	C	C	C			E	C	B		D	D	
Approach Delay (s)		28.2					32.6			44.1		
Approach LOS		C					C			D		

### Intersection Summary

HCM Average Control Delay	37.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

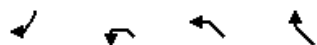
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Existing + Project  
Timing Plan: PM PEAK



Movement	SBR	NWL2	NWL	NWR
Lane Configurations				
Volume (vph)	31	9	46	36
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00
Frt	0.86	1.00	1.00	0.85
Flt Protected	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1450	1593	1593	1425
Flt Permitted	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1450	1593	1593	1425
Peak-hour factor, PHF	0.92	0.78	0.78	0.78
Adj. Flow (vph)	34	12	59	46
RTOR Reduction (vph)	31	0	0	0
Lane Group Flow (vph)	3	12	59	46
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Bus Blockages (#/hr)	0	0	0	0
Parking (#/hr)				
Turn Type	custom	Split		Perm
Protected Phases	5	7	7	
Permitted Phases				7
Actuated Green, G (s)	6.0	8.0	8.0	8.0
Effective Green, g (s)	6.0	8.0	8.0	8.0
Actuated g/C Ratio	0.08	0.10	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	109	159	159	143
v/s Ratio Prot	0.00	0.01	c0.04	
v/s Ratio Perm				0.03
v/c Ratio	0.02	0.08	0.37	0.32
Uniform Delay, d1	34.3	32.6	33.6	33.5
Progression Factor	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.9	6.5	5.9
Delay (s)	34.7	33.6	40.2	39.3
Level of Service	C	C	D	D
Approach Delay (s)			39.2	
Approach LOS			D	
<b>Intersection Summary</b>				

Queues  
3: 19th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	83	617	526
v/c Ratio	0.06	0.54	0.24
Control Delay	12.0	2.7	6.2
Queue Delay	0.0	0.0	0.0
Total Delay	12.0	2.7	6.2
Queue Length 50th (ft)	0	0	0
Queue Length 95th (ft)	31	41	111
Internal Link Dist (ft)	259		346
Turn Bay Length (ft)			
Base Capacity (vph)	2554	1207	2716
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.51	0.19

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 3: 19th St & Madison Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	75	555	0	0	0	0	460	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frb, ped/bikes					1.00	1.00					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1247					3176	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1247					3176	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	83	617	0	0	0	0	517	9
RTOR Reduction (vph)	0	0	0	0	0	210	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	83	407	0	0	0	0	524	0
Confl. Peds. (#/hr)				22								22
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					1.9	14.9					10.5	
Effective Green, g (s)					1.9	14.9					10.5	
Actuated g/C Ratio					0.08	0.66					0.46	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					268	822					1476	
v/s Ratio Prot					0.03						0.17	
v/s Ratio Perm						c0.33						
v/c Ratio					0.31	0.49					0.36	
Uniform Delay, d1					9.7	1.9					3.9	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.7	0.5					0.1	
Delay (s)					10.4	2.4					4.0	
Level of Service					B	A					A	
Approach Delay (s)		0.0			3.4			0.0			4.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			3.6		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			22.6		Sum of lost time (s)				4.0			
Intersection Capacity Utilization			50.0%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
4: 17th St & Madison Street



















Existing + Project  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	168	666
v/c Ratio	0.24	0.38
Control Delay	6.9	6.2
Queue Delay	0.0	0.9
Total Delay	6.9	7.0
Queue Length 50th (ft)	5	52
Queue Length 95th (ft)	25	80
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	702	1767
Starvation Cap Reductn	0	760
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.66
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 4: 17th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 	 	
Volume (vph)	0	32	122	0	0	0	0	0	0	57	549	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.92									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.88									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2409									2846	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2409									2846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	35	133	0	0	0	0	0	0	63	603	0
RTOR Reduction (vph)	0	100	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	68	0	0	0	0	0	0	0	0	653	0
Confl. Peds. (#/hr)	34		78							8		18
Confl. Bikes (#/hr)			4						1			
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0										37.0
Effective Green, g (s)		15.0										37.0
Actuated g/C Ratio		0.25										0.62
Clearance Time (s)		4.0										4.0
Lane Grp Cap (vph)		602										1755
v/s Ratio Prot		c0.03										
v/s Ratio Perm												0.23
v/c Ratio		0.11										0.37
Uniform Delay, d1		17.4										5.7
Progression Factor		1.00										1.00
Incremental Delay, d2		0.4										0.6
Delay (s)		17.7										6.3
Level of Service		B										A
Approach Delay (s)		17.7			0.0			0.0				6.3
Approach LOS		B			A			A				A
<b>Intersection Summary</b>												
HCM Average Control Delay			8.6									A
HCM Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			50.0%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK

	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	390	334	813
v/c Ratio	0.22	0.20	0.99
Control Delay	5.5	3.4	58.0
Queue Delay	0.0	0.0	25.9
Total Delay	5.5	3.4	83.9
Queue Length 50th (ft)	26	11	170
Queue Length 95th (ft)	44	16	#246
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1756	1668	823
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	6	4	64
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.20	1.07



















**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	259	111	33	244	0	0	0	0	141	498	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.97			1.00						1.00	
Flpb, ped/bikes		1.00			0.99						0.99	
Frt		0.95			1.00						0.99	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		2938			3145						2876	
Flt Permitted		1.00			0.89						0.99	
Satd. Flow (perm)		2938			2818						2876	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	273	117	40	294	0	0	0	0	168	593	52
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	372	0	0	334	0	0	0	0	0	804	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm							Perm	
Protected Phases		4			4							2
Permitted Phases				4						2		
Actuated Green, G (s)		35.5			35.5							17.0
Effective Green, g (s)		35.5			35.5							17.0
Actuated g/C Ratio		0.59			0.59							0.28
Clearance Time (s)		3.0			3.0							4.5
Lane Grp Cap (vph)		1738			1667							815
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.12							0.28
v/c Ratio		0.21			0.20							0.99
Uniform Delay, d1		5.7			5.7							21.4
Progression Factor		1.00			0.55							1.31
Incremental Delay, d2		0.3			0.3							28.0
Delay (s)		6.0			3.4							56.1
Level of Service		A			A							E
Approach Delay (s)		6.0			3.4			0.0				56.1
Approach LOS		A			A			A				E
<b>Intersection Summary</b>												
HCM Average Control Delay			31.9		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				7.5			
Intersection Capacity Utilization			59.0%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Existing + Project  
Timing Plan: PM PEAK



Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	312	235	178	518	101
v/c Ratio	0.47	0.28	0.37	0.29	0.14
Control Delay	21.2	12.4	5.9	2.1	0.4
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	21.2	12.4	5.9	2.3	0.4
Queue Length 50th (ft)	57	35	27	10	0
Queue Length 95th (ft)	m78	45	38	18	0
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	666	849	486	1782	729
Starvation Cap Reductn	0	0	0	570	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.28	0.37	0.43	0.14













Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕↕	↗		↔↔	↗			
Volume (vph)	50	237	0	0	188	142	67	420	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.94		1.00	0.97			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2888			3185	1333		3145	1209			
Flt Permitted		0.86			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2497			3185	1333		3145	1209			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	54	258	0	0	235	178	71	447	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	131	0	0	44	0	0	0
Lane Group Flow (vph)	0	312	0	0	235	47	0	518	57	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		16.0			16.0	16.0		34.0	34.0			
Effective Green, g (s)		16.0			16.0	16.0		34.0	34.0			
Actuated g/C Ratio		0.27			0.27	0.27		0.57	0.57			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		666			849	355		1782	685			
v/s Ratio Prot					0.07							
v/s Ratio Perm		c0.12				0.04		0.16	0.05			
v/c Ratio		0.47			0.28	0.13		0.29	0.08			
Uniform Delay, d1		18.4			17.4	16.7		6.7	5.9			
Progression Factor		1.02			0.66	1.02		0.25	0.03			
Incremental Delay, d2		2.1			0.8	0.8		0.4	0.2			
Delay (s)		20.8			12.2	17.8		2.1	0.4			
Level of Service		C			B	B		A	A			
Approach Delay (s)		20.8			14.6			1.8			0.0	
Approach LOS		C			B			A			A	

Intersection Summary		
HCM Average Control Delay	10.2	HCM Level of Service B
HCM Volume to Capacity ratio	0.35	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	527	816
v/c Ratio	0.35	0.46
Control Delay	13.9	7.8
Queue Delay	0.0	3.5
Total Delay	13.9	11.3
Queue Length 50th (ft)	32	104
Queue Length 95th (ft)	42	m114
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1521	1791
Starvation Cap Reductn	0	856
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.87


















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis




## 7: 13th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  									 		
Volume (vph)	0	305	101	0	0	0	0	0	0	16	612	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5									3.5		
Lane Util. Factor		0.86									0.95		
Frbp, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									1.00		
Frt		0.96									1.00		
Flt Protected		1.00									1.00		
Satd. Flow (prot)		5342									2979		
Flt Permitted		1.00									1.00		
Satd. Flow (perm)		5342									2979		
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.92	0.92	0.77	0.77	0.77	
Adj. Flow (vph)	0	396	131	0	0	0	0	0	0	21	795	0	
RTOR Reduction (vph)	0	96	0	0	0	0	0	0	0	0	3	0	
Lane Group Flow (vph)	0	431	0	0	0	0	0	0	0	0	813	0	
Confl. Peds. (#/hr)	14		11							38		28	
Confl. Bikes (#/hr)			4									8	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4										2	
Permitted Phases										2			
Actuated Green, G (s)		16.0									36.0		
Effective Green, g (s)		16.0									36.0		
Actuated g/C Ratio		0.27									0.60		
Clearance Time (s)		4.5									3.5		
Lane Grp Cap (vph)		1425									1787		
v/s Ratio Prot		c0.08											
v/s Ratio Perm											0.27		
v/c Ratio		0.30									0.45		
Uniform Delay, d1		17.5									6.6		
Progression Factor		1.00									1.08		
Incremental Delay, d2		0.5									0.5		
Delay (s)		18.1									7.7		
Level of Service		B									A		
Approach Delay (s)		18.1			0.0			0.0			7.7		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.8		HCM Level of Service							B	
HCM Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			50.8%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													




















Queues  
8: 13th St & Oak Street

Existing + Project  
Timing Plan: PM PEAK

			
Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	93	396	677
v/c Ratio	0.21	0.34	0.26
Control Delay	10.3	20.6	16.7
Queue Delay	0.0	0.0	0.0
Total Delay	10.3	20.6	16.7
Queue Length 50th (ft)	0	33	81
Queue Length 95th (ft)	22	47	117
Internal Link Dist (ft)		132	231
Turn Bay Length (ft)	50		
Base Capacity (vph)	433	1170	2596
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.34	0.26
<b>Intersection Summary</b>			

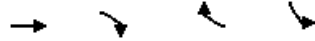
HCM Signalized Intersection Capacity Analysis  
 8: 13th St & Oak Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	66	281	0	0	0	0	0	526	117	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0				
Lane Util. Factor	1.00	0.91						0.91				
Frbp, ped/bikes	1.00	1.00						0.99				
Flpb, ped/bikes	0.98	1.00						1.00				
Frt	1.00	1.00						0.97				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1367	4386						4243				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1367	4386						4243				
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	93	396	0	0	0	0	0	554	123	0	0	0
RTOR Reduction (vph)	68	0	0	0	0	0	0	49	0	0	0	0
Lane Group Flow (vph)	25	396	0	0	0	0	0	628	0	0	0	0
Confl. Peds. (#/hr)	17		17				86		18			
Confl. Bikes (#/hr)			1						27			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)	16.0	16.0						36.0				
Effective Green, g (s)	16.0	16.0						36.0				
Actuated g/C Ratio	0.27	0.27						0.60				
Clearance Time (s)	5.0	5.0						3.0				
Lane Grp Cap (vph)	365	1170						2546				
v/s Ratio Prot		c0.09						c0.15				
v/s Ratio Perm	0.02											
v/c Ratio	0.07	0.34						0.25				
Uniform Delay, d1	16.4	17.7						5.6				
Progression Factor	1.85	1.10						3.58				
Incremental Delay, d2	0.3	0.8						0.2				
Delay (s)	30.8	20.3						20.3				
Level of Service	C	C						C				
Approach Delay (s)		22.3			0.0			20.3			0.0	
Approach LOS		C			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.2				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			80.1%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Existing + Project  
Timing Plan: PM PEAK



















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	520	51	400	397
v/c Ratio	1.16	0.14	0.19	0.93
Control Delay	119.8	6.8	0.2	63.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	119.8	6.8	0.2	63.8
Queue Length 50th (ft)	~241	1	0	162
Queue Length 95th (ft)	#396	8	0	#233
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	447	370	2077	425
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.16	0.14	0.19	0.93

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.

HCM Signalized Intersection Capacity Analysis  
 9: 13th St & Lake Merritt Blvd






Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	452	44	0	0	344	0	0	0	302	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		1.00	1.00			0.88				1.00		
Frb, ped/bikes		1.00	1.00			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		1676	1247			2508				1593		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		1676	1247			2508				1593		
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.25	0.25	0.25	0.76	0.76	0.76
Adj. Flow (vph)	0	520	51	0	0	400	0	0	0	397	0	0
RTOR Reduction (vph)	0	0	37	0	0	293	0	0	0	0	0	0
Lane Group Flow (vph)	0	520	14	0	0	107	0	0	0	397	0	0
Confl. Peds. (#/hr)	20					20						
Parking (#/hr)			5									
Turn Type		custom				custom				Prot		
Protected Phases						2				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			16.0				16.0		
Effective Green, g (s)		16.0	16.0			16.0				16.0		
Actuated g/C Ratio		0.27	0.27			0.27				0.27		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		447	333			669				425		
v/s Ratio Prot						c0.04				c0.25		
v/s Ratio Perm		c0.31	0.01									
v/c Ratio		1.16	0.04			0.16				0.93		
Uniform Delay, d1		22.0	16.3			16.8				21.5		
Progression Factor		0.95	0.98			1.00				1.49		
Incremental Delay, d2		95.0	0.2			0.5				29.0		
Delay (s)		116.0	16.2			17.3				61.1		
Level of Service		F	B			B				E		
Approach Delay (s)		107.1			17.3			0.0			61.1	
Approach LOS		F			B			A			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			67.5			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			51.7%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Existing + Project  
Timing Plan: PM PEAK

					
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	106	140	353	1174
v/c Ratio	0.03	0.20	0.10	0.32	1.38
Control Delay	0.0	5.8	21.4	23.9	205.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	5.8	21.4	23.9	205.6
Queue Length 50th (ft)	0	0	19	49	-434
Queue Length 95th (ft)	0	30	32	75	#557
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	469	528	1400	1105	852
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.10	0.32	1.38














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.



HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Existing + Project  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	90	119	275	46	1084	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.98		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1337	1485	4577	4260		3081	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1337	1485	4577	4260		3081	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	106	140	302	51	1129	45
RTOR Reduction (vph)	8	74	0	28	0	0	0
Lane Group Flow (vph)	4	32	140	325	0	1174	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	26.0	26.0	26.0	21.5		23.5	
Effective Green, g (s)	26.0	26.0	26.0	21.5		23.5	
Actuated g/C Ratio	0.31	0.31	0.31	0.25		0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	409	454	1400	1078		852	
v/s Ratio Prot			c0.03	c0.08		c0.38	
v/s Ratio Perm	0.00	0.02					
v/c Ratio	0.01	0.07	0.10	0.30		1.38	
Uniform Delay, d1	20.5	20.9	21.1	25.7		30.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3	0.1	0.7		177.5	
Delay (s)	20.6	21.2	21.3	26.4		208.2	
Level of Service	C	C	C	C		F	
Approach Delay (s)			21.3	26.4		208.2	
Approach LOS			C	C		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			145.2		HCM Level of Service		F
HCM Volume to Capacity ratio			0.58				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			65.6%		ICU Level of Service		C
Analysis Period (min)			15				

c Critical Lane Group

Queues  
11: 12th St & Broadway

Existing + Project  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1331	133	590	836
v/c Ratio	0.92	1.12	0.37	0.76
Control Delay	30.5	141.0	10.2	21.8
Queue Delay	0.2	0.0	0.7	0.9
Total Delay	30.7	141.0	10.9	22.7
Queue Length 50th (ft)	162	-60	104	131
Queue Length 95th (ft)	155	m#110	151	181
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1453	119	1587	1097
Starvation Cap Reductn	0	0	636	84
Spillback Cap Reductn	7	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.92	1.12	0.62	0.83

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.

HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

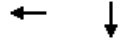
Existing + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	141	687	130	121	537	0	0	640	79	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.99		1.00	1.00			0.96		
Flpb, ped/bikes					0.98		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4110		1593	3122			2950		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4110		1593	3122			2950		
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.91	0.91	0.91	0.86	0.86	0.86	
Adj. Flow (vph)	0	0	0	196	954	181	133	590	0	0	744	92	
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	0	16	0	
Lane Group Flow (vph)	0	0	0	0	1318	0	133	590	0	0	820	0	
Confl. Peds. (#/hr)				125		48	446		455	455		446	
Confl. Bikes (#/hr)						6			10			9	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type				Perm			Prot						
Protected Phases					4		5	2			6		
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1439		119	1587			1082		
v/s Ratio Prot							c0.08	0.19			c0.28		
v/s Ratio Perm					0.32								
v/c Ratio					0.92		1.12	0.37			0.76		
Uniform Delay, d1					18.7		27.8	8.9			16.7		
Progression Factor					1.00		1.13	1.06			1.00		
Incremental Delay, d2					10.6		105.2	0.5			5.0		
Delay (s)					29.3		136.6	10.0			21.6		
Level of Service					C		F	A			C		
Approach Delay (s)		0.0			29.3			33.3			21.6		
Approach LOS		A			C			C			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			28.1		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.86										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			63.0%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	920	877
v/c Ratio	0.29	1.12
Control Delay	4.6	95.8
Queue Delay	0.0	154.5
Total Delay	4.6	250.3
Queue Length 50th (ft)	29	~213
Queue Length 95th (ft)	37	#284
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3221	782
Starvation Cap Reductn	0	0
Spillback Cap Reductn	204	186
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	1.47

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.

HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

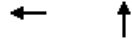
Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4TTL						4TTL	4TTL
Volume (vph)	0	0	0	222	569	0	0	0	0	0	651	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						4.0	
Lane Util. Factor					0.86						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					0.98						1.00	
Frt					1.00						0.99	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					5354						2800	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					5354						2800	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	258	662	0	0	0	0	0	794	83
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	911	0	0	0	0	0	865	0
Confl. Peds. (#/hr)				69		76						45
Confl. Bikes (#/hr)						5						15
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0
Parking (#/hr)				5	5						5	5
Turn Type					Perm							Perm
Protected Phases					6						4	
Permitted Phases				6								4
Actuated Green, G (s)					36.0						16.5	
Effective Green, g (s)					36.0						16.5	
Actuated g/C Ratio					0.60						0.28	
Clearance Time (s)					3.5						4.0	
Lane Grp Cap (vph)					3212						770	
v/s Ratio Prot											c0.31	
v/s Ratio Perm					0.17							
v/c Ratio					0.28						1.12	
Uniform Delay, d1					5.8						21.8	
Progression Factor					0.77						1.11	
Incremental Delay, d2					0.2						70.6	
Delay (s)					4.7						94.8	
Level of Service					A						F	
Approach Delay (s)		0.0			4.7			0.0			94.8	
Approach LOS		A			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			48.7		HCM Level of Service						D	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5		
Intersection Capacity Utilization			43.4%		ICU Level of Service					A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
13: 12th St & Oak Street













Existing + Project  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	663	942
v/c Ratio	0.23	0.69
Control Delay	7.5	17.6
Queue Delay	0.0	0.4
Total Delay	7.5	18.0
Queue Length 50th (ft)	32	85
Queue Length 95th (ft)	42	124
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2903	1369
Starvation Cap Reductn	0	119
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.75
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	525	32	249	589	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.91				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.94				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5431			4028				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5431			4028				
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	625	38	280	662	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	127	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	656	0	0	815	0	0	0	0
Confl. Peds. (#/hr)						140	166		148			
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					32.0			18.5				
Effective Green, g (s)					32.0			18.5				
Actuated g/C Ratio					0.53			0.31				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2897			1242				
v/s Ratio Prot					c0.12							
v/s Ratio Perm								0.20				
v/c Ratio					0.23			0.66				
Uniform Delay, d1					7.4			18.0				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.2			2.7				
Delay (s)					7.6			20.7				
Level of Service					A			C				
Approach Delay (s)		0.0			7.6			20.7			0.0	
Approach LOS		A			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.3									B
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0									9.5
Intersection Capacity Utilization			39.5%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Existing + Project  
Timing Plan: PM PEAK

	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	792	540	382	855
v/c Ratio	0.90	0.29	0.38	1.91
Control Delay	27.6	6.3	7.6	430.8
Queue Delay	59.3	0.0	0.0	0.0
Total Delay	86.9	6.3	7.6	430.8
Queue Length 50th (ft)	213	42	62	~477
Queue Length 95th (ft)	#449	64	108	m#444
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)				
Base Capacity (vph)	876	1854	1006	447
Starvation Cap Reductn	175	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	0.29	0.38	1.91

**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.



HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Existing + Project  
 Timing Plan: PM PEAK

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	697	486	344	750	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	0.97	1.00	1.00	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1450	3090	1676	1676	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1450	3090	1676	1676	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	792	540	382	852	3
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	0	786	540	382	855	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		36.0	36.0	36.0	16.0	
Effective Green, g (s)		36.0	36.0	36.0	16.0	
Actuated g/C Ratio		0.60	0.60	0.60	0.27	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		870	1854	1006	447	
v/s Ratio Prot		c0.54	0.17	0.23	c0.51	
v/s Ratio Perm						
v/c Ratio		0.90	0.29	0.38	1.91	
Uniform Delay, d1		10.5	5.8	6.2	22.0	
Progression Factor		1.00	1.00	1.00	0.72	
Incremental Delay, d2		14.6	0.4	1.1	411.5	
Delay (s)		25.0	6.2	7.3	427.3	
Level of Service		C	A	A	F	
Approach Delay (s)	25.0			6.7	427.3	
Approach LOS	C			A	F	
<b>Intersection Summary</b>						
HCM Average Control Delay			152.3		HCM Level of Service	F
HCM Volume to Capacity ratio			1.21			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			98.7%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

## Queues

Existing + Project

## 15: International Blvd &amp; Lake Merritt Blvd

Timing Plan: PM PEAK















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	357	143	972	547	630
v/c Ratio	0.49	0.26	0.60	0.62	0.87
Control Delay	16.7	10.7	14.4	4.6	30.9
Queue Delay	0.0	0.0	5.4	0.6	0.0
Total Delay	16.7	10.7	19.9	5.2	30.9
Queue Length 50th (ft)	100	25	145	0	209
Queue Length 95th (ft)	163	58	203	51	#360
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)					
Base Capacity (vph)	735	544	1617	887	725
Starvation Cap Reductn	0	0	574	107	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.26	0.93	0.70	0.87

## Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Existing + Project  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			
Volume (vph)	314	126	933	525	13	517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	1.00	1.00	0.91	0.91		1.00
Frbp, ped/bikes	1.00	0.94	1.00	0.91		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1770	1255	3390	1260		1563
Flt Permitted	0.95	1.00	1.00	1.00		0.97
Satd. Flow (perm)	1770	1255	3390	1260		1520
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.84	0.84
Adj. Flow (vph)	357	143	972	547	15	615
RTOR Reduction (vph)	0	23	0	286	0	0
Lane Group Flow (vph)	357	120	972	261	0	630
Confl. Peds. (#/hr)		63		103		
Confl. Bikes (#/hr)				33		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	735	521	1617	601		725
v/s Ratio Prot	c0.20		0.29			
v/s Ratio Perm		0.10		0.21		c0.41
v/c Ratio	0.49	0.23	0.60	0.43		0.87
Uniform Delay, d1	13.9	12.3	12.5	11.2		15.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.3	1.0	1.7	2.3		13.4
Delay (s)	16.2	13.3	14.1	13.5		28.6
Level of Service	B	B	B	B		C
Approach Delay (s)	15.4		13.9			28.6
Approach LOS	B		B			C

Intersection Summary			
HCM Average Control Delay		17.7	HCM Level of Service B
HCM Volume to Capacity ratio		0.69	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		66.8%	ICU Level of Service C
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Existing + Project  
Timing Plan: PM PEAK



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	245	172	687	397	273	447
v/c Ratio	0.21	0.30	0.57	0.55	0.67	0.21
Control Delay	24.1	5.2	29.3	7.2	44.3	9.5
Queue Delay	0.0	0.0	11.5	1.0	0.0	0.0
Total Delay	24.1	5.2	40.8	8.2	44.3	9.5
Queue Length 50th (ft)	56	0	186	16	159	63
Queue Length 95th (ft)	80	37	245	93	242	85
Internal Link Dist (ft)	677		204			677
Turn Bay Length (ft)		100		125	200	
Base Capacity (vph)	1167	570	1203	724	407	2081
Starvation Cap Reductn	0	0	492	137	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.30	0.97	0.68	0.67	0.21

Intersection Summary





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Existing + Project  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	208	146	625	361	240	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	0.88	1.00	0.94	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	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1343	3539	1433	1770	3468
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1343	3539	1433	1770	3468
Peak-hour factor, PHF	0.85	0.85	0.91	0.91	0.88	0.88
Adj. Flow (vph)	245	172	687	397	273	447
RTOR Reduction (vph)	0	114	0	237	0	0
Lane Group Flow (vph)	245	58	687	160	273	447
Confl. Peds. (#/hr)	28	89		24	24	
Confl. Bikes (#/hr)				25		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm		Perm	Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	34.0	34.0	34.0	34.0	23.0	60.0
Effective Green, g (s)	34.0	34.0	34.0	34.0	23.0	60.0
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.23	0.60
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1167	457	1203	487	407	2081
v/s Ratio Prot	c0.07		c0.19		c0.15	0.13
v/s Ratio Perm		0.04		0.11		
v/c Ratio	0.21	0.13	0.57	0.33	0.67	0.21
Uniform Delay, d1	23.5	22.8	27.0	24.5	35.1	9.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.6	2.0	1.8	8.5	0.2
Delay (s)	23.9	23.3	29.0	26.3	43.6	9.4
Level of Service	C	C	C	C	D	A
Approach Delay (s)	23.7		28.0			22.4
Approach LOS	C		C			C
<b>Intersection Summary</b>						
HCM Average Control Delay			25.4		HCM Level of Service	C
HCM Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			64.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Existing + Project  
Timing Plan: PM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	161	652	1290	103
v/c Ratio	0.36	0.44	0.78	0.19
Control Delay	6.8	26.8	27.5	30.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.8	26.8	27.5	30.6
Queue Length 50th (ft)	0	88	217	24
Queue Length 95th (ft)	46	110	247	42
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	450	1470	1647	540
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.44	0.78	0.19
<b>Intersection Summary</b>				

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Existing + Project  
 Timing Plan: PM PEAK



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	137	554	1056	28	56	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.95	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1229	5432	4366		2959	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1229	5432	4366		2959	
Peak-hour factor, PHF	0.85	0.85	0.84	0.84	0.83	0.83
Adj. Flow (vph)	161	652	1257	33	67	36
RTOR Reduction (vph)	117	0	3	0	0	0
Lane Group Flow (vph)	44	652	1287	0	103	0
Confl. Peds. (#/hr)	39			8		8
Confl. Bikes (#/hr)				1		
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	23.0	23.0	32.0		15.5	
Effective Green, g (s)	23.0	23.0	32.0		15.5	
Actuated g/C Ratio	0.27	0.27	0.38		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	333	1470	1644		540	
v/s Ratio Prot			c0.29		c0.03	
v/s Ratio Perm	0.04	0.12				
v/c Ratio	0.13	0.44	0.78		0.19	
Uniform Delay, d1	23.4	25.7	23.4		29.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.8	1.0	3.8		0.8	
Delay (s)	24.3	26.7	27.2		30.2	
Level of Service	C	C	C		C	
Approach Delay (s)		26.2	27.2		30.2	
Approach LOS		C	C		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			27.0		HCM Level of Service	C
HCM Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			57.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
18: 11th St & Broadway

Existing + Project  
Timing Plan: PM PEAK

	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	823	715	136	712
v/c Ratio	0.43	0.73	1.02	0.47
Control Delay	14.4	22.1	97.3	18.1
Queue Delay	0.0	0.9	0.0	1.4
Total Delay	14.4	23.0	97.3	19.5
Queue Length 50th (ft)	61	113	~58	123
Queue Length 95th (ft)	84	167	m#88	m159
Internal Link Dist (ft)	1829	193		185
Turn Bay Length (ft)			85	
Base Capacity (vph)	1898	983	133	1509
Starvation Cap Reductn	0	90	0	566
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.80	1.02	0.76





















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.



HCM Signalized Intersection Capacity Analysis  
 18: 11th St & Broadway

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	98	524	152	0	0	0	0	547	89	122	641	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.86						0.95		1.00	0.95	
Frbp, ped/bikes		0.93						0.95		1.00	1.00	
Flpb, ped/bikes		0.99						1.00		1.00	1.00	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		4937						2899		1593	3122	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		4937						2899		1593	3122	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	104	557	162	0	0	0	0	615	100	136	712	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	817	0	0	0	0	0	698	0	136	712	0
Confl. Peds. (#/hr)	77		535					490		535	535	490
Confl. Bikes (#/hr)			6							9		16
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm						Prot					
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		23.0						20.0		5.0	29.0	
Effective Green, g (s)		23.0						20.0		5.0	29.0	
Actuated g/C Ratio		0.38						0.33		0.08	0.48	
Clearance Time (s)		4.0						4.0		4.0	4.0	
Lane Grp Cap (vph)		1893						966		133	1509	
v/s Ratio Prot								c0.24		c0.09	0.23	
v/s Ratio Perm		0.17										
v/c Ratio		0.43						0.72		1.02	0.47	
Uniform Delay, d1		13.7						17.6		27.5	10.4	
Progression Factor		1.00						1.00		0.85	1.65	
Incremental Delay, d2		0.7						4.7		65.5	0.6	
Delay (s)		14.4						22.3		88.9	17.7	
Level of Service		B						C		F	B	
Approach Delay (s)		14.4			0.0			22.3			29.1	
Approach LOS		B			A			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			22.0								C	
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			60.0							12.0		
Intersection Capacity Utilization			63.0%								B	
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	1084	1038
v/c Ratio	0.12	0.47	1.04
Control Delay	8.2	10.3	49.8
Queue Delay	0.0	0.1	112.7
Total Delay	8.2	10.3	162.5
Queue Length 50th (ft)	18	84	~234
Queue Length 95th (ft)	39	98	m205
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	900	2300	995
Starvation Cap Reductn	0	0	201
Spillback Cap Reductn	0	173	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.12	0.51	1.31

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Existing + Project  
 Timing Plan: PM PEAK

	↖	→	↘	↙	↓
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations	↖	↑↑↑			↖↑
Volume (vph)	97	622	256	75	787
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.91			0.95
Frbp, ped/bikes	1.00	0.98			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.96			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1770	4516			3227
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1770	4516			3227
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	768	316	90	948
RTOR Reduction (vph)	0	5	0	0	0
Lane Group Flow (vph)	105	1079	0	0	1038
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	30.5	30.5			18.5
Effective Green, g (s)	30.5	30.5			18.5
Actuated g/C Ratio	0.51	0.51			0.31
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	900	2296			995
v/s Ratio Prot		c0.24			
v/s Ratio Perm	0.06				0.32
v/c Ratio	0.12	0.47			1.04
Uniform Delay, d1	7.7	9.5			20.8
Progression Factor	1.00	1.00			0.76
Incremental Delay, d2	0.3	0.7			30.3
Delay (s)	8.0	10.2			46.1
Level of Service	A	B			D
Approach Delay (s)		10.0			46.1
Approach LOS		B			D

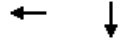
Intersection Summary

HCM Average Control Delay		26.8	HCM Level of Service	C
HCM Volume to Capacity ratio		0.69		
Actuated Cycle Length (s)		60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization		51.8%	ICU Level of Service	A
Analysis Period (min)		15		

c Critical Lane Group

Queues  
 20: 10th St & Madison Street

Existing + Project  
 Timing Plan: PM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	333	1320
v/c Ratio	0.79	0.78
Control Delay	23.2	18.0
Queue Delay	0.0	2.0
Total Delay	23.2	20.0
Queue Length 50th (ft)	63	192
Queue Length 95th (ft)	m68	m192
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	419	1690
Starvation Cap Reductn	0	225
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.79	0.90
















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 20: 10th St & Madison Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Volume (vph)	0	0	0	67	249	0	0	0	0	154	811	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						0.99	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					1438						2829	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					1438						2829	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	71	262	0	0	0	0	188	989	143
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	0	0	0	333	0	0	0	0	0	1304	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					419						1674	
v/s Ratio Prot												
v/s Ratio Perm					0.23						0.46	
v/c Ratio					0.79						0.78	
Uniform Delay, d1					19.6						9.3	
Progression Factor					0.70						1.70	
Incremental Delay, d2					6.6						1.8	
Delay (s)					20.3						17.6	
Level of Service					C						B	
Approach Delay (s)		0.0			20.3			0.0			17.6	
Approach LOS		A			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.1		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			59.6%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Existing + Project  
Timing Plan: PM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	195	403	942
v/c Ratio	0.59	1.07	0.35
Control Delay	21.0	92.7	1.9
Queue Delay	0.0	0.0	0.1
Total Delay	21.0	92.7	2.0
Queue Length 50th (ft)	59	~157	6
Queue Length 95th (ft)	m90	#310	17
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	331	375	2691
Starvation Cap Reductn	0	0	540
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.59	1.07	0.44


















**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.

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	6	146	0	0	247	116	84	614	169	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frbp, ped/bikes		1.00			0.99			0.98				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.96			0.97				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1463			1384			4251				
Flt Permitted		0.90			1.00			1.00				
Satd. Flow (perm)		1323			1384			4251				
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	187	0	0	274	129	91	667	184	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	69	0	0	0	0
Lane Group Flow (vph)	0	195	0	0	375	0	0	873	0	0	0	0
Confl. Peds. (#/hr)	22		35	35		22	62		168			
Confl. Bikes (#/hr)			14			6			45			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm							Perm				
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		331			346			2621				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.15						0.21				
v/c Ratio		0.59			1.08			0.33				
Uniform Delay, d1		19.8			22.5			5.5				
Progression Factor		0.77			1.00			0.35				
Incremental Delay, d2		4.8			72.2			0.3				
Delay (s)		20.1			94.7			2.3				
Level of Service		C			F			A				
Approach Delay (s)		20.1			94.7			2.3			0.0	
Approach LOS		C			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			28.7				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			60.5%				ICU Level of Service		B			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
22: 9th Street & Webster Street













Existing + Project  
Timing Plan: PM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	260	123	1586
v/c Ratio	0.29	0.28	0.88
Control Delay	25.3	6.5	34.6
Queue Delay	0.0	0.0	75.4
Total Delay	25.3	6.5	110.0
Queue Length 50th (ft)	59	0	238
Queue Length 95th (ft)	87	35	287
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	439	1807
Starvation Cap Reductn	0	0	447
Spillback Cap Reductn	0	2	123
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.28	1.17
<b>Intersection Summary</b>			



HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↓↓↓	
Volume (vph)	0	224	106	0	0	0	0	0	0	231	1196	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.98								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1176								5487	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1176								5487	
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	260	123	0	0	0	0	0	0	257	1329	0
RTOR Reduction (vph)	0	0	86	0	0	0	0	0	0	0	39	0
Lane Group Flow (vph)	0	260	37	0	0	0	0	0	0	0	1547	0
Confl. Bikes (#/hr)			8									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	353								1768	
v/s Ratio Prot		c0.09										
v/s Ratio Perm			0.03								0.28	
v/c Ratio		0.29	0.10								0.88	
Uniform Delay, d1		24.2	22.8								28.8	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.8	0.6								6.4	
Delay (s)		25.0	23.4								35.2	
Level of Service		C	C								D	
Approach Delay (s)		24.5			0.0			0.0			35.2	
Approach LOS		C			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.1								HCM Level of Service	C
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	34.0
Intersection Capacity Utilization			37.1%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												













Queues  
23: 9th Street & Madison Street

Existing + Project  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	510	1074
v/c Ratio	0.47	0.61
Control Delay	15.6	2.5
Queue Delay	0.0	0.6
Total Delay	15.6	3.1
Queue Length 50th (ft)	41	11
Queue Length 95th (ft)	67	13
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1087	1761
Starvation Cap Reductn	0	313
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.74
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↔↑	
Volume (vph)	0	273	181	0	0	0	0	0	0	137	798	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.95	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3951									2895	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3951									2895	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	307	203	0	0	0	0	0	0	157	917	0
RTOR Reduction (vph)	0	100	0	0	0	0	0	0	0	0	23	0
Lane Group Flow (vph)	0	410	0	0	0	0	0	0	0	0	1051	0
Confl. Peds. (#/hr)			68							29		20
Confl. Bikes (#/hr)			18									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		988									1737	
v/s Ratio Prot		c0.10										
v/s Ratio Perm											0.36	
v/c Ratio		0.42									0.60	
Uniform Delay, d1		18.8									7.5	
Progression Factor		1.00									0.21	
Incremental Delay, d2		1.3									1.0	
Delay (s)		20.1									2.6	
Level of Service		C									A	
Approach Delay (s)		20.1			0.0			0.0			2.6	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.2								A	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			48.9%								A	
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group













Queues  
24: 9th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	448	924
v/c Ratio	0.36	0.35
Control Delay	17.5	1.3
Queue Delay	0.0	0.0
Total Delay	17.5	1.3
Queue Length 50th (ft)	35	9
Queue Length 95th (ft)	66	12
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1243	2652
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.35
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

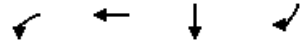
Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	109	290	0	0	0	0	0	737	123	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4322						4236				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4322						4236				
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	122	326	0	0	0	0	0	792	132	0	0	0
RTOR Reduction (vph)	0	89	0	0	0	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	359	0	0	0	0	0	886	0	0	0	0
Confl. Peds. (#/hr)	4		5					69		146		
Confl. Bikes (#/hr)										31		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1153						2612				
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.08										
v/c Ratio		0.31						0.34				
Uniform Delay, d1		17.6						5.6				
Progression Factor		1.30						0.20				
Incremental Delay, d2		0.6						0.3				
Delay (s)		23.4						1.4				
Level of Service		C						A				
Approach Delay (s)		23.4			0.0			1.4			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.6								A	
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0							7.0		
Intersection Capacity Utilization			50.8%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Existing + Project  
Timing Plan: PM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	420	586	1156	291
v/c Ratio	0.64	0.48	0.87	0.56
Control Delay	7.8	27.3	10.5	4.4
Queue Delay	0.0	0.0	4.2	4.6
Total Delay	7.8	27.3	14.7	9.0
Queue Length 50th (ft)	0	105	20	0
Queue Length 95th (ft)	53	128	m27	m0
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	653	1227	1336	523
Starvation Cap Reductn	0	0	121	163
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.48	0.95	0.81

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	349	486	0	0	0	0	0	1029	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frbp, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1011
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1011
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	420	586	0	0	0	0	0	1156	291
RTOR Reduction (vph)	0	0	0	294	0	0	0	0	0	0	0	197
Lane Group Flow (vph)	0	0	0	126	586	0	0	0	0	0	1156	94
Confl. Bikes (#/hr)												9
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	326
v/s Ratio Prot											c0.28	
v/s Ratio Perm				0.11	0.14							0.09
v/c Ratio				0.35	0.48						0.87	0.29
Uniform Delay, d1				24.6	25.7						28.7	22.8
Progression Factor				1.00	1.00						0.18	0.63
Incremental Delay, d2				2.7	1.3						4.3	1.2
Delay (s)				27.3	27.1						9.6	15.6
Level of Service				C	C						A	B
Approach Delay (s)		0.0			27.2			0.0			10.8	
Approach LOS		A			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.5	HCM Level of Service							B	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0		
Intersection Capacity Utilization			49.6%	ICU Level of Service						A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
26: 8th Street & Harrison Street

Existing + Project  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	760	155	624
v/c Ratio	0.46	0.25	0.30
Control Delay	13.9	6.1	6.8
Queue Delay	0.0	0.0	0.0
Total Delay	13.9	6.1	6.8
Queue Length 50th (ft)	66	46	69
Queue Length 95th (ft)	93	97	103
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1636	631	2051
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.25	0.30

Intersection Summary



HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Existing + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑↑					
Volume (vph)	0	0	0	0	578	91	280	421	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.91		0.86	0.86					
Frbp, ped/bikes					0.98		1.00	1.00					
Flpb, ped/bikes					1.00		0.89	0.97					
Frt					0.98		1.00	1.00					
Flt Protected					1.00		0.95	0.99					
Satd. Flow (prot)					4176		1215	4151					
Flt Permitted					1.00		0.95	0.99					
Satd. Flow (perm)					4176		1215	4151					
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	657	103	311	468	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	35	0	44	44	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	725	0	111	580	0	0	0	0	
Confl. Peds. (#/hr)				40		125	179		40	40		179	
Confl. Bikes (#/hr)						6							
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type							Perm						
Protected Phases					8			1					
Permitted Phases							1						
Actuated Green, G (s)					23.0		28.5	28.5					
Effective Green, g (s)					23.0		29.0	29.0					
Actuated g/C Ratio					0.38		0.48	0.48					
Clearance Time (s)					4.0		4.5	4.5					
Lane Grp Cap (vph)					1601		587	2006					
v/s Ratio Prot					c0.17								
v/s Ratio Perm							0.09	0.14					
v/c Ratio					0.45		0.19	0.29					
Uniform Delay, d1					13.8		8.8	9.3					
Progression Factor					1.00		1.10	0.79					
Incremental Delay, d2					0.9		0.7	0.3					
Delay (s)					14.7		10.3	7.7					
Level of Service					B		B	A					
Approach Delay (s)		0.0			14.7			8.2			0.0		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.4		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.36										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			49.6%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
27: 8th Street & Jackson Street

Existing + Project  
Timing Plan: PM PEAK



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	747	350	503
v/c Ratio	0.43	0.90	0.79
Control Delay	7.6	29.1	25.2
Queue Delay	0.0	0.0	13.9
Total Delay	7.6	29.1	39.0
Queue Length 50th (ft)	61	101	141
Queue Length 95th (ft)	75	m98	#301
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1743	389	640
Starvation Cap Reductn	0	0	125
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	0.90	0.98



















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.

# HCM Signalized Intersection Capacity Analysis

## 27: 8th Street & Jackson Street

Existing + Project  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						 		
Volume (vph)	0	0	0	94	527	51	100	225	0	0	393	70	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.91			1.00			1.00		
Frb, ped/bikes					0.99			1.00			0.99		
Flpb, ped/bikes					0.99			1.00			1.00		
Frt					0.99			1.00			0.98		
Flt Protected					0.99			0.98			1.00		
Satd. Flow (prot)					4143			1438			1426		
Flt Permitted					0.99			0.60			1.00		
Satd. Flow (perm)					4143			880			1426		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	104	586	57	108	242	0	0	427	76	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	11	0	
Lane Group Flow (vph)	0	0	0	0	731	0	0	350	0	0	492	0	
Confl. Peds. (#/hr)				88		91	53					53	
Confl. Bikes (#/hr)						9						7	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type				Perm			Perm						
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					25.0			26.0			26.0		
Effective Green, g (s)					25.0			26.5			26.5		
Actuated g/C Ratio					0.42			0.44			0.44		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1726			389			630		
v/s Ratio Prot											0.35		
v/s Ratio Perm					0.18			c0.40					
v/c Ratio					0.42			0.90			0.78		
Uniform Delay, d1					12.4			15.5			14.3		
Progression Factor					0.58			1.40			1.00		
Incremental Delay, d2					0.6			3.5			9.3		
Delay (s)					7.7			25.3			23.6		
Level of Service					A			C			C		
Approach Delay (s)		0.0			7.7			25.3			23.6		
Approach LOS		A			A			C			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			16.6		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.5		
Intersection Capacity Utilization			78.9%		ICU Level of Service						D		
Analysis Period (min)			15										

c Critical Lane Group

Queues  
 28: 8th Street & Madison Street













Existing + Project  
 Timing Plan: PM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	1003	1090
v/c Ratio	0.66	0.49
Control Delay	17.3	5.8
Queue Delay	0.0	0.3
Total Delay	17.4	6.1
Queue Length 50th (ft)	111	35
Queue Length 95th (ft)	157	42
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1516	2217
Starvation Cap Reductn	0	396
Spillback Cap Reductn	9	468
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	0.62
Intersection Summary		

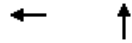
HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Existing + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	335	588	0	0	0	0	0	873	86	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.98						1.00		
Frt					1.00						0.99		
Flt Protected					0.98						1.00		
Satd. Flow (prot)					4174						4252		
Flt Permitted					0.98						1.00		
Satd. Flow (perm)					4174						4252		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	364	639	0	0	0	0	0	992	98	
RTOR Reduction (vph)	0	0	0	0	55	0	0	0	0	0	19	0	
Lane Group Flow (vph)	0	0	0	0	948	0	0	0	0	0	1071	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					20.5						30.5		
Effective Green, g (s)					21.0						31.0		
Actuated g/C Ratio					0.35						0.52		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1461						2197		
v/s Ratio Prot											c0.25		
v/s Ratio Perm					0.23								
v/c Ratio					0.65						0.49		
Uniform Delay, d1					16.4						9.4		
Progression Factor					1.01						0.56		
Incremental Delay, d2					2.0						0.6		
Delay (s)					18.5						5.9		
Level of Service					B						A		
Approach Delay (s)		0.0			18.5			0.0			5.9		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.9		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			58.1%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
29: 8th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	783	1322
v/c Ratio	0.58	0.56
Control Delay	17.9	14.4
Queue Delay	0.0	1.8
Total Delay	17.9	16.2
Queue Length 50th (ft)	78	165
Queue Length 95th (ft)	113	m188
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1360	2355
Starvation Cap Reductn	0	815
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.58	0.86













Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 29: 8th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	627	101	206	997	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.98			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4178			4227				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4178			4227				
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	674	109	226	1096	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	746	0	0	1293	0	0	0	0
Confl. Peds. (#/hr)						92	160					
Confl. Bikes (#/hr)						6						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0			33.0				
Effective Green, g (s)					19.0			33.0				
Actuated g/C Ratio					0.32			0.55				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1323			2325				
v/s Ratio Prot					c0.18							
v/s Ratio Perm								0.31				
v/c Ratio					0.56			0.56				
Uniform Delay, d1					17.1			8.8				
Progression Factor					1.00			1.64				
Incremental Delay, d2					1.7			0.5				
Delay (s)					18.8			14.8				
Level of Service					B			B				
Approach Delay (s)		0.0			18.8			14.8			0.0	
Approach LOS		A			B			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.3				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			49.5%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

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Intersection Sign configuration not allowed in HCM analysis.

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










Queues  
31: 7th Street & Harrison Street

Existing + Project  
Timing Plan: PM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	818	627	948
v/c Ratio	0.32	0.48	0.38
Control Delay	6.4	19.4	0.5
Queue Delay	0.0	0.0	0.0
Total Delay	6.4	19.4	0.5
Queue Length 50th (ft)	45	68	0
Queue Length 95th (ft)	58	98	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2522	1297	2475
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.48	0.38
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	114	581	0	0	0	0	0	596	901	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.99			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4282						4577	2475			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4282						4577	2475			
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	134	684	0	0	0	0	0	627	948	0	0	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	795	0	0	0	0	0	627	948	0	0	0
Confl. Peds. (#/hr)	28								3			
Confl. Bikes (#/hr)			1						1			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm						Free					
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		35.0						17.0	60.0			
Actuated g/C Ratio		0.58						0.28	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2498						1297	2475			
v/s Ratio Prot								c0.14				
v/s Ratio Perm		0.19							c0.38			
v/c Ratio		0.32						0.48	0.38			
Uniform Delay, d1		6.4						17.9	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.3						1.3	0.5			
Delay (s)		6.7						19.1	0.5			
Level of Service		A						B	A			
Approach Delay (s)		6.7			0.0			7.9			0.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.5									A
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0									4.0
Intersection Capacity Utilization			47.0%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
32: 7th Street & Jackson Street

Existing + Project  
Timing Plan: PM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1314	288	482	538
v/c Ratio	0.58	0.48	1.09	2.06
Control Delay	6.3	5.3	86.1	504.9
Queue Delay	0.0	0.0	18.2	0.0
Total Delay	6.3	5.3	104.4	504.9
Queue Length 50th (ft)	56	15	~192	~266
Queue Length 95th (ft)	73	40	#340	m#352
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2259	597	444	261
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	58	0	18	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.48	1.13	2.06

**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.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	35	930	541	0	0	0	0	297	146	41	438	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.98	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.97	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3890	958					1384			1460	
Flt Permitted		1.00	1.00					1.00			0.59	
Satd. Flow (perm)		3890	958					1384			871	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	37	989	576	0	0	0	0	323	159	46	492	0
RTOR Reduction (vph)	0	54	54	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	1260	234	0	0	0	0	453	0	0	538	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2204	543					415			261	
v/s Ratio Prot								0.33				
v/s Ratio Perm		0.32	0.24								c0.62	
v/c Ratio		0.57	0.43					1.09			2.06	
Uniform Delay, d1		8.3	7.5					21.0			21.0	
Progression Factor		0.68	0.57					0.75			0.66	
Incremental Delay, d2		1.0	2.4					69.2			486.7	
Delay (s)		6.7	6.6					84.8			500.5	
Level of Service		A	A					F			F	
Approach Delay (s)		6.7			0.0			84.8			500.5	
Approach LOS		A			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			122.4								HCM Level of Service	F
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			92.0%								ICU Level of Service	F
Analysis Period (min)			15									

c Critical Lane Group

Queues  
33: 7th Street & Madison Street

Existing + Project  
Timing Plan: PM PEAK
















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1240	1326
v/c Ratio	0.42	1.53
Control Delay	7.2	265.6
Queue Delay	0.0	10.5
Total Delay	7.2	276.1
Queue Length 50th (ft)	48	~367
Queue Length 95th (ft)	m75	#530
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	2968	867
Starvation Cap Reductn	0	0
Spillback Cap Reductn	259	13
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.46	1.55

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.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	782	309	0	0	0	0	0	0	293	914	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5227									2731	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5227									2731	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	889	351	0	0	0	0	0	0	322	1004	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	48	0
Lane Group Flow (vph)	0	1235	0	0	0	0	0	0	0	0	1278	0
Confl. Peds. (#/hr)			30							61		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		34.0									19.0	
Effective Green, g (s)		34.0									18.0	
Actuated g/C Ratio		0.57									0.30	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		2962									819	
v/s Ratio Prot		c0.24										
v/s Ratio Perm											0.47	
v/c Ratio		0.42									1.56	
Uniform Delay, d1		7.4									21.0	
Progression Factor		0.93									1.06	
Incremental Delay, d2		0.3									257.5	
Delay (s)		7.2									279.9	
Level of Service		A									F	
Approach Delay (s)		7.2		0.0			0.0				279.9	
Approach LOS		A		A			A				F	
<b>Intersection Summary</b>												
HCM Average Control Delay			148.1								HCM Level of Service	F
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			70.4%								ICU Level of Service	C
Analysis Period (min)			15									

c Critical Lane Group

Queues  
34: 7th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	1020	1524
v/c Ratio	0.39	0.92
Control Delay	13.9	27.3
Queue Delay	0.0	3.4
Total Delay	13.9	30.7
Queue Length 50th (ft)	78	171
Queue Length 95th (ft)	m93	#247
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2641	1658
Starvation Cap Reductn	0	81
Spillback Cap Reductn	80	38
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.40	0.97

**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.

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Existing + Project  
 Timing Plan: PM PEAK








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	218	731	0	0	0	0	0	1011	299	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5443						4119				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5443						4119				
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	234	786	0	0	0	0	0	1176	348	0	0	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	79	0	0	0	0
Lane Group Flow (vph)	0	1011	0	0	0	0	0	1445	0	0	0	0
Confl. Peds. (#/hr)	31								57			
Confl. Bikes (#/hr)									10			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		28.0						22.0				
Effective Green, g (s)		29.0						23.0				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2631						1579				
v/s Ratio Prot								c0.35				
v/s Ratio Perm		0.19										
v/c Ratio		0.38						0.92				
Uniform Delay, d1		9.8						17.6				
Progression Factor		1.39						1.00				
Incremental Delay, d2		0.3						9.8				
Delay (s)		14.0						27.4				
Level of Service		B						C				
Approach Delay (s)		14.0			0.0			27.4			0.0	
Approach LOS		B			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			22.0				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			52.2%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group



Queues  
35: 7th Street & 5th Ave

Existing + Project  
Timing Plan: PM PEAK

							
Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	215	1095	206	63	356	467	474
v/c Ratio	0.51	0.50	0.30	0.43	0.16	0.70	0.68
Control Delay	18.7	14.4	3.3	23.9	11.3	20.6	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	14.4	3.3	23.9	11.3	20.6	18.4
Queue Length 50th (ft)	59	110	0	17	29	134	127
Queue Length 95th (ft)	102	126	24	46	41	240	172
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		60	110			
Base Capacity (vph)	424	2190	698	148	2185	664	702
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.50	0.30	0.43	0.16	0.70	0.68
<b>Intersection Summary</b>							

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Existing + Project  
 Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	41	133	887	167	2	50	284	8	65	295	60	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00		
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00		
Flpb, ped/bikes		0.99	1.00	1.00		1.00	1.00			1.00		
Fr		1.00	1.00	0.85		1.00	1.00			0.98		
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.99		
Satd. Flow (prot)		1760	5085	1349		1768	5059			1582		
Flt Permitted		0.53	1.00	1.00		0.19	1.00			0.89		
Satd. Flow (perm)		983	5085	1349		345	5059			1418		
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77
Adj. Flow (vph)	51	164	1095	206	2	61	346	10	72	328	67	38
RTOR Reduction (vph)	0	0	0	117	0	0	5	0	0	9	0	0
Lane Group Flow (vph)	0	215	1095	89	0	63	351	0	0	458	0	0
Confl. Peds. (#/hr)		8		4		4		8	7		1	1
Confl. Bikes (#/hr)				2				2			7	
Parking (#/hr)				5					5	5	5	5
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm
Protected Phases			1				1			2		
Permitted Phases	1	1		1	1	1			2			2
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43			0.46		
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Grp Cap (vph)		423	2190	581		149	2179			654		
v/s Ratio Prot			0.22				0.07					
v/s Ratio Perm		c0.22		0.07		0.18				c0.32		
v/c Ratio		0.51	0.50	0.15		0.42	0.16			0.70		
Uniform Delay, d1		13.5	13.4	11.3		12.9	11.3			13.9		
Progression Factor		1.00	1.00	1.00		1.00	1.00			1.00		
Incremental Delay, d2		4.3	0.8	0.6		8.6	0.2			6.1		
Delay (s)		17.8	14.2	11.8		21.4	11.5			20.1		
Level of Service		B	B	B		C	B			C		
Approach Delay (s)			14.4				13.0			20.1		
Approach LOS			B				B			C		
<b>Intersection Summary</b>												
HCM Average Control Delay			15.8				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			65.0				Sum of lost time (s)			7.0		
Intersection Capacity Utilization			80.7%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Existing + Project  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↕	
Volume (vph)	235	101
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	1555	
Flt Permitted	0.95	
Satd. Flow (perm)	1476	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	305	131
RTOR Reduction (vph)	21	0
Lane Group Flow (vph)	453	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	681	
v/s Ratio Prot		
v/s Ratio Perm	0.31	
v/c Ratio	0.67	
Uniform Delay, d1	13.6	
Progression Factor	1.00	
Incremental Delay, d2	5.1	
Delay (s)	18.7	
Level of Service	B	
Approach Delay (s)	18.7	
Approach LOS	B	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Existing + Project  
 Timing Plan: PM PEAK



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	10	538	378	482	677	384
v/c Ratio	0.02	1.20	1.41	0.55	0.74	0.47
Control Delay	17.6	133.1	225.1	10.1	8.1	5.6
Queue Delay	0.0	0.0	0.0	3.0	12.6	0.8
Total Delay	17.6	133.1	225.1	13.1	20.7	6.3
Queue Length 50th (ft)	3	~246	~190	90	100	45
Queue Length 95th (ft)	m6	m#332	#208	139	m93	m47
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	268	880	915	809
Starvation Cap Reductn	0	0	0	286	223	186
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.20	1.41	0.81	0.98	0.62



















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.

# HCM Signalized Intersection Capacity Analysis

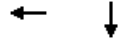
## 36: I-880 NB On-Ramp & Jackson Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	8	436	0	314	400	0	0	279	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			0.93	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1570	1676		1593	1467			1477	1300
Flt Permitted				0.95	1.00		0.27	1.00			1.00	1.00
Satd. Flow (perm)				1570	1676		446	1467			1477	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	10	538	0	378	482	0	0	349	712
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	29	29
Lane Group Flow (vph)	0	0	0	10	538	0	378	482	0	0	648	355
Confl. Peds. (#/hr)				7		1				34		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				419	447		268	880			886	780
v/s Ratio Prot					c0.32			0.33			0.44	
v/s Ratio Perm				0.01			c0.85					0.27
v/c Ratio				0.02	1.20		1.41	0.55			0.73	0.45
Uniform Delay, d1				16.2	22.0		12.0	7.1			8.6	6.6
Progression Factor				1.07	1.00		1.00	1.00			0.87	0.95
Incremental Delay, d2				0.1	108.1		205.5	2.4			0.5	0.2
Delay (s)				17.4	130.0		217.5	9.6			8.0	6.5
Level of Service				B	F		F	A			A	A
Approach Delay (s)		0.0			127.9			101.0			7.4	
Approach LOS		A			F			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			66.7	HCM Level of Service				E				
HCM Volume to Capacity ratio			1.35									
Actuated Cycle Length (s)			60.0	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			84.0%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 37: 6th Street & Madison Street

Existing + Project  
 Timing Plan: PM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	282	1501
v/c Ratio	0.33	0.88
Control Delay	17.8	17.2
Queue Delay	0.0	41.6
Total Delay	17.8	58.9
Queue Length 50th (ft)	40	198
Queue Length 95th (ft)	69	m152
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	850	1708
Starvation Cap Reductn	0	328
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.33	1.09

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						 	
Volume (vph)	0	0	0	14	254	0	0	0	0	0	959	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.96	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					2978						2817	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					2978						2817	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	267	0	0	0	0	0	1090	411
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	65	0
Lane Group Flow (vph)	0	0	0	0	276	0	0	0	0	0	1436	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					17.0						35.0	
Effective Green, g (s)					17.0						35.0	
Actuated g/C Ratio					0.28						0.58	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					844						1643	
v/s Ratio Prot											c0.51	
v/s Ratio Perm					0.09							
v/c Ratio					0.33						0.87	
Uniform Delay, d1					17.0						10.6	
Progression Factor					1.00						1.61	
Incremental Delay, d2					1.0						0.7	
Delay (s)					18.0						17.8	
Level of Service					B						B	
Approach Delay (s)		0.0			18.0			0.0			17.8	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.8		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			62.6%		ICU Level of Service			B				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	874	614	390	73
v/c Ratio	1.72	0.45	0.64	0.12
Control Delay	341.7	9.3	15.0	2.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	341.7	9.3	15.0	2.9
Queue Length 50th (ft)	~367	50	75	0
Queue Length 95th (ft)	m#331	75	146	14
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	509	1360	611	627
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.72	0.45	0.64	0.12

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.



HCM Signalized Intersection Capacity Analysis  
38: 6th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↩		↩	↩	↩
Volume (vph)	138	649	87	105	672	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.90	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1451		2889	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1451		2889	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	153	721	101	122	781	73
RTOR Reduction (vph)	0	0	0	0	0	37
Lane Group Flow (vph)	0	874	0	614	390	36
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		509		1361	611	590
v/s Ratio Prot				0.21	c0.30	
v/s Ratio Perm		0.60				0.03
v/c Ratio		1.72		0.45	0.64	0.06
Uniform Delay, d1		14.6		8.0	9.0	6.5
Progression Factor		0.73		1.00	1.00	1.00
Incremental Delay, d2		323.5		1.1	5.0	0.2
Delay (s)		334.1		9.1	14.0	6.7
Level of Service		F		A	B	A
Approach Delay (s)		334.1		11.0		
Approach LOS		F		B		
<b>Intersection Summary</b>						
HCM Average Control Delay			155.6		HCM Level of Service	F
HCM Volume to Capacity ratio			1.10			
Actuated Cycle Length (s)			45.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			91.6%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
39: I-880 SB Off-Ramp & Jackson Street

Existing + Project  
Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1163	615	422
v/c Ratio	0.63	0.94	2.72
Control Delay	13.0	43.2	809.3
Queue Delay	0.0	0.0	0.0
Total Delay	13.0	43.2	809.3
Queue Length 50th (ft)	94	197	~219
Queue Length 95th (ft)	131	#317	#265
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1859	651	155
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.63	0.94	2.72

**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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Existing + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	228	535	272	0	0	0	0	458	28	212	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4164						1454			1415	
Flt Permitted		0.99						1.00			0.24	
Satd. Flow (perm)		4164						1454			347	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	256	601	306	0	0	0	0	580	35	303	119	0
RTOR Reduction (vph)	0	108	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1055	0	0	0	0	0	611	0	0	422	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						26.0			26.0	
Effective Green, g (s)		25.0						26.5			26.5	
Actuated g/C Ratio		0.42						0.45			0.45	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1750						648			155	
v/s Ratio Prot								0.42				
v/s Ratio Perm		0.25									c1.22	
v/c Ratio		0.60						0.94			2.72	
Uniform Delay, d1		13.4						15.8			16.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		1.5						23.8			793.1	
Delay (s)		14.9						39.6			809.6	
Level of Service		B						D			F	
Approach Delay (s)		14.9			0.0			39.6			809.6	
Approach LOS		B			A			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			174.3								F	
HCM Volume to Capacity ratio			1.70									
Actuated Cycle Length (s)			59.5							8.0		
Intersection Capacity Utilization			80.0%								D	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Existing + Project  
Timing Plan: PM PEAK



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	791	574	658
v/c Ratio	0.64	0.77	0.41
Control Delay	21.4	11.9	5.7
Queue Delay	0.0	1.1	0.3
Total Delay	21.4	13.0	6.0
Queue Length 50th (ft)	89	67	37
Queue Length 95th (ft)	126	m75	m41
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1242	742	1593
Starvation Cap Reductn	0	48	410
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.64	0.83	0.56






















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 40: 5th Street & Madison Street

Existing + Project  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  								  	  		
Volume (vph)	0	693	26	0	0	0	0	0	0	931	67	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.91	0.91		
Frb, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.99	0.99		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	0.96		
Satd. Flow (prot)		4360								1252	2710		
Flt Permitted		1.00								0.95	0.96		
Satd. Flow (perm)		4360								1252	2710		
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81	
Adj. Flow (vph)	0	762	29	0	0	0	0	0	0	1149	83	0	
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	12	12	0	
Lane Group Flow (vph)	0	785	0	0	0	0	0	0	0	562	646	0	
Confl. Peds. (#/hr)	2		1							15		45	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4										6	
Permitted Phases										6			
Actuated Green, G (s)		17.0								35.0	35.0		
Effective Green, g (s)		17.0								35.0	35.0		
Actuated g/C Ratio		0.28								0.58	0.58		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		1235								730	1581		
v/s Ratio Prot		c0.18											
v/s Ratio Perm										c0.45	0.24		
v/c Ratio		0.64								0.77	0.41		
Uniform Delay, d1		18.8								9.5	6.8		
Progression Factor		1.00								0.61	0.78		
Incremental Delay, d2		2.5								4.7	0.5		
Delay (s)		21.3								10.5	5.8		
Level of Service		C								B	A		
Approach Delay (s)		21.3			0.0			0.0			8.0		
Approach LOS		C			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			13.2		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.73										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			62.6%		ICU Level of Service						B		
Analysis Period (min)			15										

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1691	661	124
v/c Ratio	0.77	1.35	0.37
Control Delay	12.2	193.1	9.7
Queue Delay	0.0	0.0	0.0
Total Delay	12.2	193.1	9.7
Queue Length 50th (ft)	114	~238	22
Queue Length 95th (ft)	162	#384	47
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2196	488	336
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.77	1.35	0.37

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.

HCM Signalized Intersection Capacity Analysis  
41: 5th Street & Oak Street

Existing + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	273	1182	117	0	0	0	0	498	77	6	95	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4449						1426			1462	
Flt Permitted		0.99						1.00			0.69	
Satd. Flow (perm)		4449						1426			1009	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	294	1271	126	0	0	0	0	572	89	7	117	0
RTOR Reduction (vph)	0	20	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	1671	0	0	0	0	0	648	0	0	124	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2175						475			336	
v/s Ratio Prot								c0.45				
v/s Ratio Perm		0.38									0.12	
v/c Ratio		0.77						1.36			0.37	
Uniform Delay, d1		9.4						15.0			11.4	
Progression Factor		1.00						1.00			0.55	
Incremental Delay, d2		2.7						177.3			2.9	
Delay (s)		12.1						192.3			9.2	
Level of Service		B						F			A	
Approach Delay (s)		12.1			0.0			192.3			9.2	
Approach LOS		B			A			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			60.1									E
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			76.0%									D
Analysis Period (min)			15									
c Critical Lane Group												

**Arterial Level of Service: EB 7th Street**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	6.3	32.5	0.15	16.2	C
Madison Street	IV	25	18.9	7.2	26.1	0.07	9.8	D
Oak Street	IV	25	19.3	13.9	33.2	0.07	7.9	E
Total	IV		64.4	27.4	91.8	0.29	11.4	D

**Arterial Level of Service: WB 8th Street**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	17.9	33.9	0.06	6.4	F
Madison Street	IV	25	19.5	17.3	36.8	0.07	7.2	E
Jackson Street	IV	25	18.8	7.6	26.4	0.07	9.7	D
Alice Street	IV	25	19.7	9.1	28.8	0.07	9.3	D
Harrison Street	IV	25	19.0	13.9	32.9	0.07	7.8	E
Webster Street	IV	25	18.8	27.3	46.1	0.07	5.5	F
Total	IV		111.8	93.1	204.9	0.42	7.4	E

**Arterial Level of Service: SB Madison Street**

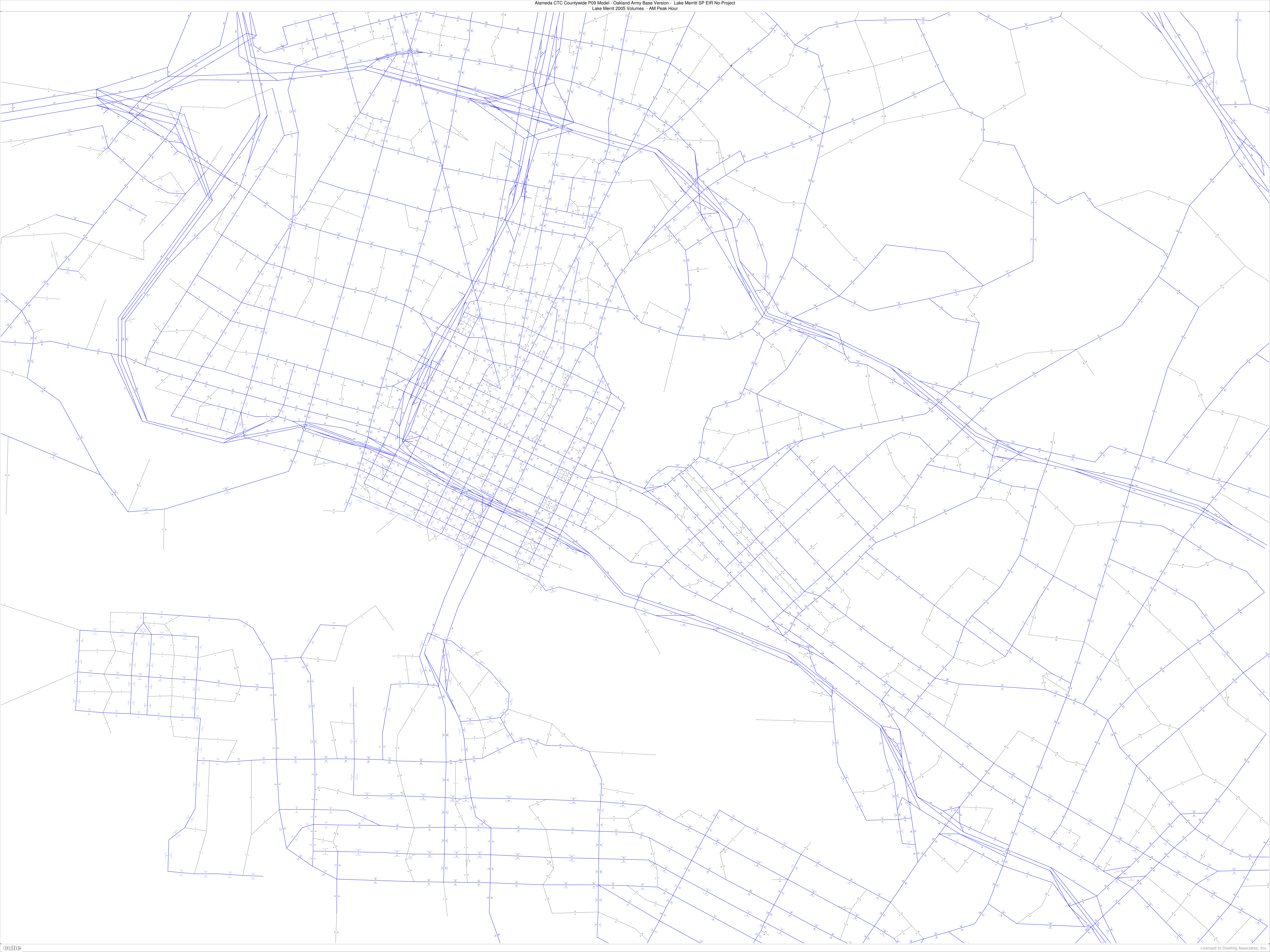
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	18.0	33.3	0.06	6.2	F
9th Street	IV	25	13.2	2.5	15.7	0.05	11.5	D
8th Street	IV	25	13.9	5.8	19.7	0.05	9.6	D
7th Street	IV	25	13.6	265.6	279.2	0.05	0.7	F
Total	IV		56.0	291.9	347.9	0.21	2.2	F

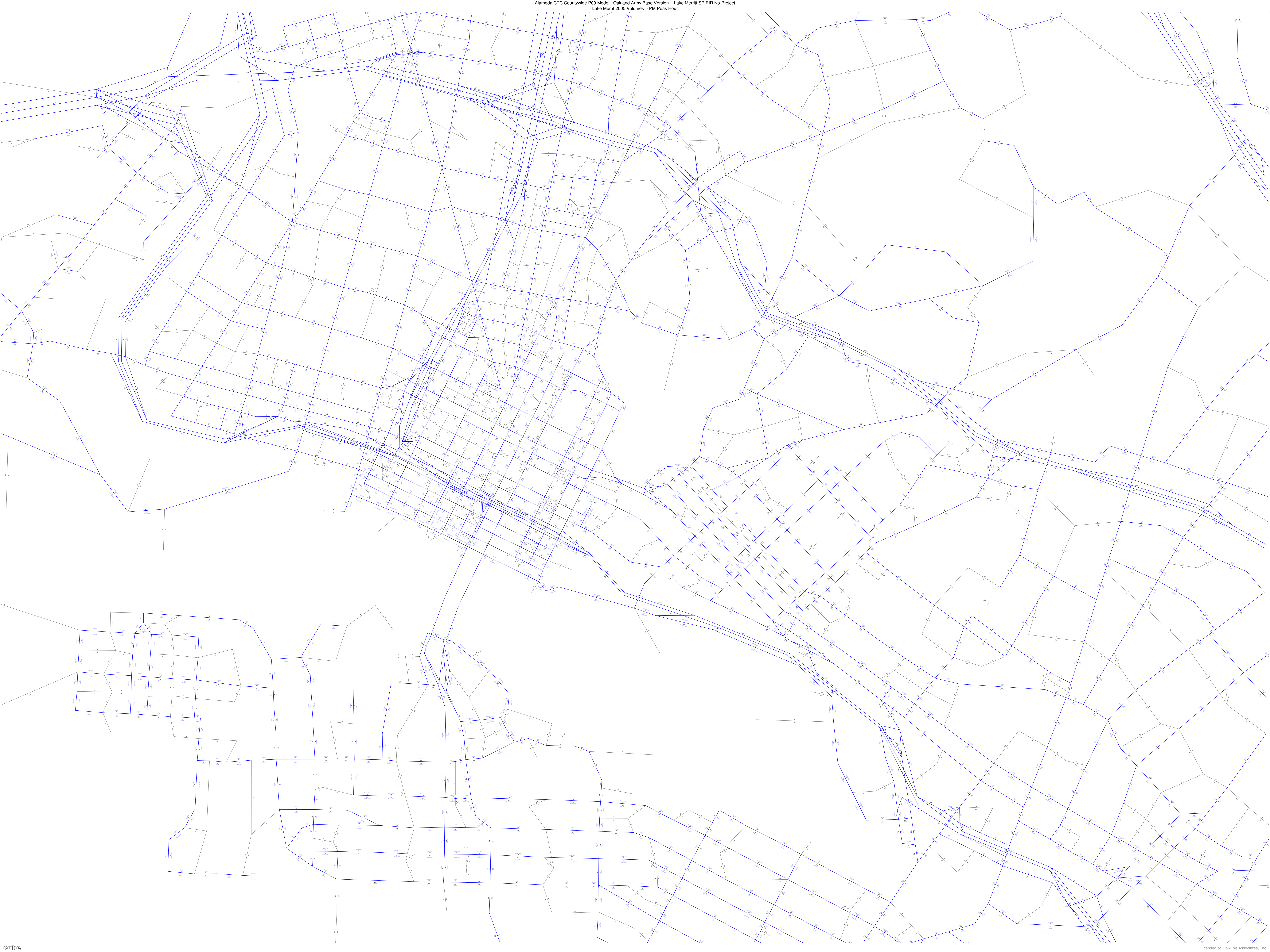


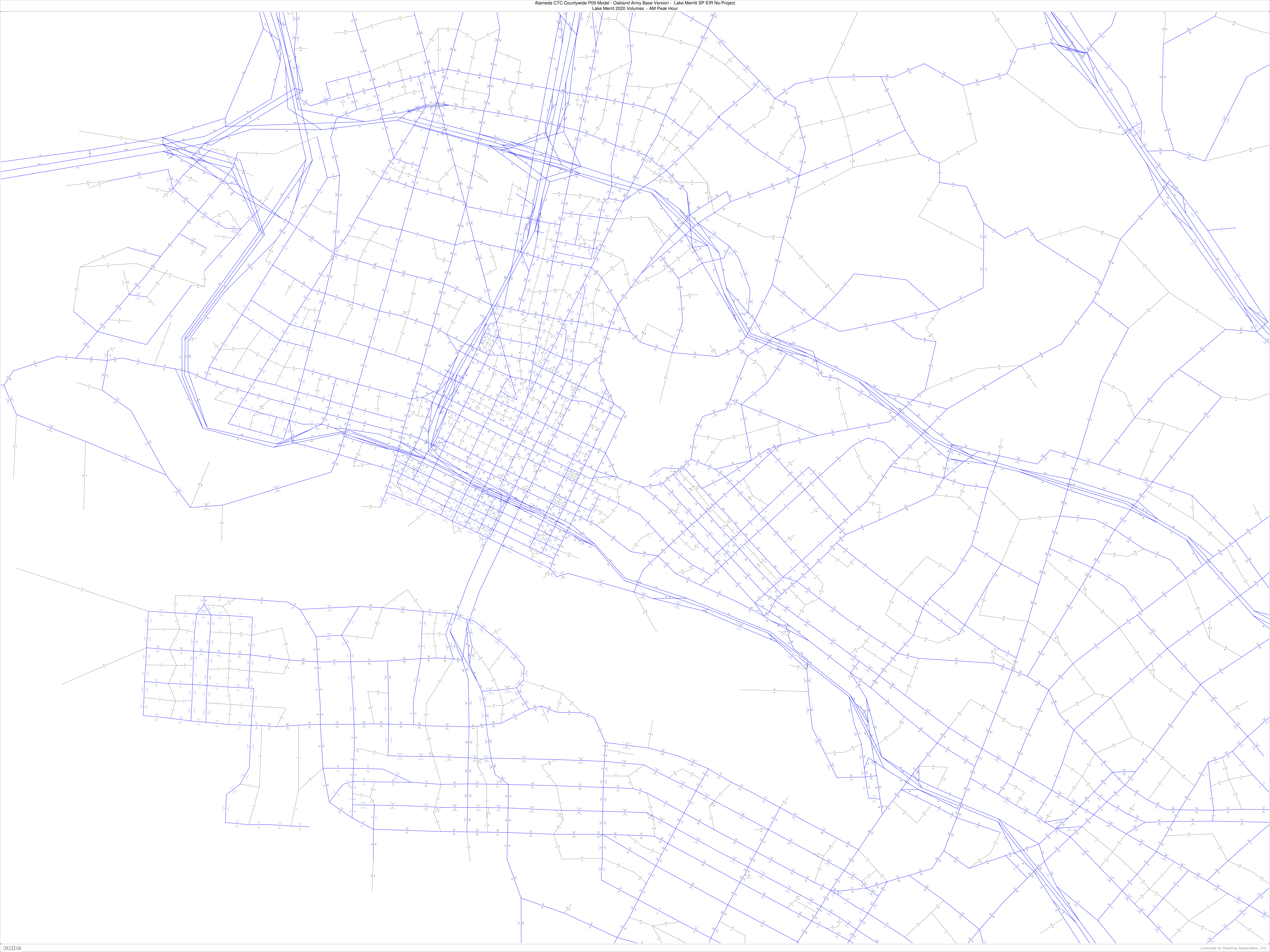
Arterial Level of Service: NB Oak Street

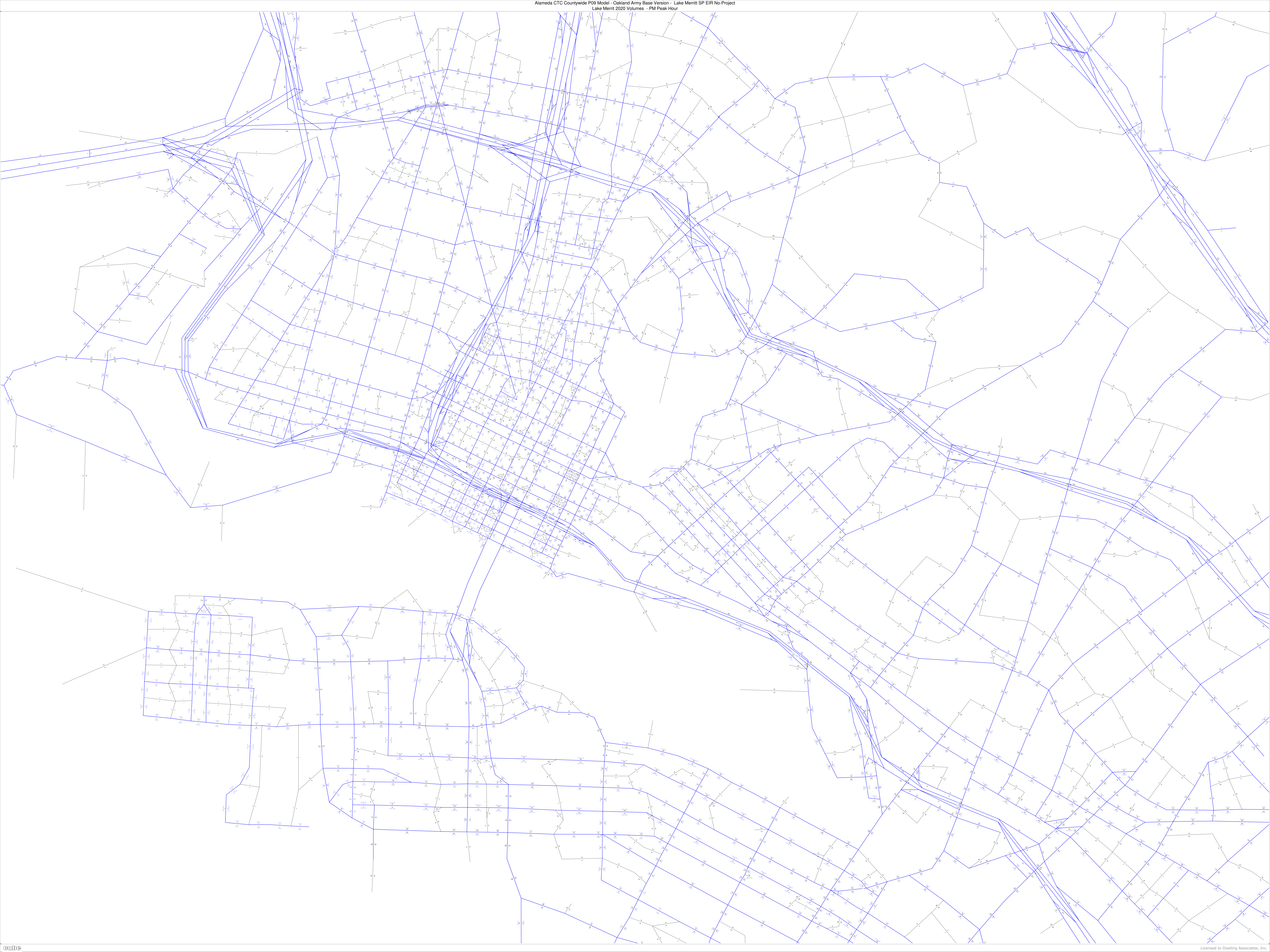
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	14.4	27.9	0.05	6.5	F
9th Street	IV	25	14.7	1.3	16.0	0.06	12.4	D
10th St	IV	25	13.3	1.9	15.2	0.05	11.9	D
11th St	IV	25	14.7	9.3	24.0	0.06	8.3	E
12th St	IV	25	12.5	17.6	30.1	0.05	5.6	F
Total	IV		68.7	44.5	113.2	0.26	8.2	E

# **2020 MODEL INFORMATION**









Lake Merritt Station Area Plan

Existing AM - Volume Comparison  
2005 Base Model vs. 2006 Data vs. 2012 Counts

#	Intersection Name		Affected by Measure DD Reconfiguration	Affected by Measure DD Construction	Volume Source Data	CITY COMMENTS
1	Grand Ave	Broadway			2012 Counts (KHA)	OK
2	20th St.	Harrison St	X		2012 Counts + Project	not affected by DD constr, 2012 counts
3	19th St	Madison St		X	1994 Counts (No Source)	not affected by DD constr, 2012 counts
4	17th St	Madison St			2012 Counts (KHA)	OK
5	Madison St.	14th St.		X	2008 Counts (Kaiser Center Redev DEIR)	OK
6	Oak St.	14th St.		X	2008 Counts (Kaiser Center Redev DEIR)	OK
7	Madison St.	13th St		X	Measure DD EIR 2006 + Project + Growth Factor	2006 Measure DD EIR + project (zero) volumes
8	Oak St.	13th St	X	X	Measure DD EIR 2006 + Project + Growth Factor	OK
9	Lake Merritt Blvd	13th St	X	X	Measure DD EIR 2006 + Project + Growth Factor	OK
10	Brush St	12th St.			2012 Counts (KHA)	OK
11	Broadway	12th St.			2012 Counts (KHA)	OK
12	Madison St.	12th St.		X	2008 Counts (Kaiser Center Redev DEIR)	OK
13	Oak St.	12th St.		X	2008 Counts (Kaiser Center Redev DEIR)	OK
14	Lake Merritt Blvd	11th St.	X	X	Measure DD EIR 2006 + Project + Growth Factor	OK
15	1st Ave.	International Blvd.	X	X	Measure DD EIR 2006 + Project + Growth Factor	OK
16	Lakeshore Ave	18th St	X	X	Measure DD EIR 2006 + Project + Growth Factor	OK
17	Castro St	11th St.			2012 Counts (KHA)	OK
18	Broadway	11th St.			2012 Counts (KHA)	OK
19	Madison St.	11th St.		X	2008 Counts (Kaiser Center Redev DEIR)	not affected by DD constr, 2012 counts
20	Madison St.	10th St.		X	2009 Counts (EIP LSA)	not affected by DD constr, 2012 counts
21	Oak St.	10th St.			2012 Counts (KHA)	affected by DD constr, prior counts (Measure DD?)
22	Webster St.	9th St.			2012 Counts (KHA)	OK
23	Madison St.	9th St.			2012 Counts (KHA)	OK
24	Oak St.	9th St.			2012 Counts (KHA)	OK
25	Webster St.	8th St.			2012 Counts (KHA)	OK
26	Harrison St.	8th St.			2012 Counts (KHA)	OK
27	Jackson St.	8th St.			2012 Counts (KHA)	OK
28	Madison St.	8th St.		X	2004 Counts (Oak to 9th Ave DEIR)	not affected by DD constr, 2012 counts
29	Oak St.	8th St.		X	2004 Counts (Oak to 9th Ave DEIR)	not affected by DD constr, 2012 counts
30	Fallon St.	8th St.			2012 Counts (KHA)	OK
31	Harrison St.	7th St.			2012 Counts (KHA)	OK
32	Jackson St.	7th St.			2012 Counts (KHA)	OK
33	Madison St.	7th St.		X	2008 Counts (Kaiser Center Redev DEIR)	not affected by DD constr, but still use prior counts*
34	Oak St.	7th St.		X	2008 Counts (Kaiser Center Redev DEIR)	not affected by DD constr, but still use prior counts*
35	5th Ave.	7th St./8th St.			2012 Counts (KHA)	OK
36	Jackson St.	6th St.			2012 Counts (KHA)	OK
37	Madison St.	6th St.			2012 Counts (KHA)	OK
38	Oak St.	6th St.			2012 Counts (KHA)	OK
39	Jackson St.	5th St.			2012 Counts (KHA)	OK
40	Madison St.	5th St.			2012 Counts (KHA)	OK
41	Oak St.	5th St.			2012 Counts (KHA)	OK
42	Oak St.	Embarcadero			2012 Counts (KHA)	OK

<sup>1</sup>Volume can be calculated from adjacent intersections at Madison/12th and Oak/13th.

\* 2012 counts seemed unreasonably low, which is the opposite effect we would expect if these intersections were impacted by Measure DD construction. Staff is guessing that counts were taken too late in May and did not adequately capture the volumes that would be created at the adjacent community college. Therefore, we need to rely on prior counts.















# **INTERIM 2020 TRAFFIC CONDITIONS**

Queues  
1: W Grand Ave & Broadway

Interim 2020  
Timing Plan: AM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	566	872	109	384	129	44	485
v/c Ratio	0.41	0.41	0.91	0.33	0.26	0.22	0.12	0.34
Control Delay	24.4	16.5	35.5	19.4	15.1	4.1	15.6	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	16.5	35.5	19.4	15.1	4.1	15.6	13.3
Queue Length 50th (ft)	22	98	208	36	65	0	13	70
Queue Length 95th (ft)	57	131	#287	83	101	32	36	112
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	172	1517	1065	332	1498	579	378	1431
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	0.37	0.37	0.82	0.33	0.26	0.22	0.12	0.34

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Interim 2020  
 Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	11	47	479	36	125	589	71	100	353	119	1	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		1.00	0.95			0.95		1.00	0.95	1.00		1.00
Frbp, ped/bikes		1.00	0.99			0.99		1.00	1.00	0.91		1.00
Flpb, ped/bikes		0.98	1.00			1.00		0.97	1.00	1.00		0.96
Frft		1.00	0.99			0.99		1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00			0.99		0.95	1.00	1.00		0.95
Satd. Flow (prot)		1568	3133			3079		1538	3185	1086		1522
Flt Permitted		0.22	1.00			0.71		0.43	1.00	1.00		0.50
Satd. Flow (perm)		357	3133			2190		704	3185	1086		805
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	526	40	139	654	79	109	384	129	1	43
RTOR Reduction (vph)	0	0	7	0	0	10	0	0	0	68	0	0
Lane Group Flow (vph)	0	64	559	0	0	862	0	109	384	61	0	44
Confl. Peds. (#/hr)		71		73	73		71	84		80		80
Confl. Bikes (#/hr)				15			21			9		
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	10	0	0
Parking (#/hr)				5			5			5		
Turn Type	Perm	Perm			Perm			Perm		Perm	Perm	Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2		2	6	6
Actuated Green, G (s)		37.0	37.0			37.0		40.0	40.0	40.0		40.0
Effective Green, g (s)		37.0	37.0			37.0		40.0	40.0	40.0		40.0
Actuated g/C Ratio		0.44	0.44			0.44		0.47	0.47	0.47		0.47
Clearance Time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		2.0	2.0			2.0		2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		155	1364			953		331	1499	511		379
v/s Ratio Prot			0.18						0.12			
v/s Ratio Perm		0.18			c0.39			c0.15		0.06		0.05
v/c Ratio		0.41	0.41			0.90		0.33	0.26	0.12		0.12
Uniform Delay, d1		16.5	16.5			22.4		14.1	13.5	12.6		12.6
Progression Factor		1.00	1.00			1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		0.7	0.1			11.6		2.6	0.4	0.5		0.6
Delay (s)		17.2	16.6			34.0		16.7	14.0	13.1		13.2
Level of Service		B	B			C		B	B	B		B
Approach Delay (s)			16.6			34.0			14.3			
Approach LOS			B			C			B			
<b>Intersection Summary</b>												
HCM Average Control Delay			21.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			93.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Interim 2020  
 Timing Plan: AM PEAK

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	313	133
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	2955	
Flt Permitted	1.00	
Satd. Flow (perm)	2955	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	340	145
RTOR Reduction (vph)	42	0
Lane Group Flow (vph)	443	0
Confl. Peds. (#/hr)		84
Confl. Bikes (#/hr)		34
Bus Blockages (#/hr)	0	10
Parking (#/hr)		5
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	40.0	
Effective Green, g (s)	40.0	
Actuated g/C Ratio	0.47	
Clearance Time (s)	4.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1391	
v/s Ratio Prot	0.15	
v/s Ratio Perm		
v/c Ratio	0.32	
Uniform Delay, d1	14.0	
Progression Factor	1.00	
Incremental Delay, d2	0.6	
Delay (s)	14.6	
Level of Service	B	
Approach Delay (s)	14.5	
Approach LOS	B	
<b>Intersection Summary</b>		

Queues  
2: 20th St & Kaiser DWY

Interim 2020  
Timing Plan: AM PEAK





























Lane Group	EBT	WBL	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	190	401	281	8	208	193	9
v/c Ratio	0.18	0.53	0.24	0.02	0.39	0.33	0.01
Control Delay	12.5	26.2	15.9	8.6	15.5	4.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	26.2	15.9	8.6	15.5	4.6	0.0
Queue Length 50th (ft)	12	77	42	0	51	0	0
Queue Length 95th (ft)	28	108	63	7	97	34	0
Internal Link Dist (ft)	337		348		577		
Turn Bay Length (ft)		120		90			
Base Capacity (vph)	1085	750	1183	513	535	582	681
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.53	0.24	0.02	0.39	0.33	0.01

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	 	 		 	 			
Volume (vph)	0	94	75	337	236	7	89	17	235	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			1.00
Frb, ped/bikes		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
Frt		0.93		1.00	1.00	0.85		0.94	0.85			0.86
Flt Protected		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (prot)		4203		3090	3185	1368		1460	1327			1450
Flt Permitted		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (perm)		4203		3090	3185	1368		1460	1327			1450
Peak-hour factor, PHF	0.89	0.89	0.89	0.84	0.84	0.84	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	106	84	401	281	8	105	20	276	0	0	9
RTOR Reduction (vph)	0	64	0	0	0	5	0	34	127	0	0	8
Lane Group Flow (vph)	0	126	0	401	281	3	0	174	66	0	0	1
Confl. Peds. (#/hr)			20				117					
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	5	0	0	0
Parking (#/hr)			5									
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		17.0	26.0	26.0		24.0	24.0			8.0
Effective Green, g (s)		17.0		17.0	26.0	26.0		24.0	24.0			8.0
Actuated g/C Ratio		0.24		0.24	0.37	0.37		0.34	0.34			0.11
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1021		750	1183	508		501	455			166
v/s Ratio Prot				c0.13	c0.09			c0.12	0.05			0.00
v/s Ratio Perm		c0.03				0.00						
v/c Ratio		0.12		0.53	0.24	0.01		0.35	0.15			0.01
Uniform Delay, d1		20.7		23.1	15.2	13.9		17.2	15.9			27.5
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.2		2.7	0.5	0.0		1.9	0.7			0.1
Delay (s)		20.9		25.8	15.6	13.9		19.1	16.6			27.5
Level of Service		C		C	B	B		B	B			C
Approach Delay (s)		20.9			21.5			17.9			27.5	
Approach LOS		C			C			B			C	

Intersection Summary		
HCM Average Control Delay	20.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.37	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	46.6%	ICU Level of Service A
Analysis Period (min)	15	

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	212	1109	408
v/c Ratio	0.14	0.92	0.32
Control Delay	10.0	15.9	16.2
Queue Delay	0.0	0.0	0.0
Total Delay	10.0	15.9	16.2
Queue Length 50th (ft)	8	0	48
Queue Length 95th (ft)	64	#488	106
Internal Link Dist (ft)	259		536
Turn Bay Length (ft)			
Base Capacity (vph)	1708	1209	1745
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.12	0.92	0.23

Intersection Summary













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



# HCM Signalized Intersection Capacity Analysis

## 3: 19th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	197	1031	0	0	0	0	368	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	0.98					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1220					3174	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1220					3174	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	212	1109	0	0	0	0	400	8
RTOR Reduction (vph)	0	0	0	0	0	198	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	212	911	0	0	0	0	406	0
Confl. Peds. (#/hr)				38		3						29
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					20.2	40.5					17.8	
Effective Green, g (s)					20.2	40.5					17.8	
Actuated g/C Ratio					0.41	0.82					0.36	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					1300	998					1141	
v/s Ratio Prot					0.07						0.13	
v/s Ratio Perm						c0.75						
v/c Ratio					0.16	0.91					0.36	
Uniform Delay, d1					9.3	3.2					11.6	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.1	12.3					0.2	
Delay (s)					9.3	15.5					11.8	
Level of Service					A	B					B	
Approach Delay (s)		0.0			14.5			0.0			11.8	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.9		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			49.5		Sum of lost time (s)					9.0		
Intersection Capacity Utilization			74.6%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
4: 17th St & Madison Street













Interim 2020  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	169	477
v/c Ratio	0.23	0.18
Control Delay	6.7	4.9
Queue Delay	0.0	0.0
Total Delay	6.7	4.9
Queue Length 50th (ft)	4	21
Queue Length 95th (ft)	24	33
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	724	2702
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.18
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

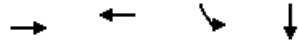
## 4: 17th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑↑↑	
Volume (vph)	0	30	120	0	0	0	0	0	0	23	430	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.95									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.88									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2492									4369	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2492									4369	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	34	135	0	0	0	0	0	0	24	453	0
RTOR Reduction (vph)	0	101	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	68	0	0	0	0	0	0	0	0	468	0
Confl. Peds. (#/hr)	52		45							52		9
Confl. Bikes (#/hr)									1			7
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0										37.0
Effective Green, g (s)		15.0										37.0
Actuated g/C Ratio		0.25										0.62
Clearance Time (s)		4.0										4.0
Lane Grp Cap (vph)		623										2694
v/s Ratio Prot		c0.03										
v/s Ratio Perm												0.11
v/c Ratio		0.11										0.17
Uniform Delay, d1		17.3										4.9
Progression Factor		1.00										1.00
Incremental Delay, d2		0.4										0.1
Delay (s)		17.7										5.1
Level of Service		B										A
Approach Delay (s)		17.7			0.0			0.0				5.1
Approach LOS		B			A			A				A
<b>Intersection Summary</b>												
HCM Average Control Delay			8.4									A
HCM Volume to Capacity ratio			0.15									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			50.0%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK



Lane Group	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	325	984	215	417
v/c Ratio	0.18	0.62	0.60	0.49
Control Delay	5.0	14.2	24.5	17.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.0	14.2	24.5	17.8
Queue Length 50th (ft)	20	179	67	65
Queue Length 95th (ft)	33	194	#133	106
Internal Link Dist (ft)	285	315		1054
Turn Bay Length (ft)				
Base Capacity (vph)	1847	1594	360	843
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.62	0.60	0.49





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 					 	 	
Volume (vph)	0	234	39	101	647	0	0	0	0	198	367	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0					4.5	4.5	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frb, ped/bikes		0.99			1.00					1.00	1.00	
Flpb, ped/bikes		1.00			1.00					0.91	1.00	
Frt		0.98			1.00					1.00	0.99	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3089			3152					1271	2956	
Flt Permitted		1.00			0.85					0.95	1.00	
Satd. Flow (perm)		3089			2695					1271	2956	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	279	46	133	851	0	0	0	0	215	399	18
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	306	0	0	984	0	0	0	0	215	412	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4							2	
Actuated Green, G (s)		35.5			35.5					17.0	17.0	
Effective Green, g (s)		35.5			35.5					17.0	17.0	
Actuated g/C Ratio		0.59			0.59					0.28	0.28	
Clearance Time (s)		3.0			3.0					4.5	4.5	
Lane Grp Cap (vph)		1828			1595					360	838	
v/s Ratio Prot		0.10									0.14	
v/s Ratio Perm					c0.37					c0.17		
v/c Ratio		0.17			0.62					0.60	0.49	
Uniform Delay, d1		5.6			7.9					18.5	17.9	
Progression Factor		1.00			1.54					0.89	0.88	
Incremental Delay, d2		0.2			1.5					7.1	2.0	
Delay (s)		5.8			13.6					23.6	17.8	
Level of Service		A			B					C	B	
Approach Delay (s)		5.8			13.6			0.0			19.8	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.3		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5		
Intersection Capacity Utilization			59.4%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Interim 2020  
Timing Plan: AM PEAK



Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	475	698	754	839	37
v/c Ratio	0.69	0.73	1.50	0.50	0.06
Control Delay	23.1	24.2	257.4	7.8	1.8
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	23.1	24.2	257.4	8.0	1.8
Queue Length 50th (ft)	57	117	~353	58	0
Queue Length 95th (ft)	112	173	#547	68	4
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	693	956	501	1671	656
Starvation Cap Reductn	0	0	0	239	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.73	1.50	0.59	0.06





















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.

# HCM Signalized Intersection Capacity Analysis

## 6: 14th St & Oak Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Volume (vph)	43	403	0	0	656	709	116	580	31	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frb, ped/bikes		1.00			1.00	0.92		1.00	0.96			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2908			3185	1306		3132	1197			
Flt Permitted		0.79			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2311			3185	1306		3132	1197			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	46	429	0	0	698	754	140	699	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	109	0	0	17	0	0	0
Lane Group Flow (vph)	0	475	0	0	698	645	0	839	20	0	0	0
Confl. Peds. (#/hr)	49					49	90		44			
Confl. Bikes (#/hr)						35			9			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		18.0			18.0	18.0		32.0	32.0			
Effective Green, g (s)		18.0			18.0	18.0		32.0	32.0			
Actuated g/C Ratio		0.30			0.30	0.30		0.53	0.53			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		693			956	392		1670	638			
v/s Ratio Prot					0.22							
v/s Ratio Perm		0.21				c0.49		0.27	0.02			
v/c Ratio		0.69			0.73	1.64		0.50	0.03			
Uniform Delay, d1		18.5			18.8	21.0		8.9	6.6			
Progression Factor		0.94			1.00	1.00		0.73	0.59			
Incremental Delay, d2		5.2			4.9	301.5		1.1	0.1			
Delay (s)		22.6			23.7	322.5		7.6	4.0			
Level of Service		C			C	F		A	A			
Approach Delay (s)		22.6			178.9			7.4			0.0	
Approach LOS		C			F			A			A	

### Intersection Summary

HCM Average Control Delay	98.8	HCM Level of Service	F
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	864	551
v/c Ratio	0.57	0.21
Control Delay	18.1	9.2
Queue Delay	0.0	0.0
Total Delay	18.1	9.2
Queue Length 50th (ft)	66	54
Queue Length 95th (ft)	59	79
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1508	2610
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.57	0.21
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	431	122	0	0	0	0	0	0	86	421	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5332									4324	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5332									4324	
Peak-hour factor, PHF	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	673	191	0	0	0	0	0	0	93	458	0
RTOR Reduction (vph)	0	86	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	778	0	0	0	0	0	0	0	0	537	0
Confl. Peds. (#/hr)			42							32		
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1422									2594	
v/s Ratio Prot		c0.15										
v/s Ratio Perm											0.12	
v/c Ratio		0.55									0.21	
Uniform Delay, d1		18.9									5.5	
Progression Factor		1.00									1.75	
Incremental Delay, d2		1.5									0.2	
Delay (s)		20.4									9.8	
Level of Service		C									A	
Approach Delay (s)		20.4			0.0			0.0			9.8	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.3									B
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			46.8%								A	
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

Queues  
8: 13th St & Oak Street

Interim 2020  
Timing Plan: AM PEAK























Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	98	736	704	75
v/c Ratio	0.23	0.63	0.27	0.10
Control Delay	1.4	10.4	6.0	4.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.4	10.4	6.0	4.1
Queue Length 50th (ft)	1	30	38	6
Queue Length 95th (ft)	1	24	54	20
Internal Link Dist (ft)		317	231	
Turn Bay Length (ft)	50			
Base Capacity (vph)	426	1170	2632	733
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.63	0.27	0.10

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 8: 13th St & Oak Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	58	434	0	0	0	0	0	669	71	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0	3.0			
Lane Util. Factor	1.00	0.91						0.91	1.00			
Frbp, ped/bikes	1.00	1.00						1.00	0.97			
Flpb, ped/bikes	0.97	1.00						1.00	1.00			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1353	4386						4386	1205			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1353	4386						4386	1205			
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	98	736	0	0	0	0	0	704	75	0	0	0
RTOR Reduction (vph)	65	0	0	0	0	0	0	0	10	0	0	0
Lane Group Flow (vph)	33	736	0	0	0	0	0	704	65	0	0	0
Confl. Peds. (#/hr)	26								36			
Confl. Bikes (#/hr)									11			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm								Perm			
Protected Phases		2						1				
Permitted Phases	2								1			
Actuated Green, G (s)	16.0	16.0						36.0	36.0			
Effective Green, g (s)	16.0	16.0						36.0	36.0			
Actuated g/C Ratio	0.27	0.27						0.60	0.60			
Clearance Time (s)	5.0	5.0						3.0	3.0			
Lane Grp Cap (vph)	361	1170						2632	723			
v/s Ratio Prot		c0.17						c0.16				
v/s Ratio Perm	0.02								0.05			
v/c Ratio	0.09	0.63						0.27	0.09			
Uniform Delay, d1	16.5	19.4						5.7	5.1			
Progression Factor	0.04	0.41						1.00	1.00			
Incremental Delay, d2	0.4	2.3						0.2	0.2			
Delay (s)	1.2	10.3						6.0	5.3			
Level of Service	A	B						A	A			
Approach Delay (s)		9.2			0.0			5.9			0.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.6				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			67.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Interim 2020  
Timing Plan: AM PEAK















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	536	58	1976	505
v/c Ratio	0.42	0.11	0.92	0.41
Control Delay	9.9	3.5	10.7	9.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.9	3.5	10.7	9.9
Queue Length 50th (ft)	42	0	3	39
Queue Length 95th (ft)	65	12	0	62
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1274	527	2155	1236
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.11	0.92	0.41

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 9: 13th St & Lake Merritt Blvd

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	456	49	0	0	1344	0	0	0	434	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frb, ped/bikes		1.00	0.99			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1230			2508				3090		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1230			2508				3090		
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.25	0.25	0.25	0.86	0.86	0.86
Adj. Flow (vph)	0	536	58	0	0	1976	0	0	0	505	0	0
RTOR Reduction (vph)	0	0	35	0	0	1152	0	0	0	0	0	0
Lane Group Flow (vph)	0	536	23	0	0	824	0	0	0	505	0	0
Confl. Bikes (#/hr)			3									
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			16.0				16.0		
Effective Green, g (s)		16.0	16.0			16.0				16.0		
Actuated g/C Ratio		0.40	0.40			0.40				0.40		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1274	492			1003				1236		
v/s Ratio Prot						c0.33				0.16		
v/s Ratio Perm		c0.17	0.02									
v/c Ratio		0.42	0.05			0.82				0.41		
Uniform Delay, d1		8.7	7.3			10.7				8.6		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		1.0	0.2			7.6				1.0		
Delay (s)		9.7	7.5			18.3				9.6		
Level of Service		A	A			B				A		
Approach Delay (s)		9.5			18.3			0.0			9.6	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			40.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			55.6%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Interim 2020  
Timing Plan: AM PEAK

	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	66	208	680	2037
v/c Ratio	0.03	0.21	0.22	1.00	1.28
Control Delay	24.0	36.2	38.4	81.6	156.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	36.2	38.4	81.6	156.2
Queue Length 50th (ft)	1	37	47	-178	-984
Queue Length 95th (ft)	2	73	67	#199	#1120
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	286	317	955	678	1597
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.21	0.22	1.00	1.28

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Interim 2020  
 Timing Plan: AM PEAK

	↘	↙	←	↓	↗	↘	↙
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↙	↑↑↑	↑↑↑		↘↙	
Volume (vph)	2	56	177	427	96	1874	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1346	1496	4577	4248		3086	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1346	1496	4577	4248		3086	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	66	208	555	125	1973	64
RTOR Reduction (vph)	5	5	0	31	0	0	0
Lane Group Flow (vph)	3	61	208	649	0	2037	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	24.0	24.0	24.0	17.5		59.5	
Effective Green, g (s)	24.0	24.0	24.0	17.5		59.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.15		0.52	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	281	312	955	646		1597	
v/s Ratio Prot			c0.05	c0.15		c0.66	
v/s Ratio Perm	0.00	0.04					
v/c Ratio	0.01	0.20	0.22	1.00		1.28	
Uniform Delay, d1	36.1	37.5	37.7	48.8		27.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.4	0.5	36.4		129.0	
Delay (s)	36.2	38.9	38.2	85.2		156.7	
Level of Service	D	D	D	F		F	
Approach Delay (s)			38.4	85.2		156.7	
Approach LOS			D	F		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			129.4		HCM Level of Service		F
HCM Volume to Capacity ratio			0.98				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			89.5%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
11: 12th St & Broadway

Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	749	103	411	474
v/c Ratio	0.46	0.77	0.23	0.39
Control Delay	15.4	67.3	8.7	14.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.4	67.3	8.7	14.2
Queue Length 50th (ft)	70	38	40	59
Queue Length 95th (ft)	92	#111	62	94
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1611	133	1763	1202
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.77	0.23	0.39













Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
11: 12th St & Broadway

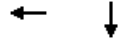
Interim 2020  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	102	455	72	99	395	0	0	400	65	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.99		1.00	1.00			0.95		
Flpb, ped/bikes					0.98		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4523		1770	3468			3220		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4523		1770	3468			3220		
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.96	0.96	0.96	0.98	0.98	0.98	
Adj. Flow (vph)	0	0	0	121	542	86	103	411	0	0	408	66	
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	0	0	22	0	
Lane Group Flow (vph)	0	0	0	0	722	0	103	411	0	0	452	0	
Confl. Peds. (#/hr)				164		113	522					522	
Confl. Bikes (#/hr)						6						10	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type				Perm			Prot						
Protected Phases					4		5	2			6		
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1583		133	1763			1181		
v/s Ratio Prot							c0.06	0.12			c0.14		
v/s Ratio Perm					0.16								
v/c Ratio					0.46		0.77	0.23			0.38		
Uniform Delay, d1					15.1		27.3	8.2			14.0		
Progression Factor					1.00		1.00	1.00			1.00		
Incremental Delay, d2					0.9		34.6	0.3			0.9		
Delay (s)					16.0		61.9	8.5			14.9		
Level of Service					B		E	A			B		
Approach Delay (s)		0.0			16.0			19.2			14.9		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			16.7		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.45										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			50.1%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street















Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	1433	524
v/c Ratio	0.43	0.45
Control Delay	6.0	10.2
Queue Delay	0.0	0.0
Total Delay	6.0	10.2
Queue Length 50th (ft)	59	21
Queue Length 95th (ft)	74	35
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3368	1158
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.45
Intersection Summary		

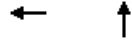
HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

Interim 2020  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	188	1044	0	0	0	0	0	383	120	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.98		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.96		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5449						4133		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5449						4133		
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96	
Adj. Flow (vph)	0	0	0	219	1214	0	0	0	0	0	399	125	
RTOR Reduction (vph)	0	0	0	0	54	0	0	0	0	0	56	0	
Lane Group Flow (vph)	0	0	0	0	1379	0	0	0	0	0	468	0	
Confl. Peds. (#/hr)				50								65	
Confl. Bikes (#/hr)												10	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					36.5						16.0		
Effective Green, g (s)					36.5						16.0		
Actuated g/C Ratio					0.61						0.27		
Clearance Time (s)					3.5						4.0		
Lane Grp Cap (vph)					3315						1102		
v/s Ratio Prot											c0.11		
v/s Ratio Perm					0.25								
v/c Ratio					0.42						0.42		
Uniform Delay, d1					6.2						18.2		
Progression Factor					1.00						0.57		
Incremental Delay, d2					0.4						1.2		
Delay (s)					6.5						11.6		
Level of Service					A						B		
Approach Delay (s)		0.0			6.5			0.0			11.6		
Approach LOS		A			A			A			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			7.9		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			39.2%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
13: 12th St & Oak Street



















Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	1076	1023
v/c Ratio	0.45	0.55
Control Delay	9.5	12.4
Queue Delay	0.0	0.0
Total Delay	9.5	12.4
Queue Length 50th (ft)	51	56
Queue Length 95th (ft)	72	80
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2382	1871
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.45	0.55
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	969	42	263	698	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.95				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5464			5183				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5464			5183				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1031	45	280	743	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1062	0	0	994	0	0	0	0
Confl. Peds. (#/hr)						151	217					
Confl. Bikes (#/hr)						9						
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					19.5			16.0				
Effective Green, g (s)					19.5			16.0				
Actuated g/C Ratio					0.43			0.36				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2368			1843				
v/s Ratio Prot					c0.19							
v/s Ratio Perm								0.19				
v/c Ratio					0.45			0.54				
Uniform Delay, d1					9.0			11.6				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.6			1.1				
Delay (s)					9.6			12.7				
Level of Service					A			B				
Approach Delay (s)		0.0			9.6			12.7			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			45.0				Sum of lost time (s)			9.5		
Intersection Capacity Utilization			40.8%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020

Timing Plan: AM PEAK












	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	459	1160	1680	1022
v/c Ratio	0.23	0.63	0.88	0.84
Control Delay	5.8	9.6	17.5	28.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.8	9.6	17.5	28.7
Queue Length 50th (ft)	28	119	234	127
Queue Length 95th (ft)	41	140	260	#169
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1955	1854	1911	1220
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.63	0.88	0.84

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020  
 Timing Plan: AM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	390	928	1344	880	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4569	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4569	
Peak-hour factor, PHF	0.85	0.85	0.80	0.80	0.87	0.87
Adj. Flow (vph)	0	459	1160	1680	1011	11
RTOR Reduction (vph)	0	5	0	0	1	0
Lane Group Flow (vph)	0	454	1160	1680	1021	0
Confl. Bikes (#/hr)		7				
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		36.0	36.0	36.0	16.0	
Effective Green, g (s)		36.0	36.0	36.0	16.0	
Actuated g/C Ratio		0.60	0.60	0.60	0.27	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1949	1854	1911	1218	
v/s Ratio Prot		0.14	0.38	c0.53	c0.22	
v/s Ratio Perm						
v/c Ratio		0.23	0.63	0.88	0.84	
Uniform Delay, d1		5.6	7.7	10.2	20.8	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3	1.6	6.2	7.0	
Delay (s)		5.9	9.3	16.3	27.7	
Level of Service		A	A	B	C	
Approach Delay (s)	5.9			13.4	27.7	
Approach LOS	A			B	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			16.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			55.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues

15: International Blvd & Lake Merritt Blvd

Interim 2020

Timing Plan: AM PEAK



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	313	45	431	140	1240
v/c Ratio	0.22	0.08	0.26	0.12	0.87
Control Delay	12.8	4.6	10.6	2.3	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	4.6	10.6	2.3	24.1
Queue Length 50th (ft)	39	0	50	0	217
Queue Length 95th (ft)	62	16	76	13	#346
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1426	553	1688	1210	1421
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.08	0.26	0.12	0.87
















Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Interim 2020  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	279	40	409	133	50	1054
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.95	1.00	0.87		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1267	3539	2384		3244
Flt Permitted	0.95	1.00	1.00	1.00		0.92
Satd. Flow (perm)	3433	1267	3539	2384		2978
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	313	45	431	140	56	1184
RTOR Reduction (vph)	0	26	0	73	0	0
Lane Group Flow (vph)	313	19	431	67	0	1240
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1426	526	1688	1137		1420
v/s Ratio Prot	c0.09		0.12			
v/s Ratio Perm		0.01		0.03		c0.42
v/c Ratio	0.22	0.04	0.26	0.06		0.87
Uniform Delay, d1	12.2	11.3	10.1	9.1		15.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	0.1	0.4	0.1		7.7
Delay (s)	12.6	11.4	10.5	9.2		22.9
Level of Service	B	B	B	A		C
Approach Delay (s)	12.4		10.2			22.9
Approach LOS	B		B			C

Intersection Summary			
HCM Average Control Delay		17.8	HCM Level of Service B
HCM Volume to Capacity ratio		0.57	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		88.9%	ICU Level of Service E
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Interim 2020  
Timing Plan: AM PEAK


















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	792	20	494	38	635
v/c Ratio	0.58	0.03	0.35	0.28	0.36
Control Delay	17.3	5.9	3.6	33.9	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	5.9	3.6	33.9	10.4
Queue Length 50th (ft)	121	0	10	15	73
Queue Length 95th (ft)	156	10	36	40	105
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1373	574	1404	136	1761
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.03	0.35	0.28	0.36

Intersection Summary





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Interim 2020  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	665	17	70	369	34	565
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.93	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.87		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1406	2987		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1406	2987		1770	3468
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.89	0.89
Adj. Flow (vph)	792	20	79	415	38	635
RTOR Reduction (vph)	0	12	255	0	0	0
Lane Group Flow (vph)	792	8	239	0	38	635
Confl. Peds. (#/hr)	19	82		33	33	
Confl. Bikes (#/hr)				5		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	25.0		5.0	33.0
Effective Green, g (s)	26.0	26.0	25.0		5.0	33.0
Actuated g/C Ratio	0.40	0.40	0.38		0.08	0.51
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1373	562	1149		136	1761
v/s Ratio Prot	c0.23		0.08		0.02	c0.18
v/s Ratio Perm		0.01				
v/c Ratio	0.58	0.01	0.21		0.28	0.36
Uniform Delay, d1	15.2	11.8	13.4		28.3	9.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	0.0	0.4		5.1	0.6
Delay (s)	17.0	11.8	13.8		33.4	10.2
Level of Service	B	B	B		C	B
Approach Delay (s)	16.9		13.8			11.5
Approach LOS	B		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			14.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			55.0%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Interim 2020  
Timing Plan: AM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	173	832	821	165
v/c Ratio	0.25	0.31	0.90	0.31
Control Delay	3.4	18.3	57.9	43.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	18.3	57.9	43.1
Queue Length 50th (ft)	0	111	216	55
Queue Length 95th (ft)	45	137	#286	88
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	679	2645	912	524
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.31	0.90	0.31

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 17: 11th St & Castro St

Interim 2020  
Timing Plan: AM PEAK



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	159	765	682	49	90	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.94	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1212	5432	4335		2939	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1212	5432	4335		2939	
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93
Adj. Flow (vph)	173	832	766	55	97	68
RTOR Reduction (vph)	89	0	7	0	0	0
Lane Group Flow (vph)	84	832	814	0	165	0
Confl. Peds. (#/hr)	37			5	37	5
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	56.0	56.0	24.0		20.5	
Effective Green, g (s)	56.0	56.0	24.0		20.5	
Actuated g/C Ratio	0.49	0.49	0.21		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	590	2645	905		524	
v/s Ratio Prot			c0.19		c0.06	
v/s Ratio Perm	0.07	0.15				
v/c Ratio	0.14	0.31	0.90		0.31	
Uniform Delay, d1	16.3	17.9	44.3		41.1	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.3	13.7		1.6	
Delay (s)	16.8	18.2	58.0		42.7	
Level of Service	B	B	E		D	
Approach Delay (s)		17.9	58.0		42.7	
Approach LOS		B	E		D	

### Intersection Summary

HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
18: 11th St & Broadway

Interim 2020  
Timing Plan: AM PEAK























	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	592	93	512	111	446
v/c Ratio	0.54	0.12	0.59	0.64	0.30
Control Delay	15.6	3.6	18.6	43.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	3.6	18.6	43.5	9.6
Queue Length 50th (ft)	76	0	68	36	43
Queue Length 95th (ft)	118	12	110	#97	68
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1089	806	872	174	1476
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.12	0.59	0.64	0.30

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
18: 11th St & Broadway

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 		 	 	
Volume (vph)	85	454	85	0	0	0	0	406	75	99	397	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frb, ped/bikes		1.00	0.85					0.95		1.00	1.00	
Flpb, ped/bikes		0.98	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2854	1960					2900		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2854	1960					2900		1593	3122	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	93	499	93	0	0	0	0	432	80	111	446	0
RTOR Reduction (vph)	0	0	57	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	592	36	0	0	0	0	484	0	111	446	0
Confl. Peds. (#/hr)	139		172						313	313		
Confl. Bikes (#/hr)			11						3			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1090	748					844		174	1476	
v/s Ratio Prot								c0.17		c0.07	0.14	
v/s Ratio Perm		0.21	0.02									
v/c Ratio		0.54	0.05					0.57		0.64	0.30	
Uniform Delay, d1		13.3	10.7					16.6		23.5	8.9	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		1.9	0.1					2.8		16.5	0.5	
Delay (s)		15.2	10.8					19.4		40.0	9.4	
Level of Service		B	B					B		D	A	
Approach Delay (s)		14.6			0.0			19.4			15.5	
Approach LOS		B			A			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.3									B
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			55.0							12.0		
Intersection Capacity Utilization			50.1%									A
Analysis Period (min)			15									












c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	27	509	556
v/c Ratio	0.04	0.43	0.32
Control Delay	11.0	10.7	9.6
Queue Delay	0.0	0.0	0.0
Total Delay	11.0	10.7	9.6
Queue Length 50th (ft)	6	48	31
Queue Length 95th (ft)	18	78	41
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	650	1192	1751
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.43	0.32
<b>Intersection Summary</b>			



HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Interim 2020  
 Timing Plan: AM PEAK

					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		 			  
Volume (vph)	25	314	129	51	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.91
Frbp, ped/bikes	1.00	0.98			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.96			1.00
Flt Protected	0.95	1.00			0.99
Satd. Flow (prot)	1593	2738			4287
Flt Permitted	0.95	1.00			0.99
Satd. Flow (perm)	1593	2738			4287
Peak-hour factor, PHF	0.92	0.87	0.87	0.89	0.89
Adj. Flow (vph)	27	361	148	57	499
RTOR Reduction (vph)	0	74	0	0	0
Lane Group Flow (vph)	27	435	0	0	556
Confl. Peds. (#/hr)			52	38	
Confl. Bikes (#/hr)			4		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	24.5	24.5			24.5
Effective Green, g (s)	24.5	24.5			24.5
Actuated g/C Ratio	0.41	0.41			0.41
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	650	1118			1751
v/s Ratio Prot		c0.16			
v/s Ratio Perm	0.02				0.13
v/c Ratio	0.04	0.39			0.32
Uniform Delay, d1	10.7	12.5			12.1
Progression Factor	1.00	1.00			0.75
Incremental Delay, d2	0.1	1.0			0.4
Delay (s)	10.8	13.5			9.5
Level of Service	B	B			A
Approach Delay (s)		13.4			9.5
Approach LOS		B			A

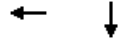
Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK




















Lane Group	WBT	SBT
Lane Group Flow (vph)	538	590
v/c Ratio	0.62	0.24
Control Delay	23.5	2.3
Queue Delay	0.0	0.0
Total Delay	23.5	2.3
Queue Length 50th (ft)	109	9
Queue Length 95th (ft)	146	16
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	861	2484
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.24
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 20: 10th St & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						  	
Volume (vph)	0	0	0	72	385	0	0	0	0	97	403	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						0.99	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					2951						4145	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					2951						4145	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	85	453	0	0	0	0	100	415	75
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	0	0	0	538	0	0	0	0	0	559	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					861						2452	
v/s Ratio Prot												
v/s Ratio Perm					0.18						0.13	
v/c Ratio					0.62						0.23	
Uniform Delay, d1					18.4						5.8	
Progression Factor					1.10						0.42	
Incremental Delay, d2					2.8						0.2	
Delay (s)					23.1						2.6	
Level of Service					C						A	
Approach Delay (s)		0.0			23.1			0.0			2.6	
Approach LOS		A			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.4		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			39.1%		ICU Level of Service					A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Interim 2020  
Timing Plan: AM PEAK




















	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	118	522	1164
v/c Ratio	0.18	0.69	0.34
Control Delay	16.5	23.4	1.5
Queue Delay	0.0	0.0	0.1
Total Delay	16.5	23.4	1.5
Queue Length 50th (ft)	11	78	10
Queue Length 95th (ft)	15	115	14
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	654	758	3451
Starvation Cap Reductn	0	0	708
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.18	0.69	0.42
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Interim 2020

Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			  					
Volume (vph)	10	62	0	0	339	99	110	852	97	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0					
Lane Util. Factor		0.95			0.95			0.86					
Frb, ped/bikes		1.00			0.99			0.99					
Flpb, ped/bikes		1.00			1.00			1.00					
Frt		1.00			0.97			0.99					
Flt Protected		0.99			1.00			0.99					
Satd. Flow (prot)		2961			2853			5551					
Flt Permitted		0.88			1.00			0.99					
Satd. Flow (perm)		2613			2853			5551					
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92	
Adj. Flow (vph)	16	102	0	0	404	118	121	936	107	0	0	0	
RTOR Reduction (vph)	0	0	0	0	45	0	0	28	0	0	0	0	
Lane Group Flow (vph)	0	118	0	0	477	0	0	1136	0	0	0	0	
Confl. Peds. (#/hr)	26					26	72		91				
Confl. Bikes (#/hr)						7			11				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0	
Parking (#/hr)		5			5	5	5		5				
Turn Type	Perm						Perm						
Protected Phases		2			2			1					
Permitted Phases	2						1						
Actuated Green, G (s)		15.0			15.0			37.0					
Effective Green, g (s)		15.0			15.0			37.0					
Actuated g/C Ratio		0.25			0.25			0.62					
Clearance Time (s)		4.0			4.0			4.0					
Lane Grp Cap (vph)		653			713			3423					
v/s Ratio Prot					c0.17								
v/s Ratio Perm		0.05						0.20					
v/c Ratio		0.18			0.67			0.33					
Uniform Delay, d1		17.7			20.3			5.5					
Progression Factor		0.88			1.00			0.23					
Incremental Delay, d2		0.6			4.9			0.3					
Delay (s)		16.2			25.2			1.6					
Level of Service		B			C			A					
Approach Delay (s)		16.2			25.2			1.6			0.0		
Approach LOS		B			C			A			A		

### Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group













Queues  
22: 9th Street & Webster Street

Interim 2020  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	124	71	1073
v/c Ratio	0.14	0.20	0.60
Control Delay	23.6	7.5	25.8
Queue Delay	0.0	0.0	1.5
Total Delay	23.6	7.5	27.3
Queue Length 50th (ft)	26	0	139
Queue Length 95th (ft)	45	27	157
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	360	1792
Starvation Cap Reductn	0	0	499
Spillback Cap Reductn	0	1	135
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.14	0.20	0.83
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑								↓	↓
Volume (vph)	0	104	60	0	0	0	0	0	0	147	744	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.86								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1034								5439	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1034								5439	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	124	71	0	0	0	0	0	0	177	896	0
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	0	0	39	0
Lane Group Flow (vph)	0	124	21	0	0	0	0	0	0	0	1034	0
Confl. Peds. (#/hr)			124							55		
Confl. Bikes (#/hr)			4									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	310								1753	
v/s Ratio Prot		c0.04										
v/s Ratio Perm			0.02								0.19	
v/c Ratio		0.14	0.07								0.59	
Uniform Delay, d1		23.0	22.5								25.5	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.3	0.4								1.5	
Delay (s)		23.3	22.9								27.0	
Level of Service		C	C								C	
Approach Delay (s)		23.2			0.0			0.0			27.0	
Approach LOS		C			A			A			C	

Intersection Summary		
HCM Average Control Delay	26.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.37	
Actuated Cycle Length (s)	90.0	Sum of lost time (s) 34.0
Intersection Capacity Utilization	43.6%	ICU Level of Service A
Analysis Period (min)	15	

c Critical Lane Group

Queues  
 23: 9th Street & Madison Street













Interim 2020  
 Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	257	521
v/c Ratio	0.24	0.20
Control Delay	11.3	3.9
Queue Delay	0.0	0.0
Total Delay	11.3	3.9
Queue Length 50th (ft)	15	9
Queue Length 95th (ft)	33	15
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1070	2595
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.20
Intersection Summary		



HCM Signalized Intersection Capacity Analysis  
23: 9th Street & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	142	97	0	0	0	0	0	0	67	412	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3969									4276	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3969									4276	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	153	104	0	0	0	0	0	0	73	448	0
RTOR Reduction (vph)	0	78	0	0	0	0	0	0	0	0	29	0
Lane Group Flow (vph)	0	179	0	0	0	0	0	0	0	0	492	0
Confl. Peds. (#/hr)			62								43	
Confl. Bikes (#/hr)			7									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		992									2566	
v/s Ratio Prot		c0.05										
v/s Ratio Perm											0.12	
v/c Ratio		0.18									0.19	
Uniform Delay, d1		17.7									5.4	
Progression Factor		1.00									0.80	
Incremental Delay, d2		0.4									0.2	
Delay (s)		18.1									4.5	
Level of Service		B									A	
Approach Delay (s)		18.1			0.0			0.0			4.5	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.0								A	
HCM Volume to Capacity ratio			0.19									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			30.4%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
24: 9th Street & Oak Street

Interim 2020  
Timing Plan: AM PEAK



















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	274	1066
v/c Ratio	0.22	0.31
Control Delay	8.4	2.6
Queue Delay	0.0	0.0
Total Delay	8.4	2.6
Queue Length 50th (ft)	10	20
Queue Length 95th (ft)	17	m22
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1218	3419
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.22	0.31

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

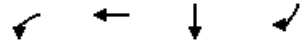
Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	98	126	0	0	0	0	0	921	60	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.86				
Frb, ped/bikes		1.00						1.00				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.99				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		4237						5517				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		4237						5517				
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	154	0	0	0	0	0	1001	65	0	0	0
RTOR Reduction (vph)	0	88	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	186	0	0	0	0	0	1050	0	0	0	0
Confl. Peds. (#/hr)	26								84			
Confl. Bikes (#/hr)									11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1130						3402				
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.04										
v/c Ratio		0.16						0.31				
Uniform Delay, d1		16.9						5.4				
Progression Factor		0.82						0.45				
Incremental Delay, d2		0.3						0.2				
Delay (s)		14.2						2.6				
Level of Service		B						A				
Approach Delay (s)		14.2			0.0			2.6			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			5.0								A	
HCM Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			43.5%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	423	1190	538	352
v/c Ratio	0.64	0.97	0.40	0.62
Control Delay	7.8	51.6	4.4	11.9
Queue Delay	0.0	0.0	0.2	14.8
Total Delay	7.8	51.6	4.6	26.7
Queue Length 50th (ft)	0	257	10	206
Queue Length 95th (ft)	56	#318	13	318
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	656	1227	1336	564
Starvation Cap Reductn	0	0	235	194
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.97	0.49	0.95





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 25: 8th Street & Webster Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	355	1000	0	0	0	0	0	473	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frbp, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1010
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1010
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	423	1190	0	0	0	0	0	538	352
RTOR Reduction (vph)	0	0	0	296	0	0	0	0	0	0	0	239
Lane Group Flow (vph)	0	0	0	127	1190	0	0	0	0	0	538	113
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	325
v/s Ratio Prot											c0.13	
v/s Ratio Perm				0.11	0.29							0.11
v/c Ratio				0.35	0.97						0.40	0.35
Uniform Delay, d1				24.7	31.1						23.8	23.3
Progression Factor				1.00	1.00						0.15	2.45
Incremental Delay, d2				2.7	19.4						0.8	2.4
Delay (s)				27.4	50.5						4.3	59.5
Level of Service				C	D						A	E
Approach Delay (s)		0.0			44.4			0.0			26.2	
Approach LOS		A			D			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			37.9	HCM Level of Service							D	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0		
Intersection Capacity Utilization			43.0%	ICU Level of Service						A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 26: 8th Street & Harrison Street

Interim 2020  
 Timing Plan: AM PEAK























Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1244	339	749
v/c Ratio	0.71	0.46	0.33
Control Delay	20.0	3.4	1.5
Queue Delay	0.0	0.5	0.0
Total Delay	20.0	3.9	1.5
Queue Length 50th (ft)	108	8	6
Queue Length 95th (ft)	109	13	8
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1740	730	2293
Starvation Cap Reductn	0	121	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.71	0.56	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  		 	  				
Volume (vph)	0	0	0	0	818	103	529	320	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.86		0.86	0.86				
Frbp, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.96	0.98				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	0.98				
Satd. Flow (prot)					5379		1320	4161				
Flt Permitted					1.00		0.95	0.98				
Satd. Flow (perm)					5379		1320	4161				
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1105	139	678	410	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	38	0	4	4	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1206	0	335	745	0	0	0	0
Confl. Peds. (#/hr)							88	65				
Confl. Bikes (#/hr)							7					
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)					5	5						
Turn Type							Perm					
Protected Phases					8			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		33.0	33.0				
Actuated g/C Ratio					0.32		0.55	0.55				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1703		726	2289				
v/s Ratio Prot					c0.22							
v/s Ratio Perm							c0.25	0.18				
v/c Ratio					0.71		0.46	0.33				
Uniform Delay, d1					18.1		8.1	7.4				
Progression Factor					1.00		0.19	0.16				
Incremental Delay, d2					2.5		1.8	0.3				
Delay (s)					20.6		3.3	1.5				
Level of Service					C		A	A				
Approach Delay (s)		0.0			20.6			2.1			0.0	
Approach LOS		A			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.9		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			37.2%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
27: 8th Street & Jackson Street

Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1045	341	353
v/c Ratio	0.69	0.51	0.43
Control Delay	17.9	14.3	9.2
Queue Delay	0.2	2.5	1.4
Total Delay	18.2	16.8	10.5
Queue Length 50th (ft)	113	125	62
Queue Length 95th (ft)	148	m163	90
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1518	670	814
Starvation Cap Reductn	0	213	275
Spillback Cap Reductn	88	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.73	0.75	0.65




















Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

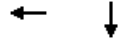
Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	58	784	99	99	208	0	0	211	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.0			4.0	
Lane Util. Factor					0.86			1.00			1.00	
Frb, ped/bikes					0.98			1.00			0.99	
Flpb, ped/bikes					0.99			0.99			1.00	
Frt					0.98			1.00			0.97	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					5241			1436			1410	
Flt Permitted					1.00			0.80			1.00	
Satd. Flow (perm)					5241			1165			1410	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	64	871	110	110	231	0	0	274	79
RTOR Reduction (vph)	0	0	0	0	34	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	1011	0	0	341	0	0	350	0
Confl. Peds. (#/hr)				129		97	51					51
Confl. Bikes (#/hr)						8						1
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)				5	5	5	5	5			5	5
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					17.0			34.0			34.0	
Effective Green, g (s)					17.0			34.5			34.5	
Actuated g/C Ratio					0.28			0.58			0.58	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					1485			670			811	
v/s Ratio Prot											0.25	
v/s Ratio Perm					0.19			c0.29				
v/c Ratio					0.68			0.51			0.43	
Uniform Delay, d1					19.1			7.7			7.2	
Progression Factor					0.86			1.52			1.00	
Incremental Delay, d2					1.9			1.7			1.7	
Delay (s)					18.4			13.3			8.9	
Level of Service					B			B			A	
Approach Delay (s)		0.0			18.4			13.3			8.9	
Approach LOS		A			B			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.5		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5		
Intersection Capacity Utilization			73.1%		ICU Level of Service					D		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 28: 8th Street & Madison Street















Interim 2020  
 Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	1541	522
v/c Ratio	0.67	0.26
Control Delay	11.2	3.6
Queue Delay	0.0	0.0
Total Delay	11.2	3.6
Queue Length 50th (ft)	52	16
Queue Length 95th (ft)	94	22
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	2307	2003
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	0.26
Intersection Summary		

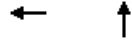
HCM Signalized Intersection Capacity Analysis  
28: 8th Street & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	500	903	0	0	0	0	0	448	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.86						0.91	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.99	
Flt Protected					0.98						1.00	
Satd. Flow (prot)					5356						4254	
Flt Permitted					0.98						1.00	
Satd. Flow (perm)					5356						4254	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	549	992	0	0	0	0	0	477	45
RTOR Reduction (vph)	0	0	0	0	166	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	1375	0	0	0	0	0	503	0
Confl. Peds. (#/hr)				36								34
Confl. Bikes (#/hr)												7
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								
Protected Phases					8						2	
Permitted Phases				8								
Actuated Green, G (s)					23.5						27.5	
Effective Green, g (s)					24.0						28.0	
Actuated g/C Ratio					0.40						0.47	
Clearance Time (s)					4.5						4.5	
Lane Grp Cap (vph)					2142						1985	
v/s Ratio Prot											c0.12	
v/s Ratio Perm					0.26							
v/c Ratio					0.64						0.25	
Uniform Delay, d1					14.5						9.7	
Progression Factor					0.86						0.37	
Incremental Delay, d2					0.9						0.3	
Delay (s)					13.4						3.8	
Level of Service					B						A	
Approach Delay (s)		0.0			13.4			0.0			3.8	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.9		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			52.4%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
29: 8th Street & Oak Street



















Interim 2020  
Timing Plan: AM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	1608	1064
v/c Ratio	0.83	0.38
Control Delay	22.1	3.9
Queue Delay	0.0	0.0
Total Delay	22.1	3.9
Queue Length 50th (ft)	145	13
Queue Length 95th (ft)	188	17
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1926	2815
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.83	0.38
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Interim 2020  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  			  					
Volume (vph)	0	0	0	0	1284	195	119	796	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0			4.0					
Lane Util. Factor					0.86			0.86					
Frb, ped/bikes					0.99			1.00					
Flpb, ped/bikes					1.00			0.99					
Frt					0.98			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					5374			5441					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					5374			5441					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	1396	212	138	926	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	46	0	0	2	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1563	0	0	1062	0	0	0	0	
Confl. Peds. (#/hr)						62	131						
Confl. Bikes (#/hr)						4							
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0	
Parking (#/hr)					5	5	5	5					
Turn Type							Perm						
Protected Phases					2			1					
Permitted Phases							1						
Actuated Green, G (s)					21.0			31.0					
Effective Green, g (s)					21.0			31.0					
Actuated g/C Ratio					0.35			0.52					
Clearance Time (s)					4.0			4.0					
Lane Grp Cap (vph)					1881			2811					
v/s Ratio Prot					c0.29								
v/s Ratio Perm								0.20					
v/c Ratio					0.83			0.38					
Uniform Delay, d1					17.9			8.7					
Progression Factor					1.00			0.41					
Incremental Delay, d2					4.4			0.3					
Delay (s)					22.3			3.9					
Level of Service					C			A					
Approach Delay (s)		0.0			22.3			3.9			0.0		
Approach LOS		A			C			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			15.0		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			46.4%		ICU Level of Service						A		
Analysis Period (min)			15										

c Critical Lane Group

Intersection Sign configuration not allowed in HCM analysis.













Queues  
31: 7th Street & Harrison Street

Interim 2020  
Timing Plan: AM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	422	1053	1682
v/c Ratio	0.21	0.58	0.68
Control Delay	9.1	15.6	1.6
Queue Delay	0.0	0.0	0.0
Total Delay	9.1	15.6	1.6
Queue Length 50th (ft)	28	104	0
Queue Length 95th (ft)	37	104	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2004	1831	2457
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.58	0.68
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	91	238	0	0	0	0	0	758	1211	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.98			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4259						4577	2457			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4259						4577	2457			
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.72	0.72	0.72	0.92	0.92	0.92
Adj. Flow (vph)	117	305	0	0	0	0	0	1053	1682	0	0	0
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	405	0	0	0	0	0	1053	1682	0	0	0
Confl. Peds. (#/hr)	12								29			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm								Free			
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		28.0						24.0	60.0			
Actuated g/C Ratio		0.47						0.40	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1988						1831	2457			
v/s Ratio Prot								0.23				
v/s Ratio Perm		0.10							c0.68			
v/c Ratio		0.20						0.58	0.68			
Uniform Delay, d1		9.4						14.0	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.2						1.3	1.6			
Delay (s)		9.7						15.3	1.6			
Level of Service		A						B	A			
Approach Delay (s)		9.7			0.0			6.9			0.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.2									A
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			60.0									0.0
Intersection Capacity Utilization			36.6%									A
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
32: 7th Street & Jackson Street

Interim 2020  
Timing Plan: AM PEAK

	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1271	361	358	306
v/c Ratio	0.56	0.54	0.82	0.74
Control Delay	6.9	4.0	36.9	35.8
Queue Delay	0.0	0.0	1.2	0.0
Total Delay	6.9	4.0	38.1	35.8
Queue Length 50th (ft)	70	4	112	108
Queue Length 95th (ft)	75	24	#247	m#203
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2269	673	436	415
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	86	0	14	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.54	0.85	0.74



















**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.

# HCM Signalized Intersection Capacity Analysis

## 32: 7th Street & Jackson Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	35	666	556	0	0	0	0	262	64	25	245	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frbp, ped/bikes		0.97	0.91					0.98			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.96	0.85					0.97			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3797	937					1403			1455	
Flt Permitted		1.00	1.00					1.00			0.95	
Satd. Flow (perm)		3797	937					1403			1384	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	45	865	722	0	0	0	0	288	70	28	278	0
RTOR Reduction (vph)	0	119	142	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	1152	219	0	0	0	0	343	0	0	306	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2152	531					421			415	
v/s Ratio Prot								c0.24				
v/s Ratio Perm		0.30	0.23								0.22	
v/c Ratio		0.54	0.41					0.82			0.74	
Uniform Delay, d1		8.1	7.4					19.5			18.9	
Progression Factor		0.96	0.92					1.00			1.26	
Incremental Delay, d2		0.8	1.9					15.9			10.0	
Delay (s)		8.5	8.7					35.3			33.7	
Level of Service		A	A					D			C	
Approach Delay (s)		8.5			0.0			35.3			33.7	
Approach LOS		A			A			D			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.1								B	
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			64.9%							C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 33: 7th Street & Madison Street

Interim 2020  
 Timing Plan: AM PEAK













	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	899	997
v/c Ratio	0.43	0.64
Control Delay	12.4	19.1
Queue Delay	0.0	0.3
Total Delay	12.4	19.4
Queue Length 50th (ft)	83	94
Queue Length 95th (ft)	110	130
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	2102	1547
Starvation Cap Reductn	0	130
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.70
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 33: 7th Street & Madison Street

Interim 2020

Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	486	269	0	0	0	0	0	0	160	788	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.98									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		4025									4270	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		4025									4270	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	579	320	0	0	0	0	0	0	168	829	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	877	0	0	0	0	0	0	0	0	946	0
Confl. Peds. (#/hr)			33								31	
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5								5	5
Turn Type										Perm		
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		31.0									22.0	
Effective Green, g (s)		31.0									21.0	
Actuated g/C Ratio		0.52									0.35	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		2080									1495	
v/s Ratio Prot		c0.22										
v/s Ratio Perm											0.22	
v/c Ratio		0.42									0.63	
Uniform Delay, d1		9.0									16.3	
Progression Factor		1.37									1.13	
Incremental Delay, d2		0.5									1.8	
Delay (s)		12.8									20.3	
Level of Service		B									C	
Approach Delay (s)		12.8			0.0			0.0			20.3	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
34: 7th Street & Oak Street

Interim 2020  
Timing Plan: AM PEAK




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	754	1200
v/c Ratio	0.31	0.64
Control Delay	6.7	13.2
Queue Delay	0.0	0.4
Total Delay	6.7	13.6
Queue Length 50th (ft)	7	100
Queue Length 95th (ft)	21	131
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2401	1874
Starvation Cap Reductn	0	232
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.31	0.73
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 34: 7th Street & Oak Street

Interim 2020

Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	131	518	0	0	0	0	0	784	248	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frb, ped/bikes		1.00						0.98				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.96				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5455						4105				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5455						4105				
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	152	602	0	0	0	0	0	912	288	0	0	0
RTOR Reduction (vph)	0	37	0	0	0	0	0	95	0	0	0	0
Lane Group Flow (vph)	0	717	0	0	0	0	0	1105	0	0	0	0
Confl. Peds. (#/hr)	26								75			
Confl. Bikes (#/hr)									3			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		25.0						25.0				
Effective Green, g (s)		26.0						26.0				
Actuated g/C Ratio		0.43						0.43				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2364						1779				
v/s Ratio Prot								c0.27				
v/s Ratio Perm		0.13										
v/c Ratio		0.30						0.62				
Uniform Delay, d1		11.1						13.2				
Progression Factor		0.63						1.00				
Incremental Delay, d2		0.3						1.6				
Delay (s)		7.3						14.8				
Level of Service		A						B				
Approach Delay (s)		7.3			0.0			14.8			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			41.4%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
35: 7th Street & 5th Ave

Interim 2020  
Timing Plan: AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	125	399	24	148	1240	485	522
v/c Ratio	1.09	0.18	0.04	0.36	0.81	0.97	0.75
Control Delay	136.7	11.7	5.1	15.8	21.8	53.7	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.7	11.7	5.1	15.8	21.8	53.7	22.5
Queue Length 50th (ft)	-57	34	0	38	216	170	156
Queue Length 95th (ft)	#147	50	11	80	296	#310	#313
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		50	110			
Base Capacity (vph)	115	2190	595	407	1523	500	698
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.18	0.04	0.36	0.81	0.97	0.75

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.

# HCM Signalized Intersection Capacity Analysis

## 35: 7th Street & 5th Ave

Interim 2020

Timing Plan: AM PEAK

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	34	76	351	21	141	1172	6	129	197	72	22	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95			1.00			1.00
Frbp, ped/bikes		1.00	1.00	0.97	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			0.98			0.95
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.98			1.00
Satd. Flow (prot)		1767	5085	1350	1765	3536			1559			1532
Flt Permitted		0.14	1.00	1.00	0.51	1.00			0.67			0.97
Satd. Flow (perm)		266	5085	1350	944	3536			1057			1492
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90
Adj. Flow (vph)	39	86	399	24	148	1234	6	157	240	88	24	301
RTOR Reduction (vph)	0	0	0	14	0	1	0	0	12	0	0	9
Lane Group Flow (vph)	0	125	399	10	148	1239	0	0	473	0	0	513
Confl. Peds. (#/hr)		10		4	4		10	8		3	3	
Confl. Bikes (#/hr)				1			2			4		
Parking (#/hr)				5				5	5	5	5	5
Turn Type	Perm	Perm		Perm	Perm			Perm				Perm
Protected Phases			1			1			2			2
Permitted Phases	1	1		1	1			2			2	
Actuated Green, G (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Effective Green, g (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Actuated g/C Ratio		0.43	0.43	0.43	0.43	0.43			0.46			0.46
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Grp Cap (vph)		115	2190	582	407	1523			488			689
v/s Ratio Prot			0.08			0.35						
v/s Ratio Perm		c0.47		0.01	0.16				c0.45			0.34
v/c Ratio		1.09	0.18	0.02	0.36	0.81			0.97			0.74
Uniform Delay, d1		18.5	11.4	10.6	12.5	16.2			17.0			14.4
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00			1.00
Incremental Delay, d2		109.2	0.2	0.1	2.5	4.9			33.6			7.2
Delay (s)		127.7	11.6	10.7	15.0	21.1			50.7			21.5
Level of Service		F	B	B	B	C			D			C
Approach Delay (s)			38.1			20.4			50.7			21.5
Approach LOS			D			C			D			C
<b>Intersection Summary</b>												
HCM Average Control Delay			28.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			7.0			
Intersection Capacity Utilization			103.6%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												





Movement	SBR
Lane Configurations	
Volume (vph)	177
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	0.90
Adj. Flow (vph)	197
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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	

Queues  
36: I-880 NB On-Ramp & Jackson Street

Interim 2020  
Timing Plan: AM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	8	719	263	243	566	480
v/c Ratio	0.01	1.07	1.58	0.39	0.86	0.79
Control Delay	8.3	75.2	307.0	15.1	27.2	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	75.2	307.0	15.1	27.2	21.9
Queue Length 50th (ft)	1	~219	~110	59	106	82
Queue Length 95th (ft)	7	#381	m#172	m89	#237	#195
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	166	619	657	606
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	0.01	1.07	1.58	0.39	0.86	0.79

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.

HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Interim 2020  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	7	647	0	237	219	0	0	129	729	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0	
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95	
Frbp, ped/bikes				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	
Frt				1.00	1.00		1.00	1.00			0.89	0.85	
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00	
Satd. Flow (prot)				1588	1676		1593	1467			1420	1300	
Flt Permitted				0.95	1.00		0.23	1.00			1.00	1.00	
Satd. Flow (perm)				1588	1676		393	1467			1420	1300	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82	
Adj. Flow (vph)	0	0	0	8	719	0	263	243	0	0	157	889	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	57	57	
Lane Group Flow (vph)	0	0	0	8	719	0	263	243	0	0	509	423	
Confl. Peds. (#/hr)				2		2							
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10	
Parking (#/hr)								5					
Turn Type				Perm			Perm					Perm	
Protected Phases					1			2			2		
Permitted Phases				1			2					2	
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5	
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0	
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42	
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5	
Lane Grp Cap (vph)				635	670		166	619			600	549	
v/s Ratio Prot					c0.43			0.17			0.36		
v/s Ratio Perm				0.01			c0.67					0.33	
v/c Ratio				0.01	1.07		1.58	0.39			0.85	0.77	
Uniform Delay, d1				8.1	13.5		13.0	9.0			11.7	11.1	
Progression Factor				1.00	1.00		1.39	1.43			1.00	1.00	
Incremental Delay, d2				0.0	56.1		284.2	1.5			13.9	10.0	
Delay (s)				8.2	69.6		302.3	14.3			25.6	21.1	
Level of Service				A	E		F	B			C	C	
Approach Delay (s)		0.0			68.9			164.0			23.6		
Approach LOS		A			E			F			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			69.2	HCM Level of Service						E			
HCM Volume to Capacity ratio			1.34										
Actuated Cycle Length (s)			45.0	Sum of lost time (s)					8.0				
Intersection Capacity Utilization			95.9%	ICU Level of Service					F				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
 37: 6th Street & Madison Street

Interim 2020  
 Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	362	1132
v/c Ratio	0.26	0.49
Control Delay	15.1	4.8
Queue Delay	0.0	0.1
Total Delay	15.1	4.9
Queue Length 50th (ft)	33	28
Queue Length 95th (ft)	52	37
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	1397	2319
Starvation Cap Reductn	0	262
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.26	0.55
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 37: 6th Street & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←						←←←	
Volume (vph)	0	0	0	20	298	0	0	0	0	0	594	447
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					4372						4013	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					4372						4013	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	23	339	0	0	0	0	0	646	486
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	111	0
Lane Group Flow (vph)	0	0	0	0	350	0	0	0	0	0	1021	0
Confl. Peds. (#/hr)				2		11						45
Confl. Bikes (#/hr)												9
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					19.0						33.0	
Effective Green, g (s)					19.0						33.0	
Actuated g/C Ratio					0.32						0.55	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					1384						2207	
v/s Ratio Prot											c0.25	
v/s Ratio Perm					0.08							
v/c Ratio					0.25						0.46	
Uniform Delay, d1					15.2						8.1	
Progression Factor					1.00						0.66	
Incremental Delay, d2					0.4						0.6	
Delay (s)					15.7						6.0	
Level of Service					B						A	
Approach Delay (s)		0.0			15.7			0.0			6.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.3								A	
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			44.6%							A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Interim 2020  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	731	507	317	27
v/c Ratio	0.71	0.37	0.52	0.04
Control Delay	18.1	8.6	12.2	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.1	8.6	12.2	0.1
Queue Length 50th (ft)	88	39	57	0
Queue Length 95th (ft)	m95	57	102	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	1030	1363	611	690
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.37	0.52	0.04

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
38: 6th Street & Oak Street

Interim 2020  
Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↑↑		←←	←	←
Volume (vph)	218	440	81	75	520	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.98		0.98	1.00	1.00
Satd. Flow (prot)		2934		2893	1297	1269
Flt Permitted		0.98		0.98	1.00	1.00
Satd. Flow (perm)		2934		2893	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	242	489	99	91	634	27
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	731	0	507	317	13
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		1030		1363	611	598
v/s Ratio Prot				0.18	c0.24	
v/s Ratio Perm		0.25				0.01
v/c Ratio		0.71		0.37	0.52	0.02
Uniform Delay, d1		12.6		7.6	8.3	6.4
Progression Factor		1.23		1.00	1.00	1.00
Incremental Delay, d2		2.0		0.8	3.1	0.1
Delay (s)		17.5		8.4	11.5	6.4
Level of Service		B		A	B	A
Approach Delay (s)		17.5		9.6		
Approach LOS		B		A		

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

## Queues

## 39: I-880 SB Off-Ramp &amp; Jackson Street

Interim 2020

Timing Plan: AM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1166	248	162
v/c Ratio	0.84	0.32	0.27
Control Delay	18.4	6.5	11.8
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	6.5	11.8
Queue Length 50th (ft)	73	27	33
Queue Length 95th (ft)	#144	51	m42
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1396	778	603
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	0.32	0.27


















## 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.



HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Interim 2020  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	273	415	362	0	0	0	0	171	32	73	63	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.95						0.98			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4101						1430			1429	
Flt Permitted		0.99						1.00			0.77	
Satd. Flow (perm)		4101						1430			1132	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	303	461	402	0	0	0	0	209	39	87	75	0
RTOR Reduction (vph)	0	212	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	954	0	0	0	0	0	233	0	0	162	0
Confl. Peds. (#/hr)	4								21			
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		13.0						24.0			24.0	
Actuated g/C Ratio		0.29						0.53			0.53	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1185						763			604	
v/s Ratio Prot								c0.16				
v/s Ratio Perm		0.23									0.14	
v/c Ratio		0.81						0.31			0.27	
Uniform Delay, d1		14.8						5.9			5.7	
Progression Factor		1.00						1.00			1.82	
Incremental Delay, d2		5.9						1.0			0.6	
Delay (s)		20.7						6.9			11.0	
Level of Service		C						A			B	
Approach Delay (s)		20.7			0.0			6.9			11.0	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.5								B	
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			61.8%								B	
Analysis Period (min)			15									

c Critical Lane Group













Queues  
40: 5th Street & Madison Street

Interim 2020  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	574	256	440
v/c Ratio	0.39	0.35	0.29
Control Delay	16.1	2.3	2.6
Queue Delay	0.0	0.1	0.0
Total Delay	16.1	2.4	2.6
Queue Length 50th (ft)	56	0	9
Queue Length 95th (ft)	80	0	12
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1460	724	1527
Starvation Cap Reductn	0	74	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.39	0.29
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
40: 5th Street & Madison Street

Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↙↑	
Volume (vph)	0	488	17	0	0	0	0	0	0	421	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.99	0.99	
Frt		1.00								1.00	1.00	
Flt Protected		1.00								0.95	0.97	
Satd. Flow (prot)		4362								1251	2757	
Flt Permitted		1.00								0.95	0.97	
Satd. Flow (perm)		4362								1251	2757	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	555	19	0	0	0	0	0	0	513	183	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	56	56	0
Lane Group Flow (vph)	0	568	0	0	0	0	0	0	0	200	384	0
Confl. Peds. (#/hr)			4							16		
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		20.0								32.0	32.0	
Effective Green, g (s)		20.0								32.0	32.0	
Actuated g/C Ratio		0.33								0.53	0.53	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		1454								667	1470	
v/s Ratio Prot		c0.13										
v/s Ratio Perm										c0.16	0.14	
v/c Ratio		0.39								0.30	0.26	
Uniform Delay, d1		15.3								7.8	7.6	
Progression Factor		1.00								0.24	0.40	
Incremental Delay, d2		0.8								1.0	0.4	
Delay (s)		16.1								2.9	3.4	
Level of Service		B								A	A	
Approach Delay (s)		16.1			0.0			0.0			3.2	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.0									A
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			44.6%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Interim 2020  
Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	940	562	126
v/c Ratio	0.43	1.14	0.26
Control Delay	7.3	106.4	16.5
Queue Delay	0.0	0.0	0.0
Total Delay	7.3	106.4	16.5
Queue Length 50th (ft)	45	~176	34
Queue Length 95th (ft)	67	#331	62
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2200	492	487
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	1.14	0.26

**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.

HCM Signalized Intersection Capacity Analysis  
41: 5th Street & Oak Street













Interim 2020  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	251	523	129	0	0	0	0	417	95	1	94	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4395						1423			1466	
Flt Permitted		0.99						1.00			1.00	
Satd. Flow (perm)		4395						1423			1462	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	261	545	134	0	0	0	0	458	104	1	125	0
RTOR Reduction (vph)	0	51	0	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	889	0	0	0	0	0	544	0	0	126	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2149						474			487	
v/s Ratio Prot								c0.38				
v/s Ratio Perm		0.20									0.09	
v/c Ratio		0.41						1.15			0.26	
Uniform Delay, d1		7.4						15.0			10.9	
Progression Factor		1.00						1.00			1.33	
Incremental Delay, d2		0.6						88.6			1.2	
Delay (s)		8.0						103.6			15.8	
Level of Service		A						F			B	
Approach Delay (s)		8.0			0.0			103.6			15.8	
Approach LOS		A			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			41.6									HCM Level of Service D
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			45.0								8.0	Sum of lost time (s)
Intersection Capacity Utilization			58.0%									ICU Level of Service B
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
42: Embarcadero W & Oak Street

Interim 2020  
Timing Plan: AM PEAK

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	0	0	0	0	0	0		
Sign Control	Stop			Free		Free		
Grade	0%			0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	0	0	0	0	0		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (ft)	1112							
pX, platoon unblocked								
vC, conflicting volume	0	0	0					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	0					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	100	100					
cM capacity (veh/h)	1023	1084	1622					
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	0	0	0	0	0	0	0	
Volume Left	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Queue Length 95th (ft)	0	0	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A	A						
Approach Delay (s)	0.0		0.0			0.0		
Approach LOS	A							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization			0.0%			ICU Level of Service		A
Analysis Period (min)	15							

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	6.9	33.1	0.15	15.9	C
Madison Street	IV	25	18.9	12.4	31.3	0.07	8.2	E
Oak Street	IV	25	19.3	6.7	26.0	0.07	10.1	D
Total	IV		64.4	26.0	90.4	0.29	11.5	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	22.1	38.1	0.06	5.7	F
Madison Street	IV	25	19.5	11.2	30.7	0.07	8.6	E
Jackson Street	IV	25	18.8	17.9	36.7	0.07	6.9	F
Alice Street	IV	25	19.7	9.2	28.9	0.07	9.3	D
Harrison Street	IV	25	19.0	20.0	39.0	0.07	6.6	F
Webster Street	IV	25	18.8	51.6	70.4	0.07	3.6	F
Total	IV		111.8	132.0	243.8	0.42	6.2	F

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	2.3	17.6	0.06	11.8	D
9th Street	IV	25	13.2	3.9	17.1	0.05	10.5	D
8th Street	IV	25	13.9	3.6	17.5	0.05	10.8	D
7th Street	IV	25	13.6	19.1	32.7	0.05	5.6	F
Total	IV		56.0	28.9	84.9	0.21	9.0	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	3.9	17.4	0.05	10.5	D
9th Street	IV	25	14.7	2.6	17.3	0.06	11.5	D
10th St	IV	25	13.3	1.5	14.8	0.05	12.2	D
11th St	IV	25	14.7	9.2	23.9	0.06	8.3	E
12th St	IV	25	12.5	12.4	24.9	0.05	6.8	F
Total	IV		68.7	29.6	98.3	0.26	9.5	D



Queues  
1: W Grand Ave & Broadway

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	1498	1194	219	567	193	99	509
v/c Ratio	1.95	0.98	1.99dl	0.77	0.42	0.41	0.39	0.39
Control Delay	482.9	42.5	274.3	42.4	18.4	19.1	22.5	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	482.9	42.5	274.3	42.4	18.4	19.1	22.5	16.3
Queue Length 50th (ft)	~162	394	~482	97	108	64	35	86
Queue Length 95th (ft)	#126	172	194	#222	151	122	77	122
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	99	1522	773	283	1349	468	257	1299
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	1.95	0.98	1.54	0.77	0.42	0.41	0.39	0.39

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
1: W Grand Ave & Broadway

Interim 2020  
Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	88	664	40	82	449	42	1	201	522	178	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frbp, ped/bikes		1.00	1.00			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		0.99	1.00			1.00			0.98	1.00	1.00	
Frft		1.00	0.99			0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1584	3146			3113			1566	3185	1087	
Flt Permitted		0.12	1.00			0.51			0.41	1.00	1.00	
Satd. Flow (perm)		205	3146			1590			669	3185	1087	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	187	1413	85	171	935	88	1	218	567	193	1
RTOR Reduction (vph)	0	0	5	0	0	7	0	0	0	0	8	0
Lane Group Flow (vph)	0	193	1493	0	0	1187	0	0	219	567	185	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Effective Green, g (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Actuated g/C Ratio		0.48	0.48			0.48			0.42	0.42	0.42	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		99	1517			767			283	1349	460	
v/s Ratio Prot			0.47							0.18		
v/s Ratio Perm		c0.94				0.75			c0.33		0.17	
v/c Ratio		1.95	0.98			1.99dl			0.77	0.42	0.40	
Uniform Delay, d1		22.0	21.7			22.0			21.0	17.2	17.0	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		461.8	19.2			253.0			18.4	1.0	2.6	
Delay (s)		483.8	40.9			275.0			39.4	18.1	19.6	
Level of Service		F	D			F			D	B	B	
Approach Delay (s)			91.4			275.0				23.2		
Approach LOS			F			F				C		
<b>Intersection Summary</b>												
HCM Average Control Delay			115.6			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.40									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			95.6%			ICU Level of Service			F			
Analysis Period (min)			15									

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 1: W Grand Ave & Broadway

Interim 2020  
Timing Plan: PM PEAK



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	86	324	124
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.98	
Flpb, ped/bikes	0.98	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1563	3003	
Flt Permitted	0.37	1.00	
Satd. Flow (perm)	607	3003	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	98	368	141
RTOR Reduction (vph)	0	27	0
Lane Group Flow (vph)	99	482	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	36.0	36.0	
Effective Green, g (s)	36.0	36.0	
Actuated g/C Ratio	0.42	0.42	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	257	1272	
v/s Ratio Prot		0.16	
v/s Ratio Perm	0.16		
v/c Ratio	0.39	0.38	
Uniform Delay, d1	16.9	16.8	
Progression Factor	1.00	1.00	
Incremental Delay, d2	4.3	0.9	
Delay (s)	21.2	17.7	
Level of Service	C	B	
Approach Delay (s)		18.3	
Approach LOS		B	
<b>Intersection Summary</b>			

Queues  
2: 20th St & Kaiser DWY

Interim 2020  
Timing Plan: PM PEAK















Lane Group	EBT	WBL	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	340	160	160	2	362	343	34
v/c Ratio	0.31	0.23	0.14	0.01	0.61	0.53	0.06
Control Delay	19.9	23.0	15.7	11.0	16.4	5.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	23.0	15.7	11.0	16.4	5.6	0.2
Queue Length 50th (ft)	38	28	24	0	78	0	0
Queue Length 95th (ft)	59	46	38	4	153	45	0
Internal Link Dist (ft)	337		517		577		
Turn Bay Length (ft)		120		90			
Base Capacity (vph)	1107	706	1138	348	595	644	572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.23	0.14	0.01	0.61	0.53	0.06

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑	↑		↔	↑			↑
Volume (vph)	0	256	40	130	130	2	103	12	491	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			1.00
Frbp, ped/bikes		0.99		1.00	1.00	0.71		1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.98		1.00	1.00	0.85		0.91	0.85			0.86
Flt Protected		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (prot)		4433		3090	3185	971		1419	1185			1450
Flt Permitted		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (perm)		4433		3090	3185	971		1419	1185			1450
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	294	46	160	160	2	120	14	571	0	0	34
RTOR Reduction (vph)	0	30	0	0	0	1	0	87	221	0	0	30
Lane Group Flow (vph)	0	310	0	160	160	1	0	275	123	0	0	4
Confl. Peds. (#/hr)			54			181	125					
Confl. Bikes (#/hr)			9									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5						5			
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		16.0	25.0	25.0		25.0	25.0			8.0
Effective Green, g (s)		17.0		16.0	25.0	25.0		25.0	25.0			8.0
Actuated g/C Ratio		0.24		0.23	0.36	0.36		0.36	0.36			0.11
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1077		706	1138	347		507	423			166
v/s Ratio Prot				c0.05	0.05			c0.19	0.10			0.00
v/s Ratio Perm		c0.07				0.00						
v/c Ratio		0.29		0.23	0.14	0.00		0.54	0.29			0.02
Uniform Delay, d1		21.6		22.0	15.2	14.5		17.9	16.1			27.5
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.7		0.7	0.3	0.0		4.1	1.7			0.3
Delay (s)		22.2		22.7	15.5	14.5		22.0	17.9			27.8
Level of Service		C		C	B	B		C	B			C
Approach Delay (s)		22.2			19.1			20.0			27.8	
Approach LOS		C			B			C			C	

### Intersection Summary

HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	83	1062	771
v/c Ratio	0.09	0.86	0.33
Control Delay	13.9	10.6	9.8
Queue Delay	0.0	0.0	0.0
Total Delay	13.9	10.6	9.8
Queue Length 50th (ft)	7	0	0
Queue Length 95th (ft)	30	#446	212
Internal Link Dist (ft)	259		346
Turn Bay Length (ft)			
Base Capacity (vph)	1689	1232	2410
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.05	0.86	0.32













Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 3: 19th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	75	956	0	0	0	0	677	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frb, ped/bikes					1.00	1.00					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1247					3178	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1247					3178	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	83	1062	0	0	0	0	761	10
RTOR Reduction (vph)	0	0	0	0	0	209	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	83	853	0	0	0	0	770	0
Confl. Peds. (#/hr)				22								22
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					5.6	34.7					26.6	
Effective Green, g (s)					5.6	34.7					26.6	
Actuated g/C Ratio					0.13	0.80					0.62	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					413	1002					1957	
v/s Ratio Prot					0.03						0.24	
v/s Ratio Perm						c0.68						
v/c Ratio					0.20	0.85					0.39	
Uniform Delay, d1					16.8	2.6					4.2	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.2	7.1					0.1	
Delay (s)					17.0	9.7					4.3	
Level of Service					B	A					A	
Approach Delay (s)		0.0			10.2			0.0			4.3	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.9		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			43.2		Sum of lost time (s)				8.5			
Intersection Capacity Utilization			69.1%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
4: 17th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK


















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	323	907
v/c Ratio	0.45	0.33
Control Delay	11.5	5.7
Queue Delay	0.0	0.5
Total Delay	11.5	6.2
Queue Length 50th (ft)	23	46
Queue Length 95th (ft)	55	65
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	710	2710
Starvation Cap Reductn	0	1245
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.45	0.62
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

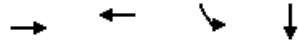
## 4: 17th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									  	
Volume (vph)	0	32	265	0	0	0	0	0	0	57	768	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.90									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.87									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2341									4370	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2341									4370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	35	288	0	0	0	0	0	0	63	844	0
RTOR Reduction (vph)	0	125	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	198	0	0	0	0	0	0	0	0	893	0
Confl. Peds. (#/hr)	34		78							8		18
Confl. Bikes (#/hr)			4						1			
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0									37.0	
Effective Green, g (s)		15.0									37.0	
Actuated g/C Ratio		0.25									0.62	
Clearance Time (s)		4.0									4.0	
Lane Grp Cap (vph)		585									2695	
v/s Ratio Prot		c0.08										
v/s Ratio Perm											0.20	
v/c Ratio		0.34									0.33	
Uniform Delay, d1		18.4									5.5	
Progression Factor		1.00									1.00	
Incremental Delay, d2		1.6									0.3	
Delay (s)		20.0									5.9	
Level of Service		B									A	
Approach Delay (s)		20.0			0.0			0.0			5.9	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.6									A
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			52.7%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	639	673	455	930
v/c Ratio	0.35	0.42	1.23	1.10
Control Delay	6.9	10.6	151.9	89.5
Queue Delay	0.0	0.0	0.0	30.1
Total Delay	6.9	10.6	151.9	119.6
Queue Length 50th (ft)	53	58	~219	~216
Queue Length 95th (ft)	80	89	#348	#293
Internal Link Dist (ft)	285	315		1054
Turn Bay Length (ft)				
Base Capacity (vph)	1832	1590	370	845
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	8	7	0	51
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.43	1.23	1.17




















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.

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	538	69	57	501	0	0	0	0	382	765	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0					4.5	4.5	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frbp, ped/bikes		0.99			1.00					1.00	1.00	
Flpb, ped/bikes		1.00			1.00					0.94	1.00	
Frt		0.98			1.00					1.00	1.00	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3090			3157					1307	2973	
Flt Permitted		1.00			0.85					0.95	1.00	
Satd. Flow (perm)		3090			2688					1307	2973	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	566	73	69	604	0	0	0	0	455	911	19
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	636	0	0	673	0	0	0	0	455	928	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4							2	
Actuated Green, G (s)		35.5			35.5					17.0	17.0	
Effective Green, g (s)		35.5			35.5					17.0	17.0	
Actuated g/C Ratio		0.59			0.59					0.28	0.28	
Clearance Time (s)		3.0			3.0					4.5	4.5	
Lane Grp Cap (vph)		1828			1590					370	842	
v/s Ratio Prot		0.21									0.31	
v/s Ratio Perm					c0.25					c0.35		
v/c Ratio		0.35			0.42					1.23	1.10	
Uniform Delay, d1		6.3			6.7					21.5	21.5	
Progression Factor		1.00			1.44					1.21	1.21	
Incremental Delay, d2		0.5			0.7					124.4	62.4	
Delay (s)		6.8			10.3					150.3	88.4	
Level of Service		A			B					F	F	
Approach Delay (s)		6.8			10.3			0.0			108.7	
Approach LOS		A			B			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			60.0			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				7.5		
Intersection Capacity Utilization			71.4%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1000	532	761	687	37
v/c Ratio	1.58	0.63	1.38	0.39	0.05
Control Delay	287.9	23.3	199.8	6.5	4.3
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	287.9	23.3	199.8	6.7	4.3
Queue Length 50th (ft)	~291	88	~301	46	2
Queue Length 95th (ft)	m#318	115	#405	68	7
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	634	849	552	1771	689
Starvation Cap Reductn	0	0	0	404	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.58	0.63	1.38	0.50	0.05













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.

# HCM Signalized Intersection Capacity Analysis

## 6: 14th St & Oak Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕↕	↗		↔↔	↗			
Volume (vph)	63	857	0	0	426	609	132	514	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frb, ped/bikes		1.00			1.00	0.94		1.00	0.97			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2913			3185	1333		3126	1209			
Flt Permitted		0.81			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2376			3185	1333		3126	1209			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	68	932	0	0	532	761	140	547	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	197	0	0	3	0	0	0
Lane Group Flow (vph)	0	1000	0	0	532	564	0	687	34	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		16.0			16.0	16.0		34.0	34.0			
Effective Green, g (s)		16.0			16.0	16.0		34.0	34.0			
Actuated g/C Ratio		0.27			0.27	0.27		0.57	0.57			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		634			849	355		1771	685			
v/s Ratio Prot					0.17							
v/s Ratio Perm		0.42				c0.42		0.22	0.03			
v/c Ratio		1.58			0.63	1.59		0.39	0.05			
Uniform Delay, d1		22.0			19.4	22.0		7.2	5.8			
Progression Factor		1.05			1.00	1.00		0.79	0.82			
Incremental Delay, d2		264.7			3.5	278.5		0.6	0.1			
Delay (s)		287.7			22.9	300.5		6.3	4.9			
Level of Service		F			C	F		A	A			
Approach Delay (s)		287.7			186.3			6.3			0.0	
Approach LOS		F			F			A			A	

Intersection Summary		
HCM Average Control Delay	176.7	HCM Level of Service F
HCM Volume to Capacity ratio	0.77	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 10.0
Intersection Capacity Utilization	114.1%	ICU Level of Service H
Analysis Period (min)	15	

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1128	1157
v/c Ratio	0.75	0.44
Control Delay	21.7	7.2
Queue Delay	0.0	3.2
Total Delay	21.7	10.4
Queue Length 50th (ft)	97	107
Queue Length 95th (ft)	105	m81
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1514	2602
Starvation Cap Reductn	0	1311
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.75	0.90

**Intersection Summary**















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

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street

Interim 2020

Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	681	188	0	0	0	0	0	0	131	760	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5374									4328	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5374									4328	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	884	244	0	0	0	0	0	0	170	987	0
RTOR Reduction (vph)	0	80	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1048	0	0	0	0	0	0	0	0	1153	0
Confl. Peds. (#/hr)	14		11							38		28
Confl. Bikes (#/hr)			4									8
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1433									2597	
v/s Ratio Prot		c0.20										
v/s Ratio Perm											0.27	
v/c Ratio		0.73									0.44	
Uniform Delay, d1		20.0									6.5	
Progression Factor		1.00									1.06	
Incremental Delay, d2		3.3									0.2	
Delay (s)		23.4									7.2	
Level of Service		C									A	
Approach Delay (s)		23.4			0.0			0.0			7.2	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.2		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			52.3%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
8: 13th St & Oak Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	114	973	638	212
v/c Ratio	0.27	0.83	0.24	0.29
Control Delay	20.0	37.2	5.9	7.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.0	37.2	5.9	7.0
Queue Length 50th (ft)	21	121	34	31
Queue Length 95th (ft)	m29	127	49	62
Internal Link Dist (ft)		132	231	
Turn Bay Length (ft)	50			
Base Capacity (vph)	422	1170	2632	728
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.83	0.24	0.29

Intersection Summary





















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



# HCM Signalized Intersection Capacity Analysis

## 8: 13th St & Oak Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	81	691	0	0	0	0	0	606	201	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0	3.0			
Lane Util. Factor	1.00	0.91						0.91	1.00			
Frbp, ped/bikes	1.00	1.00						1.00	0.97			
Flpb, ped/bikes	0.98	1.00						1.00	1.00			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1367	4386						4386	1209			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1367	4386						4386	1209			
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	114	973	0	0	0	0	0	638	212	0	0	0
RTOR Reduction (vph)	58	0	0	0	0	0	0	0	2	0	0	0
Lane Group Flow (vph)	56	973	0	0	0	0	0	638	210	0	0	0
Confl. Peds. (#/hr)	17		17				86		18			
Confl. Bikes (#/hr)			1						27			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm								Perm			
Protected Phases		2						1				
Permitted Phases	2								1			
Actuated Green, G (s)	16.0	16.0						36.0	36.0			
Effective Green, g (s)	16.0	16.0						36.0	36.0			
Actuated g/C Ratio	0.27	0.27						0.60	0.60			
Clearance Time (s)	5.0	5.0						3.0	3.0			
Lane Grp Cap (vph)	365	1170						2632	725			
v/s Ratio Prot		c0.22						0.15				
v/s Ratio Perm	0.04								c0.17			
v/c Ratio	0.15	0.83						0.24	0.29			
Uniform Delay, d1	16.8	20.7						5.6	5.8			
Progression Factor	2.40	1.51						1.00	1.00			
Incremental Delay, d2	0.7	5.2						0.2	1.0			
Delay (s)	41.1	36.4						5.8	6.8			
Level of Service	D	D						A	A			
Approach Delay (s)		36.9			0.0			6.1			0.0	
Approach LOS		D			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.4				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			82.9%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	975	51	1203	1174
v/c Ratio	0.81	0.10	0.55	0.86
Control Delay	20.0	4.1	4.0	19.9
Queue Delay	0.0	0.0	2.1	0.0
Total Delay	20.0	4.1	6.2	19.9
Queue Length 50th (ft)	113	0	27	129
Queue Length 95th (ft)	#175	14	m28	147
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1203	503	2181	1373
Starvation Cap Reductn	0	0	794	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.10	0.87	0.86













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.

# HCM Signalized Intersection Capacity Analysis

## 9: 13th St & Lake Merritt Blvd

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	848	44	0	0	1035	0	0	0	892	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frb, ped/bikes		1.00	1.00			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Fr t		1.00	0.85			0.85				1.00		
Fl t Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1247			2508				3090		
Fl t Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1247			2508				3090		
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.25	0.25	0.25	0.76	0.76	0.76
Adj. Flow (vph)	0	975	51	0	0	1203	0	0	0	1174	0	0
RTOR Reduction (vph)	0	0	32	0	0	668	0	0	0	0	0	0
Lane Group Flow (vph)	0	975	19	0	0	535	0	0	0	1174	0	0
Confl. Peds. (#/hr)	20					20						
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		17.0	17.0			20.0				20.0		
Effective Green, g (s)		17.0	17.0			20.0				20.0		
Actuated g/C Ratio		0.38	0.38			0.44				0.44		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1203	471			1115				1373		
v/s Ratio Prot						0.21				c0.38		
v/s Ratio Perm		c0.31	0.02									
v/c Ratio		0.81	0.04			0.48				0.86		
Uniform Delay, d1		12.6	8.8			8.8				11.2		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		6.0	0.2			0.7				7.0		
Delay (s)		18.5	9.0			9.5				18.2		
Level of Service		B	A			A				B		
Approach Delay (s)		18.1			9.5			0.0			18.2	
Approach LOS		B			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			61.0%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Interim 2020  
Timing Plan: PM PEAK














	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	119	284	392	1224
v/c Ratio	0.03	0.23	0.20	0.35	1.45
Control Delay	0.0	7.8	22.3	23.6	235.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	7.8	22.3	23.6	235.2
Queue Length 50th (ft)	0	7	41	54	-464
Queue Length 95th (ft)	0	40	58	81	#589
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	463	524	1400	1109	846
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.23	0.20	0.35	1.45

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Interim 2020  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	101	241	295	62	1068	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1337	1485	4577	4235		3058	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1337	1485	4577	4235		3058	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	119	284	324	68	1112	112
RTOR Reduction (vph)	8	69	0	38	0	0	0
Lane Group Flow (vph)	4	50	284	354	0	1224	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	26.0	26.0	26.0	21.5		23.5	
Effective Green, g (s)	26.0	26.0	26.0	21.5		23.5	
Actuated g/C Ratio	0.31	0.31	0.31	0.25		0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	409	454	1400	1071		845	
v/s Ratio Prot			c0.06	c0.08		c0.40	
v/s Ratio Perm	0.00	0.03					
v/c Ratio	0.01	0.11	0.20	0.33		1.45	
Uniform Delay, d1	20.5	21.2	21.8	25.9		30.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.5	0.3	0.8		208.5	
Delay (s)	20.6	21.7	22.2	26.7		239.2	
Level of Service	C	C	C	C		F	
Approach Delay (s)			22.0	26.7		239.2	
Approach LOS			C	C		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			153.8		HCM Level of Service		F
HCM Volume to Capacity ratio			0.65				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			68.2%		ICU Level of Service		C
Analysis Period (min)			15				

c Critical Lane Group

Queues  
11: 12th St & Broadway

Interim 2020  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1187	138	486	800
v/c Ratio	0.82	1.16	0.31	0.73
Control Delay	23.4	164.5	9.3	20.7
Queue Delay	0.0	0.0	0.0	0.6
Total Delay	23.4	164.5	9.3	21.3
Queue Length 50th (ft)	136	-61	49	123
Queue Length 95th (ft)	134	#155	76	171
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1448	119	1587	1089
Starvation Cap Reductn	0	0	0	77
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	1.16	0.31	0.79

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.

HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

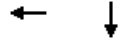
Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↑	↑↑			↑↑	
Volume (vph)	0	0	0	158	585	112	126	442	0	0	598	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.5			4.5	
Lane Util. Factor					0.91		1.00	0.95			0.95	
Frbp, ped/bikes					0.99		1.00	1.00			0.95	
Flpb, ped/bikes					0.98		1.00	1.00			1.00	
Frt					0.98		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4090		1593	3122			2918	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					4090		1593	3122			2918	
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.91	0.91	0.91	0.86	0.86	0.86
Adj. Flow (vph)	0	0	0	219	812	156	138	486	0	0	695	105
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	1170	0	138	486	0	0	780	0
Confl. Peds. (#/hr)				125		48	446		455	455		446
Confl. Bikes (#/hr)						6			10			9
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10
Parking (#/hr)				5	5	5						
Turn Type					Perm			Prot				
Protected Phases						4		5	2			6
Permitted Phases				4								
Actuated Green, G (s)					21.0		4.5	30.5			22.0	
Effective Green, g (s)					21.0		4.5	30.5			22.0	
Actuated g/C Ratio					0.35		0.08	0.51			0.37	
Clearance Time (s)					4.0		4.0	4.5			4.5	
Lane Grp Cap (vph)					1432		119	1587			1070	
v/s Ratio Prot							c0.09	0.16			c0.27	
v/s Ratio Perm					0.29							
v/c Ratio					0.82		1.16	0.31			0.73	
Uniform Delay, d1					17.8		27.8	8.6			16.4	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					5.3		131.8	0.5			4.4	
Delay (s)					23.0		159.5	9.1			20.8	
Level of Service					C		F	A			C	
Approach Delay (s)		0.0			23.0			42.4			20.8	
Approach LOS		A			C			D			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			27.0		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5		
Intersection Capacity Utilization			60.4%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	1280	1105
v/c Ratio	0.42	0.80
Control Delay	8.1	16.6
Queue Delay	0.0	0.0
Total Delay	8.1	16.6
Queue Length 50th (ft)	68	68
Queue Length 95th (ft)	84	104
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3029	1380
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.42	0.80
Intersection Summary		



HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

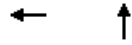
Interim 2020  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					4TTL						4TTL		
Volume (vph)	0	0	0	208	893	0	0	0	0	0	815	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5411						4288		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5411						4288		
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.82	0.82	0.82	
Adj. Flow (vph)	0	0	0	242	1038	0	0	0	0	0	994	111	
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	23	0	
Lane Group Flow (vph)	0	0	0	0	1273	0	0	0	0	0	1082	0	
Confl. Peds. (#/hr)				69		76						45	
Confl. Bikes (#/hr)						5						15	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					33.5						19.0		
Effective Green, g (s)					33.5						19.0		
Actuated g/C Ratio					0.56						0.32		
Clearance Time (s)					3.5						4.0		
Lane Grp Cap (vph)					3021						1358		
v/s Ratio Prot											c0.25		
v/s Ratio Perm					0.24								
v/c Ratio					0.42						0.80		
Uniform Delay, d1					7.7						18.7		
Progression Factor					1.00						0.64		
Incremental Delay, d2					0.4						4.4		
Delay (s)					8.1						16.3		
Level of Service					A						B		
Approach Delay (s)		0.0			8.1			0.0			16.3		
Approach LOS		A			A			A			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.9		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			44.7%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
13: 12th St & Oak Street















Interim 2020  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	1275	930
v/c Ratio	0.54	0.48
Control Delay	10.4	11.9
Queue Delay	0.0	0.0
Total Delay	10.4	11.9
Queue Length 50th (ft)	64	50
Queue Length 95th (ft)	81	71
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2357	1937
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.48
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	990	81	108	720	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.98				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5416			5395				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5416			5395				
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1179	96	121	809	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1266	0	0	913	0	0	0	0
Confl. Peds. (#/hr)						140	166		148			
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					19.5			16.0				
Effective Green, g (s)					19.5			16.0				
Actuated g/C Ratio					0.43			0.36				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2347			1918				
v/s Ratio Prot					c0.23							
v/s Ratio Perm								0.17				
v/c Ratio					0.54			0.48				
Uniform Delay, d1					9.4			11.2				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.9			0.8				
Delay (s)					10.3			12.1				
Level of Service					B			B				
Approach Delay (s)		0.0			10.3			12.1			0.0	
Approach LOS		A			B			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			45.0				Sum of lost time (s)			9.5		
Intersection Capacity Utilization			39.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020

Timing Plan: PM PEAK

	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	798	1094	1151	1977
v/c Ratio	0.61	0.89	0.90	1.02
Control Delay	13.2	24.2	25.7	35.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	24.2	25.7	35.9
Queue Length 50th (ft)	67	127	138	~158
Queue Length 95th (ft)	101	#236	#254	m#280
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1302	1236	1274	1932
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.89	0.90	1.02

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.

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020  
 Timing Plan: PM PEAK

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑	
Volume (vph)	0	702	985	1036	1730	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4573	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4573	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	798	1094	1151	1966	11
RTOR Reduction (vph)	0	2	0	0	1	0
Lane Group Flow (vph)	0	796	1094	1151	1976	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		18.0	18.0	18.0	19.0	
Effective Green, g (s)		18.0	18.0	18.0	19.0	
Actuated g/C Ratio		0.40	0.40	0.40	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1300	1236	1274	1931	
v/s Ratio Prot		0.24	0.35	c0.36	c0.43	
v/s Ratio Perm						
v/c Ratio		0.61	0.89	0.90	1.02	
Uniform Delay, d1		10.7	12.5	12.7	13.0	
Progression Factor		1.00	1.00	1.00	0.88	
Incremental Delay, d2		2.2	9.5	10.6	21.1	
Delay (s)		12.9	22.0	23.3	32.5	
Level of Service		B	C	C	C	
Approach Delay (s)	12.9			22.7	32.5	
Approach LOS	B			C	C	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues

15: International Blvd & Lake Merritt Blvd

Interim 2020

Timing Plan: PM PEAK


















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	508	81	1302	626	1106
v/c Ratio	0.36	0.15	0.77	0.44	0.98
Control Delay	13.9	11.2	18.0	2.0	42.8
Queue Delay	0.0	0.0	66.5	0.2	0.0
Total Delay	13.9	11.2	84.4	2.2	42.8
Queue Length 50th (ft)	68	16	211	0	213
Queue Length 95th (ft)	98	39	289	26	#316
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1426	529	1688	1436	1123
Starvation Cap Reductn	0	0	548	231	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.15	1.14	0.52	0.98

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Interim 2020  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	447	71	1250	601	50	879
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.94	1.00	0.85		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1255	3539	2325		3243
Flt Permitted	0.95	1.00	1.00	1.00		0.72
Satd. Flow (perm)	3433	1255	3539	2325		2354
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.84	0.84
Adj. Flow (vph)	508	81	1302	626	60	1046
RTOR Reduction (vph)	0	8	0	327	0	0
Lane Group Flow (vph)	508	73	1302	299	0	1106
Confl. Peds. (#/hr)		63		103		
Confl. Bikes (#/hr)				33		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1426	521	1688	1109		1123
v/s Ratio Prot	c0.15		0.37			
v/s Ratio Perm		0.06		0.13		c0.47
v/c Ratio	0.36	0.14	0.77	0.27		0.98
Uniform Delay, d1	13.0	11.8	14.1	10.2		16.8
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.7	0.6	3.5	0.6		23.5
Delay (s)	13.7	12.4	17.5	10.8		40.2
Level of Service	B	B	B	B		D
Approach Delay (s)	13.5		15.4			40.2
Approach LOS	B		B			D

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

## Queues

## 16: E 18th St &amp; Lakeshore Ave

Interim 2020

Timing Plan: PM PEAK



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	571	36	1248	114	336
v/c Ratio	0.43	0.06	0.74	0.60	0.19
Control Delay	16.0	5.3	8.2	42.6	8.5
Queue Delay	0.0	0.0	0.5	0.0	0.0
Total Delay	16.0	5.3	8.7	42.6	8.5
Queue Length 50th (ft)	83	0	55	44	34
Queue Length 95th (ft)	113	14	124	#102	52
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1320	560	1681	191	1814
Starvation Cap Reductn	0	0	136	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.06	0.81	0.60	0.19
















## Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Interim 2020  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	485	31	344	792	100	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.92	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Fr t	1.00	0.85	0.90		1.00	1.00
Fl t Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1398	3068		1770	3468
Fl t Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1398	3068		1770	3468
Peak-hour factor, PHF	0.85	0.85	0.91	0.91	0.88	0.88
Adj. Flow (vph)	571	36	378	870	114	336
RTOR Reduction (vph)	0	22	549	0	0	0
Lane Group Flow (vph)	571	14	699	0	114	336
Confl. Peds. (#/hr)	28	89		24	24	
Confl. Bikes (#/hr)				25		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0	24.0		7.0	34.0
Effective Green, g (s)	25.0	25.0	24.0		7.0	34.0
Actuated g/C Ratio	0.38	0.38	0.37		0.11	0.52
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1320	538	1133		191	1814
v/s Ratio Prot	c0.17		c0.23		c0.06	0.10
v/s Ratio Perm		0.01				
v/c Ratio	0.43	0.03	0.62		0.60	0.19
Uniform Delay, d1	14.8	12.4	16.7		27.7	8.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	2.5		13.0	0.2
Delay (s)	15.8	12.5	19.3		40.7	8.4
Level of Service	B	B	B		D	A
Approach Delay (s)	15.6		19.3			16.6
Approach LOS	B		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			17.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			73.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Interim 2020  
Timing Plan: PM PEAK


















Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	201	564	1546	103
v/c Ratio	0.42	0.38	0.94	0.19
Control Delay	6.8	26.2	38.1	30.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.8	26.2	38.1	30.6
Queue Length 50th (ft)	0	75	285	24
Queue Length 95th (ft)	51	95	#318	42
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	479	1470	1648	540
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.38	0.94	0.19

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Interim 2020  
 Timing Plan: PM PEAK

						
Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations		  	  			 
Volume (vph)	171	479	1271	28	56	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.95	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1229	5432	4370		2959	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1229	5432	4370		2959	
Peak-hour factor, PHF	0.85	0.85	0.84	0.84	0.83	0.83
Adj. Flow (vph)	201	564	1513	33	67	36
RTOR Reduction (vph)	147	0	2	0	0	0
Lane Group Flow (vph)	54	564	1544	0	103	0
Confl. Peds. (#/hr)	39			8		8
Confl. Bikes (#/hr)				1		
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	23.0	23.0	32.0		15.5	
Effective Green, g (s)	23.0	23.0	32.0		15.5	
Actuated g/C Ratio	0.27	0.27	0.38		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	333	1470	1645		540	
v/s Ratio Prot			c0.35		c0.03	
v/s Ratio Perm	0.04	0.10				
v/c Ratio	0.16	0.38	0.94		0.19	
Uniform Delay, d1	23.7	25.2	25.5		29.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.1	0.8	11.7		0.8	
Delay (s)	24.7	26.0	37.3		30.2	
Level of Service	C	C	D		C	
Approach Delay (s)		25.7	37.3		30.2	
Approach LOS		C	D		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			33.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			61.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
18: 11th St & Broadway

Interim 2020  
Timing Plan: PM PEAK























	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	625	157	610	143	673
v/c Ratio	0.57	0.26	0.71	0.82	0.46
Control Delay	15.9	11.9	21.5	63.4	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay	15.9	11.9	21.5	63.4	11.6
Queue Length 50th (ft)	82	17	86	47	72
Queue Length 95th (ft)	126	37	134	#131	109
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1097	598	864	174	1476
Starvation Cap Reductn	0	0	0	0	424
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.57	0.26	0.71	0.82	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 18: 11th St & Broadway

Interim 2020  
 Timing Plan: PM PEAK












												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 		 	 	
Volume (vph)	99	489	148	0	0	0	0	457	86	129	606	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.67					0.94		1.00	1.00	
Flpb, ped/bikes		0.99	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2873	1541					2874		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2873	1541					2874		1593	3122	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	105	520	157	0	0	0	0	513	97	143	673	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	625	147	0	0	0	0	582	0	143	673	0
Confl. Peds. (#/hr)	77		535					490		535	535	490
Confl. Bikes (#/hr)			6							9		16
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1097	588					836		174	1476	
v/s Ratio Prot								c0.20		c0.09	0.22	
v/s Ratio Perm		0.22	0.10									
v/c Ratio		0.57	0.25					0.70		0.82	0.46	
Uniform Delay, d1		13.4	11.6					17.3		24.0	9.7	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		2.1	1.0					4.8		33.6	1.0	
Delay (s)		15.6	12.6					22.1		57.6	10.8	
Level of Service		B	B					C		E	B	
Approach Delay (s)		15.0			0.0			22.1			19.0	
Approach LOS		B			A			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.4									HCM Level of Service B
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			55.0								12.0	
Intersection Capacity Utilization			60.4%									ICU Level of Service B
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	838	1221
v/c Ratio	0.17	0.76	0.67
Control Delay	12.9	21.1	6.0
Queue Delay	0.0	0.0	0.4
Total Delay	12.9	21.1	6.4
Queue Length 50th (ft)	24	130	36
Queue Length 95th (ft)	52	164	41
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	624	1099	1823
Starvation Cap Reductn	0	0	192
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	0.76	0.75
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Interim 2020  
 Timing Plan: PM PEAK

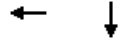
					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		 			  
Volume (vph)	97	509	170	96	917
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.91
Frb, ped/bikes	1.00	0.98			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.96			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	2773			4291
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	2773			4291
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	628	210	116	1105
RTOR Reduction (vph)	0	13	0	0	0
Lane Group Flow (vph)	105	825	0	0	1221
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	23.5	23.5			25.5
Effective Green, g (s)	23.5	23.5			25.5
Actuated g/C Ratio	0.39	0.39			0.42
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	624	1086			1824
v/s Ratio Prot		c0.30			
v/s Ratio Perm	0.07				0.28
v/c Ratio	0.17	0.76			0.67
Uniform Delay, d1	11.9	15.8			13.9
Progression Factor	1.00	1.00			0.33
Incremental Delay, d2	0.6	5.0			1.3
Delay (s)	12.5	20.8			5.9
Level of Service	B	C			A
Approach Delay (s)		19.9			5.9
Approach LOS		B			A

Intersection Summary			
HCM Average Control Delay		12.0	HCM Level of Service B
HCM Volume to Capacity ratio		0.71	
Actuated Cycle Length (s)		60.0	Sum of lost time (s) 11.0
Intersection Capacity Utilization		53.5%	ICU Level of Service A
Analysis Period (min)		15	

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK




















Lane Group	WBT	SBT
Lane Group Flow (vph)	353	1325
v/c Ratio	0.41	0.53
Control Delay	14.2	17.5
Queue Delay	0.0	0.7
Total Delay	14.2	18.2
Queue Length 50th (ft)	34	163
Queue Length 95th (ft)	48	184
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	851	2505
Starvation Cap Reductn	0	742
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.75
Intersection Summary		



# HCM Signalized Intersection Capacity Analysis

## 20: 10th St & Madison Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						  	
Volume (vph)	0	0	0	83	253	0	0	0	0	166	802	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					2918						4190	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					2918						4190	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	87	266	0	0	0	0	202	978	145
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	353	0	0	0	0	0	1299	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					851						2479	
v/s Ratio Prot												
v/s Ratio Perm					0.12						0.31	
v/c Ratio					0.41						0.52	
Uniform Delay, d1					17.1						7.3	
Progression Factor					0.73						2.41	
Incremental Delay, d2					1.4						0.6	
Delay (s)					13.9						18.0	
Level of Service					B						B	
Approach Delay (s)		0.0			13.9			0.0			18.0	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.2		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			44.9%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												




















Queues  
21: 10th St & Oak Street

Interim 2020  
Timing Plan: PM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	170	355	958
v/c Ratio	0.26	0.46	0.28
Control Delay	19.6	15.5	1.9
Queue Delay	0.0	0.0	0.0
Total Delay	19.6	15.5	1.9
Queue Length 50th (ft)	35	39	11
Queue Length 95th (ft)	54	73	14
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	647	779	3435
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.46	0.28
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
21: 10th St & Oak Street

Interim 2020  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			  					
Volume (vph)	22	111	0	0	220	100	88	703	90	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0					
Lane Util. Factor		0.95			0.95			0.86					
Frb, ped/bikes		1.00			0.99			0.99					
Flpb, ped/bikes		1.00			1.00			1.00					
Frt		1.00			0.95			0.98					
Flt Protected		0.99			1.00			1.00					
Satd. Flow (prot)		2954			2808			5516					
Flt Permitted		0.87			1.00			1.00					
Satd. Flow (perm)		2588			2808			5516					
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	28	142	0	0	244	111	96	764	98	0	0	0	
RTOR Reduction (vph)	0	0	0	0	77	0	0	33	0	0	0	0	
Lane Group Flow (vph)	0	170	0	0	278	0	0	925	0	0	0	0	
Confl. Peds. (#/hr)	22		35	35		22	62		168				
Confl. Bikes (#/hr)			14			6			45				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0	
Parking (#/hr)		5			5	5	5		5				
Turn Type	Perm							Perm					
Protected Phases		2			2			1					
Permitted Phases	2						1						
Actuated Green, G (s)		15.0			15.0			37.0					
Effective Green, g (s)		15.0			15.0			37.0					
Actuated g/C Ratio		0.25			0.25			0.62					
Clearance Time (s)		4.0			4.0			4.0					
Lane Grp Cap (vph)		647			702			3402					
v/s Ratio Prot					c0.10								
v/s Ratio Perm		0.07						0.17					
v/c Ratio		0.26			0.40			0.27					
Uniform Delay, d1		18.1			18.7			5.3					
Progression Factor		1.02			1.00			0.35					
Incremental Delay, d2		0.8			1.7			0.2					
Delay (s)		19.2			20.4			2.1					
Level of Service		B			C			A					
Approach Delay (s)		19.2			20.4			2.1			0.0		
Approach LOS		B			C			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			8.4				HCM Level of Service		A				
HCM Volume to Capacity ratio			0.31										
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization			58.1%				ICU Level of Service		B				
Analysis Period (min)			15										

c Critical Lane Group

Queues  
22: 9th Street & Webster Street

Interim 2020  
Timing Plan: PM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	263	145	1602
v/c Ratio	0.29	0.32	0.89
Control Delay	25.3	6.4	35.1
Queue Delay	0.0	0.0	78.9
Total Delay	25.3	6.4	114.0
Queue Length 50th (ft)	60	0	241
Queue Length 95th (ft)	88	37	#292
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	454	1809
Starvation Cap Reductn	0	0	445
Spillback Cap Reductn	0	3	121
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.32	1.17

**Intersection Summary**













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

# HCM Signalized Intersection Capacity Analysis

## 22: 9th Street & Webster Street

Interim 2020

Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↓↑↑	
Volume (vph)	0	226	125	0	0	0	0	0	0	244	1198	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.98								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1176								5485	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1176								5485	
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	263	145	0	0	0	0	0	0	271	1331	0
RTOR Reduction (vph)	0	0	102	0	0	0	0	0	0	0	41	0
Lane Group Flow (vph)	0	263	44	0	0	0	0	0	0	0	1561	0
Confl. Bikes (#/hr)			8									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	353								1767	
v/s Ratio Prot		c0.09										
v/s Ratio Perm			0.04								0.28	
v/c Ratio		0.29	0.12								0.88	
Uniform Delay, d1		24.2	22.9								28.9	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.8	0.7								6.8	
Delay (s)		25.0	23.6								35.7	
Level of Service		C	C								D	
Approach Delay (s)		24.5			0.0			0.0			35.7	
Approach LOS		C			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.5								HCM Level of Service	C
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	34.0
Intersection Capacity Utilization			38.7%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												













Queues  
 23: 9th Street & Madison Street

Interim 2020  
 Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	516	1079
v/c Ratio	0.48	0.41
Control Delay	16.1	2.5
Queue Delay	0.0	0.1
Total Delay	16.1	2.6
Queue Length 50th (ft)	43	11
Queue Length 95th (ft)	69	12
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1076	2605
Starvation Cap Reductn	0	474
Spillback Cap Reductn	0	31
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.51
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	267	192	0	0	0	0	0	0	118	820	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3929									4288	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3929									4288	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	300	216	0	0	0	0	0	0	136	943	0
RTOR Reduction (vph)	0	94	0	0	0	0	0	0	0	0	32	0
Lane Group Flow (vph)	0	422	0	0	0	0	0	0	0	0	1047	0
Confl. Peds. (#/hr)			68							29		20
Confl. Bikes (#/hr)			18									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		982									2573	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.24	
v/c Ratio		0.43									0.41	
Uniform Delay, d1		18.9									6.4	
Progression Factor		1.00									0.35	
Incremental Delay, d2		1.4									0.4	
Delay (s)		20.3									2.6	
Level of Service		C									A	
Approach Delay (s)		20.3			0.0			0.0			2.6	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.3								A	
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			40.3%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
24: 9th Street & Oak Street



















Interim 2020  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	432	962
v/c Ratio	0.35	0.28
Control Delay	16.6	2.0
Queue Delay	0.0	0.0
Total Delay	16.6	2.0
Queue Length 50th (ft)	38	13
Queue Length 95th (ft)	68	17
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1228	3384
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.28
<b>Intersection Summary</b>		



HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

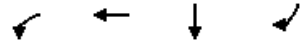
Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	90	295	0	0	0	0	0	781	113	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.86				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4331						5417				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4331						5417				
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	101	331	0	0	0	0	0	840	122	0	0	0
RTOR Reduction (vph)	0	74	0	0	0	0	0	44	0	0	0	0
Lane Group Flow (vph)	0	358	0	0	0	0	0	918	0	0	0	0
Confl. Peds. (#/hr)	4		5					69		146		
Confl. Bikes (#/hr)										31		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1155						3340				
v/s Ratio Prot								c0.17				
v/s Ratio Perm		0.08										
v/c Ratio		0.31						0.27				
Uniform Delay, d1		17.6						5.3				
Progression Factor		1.16						0.39				
Incremental Delay, d2		0.6						0.2				
Delay (s)		21.1						2.3				
Level of Service		C						A				
Approach Delay (s)		21.1			0.0			2.3			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.1									A
HCM Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	500	882	1065	406
v/c Ratio	0.71	0.72	0.80	0.68
Control Delay	8.7	32.1	7.8	10.5
Queue Delay	0.0	0.0	2.3	32.8
Total Delay	8.7	32.1	10.1	43.2
Queue Length 50th (ft)	0	172	21	256
Queue Length 95th (ft)	54	200	m28	m301
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	709	1227	1336	601
Starvation Cap Reductn	0	0	155	209
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.72	0.90	1.04





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 25: 8th Street & Webster Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	415	732	0	0	0	0	0	948	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1011
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1011
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	500	882	0	0	0	0	0	1065	406
RTOR Reduction (vph)	0	0	0	350	0	0	0	0	0	0	0	275
Lane Group Flow (vph)	0	0	0	150	882	0	0	0	0	0	1065	131
Confl. Bikes (#/hr)												9
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	326
v/s Ratio Prot											c0.26	
v/s Ratio Perm				0.13	0.22							0.13
v/c Ratio				0.42	0.72						0.80	0.40
Uniform Delay, d1				25.2	28.1						27.8	23.7
Progression Factor				1.00	1.00						0.18	2.39
Incremental Delay, d2				3.6	3.6						2.7	1.9
Delay (s)				28.8	31.8						7.7	58.6
Level of Service				C	C						A	E
Approach Delay (s)		0.0			30.7			0.0			21.7	
Approach LOS		A			C			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.1	HCM Level of Service						C		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)				34.0				
Intersection Capacity Utilization			49.6%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 26: 8th Street & Harrison Street

Interim 2020  
 Timing Plan: PM PEAK























Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	814	293	776
v/c Ratio	0.39	0.47	0.39
Control Delay	13.1	9.1	7.4
Queue Delay	0.0	1.0	0.0
Total Delay	13.1	10.0	7.4
Queue Length 50th (ft)	55	96	91
Queue Length 95th (ft)	75	173	128
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	2097	621	1997
Starvation Cap Reductn	0	140	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.61	0.39

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Interim 2020  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  		 	  					
Volume (vph)	0	0	0	0	642	74	527	435	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.86		0.86	0.86					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.89	0.96					
Frt					0.98		1.00	1.00					
Flt Protected					1.00		0.95	0.98					
Satd. Flow (prot)					5383		1215	4064					
Flt Permitted					1.00		0.95	0.98					
Satd. Flow (perm)					5383		1215	4064					
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	730	84	586	483	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	33	0	34	34	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	781	0	259	742	0	0	0	0	
Confl. Peds. (#/hr)				40		125	179		40	40		179	
Confl. Bikes (#/hr)						6							
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type							Perm						
Protected Phases					8			1					
Permitted Phases							1						
Actuated Green, G (s)					23.0		28.5	28.5					
Effective Green, g (s)					23.0		29.0	29.0					
Actuated g/C Ratio					0.38		0.48	0.48					
Clearance Time (s)					4.0		4.5	4.5					
Lane Grp Cap (vph)					2063		587	1964					
v/s Ratio Prot					c0.15								
v/s Ratio Perm							c0.21	0.18					
v/c Ratio					0.38		0.44	0.38					
Uniform Delay, d1					13.3		10.2	9.8					
Progression Factor					1.00		0.82	0.76					
Incremental Delay, d2					0.5		2.0	0.5					
Delay (s)					13.9		10.4	7.9					
Level of Service					B		B	A					
Approach Delay (s)		0.0			13.9			8.6			0.0		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			10.9		HCM Level of Service				B				
HCM Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			49.6%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
 27: 8th Street & Jackson Street

Interim 2020  
 Timing Plan: PM PEAK






















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	719	285	380
v/c Ratio	0.32	0.63	0.59
Control Delay	8.0	21.8	16.4
Queue Delay	0.0	0.1	2.1
Total Delay	8.0	21.9	18.4
Queue Length 50th (ft)	60	73	90
Queue Length 95th (ft)	71	m89	169
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	2258	454	639
Starvation Cap Reductn	0	5	138
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.63	0.76

Intersection Summary

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

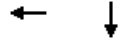
HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	45	565	37	102	163	0	0	276	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.0			4.0	
Lane Util. Factor					0.86			1.00			1.00	
Frb, ped/bikes					0.99			1.00			0.99	
Flpb, ped/bikes					0.99			0.99			1.00	
Frt					0.99			1.00			0.97	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					5383			1428			1410	
Flt Permitted					1.00			0.71			1.00	
Satd. Flow (perm)					5383			1030			1410	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	50	628	41	110	175	0	0	300	80
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	0	0	0	704	0	0	285	0	0	364	0
Confl. Peds. (#/hr)				88		91	53					53
Confl. Bikes (#/hr)						9						7
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)				5	5	5	5	5			5	5
Turn Type				Perm			Perm					
Protected Phases					1			2			2	
Permitted Phases				1			2					
Actuated Green, G (s)					25.0			26.0			26.0	
Effective Green, g (s)					25.0			26.5			26.5	
Actuated g/C Ratio					0.42			0.44			0.44	
Clearance Time (s)					4.5			4.5			4.5	
Lane Grp Cap (vph)					2243			455			623	
v/s Ratio Prot											0.26	
v/s Ratio Perm					0.13			0.28				
v/c Ratio					0.31			0.63			0.58	
Uniform Delay, d1					11.7			12.9			12.6	
Progression Factor					0.67			1.34			1.00	
Incremental Delay, d2					0.3			2.9			4.0	
Delay (s)					8.3			20.2			16.6	
Level of Service					A			C			B	
Approach Delay (s)		0.0			8.3			20.2			16.6	
Approach LOS		A			A			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.0		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5		
Intersection Capacity Utilization			69.1%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 28: 8th Street & Madison Street

Interim 2020  
 Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	929	1150
v/c Ratio	0.48	0.52
Control Delay	17.0	6.5
Queue Delay	0.0	0.1
Total Delay	17.0	6.7
Queue Length 50th (ft)	90	34
Queue Length 95th (ft)	122	42
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1919	2219
Starvation Cap Reductn	0	254
Spillback Cap Reductn	0	90
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.59
<b>Intersection Summary</b>		



HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Interim 2020  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					4TTL						4TTL		
Volume (vph)	0	0	0	282	572	0	0	0	0	0	937	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.98						1.00		
Frt					1.00						0.99		
Flt Protected					0.98						1.00		
Satd. Flow (prot)					5352						4266		
Flt Permitted					0.98						1.00		
Satd. Flow (perm)					5352						4266		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	307	622	0	0	0	0	0	1065	85	
RTOR Reduction (vph)	0	0	0	0	46	0	0	0	0	0	15	0	
Lane Group Flow (vph)	0	0	0	0	884	0	0	0	0	0	1135	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					20.5						30.5		
Effective Green, g (s)					21.0						31.0		
Actuated g/C Ratio					0.35						0.52		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1873						2204		
v/s Ratio Prot											c0.27		
v/s Ratio Perm					0.17								
v/c Ratio					0.47						0.51		
Uniform Delay, d1					15.2						9.5		
Progression Factor					1.15						0.61		
Incremental Delay, d2					0.8						0.8		
Delay (s)					18.2						6.6		
Level of Service					B						A		
Approach Delay (s)		0.0			18.2			0.0			6.6		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.8		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			46.2%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
29: 8th Street & Oak Street

Interim 2020  
Timing Plan: PM PEAK

















Lane Group	WBT	NBT
Lane Group Flow (vph)	923	948
v/c Ratio	0.53	0.32
Control Delay	16.5	11.5
Queue Delay	0.0	0.0
Total Delay	16.5	11.5
Queue Length 50th (ft)	70	94
Queue Length 95th (ft)	97	m106
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1738	3008
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.53	0.32

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Interim 2020  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	0	716	142	111	752	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0			4.0					
Lane Util. Factor					0.86			0.86					
Frbp, ped/bikes					0.98			1.00					
Flpb, ped/bikes					1.00			0.99					
Frt					0.98			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					5303			5434					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					5303			5434					
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	770	153	122	826	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	59	0	0	18	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	864	0	0	930	0	0	0	0	
Confl. Peds. (#/hr)							92	160					
Confl. Bikes (#/hr)							6						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0	
Parking (#/hr)					5	5	5	5					
Turn Type							Perm						
Protected Phases					2			1					
Permitted Phases							1						
Actuated Green, G (s)					19.0			33.0					
Effective Green, g (s)					19.0			33.0					
Actuated g/C Ratio					0.32			0.55					
Clearance Time (s)					4.0			4.0					
Lane Grp Cap (vph)					1679			2989					
v/s Ratio Prot					c0.16								
v/s Ratio Perm								0.17					
v/c Ratio					0.51			0.31					
Uniform Delay, d1					16.7			7.3					
Progression Factor					1.00			1.62					
Incremental Delay, d2					1.1			0.1					
Delay (s)					17.9			12.0					
Level of Service					B			B					
Approach Delay (s)		0.0			17.9			12.0			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			14.9		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			36.5%		ICU Level of Service						A		
Analysis Period (min)			15										

c Critical Lane Group

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Queues  
31: 7th Street & Harrison Street

Interim 2020  
Timing Plan: PM PEAK













	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	923	821	947
v/c Ratio	0.37	0.63	0.38
Control Delay	7.0	21.4	0.5
Queue Delay	0.0	0.0	0.0
Total Delay	7.0	21.4	0.5
Queue Length 50th (ft)	55	94	0
Queue Length 95th (ft)	71	131	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2494	1297	2475
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.37	0.63	0.38
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 31: 7th Street & Harrison Street

Interim 2020

Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	191	593	0	0	0	0	0	780	900	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.99			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4260						4577	2475			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4260						4577	2475			
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	225	698	0	0	0	0	0	821	947	0	0	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	914	0	0	0	0	0	821	947	0	0	0
Confl. Peds. (#/hr)	28								3			
Confl. Bikes (#/hr)			1						1			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm								Free			
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		35.0						17.0	60.0			
Actuated g/C Ratio		0.58						0.28	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2485						1297	2475			
v/s Ratio Prot								c0.18				
v/s Ratio Perm		0.21							c0.38			
v/c Ratio		0.37						0.63	0.38			
Uniform Delay, d1		6.6						18.8	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.4						2.4	0.5			
Delay (s)		7.1						21.1	0.5			
Level of Service		A						C	A			
Approach Delay (s)		7.1			0.0			10.1			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.0									A
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			60.0									4.0
Intersection Capacity Utilization			49.6%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
32: 7th Street & Jackson Street

Interim 2020  
Timing Plan: PM PEAK

	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1448	157	404	336
v/c Ratio	0.63	0.26	0.91	1.05
Control Delay	7.2	1.5	41.7	79.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.2	1.5	41.7	79.0
Queue Length 50th (ft)	67	0	53	~138
Queue Length 95th (ft)	87	8	#264	#275
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2284	611	442	321
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.26	0.91	1.05



















**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.

# HCM Signalized Intersection Capacity Analysis

## 32: 7th Street & Jackson Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	35	1179	295	0	0	0	0	237	134	42	257	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.99	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.98	0.85					0.95			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		3988	958					1376			1454	
Flt Permitted		1.00	1.00					1.00			0.73	
Satd. Flow (perm)		3988	958					1376			1070	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	37	1254	314	0	0	0	0	258	146	47	289	0
RTOR Reduction (vph)	0	23	68	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	1425	89	0	0	0	0	375	0	0	336	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2260	543					413			321	
v/s Ratio Prot								0.27				
v/s Ratio Perm		0.36	0.09								c0.31	
v/c Ratio		0.63	0.16					0.91			1.05	
Uniform Delay, d1		8.8	6.2					20.2			21.0	
Progression Factor		0.68	0.36					0.69			0.62	
Incremental Delay, d2		1.3	0.6					24.7			58.8	
Delay (s)		7.3	2.9					38.8			71.9	
Level of Service		A	A					D			E	
Approach Delay (s)		6.8			0.0			38.8			71.9	
Approach LOS		A			A			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.7									C
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			80.2%									D
Analysis Period (min)			15									

c Critical Lane Group



Queues  
33: 7th Street & Madison Street

Interim 2020  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1532	1366
v/c Ratio	0.50	1.06
Control Delay	8.8	64.5
Queue Delay	0.0	0.0
Total Delay	8.8	64.5
Queue Length 50th (ft)	73	~213
Queue Length 95th (ft)	m110	#128
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	3035	1293
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.50	1.06















**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.

# HCM Signalized Intersection Capacity Analysis

## 33: 7th Street & Madison Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1111	238	0	0	0	0	0	0	393	850	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.98	
Frt		0.97									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		5341									4182	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		5341									4182	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	1262	270	0	0	0	0	0	0	432	934	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	39	0
Lane Group Flow (vph)	0	1526	0	0	0	0	0	0	0	0	1328	0
Confl. Peds. (#/hr)			30								61	
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		34.0									19.0	
Effective Green, g (s)		34.0									18.0	
Actuated g/C Ratio		0.57									0.30	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		3027									1255	
v/s Ratio Prot		c0.29										
v/s Ratio Perm											0.32	
v/c Ratio		0.50									1.06	
Uniform Delay, d1		7.9									21.0	
Progression Factor		1.06									1.11	
Incremental Delay, d2		0.5									40.6	
Delay (s)		8.8									64.0	
Level of Service		A									E	
Approach Delay (s)		8.8			0.0			0.0			64.0	
Approach LOS		A			A			A			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.8									C
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			56.6%									B
Analysis Period (min)			15									

c Critical Lane Group

Queues  
34: 7th Street & Oak Street

Interim 2020  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	1618	1403
v/c Ratio	0.60	1.23dr
Control Delay	16.1	29.2
Queue Delay	0.0	1.8
Total Delay	16.1	31.0
Queue Length 50th (ft)	143	169
Queue Length 95th (ft)	m162	#242
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2682	1528
Starvation Cap Reductn	0	48
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.60	0.95

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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

# HCM Signalized Intersection Capacity Analysis

## 34: 7th Street & Oak Street

Interim 2020

Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		   						  					
Volume (vph)	137	1368	0	0	0	0	0	714	493	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0						4.0					
Lane Util. Factor		0.86						0.91					
Frbp, ped/bikes		1.00						0.97					
Flpb, ped/bikes		1.00						1.00					
Frt		1.00						0.94					
Flt Protected		1.00						1.00					
Satd. Flow (prot)		5496						3958					
Flt Permitted		1.00						1.00					
Satd. Flow (perm)		5496						3958					
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	
Adj. Flow (vph)	147	1471	0	0	0	0	0	830	573	0	0	0	
RTOR Reduction (vph)	0	27	0	0	0	0	0	10	0	0	0	0	
Lane Group Flow (vph)	0	1591	0	0	0	0	0	1393	0	0	0	0	
Confl. Peds. (#/hr)	31								57				
Confl. Bikes (#/hr)									10				
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0	
Parking (#/hr)	5	5						5	5				
Turn Type	Perm												
Protected Phases		1						2					
Permitted Phases	1												
Actuated Green, G (s)		28.0						22.0					
Effective Green, g (s)		29.0						23.0					
Actuated g/C Ratio		0.48						0.38					
Clearance Time (s)		5.0						5.0					
Lane Grp Cap (vph)		2656						1517					
v/s Ratio Prot								c0.35					
v/s Ratio Perm		0.29											
v/c Ratio		0.60						1.23dr					
Uniform Delay, d1		11.3						17.6					
Progression Factor		1.39						1.00					
Incremental Delay, d2		0.8						10.4					
Delay (s)		16.4						28.0					
Level of Service		B						C					
Approach Delay (s)		16.4			0.0			28.0			0.0		
Approach LOS		B			A			C			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			21.8		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			60.4%		ICU Level of Service					B			
Analysis Period (min)			15										
dr Defacto Right Lane. Recode with 1 though lane as a right lane.													
c Critical Lane Group													

Queues  
35: 7th Street & 5th Ave

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	207	1711	290	125	665	655	504
v/c Ratio	0.80	0.78	0.39	1.09	0.44	1.11	0.74
Control Delay	43.2	19.0	3.4	136.7	14.1	91.8	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	19.0	3.4	136.7	14.1	91.8	21.7
Queue Length 50th (ft)	68	203	0	-57	92	-306	144
Queue Length 95th (ft)	#154	219	27	#134	117	#495	194
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		60	110			
Base Capacity (vph)	258	2190	746	115	1523	591	682
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.78	0.39	1.09	0.44	1.11	0.74



















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.

# HCM Signalized Intersection Capacity Analysis

## 35: 7th Street & 5th Ave

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	41	126	1386	235	2	101	541	4	113	363	113	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Util. Factor		1.00	0.91	1.00		1.00	0.95			1.00		
Frb, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00		
Fr t		1.00	1.00	0.85		1.00	1.00			0.97		
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.99		
Satd. Flow (prot)		1764	5085	1349		1769	3534			1567		
Flt Permitted		0.32	1.00	1.00		0.14	1.00			0.81		
Satd. Flow (perm)		597	5085	1349		266	3534			1276		
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77
Adj. Flow (vph)	51	156	1711	290	2	123	660	5	126	403	126	49
RTOR Reduction (vph)	0	0	0	165	0	0	1	0	0	2	0	0
Lane Group Flow (vph)	0	207	1711	125	0	125	664	0	0	653	0	0
Confl. Peds. (#/hr)		8		4		4		8	7		1	1
Confl. Bikes (#/hr)				2				2			7	
Parking (#/hr)				5					5	5	5	5
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm
Protected Phases			1				1			2		
Permitted Phases	1	1		1	1	1			2			2
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43			0.46		
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Grp Cap (vph)		257	2190	581		115	1522			589		
v/s Ratio Prot			0.34				0.19					
v/s Ratio Perm		0.35		0.09		c0.47				c0.51		
v/c Ratio		0.81	0.78	0.22		1.09	0.44			1.11		
Uniform Delay, d1		16.1	15.9	11.6		18.5	13.0			17.5		
Progression Factor		1.00	1.00	1.00		1.00	1.00			1.00		
Incremental Delay, d2		23.0	2.9	0.8		109.2	0.9			70.4		
Delay (s)		39.1	18.7	12.5		127.7	13.9			87.9		
Level of Service		D	B	B		F	B			F		
Approach Delay (s)			19.8				31.9			87.9		
Approach LOS			B				C			F		
<b>Intersection Summary</b>												
HCM Average Control Delay			33.0			HCM Level of Service				C		
HCM Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)				7.0		
Intersection Capacity Utilization			97.6%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Interim 2020  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↕	
Volume (vph)	259	92
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	1564	
Flt Permitted	0.92	
Satd. Flow (perm)	1440	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	336	119
RTOR Reduction (vph)	17	0
Lane Group Flow (vph)	487	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	665	
v/s Ratio Prot		
v/s Ratio Perm	0.34	
v/c Ratio	0.73	
Uniform Delay, d1	14.2	
Progression Factor	1.00	
Incremental Delay, d2	7.0	
Delay (s)	21.2	
Level of Service	C	
Approach Delay (s)	21.2	
Approach LOS	C	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Interim 2020  
 Timing Plan: PM PEAK



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	17	578	412	429	423	267
v/c Ratio	0.04	1.29	0.91	0.49	0.47	0.33
Control Delay	14.1	170.6	40.5	9.2	6.4	5.1
Queue Delay	0.0	0.0	2.7	2.1	0.8	0.0
Total Delay	14.1	170.6	43.2	11.2	7.2	5.1
Queue Length 50th (ft)	4	~290	114	76	52	28
Queue Length 95th (ft)	m12	#387	#258	118	m65	m38
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	452	880	902	804
Starvation Cap Reductn	0	0	12	304	222	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	1.29	0.94	0.74	0.62	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.



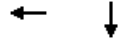
HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	14	468	0	342	356	0	0	156	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			0.92	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1570	1676		1593	1467			1464	1300
Flt Permitted				0.95	1.00		0.45	1.00			1.00	1.00
Satd. Flow (perm)				1570	1676		755	1467			1464	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	17	578	0	412	429	0	0	195	495
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	24	24
Lane Group Flow (vph)	0	0	0	17	578	0	412	429	0	0	399	243
Confl. Peds. (#/hr)				7		1				34		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				419	447		453	880			878	780
v/s Ratio Prot					c0.34			0.29			0.27	
v/s Ratio Perm				0.01			c0.55					0.19
v/c Ratio				0.04	1.29		0.91	0.49			0.45	0.31
Uniform Delay, d1				16.3	22.0		10.6	6.8			6.6	5.9
Progression Factor				0.84	0.91		1.00	1.00			0.85	0.89
Incremental Delay, d2				0.2	147.1		24.8	1.9			1.3	0.8
Delay (s)				13.9	167.2		35.4	8.7			6.9	6.0
Level of Service				B	F		D	A			A	A
Approach Delay (s)		0.0			162.8			21.8			6.6	
Approach LOS		A			F			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			56.3	HCM Level of Service				E				
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			60.0	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			76.6%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 37: 6th Street & Madison Street

Interim 2020  
 Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	257	1283
v/c Ratio	0.21	0.51
Control Delay	15.9	10.6
Queue Delay	0.0	0.3
Total Delay	15.9	10.9
Queue Length 50th (ft)	24	93
Queue Length 95th (ft)	41	m99
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	1249	2529
Starvation Cap Reductn	0	570
Spillback Cap Reductn	0	38
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.21	0.65

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Interim 2020  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑↑	
Volume (vph)	0	0	0	14	230	0	0	0	0	0	786	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.95	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					4372						4110	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					4372						4110	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	242	0	0	0	0	0	893	390
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	132	0
Lane Group Flow (vph)	0	0	0	0	246	0	0	0	0	0	1151	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					17.0						35.0	
Effective Green, g (s)					17.0						35.0	
Actuated g/C Ratio					0.28						0.58	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					1239						2398	
v/s Ratio Prot											c0.28	
v/s Ratio Perm					0.06							
v/c Ratio					0.20						0.48	
Uniform Delay, d1					16.3						7.2	
Progression Factor					1.00						1.90	
Incremental Delay, d2					0.4						0.3	
Delay (s)					16.7						14.1	
Level of Service					B						B	
Approach Delay (s)		0.0			16.7			0.0			14.1	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.5								HCM Level of Service	B
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			45.8%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1134	330	196	73
v/c Ratio	1.10	0.24	0.32	0.12
Control Delay	61.9	7.7	9.3	4.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	61.9	7.7	9.3	4.8
Queue Length 50th (ft)	~189	23	31	5
Queue Length 95th (ft)	m#115	39	64	19
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	1035	1366	611	608
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.10	0.24	0.32	0.12

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.

HCM Signalized Intersection Capacity Analysis  
38: 6th Street & Oak Street

Interim 2020  
Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↔↑		↔↓	↔↓	↔↓
Volume (vph)	214	806	84	30	338	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		2948		2903	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		2948		2903	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	238	896	98	35	393	73
RTOR Reduction (vph)	0	0	0	0	0	19
Lane Group Flow (vph)	0	1134	0	330	196	54
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		1035		1368	611	590
v/s Ratio Prot				0.11	c0.15	
v/s Ratio Perm		0.38				0.04
v/c Ratio		1.10		0.24	0.32	0.09
Uniform Delay, d1		14.6		7.1	7.4	6.6
Progression Factor		0.82		1.00	1.00	1.00
Incremental Delay, d2		44.8		0.4	1.4	0.3
Delay (s)		56.8		7.5	8.8	6.9
Level of Service		E		A	A	A
Approach Delay (s)		56.8		8.0		
Approach LOS		E		A		

Intersection Summary			
HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Interim 2020  
 Timing Plan: PM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1537	579	243
v/c Ratio	0.83	0.89	1.09
Control Delay	19.2	34.7	109.9
Queue Delay	0.0	0.0	0.0
Total Delay	19.2	34.7	109.9
Queue Length 50th (ft)	157	177	~101
Queue Length 95th (ft)	210	#289	#152
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1846	650	223
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.83	0.89	1.09



















**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.

# HCM Signalized Intersection Capacity Analysis

## 39: I-880 SB Off-Ramp & Jackson Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 				
Volume (vph)	277	806	285	0	0	0	0	421	36	109	61	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4204						1449			1420	
Flt Permitted		0.99						1.00			0.34	
Satd. Flow (perm)		4204						1449			501	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	311	906	320	0	0	0	0	533	46	156	87	0
RTOR Reduction (vph)	0	79	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1458	0	0	0	0	0	574	0	0	243	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						26.0			26.0	
Effective Green, g (s)		25.0						26.5			26.5	
Actuated g/C Ratio		0.42						0.45			0.45	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1766						645			223	
v/s Ratio Prot								0.40				
v/s Ratio Perm		0.35									c0.48	
v/c Ratio		0.83						0.89			1.09	
Uniform Delay, d1		15.3						15.2			16.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		4.6						16.8			86.2	
Delay (s)		19.9						32.0			102.7	
Level of Service		B						C			F	
Approach Delay (s)		19.9			0.0			32.0			102.7	
Approach LOS		B			A			C			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.4								C	
HCM Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			59.5							8.0		
Intersection Capacity Utilization			78.0%								D	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Interim 2020  
Timing Plan: PM PEAK



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1045	432	555
v/c Ratio	0.81	0.58	0.35
Control Delay	23.6	11.9	7.7
Queue Delay	0.0	0.0	0.1
Total Delay	23.6	11.9	7.8
Queue Length 50th (ft)	110	68	42
Queue Length 95th (ft)	#162	89	52
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1290	740	1599
Starvation Cap Reductn	0	0	276
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.81	0.58	0.42

Intersection Summary






















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



# HCM Signalized Intersection Capacity Analysis

## 40: 5th Street & Madison Street

Interim 2020  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  								  	  	
Volume (vph)	0	719	232	0	0	0	0	0	0	701	99	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.91	0.91	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.99	0.99	
Frt		0.96								1.00	1.00	
Flt Protected		1.00								0.95	0.96	
Satd. Flow (prot)		4212								1252	2725	
Flt Permitted		1.00								0.95	0.96	
Satd. Flow (perm)		4212								1252	2725	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	790	255	0	0	0	0	0	0	865	122	0
RTOR Reduction (vph)	0	97	0	0	0	0	0	0	0	10	10	0
Lane Group Flow (vph)	0	948	0	0	0	0	0	0	0	422	545	0
Confl. Peds. (#/hr)	2		1							15		45
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		17.0								35.0	35.0	
Effective Green, g (s)		17.0								35.0	35.0	
Actuated g/C Ratio		0.28								0.58	0.58	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		1193								730	1590	
v/s Ratio Prot		c0.23										
v/s Ratio Perm										c0.34	0.20	
v/c Ratio		0.79								0.58	0.34	
Uniform Delay, d1		19.9								7.9	6.5	
Progression Factor		1.00								1.10	1.13	
Incremental Delay, d2		5.5								3.0	0.5	
Delay (s)		25.4								11.6	7.9	
Level of Service		C								B	A	
Approach Delay (s)		25.4			0.0			0.0			9.5	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.7								B	
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			45.8%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Interim 2020  
Timing Plan: PM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1527	742	118
v/c Ratio	0.70	1.52	0.40
Control Delay	10.8	264.7	11.8
Queue Delay	0.0	0.0	0.0
Total Delay	10.8	264.7	11.8
Queue Length 50th (ft)	97	~288	24
Queue Length 95th (ft)	138	#438	54
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2183	488	296
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.70	1.52	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.

# HCM Signalized Intersection Capacity Analysis

## 41: 5th Street & Oak Street













Interim 2020

Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	409	890	121	0	0	0	0	570	76	5	91	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4416						1432			1463	
Flt Permitted		0.99						1.00			0.61	
Satd. Flow (perm)		4416						1432			889	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	440	957	130	0	0	0	0	655	87	6	112	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1503	0	0	0	0	0	731	0	0	118	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2159						477			296	
v/s Ratio Prot								c0.51				
v/s Ratio Perm		0.34									0.13	
v/c Ratio		0.70						1.53			0.40	
Uniform Delay, d1		8.9						15.0			11.5	
Progression Factor		1.00						1.00			0.62	
Incremental Delay, d2		1.9						250.3			3.9	
Delay (s)		10.8						265.3			11.1	
Level of Service		B						F			B	
Approach Delay (s)		10.8			0.0			265.3			11.1	
Approach LOS		B			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			89.9									F
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			77.0%									D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 42: Embarcadero W & Oak Street

Interim 2020  
 Timing Plan: PM PEAK

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Volume (veh/h)	0	0	0	0	0	0	0
Sign Control	Stop			Free		Free	
Grade	0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)					1112		
pX, platoon unblocked							
vC, conflicting volume	0	0	0				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	0	0				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	100	100				
cM capacity (veh/h)	1023	1084	1622				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			0.0%			ICU Level of Service	
Analysis Period (min)			15				

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	7.2	33.4	0.15	15.7	C
Madison Street	IV	25	18.9	8.8	27.7	0.07	9.3	D
Oak Street	IV	25	19.3	16.1	35.4	0.07	7.4	E
Total	IV		64.4	32.1	96.5	0.29	10.8	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	16.5	32.5	0.06	6.7	F
Madison Street	IV	25	19.5	17.0	36.5	0.07	7.3	E
Jackson Street	IV	25	18.8	8.0	26.8	0.07	9.5	D
Alice Street	IV	25	19.7	8.7	28.4	0.07	9.4	D
Harrison Street	IV	25	19.0	13.1	32.1	0.07	8.0	E
Webster Street	IV	25	18.8	32.1	50.9	0.07	5.0	F
Total	IV		111.8	95.4	207.2	0.42	7.3	E

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	17.5	32.8	0.06	6.3	F
9th Street	IV	25	13.2	2.5	15.7	0.05	11.5	D
8th Street	IV	25	13.9	6.5	20.4	0.05	9.2	D
7th Street	IV	25	13.6	64.5	78.1	0.05	2.4	F
Total	IV		56.0	91.0	147.0	0.21	5.2	F









Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	11.5	25.0	0.05	7.3	E
9th Street	IV	25	14.7	2.0	16.7	0.06	11.9	D
10th St	IV	25	13.3	1.9	15.2	0.05	11.9	D
11th St	IV	25	14.7	8.9	23.6	0.06	8.4	E
12th St	IV	25	12.5	11.9	24.4	0.05	7.0	F
Total	IV		68.7	36.2	104.9	0.26	8.9	E

**INTERIM 2020 PLUS PROJECT TRAFFIC  
CONDITIONS**

Queues  
1: W Grand Ave & Broadway

Interim 2020 + Project  
Timing Plan: AM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	566	872	109	393	129	44	516
v/c Ratio	0.41	0.41	0.91	0.34	0.26	0.22	0.12	0.36
Control Delay	24.4	16.5	35.5	19.9	15.1	4.1	15.6	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	16.5	35.5	19.9	15.1	4.1	15.6	13.7
Queue Length 50th (ft)	22	98	208	37	66	0	13	76
Queue Length 95th (ft)	57	131	#287	84	103	32	36	121
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	172	1517	1065	317	1498	579	374	1438
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	0.37	0.37	0.82	0.34	0.26	0.22	0.12	0.36

Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
1: W Grand Ave & Broadway

Interim 2020 + Project  
Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	11	47	479	36	125	589	71	100	362	119	1	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		1.00	0.95			0.95		1.00	0.95	1.00		1.00
Frb, ped/bikes		1.00	0.99			0.99		1.00	1.00	0.91		1.00
Flpb, ped/bikes		0.98	1.00			1.00		0.97	1.00	1.00		0.96
Fr t		1.00	0.99			0.99		1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00			0.99		0.95	1.00	1.00		0.95
Satd. Flow (prot)		1568	3133			3079		1541	3185	1086		1523
Flt Permitted		0.22	1.00			0.71		0.42	1.00	1.00		0.50
Satd. Flow (perm)		357	3133			2190		674	3185	1086		795
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	526	40	139	654	79	109	393	129	1	43
RTOR Reduction (vph)	0	0	7	0	0	10	0	0	0	68	0	0
Lane Group Flow (vph)	0	64	559	0	0	862	0	109	393	61	0	44
Confl. Peds. (#/hr)		71		73	73		71	84		80		80
Confl. Bikes (#/hr)				15			21			9		
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	10	0	0
Parking (#/hr)				5			5			5		
Turn Type	Perm	Perm			Perm			Perm		Perm	Perm	Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2		2	6	6
Actuated Green, G (s)		37.0	37.0			37.0		40.0	40.0	40.0		40.0
Effective Green, g (s)		37.0	37.0			37.0		40.0	40.0	40.0		40.0
Actuated g/C Ratio		0.44	0.44			0.44		0.47	0.47	0.47		0.47
Clearance Time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		2.0	2.0			2.0		2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		155	1364			953		317	1499	511		374
v/s Ratio Prot			0.18						0.12			
v/s Ratio Perm		0.18			c0.39			c0.16		0.06		0.06
v/c Ratio		0.41	0.41			0.90		0.34	0.26	0.12		0.12
Uniform Delay, d1		16.5	16.5			22.4		14.2	13.6	12.6		12.6
Progression Factor		1.00	1.00			1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		0.7	0.1			11.6		2.9	0.4	0.5		0.6
Delay (s)		17.2	16.6			34.0		17.2	14.0	13.1		13.3
Level of Service		B	B			C		B	B	B		B
Approach Delay (s)			16.6			34.0			14.4			
Approach LOS			B			C			B			
<b>Intersection Summary</b>												
HCM Average Control Delay			21.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			93.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Interim 2020 + Project  
 Timing Plan: AM PEAK

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	341	133
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	2969	
Flt Permitted	1.00	
Satd. Flow (perm)	2969	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	371	145
RTOR Reduction (vph)	42	0
Lane Group Flow (vph)	474	0
Confl. Peds. (#/hr)		84
Confl. Bikes (#/hr)		34
Bus Blockages (#/hr)	0	10
Parking (#/hr)		5
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	40.0	
Effective Green, g (s)	40.0	
Actuated g/C Ratio	0.47	
Clearance Time (s)	4.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1397	
v/s Ratio Prot	0.16	
v/s Ratio Perm		
v/c Ratio	0.34	
Uniform Delay, d1	14.2	
Progression Factor	1.00	
Incremental Delay, d2	0.7	
Delay (s)	14.8	
Level of Service	B	
Approach Delay (s)	14.7	
Approach LOS	B	
<b>Intersection Summary</b>		

Queues  
2: 20th St & Kaiser DWY













Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↙	←	↘	↑	↗
Lane Group	EBT	WBL	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	195	401	281	8	208	193
v/c Ratio	0.18	0.53	0.24	0.02	0.39	0.36
Control Delay	12.2	26.2	15.9	8.6	15.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	26.2	15.9	8.6	15.5	5.1
Queue Length 50th (ft)	13	77	42	0	51	0
Queue Length 95th (ft)	29	108	63	7	97	35
Internal Link Dist (ft)	337		348		577	
Turn Bay Length (ft)		120		90		
Base Capacity (vph)	1086	750	1183	513	535	533
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	0.18	0.53	0.24	0.02	0.39	0.36
<b>Intersection Summary</b>						

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑	↑		↔	↑			↑
Volume (vph)	0	94	79	337	236	7	89	17	235	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			
Frb, ped/bikes		0.98		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			
Frt		0.93		1.00	1.00	0.85		0.94	0.85			
Flt Protected		1.00		0.95	1.00	1.00		0.98	1.00			
Satd. Flow (prot)		4191		3090	3185	1368		1460	1185			
Flt Permitted		1.00		0.95	1.00	1.00		0.98	1.00			
Satd. Flow (perm)		4191		3090	3185	1368		1460	1185			
Peak-hour factor, PHF	0.89	0.89	0.89	0.84	0.84	0.84	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	106	89	401	281	8	105	20	276	0	0	0
RTOR Reduction (vph)	0	67	0	0	0	5	0	34	127	0	0	0
Lane Group Flow (vph)	0	128	0	401	281	3	0	174	66	0	0	0
Confl. Peds. (#/hr)			20				117					
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5						5			
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		17.0	26.0	26.0		24.0	24.0			
Effective Green, g (s)		17.0		17.0	26.0	26.0		24.0	24.0			
Actuated g/C Ratio		0.24		0.24	0.37	0.37		0.34	0.34			
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			
Lane Grp Cap (vph)		1018		750	1183	508		501	406			
v/s Ratio Prot				c0.13	c0.09			c0.12	0.06			
v/s Ratio Perm		c0.03				0.00						
v/c Ratio		0.13		0.53	0.24	0.01		0.35	0.16			
Uniform Delay, d1		20.7		23.1	15.2	13.9		17.2	16.0			
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.3		2.7	0.5	0.0		1.9	0.9			
Delay (s)		20.9		25.8	15.6	13.9		19.1	16.9			
Level of Service		C		C	B	B		B	B			
Approach Delay (s)		20.9			21.5			18.0			0.0	
Approach LOS		C			C			B			A	

### Intersection Summary

HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	212	1112	418
v/c Ratio	0.14	0.92	0.33
Control Delay	10.1	16.2	16.1
Queue Delay	0.0	0.0	0.0
Total Delay	10.1	16.2	16.1
Queue Length 50th (ft)	9	0	49
Queue Length 95th (ft)	64	#492	109
Internal Link Dist (ft)	259		536
Turn Bay Length (ft)			
Base Capacity (vph)	1692	1209	1745
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.13	0.92	0.24

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 3: 19th St & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	197	1034	0	0	0	0	377	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	0.98					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1220					3174	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1220					3174	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	212	1112	0	0	0	0	410	8
RTOR Reduction (vph)	0	0	0	0	0	198	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	212	914	0	0	0	0	416	0
Confl. Peds. (#/hr)				38		3						29
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					20.1	40.6					18.0	
Effective Green, g (s)					20.1	40.6					18.0	
Actuated g/C Ratio					0.41	0.82					0.36	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					1291	999					1152	
v/s Ratio Prot					0.07						0.13	
v/s Ratio Perm						c0.75						
v/c Ratio					0.16	0.91					0.36	
Uniform Delay, d1					9.4	3.3					11.6	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.1	12.5					0.2	
Delay (s)					9.5	15.8					11.8	
Level of Service					A	B					B	
Approach Delay (s)		0.0			14.7			0.0			11.8	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.0		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			49.6		Sum of lost time (s)					9.0		
Intersection Capacity Utilization			74.8%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												


















Queues  
4: 17th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	171	24	462
v/c Ratio	0.24	0.03	0.25
Control Delay	6.7	2.2	5.6
Queue Delay	0.0	0.0	0.5
Total Delay	6.7	2.2	6.1
Queue Length 50th (ft)	4	0	34
Queue Length 95th (ft)	25	7	52
Internal Link Dist (ft)	281		166
Turn Bay Length (ft)			
Base Capacity (vph)	726	847	1841
Starvation Cap Reductn	0	0	920
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.03	0.50
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
4: 17th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									 	
Volume (vph)	0	30	122	0	0	0	0	0	0	23	439	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.95								1.00	1.00	
Flpb, ped/bikes		1.00								0.97	1.00	
Frt		0.88								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		2491								1358	2986	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		2491								1358	2986	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	34	137	0	0	0	0	0	0	24	462	0
RTOR Reduction (vph)	0	103	0	0	0	0	0	0	0	9	0	0
Lane Group Flow (vph)	0	68	0	0	0	0	0	0	0	15	462	0
Confl. Peds. (#/hr)	52		45							52		9
Confl. Bikes (#/hr)									1			7
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2									1	
Permitted Phases										1		
Actuated Green, G (s)		15.0								37.0	37.0	
Effective Green, g (s)		15.0								37.0	37.0	
Actuated g/C Ratio		0.25								0.62	0.62	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		623								837	1841	
v/s Ratio Prot		c0.03									c0.15	
v/s Ratio Perm										0.01		
v/c Ratio		0.11								0.02	0.25	
Uniform Delay, d1		17.4								4.5	5.2	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		0.4								0.0	0.3	
Delay (s)		17.7								4.5	5.5	
Level of Service		B								A	A	
Approach Delay (s)		17.7			0.0			0.0			5.5	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.7								A	
HCM Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			74.8%								D	
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
5: 14th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	331	1030	644
v/c Ratio	0.18	0.65	0.80
Control Delay	5.0	14.4	26.5
Queue Delay	0.0	0.2	0.0
Total Delay	5.0	14.6	26.5
Queue Length 50th (ft)	21	185	112
Queue Length 95th (ft)	33	198	#193
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1844	1592	806
Starvation Cap Reductn	0	108	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.18	0.69	0.80



















**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	235	43	104	679	0	0	0	0	198	372	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						0.97	
Frt		0.98			1.00						0.99	
Flt Protected		1.00			0.99						0.98	
Satd. Flow (prot)		3081			3153						2825	
Flt Permitted		1.00			0.85						0.98	
Satd. Flow (perm)		3081			2692						2825	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	280	51	137	893	0	0	0	0	215	404	25
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	310	0	0	1030	0	0	0	0	0	639	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		35.5			35.5						17.0	
Effective Green, g (s)		35.5			35.5						17.0	
Actuated g/C Ratio		0.59			0.59						0.28	
Clearance Time (s)		3.0			3.0						4.5	
Lane Grp Cap (vph)		1823			1593						800	
v/s Ratio Prot		0.10										
v/s Ratio Perm					c0.38						0.23	
v/c Ratio		0.17			0.65						0.80	
Uniform Delay, d1		5.6			8.1						19.9	
Progression Factor		1.00			1.50						0.87	
Incremental Delay, d2		0.2			1.6						8.1	
Delay (s)		5.8			13.8						25.3	
Level of Service		A			B						C	
Approach Delay (s)		5.8			13.8			0.0			25.3	
Approach LOS		A			B			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.2		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				7.5			
Intersection Capacity Utilization			66.8%		ICU Level of Service				C			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK



Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	476	712	755	867	37
v/c Ratio	0.69	0.74	1.51	0.52	0.06
Control Delay	24.9	24.8	258.2	7.8	1.8
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	24.9	24.8	258.2	7.9	1.8
Queue Length 50th (ft)	68	120	~354	61	0
Queue Length 95th (ft)	m107	177	#548	71	4
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	687	956	501	1667	656
Starvation Cap Reductn	0	0	0	211	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.74	1.51	0.60	0.06





















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.

# HCM Signalized Intersection Capacity Analysis

## 6: 14th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Volume (vph)	43	404	0	0	669	710	138	582	31	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frb, ped/bikes		1.00			1.00	0.92		1.00	0.96			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2908			3185	1306		3125	1197			
Flt Permitted		0.78			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2290			3185	1306		3125	1197			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	46	430	0	0	712	755	166	701	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	109	0	0	17	0	0	0
Lane Group Flow (vph)	0	476	0	0	712	646	0	867	20	0	0	0
Confl. Peds. (#/hr)	49					49	90		44			
Confl. Bikes (#/hr)						35			9			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		18.0			18.0	18.0		32.0	32.0			
Effective Green, g (s)		18.0			18.0	18.0		32.0	32.0			
Actuated g/C Ratio		0.30			0.30	0.30		0.53	0.53			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		687			956	392		1667	638			
v/s Ratio Prot					0.22							
v/s Ratio Perm		0.21				c0.49		0.28	0.02			
v/c Ratio		0.69			0.74	1.65		0.52	0.03			
Uniform Delay, d1		18.6			18.9	21.0		9.0	6.6			
Progression Factor		1.03			1.00	1.00		0.71	0.60			
Incremental Delay, d2		5.2			5.3	302.6		1.1	0.1			
Delay (s)		24.2			24.2	323.6		7.6	4.1			
Level of Service		C			C	F		A	A			
Approach Delay (s)		24.2			178.3			7.4			0.0	
Approach LOS		C			F			A			A	

Intersection Summary		
HCM Average Control Delay	98.3	HCM Level of Service F
HCM Volume to Capacity ratio	0.93	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 10.0
Intersection Capacity Utilization	105.7%	ICU Level of Service G
Analysis Period (min)	15	

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	882	557
v/c Ratio	0.58	0.31
Control Delay	18.2	9.0
Queue Delay	0.0	0.8
Total Delay	18.2	9.8
Queue Length 50th (ft)	68	82
Queue Length 95th (ft)	60	m107
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1508	1781
Starvation Cap Reductn	0	867
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.58	0.61















**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street




Interim 2020 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	438	127	0	0	0	0	0	0	86	427	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5									3.5		
Lane Util. Factor		0.86									0.95		
Frbp, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		5328									2945		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		5328									2945		
Peak-hour factor, PHF	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	684	198	0	0	0	0	0	0	93	464	0	
RTOR Reduction (vph)	0	87	0	0	0	0	0	0	0	0	14	0	
Lane Group Flow (vph)	0	795	0	0	0	0	0	0	0	0	543	0	
Confl. Peds. (#/hr)			42							32			
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4										2	
Permitted Phases										2			
Actuated Green, G (s)		16.0									36.0		
Effective Green, g (s)		16.0									36.0		
Actuated g/C Ratio		0.27									0.60		
Clearance Time (s)		4.5									3.5		
Lane Grp Cap (vph)		1421									1767		
v/s Ratio Prot		c0.15											
v/s Ratio Perm											0.18		
v/c Ratio		0.56									0.31		
Uniform Delay, d1		19.0									5.9		
Progression Factor		1.00									1.55		
Incremental Delay, d2		1.6									0.3		
Delay (s)		20.6									9.4		
Level of Service		C									A		
Approach Delay (s)		20.6			0.0			0.0			9.4		
Approach LOS		C			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			16.3		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			47.0%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group




















Queues  
8: 13th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

			
Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	100	747	808
v/c Ratio	0.23	0.64	0.31
Control Delay	1.3	10.4	6.1
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	10.4	6.1
Queue Length 50th (ft)	0	30	43
Queue Length 95th (ft)	1	24	61
Internal Link Dist (ft)		116	231
Turn Bay Length (ft)	50		
Base Capacity (vph)	427	1170	2593
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.64	0.31
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
8: 13th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	59	441	0	0	0	0	0	693	75	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0				
Lane Util. Factor	1.00	0.91						0.91				
Frbp, ped/bikes	1.00	1.00						1.00				
Flpb, ped/bikes	0.97	1.00						1.00				
Frt	1.00	1.00						0.99				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1353	4386						4308				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1353	4386						4308				
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	100	747	0	0	0	0	0	729	79	0	0	0
RTOR Reduction (vph)	66	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	34	747	0	0	0	0	0	798	0	0	0	0
Confl. Peds. (#/hr)	26								36			
Confl. Bikes (#/hr)									11			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)	16.0	16.0						36.0				
Effective Green, g (s)	16.0	16.0						36.0				
Actuated g/C Ratio	0.27	0.27						0.60				
Clearance Time (s)	5.0	5.0						3.0				
Lane Grp Cap (vph)	361	1170						2585				
v/s Ratio Prot		c0.17						c0.19				
v/s Ratio Perm	0.03											
v/c Ratio	0.09	0.64						0.31				
Uniform Delay, d1	16.5	19.4						5.9				
Progression Factor	0.02	0.41						1.00				
Incremental Delay, d2	0.5	2.3						0.3				
Delay (s)	0.8	10.3						6.2				
Level of Service	A	B						A				
Approach Delay (s)		9.1			0.0			6.2			0.0	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.7					HCM Level of Service		A		
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			72.8%					ICU Level of Service		C		
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
9: 13th St & Lake Merritt Blvd

Interim 2020 + Project  
Timing Plan: AM PEAK















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	548	58	1997	506
v/c Ratio	0.43	0.11	0.93	0.41
Control Delay	10.0	3.5	11.7	9.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.0	3.5	11.7	9.9
Queue Length 50th (ft)	43	0	5	39
Queue Length 95th (ft)	67	12	0	62
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1274	527	2155	1236
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.11	0.93	0.41
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 9: 13th St & Lake Merritt Blvd

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↘↘		
Volume (vph)	0	466	49	0	0	1358	0	0	0	435	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frbp, ped/bikes		1.00	0.99			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1230			2508				3090		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1230			2508				3090		
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.25	0.25	0.25	0.86	0.86	0.86
Adj. Flow (vph)	0	548	58	0	0	1997	0	0	0	506	0	0
RTOR Reduction (vph)	0	0	35	0	0	1152	0	0	0	0	0	0
Lane Group Flow (vph)	0	548	23	0	0	845	0	0	0	506	0	0
Confl. Bikes (#/hr)			3									
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			16.0				16.0		
Effective Green, g (s)		16.0	16.0			16.0				16.0		
Actuated g/C Ratio		0.40	0.40			0.40				0.40		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1274	492			1003				1236		
v/s Ratio Prot						c0.34				0.16		
v/s Ratio Perm		c0.17	0.02									
v/c Ratio		0.43	0.05			0.84				0.41		
Uniform Delay, d1		8.7	7.3			10.9				8.6		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		1.1	0.2			8.6				1.0		
Delay (s)		9.8	7.5			19.4				9.6		
Level of Service		A	A			B				A		
Approach Delay (s)		9.5			19.4			0.0			9.6	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			40.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			56.1%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Interim 2020 + Project  
Timing Plan: AM PEAK

	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	66	208	680	2112
v/c Ratio	0.03	0.21	0.22	1.00	1.32
Control Delay	26.0	36.8	38.4	81.6	176.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	36.8	38.4	81.6	176.5
Queue Length 50th (ft)	2	38	47	~178	~1044
Queue Length 95th (ft)	2	74	67	#199	#1179
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	285	316	955	678	1597
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.21	0.22	1.00	1.32

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Interim 2020 + Project  
 Timing Plan: AM PEAK

	↘	↙	←	↓	↘	↙	↙
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↘	↑↑↑	↑↑↑		↘↘	
Volume (vph)	2	56	177	427	96	1946	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1346	1496	4577	4248		3087	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1346	1496	4577	4248		3087	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	66	208	555	125	2048	64
RTOR Reduction (vph)	4	4	0	31	0	0	0
Lane Group Flow (vph)	4	62	208	649	0	2112	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	24.0	24.0	24.0	17.5		59.5	
Effective Green, g (s)	24.0	24.0	24.0	17.5		59.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.15		0.52	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	281	312	955	646		1597	
v/s Ratio Prot			c0.05	c0.15		c0.68	
v/s Ratio Perm	0.00	0.04					
v/c Ratio	0.01	0.20	0.22	1.00		1.32	
Uniform Delay, d1	36.1	37.6	37.7	48.8		27.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.4	0.5	36.4		149.6	
Delay (s)	36.2	39.0	38.2	85.2		177.3	
Level of Service	D	D	D	F		F	
Approach Delay (s)			38.4	85.2		177.3	
Approach LOS			D	F		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			144.2		HCM Level of Service		F
HCM Volume to Capacity ratio			1.00				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			91.8%		ICU Level of Service		F
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
11: 12th St & Broadway

Interim 2020 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	775	97	399	479
v/c Ratio	0.53	0.82	0.25	0.44
Control Delay	16.3	77.5	8.8	14.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.3	77.5	8.8	14.8
Queue Length 50th (ft)	75	36	39	61
Queue Length 95th (ft)	98	#109	62	98
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1457	119	1587	1085
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.82	0.25	0.44

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
11: 12th St & Broadway

Interim 2020 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	95	482	74	93	383	0	0	405	65	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.99		1.00	1.00			0.95		
Flpb, ped/bikes					0.98		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4085		1593	3122			2900		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4085		1593	3122			2900		
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.96	0.96	0.96	0.98	0.98	0.98	
Adj. Flow (vph)	0	0	0	113	574	88	97	399	0	0	413	66	
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	0	0	22	0	
Lane Group Flow (vph)	0	0	0	0	748	0	97	399	0	0	457	0	
Confl. Peds. (#/hr)				164		113	522					522	
Confl. Bikes (#/hr)						6						10	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type					Perm			Prot					
Protected Phases						4		5	2			6	
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1430		119	1587			1063		
v/s Ratio Prot							c0.06	0.13			c0.16		
v/s Ratio Perm					0.18								
v/c Ratio					0.52		0.82	0.25			0.43		
Uniform Delay, d1					15.5		27.3	8.3			14.3		
Progression Factor					1.00		1.00	1.00			1.00		
Incremental Delay, d2					1.4		43.7	0.4			1.3		
Delay (s)					16.9		71.1	8.7			15.6		
Level of Service					B		E	A			B		
Approach Delay (s)		0.0			16.9			20.9			15.6		
Approach LOS		A			B			C			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			17.7		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.51										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			50.9%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK


















Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1526	409	126
v/c Ratio	0.45	0.51	0.36
Control Delay	6.2	14.1	7.4
Queue Delay	0.0	0.0	0.0
Total Delay	6.2	14.1	7.4
Queue Length 50th (ft)	65	38	2
Queue Length 95th (ft)	80	77	m22
Internal Link Dist (ft)	319	229	
Turn Bay Length (ft)			
Base Capacity (vph)	3368	796	348
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	5	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.52	0.36

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
12: 12th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	202	1110	0	0	0	0	0	393	121	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0	4.0	
Lane Util. Factor					0.86						0.95	1.00	
Frbp, ped/bikes					1.00						1.00	0.90	
Flpb, ped/bikes					0.99						1.00	1.00	
Frt					1.00						1.00	0.85	
Flt Protected					0.99						1.00	1.00	
Satd. Flow (prot)					5449						2986	1128	
Flt Permitted					0.99						1.00	1.00	
Satd. Flow (perm)					5449						2986	1128	
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96	
Adj. Flow (vph)	0	0	0	235	1291	0	0	0	0	0	409	126	
RTOR Reduction (vph)	0	0	0	0	55	0	0	0	0	0	0	47	
Lane Group Flow (vph)	0	0	0	0	1471	0	0	0	0	0	409	79	
Confl. Peds. (#/hr)				50								65	
Confl. Bikes (#/hr)												10	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm								Perm	
Protected Phases					6						4		
Permitted Phases				6								4	
Actuated Green, G (s)					36.5						16.0	16.0	
Effective Green, g (s)					36.5						16.0	16.0	
Actuated g/C Ratio					0.61						0.27	0.27	
Clearance Time (s)					3.5						4.0	4.0	
Lane Grp Cap (vph)					3315						796	301	
v/s Ratio Prot											c0.14		
v/s Ratio Perm					0.27							0.07	
v/c Ratio					0.44						0.51	0.26	
Uniform Delay, d1					6.3						18.7	17.3	
Progression Factor					1.00						0.62	0.45	
Incremental Delay, d2					0.4						2.2	2.0	
Delay (s)					6.7						13.9	9.8	
Level of Service					A						B	A	
Approach Delay (s)		0.0			6.7			0.0			12.9		
Approach LOS		A			A			A			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			8.3		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			41.0%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
13: 12th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK





















Lane Group	WBT	NBT
Lane Group Flow (vph)	1111	1101
v/c Ratio	0.47	0.76
Control Delay	9.6	16.5
Queue Delay	0.0	0.0
Total Delay	9.6	16.5
Queue Length 50th (ft)	53	84
Queue Length 95th (ft)	75	125
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2382	1458
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.76

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
13: 12th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  			  					
Volume (vph)	0	0	0	0	1002	42	310	725	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.5			4.0					
Lane Util. Factor					0.86			0.91					
Frbp, ped/bikes					0.99			1.00					
Flpb, ped/bikes					1.00			0.95					
Frt					0.99			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					5466			4030					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					5466			4030					
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	1066	45	330	771	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	13	0	0	26	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1098	0	0	1075	0	0	0	0	
Confl. Peds. (#/hr)						151	217						
Confl. Bikes (#/hr)						9							
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0	
Parking (#/hr)					5	5	5	5					
Turn Type								Perm					
Protected Phases					6			4					
Permitted Phases							4						
Actuated Green, G (s)					19.5			16.0					
Effective Green, g (s)					19.5			16.0					
Actuated g/C Ratio					0.43			0.36					
Clearance Time (s)					5.5			4.0					
Lane Grp Cap (vph)					2369			1433					
v/s Ratio Prot					c0.20								
v/s Ratio Perm								0.27					
v/c Ratio					0.46			0.75					
Uniform Delay, d1					9.0			12.7					
Progression Factor					1.00			1.00					
Incremental Delay, d2					0.7			3.7					
Delay (s)					9.7			16.4					
Level of Service					A			B					
Approach Delay (s)		0.0			9.7			16.4			0.0		
Approach LOS		A			A			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			13.0		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			45.0		Sum of lost time (s)					9.5			
Intersection Capacity Utilization			47.7%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020 + Project  
Timing Plan: AM PEAK












	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	459	1202	1698	1035
v/c Ratio	0.23	0.65	0.89	0.85
Control Delay	5.8	9.9	18.2	29.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.8	9.9	18.2	29.3
Queue Length 50th (ft)	28	127	240	129
Queue Length 95th (ft)	41	147	265	#175
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1954	1854	1911	1220
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.65	0.89	0.85

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020 + Project  
 Timing Plan: AM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	390	962	1358	891	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frbp, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4569	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4569	
Peak-hour factor, PHF	0.85	0.85	0.80	0.80	0.87	0.87
Adj. Flow (vph)	0	459	1202	1698	1024	11
RTOR Reduction (vph)	0	5	0	0	1	0
Lane Group Flow (vph)	0	454	1202	1698	1034	0
Confl. Bikes (#/hr)		7				
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		36.0	36.0	36.0	16.0	
Effective Green, g (s)		36.0	36.0	36.0	16.0	
Actuated g/C Ratio		0.60	0.60	0.60	0.27	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1949	1854	1911	1218	
v/s Ratio Prot		0.14	0.39	c0.53	c0.23	
v/s Ratio Perm						
v/c Ratio		0.23	0.65	0.89	0.85	
Uniform Delay, d1		5.6	7.9	10.3	20.9	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3	1.8	6.6	7.5	
Delay (s)		5.9	9.6	16.9	28.3	
Level of Service		A	A	B	C	
Approach Delay (s)	5.9			13.9	28.3	
Approach LOS	A			B	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			16.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			56.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues

15: International Blvd & Lake Merritt Blvd


















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	327	46	439	142	1275
v/c Ratio	0.23	0.08	0.26	0.12	0.90
Control Delay	12.8	4.5	10.7	2.3	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	4.5	10.7	2.3	26.2
Queue Length 50th (ft)	41	0	51	0	228
Queue Length 95th (ft)	64	16	77	13	#363
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1426	553	1688	1211	1421
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.08	0.26	0.12	0.90

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Interim 2020 + Project  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	291	41	417	135	50	1085
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.95	1.00	0.87		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1267	3539	2384		3245
Flt Permitted	0.95	1.00	1.00	1.00		0.92
Satd. Flow (perm)	3433	1267	3539	2384		2979
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	327	46	439	142	56	1219
RTOR Reduction (vph)	0	27	0	74	0	0
Lane Group Flow (vph)	327	19	439	68	0	1275
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1426	526	1688	1137		1421
v/s Ratio Prot	c0.10		0.12			
v/s Ratio Perm		0.02		0.03		c0.43
v/c Ratio	0.23	0.04	0.26	0.06		0.90
Uniform Delay, d1	12.3	11.3	10.2	9.2		15.5
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	0.1	0.4	0.1		9.2
Delay (s)	12.7	11.4	10.5	9.3		24.8
Level of Service	B	B	B	A		C
Approach Delay (s)	12.5		10.2			24.8
Approach LOS	B		B			C

Intersection Summary			
HCM Average Control Delay		18.9	HCM Level of Service B
HCM Volume to Capacity ratio		0.59	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		89.8%	ICU Level of Service E
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Interim 2020 + Project  
Timing Plan: AM PEAK


















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	811	20	503	38	653
v/c Ratio	0.59	0.03	0.36	0.28	0.37
Control Delay	17.5	5.9	3.7	33.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	5.9	3.7	33.9	10.5
Queue Length 50th (ft)	125	0	11	15	76
Queue Length 95th (ft)	160	10	37	40	108
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1373	574	1408	136	1761
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.03	0.36	0.28	0.37

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave





Interim 2020 + Project  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	681	17	75	373	34	581
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.93	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.88		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1406	2991		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1406	2991		1770	3468
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.89	0.89
Adj. Flow (vph)	811	20	84	419	38	653
RTOR Reduction (vph)	0	12	258	0	0	0
Lane Group Flow (vph)	811	8	245	0	38	653
Confl. Peds. (#/hr)	19	82		33	33	
Confl. Bikes (#/hr)				5		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	25.0		5.0	33.0
Effective Green, g (s)	26.0	26.0	25.0		5.0	33.0
Actuated g/C Ratio	0.40	0.40	0.38		0.08	0.51
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1373	562	1150		136	1761
v/s Ratio Prot	c0.24		0.08		0.02	c0.19
v/s Ratio Perm		0.01				
v/c Ratio	0.59	0.01	0.21		0.28	0.37
Uniform Delay, d1	15.3	11.8	13.4		28.3	9.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.0	0.4		5.1	0.6
Delay (s)	17.2	11.8	13.8		33.4	10.3
Level of Service	B	B	B		C	B
Approach Delay (s)	17.1		13.8			11.6
Approach LOS	B		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			14.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			55.0%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						



Queues  
17: 11th St & Castro St

Interim 2020 + Project  
Timing Plan: AM PEAK











				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	173	910	821	165
v/c Ratio	0.25	0.34	0.90	0.31
Control Delay	3.4	18.6	57.9	43.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	18.6	57.9	43.1
Queue Length 50th (ft)	0	124	216	55
Queue Length 95th (ft)	45	151	#286	88
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	679	2645	912	524
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.34	0.90	0.31

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Interim 2020 + Project  
 Timing Plan: AM PEAK

						
Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	159	837	682	49	90	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.94	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1212	5432	4335		2939	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1212	5432	4335		2939	
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93
Adj. Flow (vph)	173	910	766	55	97	68
RTOR Reduction (vph)	89	0	7	0	0	0
Lane Group Flow (vph)	84	910	814	0	165	0
Confl. Peds. (#/hr)	37			5	37	5
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	56.0	56.0	24.0		20.5	
Effective Green, g (s)	56.0	56.0	24.0		20.5	
Actuated g/C Ratio	0.49	0.49	0.21		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	590	2645	905		524	
v/s Ratio Prot			c0.19		c0.06	
v/s Ratio Perm	0.07	0.17				
v/c Ratio	0.14	0.34	0.90		0.31	
Uniform Delay, d1	16.3	18.2	44.3		41.1	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.4	13.7		1.6	
Delay (s)	16.8	18.5	58.0		42.7	
Level of Service	B	B	E		D	
Approach Delay (s)		18.3	58.0		42.7	
Approach LOS		B	E		D	
<b>Intersection Summary</b>						
HCM Average Control Delay			36.0		HCM Level of Service	D
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			115.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			54.8%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Queues  
18: 11th St & Broadway

Interim 2020 + Project  
Timing Plan: AM PEAK






















	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	682	84	477	112	443
v/c Ratio	0.63	0.10	0.55	0.64	0.30
Control Delay	16.9	3.7	17.8	43.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	3.7	17.8	43.9	9.6
Queue Length 50th (ft)	92	0	61	36	43
Queue Length 95th (ft)	140	11	101	#98	68
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1089	800	870	174	1476
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.63	0.10	0.55	0.64	0.30

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
18: 11th St & Broadway

Interim 2020 + Project  
Timing Plan: AM PEAK











												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 			 	
Volume (vph)	98	522	76	0	0	0	0	375	73	100	394	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frb, ped/bikes		1.00	0.85					0.95		1.00	1.00	
Flpb, ped/bikes		0.98	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2853	1960					2890		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2853	1960					2890		1593	3122	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	108	574	84	0	0	0	0	399	78	112	443	0
RTOR Reduction (vph)	0	0	52	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	0	682	32	0	0	0	0	447	0	112	443	0
Confl. Peds. (#/hr)	139		172						313	313		
Confl. Bikes (#/hr)			11						3			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1089	748					841		174	1476	
v/s Ratio Prot								c0.15		c0.07	0.14	
v/s Ratio Perm		0.24	0.02									
v/c Ratio		0.63	0.04					0.53		0.64	0.30	
Uniform Delay, d1		13.8	10.7					16.4		23.5	8.9	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		2.7	0.1					2.4		16.9	0.5	
Delay (s)		16.5	10.8					18.8		40.4	9.4	
Level of Service		B	B					B		D	A	
Approach Delay (s)		15.9			0.0			18.8			15.7	
Approach LOS		B			A			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.6									HCM Level of Service B
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			55.0								12.0	
Intersection Capacity Utilization			50.9%									ICU Level of Service A
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	27	545	583
v/c Ratio	0.04	0.46	0.49
Control Delay	11.0	10.8	10.0
Queue Delay	0.0	0.0	0.4
Total Delay	11.0	10.8	10.3
Queue Length 50th (ft)	6	51	42
Queue Length 95th (ft)	18	83	60
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	650	1190	1184
Starvation Cap Reductn	0	0	199
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.46	0.59
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

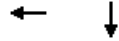
Interim 2020 + Project  
 Timing Plan: AM PEAK

					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		 			 
Volume (vph)	25	314	160	51	468
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.95			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	2708			2900
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	2708			2900
Peak-hour factor, PHF	0.92	0.87	0.87	0.89	0.89
Adj. Flow (vph)	27	361	184	57	526
RTOR Reduction (vph)	0	85	0	0	0
Lane Group Flow (vph)	27	460	0	0	583
Confl. Peds. (#/hr)			52	38	
Confl. Bikes (#/hr)			4		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	24.5	24.5			24.5
Effective Green, g (s)	24.5	24.5			24.5
Actuated g/C Ratio	0.41	0.41			0.41
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	650	1106			1184
v/s Ratio Prot		c0.17			
v/s Ratio Perm	0.02				0.20
v/c Ratio	0.04	0.42			0.49
Uniform Delay, d1	10.7	12.7			13.1
Progression Factor	1.00	1.00			0.65
Incremental Delay, d2	0.1	1.2			1.3
Delay (s)	10.8	13.8			9.8
Level of Service	B	B			A
Approach Delay (s)		13.7			9.8
Approach LOS		B			A
<b>Intersection Summary</b>					
HCM Average Control Delay			11.7	HCM Level of Service	B
HCM Volume to Capacity ratio			0.45		
Actuated Cycle Length (s)			60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			41.9%	ICU Level of Service	A
Analysis Period (min)			15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	562	647
v/c Ratio	1.33	0.39
Control Delay	174.1	3.5
Queue Delay	0.0	0.0
Total Delay	174.1	3.5
Queue Length 50th (ft)	~288	21
Queue Length 95th (ft)	m#204	35
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	423	1674
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.33	0.39
















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.

# HCM Signalized Intersection Capacity Analysis

## 20: 10th St & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											  	
Volume (vph)	0	0	0	79	399	0	0	0	0	97	458	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						0.99	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					1449						2801	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					1449						2801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	93	469	0	0	0	0	100	472	75
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	0	0	0	562	0	0	0	0	0	630	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					423						1657	
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.23	
v/c Ratio					1.33						0.38	
Uniform Delay, d1					21.2						6.5	
Progression Factor					1.06						0.48	
Incremental Delay, d2					149.4						0.6	
Delay (s)					171.8						3.7	
Level of Service					F						A	
Approach Delay (s)		0.0			171.8			0.0			3.7	
Approach LOS		A			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			81.8		HCM Level of Service						F	
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			55.2%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group



Queues  
21: 10th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	118	547	1250
v/c Ratio	0.77	1.48	0.46
Control Delay	53.6	254.4	2.1
Queue Delay	0.0	0.0	0.1
Total Delay	53.6	254.4	2.1
Queue Length 50th (ft)	24	~280	15
Queue Length 95th (ft)	#36	#412	20
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	154	369	2721
Starvation Cap Reductn	0	0	271
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.77	1.48	0.51


















**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.

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	10	62	0	0	359	101	111	924	103	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frb, ped/bikes		1.00			0.99			0.99				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.97			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1456			1408			4384				
Flt Permitted		0.42			1.00			1.00				
Satd. Flow (perm)		617			1408			4384				
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	16	102	0	0	427	120	122	1015	113	0	0	0
RTOR Reduction (vph)	0	0	0	0	17	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	118	0	0	531	0	0	1230	0	0	0	0
Confl. Peds. (#/hr)	26					26	72		91			
Confl. Bikes (#/hr)						7			11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm							Perm				
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		154			352			2703				
v/s Ratio Prot					c0.38							
v/s Ratio Perm		0.19						0.28				
v/c Ratio		0.77			1.51			0.46				
Uniform Delay, d1		20.9			22.5			6.1				
Progression Factor		0.89			1.00			0.26				
Incremental Delay, d2		28.9			242.5			0.5				
Delay (s)		47.5			265.0			2.1				
Level of Service		D			F			A				
Approach Delay (s)		47.5			265.0			2.1			0.0	
Approach LOS		D			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			80.0				HCM Level of Service		E			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			65.8%				ICU Level of Service		C			
Analysis Period (min)			15									

c Critical Lane Group













Queues  
22: 9th Street & Webster Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	112	69	1088
v/c Ratio	0.12	0.19	0.61
Control Delay	23.4	7.6	26.0
Queue Delay	0.0	0.0	1.7
Total Delay	23.4	7.6	27.6
Queue Length 50th (ft)	24	0	142
Queue Length 95th (ft)	41	26	159
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	359	1792
Starvation Cap Reductn	0	0	496
Spillback Cap Reductn	0	1	137
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.13	0.19	0.84
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↑↑↑	
Volume (vph)	0	94	58	0	0	0	0	0	0	146	757	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.86								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1034								5441	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1034								5441	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	112	69	0	0	0	0	0	0	176	912	0
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	39	0
Lane Group Flow (vph)	0	112	21	0	0	0	0	0	0	0	1049	0
Confl. Peds. (#/hr)			124							55		
Confl. Bikes (#/hr)			4									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm							Perm		
Protected Phases		2									1	
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	310								1753	
v/s Ratio Prot		c0.04										
v/s Ratio Perm			0.02								0.19	
v/c Ratio		0.12	0.07								0.60	
Uniform Delay, d1		22.9	22.5								25.6	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.3	0.4								1.5	
Delay (s)		23.2	22.9								27.1	
Level of Service		C	C								C	
Approach Delay (s)		23.1			0.0			0.0			27.1	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.6								HCM Level of Service	C
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	34.0
Intersection Capacity Utilization			43.8%								ICU Level of Service	A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 23: 9th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK













	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	267	589
v/c Ratio	0.25	0.34
Control Delay	11.5	5.2
Queue Delay	0.0	0.3
Total Delay	11.5	5.4
Queue Length 50th (ft)	16	11
Queue Length 95th (ft)	34	m15
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1074	1757
Starvation Cap Reductn	0	546
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.25	0.49

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↔↑	
Volume (vph)	0	151	98	0	0	0	0	0	0	85	457	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.95	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3981									2888	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3981									2888	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	162	105	0	0	0	0	0	0	92	497	0
RTOR Reduction (vph)	0	79	0	0	0	0	0	0	0	0	25	0
Lane Group Flow (vph)	0	188	0	0	0	0	0	0	0	0	564	0
Confl. Peds. (#/hr)			62							43		
Confl. Bikes (#/hr)			7									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		995									1733	
v/s Ratio Prot		c0.05										
v/s Ratio Perm											0.20	
v/c Ratio		0.19									0.33	
Uniform Delay, d1		17.7									6.0	
Progression Factor		1.00									0.87	
Incremental Delay, d2		0.4									0.4	
Delay (s)		18.1									5.6	
Level of Service		B									A	
Approach Delay (s)		18.1			0.0			0.0			5.6	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.5								A	
HCM Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			36.8%								A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
24: 9th Street & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	302	1161
v/c Ratio	0.25	0.43
Control Delay	10.2	2.6
Queue Delay	0.0	0.1
Total Delay	10.2	2.7
Queue Length 50th (ft)	15	24
Queue Length 95th (ft)	22	m29
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1211	2681
Starvation Cap Reductn	0	407
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.25	0.51













**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 24: 9th Street & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

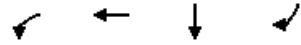
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	100	148	0	0	0	0	0	997	71	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						1.00				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.99				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		4248						4326				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		4248						4326				
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	180	0	0	0	0	0	1084	77	0	0	0
RTOR Reduction (vph)	0	78	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	224	0	0	0	0	0	1148	0	0	0	0
Confl. Peds. (#/hr)	26								84			
Confl. Bikes (#/hr)									11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1133						2668				
v/s Ratio Prot								c0.27				
v/s Ratio Perm		0.05										
v/c Ratio		0.20						0.43				
Uniform Delay, d1		17.0						6.0				
Progression Factor		0.87						0.37				
Incremental Delay, d2		0.4						0.4				
Delay (s)		15.2						2.6				
Level of Service		B						A				
Approach Delay (s)		15.2			0.0			2.6			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			5.2									A
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			43.7%									A
Analysis Period (min)			15									

c Critical Lane Group



Queues  
25: 8th Street & Webster Street

Interim 2020 + Project  
Timing Plan: AM PEAK



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	427	1194	551	352
v/c Ratio	0.65	0.97	0.41	0.62
Control Delay	7.9	52.2	4.3	11.9
Queue Delay	0.0	0.0	0.2	15.6
Total Delay	7.9	52.2	4.5	27.5
Queue Length 50th (ft)	0	258	10	208
Queue Length 95th (ft)	56	#320	13	320
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	658	1227	1336	564
Starvation Cap Reductn	0	0	231	196
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.97	0.50	0.96





















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 25: 8th Street & Webster Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	359	1003	0	0	0	0	0	485	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1010
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1010
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	427	1194	0	0	0	0	0	551	352
RTOR Reduction (vph)	0	0	0	299	0	0	0	0	0	0	0	239
Lane Group Flow (vph)	0	0	0	128	1194	0	0	0	0	0	551	113
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	325
v/s Ratio Prot											c0.13	
v/s Ratio Perm				0.11	0.29							0.11
v/c Ratio				0.36	0.97						0.41	0.35
Uniform Delay, d1				24.7	31.1						23.8	23.3
Progression Factor				1.00	1.00						0.15	2.45
Incremental Delay, d2				2.8	20.0						0.8	2.4
Delay (s)				27.4	51.1						4.2	59.6
Level of Service				C	D						A	E
Approach Delay (s)		0.0			44.9			0.0			25.8	
Approach LOS		A			D			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			38.1	HCM Level of Service							D	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0		
Intersection Capacity Utilization			43.1%	ICU Level of Service						A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
26: 8th Street & Harrison Street

Interim 2020 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1258	340	795
v/c Ratio	0.93	0.47	0.35
Control Delay	32.9	3.5	1.7
Queue Delay	0.0	0.5	0.0
Total Delay	32.9	4.0	1.7
Queue Length 50th (ft)	153	9	8
Queue Length 95th (ft)	154	15	10
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1360	730	2297
Starvation Cap Reductn	0	124	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	0.56	0.35

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 26: 8th Street & Harrison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↑	↑↑↑				
Volume (vph)	0	0	0	0	823	108	531	354	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.91		0.86	0.86				
Frbp, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.96	0.98				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	0.98				
Satd. Flow (prot)					4204		1320	4169				
Flt Permitted					1.00		0.95	0.98				
Satd. Flow (perm)					4204		1320	4169				
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1112	146	681	454	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	28	0	4	4	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1230	0	336	791	0	0	0	0
Confl. Peds. (#/hr)							88	65				
Confl. Bikes (#/hr)							7					
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)					5	5						
Turn Type							Perm					
Protected Phases					8			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		33.0	33.0				
Actuated g/C Ratio					0.32		0.55	0.55				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1331		726	2293				
v/s Ratio Prot					c0.29							
v/s Ratio Perm							c0.25	0.19				
v/c Ratio					0.92		0.46	0.34				
Uniform Delay, d1					19.8		8.1	7.5				
Progression Factor					1.00		0.20	0.18				
Incremental Delay, d2					12.1		1.8	0.3				
Delay (s)					32.0		3.4	1.7				
Level of Service					C		A	A				
Approach Delay (s)		0.0			32.0			2.2			0.0	
Approach LOS		A			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.8		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			42.9%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
27: 8th Street & Jackson Street

Interim 2020 + Project  
Timing Plan: AM PEAK





















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1069	449	378
v/c Ratio	0.90	0.65	0.46
Control Delay	26.5	15.9	9.6
Queue Delay	0.0	17.8	1.6
Total Delay	26.5	33.7	11.2
Queue Length 50th (ft)	152	176	69
Queue Length 95th (ft)	m#188	m175	98
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1186	694	815
Starvation Cap Reductn	0	237	270
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	0.98	0.69

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.

HCM Signalized Intersection Capacity Analysis  
27: 8th Street & Jackson Street

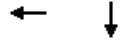
Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						 	
Volume (vph)	0	0	0	59	791	112	102	302	0	0	229	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.5			4.0			4.0	
Lane Util. Factor					0.91			1.00			1.00	
Frbp, ped/bikes					0.98			1.00			0.99	
Flpb, ped/bikes					0.99			1.00			1.00	
Frt					0.98			1.00			0.97	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					4084			1443			1413	
Flt Permitted					1.00			0.83			1.00	
Satd. Flow (perm)					4084			1207			1413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	66	879	124	113	336	0	0	297	81
RTOR Reduction (vph)	0	0	0	0	28	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	1041	0	0	449	0	0	375	0
Confl. Peds. (#/hr)				129		97	51					51
Confl. Bikes (#/hr)						8						1
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)				5	5	5	5	5			5	5
Turn Type					Perm			Perm				
Protected Phases						1			2			2
Permitted Phases				1			2					
Actuated Green, G (s)						17.0			34.0			34.0
Effective Green, g (s)						17.0			34.5			34.5
Actuated g/C Ratio						0.28			0.58			0.58
Clearance Time (s)						4.5			4.5			4.5
Lane Grp Cap (vph)						1157			694			812
v/s Ratio Prot												0.27
v/s Ratio Perm						0.25			c0.37			
v/c Ratio						0.90			0.65			0.46
Uniform Delay, d1						20.7			8.6			7.4
Progression Factor						0.93			1.54			1.00
Incremental Delay, d2						6.4			1.2			1.9
Delay (s)						25.6			14.5			9.3
Level of Service						C			B			A
Approach Delay (s)		0.0				25.6			14.5			9.3
Approach LOS		A				C			B			A
<b>Intersection Summary</b>												
HCM Average Control Delay						19.7						HCM Level of Service B
HCM Volume to Capacity ratio						0.73						
Actuated Cycle Length (s)						60.0						Sum of lost time (s) 8.5
Intersection Capacity Utilization						84.4%						ICU Level of Service E
Analysis Period (min)						15						

c Critical Lane Group

Queues  
 28: 8th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	1587	571
v/c Ratio	0.87	0.28
Control Delay	16.0	3.2
Queue Delay	0.9	0.0
Total Delay	16.9	3.2
Queue Length 50th (ft)	102	15
Queue Length 95th (ft)	m93	21
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1827	2005
Starvation Cap Reductn	0	0
Spillback Cap Reductn	76	1
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.91	0.28













Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 28: 8th Street & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

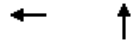
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑↑	
Volume (vph)	0	0	0	521	923	0	0	0	0	0	493	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.99	
Flt Protected					0.98						1.00	
Satd. Flow (prot)					4189						4257	
Flt Permitted					0.98						1.00	
Satd. Flow (perm)					4189						4257	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	573	1014	0	0	0	0	0	524	47
RTOR Reduction (vph)	0	0	0	0	152	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	0	0	0	1435	0	0	0	0	0	553	0
Confl. Peds. (#/hr)				36								34
Confl. Bikes (#/hr)												7
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								
Protected Phases					8						2	
Permitted Phases				8								
Actuated Green, G (s)					23.5						27.5	
Effective Green, g (s)					24.0						28.0	
Actuated g/C Ratio					0.40						0.47	
Clearance Time (s)					4.5						4.5	
Lane Grp Cap (vph)					1676						1987	
v/s Ratio Prot											c0.13	
v/s Ratio Perm					0.34							
v/c Ratio					0.86						0.28	
Uniform Delay, d1					16.4						9.8	
Progression Factor					1.05						0.31	
Incremental Delay, d2					0.6						0.3	
Delay (s)					17.9						3.3	
Level of Service					B						A	
Approach Delay (s)		0.0			17.9			0.0			3.3	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			58.4%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group



Queues  
29: 8th Street & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBT
Lane Group Flow (vph)	1659	1159
v/c Ratio	1.10	0.53
Control Delay	77.7	5.1
Queue Delay	0.0	0.7
Total Delay	77.7	5.7
Queue Length 50th (ft)	~254	17
Queue Length 95th (ft)	#343	23
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1506	2204
Starvation Cap Reductn	0	632
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.10	0.74

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.

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	1321	205	122	875	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.98			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4202			4261				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4202			4261				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1436	223	142	1017	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	34	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1625	0	0	1157	0	0	0	0
Confl. Peds. (#/hr)						62	131					
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					21.0			31.0				
Effective Green, g (s)					21.0			31.0				
Actuated g/C Ratio					0.35			0.52				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1471			2202				
v/s Ratio Prot					c0.39							
v/s Ratio Perm								0.27				
v/c Ratio					1.10			0.53				
Uniform Delay, d1					19.5			9.6				
Progression Factor					1.00			0.45				
Incremental Delay, d2					57.5			0.7				
Delay (s)					77.0			5.0				
Level of Service					E			A				
Approach Delay (s)		0.0			77.0			5.0			0.0	
Approach LOS		A			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			47.4				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			62.3%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

Intersection Sign configuration not allowed in HCM analysis.













Queues  
31: 7th Street & Harrison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	461	1083	1694
v/c Ratio	0.23	0.59	0.69
Control Delay	9.3	15.8	1.6
Queue Delay	0.0	0.0	0.0
Total Delay	9.3	15.8	1.6
Queue Length 50th (ft)	31	108	0
Queue Length 95th (ft)	41	108	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2002	1831	2457
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.59	0.69
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
31: 7th Street & Harrison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑						↑↑↑	↑↑				
Volume (vph)	104	256	0	0	0	0	0	780	1220	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0						4.0	3.0				
Lane Util. Factor		0.91						0.91	0.88				
Frb, ped/bikes		1.00						1.00	0.98				
Flpb, ped/bikes		1.00						1.00	1.00				
Frt		1.00						1.00	0.85				
Flt Protected		0.99						1.00	1.00				
Satd. Flow (prot)		4256						4577	2457				
Flt Permitted		0.99						1.00	1.00				
Satd. Flow (perm)		4256						4577	2457				
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.72	0.72	0.72	0.92	0.92	0.92	
Adj. Flow (vph)	133	328	0	0	0	0	0	1083	1694	0	0	0	
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	446	0	0	0	0	0	1083	1694	0	0	0	
Confl. Peds. (#/hr)	12								29				
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	5	5											
Turn Type	Perm						Free						
Protected Phases		2						4					
Permitted Phases	2									Free			
Actuated Green, G (s)		27.0						23.0	60.0				
Effective Green, g (s)		28.0						24.0	60.0				
Actuated g/C Ratio		0.47						0.40	1.00				
Clearance Time (s)		5.0						5.0					
Lane Grp Cap (vph)		1986						1831	2457				
v/s Ratio Prot								0.24					
v/s Ratio Perm		0.10							c0.69				
v/c Ratio		0.22						0.59	0.69				
Uniform Delay, d1		9.5						14.1	0.0				
Progression Factor		1.00						1.00	1.00				
Incremental Delay, d2		0.3						1.4	1.6				
Delay (s)		9.8						15.6	1.6				
Level of Service		A						B	A				
Approach Delay (s)		9.8			0.0			7.0			0.0		
Approach LOS		A			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			7.4									HCM Level of Service	A
HCM Volume to Capacity ratio			0.69										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	0.0
Intersection Capacity Utilization			42.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
32: 7th Street & Jackson Street

Interim 2020 + Project  
Timing Plan: AM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1305	369	463	329
v/c Ratio	0.58	0.56	1.06	1.03
Control Delay	7.0	4.7	85.2	86.5
Queue Delay	0.1	0.0	50.3	0.0
Total Delay	7.2	4.7	135.5	86.5
Queue Length 50th (ft)	73	11	~187	~135
Queue Length 95th (ft)	78	32	#348	m#251
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2269	661	436	318
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	173	0	46	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.56	1.19	1.03

**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.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	35	685	569	0	0	0	0	358	64	26	263	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.97	0.91					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.96	0.85					0.98			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3798	937					1418			1456	
Flt Permitted		1.00	1.00					1.00			0.72	
Satd. Flow (perm)		3798	937					1418			1059	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	45	890	739	0	0	0	0	393	70	30	299	0
RTOR Reduction (vph)	0	119	130	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1186	239	0	0	0	0	453	0	0	329	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2152	531					425			318	
v/s Ratio Prot								c0.32				
v/s Ratio Perm		0.31	0.26								0.31	
v/c Ratio		0.55	0.45					1.06			1.03	
Uniform Delay, d1		8.2	7.6					21.0			21.0	
Progression Factor		0.95	0.91					1.00			1.28	
Incremental Delay, d2		0.8	2.2					61.9			55.7	
Delay (s)		8.6	9.1					82.9			82.5	
Level of Service		A	A					F			F	
Approach Delay (s)		8.7			0.0			82.9			82.5	
Approach LOS		A			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			32.5									HCM Level of Service C
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			67.3%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
33: 7th Street & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	922	198	869
v/c Ratio	0.34	0.33	0.85
Control Delay	11.3	4.7	27.2
Queue Delay	0.0	0.0	5.0
Total Delay	11.3	4.7	32.2
Queue Length 50th (ft)	67	5	145
Queue Length 95th (ft)	m83	m17	m#202
Internal Link Dist (ft)	296		190
Turn Bay Length (ft)			
Base Capacity (vph)	2678	602	1024
Starvation Cap Reductn	0	0	106
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.33	0.95




















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.



HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  								 	 		
Volume (vph)	0	503	271	0	0	0	0	0	0	188	826	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.86								1.00	0.95		
Frb, ped/bikes		0.98								1.00	1.00		
Flpb, ped/bikes		1.00								0.97	1.00		
Frt		0.95								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		5150								1353	2926		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		5150								1353	2926		
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	
Adj. Flow (vph)	0	599	323	0	0	0	0	0	0	198	869	0	
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	129	0	0	
Lane Group Flow (vph)	0	904	0	0	0	0	0	0	0	69	869	0	
Confl. Peds. (#/hr)			33							31			
Confl. Bikes (#/hr)			2										
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		31.0								22.0	22.0		
Effective Green, g (s)		31.0								21.0	21.0		
Actuated g/C Ratio		0.52								0.35	0.35		
Clearance Time (s)		4.0								3.0	3.0		
Lane Grp Cap (vph)		2661								474	1024		
v/s Ratio Prot		c0.18									c0.30		
v/s Ratio Perm										0.05			
v/c Ratio		0.34								0.15	0.85		
Uniform Delay, d1		8.5								13.4	18.0		
Progression Factor		1.34								1.26	1.03		
Incremental Delay, d2		0.3								0.5	7.2		
Delay (s)		11.7								17.3	25.8		
Level of Service		B								B	C		
Approach Delay (s)		11.7			0.0			0.0			24.2		
Approach LOS		B			A			A			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			18.4		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			70.7%		ICU Level of Service					C			
Analysis Period (min)			15										

c Critical Lane Group




















Queues  
34: 7th Street & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	807	1321
v/c Ratio	0.34	0.71
Control Delay	5.8	14.7
Queue Delay	0.0	0.6
Total Delay	5.8	15.4
Queue Length 50th (ft)	11	119
Queue Length 95th (ft)	26	153
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2391	1865
Starvation Cap Reductn	0	222
Spillback Cap Reductn	0	16
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.80
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	133	561	0	0	0	0	0	864	272	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frb, ped/bikes		1.00						0.98				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.96				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5459						4106				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5459						4106				
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	155	652	0	0	0	0	0	1005	316	0	0	0
RTOR Reduction (vph)	0	27	0	0	0	0	0	86	0	0	0	0
Lane Group Flow (vph)	0	780	0	0	0	0	0	1235	0	0	0	0
Confl. Peds. (#/hr)	26								75			
Confl. Bikes (#/hr)									3			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		25.0						25.0				
Effective Green, g (s)		26.0						26.0				
Actuated g/C Ratio		0.43						0.43				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2366						1779				
v/s Ratio Prot								c0.30				
v/s Ratio Perm		0.14										
v/c Ratio		0.33						0.69				
Uniform Delay, d1		11.2						13.8				
Progression Factor		0.51						1.00				
Incremental Delay, d2		0.4						2.3				
Delay (s)		6.1						16.0				
Level of Service		A						B				
Approach Delay (s)		6.1			0.0			16.0			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.3				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			44.5%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
35: 7th Street & 5th Ave

Interim 2020 + Project  
Timing Plan: AM PEAK






















Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	125	405	24	148	1260	485	524
v/c Ratio	1.09	0.18	0.04	0.37	0.83	0.97	0.75
Control Delay	136.7	11.7	5.1	15.9	22.4	53.7	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.7	11.7	5.1	15.9	22.4	53.7	22.8
Queue Length 50th (ft)	-57	34	0	38	221	170	157
Queue Length 95th (ft)	#147	50	11	80	#305	#310	#316
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		50	110			
Base Capacity (vph)	115	2190	595	404	1523	500	695
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.18	0.04	0.37	0.83	0.97	0.75

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.

HCM Signalized Intersection Capacity Analysis  
35: 7th Street & 5th Ave

Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	34	76	356	21	141	1191	6	129	197	72	23	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95			1.00			1.00
Frbp, ped/bikes		1.00	1.00	0.97	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			0.98			0.95
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.98			1.00
Satd. Flow (prot)		1767	5085	1350	1765	3536			1559			1532
Flt Permitted		0.14	1.00	1.00	0.51	1.00			0.67			0.97
Satd. Flow (perm)		266	5085	1350	938	3536			1056			1488
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90
Adj. Flow (vph)	39	86	405	24	148	1254	6	157	240	88	26	301
RTOR Reduction (vph)	0	0	0	14	0	1	0	0	12	0	0	9
Lane Group Flow (vph)	0	125	405	10	148	1259	0	0	473	0	0	515
Confl. Peds. (#/hr)		10		4	4		10	8		3	3	
Confl. Bikes (#/hr)				1			2			4		
Parking (#/hr)				5				5	5	5	5	5
Turn Type	Perm	Perm		Perm	Perm			Perm			Perm	
Protected Phases			1			1			2			2
Permitted Phases	1	1		1	1			2			2	
Actuated Green, G (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Effective Green, g (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Actuated g/C Ratio		0.43	0.43	0.43	0.43	0.43			0.46			0.46
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Grp Cap (vph)		115	2190	582	404	1523			487			687
v/s Ratio Prot			0.08			0.36						
v/s Ratio Perm		c0.47		0.01	0.16				c0.45			0.35
v/c Ratio		1.09	0.18	0.02	0.37	0.83			0.97			0.75
Uniform Delay, d1		18.5	11.4	10.6	12.5	16.4			17.1			14.4
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00			1.00
Incremental Delay, d2		109.2	0.2	0.1	2.6	5.3			34.1			7.4
Delay (s)		127.7	11.6	10.7	15.1	21.6			51.1			21.8
Level of Service		F	B	B	B	C			D			C
Approach Delay (s)			37.8			21.0			51.1			21.8
Approach LOS			D			C			D			C
<b>Intersection Summary</b>												
HCM Average Control Delay			29.2			HCM Level of Service			C			
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			7.0			
Intersection Capacity Utilization			104.2%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lane Configurations	
Volume (vph)	177
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	0.90
Adj. Flow (vph)	197
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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	

Queues  
36: I-880 NB On-Ramp & Jackson Street

Interim 2020 + Project  
Timing Plan: AM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	8	736	263	306	592	493
v/c Ratio	0.01	1.10	1.77	0.49	0.90	0.82
Control Delay	8.3	84.0	386.0	15.3	32.4	24.0
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	8.3	84.0	386.0	15.6	32.4	24.0
Queue Length 50th (ft)	1	~229	~115	74	117	87
Queue Length 95th (ft)	7	#392	m#176	m113	#256	#206
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	149	619	656	603
Starvation Cap Reductn	0	0	0	57	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	1.10	1.77	0.54	0.90	0.82

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.

HCM Signalized Intersection Capacity Analysis  
36: I-880 NB On-Ramp & Jackson Street

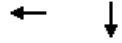
Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	7	662	0	237	275	0	0	141	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frb, ped/bikes				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
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1588	1676		1593	1467			1423	1300
Flt Permitted				0.95	1.00		0.21	1.00			1.00	1.00
Satd. Flow (perm)				1588	1676		353	1467			1423	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	8	736	0	263	306	0	0	172	913
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	54	54
Lane Group Flow (vph)	0	0	0	8	736	0	263	306	0	0	538	439
Confl. Peds. (#/hr)				2		2						
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2				2
Permitted Phases				1			2					2
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				635	670		149	619			601	549
v/s Ratio Prot					c0.44			0.21			0.38	
v/s Ratio Perm				0.01			c0.75					0.34
v/c Ratio				0.01	1.10		1.77	0.49			0.89	0.80
Uniform Delay, d1				8.1	13.5		13.0	9.5			12.1	11.3
Progression Factor				1.00	1.00		1.29	1.30			1.00	1.00
Incremental Delay, d2				0.0	64.8		364.7	2.2			18.3	11.6
Delay (s)				8.2	78.3		381.4	14.5			30.4	22.9
Level of Service				A	E		F	B			C	C
Approach Delay (s)		0.0			77.6			184.1			27.0	
Approach LOS		A			E			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			80.0									E
HCM Volume to Capacity ratio			1.44									
Actuated Cycle Length (s)			45.0									8.0
Intersection Capacity Utilization			97.7%									F
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
 37: 6th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	412	1176
v/c Ratio	0.43	0.74
Control Delay	17.6	7.3
Queue Delay	0.0	0.5
Total Delay	17.6	7.8
Queue Length 50th (ft)	59	49
Queue Length 95th (ft)	92	m62
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	950	1594
Starvation Cap Reductn	0	131
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.80

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						 	
Volume (vph)	0	0	0	20	342	0	0	0	0	0	624	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					2978						2736	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					2978						2736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	23	389	0	0	0	0	0	678	498
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	90	0
Lane Group Flow (vph)	0	0	0	0	405	0	0	0	0	0	1086	0
Confl. Peds. (#/hr)				2		11						45
Confl. Bikes (#/hr)												9
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					19.0						33.0	
Effective Green, g (s)					19.0						33.0	
Actuated g/C Ratio					0.32						0.55	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					943						1505	
v/s Ratio Prot											c0.40	
v/s Ratio Perm					0.14							
v/c Ratio					0.43						0.72	
Uniform Delay, d1					16.2						10.1	
Progression Factor					1.00						0.59	
Incremental Delay, d2					1.4						2.1	
Delay (s)					17.6						8.1	
Level of Service					B						A	
Approach Delay (s)		0.0			17.6			0.0			8.1	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.5		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			56.2%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	756	617	372	27
v/c Ratio	1.49	0.45	0.61	0.04
Control Delay	247.8	9.3	14.2	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	247.8	9.3	14.2	0.1
Queue Length 50th (ft)	~275	50	70	0
Queue Length 95th (ft)	m#291	71	125	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	506	1366	611	682
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.49	0.45	0.61	0.04

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.

HCM Signalized Intersection Capacity Analysis  
38: 6th Street & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↰		↱	↰	↱
Volume (vph)	218	463	81	119	611	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.98		0.98	1.00	1.00
Satd. Flow (prot)		1442		2900	1297	1269
Flt Permitted		0.98		0.98	1.00	1.00
Satd. Flow (perm)		1442		2900	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	242	514	99	145	745	27
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	756	0	617	372	13
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		506		1366	611	598
v/s Ratio Prot				0.21	c0.29	
v/s Ratio Perm		0.52				0.01
v/c Ratio		1.49		0.45	0.61	0.02
Uniform Delay, d1		14.6		8.0	8.8	6.4
Progression Factor		1.18		1.00	1.00	1.00
Incremental Delay, d2		226.5		1.1	4.5	0.1
Delay (s)		243.6		9.1	13.3	6.4
Level of Service		F		A	B	A
Approach Delay (s)		243.6		10.7		
Approach LOS		F		B		

Intersection Summary

HCM Average Control Delay	110.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Interim 2020 + Project  
 Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1168	316	176
v/c Ratio	0.84	0.41	0.31
Control Delay	18.6	7.7	12.3
Queue Delay	0.0	0.0	0.0
Total Delay	18.6	7.7	12.3
Queue Length 50th (ft)	74	38	37
Queue Length 95th (ft)	#145	69	m44
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1395	778	566
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	0.41	0.31

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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Interim 2020 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	273	417	362	0	0	0	0	227	32	85	63	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.95						0.98			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4102						1438			1426	
Flt Permitted		0.99						1.00			0.72	
Satd. Flow (perm)		4102						1438			1061	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	303	463	402	0	0	0	0	277	39	101	75	0
RTOR Reduction (vph)	0	210	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	958	0	0	0	0	0	305	0	0	176	0
Confl. Peds. (#/hr)	4								21			
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		13.0						24.0			24.0	
Actuated g/C Ratio		0.29						0.53			0.53	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1185						767			566	
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.23									0.17	
v/c Ratio		0.81						0.40			0.31	
Uniform Delay, d1		14.8						6.2			5.9	
Progression Factor		1.00						1.00			1.82	
Incremental Delay, d2		6.0						1.5			0.7	
Delay (s)		20.8						7.8			11.4	
Level of Service		C						A			B	
Approach Delay (s)		20.8			0.0			7.8			11.4	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.3								B	
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			62.6%								B	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK






















	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	588	275	458
v/c Ratio	0.40	0.37	0.60
Control Delay	16.2	4.0	6.4
Queue Delay	0.0	0.3	0.4
Total Delay	16.2	4.3	6.8
Queue Length 50th (ft)	57	1	3
Queue Length 95th (ft)	82	m20	63
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1460	750	769
Starvation Cap Reductn	0	142	64
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.40	0.45	0.65

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
40: 5th Street & Madison Street

Interim 2020 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  								  	  		
Volume (vph)	0	501	17	0	0	0	0	0	0	451	150	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.95	0.95		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.99	0.99		
Frt		1.00								1.00	1.00		
Flt Protected		1.00								0.95	0.97		
Satd. Flow (prot)		4362								1306	1342		
Flt Permitted		1.00								0.95	0.97		
Satd. Flow (perm)		4362								1306	1342		
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82	
Adj. Flow (vph)	0	569	19	0	0	0	0	0	0	550	183	0	
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	53	53	0	
Lane Group Flow (vph)	0	582	0	0	0	0	0	0	0	222	405	0	
Confl. Peds. (#/hr)			4							16			
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		20.0								32.0	32.0		
Effective Green, g (s)		20.0								32.0	32.0		
Actuated g/C Ratio		0.33								0.53	0.53		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		1454								697	716		
v/s Ratio Prot		c0.13											
v/s Ratio Perm										0.17	0.30		
v/c Ratio		0.40								0.32	0.57		
Uniform Delay, d1		15.4								7.9	9.4		
Progression Factor		1.00								0.63	0.53		
Incremental Delay, d2		0.8								0.8	2.3		
Delay (s)		16.2								5.8	7.3		
Level of Service		B								A	A		
Approach Delay (s)		16.2			0.0			0.0			6.7		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			10.9		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			56.2%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group



Queues  
41: 5th Street & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	986	585	126
v/c Ratio	0.45	1.19	0.26
Control Delay	7.6	124.4	16.1
Queue Delay	0.0	0.0	0.0
Total Delay	7.6	124.4	16.1
Queue Length 50th (ft)	48	~190	33
Queue Length 95th (ft)	72	#347	62
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2199	492	487
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	1.19	0.26


















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.

# HCM Signalized Intersection Capacity Analysis

## 41: 5th Street & Oak Street













Interim 2020 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	253	564	129	0	0	0	0	438	95	1	94	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4399						1425			1466	
Flt Permitted		0.99						1.00			1.00	
Satd. Flow (perm)		4399						1425			1462	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	264	588	134	0	0	0	0	481	104	1	125	0
RTOR Reduction (vph)	0	47	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	939	0	0	0	0	0	568	0	0	126	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2151						475			487	
v/s Ratio Prot								c0.40				
v/s Ratio Perm		0.21									0.09	
v/c Ratio		0.44						1.20			0.26	
Uniform Delay, d1		7.5						15.0			10.9	
Progression Factor		1.00						1.00			1.29	
Incremental Delay, d2		0.6						106.9			1.2	
Delay (s)		8.1						121.9			15.4	
Level of Service		A						F			B	
Approach Delay (s)		8.1			0.0			121.9			15.4	
Approach LOS		A			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			47.9									HCM Level of Service D
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			60.1%									ICU Level of Service B
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
42: Embarcadero W & Oak Street

Interim 2020 + Project  
Timing Plan: AM PEAK

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Volume (veh/h)	0	0	0	0	0	0	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	0	0	0	0	0	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)					1112		
pX, platoon unblocked							
vC, conflicting volume	0	0	0				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	0	0				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	100	100				
cM capacity (veh/h)	1023	1084	1622				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			0.0%		ICU Level of Service		A
Analysis Period (min)			15				

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**Arterial Level of Service: EB 7th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	7.0	33.2	0.15	15.8	C
Madison Street	IV	25	18.9	11.3	30.2	0.07	8.5	E
Oak Street	IV	25	19.3	5.8	25.1	0.07	10.5	D
Total	IV		64.4	24.1	88.5	0.29	11.8	D

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**Arterial Level of Service: WB 8th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	77.7	93.7	0.06	2.3	F
Madison Street	IV	25	19.5	16.0	35.5	0.07	7.5	E
Jackson Street	IV	25	18.8	26.5	45.3	0.07	5.6	F
Alice Street	IV	25	19.7	10.1	29.8	0.07	9.0	E
Harrison Street	IV	25	19.0	32.9	51.9	0.07	5.0	F
Webster Street	IV	25	18.8	52.2	71.0	0.07	3.6	F
Total	IV		111.8	215.4	327.2	0.42	4.6	F

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**Arterial Level of Service: SB Madison Street**


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






Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	3.5	18.8	0.06	11.1	D
9th Street	IV	25	13.2	5.2	18.4	0.05	9.8	D
8th Street	IV	25	13.9	3.2	17.1	0.05	11.0	D
7th Street	IV	25	13.6	27.2	40.8	0.05	4.5	F
Total	IV		56.0	39.1	95.1	0.21	8.0	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	5.1	18.6	0.05	9.8	D
9th Street	IV	25	14.7	2.6	17.3	0.06	11.5	D
10th St	IV	25	13.3	2.1	15.4	0.05	11.7	D
11th St	IV	25	14.7	10.5	25.2	0.06	7.9	E
12th St	IV	25	12.5	16.5	29.0	0.05	5.9	F
Total	IV		68.7	36.8	105.5	0.26	8.8	E

Queues  
1: W Grand Ave & Broadway

Interim 2020 + Project  
Timing Plan: PM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	1498	1194	219	601	193	99	527
v/c Ratio	1.95	0.98	1.99dl	0.80	0.45	0.41	0.41	0.40
Control Delay	482.9	42.5	274.3	45.2	18.7	19.1	23.4	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	482.9	42.5	274.3	45.2	18.7	19.1	23.4	16.5
Queue Length 50th (ft)	~162	394	~482	99	116	64	36	90
Queue Length 95th (ft)	#126	172	194	#227	161	122	79	127
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	99	1522	773	275	1349	468	244	1302
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	1.95	0.98	1.54	0.80	0.45	0.41	0.41	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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
1: W Grand Ave & Broadway

Interim 2020 + Project  
Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	88	664	40	82	449	42	1	201	553	178	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frbp, ped/bikes		1.00	1.00			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		0.99	1.00			1.00			0.98	1.00	1.00	
Frt		1.00	0.99			0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1584	3146			3113			1567	3185	1087	
Flt Permitted		0.12	1.00			0.51			0.39	1.00	1.00	
Satd. Flow (perm)		205	3146			1590			650	3185	1087	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	187	1413	85	171	935	88	1	218	601	193	1
RTOR Reduction (vph)	0	0	5	0	0	7	0	0	0	0	8	0
Lane Group Flow (vph)	0	193	1493	0	0	1187	0	0	219	601	185	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Effective Green, g (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Actuated g/C Ratio		0.48	0.48			0.48			0.42	0.42	0.42	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		99	1517			767			275	1349	460	
v/s Ratio Prot			0.47							0.19		
v/s Ratio Perm		c0.94				0.75			c0.34		0.17	
v/c Ratio		1.95	0.98			1.99dl			0.80	0.45	0.40	
Uniform Delay, d1		22.0	21.7			22.0			21.3	17.4	17.0	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		461.8	19.2			253.0			20.9	1.1	2.6	
Delay (s)		483.8	40.9			275.0			42.2	18.5	19.6	
Level of Service		F	D			F			D	B	B	
Approach Delay (s)			91.4			275.0				23.8		
Approach LOS			F			F				C		
<b>Intersection Summary</b>												
HCM Average Control Delay			114.7			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.41									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			95.6%			ICU Level of Service			F			
Analysis Period (min)			15									

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Interim 2020 + Project  
 Timing Plan: PM PEAK

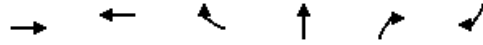


Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	86	340	124
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.98	
Flpb, ped/bikes	0.98	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1565	3009	
Flt Permitted	0.35	1.00	
Satd. Flow (perm)	574	3009	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	98	386	141
RTOR Reduction (vph)	0	27	0
Lane Group Flow (vph)	99	500	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	36.0	36.0	
Effective Green, g (s)	36.0	36.0	
Actuated g/C Ratio	0.42	0.42	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	243	1274	
v/s Ratio Prot		0.17	
v/s Ratio Perm	0.17		
v/c Ratio	0.41	0.39	
Uniform Delay, d1	17.1	16.9	
Progression Factor	1.00	1.00	
Incremental Delay, d2	5.0	0.9	
Delay (s)	22.1	17.8	
Level of Service	C	B	
Approach Delay (s)		18.5	
Approach LOS		B	
<b>Intersection Summary</b>			



Queues  
2: 20th St & Kaiser DWY

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	EBT	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	340	320	2	361	348	34
v/c Ratio	0.31	0.36	0.01	0.61	0.54	0.06
Control Delay	19.9	20.2	11.0	16.8	5.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	20.2	11.0	16.8	5.6	0.2
Queue Length 50th (ft)	38	51	0	81	0	0
Queue Length 95th (ft)	59	71	4	155	45	0
Internal Link Dist (ft)	337	517		577		
Turn Bay Length (ft)			90			
Base Capacity (vph)	1107	879	348	590	647	565
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	0.31	0.36	0.01	0.61	0.54	0.06

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↗		↔	↗			↗
Volume (vph)	0	256	40	130	130	2	107	12	491	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91			0.95	1.00		0.95	0.95			1.00
Frb, ped/bikes		0.99			1.00	0.71		1.00	1.00			1.00
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			1.00
Frt		0.98			1.00	0.85		0.91	0.85			0.86
Flt Protected		1.00			0.98	1.00		0.98	1.00			1.00
Satd. Flow (prot)		4433			3108	971		1421	1185			1450
Flt Permitted		1.00			0.70	1.00		0.98	1.00			1.00
Satd. Flow (perm)		4433			2228	971		1421	1185			1450
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	294	46	160	160	2	124	14	571	0	0	34
RTOR Reduction (vph)	0	30	0	0	0	1	0	83	224	0	0	30
Lane Group Flow (vph)	0	310	0	0	320	1	0	278	124	0	0	4
Confl. Peds. (#/hr)			54			181	125					
Confl. Bikes (#/hr)			9									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5						5			
Turn Type				Prot		Perm	Split			Prot		custom
Protected Phases				2		6	8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0			25.0	25.0		25.0	25.0			8.0
Effective Green, g (s)		17.0			25.0	25.0		25.0	25.0			8.0
Actuated g/C Ratio		0.24			0.36	0.36		0.36	0.36			0.11
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1077			997	347		508	423			166
v/s Ratio Prot					c0.07			c0.20	0.10			0.00
v/s Ratio Perm		c0.07			0.04	0.00						
v/c Ratio		0.29			0.32	0.00		0.55	0.29			0.02
Uniform Delay, d1		21.6			16.3	14.5		18.0	16.2			27.5
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.7			0.9	0.0		4.2	1.8			0.3
Delay (s)		22.2			17.2	14.5		22.2	17.9			27.8
Level of Service		C			B	B		C	B			C
Approach Delay (s)		22.2			17.2			20.1			27.8	
Approach LOS		C			B			C			C	

Intersection Summary		
HCM Average Control Delay	20.1	HCM Level of Service C
HCM Volume to Capacity ratio	0.39	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	61.8%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	84	1072	775
v/c Ratio	0.10	0.87	0.33
Control Delay	14.4	11.0	9.9
Queue Delay	0.0	0.0	0.0
Total Delay	14.4	11.0	9.9
Queue Length 50th (ft)	8	0	0
Queue Length 95th (ft)	30	#451	213
Internal Link Dist (ft)	259		346
Turn Bay Length (ft)			
Base Capacity (vph)	1620	1233	2410
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.05	0.87	0.32

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
3: 19th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	76	965	0	0	0	0	681	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	1.00					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1247					3178	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1247					3178	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	84	1072	0	0	0	0	765	10
RTOR Reduction (vph)	0	0	0	0	0	208	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	84	864	0	0	0	0	774	0
Confl. Peds. (#/hr)				22								22
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					5.8	35.8					27.5	
Effective Green, g (s)					5.8	35.8					27.5	
Actuated g/C Ratio					0.13	0.81					0.62	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					416	1005					1968	
v/s Ratio Prot					0.03						0.24	
v/s Ratio Perm						c0.69						
v/c Ratio					0.20	0.86					0.39	
Uniform Delay, d1					17.2	2.7					4.3	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.2	7.6					0.1	
Delay (s)					17.5	10.3					4.4	
Level of Service					B	B					A	
Approach Delay (s)		0.0			10.9			0.0			4.4	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.3		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			44.4		Sum of lost time (s)				8.6			
Intersection Capacity Utilization			69.7%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												


















Queues  
4: 17th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	324	63	848
v/c Ratio	0.46	0.07	0.46
Control Delay	11.6	1.7	7.2
Queue Delay	0.0	0.0	1.6
Total Delay	11.6	1.7	8.8
Queue Length 50th (ft)	24	0	73
Queue Length 95th (ft)	55	11	107
Internal Link Dist (ft)	281		166
Turn Bay Length (ft)			
Base Capacity (vph)	710	880	1841
Starvation Cap Reductn	0	0	766
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.07	0.79
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
4: 17th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									 	
Volume (vph)	0	32	266	0	0	0	0	0	0	57	772	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.90								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.87								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		2340								1388	2986	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		2340								1388	2986	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	35	289	0	0	0	0	0	0	63	848	0
RTOR Reduction (vph)	0	125	0	0	0	0	0	0	0	24	0	0
Lane Group Flow (vph)	0	200	0	0	0	0	0	0	0	39	848	0
Confl. Peds. (#/hr)	34		78							8		18
Confl. Bikes (#/hr)			4						1			
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0								37.0	37.0	
Effective Green, g (s)		15.0								37.0	37.0	
Actuated g/C Ratio		0.25								0.62	0.62	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		585								856	1841	
v/s Ratio Prot		c0.09									c0.28	
v/s Ratio Perm										0.03		
v/c Ratio		0.34								0.05	0.46	
Uniform Delay, d1		18.4								4.5	6.2	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		1.6								0.1	0.8	
Delay (s)		20.0								4.6	7.0	
Level of Service		C								A	A	
Approach Delay (s)		20.0			0.0			0.0			6.8	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.3		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			69.7%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	675	684	1390
v/c Ratio	0.37	0.43	1.71
Control Delay	7.1	10.8	345.9
Queue Delay	0.0	0.0	355.9
Total Delay	7.1	10.8	701.8
Queue Length 50th (ft)	57	61	~423
Queue Length 95th (ft)	85	92	#499
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1819	1579	815
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	20	17	312
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.44	2.76



















**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.

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	550	91	58	510	0	0	0	0	383	768	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.98			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						0.98	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.99						0.98	
Satd. Flow (prot)		3067			3158						2869	
Flt Permitted		1.00			0.84						0.98	
Satd. Flow (perm)		3067			2670						2869	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	579	96	70	614	0	0	0	0	456	914	20
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	672	0	0	684	0	0	0	0	0	1389	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		35.5			35.5						17.0	
Effective Green, g (s)		35.5			35.5						17.0	
Actuated g/C Ratio		0.59			0.59						0.28	
Clearance Time (s)		3.0			3.0						4.5	
Lane Grp Cap (vph)		1815			1580						813	
v/s Ratio Prot		0.22										
v/s Ratio Perm					c0.26						0.48	
v/c Ratio		0.37			0.43						1.71	
Uniform Delay, d1		6.4			6.7						21.5	
Progression Factor		1.00			1.46						1.20	
Incremental Delay, d2		0.6			0.7						323.5	
Delay (s)		7.0			10.5						349.4	
Level of Service		A			B						F	
Approach Delay (s)		7.0			10.5			0.0			349.4	
Approach LOS		A			B			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			181.0			HCM Level of Service				F		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			7.5			
Intersection Capacity Utilization			85.5%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group



Queues  
6: 14th St & Oak Street























Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1014	538	762	703	37
v/c Ratio	1.61	0.63	1.39	0.40	0.05
Control Delay	298.3	23.4	205.2	6.2	4.4
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	298.3	23.4	205.2	6.4	4.4
Queue Length 50th (ft)	~297	90	~306	48	2
Queue Length 95th (ft)	m#282	117	#410	71	7
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	631	849	548	1771	688
Starvation Cap Reductn	0	0	0	387	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.61	0.63	1.39	0.51	0.05

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.

HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Volume (vph)	63	870	0	0	430	610	137	524	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frb, ped/bikes		1.00			1.00	0.94		1.00	0.97			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2914			3185	1333		3125	1209			
Flt Permitted		0.81			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2368			3185	1333		3125	1209			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	68	946	0	0	538	762	146	557	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	3	0	0	0
Lane Group Flow (vph)	0	1014	0	0	538	570	0	703	34	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		16.0			16.0	16.0		34.0	34.0			
Effective Green, g (s)		16.0			16.0	16.0		34.0	34.0			
Actuated g/C Ratio		0.27			0.27	0.27		0.57	0.57			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		631			849	355		1771	685			
v/s Ratio Prot					0.17							
v/s Ratio Perm		c0.43				0.43		0.22	0.03			
v/c Ratio		1.61			0.63	1.61		0.40	0.05			
Uniform Delay, d1		22.0			19.4	22.0		7.3	5.8			
Progression Factor		1.03			1.00	1.00		0.75	0.82			
Incremental Delay, d2		275.4			3.6	285.2		0.6	0.1			
Delay (s)		298.1			23.0	307.2		6.1	4.9			
Level of Service		F			C	F		A	A			
Approach Delay (s)		298.1			189.6			6.0			0.0	
Approach LOS		F			F			A			A	

Intersection Summary			
HCM Average Control Delay	181.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1219	1198
v/c Ratio	0.81	0.68
Control Delay	24.3	10.5
Queue Delay	0.0	109.7
Total Delay	24.3	120.2
Queue Length 50th (ft)	109	233
Queue Length 95th (ft)	117	m123
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1502	1772
Starvation Cap Reductn	0	805
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.81	1.24



















**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  									  	
Volume (vph)	0	720	219	0	0	0	0	0	0	133	789	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.95	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5357									2948	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5357									2948	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	935	284	0	0	0	0	0	0	173	1025	0
RTOR Reduction (vph)	0	73	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1146	0	0	0	0	0	0	0	0	1195	0
Confl. Peds. (#/hr)	14		11							38		28
Confl. Bikes (#/hr)			4									8
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1429									1769	
v/s Ratio Prot		c0.21										
v/s Ratio Perm											0.41	
v/c Ratio		0.80									0.68	
Uniform Delay, d1		20.5									8.1	
Progression Factor		1.00									1.23	
Incremental Delay, d2		4.8									0.2	
Delay (s)		25.4									10.1	
Level of Service		C									B	
Approach Delay (s)		25.4			0.0			0.0			10.1	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.8								HCM Level of Service	B
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			53.1%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
8: 13th St & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK




















	↖	→	↑
Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	124	1021	868
v/c Ratio	0.29	0.87	0.35
Control Delay	20.1	38.5	6.5
Queue Delay	0.0	0.0	0.0
Total Delay	20.1	38.5	6.5
Queue Length 50th (ft)	24	130	50
Queue Length 95th (ft)	m28	133	69
Internal Link Dist (ft)		132	231
Turn Bay Length (ft)	50		
Base Capacity (vph)	424	1170	2513
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.87	0.35

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
8: 13th St & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	88	725	0	0	0	0	0	614	211	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0				
Lane Util. Factor	1.00	0.91						0.91				
Frbp, ped/bikes	1.00	1.00						0.99				
Flpb, ped/bikes	0.98	1.00						1.00				
Frt	1.00	1.00						0.96				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1367	4386						4185				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1367	4386						4185				
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	124	1021	0	0	0	0	0	646	222	0	0	0
RTOR Reduction (vph)	59	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	65	1021	0	0	0	0	0	866	0	0	0	0
Confl. Peds. (#/hr)	17		17				86		18			
Confl. Bikes (#/hr)			1						27			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)	16.0	16.0						36.0				
Effective Green, g (s)	16.0	16.0						36.0				
Actuated g/C Ratio	0.27	0.27						0.60				
Clearance Time (s)	5.0	5.0						3.0				
Lane Grp Cap (vph)	365	1170						2511				
v/s Ratio Prot		c0.23						c0.21				
v/s Ratio Perm	0.05											
v/c Ratio	0.18	0.87						0.35				
Uniform Delay, d1	16.9	21.0						6.1				
Progression Factor	2.34	1.50						1.00				
Incremental Delay, d2	0.7	5.9						0.4				
Delay (s)	40.2	37.5						6.4				
Level of Service	D	D						A				
Approach Delay (s)		37.8			0.0			6.4			0.0	
Approach LOS		D			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			24.3		HCM Level of Service			C				
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			94.1%		ICU Level of Service			F				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Interim 2020 + Project  
Timing Plan: PM PEAK



Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	1024	51	1209	1191
v/c Ratio	0.85	0.10	0.55	0.87
Control Delay	22.3	4.1	4.1	20.7
Queue Delay	0.3	0.0	2.2	0.0
Total Delay	22.7	4.1	6.3	20.7
Queue Length 50th (ft)	121	0	27	131
Queue Length 95th (ft)	#210	14	m28	151
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1203	503	2181	1373
Starvation Cap Reductn	0	0	794	0
Spillback Cap Reductn	19	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.10	0.87	0.87













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.

# HCM Signalized Intersection Capacity Analysis

## 9: 13th St & Lake Merritt Blvd






Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	891	44	0	0	1040	0	0	0	905	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frb, ped/bikes		1.00	1.00			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1247			2508				3090		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1247			2508				3090		
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.25	0.25	0.25	0.76	0.76	0.76
Adj. Flow (vph)	0	1024	51	0	0	1209	0	0	0	1191	0	0
RTOR Reduction (vph)	0	0	32	0	0	672	0	0	0	0	0	0
Lane Group Flow (vph)	0	1024	19	0	0	537	0	0	0	1191	0	0
Confl. Peds. (#/hr)	20					20						
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		17.0	17.0			20.0				20.0		
Effective Green, g (s)		17.0	17.0			20.0				20.0		
Actuated g/C Ratio		0.38	0.38			0.44				0.44		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1203	471			1115				1373		
v/s Ratio Prot						0.21				c0.39		
v/s Ratio Perm		c0.32	0.02									
v/c Ratio		0.85	0.04			0.48				0.87		
Uniform Delay, d1		12.8	8.8			8.8				11.3		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		7.7	0.2			0.7				7.6		
Delay (s)		20.5	9.0			9.5				18.9		
Level of Service		C	A			A				B		
Approach Delay (s)		20.0			9.5			0.0			18.9	
Approach LOS		B			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			62.7%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group



Queues  
10: 12th St & I-980 Off-Ramp














					
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	119	284	392	1262
v/c Ratio	0.03	0.23	0.20	0.35	1.49
Control Delay	0.0	7.9	22.3	23.6	254.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	7.9	22.3	23.6	254.6
Queue Length 50th (ft)	0	7	41	54	-487
Queue Length 95th (ft)	0	40	58	81	#612
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	463	523	1400	1109	846
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.23	0.20	0.35	1.49

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Interim 2020 + Project  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	101	241	295	62	1104	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1337	1485	4577	4235		3059	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1337	1485	4577	4235		3059	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	119	284	324	68	1150	112
RTOR Reduction (vph)	8	69	0	38	0	0	0
Lane Group Flow (vph)	4	50	284	354	0	1262	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	26.0	26.0	26.0	21.5		23.5	
Effective Green, g (s)	26.0	26.0	26.0	21.5		23.5	
Actuated g/C Ratio	0.31	0.31	0.31	0.25		0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	409	454	1400	1071		846	
v/s Ratio Prot			c0.06	c0.08		c0.41	
v/s Ratio Perm	0.00	0.03					
v/c Ratio	0.01	0.11	0.20	0.33		1.49	
Uniform Delay, d1	20.5	21.2	21.8	25.9		30.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.5	0.3	0.8		227.6	
Delay (s)	20.6	21.7	22.2	26.7		258.3	
Level of Service	C	C	C	C		F	
Approach Delay (s)			22.0	26.7		258.3	
Approach LOS			C	C		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			167.0		HCM Level of Service		F
HCM Volume to Capacity ratio			0.67				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			69.3%		ICU Level of Service		C
Analysis Period (min)			15				

c Critical Lane Group

Queues  
11: 12th St & Broadway

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1291	120	492	812
v/c Ratio	0.89	1.01	0.31	0.74
Control Delay	27.5	120.5	9.3	21.0
Queue Delay	0.0	0.0	0.0	0.7
Total Delay	27.5	120.5	9.3	21.7
Queue Length 50th (ft)	154	-45	50	125
Queue Length 95th (ft)	148	#136	77	174
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1456	119	1587	1091
Starvation Cap Reductn	0	0	0	77
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	1.01	0.31	0.80

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.

HCM Signalized Intersection Capacity Analysis  
11: 12th St & Broadway

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↑	↑↑			↑↑	
Volume (vph)	0	0	0	139	667	124	109	448	0	0	608	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.5			4.5	
Lane Util. Factor					0.91		1.00	0.95			0.95	
Frbp, ped/bikes					0.99		1.00	1.00			0.95	
Flpb, ped/bikes					0.98		1.00	1.00			1.00	
Frt					0.98		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4111		1593	3122			2921	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					4111		1593	3122			2921	
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.91	0.91	0.91	0.86	0.86	0.86
Adj. Flow (vph)	0	0	0	193	926	172	120	492	0	0	707	105
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	1274	0	120	492	0	0	792	0
Confl. Peds. (#/hr)				125		48	446		455	455		446
Confl. Bikes (#/hr)						6			10			9
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10
Parking (#/hr)				5	5	5						
Turn Type					Perm			Prot				
Protected Phases						4		5	2			6
Permitted Phases				4								
Actuated Green, G (s)						21.0		4.5	30.5			22.0
Effective Green, g (s)						21.0		4.5	30.5			22.0
Actuated g/C Ratio						0.35		0.08	0.51			0.37
Clearance Time (s)						4.0		4.0	4.5			4.5
Lane Grp Cap (vph)						1439		119	1587			1071
v/s Ratio Prot								c0.08	0.16			c0.27
v/s Ratio Perm						0.31						
v/c Ratio						0.89		1.01	0.31			0.74
Uniform Delay, d1						18.4		27.8	8.6			16.5
Progression Factor						1.00		1.00	1.00			1.00
Incremental Delay, d2						8.3		84.8	0.5			4.6
Delay (s)						26.7		112.5	9.1			21.1
Level of Service						C		F	A			C
Approach Delay (s)		0.0				26.7			29.4			21.1
Approach LOS		A				C			C			C
<b>Intersection Summary</b>												
HCM Average Control Delay			25.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		12.5			
Intersection Capacity Utilization			61.3%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1332	1062	117
v/c Ratio	0.44	1.12	0.29
Control Delay	8.2	88.4	12.7
Queue Delay	0.0	0.0	0.0
Total Delay	8.2	88.4	12.7
Queue Length 50th (ft)	72	~228	9
Queue Length 95th (ft)	88	#296	m23
Internal Link Dist (ft)	319	229	
Turn Bay Length (ft)			
Base Capacity (vph)	3027	946	404
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	1.12	0.29

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.

HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

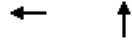
Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4TTL						4T	T
Volume (vph)	0	0	0	218	928	0	0	0	0	0	871	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						4.0	4.0
Lane Util. Factor					0.86						0.95	1.00
Frbp, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					0.99						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					5411						2986	1154
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					5411						2986	1154
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	253	1079	0	0	0	0	0	1062	117
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	0	1327	0	0	0	0	0	1062	78
Confl. Peds. (#/hr)				69		76						45
Confl. Bikes (#/hr)						5						15
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0
Parking (#/hr)				5	5						5	5
Turn Type					Perm							Perm
Protected Phases					6						4	
Permitted Phases				6								4
Actuated Green, G (s)					33.5						19.0	19.0
Effective Green, g (s)					33.5						19.0	19.0
Actuated g/C Ratio					0.56						0.32	0.32
Clearance Time (s)					3.5						4.0	4.0
Lane Grp Cap (vph)					3021						946	365
v/s Ratio Prot											c0.36	
v/s Ratio Perm					0.25							0.07
v/c Ratio					0.44						1.12	0.21
Uniform Delay, d1					7.8						20.5	15.0
Progression Factor					1.00						0.98	1.22
Incremental Delay, d2					0.5						65.4	0.9
Delay (s)					8.2						85.4	19.3
Level of Service					A						F	B
Approach Delay (s)		0.0			8.2			0.0			78.8	
Approach LOS		A			A			A			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			41.4		HCM Level of Service					D		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				7.5			
Intersection Capacity Utilization			52.0%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
13: 12th St & Oak Street













Interim 2020 + Project  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	1298	977
v/c Ratio	0.55	0.65
Control Delay	10.5	14.2
Queue Delay	0.0	0.1
Total Delay	10.5	14.3
Queue Length 50th (ft)	66	72
Queue Length 95th (ft)	83	105
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2356	1510
Starvation Cap Reductn	0	41
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.55	0.67
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	1010	81	133	737	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.91				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.98				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5418			4203				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5418			4203				
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1202	96	149	828	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1290	0	0	961	0	0	0	0
Confl. Peds. (#/hr)						140	166		148			
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					19.5			16.0				
Effective Green, g (s)					19.5			16.0				
Actuated g/C Ratio					0.43			0.36				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2348			1494				
v/s Ratio Prot					c0.24							
v/s Ratio Perm								0.23				
v/c Ratio					0.55			0.64				
Uniform Delay, d1					9.5			12.1				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.9			2.1				
Delay (s)					10.4			14.3				
Level of Service					B			B				
Approach Delay (s)		0.0			10.4			14.3			0.0	
Approach LOS		A			B			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			45.0				Sum of lost time (s)		9.5			
Intersection Capacity Utilization			45.0%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020 + Project  
Timing Plan: PM PEAK







	↙	↘	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	791	1117	1157	2041
v/c Ratio	0.61	0.90	0.91	1.06
Control Delay	13.1	26.1	26.2	47.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.1	26.1	26.2	47.5
Queue Length 50th (ft)	66	131	140	~173
Queue Length 95th (ft)	100	#243	#256	m#291
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1301	1236	1274	1932
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.90	0.91	1.06

**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.

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Interim 2020 + Project  
 Timing Plan: PM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑	
Volume (vph)	0	696	1005	1041	1786	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4573	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4573	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	791	1117	1157	2030	11
RTOR Reduction (vph)	0	2	0	0	1	0
Lane Group Flow (vph)	0	789	1117	1157	2040	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		18.0	18.0	18.0	19.0	
Effective Green, g (s)		18.0	18.0	18.0	19.0	
Actuated g/C Ratio		0.40	0.40	0.40	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1300	1236	1274	1931	
v/s Ratio Prot		0.24	0.36	c0.36	c0.45	
v/s Ratio Perm						
v/c Ratio		0.61	0.90	0.91	1.06	
Uniform Delay, d1		10.7	12.7	12.7	13.0	
Progression Factor		1.00	1.00	1.00	0.89	
Incremental Delay, d2		2.1	10.9	11.0	32.0	
Delay (s)		12.8	23.6	23.7	43.6	
Level of Service		B	C	C	D	
Approach Delay (s)	12.8			23.7	43.6	
Approach LOS	B			C	D	
<b>Intersection Summary</b>						
HCM Average Control Delay			30.0		HCM Level of Service	C
HCM Volume to Capacity ratio			0.98			
Actuated Cycle Length (s)			45.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

15: International Blvd & Lake Merritt Blvd


















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	515	82	1336	638	1126
v/c Ratio	0.36	0.16	0.79	0.44	1.03
Control Delay	14.0	11.3	18.6	2.1	54.3
Queue Delay	0.0	0.0	75.3	0.2	0.0
Total Delay	14.0	11.3	93.9	2.3	54.3
Queue Length 50th (ft)	69	16	220	0	-238
Queue Length 95th (ft)	100	40	301	26	#331
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1426	529	1688	1443	1096
Starvation Cap Reductn	0	0	539	229	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.16	1.16	0.53	1.03

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.

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Interim 2020 + Project  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	453	72	1283	612	52	894
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.94	1.00	0.85		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1255	3539	2325		3243
Flt Permitted	0.95	1.00	1.00	1.00		0.71
Satd. Flow (perm)	3433	1255	3539	2325		2300
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.84	0.84
Adj. Flow (vph)	515	82	1336	638	62	1064
RTOR Reduction (vph)	0	8	0	334	0	0
Lane Group Flow (vph)	515	74	1336	304	0	1126
Confl. Peds. (#/hr)		63		103		
Confl. Bikes (#/hr)				33		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.0	27.0	31.0	31.0		31.0
Effective Green, g (s)	27.0	27.0	31.0	31.0		31.0
Actuated g/C Ratio	0.42	0.42	0.48	0.48		0.48
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1426	521	1688	1109		1097
v/s Ratio Prot	c0.15		0.38			
v/s Ratio Perm		0.06		0.13		c0.49
v/c Ratio	0.36	0.14	0.79	0.27		1.03
Uniform Delay, d1	13.1	11.8	14.3	10.2		17.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.7	0.6	3.9	0.6		34.1
Delay (s)	13.8	12.4	18.2	10.8		51.1
Level of Service	B	B	B	B		D
Approach Delay (s)	13.6		15.8			51.1
Approach LOS	B		B			D

Intersection Summary			
HCM Average Control Delay		26.2	HCM Level of Service C
HCM Volume to Capacity ratio		0.72	
Actuated Cycle Length (s)		65.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		92.7%	ICU Level of Service F
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Interim 2020 + Project  
Timing Plan: PM PEAK

















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	579	36	1287	114	347
v/c Ratio	0.44	0.06	0.76	0.60	0.19
Control Delay	16.1	5.3	8.6	42.6	8.6
Queue Delay	0.0	0.0	0.6	0.0	0.0
Total Delay	16.1	5.3	9.2	42.6	8.6
Queue Length 50th (ft)	85	0	58	44	35
Queue Length 95th (ft)	115	14	132	#102	54
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1320	560	1695	191	1814
Starvation Cap Reductn	0	0	133	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.06	0.82	0.60	0.19

Intersection Summary

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





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Interim 2020 + Project  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Volume (vph)	492	31	362	809	100	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.92	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.90		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1398	3072		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1398	3072		1770	3468
Peak-hour factor, PHF	0.85	0.85	0.91	0.91	0.88	0.88
Adj. Flow (vph)	579	36	398	889	114	347
RTOR Reduction (vph)	0	22	561	0	0	0
Lane Group Flow (vph)	579	14	726	0	114	347
Confl. Peds. (#/hr)	28	89		24	24	
Confl. Bikes (#/hr)				25		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0	24.0		7.0	34.0
Effective Green, g (s)	25.0	25.0	24.0		7.0	34.0
Actuated g/C Ratio	0.38	0.38	0.37		0.11	0.52
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1320	538	1134		191	1814
v/s Ratio Prot	c0.17		c0.24		c0.06	0.10
v/s Ratio Perm		0.01				
v/c Ratio	0.44	0.03	0.64		0.60	0.19
Uniform Delay, d1	14.8	12.4	16.9		27.7	8.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.1	2.8		13.0	0.2
Delay (s)	15.9	12.5	19.7		40.7	8.4
Level of Service	B	B	B		D	A
Approach Delay (s)	15.7		19.7			16.4
Approach LOS	B		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			74.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Interim 2020 + Project  
Timing Plan: PM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	201	606	1546	103
v/c Ratio	0.42	0.41	0.94	0.19
Control Delay	6.8	26.5	38.1	30.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.8	26.5	38.1	30.6
Queue Length 50th (ft)	0	81	285	24
Queue Length 95th (ft)	51	102	#318	42
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	479	1470	1648	540
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.41	0.94	0.19

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Interim 2020 + Project  
 Timing Plan: PM PEAK



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Volume (vph)	171	515	1271	28	56	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.95	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1229	5432	4370		2959	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1229	5432	4370		2959	
Peak-hour factor, PHF	0.85	0.85	0.84	0.84	0.83	0.83
Adj. Flow (vph)	201	606	1513	33	67	36
RTOR Reduction (vph)	147	0	2	0	0	0
Lane Group Flow (vph)	54	606	1544	0	103	0
Confl. Peds. (#/hr)	39			8		8
Confl. Bikes (#/hr)				1		
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	23.0	23.0	32.0		15.5	
Effective Green, g (s)	23.0	23.0	32.0		15.5	
Actuated g/C Ratio	0.27	0.27	0.38		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	333	1470	1645		540	
v/s Ratio Prot			c0.35		c0.03	
v/s Ratio Perm	0.04	0.11				
v/c Ratio	0.16	0.41	0.94		0.19	
Uniform Delay, d1	23.7	25.5	25.5		29.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.1	0.9	11.7		0.8	
Delay (s)	24.7	26.3	37.3		30.2	
Level of Service	C	C	D		C	
Approach Delay (s)		25.9	37.3		30.2	
Approach LOS		C	D		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			33.2		HCM Level of Service	C
HCM Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			62.4%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						



Queues  
18: 11th St & Broadway

Interim 2020 + Project  
Timing Plan: PM PEAK






















	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	670	151	592	147	660
v/c Ratio	0.61	0.25	0.68	0.84	0.45
Control Delay	16.6	11.8	20.9	67.0	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay	16.6	11.8	20.9	67.0	11.5
Queue Length 50th (ft)	89	16	83	48	70
Queue Length 95th (ft)	137	35	129	#135	106
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1098	598	865	174	1476
Starvation Cap Reductn	0	0	0	0	427
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.25	0.68	0.84	0.63

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
18: 11th St & Broadway

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 			 	
Volume (vph)	100	530	142	0	0	0	0	445	82	132	594	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.67					0.94		1.00	1.00	
Flpb, ped/bikes		0.99	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2876	1541					2879		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2876	1541					2879		1593	3122	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	106	564	151	0	0	0	0	500	92	147	660	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	670	141	0	0	0	0	564	0	147	660	0
Confl. Peds. (#/hr)	77		535					490		535	535	490
Confl. Bikes (#/hr)			6							9		16
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1098	588					838		174	1476	
v/s Ratio Prot								c0.20		c0.09	0.21	
v/s Ratio Perm		0.23	0.09									
v/c Ratio		0.61	0.24					0.67		0.84	0.45	
Uniform Delay, d1		13.7	11.6					17.2		24.0	9.7	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		2.5	1.0					4.3		36.9	1.0	
Delay (s)		16.2	12.5					21.5		60.9	10.7	
Level of Service		B	B					C		E	B	
Approach Delay (s)		15.6			0.0			21.5			19.8	
Approach LOS		B			A			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.7									B
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			55.0							12.0		
Intersection Capacity Utilization			61.3%									B
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	901	1300
v/c Ratio	0.17	0.83	1.05
Control Delay	12.9	25.0	39.7
Queue Delay	0.0	136.0	60.1
Total Delay	12.9	161.0	99.9
Queue Length 50th (ft)	24	146	~272
Queue Length 95th (ft)	52	183	m48
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	624	1082	1235
Starvation Cap Reductn	0	0	83
Spillback Cap Reductn	0	389	147
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	1.30	1.19

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
19: 11th St &

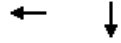
Interim 2020 + Project  
Timing Plan: PM PEAK

	↖	→	↘	↙	↓
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations	↖	↑↗			↖↑
Volume (vph)	97	503	227	96	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.95			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	2737			2903
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	2737			2903
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	621	280	116	1184
RTOR Reduction (vph)	0	10	0	0	0
Lane Group Flow (vph)	105	891	0	0	1300
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	23.5	23.5			25.5
Effective Green, g (s)	23.5	23.5			25.5
Actuated g/C Ratio	0.39	0.39			0.42
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	624	1072			1234
v/s Ratio Prot		c0.33			
v/s Ratio Perm	0.07				0.45
v/c Ratio	0.17	0.83			1.05
Uniform Delay, d1	11.9	16.5			17.2
Progression Factor	1.00	1.00			0.30
Incremental Delay, d2	0.6	7.5			29.7
Delay (s)	12.5	24.0			34.8
Level of Service	B	C			C
Approach Delay (s)		22.8			34.8
Approach LOS		C			C
<b>Intersection Summary</b>					
HCM Average Control Delay			29.6	HCM Level of Service	C
HCM Volume to Capacity ratio			0.95		
Actuated Cycle Length (s)			60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			67.0%	ICU Level of Service	C
Analysis Period (min)			15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	377	1467
v/c Ratio	0.90	0.87
Control Delay	35.1	22.7
Queue Delay	0.0	94.3
Total Delay	35.1	117.0
Queue Length 50th (ft)	76	305
Queue Length 95th (ft)	m#87	m284
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	418	1692
Starvation Cap Reductn	0	478
Spillback Cap Reductn	0	20
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.90	1.21

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.

HCM Signalized Intersection Capacity Analysis  
20: 10th St & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											  	
Volume (vph)	0	0	0	90	268	0	0	0	0	166	922	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						0.99	
Frt					1.00						0.99	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					1433						2837	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					1433						2837	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	95	282	0	0	0	0	202	1124	141
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	0	0	0	377	0	0	0	0	0	1454	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					418						1679	
v/s Ratio Prot												
v/s Ratio Perm					0.26						0.51	
v/c Ratio					0.90						0.87	
Uniform Delay, d1					20.4						10.3	
Progression Factor					0.74						2.08	
Incremental Delay, d2					15.5						0.6	
Delay (s)					30.7						21.9	
Level of Service					C						C	
Approach Delay (s)		0.0			30.7			0.0			21.9	
Approach LOS		A			C			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.7		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			65.8%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
21: 10th St & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	170	387	1025
v/c Ratio	0.66	1.03	0.38
Control Delay	25.1	80.9	2.0
Queue Delay	0.0	0.0	0.1
Total Delay	25.1	80.9	2.1
Queue Length 50th (ft)	69	~138	13
Queue Length 95th (ft)	m71	#296	18
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	256	374	2700
Starvation Cap Reductn	0	0	457
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.66	1.03	0.46


















**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.

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	22	111	0	0	240	108	89	737	117	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frb, ped/bikes		1.00			0.99			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.96			0.98				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1452			1387			4332				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1024			1387			4332				
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	142	0	0	267	120	97	801	127	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	170	0	0	360	0	0	994	0	0	0	0
Confl. Peds. (#/hr)	22		35	35		22	62		168			
Confl. Bikes (#/hr)			14			6			45			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm							Perm				
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		256			347			2671				
v/s Ratio Prot					c0.26							
v/s Ratio Perm		0.17						0.23				
v/c Ratio		0.66			1.04			0.37				
Uniform Delay, d1		20.2			22.5			5.7				
Progression Factor		0.79			1.00			0.31				
Incremental Delay, d2		6.3			58.4			0.4				
Delay (s)		22.3			80.9			2.1				
Level of Service		C			F			A				
Approach Delay (s)		22.3			80.9			2.1			0.0	
Approach LOS		C			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.6				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			64.9%				ICU Level of Service		C			
Analysis Period (min)			15									

c Critical Lane Group



Queues  
22: 9th Street & Webster Street

Interim 2020 + Project  
Timing Plan: PM PEAK













	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	273	142	1639
v/c Ratio	0.30	0.31	0.91
Control Delay	25.4	6.4	36.8
Queue Delay	0.0	0.0	88.8
Total Delay	25.4	6.4	125.5
Queue Length 50th (ft)	62	0	249
Queue Length 95th (ft)	91	37	#323
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	452	1808
Starvation Cap Reductn	0	0	440
Spillback Cap Reductn	0	3	117
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.30	0.32	1.20

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↓↑↑	
Volume (vph)	0	235	122	0	0	0	0	0	0	244	1231	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.98								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1176								5486	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1176								5486	
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	273	142	0	0	0	0	0	0	271	1368	0
RTOR Reduction (vph)	0	0	99	0	0	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	273	43	0	0	0	0	0	0	0	1599	0
Confl. Bikes (#/hr)			8									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	353								1768	
v/s Ratio Prot		c0.09										
v/s Ratio Perm			0.04								0.29	
v/c Ratio		0.30	0.12								0.90	
Uniform Delay, d1		24.3	22.9								29.2	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.9	0.7								8.1	
Delay (s)		25.1	23.6								37.3	
Level of Service		C	C								D	
Approach Delay (s)		24.6			0.0			0.0			37.3	
Approach LOS		C			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.7								HCM Level of Service	C
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	34.0
Intersection Capacity Utilization			39.0%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 23: 9th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK













	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	527	1223
v/c Ratio	0.50	0.70
Control Delay	17.6	3.2
Queue Delay	0.0	1.2
Total Delay	17.6	4.4
Queue Length 50th (ft)	48	15
Queue Length 95th (ft)	75	m17
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1054	1759
Starvation Cap Reductn	0	304
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.50	0.84

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↔↑	
Volume (vph)	0	276	193	0	0	0	0	0	0	134	930	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.95	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3936									2899	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3936									2899	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	310	217	0	0	0	0	0	0	154	1069	0
RTOR Reduction (vph)	0	71	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	457	0	0	0	0	0	0	0	0	1204	0
Confl. Peds. (#/hr)			68							29		20
Confl. Bikes (#/hr)			18									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		984									1739	
v/s Ratio Prot		c0.12										
v/s Ratio Perm											0.42	
v/c Ratio		0.46									0.69	
Uniform Delay, d1		19.1									8.2	
Progression Factor		1.00									0.25	
Incremental Delay, d2		1.6									1.1	
Delay (s)		20.7									3.1	
Level of Service		C									A	
Approach Delay (s)		20.7			0.0			0.0			3.1	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.4								A	
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			53.1%								A	
Analysis Period (min)			15									

c Critical Lane Group













Queues  
24: 9th Street & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	458	1031
v/c Ratio	0.37	0.39
Control Delay	17.1	2.2
Queue Delay	0.0	0.1
Total Delay	17.1	2.3
Queue Length 50th (ft)	35	19
Queue Length 95th (ft)	69	21
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1233	2654
Starvation Cap Reductn	0	363
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.45
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

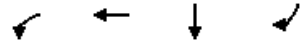
Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	95	312	0	0	0	0	0	838	121	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4331						4253				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4331						4253				
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	107	351	0	0	0	0	0	901	130	0	0	0
RTOR Reduction (vph)	0	78	0	0	0	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	380	0	0	0	0	0	1000	0	0	0	0
Confl. Peds. (#/hr)	4		5					69		146		
Confl. Bikes (#/hr)										31		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1155						2623				
v/s Ratio Prot								c0.23				
v/s Ratio Perm		0.09										
v/c Ratio		0.33						0.38				
Uniform Delay, d1		17.7						5.8				
Progression Factor		1.19						0.34				
Incremental Delay, d2		0.6						0.4				
Delay (s)		21.8						2.3				
Level of Service		C						A				
Approach Delay (s)		21.8			0.0			2.3			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.3									A
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 25: 8th Street & Webster Street

Interim 2020 + Project  
 Timing Plan: PM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	508	894	1099	406
v/c Ratio	0.72	0.73	0.82	0.68
Control Delay	9.3	32.4	8.3	10.2
Queue Delay	0.0	0.0	3.2	35.3
Total Delay	9.3	32.4	11.5	45.6
Queue Length 50th (ft)	4	175	21	259
Queue Length 95th (ft)	61	203	m27	m296
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	709	1227	1336	601
Starvation Cap Reductn	0	0	151	212
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.73	0.93	1.04

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
25: 8th Street & Webster Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	422	742	0	0	0	0	0	978	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1011
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1011
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	508	894	0	0	0	0	0	1099	406
RTOR Reduction (vph)	0	0	0	349	0	0	0	0	0	0	0	275
Lane Group Flow (vph)	0	0	0	159	894	0	0	0	0	0	1099	131
Confl. Bikes (#/hr)												9
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	326
v/s Ratio Prot											c0.27	
v/s Ratio Perm				0.13	0.22							0.13
v/c Ratio				0.44	0.73						0.82	0.40
Uniform Delay, d1				25.4	28.2						28.1	23.7
Progression Factor				1.00	1.00						0.17	2.37
Incremental Delay, d2				3.9	3.8						3.0	1.8
Delay (s)				29.3	32.0						7.9	58.1
Level of Service				C	C						A	E
Approach Delay (s)		0.0			31.1			0.0			21.4	
Approach LOS		A			C			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.1	HCM Level of Service						C		
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0		
Intersection Capacity Utilization			49.7%	ICU Level of Service						A		
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
26: 8th Street & Harrison Street

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	841	294	805
v/c Ratio	0.51	0.47	0.40
Control Delay	14.8	9.1	7.5
Queue Delay	0.0	1.0	0.3
Total Delay	14.8	10.0	7.9
Queue Length 50th (ft)	77	96	94
Queue Length 95th (ft)	107	m170	132
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1637	619	2000
Starvation Cap Reductn	0	138	597
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.61	0.57

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↵	↑↑↑					
Volume (vph)	0	0	0	0	657	83	529	460	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.91		0.86	0.86					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.89	0.96					
Frt					0.98		1.00	1.00					
Flt Protected					1.00		0.95	0.98					
Satd. Flow (prot)					4202		1215	4072					
Flt Permitted					1.00		0.95	0.98					
Satd. Flow (perm)					4202		1215	4072					
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	747	94	588	511	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	27	0	32	32	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	814	0	262	773	0	0	0	0	
Confl. Peds. (#/hr)				40		125	179		40	40		179	
Confl. Bikes (#/hr)						6							
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type							Perm						
Protected Phases					8			1					
Permitted Phases							1						
Actuated Green, G (s)					23.0		28.5	28.5					
Effective Green, g (s)					23.0		29.0	29.0					
Actuated g/C Ratio					0.38		0.48	0.48					
Clearance Time (s)					4.0		4.5	4.5					
Lane Grp Cap (vph)					1611		587	1968					
v/s Ratio Prot					c0.19								
v/s Ratio Perm							c0.22	0.19					
v/c Ratio					0.51		0.45	0.39					
Uniform Delay, d1					14.2		10.2	9.9					
Progression Factor					1.00		0.80	0.76					
Incremental Delay, d2					1.1		2.0	0.5					
Delay (s)					15.3		10.2	8.0					
Level of Service					B		B	A					
Approach Delay (s)		0.0			15.3			8.6			0.0		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.5		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			49.7%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
27: 8th Street & Jackson Street

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	767	310	453
v/c Ratio	0.44	0.77	0.71
Control Delay	7.6	27.4	20.6
Queue Delay	0.0	0.0	5.2
Total Delay	7.6	27.4	25.8
Queue Length 50th (ft)	58	83	119
Queue Length 95th (ft)	71	m94	#230
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1760	402	640
Starvation Cap Reductn	0	0	129
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.77	0.89

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.

HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

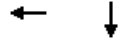
Interim 2020 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑			↑			↑		
Volume (vph)	0	0	0	50	588	52	106	182	0	0	341	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.91			1.00			1.00		
Frb, ped/bikes					0.99			1.00			0.99		
Flpb, ped/bikes					0.99			0.99			1.00		
Frt					0.99			1.00			0.98		
Flt Protected					1.00			0.98			1.00		
Satd. Flow (prot)					4187			1432			1418		
Flt Permitted					1.00			0.62			1.00		
Satd. Flow (perm)					4187			910			1418		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	56	653	58	114	196	0	0	371	82	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	13	0	
Lane Group Flow (vph)	0	0	0	0	751	0	0	310	0	0	440	0	
Confl. Peds. (#/hr)				88		91	53					53	
Confl. Bikes (#/hr)						9						7	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type					Perm			Perm					
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					25.0			26.0			26.0		
Effective Green, g (s)					25.0			26.5			26.5		
Actuated g/C Ratio					0.42			0.44			0.44		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1745			402			626		
v/s Ratio Prot											0.31		
v/s Ratio Perm					0.18			c0.34					
v/c Ratio					0.43			0.77			0.70		
Uniform Delay, d1					12.4			14.2			13.6		
Progression Factor					0.57			1.35			1.00		
Incremental Delay, d2					0.6			5.2			6.5		
Delay (s)					7.7			24.3			20.0		
Level of Service					A			C			C		
Approach Delay (s)		0.0			7.7			24.3			20.0		
Approach LOS		A			A			C			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			14.7		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.5		
Intersection Capacity Utilization			74.2%		ICU Level of Service						D		
Analysis Period (min)			15										

c Critical Lane Group

Queues  
 28: 8th Street & Madison Street













Interim 2020 + Project  
 Timing Plan: PM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	1034	1280
v/c Ratio	0.69	0.58
Control Delay	19.4	4.8
Queue Delay	0.0	3.1
Total Delay	19.4	7.9
Queue Length 50th (ft)	138	33
Queue Length 95th (ft)	180	47
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1493	2219
Starvation Cap Reductn	0	379
Spillback Cap Reductn	7	806
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.91
<b>Intersection Summary</b>		

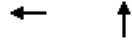
HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	340	611	0	0	0	0	0	1047	79	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.98						1.00		
Frt					1.00						0.99		
Flt Protected					0.98						1.00		
Satd. Flow (prot)					4176						4269		
Flt Permitted					0.98						1.00		
Satd. Flow (perm)					4176						4269		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	370	664	0	0	0	0	0	1190	90	
RTOR Reduction (vph)	0	0	0	0	33	0	0	0	0	0	14	0	
Lane Group Flow (vph)	0	0	0	0	1002	0	0	0	0	0	1266	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					20.5						30.5		
Effective Green, g (s)					21.0						31.0		
Actuated g/C Ratio					0.35						0.52		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1462						2206		
v/s Ratio Prot											c0.30		
v/s Ratio Perm					0.24								
v/c Ratio					0.69						0.57		
Uniform Delay, d1					16.7						10.0		
Progression Factor					1.08						0.40		
Incremental Delay, d2					1.9						0.8		
Delay (s)					19.9						4.8		
Level of Service					B						A		
Approach Delay (s)		0.0			19.9			0.0			4.8		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.6		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			66.1%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
29: 8th Street & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	NBT
Lane Group Flow (vph)	1031	1016
v/c Ratio	0.76	0.43
Control Delay	21.4	13.2
Queue Delay	0.0	0.8
Total Delay	21.4	14.0
Queue Length 50th (ft)	112	130
Queue Length 95th (ft)	157	m139
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1363	2352
Starvation Cap Reductn	0	952
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.73

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑			↑↑↑					
Volume (vph)	0	0	0	0	803	156	118	806	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0			4.0					
Lane Util. Factor					0.91			0.91					
Frbp, ped/bikes					0.98			1.00					
Flpb, ped/bikes					1.00			0.99					
Frt					0.98			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					4152			4252					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					4152			4252					
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	863	168	130	886	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	48	0	0	12	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	983	0	0	1004	0	0	0	0	
Confl. Peds. (#/hr)						92	160						
Confl. Bikes (#/hr)						6							
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0	
Parking (#/hr)					5	5	5	5					
Turn Type								Perm					
Protected Phases					2			1					
Permitted Phases							1						
Actuated Green, G (s)					19.0			33.0					
Effective Green, g (s)					19.0			33.0					
Actuated g/C Ratio					0.32			0.55					
Clearance Time (s)					4.0			4.0					
Lane Grp Cap (vph)					1315			2339					
v/s Ratio Prot					c0.24								
v/s Ratio Perm								0.24					
v/c Ratio					0.75			0.43					
Uniform Delay, d1					18.4			8.0					
Progression Factor					1.00			1.65					
Incremental Delay, d2					3.9			0.2					
Delay (s)					22.3			13.4					
Level of Service					C			B					
Approach Delay (s)		0.0			22.3			13.4			0.0		
Approach LOS		A			C			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			17.8		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			48.7%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													



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Intersection Sign configuration not allowed in HCM analysis.

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










Queues  
31: 7th Street & Harrison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	961	833	954
v/c Ratio	0.39	0.64	0.39
Control Delay	7.1	21.6	0.5
Queue Delay	0.0	0.0	0.0
Total Delay	7.1	21.6	0.5
Queue Length 50th (ft)	58	95	0
Queue Length 95th (ft)	74	133	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2490	1297	2475
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.64	0.39
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	209	608	0	0	0	0	0	791	906	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.99			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4257						4577	2475			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4257						4577	2475			
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	246	715	0	0	0	0	0	833	954	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	953	0	0	0	0	0	833	954	0	0	0
Confl. Peds. (#/hr)	28								3			
Confl. Bikes (#/hr)			1						1			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm						Free					
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		35.0						17.0	60.0			
Actuated g/C Ratio		0.58						0.28	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2483						1297	2475			
v/s Ratio Prot								c0.18				
v/s Ratio Perm		0.22							c0.39			
v/c Ratio		0.38						0.64	0.39			
Uniform Delay, d1		6.7						18.8	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.5						2.5	0.5			
Delay (s)		7.2						21.3	0.5			
Level of Service		A						C	A			
Approach Delay (s)		7.2			0.0			10.2			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay		9.1			HCM Level of Service				A			
HCM Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		60.0			Sum of lost time (s)				4.0			
Intersection Capacity Utilization		49.6%			ICU Level of Service				A			
Analysis Period (min)		15										

c Critical Lane Group

Queues  
32: 7th Street & Jackson Street

Interim 2020 + Project  
Timing Plan: PM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1467	165	429	415
v/c Ratio	0.64	0.27	0.97	1.46
Control Delay	7.2	1.5	52.5	238.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.2	1.5	52.5	238.8
Queue Length 50th (ft)	68	0	59	-217
Queue Length 95th (ft)	87	8	#288	m#340
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2283	614	443	285
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.27	0.97	1.46

**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.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗					↖			↘	
Volume (vph)	35	1188	311	0	0	0	0	260	134	49	320	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.99	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.98	0.85					0.95			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		3984	958					1381			1455	
Flt Permitted		1.00	1.00					1.00			0.65	
Satd. Flow (perm)		3984	958					1381			949	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	37	1264	331	0	0	0	0	283	146	55	360	0
RTOR Reduction (vph)	0	25	72	0	0	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	1442	94	0	0	0	0	400	0	0	415	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2258	543					414			285	
v/s Ratio Prot								0.29				
v/s Ratio Perm		0.36	0.10								c0.44	
v/c Ratio		0.64	0.17					0.97			1.46	
Uniform Delay, d1		8.8	6.2					20.7			21.0	
Progression Factor		0.68	0.35					0.71			0.58	
Incremental Delay, d2		1.3	0.6					35.0			219.1	
Delay (s)		7.3	2.8					49.7			231.2	
Level of Service		A	A					D			F	
Approach Delay (s)		6.8			0.0			49.7			231.2	
Approach LOS		A			A			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			51.9								HCM Level of Service	D
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			86.0%								ICU Level of Service	E
Analysis Period (min)			15									

c Critical Lane Group

Queues  
33: 7th Street & Madison Street





















Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1551	462	1089
v/c Ratio	0.51	1.07	1.24
Control Delay	9.0	82.5	139.7
Queue Delay	0.0	1.9	25.6
Total Delay	9.0	84.3	165.3
Queue Length 50th (ft)	75	~189	~284
Queue Length 95th (ft)	m111	#336	#401
Internal Link Dist (ft)	296		190
Turn Bay Length (ft)			
Base Capacity (vph)	3031	431	878
Starvation Cap Reductn	0	2	39
Spillback Cap Reductn	121	0	20
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.53	1.08	1.30

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.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  									 	
Volume (vph)	0	1124	241	0	0	0	0	0	0	420	991	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.86								1.00	0.95	
Frbp, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								0.94	1.00	
Frt		0.97								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		5341								1313	2926	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		5341								1313	2926	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	1277	274	0	0	0	0	0	0	462	1089	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	37	0	0
Lane Group Flow (vph)	0	1548	0	0	0	0	0	0	0	425	1089	0
Confl. Peds. (#/hr)			30							61		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		34.0								19.0	19.0	
Effective Green, g (s)		34.0								18.0	18.0	
Actuated g/C Ratio		0.57								0.30	0.30	
Clearance Time (s)		4.0								3.0	3.0	
Lane Grp Cap (vph)		3027								394	878	
v/s Ratio Prot		c0.29									c0.37	
v/s Ratio Perm										0.32		
v/c Ratio		0.51								1.08	1.24	
Uniform Delay, d1		7.9								21.0	21.0	
Progression Factor		1.06								1.00	1.01	
Incremental Delay, d2		0.5								63.3	116.0	
Delay (s)		8.9								84.2	137.2	
Level of Service		A								F	F	
Approach Delay (s)		8.9			0.0			0.0			121.4	
Approach LOS		A			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			65.2									E
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			78.5%									D
Analysis Period (min)			15									

c Critical Lane Group

Queues  
34: 7th Street & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	1662	1490
v/c Ratio	0.62	1.27dr
Control Delay	16.6	37.6
Queue Delay	0.0	6.0
Total Delay	16.6	43.6
Queue Length 50th (ft)	148	186
Queue Length 95th (ft)	m168	#268
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2679	1531
Starvation Cap Reductn	0	47
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	1.00















**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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.



HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1405	0	0	0	0	0	773	508	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.97				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.94				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		5496						3968				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		5496						3968				
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	151	1511	0	0	0	0	0	899	591	0	0	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	1638	0	0	0	0	0	1481	0	0	0	0
Confl. Peds. (#/hr)	31								57			
Confl. Bikes (#/hr)									10			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		28.0						22.0				
Effective Green, g (s)		29.0						23.0				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2656						1521				
v/s Ratio Prot								c0.37				
v/s Ratio Perm		0.30										
v/c Ratio		0.62						1.27dr				
Uniform Delay, d1		11.4						18.2				
Progression Factor		1.40						1.00				
Incremental Delay, d2		0.8						17.6				
Delay (s)		16.8						35.8				
Level of Service		B						D				
Approach Delay (s)		16.8			0.0			35.8			0.0	
Approach LOS		B			A			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			25.8				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			62.6%				ICU Level of Service			B		
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
35: 7th Street & 5th Ave

Interim 2020 + Project  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	207	1737	290	125	678	655	506
v/c Ratio	0.82	0.79	0.39	1.09	0.45	1.11	0.75
Control Delay	46.7	19.3	3.4	136.7	14.2	91.8	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	19.3	3.4	136.7	14.2	91.8	22.1
Queue Length 50th (ft)	69	208	0	-57	94	-306	146
Queue Length 95th (ft)	#156	223	27	#134	120	#495	195
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		60	110			
Base Capacity (vph)	251	2190	746	115	1522	591	679
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.79	0.39	1.09	0.45	1.11	0.75























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.

# HCM Signalized Intersection Capacity Analysis

## 35: 7th Street & 5th Ave

Interim 2020 + Project  
Timing Plan: PM PEAK

													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	
Lane Configurations			  				 			 			
Volume (vph)	41	126	1407	235	2	101	550	6	113	363	113	39	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5			3.5			
Lane Util. Factor		1.00	0.91	1.00		1.00	0.95			1.00			
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00			
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00			
Frt		1.00	1.00	0.85		1.00	1.00			0.97			
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.99			
Satd. Flow (prot)		1764	5085	1349		1769	3533			1567			
Flt Permitted		0.31	1.00	1.00		0.14	1.00			0.81			
Satd. Flow (perm)		584	5085	1349		266	3533			1275			
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77	
Adj. Flow (vph)	51	156	1737	290	2	123	671	7	126	403	126	51	
RTOR Reduction (vph)	0	0	0	165	0	0	1	0	0	2	0	0	
Lane Group Flow (vph)	0	207	1737	125	0	125	677	0	0	653	0	0	
Confl. Peds. (#/hr)		8		4		4		8	7		1	1	
Confl. Bikes (#/hr)				2				2			7		
Parking (#/hr)				5					5	5	5	5	
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm	
Protected Phases			1				1			2			
Permitted Phases	1	1		1	1	1			2			2	
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0			30.0			
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0			30.0			
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43			0.46			
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5			3.5			
Lane Grp Cap (vph)		252	2190	581		115	1522			588			
v/s Ratio Prot			0.34				0.19						
v/s Ratio Perm		0.35		0.09		c0.47				c0.51			
v/c Ratio		0.82	0.79	0.22		1.09	0.44			1.11			
Uniform Delay, d1		16.3	16.0	11.6		18.5	13.0			17.5			
Progression Factor		1.00	1.00	1.00		1.00	1.00			1.00			
Incremental Delay, d2		25.0	3.1	0.8		109.2	0.9			71.1			
Delay (s)		41.3	19.0	12.5		127.7	14.0			88.6			
Level of Service		D	B	B		F	B			F			
Approach Delay (s)			20.3				31.7			88.6			
Approach LOS			C				C			F			
<b>Intersection Summary</b>													
HCM Average Control Delay			33.3		HCM Level of Service						C		
HCM Volume to Capacity ratio			1.10										
Actuated Cycle Length (s)			65.0		Sum of lost time (s)						7.0		
Intersection Capacity Utilization			97.4%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Interim 2020 + Project  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↕	
Volume (vph)	259	92
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	0.99	
Satd. Flow (prot)	1564	
Flt Permitted	0.91	
Satd. Flow (perm)	1434	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	336	119
RTOR Reduction (vph)	17	0
Lane Group Flow (vph)	489	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	662	
v/s Ratio Prot		
v/s Ratio Perm	0.34	
v/c Ratio	0.74	
Uniform Delay, d1	14.3	
Progression Factor	1.00	
Incremental Delay, d2	7.2	
Delay (s)	21.5	
Level of Service	C	
Approach Delay (s)	21.5	
Approach LOS	C	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Interim 2020 + Project  
 Timing Plan: PM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	17	641	412	443	493	296
v/c Ratio	0.04	1.43	1.03	0.50	0.55	0.37
Control Delay	17.6	229.3	71.0	9.4	6.3	5.0
Queue Delay	0.0	0.0	0.0	2.3	1.4	0.0
Total Delay	17.6	229.3	71.0	11.7	7.8	5.0
Queue Length 50th (ft)	5	~327	~147	80	62	32
Queue Length 95th (ft)	m10	m#433	#278	124	m63	m35
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	400	880	899	797
Starvation Cap Reductn	0	0	0	299	227	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	1.43	1.03	0.76	0.73	0.37

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.

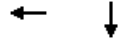
HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	14	519	0	342	368	0	0	193	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frb, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			0.92	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1570	1676		1593	1467			1471	1300
Flt Permitted				0.95	1.00		0.40	1.00			1.00	1.00
Satd. Flow (perm)				1570	1676		665	1467			1471	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	17	641	0	412	443	0	0	241	548
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	17	17
Lane Group Flow (vph)	0	0	0	17	641	0	412	443	0	0	476	279
Confl. Peds. (#/hr)				7		1				34		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				419	447		399	880			883	780
v/s Ratio Prot					c0.38			0.30			0.32	
v/s Ratio Perm				0.01			c0.62					0.21
v/c Ratio				0.04	1.43		1.03	0.50			0.54	0.36
Uniform Delay, d1				16.3	22.0		12.0	6.9			7.1	6.1
Progression Factor				1.06	0.98		1.00	1.00			0.75	0.80
Incremental Delay, d2				0.2	205.7		53.7	2.1			1.2	0.6
Delay (s)				17.4	227.3		65.7	8.9			6.5	5.5
Level of Service				B	F		E	A			A	A
Approach Delay (s)		0.0			221.9			36.3			6.1	
Approach LOS		A			F			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			79.0	HCM Level of Service				E				
HCM Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			60.0	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			82.6%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 37: 6th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	279	1447
v/c Ratio	0.33	0.84
Control Delay	17.7	18.9
Queue Delay	0.0	16.3
Total Delay	17.7	35.2
Queue Length 50th (ft)	40	199
Queue Length 95th (ft)	68	m157
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	851	1714
Starvation Cap Reductn	0	293
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.33	1.02

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						 	
Volume (vph)	0	0	0	14	251	0	0	0	0	0	890	384
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.95	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					2978						2800	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					2978						2800	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	264	0	0	0	0	0	1011	436
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	80	0
Lane Group Flow (vph)	0	0	0	0	272	0	0	0	0	0	1367	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					17.0						35.0	
Effective Green, g (s)					17.0						35.0	
Actuated g/C Ratio					0.28						0.58	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					844						1633	
v/s Ratio Prot											c0.49	
v/s Ratio Perm					0.09							
v/c Ratio					0.32						0.84	
Uniform Delay, d1					17.0						10.2	
Progression Factor					1.00						1.97	
Incremental Delay, d2					1.0						0.5	
Delay (s)					18.0						20.6	
Level of Service					B						C	
Approach Delay (s)		0.0			18.0			0.0			20.6	
Approach LOS		A			B			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.1		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			61.4%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
38: 6th Street & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK













Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1165	344	221	73
v/c Ratio	2.29	0.25	0.36	0.12
Control Delay	597.5	7.8	9.8	5.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	597.5	7.8	9.8	5.1
Queue Length 50th (ft)	~543	24	36	5
Queue Length 95th (ft)	m#480	41	72	20
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	509	1360	611	606
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.29	0.25	0.36	0.12

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.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

						
Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations						
Volume (vph)	214	834	54	51	381	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.90	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1449		2886	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1449		2886	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	238	927	63	59	443	73
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	0	1165	0	344	221	57
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		509		1360	611	590
v/s Ratio Prot				0.12	c0.17	
v/s Ratio Perm		0.80				0.05
v/c Ratio		2.29		0.25	0.36	0.10
Uniform Delay, d1		14.6		7.1	7.6	6.6
Progression Factor		0.81		1.00	1.00	1.00
Incremental Delay, d2		580.5		0.4	1.7	0.3
Delay (s)		592.3		7.6	9.2	6.9
Level of Service		F		A	A	A
Approach Delay (s)		592.3		8.2		
Approach LOS		F		A		
<b>Intersection Summary</b>						
HCM Average Control Delay			385.6		HCM Level of Service	F
HCM Volume to Capacity ratio			1.19			
Actuated Cycle Length (s)			45.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			93.7%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
39: I-880 SB Off-Ramp & Jackson Street

Interim 2020 + Project  
Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1546	594	296
v/c Ratio	0.84	0.91	1.75
Control Delay	19.4	37.8	382.1
Queue Delay	0.0	0.0	0.0
Total Delay	19.4	37.8	382.1
Queue Length 50th (ft)	158	185	~163
Queue Length 95th (ft)	212	#301	#213
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1846	651	169
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	0.91	1.75

**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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Interim 2020 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	277	814	285	0	0	0	0	433	36	146	61	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4205						1450			1415	
Flt Permitted		0.99						1.00			0.26	
Satd. Flow (perm)		4205						1450			380	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	311	915	320	0	0	0	0	548	46	209	87	0
RTOR Reduction (vph)	0	79	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1467	0	0	0	0	0	589	0	0	296	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						26.0			26.0	
Effective Green, g (s)		25.0						26.5			26.5	
Actuated g/C Ratio		0.42						0.45			0.45	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1767						646			169	
v/s Ratio Prot								0.41				
v/s Ratio Perm		0.35									c0.78	
v/c Ratio		0.83						0.91			1.75	
Uniform Delay, d1		15.4						15.4			16.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		4.7						19.4			361.4	
Delay (s)		20.1						34.8			377.9	
Level of Service		C						C			F	
Approach Delay (s)		20.1			0.0			34.8			377.9	
Approach LOS		C			A			C			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			67.1									E
HCM Volume to Capacity ratio			1.30									
Actuated Cycle Length (s)			59.5							8.0		
Intersection Capacity Utilization			81.1%									D
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1095	497	619
v/c Ratio	0.85	0.65	0.79
Control Delay	26.1	8.5	13.0
Queue Delay	0.0	0.9	0.9
Total Delay	26.1	9.3	13.8
Queue Length 50th (ft)	120	57	74
Queue Length 95th (ft)	#192	m65	m84
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1287	770	781
Starvation Cap Reductn	0	90	37
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.85	0.73	0.83






















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.

# HCM Signalized Intersection Capacity Analysis

## 40: 5th Street & Madison Street

Interim 2020 + Project  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  								  	  		
Volume (vph)	0	764	232	0	0	0	0	0	0	805	99	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.95	0.95		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.99	0.99		
Frt		0.97								1.00	1.00		
Flt Protected		1.00								0.95	0.96		
Satd. Flow (prot)		4220								1307	1326		
Flt Permitted		1.00								0.95	0.96		
Satd. Flow (perm)		4220								1307	1326		
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81	
Adj. Flow (vph)	0	840	255	0	0	0	0	0	0	994	122	0	
RTOR Reduction (vph)	0	91	0	0	0	0	0	0	0	8	8	0	
Lane Group Flow (vph)	0	1004	0	0	0	0	0	0	0	489	611	0	
Confl. Peds. (#/hr)	2		1							15		45	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4										6	
Permitted Phases										6			
Actuated Green, G (s)		17.0								35.0	35.0		
Effective Green, g (s)		17.0								35.0	35.0		
Actuated g/C Ratio		0.28								0.58	0.58		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		1196								762	774		
v/s Ratio Prot		c0.24											
v/s Ratio Perm										0.37	0.46		
v/c Ratio		0.84								0.64	0.79		
Uniform Delay, d1		20.2								8.3	9.7		
Progression Factor		1.00								0.67	0.64		
Incremental Delay, d2		7.2								2.6	5.1		
Delay (s)		27.4								8.2	11.3		
Level of Service		C								A	B		
Approach Delay (s)		27.4			0.0			0.0			9.9		
Approach LOS		C			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			18.6		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			61.4%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1687	765	118
v/c Ratio	0.77	1.57	0.40
Control Delay	12.3	285.3	13.5
Queue Delay	0.0	0.0	0.0
Total Delay	12.3	285.3	13.5
Queue Length 50th (ft)	113	~302	24
Queue Length 95th (ft)	163	#454	53
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2178	488	296
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.77	1.57	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.

# HCM Signalized Intersection Capacity Analysis

## 41: 5th Street & Oak Street













Interim 2020 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	417	1031	121	0	0	0	0	590	76	5	91	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4412						1433			1463	
Flt Permitted		0.99						1.00			0.61	
Satd. Flow (perm)		4412						1433			889	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	448	1109	130	0	0	0	0	678	87	6	112	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	1666	0	0	0	0	0	755	0	0	118	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2157						478			296	
v/s Ratio Prot								c0.53				
v/s Ratio Perm		0.38									0.13	
v/c Ratio		0.77						1.58			0.40	
Uniform Delay, d1		9.4						15.0			11.5	
Progression Factor		1.00						1.00			0.76	
Incremental Delay, d2		2.8						270.7			4.0	
Delay (s)		12.2						285.7			12.7	
Level of Service		B						F			B	
Approach Delay (s)		12.2			0.0			285.7			12.7	
Approach LOS		B			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			93.6								HCM Level of Service	F
HCM Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			45.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.4%								ICU Level of Service	D
Analysis Period (min)			15									
c Critical Lane Group												



HCM Unsignalized Intersection Capacity Analysis  
42: Embarcadero W & Oak Street

Interim 2020 + Project  
Timing Plan: PM PEAK

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Volume (veh/h)	0	0	0	0	0	0	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	0	0	0	0	0	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)					1112		
pX, platoon unblocked							
vC, conflicting volume	0	0	0				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	0	0				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	100	100				
cM capacity (veh/h)	1023	1084	1622				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			0.0%		ICU Level of Service		A
Analysis Period (min)			15				

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**Arterial Level of Service: EB 7th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	7.2	33.4	0.15	15.7	C
Madison Street	IV	25	18.9	9.0	27.9	0.07	9.2	D
Oak Street	IV	25	19.3	16.6	35.9	0.07	7.3	E
Total	IV		64.4	32.8	97.2	0.29	10.7	D

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**Arterial Level of Service: WB 8th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	21.4	37.4	0.06	5.8	F
Madison Street	IV	25	19.5	19.4	38.9	0.07	6.8	F
Jackson Street	IV	25	18.8	7.6	26.4	0.07	9.7	D
Alice Street	IV	25	19.7	9.4	29.1	0.07	9.2	D
Harrison Street	IV	25	19.0	14.8	33.8	0.07	7.6	E
Webster Street	IV	25	18.8	32.4	51.2	0.07	5.0	F
Total	IV		111.8	105.0	216.8	0.42	7.0	E

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**Arterial Level of Service: SB Madison Street**

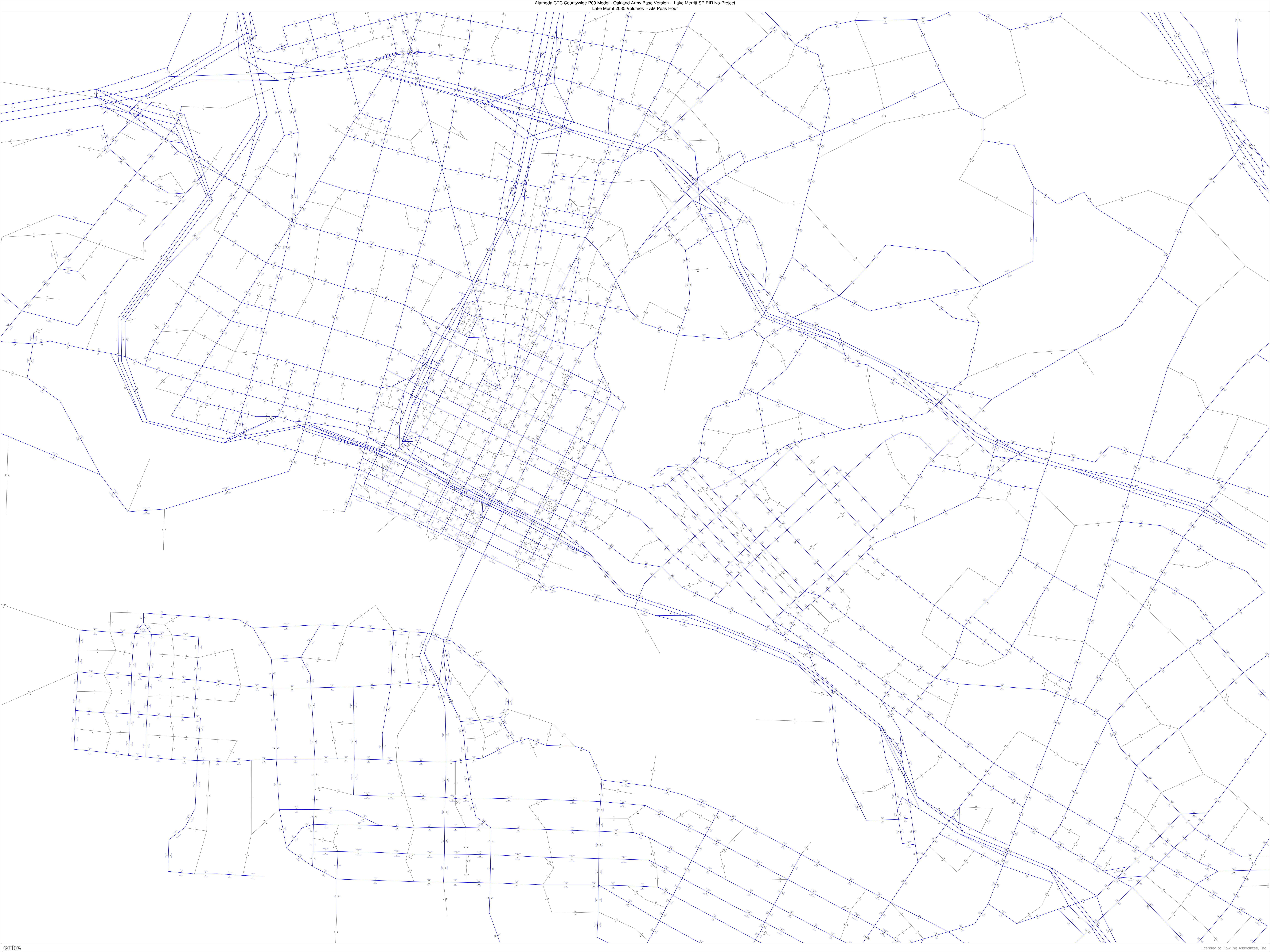

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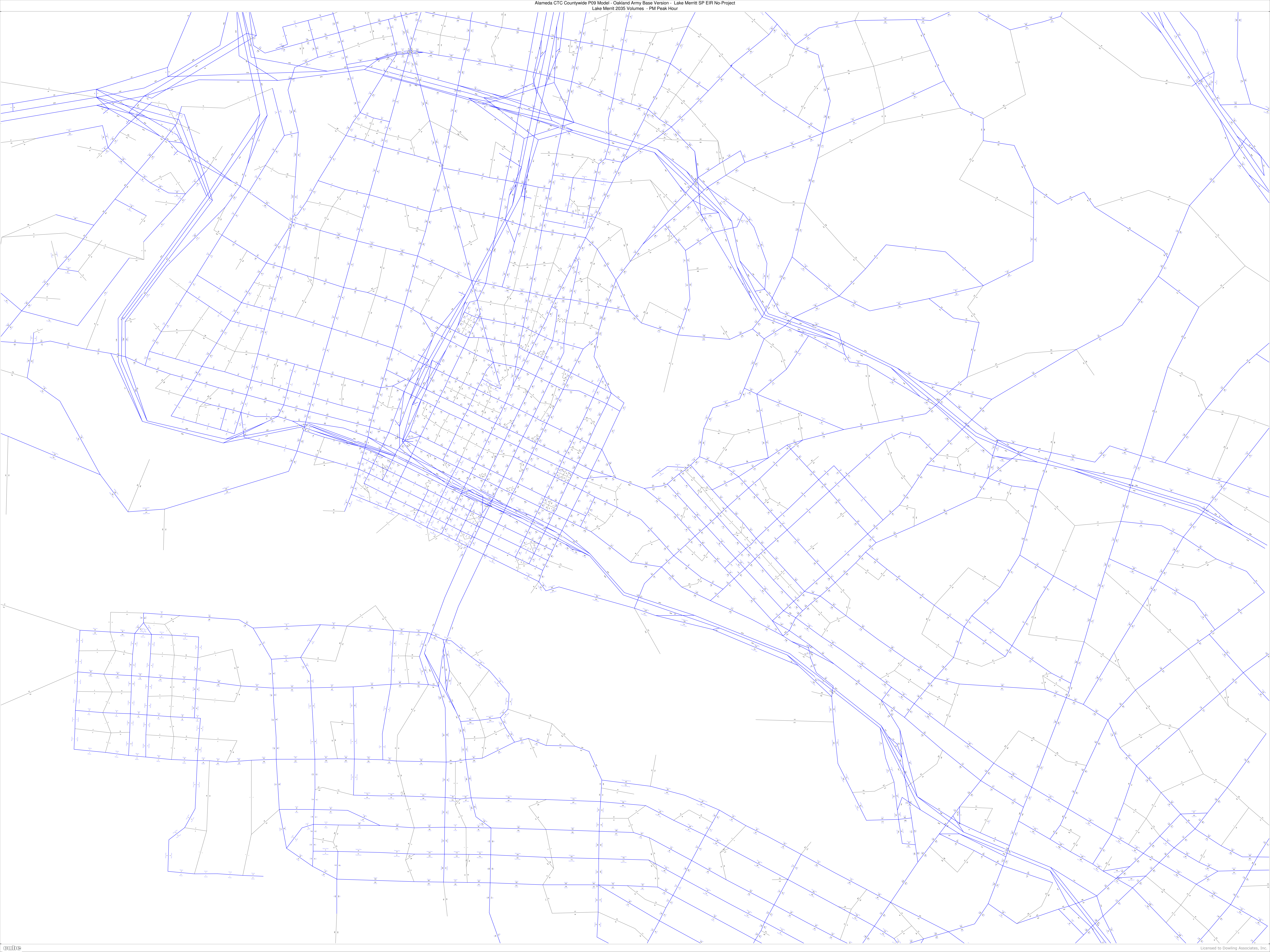
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	22.7	38.0	0.06	5.5	F
9th Street	IV	25	13.2	3.2	16.4	0.05	11.0	D
8th Street	IV	25	13.9	4.8	18.7	0.05	10.1	D
7th Street	IV	25	13.6	139.7	153.3	0.05	1.2	F
Total	IV		56.0	170.4	226.4	0.21	3.4	F

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	13.2	26.7	0.05	6.8	F
9th Street	IV	25	14.7	2.2	16.9	0.06	11.8	D
10th St	IV	25	13.3	2.0	15.3	0.05	11.8	D
11th St	IV	25	14.7	9.8	24.5	0.06	8.1	E
12th St	IV	25	12.5	14.2	26.7	0.05	6.4	F
Total	IV		68.7	41.4	110.1	0.26	8.5	E

# **2035 MODEL INFORMATION**













# **CUMULATIVE 2035 TRAFFIC CONDITIONS**

Queues  
1: W Grand Ave & Broadway

Cumulative 2035  
Timing Plan: AM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	778	1249	133	467	205	78	583
v/c Ratio	0.74	0.51	1.29	0.54	0.35	0.40	0.26	0.46
Control Delay	70.2	16.4	162.5	28.1	17.5	11.5	19.0	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	16.4	162.5	28.1	17.5	11.5	19.0	18.0
Queue Length 50th (ft)	26	141	~454	52	86	36	26	107
Queue Length 95th (ft)	#104	192	#585	113	123	90	60	152
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	86	1523	967	248	1349	515	296	1258
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.51	1.29	0.54	0.35	0.40	0.26	0.46

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.



HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035  
 Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	11	47	672	36	154	866	104	122	430	189	1	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		1.00	0.95			0.95		1.00	0.95	1.00		1.00
Frb, ped/bikes		1.00	1.00			0.99		1.00	1.00	0.91		1.00
Flpb, ped/bikes		0.99	1.00			1.00		0.97	1.00	1.00		0.96
Frt		1.00	0.99			0.99		1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00			0.99		0.95	1.00	1.00		0.95
Satd. Flow (prot)		1581	3148			3086		1547	3185	1086		1532
Flt Permitted		0.11	1.00			0.64		0.36	1.00	1.00		0.43
Satd. Flow (perm)		179	3148			1986		585	3185	1086		699
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	738	40	171	962	116	133	467	205	1	77
RTOR Reduction (vph)	0	0	5	0	0	9	0	0	0	55	0	0
Lane Group Flow (vph)	0	64	773	0	0	1240	0	133	467	150	0	78
Confl. Peds. (#/hr)		71		73	73		71	84		80		80
Confl. Bikes (#/hr)				15			21			9		
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	10	0	0
Parking (#/hr)				5			5			5		
Turn Type	Perm	Perm			Perm			Perm		Perm	Perm	Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2		2	6	6
Actuated Green, G (s)		41.0	41.0			41.0		36.0	36.0	36.0		36.0
Effective Green, g (s)		41.0	41.0			41.0		36.0	36.0	36.0		36.0
Actuated g/C Ratio		0.48	0.48			0.48		0.42	0.42	0.42		0.42
Clearance Time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		2.0	2.0			2.0		2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		86	1518			958		248	1349	460		296
v/s Ratio Prot			0.25						0.15			
v/s Ratio Perm		0.36				0.62		0.23		0.14		0.11
v/c Ratio		0.74	0.51			1.29		0.54	0.35	0.33		0.26
Uniform Delay, d1		17.8	15.1			22.0		18.3	16.6	16.4		15.9
Progression Factor		1.00	1.00			1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		25.9	0.1			140.1		8.1	0.7	1.9		2.2
Delay (s)		43.6	15.2			162.1		26.4	17.3	18.3		18.1
Level of Service		D	B			F		C	B	B		B
Approach Delay (s)			17.4			162.1			19.0			
Approach LOS			B			F			B			
<b>Intersection Summary</b>												
HCM Average Control Delay			68.8			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			105.5%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035  
 Timing Plan: AM PEAK

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	356	180
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	1.00	
Satd. Flow (prot)	2925	
Flt Permitted	1.00	
Satd. Flow (perm)	2925	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	387	196
RTOR Reduction (vph)	18	0
Lane Group Flow (vph)	565	0
Confl. Peds. (#/hr)		84
Confl. Bikes (#/hr)		34
Bus Blockages (#/hr)	0	10
Parking (#/hr)		5
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	36.0	
Effective Green, g (s)	36.0	
Actuated g/C Ratio	0.42	
Clearance Time (s)	4.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1239	
v/s Ratio Prot	0.19	
v/s Ratio Perm		
v/c Ratio	0.46	
Uniform Delay, d1	17.5	
Progression Factor	1.00	
Incremental Delay, d2	1.2	
Delay (s)	18.7	
Level of Service	B	
Approach Delay (s)	18.6	
Approach LOS	B	
<b>Intersection Summary</b>		

Queues  
2: 20th St & Kaiser DWY

Cumulative 2035  
Timing Plan: AM PEAK















Lane Group	EBT	WBL	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	191	452	270	8	327	312	9
v/c Ratio	0.18	0.60	0.23	0.02	0.59	0.51	0.01
Control Delay	13.5	27.5	15.8	8.6	18.0	5.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	27.5	15.8	8.6	18.0	5.7	0.0
Queue Length 50th (ft)	14	89	41	0	81	0	0
Queue Length 95th (ft)	30	123	61	7	148	43	0
Internal Link Dist (ft)	337		348		577		
Turn Bay Length (ft)		120		90			
Base Capacity (vph)	1089	750	1183	513	556	611	664
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.60	0.23	0.02	0.59	0.51	0.01

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 2: 20th St & Kaiser DWY

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑	↑		↔	↑			↑
Volume (vph)	0	105	65	380	227	7	105	17	421	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			1.00
Frbp, ped/bikes		0.99		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
Frt		0.94		1.00	1.00	0.85		0.92	0.85			0.86
Flt Protected		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (prot)		4253		3090	3185	1368		1432	1185			1450
Flt Permitted		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (perm)		4253		3090	3185	1368		1432	1185			1450
Peak-hour factor, PHF	0.89	0.89	0.89	0.84	0.84	0.84	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	118	73	452	270	8	124	20	495	0	0	9
RTOR Reduction (vph)	0	55	0	0	0	5	0	65	205	0	0	8
Lane Group Flow (vph)	0	136	0	452	270	3	0	262	107	0	0	1
Confl. Peds. (#/hr)			20				17					
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5						5			
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		17.0	26.0	26.0		24.0	24.0			8.0
Effective Green, g (s)		17.0		17.0	26.0	26.0		24.0	24.0			8.0
Actuated g/C Ratio		0.24		0.24	0.37	0.37		0.34	0.34			0.11
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1033		750	1183	508		491	406			166
v/s Ratio Prot				c0.15	c0.08			c0.18	0.09			0.00
v/s Ratio Perm		c0.03				0.00						
v/c Ratio		0.13		0.60	0.23	0.01		0.53	0.26			0.01
Uniform Delay, d1		20.7		23.5	15.1	13.9		18.5	16.6			27.5
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.3		3.6	0.4	0.0		4.1	1.6			0.1
Delay (s)		21.0		27.1	15.6	13.9		22.6	18.2			27.5
Level of Service		C		C	B	B		C	B			C
Approach Delay (s)		21.0			22.7			20.5			27.5	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	21.6	HCM Level of Service C
HCM Volume to Capacity ratio	0.48	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	53.2%	ICU Level of Service A
Analysis Period (min)	15	

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	191	1245	864
v/c Ratio	0.17	1.03	0.54
Control Delay	13.2	39.9	15.2
Queue Delay	0.0	0.0	0.0
Total Delay	13.2	39.9	15.2
Queue Length 50th (ft)	13	-15	89
Queue Length 95th (ft)	58	#621	#281
Internal Link Dist (ft)	259		536
Turn Bay Length (ft)			
Base Capacity (vph)	1257	1209	1745
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	1.03	0.50

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.

HCM Signalized Intersection Capacity Analysis  
 3: 19th St & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	178	1158	0	0	0	0	781	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	0.98					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1220					3175	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1220					3175	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	191	1245	0	0	0	0	849	15
RTOR Reduction (vph)	0	0	0	0	0	191	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	191	1054	0	0	0	0	862	0
Confl. Peds. (#/hr)				38		3						29
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					15.9	42.9					24.5	
Effective Green, g (s)					15.9	42.9					24.5	
Actuated g/C Ratio					0.31	0.82					0.47	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					974	1007					1496	
v/s Ratio Prot					0.06						0.27	
v/s Ratio Perm						c0.86						
v/c Ratio					0.20	1.05					0.58	
Uniform Delay, d1					13.3	4.6					10.0	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.1	41.4					0.5	
Delay (s)					13.4	45.9					10.5	
Level of Service					B	D					B	
Approach Delay (s)		0.0			41.6			0.0			10.5	
Approach LOS		A			D			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.9		HCM Level of Service						C	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			52.0		Sum of lost time (s)					9.1		
Intersection Capacity Utilization			83.3%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
4: 17th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK


















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	388	919
v/c Ratio	0.85dr	0.34
Control Delay	14.6	5.9
Queue Delay	0.0	0.5
Total Delay	14.6	6.4
Queue Length 50th (ft)	36	49
Queue Length 95th (ft)	72	68
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	722	2705
Starvation Cap Reductn	0	1243
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.63

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
4: 17th St & Madison Street

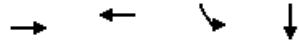
Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									  	
Volume (vph)	0	30	315	0	0	0	0	0	0	23	850	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.94									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.86									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2425									4377	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2425									4377	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	34	354	0	0	0	0	0	0	24	895	0
RTOR Reduction (vph)	0	116	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	272	0	0	0	0	0	0	0	0	914	0
Confl. Peds. (#/hr)	52		45							52		9
Confl. Bikes (#/hr)									1			7
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0									37.0	
Effective Green, g (s)		15.0									37.0	
Actuated g/C Ratio		0.25									0.62	
Clearance Time (s)		4.0									4.0	
Lane Grp Cap (vph)		606									2699	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.21	
v/c Ratio		0.85dr									0.34	
Uniform Delay, d1		19.0									5.6	
Progression Factor		1.00									1.00	
Incremental Delay, d2		2.4									0.3	
Delay (s)		21.4									5.9	
Level of Service		C									A	
Approach Delay (s)		21.4			0.0			0.0			5.9	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.5		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			53.1%		ICU Level of Service				A			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												



Queues  
5: 14th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK



Lane Group	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	323	1036	682	682
v/c Ratio	0.18	0.66	1.89	0.81
Control Delay	5.4	15.0	433.0	28.1
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	5.4	15.2	433.0	28.1
Queue Length 50th (ft)	22	193	~403	124
Queue Length 95th (ft)	34	206	#591	#204
Internal Link Dist (ft)	285	315		1054
Turn Bay Length (ft)				
Base Capacity (vph)	1839	1566	360	844
Starvation Cap Reductn	0	93	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.70	1.89	0.81





















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.

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 					 	 	
Volume (vph)	0	233	39	119	668	0	0	0	0	627	611	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0					4.5	4.5	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frbp, ped/bikes		0.99			1.00					1.00	1.00	
Flpb, ped/bikes		1.00			1.00					0.91	1.00	
Frt		0.98			1.00					1.00	1.00	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3089			3148					1271	2968	
Flt Permitted		1.00			0.83					0.95	1.00	
Satd. Flow (perm)		3089			2645					1271	2968	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	277	46	157	879	0	0	0	0	682	664	18
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	312	0	0	1036	0	0	0	0	682	679	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm							Perm	
Protected Phases		4			4							2
Permitted Phases				4							2	
Actuated Green, G (s)		35.5			35.5					17.0	17.0	
Effective Green, g (s)		35.5			35.5					17.0	17.0	
Actuated g/C Ratio		0.59			0.59					0.28	0.28	
Clearance Time (s)		3.0			3.0					4.5	4.5	
Lane Grp Cap (vph)		1828			1565					360	841	
v/s Ratio Prot		0.10									0.23	
v/s Ratio Perm					c0.39					c0.54		
v/c Ratio		0.17			0.66					1.89	0.81	
Uniform Delay, d1		5.6			8.2					21.5	20.0	
Progression Factor		1.00			1.54					0.95	0.95	
Incremental Delay, d2		0.2			1.7					412.3	7.8	
Delay (s)		5.8			14.4					432.8	26.9	
Level of Service		A			B					F	C	
Approach Delay (s)		5.8			14.4			0.0			229.9	
Approach LOS		A			B			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			121.3									F
HCM Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			60.0							7.5		
Intersection Capacity Utilization			86.7%									E
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK















Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	932	740	843	942	60
v/c Ratio	1.45	0.77	1.77	0.56	0.09
Control Delay	225.3	26.1	375.2	8.2	3.9
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	225.3	26.1	375.2	8.4	3.9
Queue Length 50th (ft)	~233	126	~446	64	3
Queue Length 95th (ft)	m#105	#192	#647	77	8
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	644	956	476	1674	649
Starvation Cap Reductn	0	0	0	159	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.45	0.77	1.77	0.62	0.09

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.

HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕↕	↗		↔↔	↗			
Volume (vph)	63	813	0	0	696	792	116	666	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.92		1.00	0.96			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Fr t		1.00			1.00	0.85		1.00	0.85			
Fl t Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2913			3185	1306		3138	1197			
Fl t Permitted		0.73			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2145			3185	1306		3138	1197			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	67	865	0	0	740	843	140	802	60	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	84	0	0	10	0	0	0
Lane Group Flow (vph)	0	932	0	0	740	759	0	942	50	0	0	0
Confl. Peds. (#/hr)	49					49	90		44			
Confl. Bikes (#/hr)						35			9			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		18.0			18.0	18.0		32.0	32.0			
Effective Green, g (s)		18.0			18.0	18.0		32.0	32.0			
Actuated g/C Ratio		0.30			0.30	0.30		0.53	0.53			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		644			956	392		1674	638			
v/s Ratio Prot					0.23							
v/s Ratio Perm		0.43				c0.58		0.30	0.04			
v/c Ratio		1.45			0.77	1.94		0.56	0.08			
Uniform Delay, d1		21.0			19.1	21.0		9.3	6.8			
Progression Factor		1.04			1.00	1.00		0.71	0.71			
Incremental Delay, d2		202.1			6.1	430.6		1.3	0.2			
Delay (s)		223.8			25.2	451.6		8.0	5.1			
Level of Service		F			C	F		A	A			
Approach Delay (s)		223.8			252.3			7.8			0.0	
Approach LOS		F			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			175.1				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			124.6%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1023	846
v/c Ratio	0.68	0.33
Control Delay	20.0	10.6
Queue Delay	0.0	0.7
Total Delay	20.0	11.3
Queue Length 50th (ft)	84	98
Queue Length 95th (ft)	72	m124
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1507	2603
Starvation Cap Reductn	0	1325
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.68	0.66















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	511	144	0	0	0	0	0	0	127	651	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5333									4327	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5333									4327	
Peak-hour factor, PHF	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	798	225	0	0	0	0	0	0	138	708	0
RTOR Reduction (vph)	0	85	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	938	0	0	0	0	0	0	0	0	839	0
Confl. Peds. (#/hr)			42								32	
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1422									2596	
v/s Ratio Prot		c0.18										
v/s Ratio Perm											0.19	
v/c Ratio		0.66									0.32	
Uniform Delay, d1		19.6									6.0	
Progression Factor		1.00									1.75	
Incremental Delay, d2		2.4									0.2	
Delay (s)		22.0									10.7	
Level of Service		C									B	
Approach Delay (s)		22.0			0.0			0.0			10.7	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.9								HCM Level of Service	B
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.8%								ICU Level of Service	A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
8: 13th St & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK























Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	108	973	796	194
v/c Ratio	0.26	0.83	0.30	0.27
Control Delay	2.4	17.0	6.2	6.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.4	17.0	6.2	6.7
Queue Length 50th (ft)	1	45	44	28
Queue Length 95th (ft)	1	35	62	56
Internal Link Dist (ft)		317	231	
Turn Bay Length (ft)	50			
Base Capacity (vph)	415	1170	2632	726
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.83	0.30	0.27

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 8: 13th St & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	64	574	0	0	0	0	0	756	184	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0	3.0			
Lane Util. Factor	1.00	0.91						0.91	1.00			
Frbp, ped/bikes	1.00	1.00						1.00	0.97			
Flpb, ped/bikes	0.97	1.00						1.00	1.00			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1353	4386						4386	1205			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1353	4386						4386	1205			
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	108	973	0	0	0	0	0	796	194	0	0	0
RTOR Reduction (vph)	54	0	0	0	0	0	0	0	3	0	0	0
Lane Group Flow (vph)	54	973	0	0	0	0	0	796	191	0	0	0
Confl. Peds. (#/hr)	26								36			
Confl. Bikes (#/hr)									11			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm								Perm			
Protected Phases		2						1				
Permitted Phases	2								1			
Actuated Green, G (s)	16.0	16.0						36.0	36.0			
Effective Green, g (s)	16.0	16.0						36.0	36.0			
Actuated g/C Ratio	0.27	0.27						0.60	0.60			
Clearance Time (s)	5.0	5.0						3.0	3.0			
Lane Grp Cap (vph)	361	1170						2632	723			
v/s Ratio Prot		c0.22						c0.18				
v/s Ratio Perm	0.04								0.16			
v/c Ratio	0.15	0.83						0.30	0.26			
Uniform Delay, d1	16.8	20.7						5.9	5.7			
Progression Factor	0.14	0.47						1.00	1.00			
Incremental Delay, d2	0.7	6.0						0.3	0.9			
Delay (s)	3.0	15.8						6.2	6.6			
Level of Service	A	B						A	A			
Approach Delay (s)		14.5			0.0			6.2			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.5				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			76.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
9: 13th St & Lake Merritt Blvd

Cumulative 2035  
Timing Plan: AM PEAK















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	834	58	2188	1003
v/c Ratio	0.82	0.13	0.98	0.62
Control Delay	24.5	5.2	19.9	10.7
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	24.5	5.2	20.0	10.7
Queue Length 50th (ft)	115	0	21	95
Queue Length 95th (ft)	#168	17	1	134
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1019	433	2226	1607
Starvation Cap Reductn	0	0	1	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	0.13	0.98	0.62

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 9: 13th St & Lake Merritt Blvd

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	709	49	0	0	1488	0	0	0	863	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frb, ped/bikes		1.00	0.99			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Fr <sub>t</sub>		1.00	0.85			0.85				1.00		
Fl <sub>t</sub> Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1229			2508				3090		
Fl <sub>t</sub> Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1229			2508				3090		
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.25	0.25	0.25	0.86	0.86	0.86
Adj. Flow (vph)	0	834	58	0	0	2188	0	0	0	1003	0	0
RTOR Reduction (vph)	0	0	39	0	0	922	0	0	0	0	0	0
Lane Group Flow (vph)	0	834	19	0	0	1266	0	0	0	1003	0	0
Confl. Bikes (#/hr)			3									
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			26.0				26.0		
Effective Green, g (s)		16.0	16.0			26.0				26.0		
Actuated g/C Ratio		0.32	0.32			0.52				0.52		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1019	393			1304				1607		
v/s Ratio Prot						c0.50				0.32		
v/s Ratio Perm		c0.26	0.02									
v/c Ratio		0.82	0.05			0.97				0.62		
Uniform Delay, d <sub>1</sub>		15.7	11.7			11.6				8.5		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d <sub>2</sub>		7.3	0.2			18.9				1.8		
Delay (s)		23.0	12.0			30.6				10.4		
Level of Service		C	B			C				B		
Approach Delay (s)		22.3			30.6			0.0			10.4	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			61.2%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Cumulative 2035  
Timing Plan: AM PEAK








	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	93	459	748	2298
v/c Ratio	0.03	0.30	0.48	1.10	1.44
Control Delay	28.0	39.7	42.0	106.8	229.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	39.7	42.0	106.8	229.7
Queue Length 50th (ft)	2	56	110	~219	~1194
Queue Length 95th (ft)	3	99	137	#232	#1327
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	284	315	955	682	1591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.30	0.48	1.10	1.44

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Cumulative 2035  
 Timing Plan: AM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↖	↑↑↑	↑↑↑		↘↘	
Volume (vph)	2	79	390	461	115	2033	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1346	1496	4577	4236		3073	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1346	1496	4577	4236		3073	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	93	459	599	149	2140	158
RTOR Reduction (vph)	3	3	0	37	0	0	0
Lane Group Flow (vph)	5	90	459	711	0	2298	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	24.0	24.0	24.0	17.5		59.5	
Effective Green, g (s)	24.0	24.0	24.0	17.5		59.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.15		0.52	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	281	312	955	645		1590	
v/s Ratio Prot			c0.10	c0.17		c0.75	
v/s Ratio Perm	0.00	0.06					
v/c Ratio	0.02	0.29	0.48	1.10		1.45	
Uniform Delay, d1	36.1	38.3	40.0	48.8		27.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	2.3	1.7	66.6		204.0	
Delay (s)	36.2	40.6	41.7	115.4		231.7	
Level of Service	D	D	D	F		F	
Approach Delay (s)			41.6	115.4		231.7	
Approach LOS			D	F		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			178.1		HCM Level of Service		F
HCM Volume to Capacity ratio			1.16				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			102.6%		ICU Level of Service		G
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
11: 12th St & Broadway

Cumulative 2035  
Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1046	127	411	518
v/c Ratio	0.72	1.07	0.26	0.48
Control Delay	19.9	136.2	8.9	15.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.9	136.2	8.9	15.3
Queue Length 50th (ft)	114	-52	40	67
Queue Length 95th (ft)	142	#143	64	106
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1451	119	1587	1081
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	1.07	0.26	0.48

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.

HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

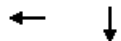
Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	154	652	73	122	395	0	0	432	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.99		1.00	1.00			0.94		
Flpb, ped/bikes					0.98		1.00	1.00			1.00		
Frt					0.99		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4094		1593	3122			2883		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4094		1593	3122			2883		
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.96	0.96	0.96	0.98	0.98	0.98	
Adj. Flow (vph)	0	0	0	183	776	87	127	411	0	0	441	77	
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	23	0	
Lane Group Flow (vph)	0	0	0	0	1028	0	127	411	0	0	495	0	
Confl. Peds. (#/hr)				164		113	522					522	
Confl. Bikes (#/hr)						6						10	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type					Perm			Prot					
Protected Phases						4		5	2			6	
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1433		119	1587			1057		
v/s Ratio Prot							c0.08	0.13			c0.17		
v/s Ratio Perm					0.25								
v/c Ratio					0.72		1.07	0.26			0.47		
Uniform Delay, d1					16.9		27.8	8.4			14.5		
Progression Factor					1.00		1.00	1.00			1.00		
Incremental Delay, d2					3.1		101.7	0.4			1.5		
Delay (s)					20.0		129.4	8.7			16.0		
Level of Service					C		F	A			B		
Approach Delay (s)		0.0			20.0			37.2			16.0		
Approach LOS		A			C			D			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			23.5		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			57.7%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK

















Lane Group	WBT	SBT
Lane Group Flow (vph)	1213	828
v/c Ratio	0.39	0.63
Control Delay	7.0	10.2
Queue Delay	0.0	0.0
Total Delay	7.0	10.2
Queue Length 50th (ft)	58	27
Queue Length 95th (ft)	72	75
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	3142	1320
Starvation Cap Reductn	0	0
Spillback Cap Reductn	9	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.39	0.63

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	206	837	0	0	0	0	0	643	152	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.98		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.97		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5425						4183		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5425						4183		
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96	
Adj. Flow (vph)	0	0	0	240	973	0	0	0	0	0	670	158	
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	0	0	65	0	
Lane Group Flow (vph)	0	0	0	0	1190	0	0	0	0	0	763	0	
Confl. Peds. (#/hr)				50								65	
Confl. Bikes (#/hr)												10	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					34.5						18.0		
Effective Green, g (s)					34.5						18.0		
Actuated g/C Ratio					0.58						0.30		
Clearance Time (s)					3.5						4.0		
Lane Grp Cap (vph)					3119						1255		
v/s Ratio Prot											c0.18		
v/s Ratio Perm					0.22								
v/c Ratio					0.38						0.61		
Uniform Delay, d1					6.9						18.0		
Progression Factor					1.00						0.50		
Incremental Delay, d2					0.4						2.0		
Delay (s)					7.3						11.0		
Level of Service					A						B		
Approach Delay (s)		0.0			7.3			0.0			11.0		
Approach LOS		A			A			A			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			8.8		HCM Level of Service						A		
HCM Volume to Capacity ratio			0.46										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			42.1%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group



Queues  
13: 12th St & Oak Street



















Cumulative 2035  
Timing Plan: AM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	850	1300
v/c Ratio	0.36	0.68
Control Delay	8.8	13.7
Queue Delay	0.0	0.0
Total Delay	8.8	13.7
Queue Length 50th (ft)	38	73
Queue Length 95th (ft)	55	104
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2380	1899
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.68
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	761	38	338	884	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.95				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5456			5179				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5456			5179				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	810	40	360	940	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	59	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	835	0	0	1241	0	0	0	0
Confl. Peds. (#/hr)						151	217					
Confl. Bikes (#/hr)						9						
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					19.5			16.0				
Effective Green, g (s)					19.5			16.0				
Actuated g/C Ratio					0.43			0.36				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2364			1841				
v/s Ratio Prot					c0.15							
v/s Ratio Perm								0.24				
v/c Ratio					0.35			0.67				
Uniform Delay, d1					8.5			12.3				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.4			2.0				
Delay (s)					8.9			14.3				
Level of Service					A			B				
Approach Delay (s)		0.0			8.9			14.3			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.2				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			45.0				Sum of lost time (s)			9.5		
Intersection Capacity Utilization			42.1%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035  
Timing Plan: AM PEAK












	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	791	926	1860	1806
v/c Ratio	0.46	0.57	1.10	1.11
Control Delay	11.3	12.8	75.7	81.2
Queue Delay	0.5	0.0	0.0	45.0
Total Delay	11.8	12.8	75.7	126.2
Queue Length 50th (ft)	85	128	~491	~334
Queue Length 95th (ft)	110	148	#508	#403
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1718	1633	1684	1634
Starvation Cap Reductn	464	0	0	139
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.57	1.10	1.21

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.

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035  
 Timing Plan: AM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	672	741	1488	1562	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frbp, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4573	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4573	
Peak-hour factor, PHF	0.85	0.85	0.80	0.80	0.87	0.87
Adj. Flow (vph)	0	791	926	1860	1795	11
RTOR Reduction (vph)	0	1	0	0	1	0
Lane Group Flow (vph)	0	790	926	1860	1805	0
Confl. Bikes (#/hr)		7				
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		37.0	37.0	37.0	25.0	
Effective Green, g (s)		37.0	37.0	37.0	25.0	
Actuated g/C Ratio		0.53	0.53	0.53	0.36	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1717	1633	1684	1633	
v/s Ratio Prot		0.24	0.30	c0.58	c0.39	
v/s Ratio Perm						
v/c Ratio		0.46	0.57	1.10	1.11	
Uniform Delay, d1		10.3	11.1	16.5	22.5	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.9	1.4	56.4	57.1	
Delay (s)		11.2	12.5	72.9	79.6	
Level of Service		B	B	E	E	
Approach Delay (s)	11.2			52.9	79.6	
Approach LOS	B			D	E	
<b>Intersection Summary</b>						
HCM Average Control Delay			55.7		HCM Level of Service	E
HCM Volume to Capacity ratio			1.11			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			63.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues

Cumulative 2035

15: International Blvd & Lake Merritt Blvd

Timing Plan: AM PEAK


















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	347	46	487	420	1596
v/c Ratio	0.28	0.09	0.25	0.29	0.99
Control Delay	17.5	5.8	9.6	1.6	38.7
Queue Delay	0.0	0.0	0.7	0.3	0.0
Total Delay	17.5	5.8	10.3	1.8	38.7
Queue Length 50th (ft)	57	0	58	0	357
Queue Length 95th (ft)	86	19	85	20	#528
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1259	491	1911	1459	1614
Starvation Cap Reductn	0	0	1047	471	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.09	0.56	0.43	0.99

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Cumulative 2035  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	309	41	463	399	50	1371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.95	1.00	0.86		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1260	3539	2344		3246
Flt Permitted	0.95	1.00	1.00	1.00		0.92
Satd. Flow (perm)	3433	1260	3539	2344		2987
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	347	46	487	420	56	1540
RTOR Reduction (vph)	0	29	0	193	0	0
Lane Group Flow (vph)	347	17	487	227	0	1596
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.5	27.5	40.5	40.5		40.5
Effective Green, g (s)	27.5	27.5	40.5	40.5		40.5
Actuated g/C Ratio	0.37	0.37	0.54	0.54		0.54
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1259	462	1911	1266		1613
v/s Ratio Prot	c0.10		0.14			
v/s Ratio Perm		0.01		0.10		c0.53
v/c Ratio	0.28	0.04	0.25	0.18		0.99
Uniform Delay, d1	16.7	15.2	9.2	8.8		17.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	0.1	0.3	0.3		20.0
Delay (s)	17.3	15.4	9.5	9.1		37.1
Level of Service	B	B	A	A		D
Approach Delay (s)	17.1		9.3			37.1
Approach LOS	B		A			D

Intersection Summary			
HCM Average Control Delay		25.7	HCM Level of Service C
HCM Volume to Capacity ratio		0.70	
Actuated Cycle Length (s)		75.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		97.7%	ICU Level of Service F
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Cumulative 2035  
Timing Plan: AM PEAK


















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	686	68	562	117	589
v/c Ratio	0.50	0.11	0.39	0.86	0.33
Control Delay	16.2	4.3	2.6	81.9	10.2
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	16.2	4.3	2.7	81.9	10.2
Queue Length 50th (ft)	101	0	2	47	67
Queue Length 95th (ft)	132	18	28	#131	97
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1373	603	1451	136	1761
Starvation Cap Reductn	0	0	181	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.11	0.44	0.86	0.33

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave





Cumulative 2035  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	576	57	18	482	104	524
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.93	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.86		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1406	2907		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1406	2907		1770	3468
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.89	0.89
Adj. Flow (vph)	686	68	20	542	117	589
RTOR Reduction (vph)	0	41	334	0	0	0
Lane Group Flow (vph)	686	27	228	0	117	589
Confl. Peds. (#/hr)	19	82		33	33	
Confl. Bikes (#/hr)				5		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	25.0		5.0	33.0
Effective Green, g (s)	26.0	26.0	25.0		5.0	33.0
Actuated g/C Ratio	0.40	0.40	0.38		0.08	0.51
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1373	562	1118		136	1761
v/s Ratio Prot	c0.20		0.08		c0.07	c0.17
v/s Ratio Perm		0.02				
v/c Ratio	0.50	0.05	0.20		0.86	0.33
Uniform Delay, d1	14.6	11.9	13.4		29.7	9.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.2	0.4		46.7	0.5
Delay (s)	15.9	12.1	13.8		76.4	10.0
Level of Service	B	B	B		E	B
Approach Delay (s)	15.6		13.8			21.0
Approach LOS	B		B			C
<b>Intersection Summary</b>						
HCM Average Control Delay			17.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			56.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						



Queues  
17: 11th St & Castro St

Cumulative 2035  
Timing Plan: AM PEAK
















				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	184	866	1531	202
v/c Ratio	0.27	0.33	1.68	0.38
Control Delay	3.4	18.4	341.5	44.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	18.4	341.5	44.1
Queue Length 50th (ft)	0	116	~612	68
Queue Length 95th (ft)	46	143	#699	105
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	685	2645	911	528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.33	1.68	0.38

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.

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Cumulative 2035  
 Timing Plan: AM PEAK

						
Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations		  	  		 	
Volume (vph)	169	797	1276	86	123	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.94	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1212	5432	4338		2965	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1212	5432	4338		2965	
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93
Adj. Flow (vph)	184	866	1434	97	132	70
RTOR Reduction (vph)	94	0	6	0	0	0
Lane Group Flow (vph)	90	866	1525	0	202	0
Confl. Peds. (#/hr)	37			5	37	5
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	56.0	56.0	24.0		20.5	
Effective Green, g (s)	56.0	56.0	24.0		20.5	
Actuated g/C Ratio	0.49	0.49	0.21		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	590	2645	905		529	
v/s Ratio Prot			c0.35		c0.07	
v/s Ratio Perm	0.07	0.16				
v/c Ratio	0.15	0.33	1.68		0.38	
Uniform Delay, d1	16.3	18.0	45.5		41.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.3	312.9		2.1	
Delay (s)	16.9	18.3	358.4		43.7	
Level of Service	B	B	F		D	
Approach Delay (s)		18.1	358.4		43.7	
Approach LOS		B	F		D	
<b>Intersection Summary</b>						
HCM Average Control Delay			207.2		HCM Level of Service	F
HCM Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			115.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			67.8%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

Queues  
18: 11th St & Broadway

Cumulative 2035  
Timing Plan: AM PEAK























	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	696	65	537	196	458
v/c Ratio	0.64	0.08	0.62	1.13	0.31
Control Delay	17.2	3.9	19.1	136.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	3.9	19.1	136.5	9.7
Queue Length 50th (ft)	94	0	72	-77	45
Queue Length 95th (ft)	144	10	116	#180	70
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1092	789	869	174	1476
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.64	0.08	0.62	1.13	0.31

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.

HCM Signalized Intersection Capacity Analysis  
18: 11th St & Broadway

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 		 	 	
Volume (vph)	94	540	59	0	0	0	0	421	84	174	408	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.85					0.95		1.00	1.00	
Flpb, ped/bikes		0.98	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.98		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2858	1960					2887		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2858	1960					2887		1593	3122	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	103	593	65	0	0	0	0	448	89	196	458	0
RTOR Reduction (vph)	0	0	40	0	0	0	0	30	0	0	0	0
Lane Group Flow (vph)	0	696	25	0	0	0	0	507	0	196	458	0
Confl. Peds. (#/hr)	139		172						313	313		
Confl. Bikes (#/hr)			11						3			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1091	748					840		174	1476	
v/s Ratio Prot								c0.18		c0.12	0.15	
v/s Ratio Perm		0.24	0.01									
v/c Ratio		0.64	0.03					0.60		1.13	0.31	
Uniform Delay, d1		13.9	10.6					16.8		24.5	9.0	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		2.9	0.1					3.2		106.2	0.5	
Delay (s)		16.8	10.7					20.0		130.7	9.5	
Level of Service		B	B					B		F	A	
Approach Delay (s)		16.2			0.0			20.0			45.8	
Approach LOS		B			A			B			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			27.2									HCM Level of Service C
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			55.0								12.0	
Intersection Capacity Utilization			57.7%									ICU Level of Service B
Analysis Period (min)			15									

c Critical Lane Group

	↙	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	200	641	954
v/c Ratio	0.31	0.56	0.55
Control Delay	13.7	14.6	11.9
Queue Delay	0.0	0.0	1.1
Total Delay	13.7	14.6	13.1
Queue Length 50th (ft)	47	80	115
Queue Length 95th (ft)	89	120	149
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	650	1140	1737
Starvation Cap Reductn	0	0	511
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.56	0.78
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Cumulative 2035  
 Timing Plan: AM PEAK

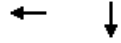
	↖	→	↘	↙	↓
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations	↖	↑↗			↘↗↑
Volume (vph)	184	366	191	154	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.91
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			0.99
Frt	1.00	0.95			1.00
Flt Protected	0.95	1.00			0.99
Satd. Flow (prot)	1593	2704			4255
Flt Permitted	0.95	1.00			0.99
Satd. Flow (perm)	1593	2704			4255
Peak-hour factor, PHF	0.92	0.87	0.87	0.89	0.89
Adj. Flow (vph)	200	421	220	173	781
RTOR Reduction (vph)	0	36	0	0	0
Lane Group Flow (vph)	200	606	0	0	954
Confl. Peds. (#/hr)			52	38	
Confl. Bikes (#/hr)			4		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	100	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	24.5	24.5			24.5
Effective Green, g (s)	24.5	24.5			24.5
Actuated g/C Ratio	0.41	0.41			0.41
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	650	1104			1737
v/s Ratio Prot		c0.22			
v/s Ratio Perm	0.13				0.22
v/c Ratio	0.31	0.55			0.55
Uniform Delay, d1	12.0	13.5			13.5
Progression Factor	1.00	1.00			0.79
Incremental Delay, d2	1.2	2.0			1.1
Delay (s)	13.2	15.5			11.8
Level of Service	B	B			B
Approach Delay (s)		15.0			11.8
Approach LOS		B			B

Intersection Summary			
HCM Average Control Delay		13.3	HCM Level of Service B
HCM Volume to Capacity ratio		0.55	
Actuated Cycle Length (s)		60.0	Sum of lost time (s) 11.0
Intersection Capacity Utilization		47.0%	ICU Level of Service A
Analysis Period (min)		15	

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	858	914
v/c Ratio	1.01	0.36
Control Delay	37.4	2.9
Queue Delay	0.0	0.0
Total Delay	37.4	2.9
Queue Length 50th (ft)	~184	21
Queue Length 95th (ft)	m162	22
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	851	2506
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.01	0.36


















Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 20: 10th St & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						  	
Volume (vph)	0	0	0	225	504	0	0	0	0	128	704	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						0.99	
Frt					1.00						0.99	
Flt Protected					0.98						0.99	
Satd. Flow (prot)					2919						4214	
Flt Permitted					0.98						0.99	
Satd. Flow (perm)					2919						4214	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	265	593	0	0	0	0	132	726	56
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	858	0	0	0	0	0	902	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					851						2493	
v/s Ratio Prot												
v/s Ratio Perm					0.29						0.21	
v/c Ratio					1.01						0.36	
Uniform Delay, d1					21.2						6.4	
Progression Factor					1.09						0.40	
Incremental Delay, d2					11.3						0.3	
Delay (s)					34.6						2.9	
Level of Service					C						A	
Approach Delay (s)		0.0			34.6			0.0			2.9	
Approach LOS		A			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.2		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			49.0%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
21: 10th St & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK




















	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	169	906	1211
v/c Ratio	0.32	1.20	0.35
Control Delay	24.5	124.9	2.1
Queue Delay	0.0	0.0	0.1
Total Delay	24.5	124.9	2.2
Queue Length 50th (ft)	27	~208	15
Queue Length 95th (ft)	32	#284	20
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	525	757	3444
Starvation Cap Reductn	0	0	683
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	1.20	0.44

**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.

HCM Signalized Intersection Capacity Analysis  
 21: 10th St & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			  					
Volume (vph)	13	90	0	0	594	167	135	858	109	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0					
Lane Util. Factor		0.95			0.95			0.86					
Frb, ped/bikes		1.00			0.99			0.99					
Flpb, ped/bikes		1.00			1.00			1.00					
Frt		1.00			0.97			0.99					
Flt Protected		0.99			1.00			0.99					
Satd. Flow (prot)		2966			2857			5534					
Flt Permitted		0.70			1.00			0.99					
Satd. Flow (perm)		2102			2857			5534					
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92	
Adj. Flow (vph)	21	148	0	0	707	199	148	943	120	0	0	0	
RTOR Reduction (vph)	0	0	0	0	43	0	0	31	0	0	0	0	
Lane Group Flow (vph)	0	169	0	0	863	0	0	1180	0	0	0	0	
Confl. Peds. (#/hr)	26					26	72		91				
Confl. Bikes (#/hr)						7			11				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0	
Parking (#/hr)		5			5	5	5		5				
Turn Type	Perm							Perm					
Protected Phases		2			2			1					
Permitted Phases	2						1						
Actuated Green, G (s)		15.0			15.0			37.0					
Effective Green, g (s)		15.0			15.0			37.0					
Actuated g/C Ratio		0.25			0.25			0.62					
Clearance Time (s)		4.0			4.0			4.0					
Lane Grp Cap (vph)		526			714			3413					
v/s Ratio Prot					c0.30								
v/s Ratio Perm		0.08						0.21					
v/c Ratio		0.32			1.21			0.35					
Uniform Delay, d1		18.3			22.5			5.6					
Progression Factor		1.22			1.00			0.35					
Incremental Delay, d2		1.6			106.9			0.3					
Delay (s)		23.9			129.4			2.2					
Level of Service		C			F			A					
Approach Delay (s)		23.9			129.4			2.2			0.0		
Approach LOS		C			F			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			54.2				HCM Level of Service			D			
HCM Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization			62.2%				ICU Level of Service		B				
Analysis Period (min)			15										

c Critical Lane Group













Queues  
22: 9th Street & Webster Street

Cumulative 2035  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	177	117	1511
v/c Ratio	0.20	0.30	0.84
Control Delay	24.2	7.0	32.8
Queue Delay	0.0	0.0	57.7
Total Delay	24.2	7.0	90.6
Queue Length 50th (ft)	38	0	223
Queue Length 95th (ft)	60	32	239
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	392	1791
Starvation Cap Reductn	0	0	447
Spillback Cap Reductn	0	4	202
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.30	1.12
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑								↓↓↓	
Volume (vph)	0	149	98	0	0	0	0	0	0	186	1068	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.86								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1034								5449	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1034								5449	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	177	117	0	0	0	0	0	0	224	1287	0
RTOR Reduction (vph)	0	0	82	0	0	0	0	0	0	0	35	0
Lane Group Flow (vph)	0	177	35	0	0	0	0	0	0	0	1476	0
Confl. Peds. (#/hr)			124							55		
Confl. Bikes (#/hr)			4									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2								1	
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	310								1756	
v/s Ratio Prot		c0.06										
v/s Ratio Perm			0.03								0.27	
v/c Ratio		0.20	0.11								0.84	
Uniform Delay, d1		23.4	22.8								28.4	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.5	0.7								5.1	
Delay (s)		23.9	23.6								33.4	
Level of Service		C	C								C	
Approach Delay (s)		23.8			0.0			0.0			33.4	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.8									HCM Level of Service C
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			90.0								34.0	
Intersection Capacity Utilization			49.5%									ICU Level of Service A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 23: 9th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK













	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	394	1012
v/c Ratio	0.36	0.39
Control Delay	11.8	5.6
Queue Delay	0.0	0.2
Total Delay	11.8	5.9
Queue Length 50th (ft)	24	56
Queue Length 95th (ft)	46	m71
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1107	2601
Starvation Cap Reductn	0	770
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.55

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	211	155	0	0	0	0	0	0	124	807	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3950									4279	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3950									4279	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	227	167	0	0	0	0	0	0	135	877	0
RTOR Reduction (vph)	0	120	0	0	0	0	0	0	0	0	34	0
Lane Group Flow (vph)	0	274	0	0	0	0	0	0	0	0	978	0
Confl. Peds. (#/hr)			62								43	
Confl. Bikes (#/hr)			7									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		988									2567	
v/s Ratio Prot		c0.07										
v/s Ratio Perm											0.23	
v/c Ratio		0.28									0.38	
Uniform Delay, d1		18.1									6.2	
Progression Factor		1.00									0.91	
Incremental Delay, d2		0.7									0.4	
Delay (s)		18.8									6.1	
Level of Service		B									A	
Approach Delay (s)		18.8			0.0			0.0			6.1	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.6								A	
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			40.1%								A	
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group

Queues  
24: 9th Street & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK













	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	425	1118
v/c Ratio	0.35	0.33
Control Delay	10.3	2.4
Queue Delay	0.0	0.0
Total Delay	10.3	2.4
Queue Length 50th (ft)	24	19
Queue Length 95th (ft)	32	m22
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1227	3409
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.33

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

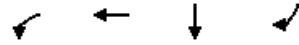
Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	124	225	0	0	0	0	0	941	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.86				
Frbp, ped/bikes		1.00						1.00				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.99				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		4265						5490				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		4265						5490				
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	274	0	0	0	0	0	1023	95	0	0	0
RTOR Reduction (vph)	0	89	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	336	0	0	0	0	0	1093	0	0	0	0
Confl. Peds. (#/hr)	26								84			
Confl. Bikes (#/hr)									11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1137						3386				
v/s Ratio Prot								c0.20				
v/s Ratio Perm		0.08										
v/c Ratio		0.30						0.32				
Uniform Delay, d1		17.5						5.5				
Progression Factor		0.75						0.43				
Incremental Delay, d2		0.6						0.2				
Delay (s)		13.9						2.6				
Level of Service		B						A				
Approach Delay (s)		13.9			0.0			2.6			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			5.7									A
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			45.1%									A
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
25: 8th Street & Webster Street

Cumulative 2035  
Timing Plan: AM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	706	2242	748	552
v/c Ratio	0.98	1.83	0.56	0.85
Control Delay	41.0	399.8	4.3	23.8
Queue Delay	0.0	0.0	0.5	166.9
Total Delay	41.0	399.8	4.8	190.7
Queue Length 50th (ft)	159	~754	12	368
Queue Length 95th (ft)	#391	#779	m17	m#458
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	717	1227	1336	653
Starvation Cap Reductn	0	0	239	250
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.98	1.83	0.68	1.37

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.

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	593	1883	0	0	0	0	0	658	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1010
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1010
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	706	2242	0	0	0	0	0	748	552
RTOR Reduction (vph)	0	0	0	358	0	0	0	0	0	0	0	328
Lane Group Flow (vph)	0	0	0	348	2242	0	0	0	0	0	748	224
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	325
v/s Ratio Prot											0.18	
v/s Ratio Perm				0.29	0.55							c0.22
v/c Ratio				0.97	1.83						0.56	0.69
Uniform Delay, d1				31.1	31.5						25.2	26.6
Progression Factor				1.00	1.00						0.13	3.55
Incremental Delay, d2				40.6	375.5						1.0	6.7
Delay (s)				71.7	407.0						4.3	101.2
Level of Service				E	F						A	F
Approach Delay (s)		0.0			326.7			0.0			45.4	
Approach LOS		A			F			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			240.6									F
HCM Volume to Capacity ratio			1.24									
Actuated Cycle Length (s)			90.0								34.0	
Intersection Capacity Utilization			83.0%									E
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
26: 8th Street & Harrison Street

Cumulative 2035  
Timing Plan: AM PEAK























Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2192	631	1199
v/c Ratio	1.26	0.87	0.53
Control Delay	144.5	14.2	2.7
Queue Delay	0.0	24.3	0.5
Total Delay	144.5	38.5	3.2
Queue Length 50th (ft)	~299	33	20
Queue Length 95th (ft)	#269	m39	23
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1739	726	2273
Starvation Cap Reductn	0	115	568
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.26	1.03	0.70

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.

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  		 	  					
Volume (vph)	0	0	0	0	1483	139	984	443	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.86		0.86	0.86					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.96	0.98					
Frt					0.99		1.00	1.00					
Flt Protected					1.00		0.95	0.97					
Satd. Flow (prot)					5414		1320	4135					
Flt Permitted					1.00		0.95	0.97					
Satd. Flow (perm)					5414		1320	4135					
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	2004	188	1262	568	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2167	0	631	1199	0	0	0	0	
Confl. Peds. (#/hr)							88	65					
Confl. Bikes (#/hr)							7						
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type							Perm						
Protected Phases					8			1					
Permitted Phases							1						
Actuated Green, G (s)					19.0		32.5	32.5					
Effective Green, g (s)					19.0		33.0	33.0					
Actuated g/C Ratio					0.32		0.55	0.55					
Clearance Time (s)					4.0		4.5	4.5					
Lane Grp Cap (vph)					1714		726	2274					
v/s Ratio Prot					c0.40								
v/s Ratio Perm							c0.48	0.29					
v/c Ratio					1.26		0.87	0.53					
Uniform Delay, d1					20.5		11.6	8.6					
Progression Factor					1.00		0.32	0.26					
Incremental Delay, d2					123.7		7.5	0.5					
Delay (s)					144.2		11.2	2.7					
Level of Service					F		B	A					
Approach Delay (s)		0.0			144.2			5.6			0.0		
Approach LOS		A			F			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			81.1		HCM Level of Service				F				
HCM Volume to Capacity ratio			1.01										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			66.0%		ICU Level of Service				C				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
27: 8th Street & Jackson Street

Cumulative 2035  
Timing Plan: AM PEAK






















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1900	343	362
v/c Ratio	1.24	0.52	0.45
Control Delay	131.5	14.2	9.5
Queue Delay	0.0	2.5	1.5
Total Delay	131.5	16.6	11.0
Queue Length 50th (ft)	~266	124	66
Queue Length 95th (ft)	m#235	m157	94
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1530	665	808
Starvation Cap Reductn	0	205	271
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.24	0.75	0.67

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.

HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

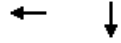
Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						  		
Volume (vph)	0	0	0	61	1475	174	101	208	0	0	211	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.86			1.00			1.00		
Frb, ped/bikes					0.98			1.00			0.99		
Flpb, ped/bikes					0.99			0.99			1.00		
Frt					0.98			1.00			0.97		
Flt Protected					1.00			0.98			1.00		
Satd. Flow (prot)					5285			1436			1405		
Flt Permitted					1.00			0.79			1.00		
Satd. Flow (perm)					5285			1157			1405		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77	
Adj. Flow (vph)	0	0	0	68	1639	193	112	231	0	0	274	88	
RTOR Reduction (vph)	0	0	0	0	32	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1868	0	0	343	0	0	362	0	
Confl. Peds. (#/hr)				129		97	51					51	
Confl. Bikes (#/hr)						8						1	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type				Perm			Perm						
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					17.0			34.0			34.0		
Effective Green, g (s)					17.0			34.5			34.5		
Actuated g/C Ratio					0.28			0.58			0.58		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1497			665			808		
v/s Ratio Prot											0.26		
v/s Ratio Perm					0.35			c0.30					
v/c Ratio					1.25			0.52			0.45		
Uniform Delay, d1					21.5			7.7			7.3		
Progression Factor					0.93			1.50			1.00		
Incremental Delay, d2					112.0			1.7			1.8		
Delay (s)					131.9			13.2			9.1		
Level of Service					F			B			A		
Approach Delay (s)		0.0			131.9			13.2			9.1		
Approach LOS		A			F			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			99.2		HCM Level of Service						F		
HCM Volume to Capacity ratio			0.76										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			85.7%		ICU Level of Service					E			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
28: 8th Street & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	2429	999
v/c Ratio	1.17dl	0.51
Control Delay	65.7	9.2
Queue Delay	17.8	0.1
Total Delay	83.5	9.4
Queue Length 50th (ft)	~264	53
Queue Length 95th (ft)	m114	81
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	2210	1973
Starvation Cap Reductn	0	239
Spillback Cap Reductn	79	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.14	0.58

Intersection Summary

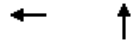
- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					4TTL						4TTL		
Volume (vph)	0	0	0	622	1588	0	0	0	0	0	829	110	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5392						4227		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5392						4227		
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	
Adj. Flow (vph)	0	0	0	684	1745	0	0	0	0	0	882	117	
RTOR Reduction (vph)	0	0	0	0	53	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	0	0	0	2376	0	0	0	0	0	998	0	
Confl. Peds. (#/hr)				36								34	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					23.5						27.5		
Effective Green, g (s)					24.0						28.0		
Actuated g/C Ratio					0.40						0.47		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					2157						1973		
v/s Ratio Prot											c0.24		
v/s Ratio Perm					0.44								
v/c Ratio					1.17dl						0.51		
Uniform Delay, d1					18.0						11.2		
Progression Factor					1.03						0.74		
Incremental Delay, d2					46.4						0.9		
Delay (s)					65.0						9.1		
Level of Service					E						A		
Approach Delay (s)		0.0			65.0			0.0			9.1		
Approach LOS		A			E			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			48.7		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.78										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			65.8%		ICU Level of Service					C			
Analysis Period (min)			15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.													
c Critical Lane Group													























Lane Group	WBT	NBT
Lane Group Flow (vph)	2451	1156
v/c Ratio	1.27	0.41
Control Delay	149.3	3.1
Queue Delay	0.0	0.3
Total Delay	149.3	3.4
Queue Length 50th (ft)	~337	11
Queue Length 95th (ft)	#413	m15
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1924	2794
Starvation Cap Reductn	0	892
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.27	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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	2036	219	176	818	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5415			5408				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5415			5408				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2213	238	205	951	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	30	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2421	0	0	1156	0	0	0	0
Confl. Peds. (#/hr)						62	131					
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					21.0			31.0				
Effective Green, g (s)					21.0			31.0				
Actuated g/C Ratio					0.35			0.52				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1895			2794				
v/s Ratio Prot					c0.45							
v/s Ratio Perm								0.21				
v/c Ratio					1.28			0.41				
Uniform Delay, d1					19.5			8.9				
Progression Factor					1.00			0.32				
Incremental Delay, d2					129.2			0.3				
Delay (s)					148.7			3.1				
Level of Service					F			A				
Approach Delay (s)		0.0			148.7			3.1			0.0	
Approach LOS		A			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			102.0				HCM Level of Service			F		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			60.1%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

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Intersection Sign configuration not allowed in HCM analysis.

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










Queues  
31: 7th Street & Harrison Street

Cumulative 2035  
Timing Plan: AM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	673	1685	1488
v/c Ratio	0.34	0.92	0.61
Control Delay	10.7	27.5	1.1
Queue Delay	0.0	0.0	0.0
Total Delay	10.7	27.5	1.1
Queue Length 50th (ft)	52	203	0
Queue Length 95th (ft)	63	186	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	1974	1831	2457
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.92	0.61
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	214	311	0	0	0	0	0	1213	1071	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frb, ped/bikes		1.00						1.00	0.98			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.98						1.00	1.00			
Satd. Flow (prot)		4227						4577	2457			
Flt Permitted		0.98						1.00	1.00			
Satd. Flow (perm)		4227						4577	2457			
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.72	0.72	0.72	0.92	0.92	0.92
Adj. Flow (vph)	274	399	0	0	0	0	0	1685	1488	0	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	671	0	0	0	0	0	1685	1488	0	0	0
Confl. Peds. (#/hr)	12								29			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm								Free			
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		28.0						24.0	60.0			
Actuated g/C Ratio		0.47						0.40	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1973						1831	2457			
v/s Ratio Prot								c0.37				
v/s Ratio Perm		0.16							c0.61			
v/c Ratio		0.34						0.92	0.61			
Uniform Delay, d1		10.1						17.1	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.5						9.1	1.1			
Delay (s)		10.6						26.2	1.1			
Level of Service		B						C	A			
Approach Delay (s)		10.6			0.0			14.4			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.7									HCM Level of Service B
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			60.0									Sum of lost time (s) 4.0
Intersection Capacity Utilization			57.4%									ICU Level of Service B
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
32: 7th Street & Jackson Street

Cumulative 2035  
Timing Plan: AM PEAK

	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1280	264	371	322
v/c Ratio	0.57	0.41	0.85	0.95
Control Delay	7.9	3.0	40.2	63.1
Queue Delay	0.0	0.0	1.6	0.0
Total Delay	8.0	3.0	41.8	63.1
Queue Length 50th (ft)	79	0	117	121
Queue Length 95th (ft)	92	22	#258	m#219
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2261	645	435	339
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	87	0	13	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.41	0.88	0.95



















**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.

# HCM Signalized Intersection Capacity Analysis

## 32: 7th Street & Jackson Street

Cumulative 2035  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	38	744	407	0	0	0	0	261	76	44	239	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.98	0.91					0.98			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			0.99	
Frt		0.97	0.85					0.97			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		3868	937					1393			1447	
Flt Permitted		1.00	1.00					1.00			0.77	
Satd. Flow (perm)		3868	937					1393			1129	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	49	966	529	0	0	0	0	287	84	50	272	0
RTOR Reduction (vph)	0	69	114	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	1211	150	0	0	0	0	354	0	0	322	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2192	531					418			339	
v/s Ratio Prot								0.25				
v/s Ratio Perm		0.31	0.16								c0.29	
v/c Ratio		0.55	0.28					0.85			0.95	
Uniform Delay, d1		8.2	6.7					19.7			20.6	
Progression Factor		0.97	1.13					1.00			1.29	
Incremental Delay, d2		0.9	1.1					18.6			32.7	
Delay (s)		8.8	8.7					38.3			59.2	
Level of Service		A	A					D			E	
Approach Delay (s)		8.8			0.0			38.3			59.2	
Approach LOS		A			A			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.0									C
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			69.2%									C
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 33: 7th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1111	1513
v/c Ratio	0.42	0.98
Control Delay	12.3	34.3
Queue Delay	0.0	35.7
Total Delay	12.3	70.0
Queue Length 50th (ft)	82	163
Queue Length 95th (ft)	m106	m#200
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	2666	1550
Starvation Cap Reductn	0	159
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.42	1.09















**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.



HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	607	326	0	0	0	0	0	0	257	1180	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0									4.0		
Lane Util. Factor		0.86									0.91		
Frbp, ped/bikes		0.98									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.95									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		5151									4267		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		5151									4267		
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	
Adj. Flow (vph)	0	723	388	0	0	0	0	0	0	271	1242	0	
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	57	0	
Lane Group Flow (vph)	0	1107	0	0	0	0	0	0	0	0	1456	0	
Confl. Peds. (#/hr)			33							31			
Confl. Bikes (#/hr)			2										
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		31.0									22.0		
Effective Green, g (s)		31.0									21.0		
Actuated g/C Ratio		0.52									0.35		
Clearance Time (s)		4.0									3.0		
Lane Grp Cap (vph)		2661									1493		
v/s Ratio Prot		c0.21											
v/s Ratio Perm											0.34		
v/c Ratio		0.42									0.98		
Uniform Delay, d1		8.9									19.2		
Progression Factor		1.33									1.05		
Incremental Delay, d2		0.4									13.4		
Delay (s)		12.2									33.6		
Level of Service		B									C		
Approach Delay (s)		12.2			0.0			0.0			33.6		
Approach LOS		B			A			A			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			24.6		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			54.7%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
34: 7th Street & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	1012	1522
v/c Ratio	0.42	0.91dr
Control Delay	8.9	20.8
Queue Delay	0.0	3.3
Total Delay	8.9	24.1
Queue Length 50th (ft)	26	164
Queue Length 95th (ft)	m30	206
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2400	1784
Starvation Cap Reductn	0	178
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.42	0.95

Intersection Summary

- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	119	752	0	0	0	0	0	875	434	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.98				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.95				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5479						4022				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5479						4022				
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	138	874	0	0	0	0	0	1017	505	0	0	0
RTOR Reduction (vph)	0	27	0	0	0	0	0	42	0	0	0	0
Lane Group Flow (vph)	0	985	0	0	0	0	0	1480	0	0	0	0
Confl. Peds. (#/hr)	26								75			
Confl. Bikes (#/hr)									3			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		25.0						25.0				
Effective Green, g (s)		26.0						26.0				
Actuated g/C Ratio		0.43						0.43				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2374						1743				
v/s Ratio Prot								c0.37				
v/s Ratio Perm		0.18										
v/c Ratio		0.42						0.91dr				
Uniform Delay, d1		11.7						15.2				
Progression Factor		0.75						1.00				
Incremental Delay, d2		0.4						5.4				
Delay (s)		9.3						20.6				
Level of Service		A						C				
Approach Delay (s)		9.3			0.0			20.6			0.0	
Approach LOS		A			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			52.1%				ICU Level of Service			A		
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
35: 7th Street & 5th Ave

Cumulative 2035  
Timing Plan: AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	172	856	43	286	1896	775	578
v/c Ratio	1.50	0.39	0.07	1.32	1.24	1.60	0.86
Control Delay	286.7	13.3	4.4	197.6	137.4	300.6	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	286.7	13.3	4.4	197.6	137.4	300.6	30.8
Queue Length 50th (ft)	-97	80	0	-151	-511	-453	192
Queue Length 95th (ft)	#160	106	15	#285	#645	#576	#382
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		50	110			
Base Capacity (vph)	115	2190	606	216	1523	484	676
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.50	0.39	0.07	1.32	1.24	1.60	0.86

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.

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Cumulative 2035  
 Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	34	117	753	38	272	1789	12	168	326	141	32	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95			1.00			1.00
Frbp, ped/bikes		1.00	1.00	0.97	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			0.97			0.96
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.99			1.00
Satd. Flow (prot)		1769	5085	1350	1767	3535			1554			1545
Flt Permitted		0.14	1.00	1.00	0.27	1.00			0.64			0.94
Satd. Flow (perm)		266	5085	1350	501	3535			1014			1461
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90
Adj. Flow (vph)	39	133	856	43	286	1883	13	205	398	172	36	358
RTOR Reduction (vph)	0	0	0	24	0	1	0	0	16	0	0	1
Lane Group Flow (vph)	0	172	856	19	286	1895	0	0	759	0	0	577
Confl. Peds. (#/hr)		10		4	4		10	8		3	3	
Confl. Bikes (#/hr)				1			2			4		
Parking (#/hr)				5				5	5	5	5	5
Turn Type	Perm	Perm		Perm	Perm			Perm			Perm	
Protected Phases			1			1			2			2
Permitted Phases	1	1		1	1			2			2	
Actuated Green, G (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Effective Green, g (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0
Actuated g/C Ratio		0.43	0.43	0.43	0.43	0.43			0.46			0.46
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5
Lane Grp Cap (vph)		115	2190	582	216	1523			468			674
v/s Ratio Prot			0.17			0.54						
v/s Ratio Perm		c0.65		0.01	0.57				c0.75			0.39
v/c Ratio		1.50	0.39	0.03	1.32	1.24			1.62			0.86
Uniform Delay, d1		18.5	12.7	10.7	18.5	18.5			17.5			15.6
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00			1.00
Incremental Delay, d2		263.1	0.5	0.1	174.3	115.8			289.9			13.2
Delay (s)		281.6	13.2	10.8	192.8	134.3			307.4			28.8
Level of Service		F	B	B	F	F			F			C
Approach Delay (s)			56.2			141.9			307.4			28.8
Approach LOS			E			F			F			C
<b>Intersection Summary</b>												
HCM Average Control Delay			135.6			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.56									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			7.0			
Intersection Capacity Utilization			135.8%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lane Configurations	
Volume (vph)	166
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	0.90
Adj. Flow (vph)	184
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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	

Queues  
36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035  
Timing Plan: AM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	17	1197	263	212	442	346
v/c Ratio	0.03	1.79	1.02	0.34	0.72	0.62
Control Delay	8.4	379.0	75.9	14.8	19.5	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	379.0	75.9	14.8	19.5	15.5
Queue Length 50th (ft)	3	~491	~82	53	88	64
Queue Length 95th (ft)	11	#684	m#124	m69	#152	116
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	258	619	615	559
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	0.03	1.79	1.02	0.34	0.72	0.62

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.

HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

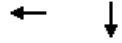
Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	15	1077	0	237	191	0	0	121	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frb, ped/bikes				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
Frt				1.00	1.00		1.00	1.00			0.90	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1588	1676		1593	1467			1434	1300
Flt Permitted				0.95	1.00		0.36	1.00			1.00	1.00
Satd. Flow (perm)				1588	1676		610	1467			1434	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	17	1197	0	263	212	0	0	148	640
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	10	10
Lane Group Flow (vph)	0	0	0	17	1197	0	263	212	0	0	432	336
Confl. Peds. (#/hr)				2		2						
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				635	670		258	619			605	549
v/s Ratio Prot					c0.71			0.14			0.30	
v/s Ratio Perm				0.01			c0.43					0.26
v/c Ratio				0.03	1.79		1.02	0.34			0.71	0.61
Uniform Delay, d1				8.2	13.5		13.0	8.8			10.7	10.1
Progression Factor				1.00	1.00		1.45	1.49			1.00	1.00
Incremental Delay, d2				0.1	360.0		49.7	1.0			7.0	5.0
Delay (s)				8.3	373.5		68.5	14.0			17.8	15.1
Level of Service				A	F		E	B			B	B
Approach Delay (s)		0.0			368.3			44.2			16.6	
Approach LOS		A			F			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			194.3								F	
HCM Volume to Capacity ratio			1.39									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			111.7%								H	
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
 37: 6th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	537	1637
v/c Ratio	0.38	1.15dr
Control Delay	16.4	6.0
Queue Delay	0.0	0.6
Total Delay	16.4	6.6
Queue Length 50th (ft)	52	53
Queue Length 95th (ft)	76	m57
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	1395	2222
Starvation Cap Reductn	0	241
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.38	0.83

Intersection Summary

- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑↑	
Volume (vph)	0	0	0	26	446	0	0	0	0	0	732	774
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						0.97	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.92	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					4373						3941	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					4373						3941	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	30	507	0	0	0	0	0	796	841
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	54	0
Lane Group Flow (vph)	0	0	0	0	526	0	0	0	0	0	1583	0
Confl. Peds. (#/hr)				2		11						45
Confl. Bikes (#/hr)												9
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					19.0						33.0	
Effective Green, g (s)					19.0						33.0	
Actuated g/C Ratio					0.32						0.55	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					1385						2168	
v/s Ratio Prot											c0.40	
v/s Ratio Perm					0.12							
v/c Ratio					0.38						1.15dr	
Uniform Delay, d1					15.9						10.2	
Progression Factor					1.00						0.51	
Incremental Delay, d2					0.8						1.1	
Delay (s)					16.7						6.3	
Level of Service					B						A	
Approach Delay (s)		0.0			16.7			0.0			6.3	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.9		HCM Level of Service					A		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			56.1%		ICU Level of Service				B			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1179	557	338	27
v/c Ratio	1.15	0.41	0.55	0.04
Control Delay	88.3	8.9	12.8	1.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	88.3	8.9	12.8	1.2
Queue Length 50th (ft)	~188	43	61	0
Queue Length 95th (ft)	m#138	63	109	3
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	1029	1366	611	629
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.15	0.41	0.55	0.04

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.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↕↕		↔↔	↗	↗
Volume (vph)	372	689	104	75	555	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.98		0.98	1.00	1.00
Satd. Flow (prot)		2931		2899	1297	1269
Flt Permitted		0.98		0.98	1.00	1.00
Satd. Flow (perm)		2931		2899	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	413	766	127	91	677	27
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	1179	0	557	338	13
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		1029		1366	611	598
v/s Ratio Prot				0.19	c0.26	
v/s Ratio Perm		0.40				0.01
v/c Ratio		1.15		0.41	0.55	0.02
Uniform Delay, d1		14.6		7.8	8.5	6.4
Progression Factor		1.21		1.00	1.00	1.00
Incremental Delay, d2		66.8		0.9	3.6	0.1
Delay (s)		84.5		8.7	12.1	6.4
Level of Service		F		A	B	A
Approach Delay (s)		84.5		10.0		
Approach LOS		F		A		

Intersection Summary			
HCM Average Control Delay	51.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035  
 Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1401	249	162
v/c Ratio	1.04	0.32	0.29
Control Delay	51.5	6.4	12.4
Queue Delay	0.0	0.0	0.0
Total Delay	51.5	6.4	12.4
Queue Length 50th (ft)	~121	26	32
Queue Length 95th (ft)	#212	50	m53
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1353	770	563
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.04	0.32	0.29

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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	261	655	345	0	0	0	0	156	48	90	46	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.97			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4159						1412			1420	
Flt Permitted		0.99						1.00			0.72	
Satd. Flow (perm)		4159						1412			1057	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	290	728	383	0	0	0	0	190	59	107	55	0
RTOR Reduction (vph)	0	151	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	1250	0	0	0	0	0	232	0	0	162	0
Confl. Peds. (#/hr)	4								21			
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm									Perm		
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		13.0						24.0			24.0	
Actuated g/C Ratio		0.29						0.53			0.53	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1201						753			564	
v/s Ratio Prot								c0.16				
v/s Ratio Perm		0.30									0.15	
v/c Ratio		1.04						0.31			0.29	
Uniform Delay, d1		16.0						5.9			5.8	
Progression Factor		1.00						1.00			1.83	
Incremental Delay, d2		37.3						1.1			1.0	
Delay (s)		53.3						6.9			11.6	
Level of Service		D						A			B	
Approach Delay (s)		53.3			0.0			6.9			11.6	
Approach LOS		D			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			43.2									D
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			45.0							8.0		
Intersection Capacity Utilization			66.3%									C
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK













	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	880	290	585
v/c Ratio	0.60	0.42	0.39
Control Delay	18.4	6.2	5.6
Queue Delay	0.0	0.4	0.2
Total Delay	18.4	6.5	5.8
Queue Length 50th (ft)	93	25	29
Queue Length 95th (ft)	126	m45	45
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1459	685	1497
Starvation Cap Reductn	0	107	321
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.60	0.50	0.50

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
40: 5th Street & Madison Street

Cumulative 2035  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↙		
Volume (vph)	0	728	47	0	0	0	0	0	0	476	242	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.91	0.91		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.99	0.99		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	0.98		
Satd. Flow (prot)		4342								1251	2772		
Flt Permitted		1.00								0.95	0.98		
Satd. Flow (perm)		4342								1251	2772		
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82	
Adj. Flow (vph)	0	827	53	0	0	0	0	0	0	580	295	0	
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	18	18	0	
Lane Group Flow (vph)	0	868	0	0	0	0	0	0	0	272	567	0	
Confl. Peds. (#/hr)			4							16			
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		20.0								32.0	32.0		
Effective Green, g (s)		20.0								32.0	32.0		
Actuated g/C Ratio		0.33								0.53	0.53		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		1447								667	1478		
v/s Ratio Prot		c0.20											
v/s Ratio Perm										c0.22	0.20		
v/c Ratio		0.60								0.41	0.38		
Uniform Delay, d1		16.7								8.3	8.2		
Progression Factor		1.00								0.63	0.65		
Incremental Delay, d2		1.8								1.3	0.5		
Delay (s)		18.5								6.6	5.9		
Level of Service		B								A	A		
Approach Delay (s)		18.5			0.0			0.0			6.1		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			12.3		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			56.1%		ICU Level of Service						B		
Analysis Period (min)			15										

c Critical Lane Group



Queues  
41: 5th Street & Oak Street

Cumulative 2035  
Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1246	805	157
v/c Ratio	0.57	1.64	0.45
Control Delay	9.0	316.6	21.0
Queue Delay	0.0	0.0	0.0
Total Delay	9.0	316.6	21.0
Queue Length 50th (ft)	69	~324	45
Queue Length 95th (ft)	101	#500	76
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2185	491	348
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	1.64	0.45

**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.

HCM Signalized Intersection Capacity Analysis  
 41: 5th Street & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	440	628	129	0	0	0	0	633	99	1	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4402						1435			1466	
Flt Permitted		0.98						1.00			0.71	
Satd. Flow (perm)		4402						1435			1044	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	458	654	134	0	0	0	0	696	109	1	156	0
RTOR Reduction (vph)	0	33	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	1213	0	0	0	0	0	792	0	0	157	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2152						478			348	
v/s Ratio Prot								c0.55				
v/s Ratio Perm		0.28									0.15	
v/c Ratio		0.56						1.66			0.45	
Uniform Delay, d1		8.1						15.0			11.8	
Progression Factor		1.00						1.00			1.33	
Incremental Delay, d2		1.1						305.1			4.0	
Delay (s)		9.2						320.1			19.7	
Level of Service		A						F			B	
Approach Delay (s)		9.2			0.0			320.1			19.7	
Approach LOS		A			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			123.3								HCM Level of Service	F
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			45.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.7%								ICU Level of Service	D
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 42: Embarcadero W & Oak Street

Cumulative 2035  
 Timing Plan: AM PEAK



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	1112					
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1084	1622			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

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**Arterial Level of Service: EB 7th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	7.9	34.1	0.15	15.4	C
Madison Street	IV	25	18.9	12.3	31.2	0.07	8.2	E
Oak Street	IV	25	19.3	8.9	28.2	0.07	9.3	D
Total	IV		64.4	29.1	93.5	0.29	11.2	D

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**Arterial Level of Service: WB 8th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	149.3	165.3	0.06	1.3	F
Madison Street	IV	25	19.5	65.7	85.2	0.07	3.1	F
Jackson Street	IV	25	18.8	131.5	150.3	0.07	1.7	F
Alice Street	IV	25	19.7	11.8	31.5	0.07	8.5	E
Harrison Street	IV	25	19.0	144.5	163.5	0.07	1.6	F
Webster Street	IV	25	18.8	399.8	418.6	0.07	0.6	F
Total	IV		111.8	902.6	1014.4	0.42	1.5	F

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**Arterial Level of Service: SB Madison Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	2.9	18.2	0.06	11.4	D
9th Street	IV	25	13.2	5.6	18.8	0.05	9.6	D
8th Street	IV	25	13.9	9.2	23.1	0.05	8.1	E
7th Street	IV	25	13.6	34.3	47.9	0.05	3.8	F
Total	IV		56.0	52.0	108.0	0.21	7.0	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	3.1	16.6	0.05	11.0	D
9th Street	IV	25	14.7	2.4	17.1	0.06	11.6	D
10th St	IV	25	13.3	2.1	15.4	0.05	11.7	D
11th St	IV	25	14.7	9.4	24.1	0.06	8.3	E
12th St	IV	25	12.5	13.7	26.2	0.05	6.5	F
Total	IV		68.7	30.7	99.4	0.26	9.4	D

Queues  
1: W Grand Ave & Broadway

Cumulative 2035  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	338	2191	1836	367	993	276	93	596
v/c Ratio	4.28	1.44	3.00dl	1.49	0.74	0.60	0.82	0.47
Control Delay	1516.4	226.1	622.4	266.2	24.6	25.4	75.2	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1516.4	226.1	622.4	266.2	24.6	25.4	75.2	18.8
Queue Length 50th (ft)	~301	~855	~867	~274	226	110	43	114
Queue Length 95th (ft)	#201	291	#422	#441	301	195	#130	155
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	79	1519	787	246	1349	462	113	1281
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	4.28	1.44	2.33	1.49	0.74	0.60	0.82	0.47

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035  
 Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	156	957	73	124	690	67	1	337	914	254	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frbp, ped/bikes		1.00	1.00			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		1.00	1.00			1.00			0.99	1.00	1.00	
Frt		1.00	0.99			0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1593	3136			3111			1570	3185	1087	
Flt Permitted		0.10	1.00			0.52			0.35	1.00	1.00	
Satd. Flow (perm)		164	3136			1617			581	3185	1087	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	332	2036	155	258	1438	140	1	366	993	276	1
RTOR Reduction (vph)	0	0	7	0	0	7	0	0	0	0	1	0
Lane Group Flow (vph)	0	338	2184	0	0	1829	0	0	367	993	275	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	10	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Effective Green, g (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Actuated g/C Ratio		0.48	0.48			0.48			0.42	0.42	0.42	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		79	1513			780			246	1349	460	
v/s Ratio Prot			0.70							0.31		
v/s Ratio Perm		c2.07				1.13			c0.63		0.25	
v/c Ratio		4.28	1.44			3.00dl			1.49	0.74	0.60	
Uniform Delay, d1		22.0	22.0			22.0			24.5	20.5	18.9	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		1504.5	203.4			609.0			241.7	3.6	5.6	
Delay (s)		1526.5	225.4			631.0			266.2	24.1	24.5	
Level of Service		F	F			F			F	C	C	
Approach Delay (s)			399.3			631.0				78.5		
Approach LOS			F			F				E		

Intersection Summary		
HCM Average Control Delay	346.0	HCM Level of Service F
HCM Volume to Capacity ratio	2.97	
Actuated Cycle Length (s)	85.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	119.3%	ICU Level of Service H
Analysis Period (min)	15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035  
 Timing Plan: PM PEAK










Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	81	385	139
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.98	
Flpb, ped/bikes	0.99	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1580	3011	
Flt Permitted	0.16	1.00	
Satd. Flow (perm)	266	3011	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	92	438	158
RTOR Reduction (vph)	0	6	0
Lane Group Flow (vph)	93	590	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	36.0	36.0	
Effective Green, g (s)	36.0	36.0	
Actuated g/C Ratio	0.42	0.42	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	113	1275	
v/s Ratio Prot		0.20	
v/s Ratio Perm	0.35		
v/c Ratio	0.82	0.46	
Uniform Delay, d1	21.7	17.6	
Progression Factor	1.00	1.00	
Incremental Delay, d2	46.7	1.2	
Delay (s)	68.4	18.8	
Level of Service	E	B	
Approach Delay (s)		25.5	
Approach LOS		C	
<b>Intersection Summary</b>			















Queues  
2: 20th St & Kaiser DWY

Cumulative 2035  
Timing Plan: PM PEAK

							
Lane Group	EBT	WBL	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	357	220	165	2	449	436	34
v/c Ratio	0.32	0.31	0.14	0.01	0.72	0.62	0.06
Control Delay	20.2	23.9	15.7	11.0	18.8	6.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	23.9	15.7	11.0	18.8	6.4	0.2
Queue Length 50th (ft)	41	40	24	0	95	0	0
Queue Length 95th (ft)	62	61	40	4	190	49	0
Internal Link Dist (ft)	337		517		577		
Turn Bay Length (ft)		120		90			
Base Capacity (vph)	1106	706	1138	348	624	704	572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.31	0.14	0.01	0.72	0.62	0.06
<b>Intersection Summary</b>							

HCM Signalized Intersection Capacity Analysis  
 2: 20th St & Kaiser DWY

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑	↑		↔	↑			↑
Volume (vph)	0	269	42	178	134	2	102	12	647	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			1.00
Frbp, ped/bikes		0.99		1.00	1.00	0.71		1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.98		1.00	1.00	0.85		0.89	0.85			0.86
Flt Protected		1.00		0.95	1.00	1.00		0.99	1.00			1.00
Satd. Flow (prot)		4433		3090	3185	971		1406	1185			1450
Flt Permitted		1.00		0.95	1.00	1.00		0.99	1.00			1.00
Satd. Flow (perm)		4433		3090	3185	971		1406	1185			1450
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	309	48	220	165	2	119	14	752	0	0	34
RTOR Reduction (vph)	0	30	0	0	0	1	0	122	280	0	0	30
Lane Group Flow (vph)	0	327	0	220	165	1	0	327	156	0	0	4
Confl. Peds. (#/hr)			54			181	125					
Confl. Bikes (#/hr)			9									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			2						5			
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		16.0	25.0	25.0		25.0	25.0			8.0
Effective Green, g (s)		17.0		16.0	25.0	25.0		25.0	25.0			8.0
Actuated g/C Ratio		0.24		0.23	0.36	0.36		0.36	0.36			0.11
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1077		706	1138	347		502	423			166
v/s Ratio Prot				c0.07	0.05			c0.23	0.13			0.00
v/s Ratio Perm		c0.07				0.00						
v/c Ratio		0.30		0.31	0.14	0.00		0.65	0.37			0.02
Uniform Delay, d1		21.7		22.4	15.3	14.5		18.8	16.7			27.5
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.7		1.1	0.3	0.0		6.4	2.5			0.3
Delay (s)		22.4		23.6	15.5	14.5		25.3	19.1			27.8
Level of Service		C		C	B	B		C	B			C
Approach Delay (s)		22.4			20.1			22.2			27.8	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	21.9	HCM Level of Service C
HCM Volume to Capacity ratio	0.46	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	57.5%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	83	1333	1280
v/c Ratio	0.13	1.08	0.53
Control Delay	16.4	57.3	12.9
Queue Delay	0.0	0.0	0.0
Total Delay	16.4	57.3	12.9
Queue Length 50th (ft)	10	-49	0
Queue Length 95th (ft)	30	#698	#488
Internal Link Dist (ft)	259		346
Turn Bay Length (ft)			
Base Capacity (vph)	1120	1234	2410
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.07	1.08	0.53

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.

HCM Signalized Intersection Capacity Analysis  
 3: 19th St & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	75	1200	0	0	0	0	1123	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	1.00					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1247					3177	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1247					3177	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	83	1333	0	0	0	0	1262	18
RTOR Reduction (vph)	0	0	0	0	0	186	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	83	1147	0	0	0	0	1279	0
Confl. Peds. (#/hr)				22								22
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					6.2	44.4					35.7	
Effective Green, g (s)					6.2	44.4					35.7	
Actuated g/C Ratio					0.12	0.83					0.67	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					369	1035					2120	
v/s Ratio Prot					0.03						0.40	
v/s Ratio Perm						c0.92						
v/c Ratio					0.22	1.11					0.60	
Uniform Delay, d1					21.5	4.6					5.0	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.3	62.7					0.5	
Delay (s)					21.8	67.3					5.4	
Level of Service					C	E					A	
Approach Delay (s)		0.0			64.6			0.0			5.4	
Approach LOS		A			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			36.5		HCM Level of Service						D	
HCM Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			53.5		Sum of lost time (s)				9.1			
Intersection Capacity Utilization			85.9%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												


















Queues  
4: 17th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	248	1405
v/c Ratio	0.39	0.52
Control Delay	16.6	7.2
Queue Delay	0.0	1.6
Total Delay	16.6	8.8
Queue Length 50th (ft)	30	87
Queue Length 95th (ft)	58	117
Internal Link Dist (ft)	281	166
Turn Bay Length (ft)		
Base Capacity (vph)	632	2708
Starvation Cap Reductn	0	1054
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.39	0.85
<b>Intersection Summary</b>		

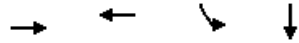
HCM Signalized Intersection Capacity Analysis  
 4: 17th St & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									  	
Volume (vph)	0	32	196	0	0	0	0	0	0	57	1221	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frbp, ped/bikes		0.91									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.87									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		2363									4375	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2363									4375	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	35	213	0	0	0	0	0	0	63	1342	0
RTOR Reduction (vph)	0	41	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	207	0	0	0	0	0	0	0	0	1397	0
Confl. Peds. (#/hr)	34		78							8		18
Confl. Bikes (#/hr)			4						1			
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0									37.0	
Effective Green, g (s)		15.0									37.0	
Actuated g/C Ratio		0.25									0.62	
Clearance Time (s)		4.0									4.0	
Lane Grp Cap (vph)		591									2698	
v/s Ratio Prot		c0.09										
v/s Ratio Perm											0.32	
v/c Ratio		0.35									0.52	
Uniform Delay, d1		18.5									6.5	
Progression Factor		1.00									1.00	
Incremental Delay, d2		1.6									0.7	
Delay (s)		20.1									7.2	
Level of Service		C									A	
Approach Delay (s)		20.1			0.0			0.0			7.2	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.1									A
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			50.1%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK



Lane Group	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	708	809	471	1339
v/c Ratio	0.39	0.60	1.27	1.58
Control Delay	7.3	17.7	168.7	292.9
Queue Delay	0.0	0.0	0.0	370.6
Total Delay	7.3	17.8	168.7	663.5
Queue Length 50th (ft)	62	109	~234	~396
Queue Length 95th (ft)	92	146	#364	#473
Internal Link Dist (ft)	285	315		1054
Turn Bay Length (ft)				
Base Capacity (vph)	1810	1354	370	845
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	25	19	0	289
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.61	1.27	2.41





















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.

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 					 	 	
Volume (vph)	0	570	103	126	545	0	0	0	0	396	1109	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0					4.5	4.5	
Lane Util. Factor		0.95			0.95					1.00	0.95	
Frbp, ped/bikes		0.98			1.00					1.00	1.00	
Flpb, ped/bikes		1.00			0.99					0.94	1.00	
Frt		0.98			1.00					1.00	1.00	
Flt Protected		1.00			0.99					0.95	1.00	
Satd. Flow (prot)		3058			3136					1307	2977	
Flt Permitted		1.00			0.72					0.95	1.00	
Satd. Flow (perm)		3058			2289					1307	2977	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	600	108	152	657	0	0	0	0	471	1320	19
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	708	0	0	809	0	0	0	0	471	1338	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4							2
Permitted Phases				4							2	
Actuated Green, G (s)		35.5			35.5					17.0	17.0	
Effective Green, g (s)		35.5			35.5					17.0	17.0	
Actuated g/C Ratio		0.59			0.59					0.28	0.28	
Clearance Time (s)		3.0			3.0					4.5	4.5	
Lane Grp Cap (vph)		1809			1354					370	843	
v/s Ratio Prot		0.23									c0.45	
v/s Ratio Perm					c0.35					0.36		
v/c Ratio		0.39			0.60					1.27	1.59	
Uniform Delay, d1		6.5			7.7					21.5	21.5	
Progression Factor		1.00			2.02					1.25	1.25	
Incremental Delay, d2		0.6			1.3					141.0	269.2	
Delay (s)		7.1			17.0					167.9	296.1	
Level of Service		A			B					F	F	
Approach Delay (s)		7.1			17.0			0.0			262.8	
Approach LOS		A			B			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			148.6			HCM Level of Service				F		
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)				7.5		
Intersection Capacity Utilization			87.9%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group



Queues  
6: 14th St & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1050	674	946	802	82
v/c Ratio	1.77	0.79	1.87	0.45	0.12
Control Delay	374.3	29.2	419.1	14.2	11.9
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	374.3	29.2	419.1	14.4	11.9
Queue Length 50th (ft)	~322	118	~490	100	16
Queue Length 95th (ft)	m#344	149	#590	152	44
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	592	849	505	1775	688
Starvation Cap Reductn	0	0	0	359	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.77	0.79	1.87	0.57	0.12

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.

HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕↕	↗		↔↔	↗			
Volume (vph)	53	913	0	0	539	757	132	622	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.94		1.00	0.97			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2907			3185	1333		3134	1209			
Flt Permitted		0.76			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2220			3185	1333		3134	1209			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	58	992	0	0	674	946	140	662	82	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	150	0	0	3	0	0	0
Lane Group Flow (vph)	0	1050	0	0	674	796	0	802	79	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	5	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		10							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		16.0			16.0	16.0		34.0	34.0			
Effective Green, g (s)		16.0			16.0	16.0		34.0	34.0			
Actuated g/C Ratio		0.27			0.27	0.27		0.57	0.57			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		592			849	355		1776	685			
v/s Ratio Prot					0.21							
v/s Ratio Perm		0.47				c0.60		0.26	0.07			
v/c Ratio		1.77			0.79	2.24		0.45	0.12			
Uniform Delay, d1		22.0			20.5	22.0		7.6	6.0			
Progression Factor		1.03			1.00	1.00		1.72	1.96			
Incremental Delay, d2		352.3			7.6	568.5		0.8	0.3			
Delay (s)		375.0			28.0	590.5		13.8	12.2			
Level of Service		F			C	F		B	B			
Approach Delay (s)		375.0			356.5			13.7			0.0	
Approach LOS		F			F			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			276.7				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			125.7%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1189	1738
v/c Ratio	0.82	0.67
Control Delay	26.1	9.9
Queue Delay	0.0	105.1
Total Delay	26.1	114.9
Queue Length 50th (ft)	113	230
Queue Length 95th (ft)	122	m131
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1448	2606
Starvation Cap Reductn	0	1193
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.82	1.23

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 7: 13th St & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	691	225	0	0	0	0	0	0	163	1175	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5345									4338	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5345									4338	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	897	292	0	0	0	0	0	0	212	1526	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1166	0	0	0	0	0	0	0	0	1734	0
Confl. Peds. (#/hr)	14		11							38		28
Confl. Bikes (#/hr)			4									8
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1425									2603	
v/s Ratio Prot		c0.22										
v/s Ratio Perm											0.40	
v/c Ratio		0.82									0.67	
Uniform Delay, d1		20.6									8.0	
Progression Factor		1.00									1.19	
Incremental Delay, d2		5.3									0.1	
Delay (s)		26.0									9.6	
Level of Service		C									A	
Approach Delay (s)		26.0			0.0			0.0			9.6	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.3									B
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			52.9%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
8: 13th St & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK























Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	193	1010	666	340
v/c Ratio	0.42	0.86	0.25	0.47
Control Delay	19.7	38.1	1.3	4.9
Queue Delay	0.1	0.0	0.0	0.4
Total Delay	19.8	38.1	1.3	5.2
Queue Length 50th (ft)	36	129	6	12
Queue Length 95th (ft)	m49	132	m8	m23
Internal Link Dist (ft)		132	231	
Turn Bay Length (ft)	50			
Base Capacity (vph)	458	1170	2632	727
Starvation Cap Reductn	0	0	0	98
Spillback Cap Reductn	12	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.86	0.25	0.54

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 8: 13th St & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	137	717	0	0	0	0	0	633	323	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0	3.0			
Lane Util. Factor	1.00	0.91						0.91	1.00			
Frbp, ped/bikes	1.00	1.00						1.00	0.97			
Flpb, ped/bikes	0.98	1.00						1.00	1.00			
Frt	1.00	1.00						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1367	4386						4386	1209			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1367	4386						4386	1209			
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	193	1010	0	0	0	0	0	666	340	0	0	0
RTOR Reduction (vph)	94	0	0	0	0	0	0	0	2	0	0	0
Lane Group Flow (vph)	99	1010	0	0	0	0	0	666	338	0	0	0
Confl. Peds. (#/hr)	17		17				86		18			
Confl. Bikes (#/hr)			1						27			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm								Perm			
Protected Phases		2						1				
Permitted Phases	2								1			
Actuated Green, G (s)	16.0	16.0						36.0	36.0			
Effective Green, g (s)	16.0	16.0						36.0	36.0			
Actuated g/C Ratio	0.27	0.27						0.60	0.60			
Clearance Time (s)	5.0	5.0						3.0	3.0			
Lane Grp Cap (vph)	365	1170						2632	725			
v/s Ratio Prot		c0.23						0.15				
v/s Ratio Perm	0.07								c0.28			
v/c Ratio	0.27	0.86						0.25	0.47			
Uniform Delay, d1	17.4	21.0						5.7	6.7			
Progression Factor	2.35	1.49						0.20	0.51			
Incremental Delay, d2	1.2	5.9						0.1	1.3			
Delay (s)	42.1	37.2						1.2	4.7			
Level of Service	D	D						A	A			
Approach Delay (s)		38.0			0.0			2.4			0.0	
Approach LOS		D			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.8				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			94.0%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	579	51	1507	1303
v/c Ratio	0.51	0.11	0.69	0.90
Control Delay	13.4	4.5	10.5	22.9
Queue Delay	2.5	0.0	1.0	232.0
Total Delay	15.9	4.5	11.5	254.9
Queue Length 50th (ft)	59	0	388	145
Queue Length 95th (ft)	92	15	m432	163
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1132	476	2194	1442
Starvation Cap Reductn	0	0	394	0
Spillback Cap Reductn	412	0	0	584
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	0.11	0.84	1.52

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 9: 13th St & Lake Merritt Blvd

Cumulative 2035  
 Timing Plan: PM PEAK






												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	504	44	0	0	1296	0	0	0	990	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frb, ped/bikes		1.00	1.00			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Fr		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1247			2508				3090		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1247			2508				3090		
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.25	0.25	0.25	0.76	0.76	0.76
Adj. Flow (vph)	0	579	51	0	0	1507	0	0	0	1303	0	0
RTOR Reduction (vph)	0	0	33	0	0	804	0	0	0	0	0	0
Lane Group Flow (vph)	0	579	18	0	0	703	0	0	0	1303	0	0
Confl. Peds. (#/hr)	20					20						
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			21.0				21.0		
Effective Green, g (s)		16.0	16.0			21.0				21.0		
Actuated g/C Ratio		0.36	0.36			0.47				0.47		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1132	443			1170				1442		
v/s Ratio Prot						0.28				c0.42		
v/s Ratio Perm		c0.18	0.01									
v/c Ratio		0.51	0.04			0.60				0.90		
Uniform Delay, d1		11.4	9.5			8.9				11.1		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		1.7	0.2			1.0				9.6		
Delay (s)		13.1	9.7			9.9				20.7		
Level of Service		B	A			A				C		
Approach Delay (s)		12.8			9.9			0.0			20.7	
Approach LOS		B			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			55.6%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group



Queues  
10: 12th St & I-980 Off-Ramp

Cumulative 2035  
Timing Plan: PM PEAK














					
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	184	652	542	1519
v/c Ratio	0.03	0.37	0.47	0.48	1.81
Control Delay	0.0	18.1	25.2	24.5	391.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	18.1	25.2	24.5	391.8
Queue Length 50th (ft)	0	51	102	76	-637
Queue Length 95th (ft)	0	98	128	109	#767
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	440	494	1400	1121	841
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.37	0.47	0.48	1.81

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Cumulative 2035  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	156	554	385	108	1260	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.98	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1337	1485	4577	4195		3039	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1337	1485	4577	4195		3039	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	184	652	423	119	1312	207
RTOR Reduction (vph)	8	40	0	60	0	0	0
Lane Group Flow (vph)	4	144	652	482	0	1519	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	26.0	26.0	26.0	21.5		23.5	
Effective Green, g (s)	26.0	26.0	26.0	21.5		23.5	
Actuated g/C Ratio	0.31	0.31	0.31	0.25		0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	409	454	1400	1061		840	
v/s Ratio Prot			c0.14	c0.11		c0.50	
v/s Ratio Perm	0.00	0.10					
v/c Ratio	0.01	0.32	0.47	0.45		1.81	
Uniform Delay, d1	20.5	22.7	23.9	26.8		30.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.8	1.1	1.4		368.5	
Delay (s)	20.6	24.5	25.0	28.2		399.2	
Level of Service	C	C	C	C		F	
Approach Delay (s)			24.9	28.2		399.2	
Approach LOS			C	C		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			221.0		HCM Level of Service		F
HCM Volume to Capacity ratio			0.91				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			83.2%		ICU Level of Service		E
Analysis Period (min)			15				

c Critical Lane Group

Queues  
11: 12th St & Broadway

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1252	202	502	880
v/c Ratio	0.86	1.70	0.32	0.82
Control Delay	25.5	372.3	9.3	24.8
Queue Delay	0.0	0.0	0.4	1.2
Total Delay	25.5	372.3	9.8	26.0
Queue Length 50th (ft)	147	~111	51	143
Queue Length 95th (ft)	142	#222	78	#198
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1459	119	1587	1077
Starvation Cap Reductn	0	0	611	67
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	1.70	0.51	0.87

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.

HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

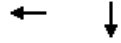
Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	145	656	101	184	457	0	0	648	109	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.99		1.00	1.00			0.95		
Flpb, ped/bikes					0.98		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4123		1593	3122			2898		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4123		1593	3122			2898		
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.91	0.91	0.91	0.86	0.86	0.86	
Adj. Flow (vph)	0	0	0	201	911	140	202	502	0	0	753	127	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	15	0	
Lane Group Flow (vph)	0	0	0	0	1236	0	202	502	0	0	865	0	
Confl. Peds. (#/hr)				125		48	446		455	455		446	
Confl. Bikes (#/hr)						6			10			9	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type				Perm			Prot						
Protected Phases					4		5	2			6		
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1443		119	1587			1063		
v/s Ratio Prot							c0.13	0.16			c0.30		
v/s Ratio Perm					0.30								
v/c Ratio					0.86		1.70	0.32			0.81		
Uniform Delay, d1					18.1		27.8	8.6			17.2		
Progression Factor					1.00		1.00	1.00			1.00		
Incremental Delay, d2					6.7		347.1	0.5			6.9		
Delay (s)					24.8		374.9	9.2			24.0		
Level of Service					C		F	A			C		
Approach Delay (s)		0.0			24.8			114.1			24.0		
Approach LOS		A			C			F			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			46.7		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.92										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			67.2%		ICU Level of Service					C			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK

















Lane Group	WBT	SBT
Lane Group Flow (vph)	1895	1707
v/c Ratio	0.67	1.17
Control Delay	5.5	103.7
Queue Delay	0.0	0.0
Total Delay	5.5	103.7
Queue Length 50th (ft)	50	~153
Queue Length 95th (ft)	48	#219
Internal Link Dist (ft)	319	229
Turn Bay Length (ft)		
Base Capacity (vph)	2835	1455
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	1.17

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.

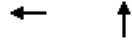
HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	353	1277	0	0	0	0	0	1026	374	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					3.5						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						0.98		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.96		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5394						4128		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5394						4128		
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.82	0.82	0.82	
Adj. Flow (vph)	0	0	0	410	1485	0	0	0	0	0	1251	456	
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	10	0	
Lane Group Flow (vph)	0	0	0	0	1891	0	0	0	0	0	1697	0	
Confl. Peds. (#/hr)				69		76						45	
Confl. Bikes (#/hr)						5						15	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					31.5						21.0		
Effective Green, g (s)					31.5						21.0		
Actuated g/C Ratio					0.52						0.35		
Clearance Time (s)					3.5						4.0		
Lane Grp Cap (vph)					2832						1445		
v/s Ratio Prot											c0.41		
v/s Ratio Perm					0.35								
v/c Ratio					0.67						1.17		
Uniform Delay, d1					10.4						19.5		
Progression Factor					0.42						0.86		
Incremental Delay, d2					1.0						84.1		
Delay (s)					5.4						100.9		
Level of Service					A						F		
Approach Delay (s)		0.0			5.4			0.0			100.9		
Approach LOS		A			A			A			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			50.7		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.87										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5			
Intersection Capacity Utilization			65.5%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
13: 12th St & Oak Street















Cumulative 2035  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	1859	1151
v/c Ratio	0.59	0.80
Control Delay	9.2	25.5
Queue Delay	0.2	0.0
Total Delay	9.4	25.5
Queue Length 50th (ft)	111	110
Queue Length 95th (ft)	126	144
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	3128	1437
Starvation Cap Reductn	459	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.80
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1481	81	149	876	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.86				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.97				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5441			5342				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5441			5342				
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1763	96	167	984	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1859	0	0	1139	0	0	0	0
Confl. Peds. (#/hr)						140	166		148			
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					34.5			16.0				
Effective Green, g (s)					34.5			16.0				
Actuated g/C Ratio					0.58			0.27				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					3129			1425				
v/s Ratio Prot					c0.34							
v/s Ratio Perm								0.21				
v/c Ratio					0.59			0.80				
Uniform Delay, d1					8.2			20.5				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.8			4.8				
Delay (s)					9.1			25.3				
Level of Service					A			C				
Approach Delay (s)		0.0			9.1			25.3			0.0	
Approach LOS		A			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.3				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		9.5			
Intersection Capacity Utilization			50.2%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035  
Timing Plan: PM PEAK







	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	805	1676	1440	2256
v/c Ratio	0.51	1.11	0.92	1.17
Control Delay	17.0	83.6	33.2	105.7
Queue Delay	1.4	0.0	88.8	113.2
Total Delay	18.4	83.6	122.0	218.9
Queue Length 50th (ft)	130	-567	384	-570
Queue Length 95th (ft)	167	#700	#549	#638
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1589	1511	1557	1931
Starvation Cap Reductn	544	0	0	344
Spillback Cap Reductn	0	0	357	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	1.11	1.20	1.42

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.

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035  
 Timing Plan: PM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		TTT	TT	TT	TTT	
Volume (vph)	0	708	1508	1296	1976	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4573	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4573	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	805	1676	1440	2245	11
RTOR Reduction (vph)	0	1	0	0	1	0
Lane Group Flow (vph)	0	804	1676	1440	2255	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		44.0	44.0	44.0	38.0	
Effective Green, g (s)		44.0	44.0	44.0	38.0	
Actuated g/C Ratio		0.49	0.49	0.49	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1588	1511	1557	1931	
v/s Ratio Prot		0.25	c0.54	0.45	c0.49	
v/s Ratio Perm						
v/c Ratio		0.51	1.11	0.92	1.17	
Uniform Delay, d1		15.6	23.0	21.5	26.0	
Progression Factor		1.00	1.00	1.00	0.94	
Incremental Delay, d2		1.2	59.2	10.8	80.2	
Delay (s)		16.8	82.2	32.2	104.6	
Level of Service		B	F	C	F	
Approach Delay (s)	16.8			59.1	104.6	
Approach LOS	B			E	F	
<b>Intersection Summary</b>						
HCM Average Control Delay			70.2		HCM Level of Service	E
HCM Volume to Capacity ratio			1.14			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			97.1%		ICU Level of Service	F
Analysis Period (min)			15			

c Critical Lane Group

Queues

Cumulative 2035

15: International Blvd & Lake Merritt Blvd

Timing Plan: PM PEAK


















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	475	81	1400	644	1790
v/c Ratio	0.45	0.20	0.64	0.40	1.14
Control Delay	26.9	16.7	12.7	1.4	91.9
Queue Delay	0.0	0.0	58.5	0.5	0.0
Total Delay	26.9	16.7	71.1	1.9	91.9
Queue Length 50th (ft)	111	20	241	0	-632
Queue Length 95th (ft)	152	53	307	21	#684
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1049	399	2182	1622	1568
Starvation Cap Reductn	0	0	935	554	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.20	1.12	0.60	1.14

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.

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Cumulative 2035  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	418	71	1344	618	50	1453
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.93	1.00	0.82		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1232	3539	2230		3246
Flt Permitted	0.95	1.00	1.00	1.00		0.78
Satd. Flow (perm)	3433	1232	3539	2230		2544
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.84	0.84
Adj. Flow (vph)	475	81	1400	644	60	1730
RTOR Reduction (vph)	0	22	0	247	0	0
Lane Group Flow (vph)	475	59	1400	397	0	1790
Confl. Peds. (#/hr)		63		103		
Confl. Bikes (#/hr)				33		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.5	27.5	55.5	55.5		55.5
Effective Green, g (s)	27.5	27.5	55.5	55.5		55.5
Actuated g/C Ratio	0.31	0.31	0.62	0.62		0.62
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1049	376	2182	1375		1569
v/s Ratio Prot	c0.14		0.40			
v/s Ratio Perm		0.05		0.18		c0.70
v/c Ratio	0.45	0.16	0.64	0.29		1.14
Uniform Delay, d1	25.2	22.8	10.9	8.0		17.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.4	0.9	1.5	0.5		71.6
Delay (s)	26.6	23.7	12.4	8.6		88.9
Level of Service	C	C	B	A		F
Approach Delay (s)	26.2		11.2			88.9
Approach LOS	C		B			F

Intersection Summary			
HCM Average Control Delay		44.8	HCM Level of Service D
HCM Volume to Capacity ratio		0.91	
Actuated Cycle Length (s)		90.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		105.6%	ICU Level of Service G
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Cumulative 2035  
Timing Plan: PM PEAK


















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	456	28	1229	118	256
v/c Ratio	0.35	0.05	0.73	0.62	0.14
Control Delay	15.1	5.7	7.2	44.0	8.2
Queue Delay	0.0	0.0	0.4	0.0	0.0
Total Delay	15.1	5.7	7.6	44.0	8.2
Queue Length 50th (ft)	63	0	45	46	25
Queue Length 95th (ft)	90	12	108	#107	41
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1320	555	1692	191	1814
Starvation Cap Reductn	0	0	129	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.05	0.79	0.62	0.14

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Cumulative 2035  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	388	24	266	853	104	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.92	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.89		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1398	3025		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1398	3025		1770	3468
Peak-hour factor, PHF	0.85	0.85	0.91	0.91	0.88	0.88
Adj. Flow (vph)	456	28	292	937	118	256
RTOR Reduction (vph)	0	17	574	0	0	0
Lane Group Flow (vph)	456	11	655	0	118	256
Confl. Peds. (#/hr)	28	89		24	24	
Confl. Bikes (#/hr)				25		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0	24.0		7.0	34.0
Effective Green, g (s)	25.0	25.0	24.0		7.0	34.0
Actuated g/C Ratio	0.38	0.38	0.37		0.11	0.52
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1320	538	1117		191	1814
v/s Ratio Prot	c0.13		c0.22		c0.07	0.07
v/s Ratio Perm		0.01				
v/c Ratio	0.35	0.02	0.59		0.62	0.14
Uniform Delay, d1	14.2	12.4	16.5		27.7	8.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.1	2.3		14.1	0.2
Delay (s)	14.9	12.5	18.8		41.8	8.1
Level of Service	B	B	B		D	A
Approach Delay (s)	14.8		18.8			18.8
Approach LOS	B		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			17.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			73.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Cumulative 2035  
Timing Plan: PM PEAK
















Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	187	756	2202	175
v/c Ratio	0.43	0.51	1.34	0.32
Control Delay	12.2	27.8	183.0	32.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.2	27.8	183.0	32.0
Queue Length 50th (ft)	27	105	~573	42
Queue Length 95th (ft)	85	128	#602	65
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	430	1470	1644	548
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.51	1.34	0.32

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.

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Cumulative 2035  
 Timing Plan: PM PEAK

						
Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations		 	 		 	
Volume (vph)	159	643	1766	84	111	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.95	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1229	5432	4351		3005	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1229	5432	4351		3005	
Peak-hour factor, PHF	0.85	0.85	0.84	0.84	0.83	0.83
Adj. Flow (vph)	187	756	2102	100	134	41
RTOR Reduction (vph)	97	0	6	0	0	0
Lane Group Flow (vph)	90	756	2196	0	175	0
Confl. Peds. (#/hr)	39			8		8
Confl. Bikes (#/hr)				1		
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	23.0	23.0	32.0		15.5	
Effective Green, g (s)	23.0	23.0	32.0		15.5	
Actuated g/C Ratio	0.27	0.27	0.38		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	333	1470	1638		548	
v/s Ratio Prot			c0.50		c0.06	
v/s Ratio Perm	0.07	0.14				
v/c Ratio	0.27	0.51	1.34		0.32	
Uniform Delay, d1	24.4	26.3	26.5		30.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.0	1.3	157.4		1.5	
Delay (s)	26.4	27.6	183.9		31.7	
Level of Service	C	C	F		C	
Approach Delay (s)		27.3	183.9		31.7	
Approach LOS		C	F		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			131.4		HCM Level of Service	F
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			75.9%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						



Queues  
18: 11th St & Broadway

Cumulative 2035  
Timing Plan: PM PEAK























	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	824	172	689	177	682
v/c Ratio	0.75	0.29	0.81	1.02	0.46
Control Delay	20.2	12.4	26.9	104.7	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay	20.2	12.4	26.9	104.7	11.7
Queue Length 50th (ft)	118	19	103	-61	73
Queue Length 95th (ft)	178	40	#182	#165	111
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1098	598	852	174	1476
Starvation Cap Reductn	0	0	0	0	422
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.29	0.81	1.02	0.65

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.

HCM Signalized Intersection Capacity Analysis  
18: 11th St & Broadway

Cumulative 2035  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 		 	 	
Volume (vph)	122	652	162	0	0	0	0	508	105	159	614	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.67					0.94		1.00	1.00	
Flpb, ped/bikes		0.99	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2876	1541					2855		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2876	1541					2855		1593	3122	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	130	694	172	0	0	0	0	571	118	177	682	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	824	163	0	0	0	0	668	0	177	682	0
Confl. Peds. (#/hr)	77		535					490		535	535	490
Confl. Bikes (#/hr)			6							9		16
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1098	588					831		174	1476	
v/s Ratio Prot								c0.23		c0.11	0.22	
v/s Ratio Perm		0.29	0.11									
v/c Ratio		0.75	0.28					0.80		1.02	0.46	
Uniform Delay, d1		14.7	11.8					18.0		24.5	9.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		4.7	1.2					8.1		72.8	1.0	
Delay (s)		19.5	12.9					26.2		97.3	10.8	
Level of Service		B	B					C		F	B	
Approach Delay (s)		18.3			0.0			26.2			28.6	
Approach LOS		B			A			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.9									C
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			55.0							12.0		
Intersection Capacity Utilization			67.2%									C
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	1089	1661
v/c Ratio	0.18	1.08	0.87
Control Delay	13.6	73.3	7.1
Queue Delay	0.0	187.1	16.6
Total Delay	13.6	260.4	23.7
Queue Length 50th (ft)	25	~239	61
Queue Length 95th (ft)	54	#295	m56
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	597	1011	1901
Starvation Cap Reductn	0	0	277
Spillback Cap Reductn	0	286	83
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.18	1.50	1.02

**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.

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Cumulative 2035  
 Timing Plan: PM PEAK

	↖	→	↘	↙	↓
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations	↖	↑↗			↘↗↑
Volume (vph)	97	536	346	75	1304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.91
Frbp, ped/bikes	1.00	0.98			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.94			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	2688			4307
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	2688			4307
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	662	427	90	1571
RTOR Reduction (vph)	0	4	0	0	0
Lane Group Flow (vph)	105	1085	0	0	1661
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	22.5	22.5			26.5
Effective Green, g (s)	22.5	22.5			26.5
Actuated g/C Ratio	0.38	0.38			0.44
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	597	1008			1902
v/s Ratio Prot		c0.40			
v/s Ratio Perm	0.07				0.39
v/c Ratio	0.18	1.08			0.87
Uniform Delay, d1	12.5	18.8			15.2
Progression Factor	1.00	1.00			0.35
Incremental Delay, d2	0.6	51.3			0.6
Delay (s)	13.2	70.1			6.0
Level of Service	B	E			A
Approach Delay (s)		65.1			6.0
Approach LOS		E			A

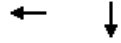
Intersection Summary

HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK




















Lane Group	WBT	SBT
Lane Group Flow (vph)	501	2013
v/c Ratio	0.59	0.81
Control Delay	14.5	20.5
Queue Delay	0.0	58.1
Total Delay	14.5	78.6
Queue Length 50th (ft)	42	268
Queue Length 95th (ft)	71	m279
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	843	2499
Starvation Cap Reductn	0	710
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.59	1.13

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						  	
Volume (vph)	0	0	0	167	309	0	0	0	0	381	1156	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.98						0.99	
Frt					1.00						0.99	
Flt Protected					0.98						0.99	
Satd. Flow (prot)					2890						4197	
Flt Permitted					0.98						0.99	
Satd. Flow (perm)					2890						4197	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	176	325	0	0	0	0	465	1410	138
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	501	0	0	0	0	0	1999	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					843						2483	
v/s Ratio Prot												
v/s Ratio Perm					0.17						0.48	
v/c Ratio					0.59						0.81	
Uniform Delay, d1					18.2						9.6	
Progression Factor					0.64						1.98	
Incremental Delay, d2					2.6						1.2	
Delay (s)					14.3						20.1	
Level of Service					B						C	
Approach Delay (s)		0.0			14.3			0.0			20.1	
Approach LOS		A			B			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.0		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			57.9%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
21: 10th St & Oak Street




















Cumulative 2035  
Timing Plan: PM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	538	496	1238
v/c Ratio	0.76	0.66	0.36
Control Delay	24.9	22.3	2.3
Queue Delay	0.0	0.0	0.1
Total Delay	24.9	22.3	2.4
Queue Length 50th (ft)	112	72	17
Queue Length 95th (ft)	137	118	21
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	704	753	3402
Starvation Cap Reductn	0	0	618
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.66	0.44
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 21: 10th St & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			  					
Volume (vph)	8	412	0	0	311	135	117	882	140	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0					
Lane Util. Factor		0.95			0.95			0.86					
Frbp, ped/bikes		1.00			0.99			0.99					
Flpb, ped/bikes		1.00			1.00			1.00					
Frt		1.00			0.95			0.98					
Flt Protected		1.00			1.00			0.99					
Satd. Flow (prot)		2983			2814			5486					
Flt Permitted		0.94			1.00			0.99					
Satd. Flow (perm)		2817			2814			5486					
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	10	528	0	0	346	150	127	959	152	0	0	0	
RTOR Reduction (vph)	0	0	0	0	50	0	0	17	0	0	0	0	
Lane Group Flow (vph)	0	538	0	0	447	0	0	1221	0	0	0	0	
Confl. Peds. (#/hr)	22		35	35		22	62		168				
Confl. Bikes (#/hr)			14			6			45				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0	
Parking (#/hr)		5			5	5	5		5				
Turn Type	Perm							Perm					
Protected Phases		2			2			1					
Permitted Phases	2						1						
Actuated Green, G (s)		15.0			15.0			37.0					
Effective Green, g (s)		15.0			15.0			37.0					
Actuated g/C Ratio		0.25			0.25			0.62					
Clearance Time (s)		4.0			4.0			4.0					
Lane Grp Cap (vph)		704			704			3383					
v/s Ratio Prot					0.16								
v/s Ratio Perm		c0.19						0.22					
v/c Ratio		0.76			0.63			0.36					
Uniform Delay, d1		20.9			20.1			5.7					
Progression Factor		0.87			1.00			0.37					
Incremental Delay, d2		5.6			4.3			0.3					
Delay (s)		23.7			24.4			2.4					
Level of Service		C			C			A					
Approach Delay (s)		23.7			24.4			2.4			0.0		
Approach LOS		C			C			A			A		

Intersection Summary		
HCM Average Control Delay	12.2	HCM Level of Service B
HCM Volume to Capacity ratio	0.48	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group



Queues  
22: 9th Street & Webster Street

Cumulative 2035  
Timing Plan: PM PEAK













	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	331	207	2181
v/c Ratio	0.37	0.42	1.21
Control Delay	26.3	6.5	128.3
Queue Delay	0.0	0.0	141.7
Total Delay	26.3	6.5	270.0
Queue Length 50th (ft)	77	0	~440
Queue Length 95th (ft)	109	43	#518
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	498	1804
Starvation Cap Reductn	0	0	374
Spillback Cap Reductn	0	8	234
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.37	0.42	1.53

**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.

HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↑↑↑	
Volume (vph)	0	285	178	0	0	0	0	0	0	298	1665	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.98								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1176								5489	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1176								5489	
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	331	207	0	0	0	0	0	0	331	1850	0
RTOR Reduction (vph)	0	0	145	0	0	0	0	0	0	0	36	0
Lane Group Flow (vph)	0	331	62	0	0	0	0	0	0	0	2145	0
Confl. Bikes (#/hr)			8									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	353								1769	
v/s Ratio Prot		c0.11										
v/s Ratio Perm			0.05								0.39	
v/c Ratio		0.37	0.18								1.21	
Uniform Delay, d1		24.8	23.3								30.5	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		1.2	1.1								101.2	
Delay (s)		26.0	24.4								131.7	
Level of Service		C	C								F	
Approach Delay (s)		25.4			0.0			0.0			131.7	
Approach LOS		C			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			110.6								HCM Level of Service	F
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			90.0							Sum of lost time (s)	34.0	
Intersection Capacity Utilization			50.8%							ICU Level of Service	A	
Analysis Period (min)			15									
c Critical Lane Group												













Queues  
 23: 9th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	643	1548
v/c Ratio	0.63	0.59
Control Delay	21.7	3.0
Queue Delay	0.0	0.5
Total Delay	21.7	3.5
Queue Length 50th (ft)	69	20
Queue Length 95th (ft)	102	22
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1017	2605
Starvation Cap Reductn	0	541
Spillback Cap Reductn	0	133
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.63	0.75
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↓↑↑	
Volume (vph)	0	328	244	0	0	0	0	0	0	173	1174	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.91	
Frbp, ped/bikes		0.95									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3921									4287	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3921									4287	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	369	274	0	0	0	0	0	0	199	1349	0
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	0	0	32	0
Lane Group Flow (vph)	0	606	0	0	0	0	0	0	0	0	1516	0
Confl. Peds. (#/hr)			68							29		20
Confl. Bikes (#/hr)			18									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		980									2572	
v/s Ratio Prot		c0.15										
v/s Ratio Perm											0.35	
v/c Ratio		0.62									0.59	
Uniform Delay, d1		20.0									7.4	
Progression Factor		1.00									0.33	
Incremental Delay, d2		2.9									0.6	
Delay (s)		22.9									3.1	
Level of Service		C									A	
Approach Delay (s)		22.9			0.0			0.0			3.1	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.9								A	
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			51.8%								A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
24: 9th Street & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK













	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	556	1237
v/c Ratio	0.46	0.37
Control Delay	19.0	1.5
Queue Delay	0.0	0.0
Total Delay	19.0	1.5
Queue Length 50th (ft)	57	11
Queue Length 95th (ft)	92	m14
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1212	3384
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.46	0.37

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	122	373	0	0	0	0	0	1003	148	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.86				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4328						5415				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4328						5415				
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	137	419	0	0	0	0	0	1078	159	0	0	0
RTOR Reduction (vph)	0	58	0	0	0	0	0	44	0	0	0	0
Lane Group Flow (vph)	0	498	0	0	0	0	0	1193	0	0	0	0
Confl. Peds. (#/hr)	4		5					69		146		
Confl. Bikes (#/hr)										31		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	24	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1154						3339				
v/s Ratio Prot								c0.22				
v/s Ratio Perm		0.12										
v/c Ratio		0.43						0.36				
Uniform Delay, d1		18.2						5.7				
Progression Factor		1.14						0.23				
Incremental Delay, d2		0.9						0.2				
Delay (s)		21.7						1.6				
Level of Service		C						A				
Approach Delay (s)		21.7			0.0			1.6			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.8									A
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0							7.0		
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									
c	Critical Lane Group											

Queues  
25: 8th Street & Webster Street

Cumulative 2035  
Timing Plan: PM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	770	2061	1301	753
v/c Ratio	1.09	1.68	0.97	1.15
Control Delay	74.2	335.1	11.6	91.4
Queue Delay	0.0	0.0	53.8	230.4
Total Delay	74.2	335.1	65.4	321.7
Queue Length 50th (ft)	~329	~670	25	~596
Queue Length 95th (ft)	#483	#689	m25	m446
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	707	1227	1336	654
Starvation Cap Reductn	0	0	185	203
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.09	1.68	1.13	1.67

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.

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						  		
Volume (vph)	0	0	0	639	1711	0	0	0	0	0	1158	670	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0	4.0						4.0	4.0	
Lane Util. Factor				0.86	0.86						0.86	0.86	
Frb, ped/bikes				1.00	1.00						1.00	0.98	
Flpb, ped/bikes				1.00	1.00						1.00	1.00	
Frt				1.00	1.00						1.00	0.85	
Flt Protected				0.95	1.00						1.00	1.00	
Satd. Flow (prot)				1198	4090						4145	1011	
Flt Permitted				0.95	1.00						1.00	1.00	
Satd. Flow (perm)				1198	4090						4145	1011	
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89	
Adj. Flow (vph)	0	0	0	770	2061	0	0	0	0	0	1301	753	
RTOR Reduction (vph)	0	0	0	347	0	0	0	0	0	0	0	328	
Lane Group Flow (vph)	0	0	0	423	2061	0	0	0	0	0	1301	425	
Confl. Bikes (#/hr)												9	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm								Perm	
Protected Phases					2						1		
Permitted Phases				2								1	
Actuated Green, G (s)				27.0	27.0						29.0	29.0	
Effective Green, g (s)				27.0	27.0						29.0	29.0	
Actuated g/C Ratio				0.30	0.30						0.32	0.32	
Clearance Time (s)				4.0	4.0						4.0	4.0	
Lane Grp Cap (vph)				359	1227						1336	326	
v/s Ratio Prot											0.31		
v/s Ratio Perm				0.35	0.50							c0.42	
v/c Ratio				1.18	1.68						0.97	1.30	
Uniform Delay, d1				31.5	31.5						30.1	30.5	
Progression Factor				1.00	1.00						0.18	2.56	
Incremental Delay, d2				105.2	309.5						3.5	138.7	
Delay (s)				136.7	341.0						8.8	216.6	
Level of Service				F	F						A	F	
Approach Delay (s)		0.0			285.4			0.0			85.0		
Approach LOS		A			F			A			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			201.1	HCM Level of Service							F		
HCM Volume to Capacity ratio			1.49										
Actuated Cycle Length (s)			90.0	Sum of lost time (s)						34.0			
Intersection Capacity Utilization			91.7%	ICU Level of Service						F			
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
26: 8th Street & Harrison Street

Cumulative 2035  
Timing Plan: PM PEAK























Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1833	485	1139
v/c Ratio	0.87	0.82	0.58
Control Delay	23.0	21.4	9.5
Queue Delay	0.0	24.6	1.2
Total Delay	23.0	46.0	10.7
Queue Length 50th (ft)	169	197	148
Queue Length 95th (ft)	209	m254	m174
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	2100	588	1949
Starvation Cap Reductn	0	114	536
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.87	1.02	0.81

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  		 	  				
Volume (vph)	0	0	0	0	1497	116	874	588	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.86		0.86	0.86				
Frbp, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.89	0.95				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	0.98				
Satd. Flow (prot)					5428		1215	4031				
Flt Permitted					1.00		0.95	0.98				
Satd. Flow (perm)					5428		1215	4031				
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1701	132	971	653	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	1	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1813	0	484	1138	0	0	0	0
Confl. Peds. (#/hr)				40		125	179		40	40		179
Confl. Bikes (#/hr)						6						
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)					5	5						
Turn Type							Perm					
Protected Phases					8			1				
Permitted Phases							1					
Actuated Green, G (s)					23.0		28.5	28.5				
Effective Green, g (s)					23.0		29.0	29.0				
Actuated g/C Ratio					0.38		0.48	0.48				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					2081		587	1948				
v/s Ratio Prot					c0.33							
v/s Ratio Perm							c0.40	0.28				
v/c Ratio					0.87		0.82	0.58				
Uniform Delay, d1					17.1		13.3	11.2				
Progression Factor					1.00		0.84	0.77				
Incremental Delay, d2					5.4		7.7	0.8				
Delay (s)					22.5		18.8	9.3				
Level of Service					C		B	A				
Approach Delay (s)		0.0			22.5			12.2			0.0	
Approach LOS		A			C			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.6				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			74.7%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
27: 8th Street & Jackson Street

Cumulative 2035  
Timing Plan: PM PEAK






















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1705	634	420
v/c Ratio	0.75	1.70	0.68
Control Delay	8.8	337.1	20.3
Queue Delay	0.0	0.0	4.2
Total Delay	8.8	337.1	24.5
Queue Length 50th (ft)	146	~324	114
Queue Length 95th (ft)	m123	m#121	208
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	2262	374	616
Starvation Cap Reductn	0	0	126
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.75	1.70	0.86

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.

HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

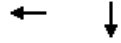
Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						  		
Volume (vph)	0	0	0	59	1349	126	181	408	0	0	276	110	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.86			1.00			1.00		
Frb, ped/bikes					0.99			1.00			0.99		
Flpb, ped/bikes					1.00			0.99			1.00		
Frt					0.99			1.00			0.96		
Flt Protected					1.00			0.98			1.00		
Satd. Flow (prot)					5370			1437			1390		
Flt Permitted					1.00			0.58			1.00		
Satd. Flow (perm)					5370			846			1390		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	66	1499	140	195	439	0	0	300	120	
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	0	0	2	0	
Lane Group Flow (vph)	0	0	0	0	1682	0	0	634	0	0	418	0	
Confl. Peds. (#/hr)				88		91	53					53	
Confl. Bikes (#/hr)						9						7	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type				Perm			Perm						
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					25.0			26.0			26.0		
Effective Green, g (s)					25.0			26.5			26.5		
Actuated g/C Ratio					0.42			0.44			0.44		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					2238			374			614		
v/s Ratio Prot											0.30		
v/s Ratio Perm					0.31			c0.75					
v/c Ratio					0.75			1.70			0.68		
Uniform Delay, d1					14.9			16.8			13.4		
Progression Factor					0.58			1.49			1.00		
Incremental Delay, d2					0.2			313.9			6.0		
Delay (s)					8.8			338.8			19.4		
Level of Service					A			F			B		
Approach Delay (s)		0.0			8.8			338.8			19.4		
Approach LOS		A			A			F			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			86.2		HCM Level of Service						F		
HCM Volume to Capacity ratio			1.24										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			95.7%		ICU Level of Service					F			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
28: 8th Street & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	2061	1612
v/c Ratio	1.21dl	0.73
Control Delay	63.7	7.8
Queue Delay	0.2	39.9
Total Delay	63.9	47.6
Queue Length 50th (ft)	~265	47
Queue Length 95th (ft)	m#247	65
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1898	2194
Starvation Cap Reductn	0	113
Spillback Cap Reductn	1	702
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.09	1.08

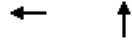
Intersection Summary

- ~ 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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					4TTL						4TTL		
Volume (vph)	0	0	0	532	1364	0	0	0	0	0	1273	145	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.86						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					5379						4242		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					5379						4242		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	578	1483	0	0	0	0	0	1447	165	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	0	0	0	2045	0	0	0	0	0	1611	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					20.5						30.5		
Effective Green, g (s)					21.0						31.0		
Actuated g/C Ratio					0.35						0.52		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1883						2192		
v/s Ratio Prot											c0.38		
v/s Ratio Perm					0.38								
v/c Ratio					1.21dl						0.73		
Uniform Delay, d1					19.5						11.3		
Progression Factor					1.01						0.51		
Incremental Delay, d2					42.2						1.8		
Delay (s)					61.8						7.6		
Level of Service					E						A		
Approach Delay (s)		0.0			61.8			0.0			7.6		
Approach LOS		A			E			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			38.0		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			70.6%		ICU Level of Service					C			
Analysis Period (min)			15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.													
c Critical Lane Group													





















Lane Group	WBT	NBT
Lane Group Flow (vph)	1861	1438
v/c Ratio	1.07	0.49
Control Delay	65.4	12.9
Queue Delay	0.0	0.9
Total Delay	65.4	13.8
Queue Length 50th (ft)	~222	141
Queue Length 95th (ft)	#294	m133
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1739	2942
Starvation Cap Reductn	0	1109
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.07	0.78

**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.

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  			  					
Volume (vph)	0	0	0	0	1572	159	317	992	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0			4.0					
Lane Util. Factor					0.86			0.86					
Frb, ped/bikes					0.99			1.00					
Flpb, ped/bikes					1.00			0.98					
Frt					0.99			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					5404			5349					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					5404			5349					
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	1690	171	348	1090	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	28	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1833	0	0	1438	0	0	0	0	
Confl. Peds. (#/hr)						92	160						
Confl. Bikes (#/hr)						6							
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0	
Parking (#/hr)					5	5	5	5					
Turn Type								Perm					
Protected Phases					2			1					
Permitted Phases							1						
Actuated Green, G (s)					19.0			33.0					
Effective Green, g (s)					19.0			33.0					
Actuated g/C Ratio					0.32			0.55					
Clearance Time (s)					4.0			4.0					
Lane Grp Cap (vph)					1711			2942					
v/s Ratio Prot					c0.34								
v/s Ratio Perm								0.27					
v/c Ratio					1.07			0.49					
Uniform Delay, d1					20.5			8.3					
Progression Factor					1.00			1.53					
Incremental Delay, d2					43.7			0.1					
Delay (s)					64.2			12.7					
Level of Service					E			B					
Approach Delay (s)		0.0			64.2			12.7			0.0		
Approach LOS		A			E			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			41.8		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.70										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			56.8%		ICU Level of Service						B		
Analysis Period (min)			15										

c Critical Lane Group



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Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Queues  
31: 7th Street & Harrison Street

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	1453	1167	1131
v/c Ratio	0.59	0.90	0.46
Control Delay	9.1	32.3	0.6
Queue Delay	0.2	1.6	0.0
Total Delay	9.3	33.9	0.6
Queue Length 50th (ft)	106	147	0
Queue Length 95th (ft)	130	#226	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2480	1297	2475
Starvation Cap Reductn	311	0	0
Spillback Cap Reductn	136	45	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.93	0.46

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	343	892	0	0	0	0	0	1109	1074	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.99			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4251						4577	2475			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4251						4577	2475			
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	404	1049	0	0	0	0	0	1167	1131	0	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1451	0	0	0	0	0	1167	1131	0	0	0
Confl. Peds. (#/hr)	28								3			
Confl. Bikes (#/hr)			1						1			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm						Free					
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		34.0						16.0	60.0			
Effective Green, g (s)		35.0						17.0	60.0			
Actuated g/C Ratio		0.58						0.28	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2480						1297	2475			
v/s Ratio Prot								c0.25				
v/s Ratio Perm		0.34							0.46			
v/c Ratio		0.59						0.90	0.46			
Uniform Delay, d1		7.9						20.7	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		1.0						10.2	0.6			
Delay (s)		8.9						30.8	0.6			
Level of Service		A						C	A			
Approach Delay (s)		8.9			0.0			16.0			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay		13.2		HCM Level of Service				B				
HCM Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		60.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization		57.7%		ICU Level of Service				B				
Analysis Period (min)		15										
c Critical Lane Group												

Queues  
32: 7th Street & Jackson Street

Cumulative 2035  
Timing Plan: PM PEAK



















	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1914	189	794	337
v/c Ratio	0.84	0.30	1.85	4.21
Control Delay	10.7	1.4	409.2	1477.8
Queue Delay	114.9	0.0	289.4	0.0
Total Delay	125.6	1.4	698.6	1477.8
Queue Length 50th (ft)	90	0	~441	~214
Queue Length 95th (ft)	112	m1	m#547	m#321
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2283	625	429	80
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	757	0	112	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.25	0.30	2.50	4.21

**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.

HCM Signalized Intersection Capacity Analysis  
 32: 7th Street & Jackson Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	80	1542	355	0	0	0	0	516	214	58	242	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.99	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.99	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		3993	958					1393			1452	
Flt Permitted		1.00	1.00					1.00			0.18	
Satd. Flow (perm)		3993	958					1393			268	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	85	1640	378	0	0	0	0	561	233	65	272	0
RTOR Reduction (vph)	0	20	82	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1894	107	0	0	0	0	783	0	0	337	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2263	543					418			80	
v/s Ratio Prot								0.56				
v/s Ratio Perm		0.47	0.11								c1.26	
v/c Ratio		0.84	0.20					1.87			4.21	
Uniform Delay, d1		10.7	6.3					21.0			21.0	
Progression Factor		0.64	0.27					0.93			0.62	
Incremental Delay, d2		3.4	0.7					398.7			1466.2	
Delay (s)		10.3	2.4					418.2			1479.1	
Level of Service		B	A					F			F	
Approach Delay (s)		9.6			0.0			418.2			1479.1	
Approach LOS		A			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			263.0								HCM Level of Service	F
HCM Volume to Capacity ratio			2.00									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			111.2%								ICU Level of Service	H
Analysis Period (min)			15									

c Critical Lane Group

Queues  
33: 7th Street & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK



















	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	2061	2010
v/c Ratio	0.68	1.66dl
Control Delay	11.7	290.5
Queue Delay	0.1	0.6
Total Delay	11.7	291.1
Queue Length 50th (ft)	137	~419
Queue Length 95th (ft)	m161	m#472
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	3037	1263
Starvation Cap Reductn	133	1
Spillback Cap Reductn	11	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.71	1.59

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  									  	
Volume (vph)	0	1521	293	0	0	0	0	0	0	614	1215	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.98	
Frt		0.98									1.00	
Flt Protected		1.00									0.98	
Satd. Flow (prot)		5357									4174	
Flt Permitted		1.00									0.98	
Satd. Flow (perm)		5357									4174	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	1728	333	0	0	0	0	0	0	675	1335	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	2060	0	0	0	0	0	0	0	0	1998	0
Confl. Peds. (#/hr)			30								61	
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type											Perm	
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		34.0									19.0	
Effective Green, g (s)		34.0									18.0	
Actuated g/C Ratio		0.57									0.30	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		3036									1252	
v/s Ratio Prot		c0.38										
v/s Ratio Perm											0.48	
v/c Ratio		0.68									1.66dl	
Uniform Delay, d1		9.2									21.0	
Progression Factor		1.24									1.02	
Incremental Delay, d2		0.1									270.2	
Delay (s)		11.4									291.7	
Level of Service		B									F	
Approach Delay (s)		11.4			0.0			0.0			291.7	
Approach LOS		B			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			149.8								HCM Level of Service	F
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			77.0%								ICU Level of Service	D
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

Queues  
34: 7th Street & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	2299	1788
v/c Ratio	0.86	1.24dr
Control Delay	20.2	98.6
Queue Delay	0.0	19.1
Total Delay	20.2	117.7
Queue Length 50th (ft)	225	~291
Queue Length 95th (ft)	m223	#353
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2658	1549
Starvation Cap Reductn	0	56
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.86	1.20















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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.



HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	1876	0	0	0	0	0	1047	491	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.98				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.95				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5484						4037				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5484						4037				
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	282	2017	0	0	0	0	0	1217	571	0	0	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2292	0	0	0	0	0	1786	0	0	0	0
Confl. Peds. (#/hr)	31								57			
Confl. Bikes (#/hr)									10			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		28.0						22.0				
Effective Green, g (s)		29.0						23.0				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2651						1548				
v/s Ratio Prot								c0.44				
v/s Ratio Perm		0.42										
v/c Ratio		0.86						1.24dr				
Uniform Delay, d1		13.8						18.5				
Progression Factor		1.32						1.00				
Incremental Delay, d2		1.5						77.1				
Delay (s)		19.6						95.6				
Level of Service		B						F				
Approach Delay (s)		19.6			0.0			95.6			0.0	
Approach LOS		B			A			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			52.8				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			77.4%				ICU Level of Service			D		
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
35: 7th Street & 5th Ave

Cumulative 2035  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	286	2312	257	170	1604	960	910
v/c Ratio	2.49	1.06	0.35	1.48	1.05	2.19	1.62
Control Delay	711.8	56.5	3.4	279.6	59.2	560.1	307.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	711.8	56.5	3.4	279.6	59.2	560.1	307.6
Queue Length 50th (ft)	~154	~378	0	~96	~376	~628	~542
Queue Length 95th (ft)	#253	#389	26	#141	#428	#836	#607
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		60	110			
Base Capacity (vph)	115	2190	727	115	1524	439	562
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.49	1.06	0.35	1.48	1.05	2.19	1.62

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.

HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Cumulative 2035  
 Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	41	190	1873	208	2	138	1305	11	174	540	150	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Util. Factor		1.00	0.91	1.00		1.00	0.95			1.00		
Frb, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00		
Fr t		1.00	1.00	0.85		1.00	1.00			0.98		
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.99		
Satd. Flow (prot)		1769	5085	1349		1769	3534			1571		
Flt Permitted		0.14	1.00	1.00		0.14	1.00			0.60		
Satd. Flow (perm)		266	5085	1349		266	3534			951		
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77
Adj. Flow (vph)	51	235	2312	257	2	168	1591	13	193	600	167	110
RTOR Reduction (vph)	0	0	0	146	0	0	1	0	0	0	0	0
Lane Group Flow (vph)	0	286	2312	111	0	170	1603	0	0	960	0	0
Confl. Peds. (#/hr)		8		4		4		8	7		1	1
Confl. Bikes (#/hr)				2				2			7	
Parking (#/hr)				5					5	5	5	5
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm
Protected Phases			1				1			2		
Permitted Phases	1	1		1	1	1			2			2
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43			0.46		
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Grp Cap (vph)		115	2190	581		115	1522			439		
v/s Ratio Prot			0.45			0.45						
v/s Ratio Perm		c1.08		0.08		0.64				c1.01		
v/c Ratio		2.49	1.06	0.19		1.48	1.05			2.19		
Uniform Delay, d1		18.5	18.5	11.5		18.5	18.5			17.5		
Progression Factor		1.00	1.00	1.00		1.00	1.00			1.00		
Incremental Delay, d2		694.4	35.9	0.7		255.9	38.5			541.5		
Delay (s)		712.9	54.4	12.2		274.4	57.0			559.0		
Level of Service		F	D	B		F	E			F		
Approach Delay (s)			116.6				77.8			559.0		
Approach LOS			F				E			F		
<b>Intersection Summary</b>												
HCM Average Control Delay			197.9				HCM Level of Service			F		
HCM Volume to Capacity ratio			2.34									
Actuated Cycle Length (s)			65.0				Sum of lost time (s)			7.0		
Intersection Capacity Utilization			135.1%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

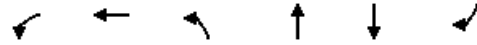
HCM Signalized Intersection Capacity Analysis  
 35: 7th Street & 5th Ave

Cumulative 2035  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↕	
Volume (vph)	378	238
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	0.99	
Satd. Flow (prot)	1536	
Flt Permitted	0.78	
Satd. Flow (perm)	1211	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	491	309
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	907	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	559	
v/s Ratio Prot		
v/s Ratio Perm	0.75	
v/c Ratio	1.62	
Uniform Delay, d1	17.5	
Progression Factor	1.00	
Incremental Delay, d2	288.5	
Delay (s)	306.0	
Level of Service	F	
Approach Delay (s)	306.0	
Approach LOS	F	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035  
 Timing Plan: PM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	27	857	502	776	449	297
v/c Ratio	0.06	1.92	1.16	0.88	0.51	0.38
Control Delay	16.5	440.3	113.0	25.1	6.7	6.0
Queue Delay	0.0	0.0	2.3	56.8	1.8	0.0
Total Delay	16.5	440.3	115.3	81.9	8.5	6.0
Queue Length 50th (ft)	7	~492	~222	206	77	48
Queue Length 95th (ft)	m14	#609	#340	#388	m62	m40
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	433	880	879	785
Starvation Cap Reductn	0	0	2	188	270	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	1.92	1.16	1.12	0.74	0.38

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.

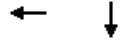
HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	22	694	0	417	644	0	0	157	440	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0	
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95	
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00	
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00	
Frt				1.00	1.00		1.00	1.00			0.92	0.85	
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00	
Satd. Flow (prot)				1570	1676		1593	1467			1458	1300	
Flt Permitted				0.95	1.00		0.43	1.00			1.00	1.00	
Satd. Flow (perm)				1570	1676		721	1467			1458	1300	
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80	
Adj. Flow (vph)	0	0	0	27	857	0	502	776	0	0	196	550	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	5	5	
Lane Group Flow (vph)	0	0	0	27	857	0	502	776	0	0	444	292	
Confl. Peds. (#/hr)				7		1				34			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10	
Parking (#/hr)								5					
Turn Type				Perm			Perm					Perm	
Protected Phases					1			2			2		
Permitted Phases				1			2					2	
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5	
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0	
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60	
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5	
Lane Grp Cap (vph)				419	447		433	880			875	780	
v/s Ratio Prot					c0.51			0.53			0.30		
v/s Ratio Perm				0.02			c0.70					0.22	
v/c Ratio				0.06	1.92		1.16	0.88			0.51	0.37	
Uniform Delay, d1				16.4	22.0		12.0	10.2			6.9	6.2	
Progression Factor				0.97	0.89		1.00	1.00			0.91	0.93	
Incremental Delay, d2				0.3	420.0		94.6	12.4			0.2	0.1	
Delay (s)				16.2	439.7		106.6	22.6			6.5	5.9	
Level of Service				B	F		F	C			A	A	
Approach Delay (s)		0.0			426.7			55.6			6.2		
Approach LOS		A			F			E			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			155.8	HCM Level of Service						F			
HCM Volume to Capacity ratio			1.39										
Actuated Cycle Length (s)			60.0	Sum of lost time (s)						8.0			
Intersection Capacity Utilization			96.4%	ICU Level of Service						F			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
 37: 6th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	306	1762
v/c Ratio	0.24	0.71
Control Delay	16.5	15.0
Queue Delay	0.0	2.3
Total Delay	16.5	17.3
Queue Length 50th (ft)	29	138
Queue Length 95th (ft)	48	m101
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	1249	2470
Starvation Cap Reductn	0	545
Spillback Cap Reductn	0	2
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.92

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑↑	
Volume (vph)	0	0	0	14	276	0	0	0	0	0	955	596
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					4375						4039	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					4375						4039	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	291	0	0	0	0	0	1085	677
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	115	0
Lane Group Flow (vph)	0	0	0	0	297	0	0	0	0	0	1647	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					17.0						35.0	
Effective Green, g (s)					17.0						35.0	
Actuated g/C Ratio					0.28						0.58	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					1240						2356	
v/s Ratio Prot											c0.41	
v/s Ratio Perm					0.07							
v/c Ratio					0.24						0.70	
Uniform Delay, d1					16.5						8.8	
Progression Factor					1.00						1.97	
Incremental Delay, d2					0.5						0.2	
Delay (s)					17.0						17.5	
Level of Service					B						B	
Approach Delay (s)		0.0			17.0			0.0			17.5	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.4		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			56.3%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
38: 6th Street & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1256	529	322	73
v/c Ratio	1.21	0.39	0.53	0.12
Control Delay	115.3	8.8	12.3	5.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	115.3	8.8	12.3	5.6
Queue Length 50th (ft)	~228	41	58	6
Queue Length 95th (ft)	m#120	63	112	21
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	1034	1365	611	603
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.21	0.39	0.53	0.12

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.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↔↑		↔↓	↔↑	↔↑
Volume (vph)	240	890	127	50	555	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		2948		2898	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		2948		2898	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	267	989	148	58	645	73
RTOR Reduction (vph)	0	0	0	0	0	13
Lane Group Flow (vph)	0	1256	0	529	322	60
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		1035		1365	611	590
v/s Ratio Prot				0.18	c0.25	
v/s Ratio Perm		0.43				0.05
v/c Ratio		1.21		0.39	0.53	0.10
Uniform Delay, d1		14.6		7.7	8.4	6.6
Progression Factor		0.82		1.00	1.00	1.00
Incremental Delay, d2		97.0		0.8	3.2	0.3
Delay (s)		108.9		8.5	11.6	7.0
Level of Service		F		A	B	A
Approach Delay (s)		108.9		9.7		
Approach LOS		F		A		

Intersection Summary			
HCM Average Control Delay	66.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035  
 Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	2098	772	256
v/c Ratio	1.15	1.19	2.10
Control Delay	96.0	119.3	540.1
Queue Delay	0.0	0.0	0.0
Total Delay	96.0	119.3	540.1
Queue Length 50th (ft)	~333	~346	~151
Queue Length 95th (ft)	#418	#441	#165
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1818	651	122
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.15	1.19	2.10

**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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	467	1151	249	0	0	0	0	565	45	96	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4242						1450			1428	
Flt Permitted		0.99						1.00			0.19	
Satd. Flow (perm)		4242						1450			273	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	525	1293	280	0	0	0	0	715	57	137	119	0
RTOR Reduction (vph)	0	35	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	2063	0	0	0	0	0	767	0	0	256	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						26.0			26.0	
Effective Green, g (s)		25.0						26.5			26.5	
Actuated g/C Ratio		0.42						0.45			0.45	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1782						646			122	
v/s Ratio Prot								0.53				
v/s Ratio Perm		0.49									c0.94	
v/c Ratio		1.16						1.19			2.10	
Uniform Delay, d1		17.2						16.5			16.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		77.8						99.3			521.0	
Delay (s)		95.0						115.8			537.5	
Level of Service		F						F			F	
Approach Delay (s)		95.0			0.0			115.8			537.5	
Approach LOS		F			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			136.4									F
HCM Volume to Capacity ratio			1.65									
Actuated Cycle Length (s)			59.5							8.0		
Intersection Capacity Utilization			98.3%									F
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Cumulative 2035  
Timing Plan: PM PEAK















Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1420	435	791
v/c Ratio	1.12	0.59	0.49
Control Delay	87.9	9.5	7.3
Queue Delay	0.0	0.4	0.3
Total Delay	87.9	10.0	7.6
Queue Length 50th (ft)	~216	64	58
Queue Length 95th (ft)	#302	71	57
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1267	732	1614
Starvation Cap Reductn	0	65	286
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.12	0.65	0.60

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.

HCM Signalized Intersection Capacity Analysis  
 40: 5th Street & Madison Street

Cumulative 2035  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↙		
Volume (vph)	0	1053	239	0	0	0	0	0	0	705	288	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.91								0.91	0.91		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.99	0.99		
Frt		0.97								1.00	1.00		
Flt Protected		1.00								0.95	0.97		
Satd. Flow (prot)		4254								1252	2764		
Flt Permitted		1.00								0.95	0.97		
Satd. Flow (perm)		4254								1252	2764		
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81	
Adj. Flow (vph)	0	1157	263	0	0	0	0	0	0	870	356	0	
RTOR Reduction (vph)	0	62	0	0	0	0	0	0	0	2	2	0	
Lane Group Flow (vph)	0	1358	0	0	0	0	0	0	0	433	789	0	
Confl. Peds. (#/hr)	2		1							15		45	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		17.0								35.0	35.0		
Effective Green, g (s)		17.0								35.0	35.0		
Actuated g/C Ratio		0.28								0.58	0.58		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		1205								730	1612		
v/s Ratio Prot		c0.32											
v/s Ratio Perm										c0.35	0.29		
v/c Ratio		1.13								0.59	0.49		
Uniform Delay, d1		21.5								8.0	7.3		
Progression Factor		1.00								0.79	0.87		
Incremental Delay, d2		68.4								2.7	0.8		
Delay (s)		89.9								9.0	7.2		
Level of Service		F								A	A		
Approach Delay (s)		89.9			0.0			0.0			7.8		
Approach LOS		F			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			51.9		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.77										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			56.3%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Cumulative 2035  
Timing Plan: PM PEAK




















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1891	812	171
v/c Ratio	0.87	1.66	0.59
Control Delay	15.9	327.4	18.3
Queue Delay	0.0	0.0	0.0
Total Delay	15.9	327.4	18.3
Queue Length 50th (ft)	137	~330	38
Queue Length 95th (ft)	#220	#485	#78
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2184	488	289
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.87	1.66	0.59

**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.

HCM Signalized Intersection Capacity Analysis  
 41: 5th Street & Oak Street













Cumulative 2035  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	499	1075	184	0	0	0	0	631	76	6	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4402						1435			1463	
Flt Permitted		0.99						1.00			0.59	
Satd. Flow (perm)		4402						1435			867	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	537	1156	198	0	0	0	0	725	87	7	164	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	1859	0	0	0	0	0	803	0	0	171	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2152						478			289	
v/s Ratio Prot								c0.56				
v/s Ratio Perm		0.42									0.20	
v/c Ratio		0.86						1.68			0.59	
Uniform Delay, d1		10.2						15.0			12.5	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		4.9						314.7			8.3	
Delay (s)		15.1						329.7			15.7	
Level of Service		B						F			B	
Approach Delay (s)		15.1			0.0			329.7			15.7	
Approach LOS		B			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			104.0									F
HCM Volume to Capacity ratio			1.19									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			88.1%									E
Analysis Period (min)			15									
c Critical Lane Group												



HCM Unsignalized Intersection Capacity Analysis  
 42: Embarcadero W & Oak Street

Cumulative 2035  
 Timing Plan: PM PEAK

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	0	0	0	0	0	0		
Sign Control	Stop			Free		Free		
Grade	0%			0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	0	0	0	0	0		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (ft)						1112		
pX, platoon unblocked								
vC, conflicting volume	0	0	0					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	0					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	100	100					
cM capacity (veh/h)	1023	1084	1622					
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	0	0	0	0	0	0	0	
Volume Left	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Queue Length 95th (ft)	0	0	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A	A						
Approach Delay (s)	0.0		0.0			0.0		
Approach LOS	A							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization			0.0%			ICU Level of Service		A
Analysis Period (min)	15							

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	10.7	36.9	0.15	14.2	C
Madison Street	IV	25	18.9	11.7	30.6	0.07	8.4	E
Oak Street	IV	25	19.3	20.2	39.5	0.07	6.6	F
Total	IV		64.4	42.6	107.0	0.29	9.8	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	65.4	81.4	0.06	2.7	F
Madison Street	IV	25	19.5	63.7	83.2	0.07	3.2	F
Jackson Street	IV	25	18.8	8.8	27.6	0.07	9.2	D
Alice Street	IV	25	19.7	11.8	31.5	0.07	8.5	E
Harrison Street	IV	25	19.0	23.0	42.0	0.07	6.1	F
Webster Street	IV	25	18.8	335.1	353.9	0.07	0.7	F
Total	IV		111.8	507.8	619.6	0.42	2.4	F

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	20.5	35.8	0.06	5.8	F
9th Street	IV	25	13.2	3.0	16.2	0.05	11.1	D
8th Street	IV	25	13.9	7.8	21.7	0.05	8.7	E
7th Street	IV	25	13.6	290.5	304.1	0.05	0.6	F
Total	IV		56.0	321.8	377.8	0.21	2.0	F









Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	12.9	26.4	0.05	6.9	F
9th Street	IV	25	14.7	1.5	16.2	0.06	12.3	D
10th St	IV	25	13.3	2.3	15.6	0.05	11.6	D
11th St	IV	25	14.7	9.4	24.1	0.06	8.3	E
12th St	IV	25	12.5	25.5	38.0	0.05	4.5	F
Total	IV		68.7	51.6	120.3	0.26	7.7	E

**CUMULATIVE 2035 PLUS PROJECT TRAFFIC  
CONDITIONS**

Queues  
1: W Grand Ave & Broadway

Cumulative 2035 + Project  
Timing Plan: AM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	64	778	1249	133	477	205	78	588
v/c Ratio	0.74	0.51	1.29	0.54	0.35	0.40	0.27	0.47
Control Delay	70.2	16.4	162.5	28.4	17.6	11.5	19.1	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	16.4	162.5	28.4	17.6	11.5	19.1	18.1
Queue Length 50th (ft)	26	141	~454	51	88	36	26	108
Queue Length 95th (ft)	#104	192	#585	114	125	90	60	154
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	86	1523	967	246	1349	515	292	1258
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.51	1.29	0.54	0.35	0.40	0.27	0.47

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.

HCM Signalized Intersection Capacity Analysis  
1: W Grand Ave & Broadway

Cumulative 2035 + Project  
Timing Plan: AM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	11	47	672	36	154	866	104	122	439	189	1	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		1.00	0.95			0.95		1.00	0.95	1.00		1.00
Frb, ped/bikes		1.00	1.00			0.99		1.00	1.00	0.91		1.00
Flpb, ped/bikes		0.99	1.00			1.00		0.97	1.00	1.00		0.96
Fr t		1.00	0.99			0.99		1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00			0.99		0.95	1.00	1.00		0.95
Satd. Flow (prot)		1581	3148			3086		1548	3185	1086		1533
Flt Permitted		0.11	1.00			0.64		0.36	1.00	1.00		0.43
Satd. Flow (perm)		179	3148			1986		581	3185	1086		689
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	738	40	171	962	116	133	477	205	1	77
RTOR Reduction (vph)	0	0	5	0	0	9	0	0	0	55	0	0
Lane Group Flow (vph)	0	64	773	0	0	1240	0	133	477	150	0	78
Confl. Peds. (#/hr)		71		73	73		71	84		80		80
Confl. Bikes (#/hr)				15			21			9		
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	10	0	0
Parking (#/hr)				5			5			5		
Turn Type	Perm	Perm			Perm			Perm		Perm	Perm	Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2		2	6	6
Actuated Green, G (s)		41.0	41.0			41.0		36.0	36.0	36.0		36.0
Effective Green, g (s)		41.0	41.0			41.0		36.0	36.0	36.0		36.0
Actuated g/C Ratio		0.48	0.48			0.48		0.42	0.42	0.42		0.42
Clearance Time (s)		4.0	4.0			4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		2.0	2.0			2.0		2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		86	1518			958		246	1349	460		292
v/s Ratio Prot			0.25						0.15			
v/s Ratio Perm		0.36				0.62		0.23		0.14		0.11
v/c Ratio		0.74	0.51			1.29		0.54	0.35	0.33		0.27
Uniform Delay, d1		17.8	15.1			22.0		18.3	16.6	16.4		15.9
Progression Factor		1.00	1.00			1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		25.9	0.1			140.1		8.3	0.7	1.9		2.2
Delay (s)		43.6	15.2			162.1		26.6	17.3	18.3		18.2
Level of Service		D	B			F		C	B	B		B
Approach Delay (s)			17.4			162.1			19.1			
Approach LOS			B			F			B			
<b>Intersection Summary</b>												
HCM Average Control Delay			68.6			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			105.5%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												








HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	361	180
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.97	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	1.00	
Satd. Flow (prot)	2927	
Flt Permitted	1.00	
Satd. Flow (perm)	2927	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	392	196
RTOR Reduction (vph)	18	0
Lane Group Flow (vph)	570	0
Confl. Peds. (#/hr)		84
Confl. Bikes (#/hr)		34
Bus Blockages (#/hr)	0	10
Parking (#/hr)		5
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	36.0	
Effective Green, g (s)	36.0	
Actuated g/C Ratio	0.42	
Clearance Time (s)	4.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1240	
v/s Ratio Prot	0.19	
v/s Ratio Perm		
v/c Ratio	0.46	
Uniform Delay, d1	17.5	
Progression Factor	1.00	
Incremental Delay, d2	1.2	
Delay (s)	18.8	
Level of Service	B	
Approach Delay (s)	18.7	
Approach LOS	B	
<b>Intersection Summary</b>		

Queues  
2: 20th St & Kaiser DWY













Cumulative 2035 + Project  
Timing Plan: AM PEAK

							
Lane Group	EBT	WBL	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	193	438	270	8	326	309	9
v/c Ratio	0.18	0.58	0.23	0.02	0.59	0.51	0.01
Control Delay	13.4	27.1	15.8	8.6	18.0	5.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	27.1	15.8	8.6	18.0	5.6	0.0
Queue Length 50th (ft)	14	86	41	0	80	0	0
Queue Length 95th (ft)	30	119	61	7	148	43	0
Internal Link Dist (ft)	337		348		577		
Turn Bay Length (ft)		120		90			
Base Capacity (vph)	1089	750	1183	513	556	609	664
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.58	0.23	0.02	0.59	0.51	0.01
<b>Intersection Summary</b>							



HCM Signalized Intersection Capacity Analysis  
2: 20th St & Kaiser DWY

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑	↑		↔	↑			↑
Volume (vph)	0	105	67	368	227	7	105	17	417	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			1.00
Frb, ped/bikes		0.99		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
Frt		0.94		1.00	1.00	0.85		0.92	0.85			0.86
Flt Protected		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (prot)		4248		3090	3185	1368		1432	1185			1450
Flt Permitted		1.00		0.95	1.00	1.00		0.98	1.00			1.00
Satd. Flow (perm)		4248		3090	3185	1368		1432	1185			1450
Peak-hour factor, PHF	0.89	0.89	0.89	0.84	0.84	0.84	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	0	118	75	438	270	8	124	20	491	0	0	9
RTOR Reduction (vph)	0	57	0	0	0	5	0	65	203	0	0	8
Lane Group Flow (vph)	0	136	0	438	270	3	0	261	106	0	0	1
Confl. Peds. (#/hr)			20				17					
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5						5			
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		17.0	26.0	26.0		24.0	24.0			8.0
Effective Green, g (s)		17.0		17.0	26.0	26.0		24.0	24.0			8.0
Actuated g/C Ratio		0.24		0.24	0.37	0.37		0.34	0.34			0.11
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1032		750	1183	508		491	406			166
v/s Ratio Prot				c0.14	c0.08			c0.18	0.09			0.00
v/s Ratio Perm		c0.03				0.00						
v/c Ratio		0.13		0.58	0.23	0.01		0.53	0.26			0.01
Uniform Delay, d1		20.7		23.4	15.1	13.9		18.5	16.6			27.5
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.3		3.3	0.4	0.0		4.1	1.6			0.1
Delay (s)		21.0		26.7	15.6	13.9		22.6	18.2			27.5
Level of Service		C		C	B	B		C	B			C
Approach Delay (s)		21.0			22.3			20.4			27.5	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	21.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.47	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	52.8%	ICU Level of Service A
Analysis Period (min)	15	

c Critical Lane Group

Queues  
3: 19th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	191	1253	879
v/c Ratio	0.18	1.04	0.54
Control Delay	13.4	42.1	15.1
Queue Delay	0.0	0.0	0.0
Total Delay	13.4	42.1	15.1
Queue Length 50th (ft)	14	-19	88
Queue Length 95th (ft)	58	#630	#289
Internal Link Dist (ft)	259		536
Turn Bay Length (ft)			
Base Capacity (vph)	1234	1209	1745
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	1.04	0.50

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.

HCM Signalized Intersection Capacity Analysis  
 3: 19th St & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	178	1165	0	0	0	0	795	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frbp, ped/bikes					1.00	0.98					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1220					3175	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1220					3175	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	191	1253	0	0	0	0	864	15
RTOR Reduction (vph)	0	0	0	0	0	191	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	191	1062	0	0	0	0	877	0
Confl. Peds. (#/hr)				38		3						29
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					15.5	42.9					24.9	
Effective Green, g (s)					15.5	42.9					24.9	
Actuated g/C Ratio					0.30	0.82					0.48	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					949	1007					1520	
v/s Ratio Prot					0.06						0.28	
v/s Ratio Perm						c0.87						
v/c Ratio					0.20	1.05					0.58	
Uniform Delay, d1					13.6	4.6					9.8	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.1	43.9					0.5	
Delay (s)					13.7	48.5					10.3	
Level of Service					B	D					B	
Approach Delay (s)		0.0			43.9			0.0			10.3	
Approach LOS		A			D			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.2		HCM Level of Service						C	
HCM Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			52.0		Sum of lost time (s)					9.1		
Intersection Capacity Utilization			83.8%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
4: 17th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



















	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	388	24	909
v/c Ratio	0.86dr	0.03	0.49
Control Delay	14.9	2.2	7.5
Queue Delay	0.0	0.0	2.0
Total Delay	14.9	2.2	9.5
Queue Length 50th (ft)	37	0	81
Queue Length 95th (ft)	73	7	118
Internal Link Dist (ft)	281		166
Turn Bay Length (ft)			
Base Capacity (vph)	719	847	1841
Starvation Cap Reductn	0	0	741
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.03	0.83

**Intersection Summary**

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
4: 17th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 								 	 		
Volume (vph)	0	30	315	0	0	0	0	0	0	23	864	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.95		
Frbp, ped/bikes		0.94								1.00	1.00		
Flpb, ped/bikes		1.00								0.97	1.00		
Frt		0.86								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		2425								1358	2986		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		2425								1358	2986		
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	
Adj. Flow (vph)	0	34	354	0	0	0	0	0	0	24	909	0	
RTOR Reduction (vph)	0	113	0	0	0	0	0	0	0	9	0	0	
Lane Group Flow (vph)	0	275	0	0	0	0	0	0	0	15	909	0	
Confl. Peds. (#/hr)	52		45							52		9	
Confl. Bikes (#/hr)									1			7	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		2										1	
Permitted Phases										1			
Actuated Green, G (s)		15.0								37.0	37.0		
Effective Green, g (s)		15.0								37.0	37.0		
Actuated g/C Ratio		0.25								0.62	0.62		
Clearance Time (s)		4.0								4.0	4.0		
Lane Grp Cap (vph)		606								837	1841		
v/s Ratio Prot		c0.11									c0.30		
v/s Ratio Perm										0.01			
v/c Ratio		0.86dr								0.02	0.49		
Uniform Delay, d1		19.0								4.5	6.3		
Progression Factor		1.00								1.00	1.00		
Incremental Delay, d2		2.4								0.0	0.9		
Delay (s)		21.5								4.5	7.3		
Level of Service		C								A	A		
Approach Delay (s)		21.5			0.0			0.0			7.2		
Approach LOS		C			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.4									HCM Level of Service	B
HCM Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			83.8%									ICU Level of Service	E
Analysis Period (min)			15										
dr Defacto Right Lane. Recode with 1 though lane as a right lane.													
c Critical Lane Group													

Queues  
5: 14th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	327	1058	1379
v/c Ratio	0.18	0.68	1.79dl
Control Delay	5.5	15.1	362.4
Queue Delay	0.0	0.3	55.5
Total Delay	5.5	15.4	417.9
Queue Length 50th (ft)	22	196	~414
Queue Length 95th (ft)	35	208	#538
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1823	1567	789
Starvation Cap Reductn	0	95	0
Spillback Cap Reductn	146	126	52
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.19	0.73	1.87



















**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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	226	49	119	685	0	0	0	0	626	625	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						0.96	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						0.98	
Satd. Flow (prot)		3065			3149						2779	
Flt Permitted		1.00			0.83						0.98	
Satd. Flow (perm)		3065			2649						2779	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	269	58	157	901	0	0	0	0	680	679	20
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	317	0	0	1058	0	0	0	0	0	1378	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm							Perm	
Protected Phases		4			4							2
Permitted Phases				4						2		
Actuated Green, G (s)		35.5			35.5							17.0
Effective Green, g (s)		35.5			35.5							17.0
Actuated g/C Ratio		0.59			0.59							0.28
Clearance Time (s)		3.0			3.0							4.5
Lane Grp Cap (vph)		1813			1567							787
v/s Ratio Prot		0.10										
v/s Ratio Perm					c0.40							0.50
v/c Ratio		0.17			0.68							1.79dl
Uniform Delay, d1		5.6			8.3							21.5
Progression Factor		1.00			1.52							0.93
Incremental Delay, d2		0.2			1.8							342.4
Delay (s)		5.8			14.5							362.4
Level of Service		A			B							F
Approach Delay (s)		5.8			14.5			0.0				362.4
Approach LOS		A			B			A				F
<b>Intersection Summary</b>												
HCM Average Control Delay			187.0									F
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			60.0								7.5	
Intersection Capacity Utilization			88.7%									E
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

Queues  
6: 14th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	923	746	845	963	60
v/c Ratio	1.44	0.78	1.78	0.58	0.09
Control Delay	223.1	26.4	380.4	8.0	3.8
Queue Delay	0.0	0.0	0.0	0.1	0.0
Total Delay	223.1	26.4	380.4	8.1	3.8
Queue Length 50th (ft)	~230	128	~449	66	2
Queue Length 95th (ft)	m#145	#196	#650	79	8
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	640	956	474	1671	649
Starvation Cap Reductn	0	0	0	132	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.44	0.78	1.78	0.63	0.09













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.



HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕↕	↗		↔↔	↗			
Volume (vph)	63	805	0	0	701	794	129	671	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.92		1.00	0.96			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2913			3185	1306		3134	1197			
Flt Permitted		0.73			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2133			3185	1306		3134	1197			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	67	856	0	0	746	845	155	808	60	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	11	0	0	0
Lane Group Flow (vph)	0	923	0	0	746	762	0	963	49	0	0	0
Confl. Peds. (#/hr)	49					49	90		44			
Confl. Bikes (#/hr)						35			9			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		18.0			18.0	18.0		32.0	32.0			
Effective Green, g (s)		18.0			18.0	18.0		32.0	32.0			
Actuated g/C Ratio		0.30			0.30	0.30		0.53	0.53			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		640			956	392		1671	638			
v/s Ratio Prot					0.23							
v/s Ratio Perm		0.43				c0.58		0.31	0.04			
v/c Ratio		1.44			0.78	1.94		0.58	0.08			
Uniform Delay, d1		21.0			19.2	21.0		9.4	6.8			
Progression Factor		1.04			1.00	1.00		0.68	0.71			
Incremental Delay, d2		199.8			6.3	434.5		1.4	0.2			
Delay (s)		221.5			25.5	455.5		7.8	5.1			
Level of Service		F			C	F		A	A			
Approach Delay (s)		221.5			253.8			7.6			0.0	
Approach LOS		F			F			A			A	

Intersection Summary

HCM Average Control Delay	174.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	124.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1007	871
v/c Ratio	0.67	0.49
Control Delay	19.9	11.7
Queue Delay	0.0	6.5
Total Delay	19.9	18.2
Queue Length 50th (ft)	82	154
Queue Length 95th (ft)	71	m108
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1506	1775
Starvation Cap Reductn	0	844
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	0.94


















**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 7: 13th St & Madison Street




Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  									 	
Volume (vph)	0	504	140	0	0	0	0	0	0	127	674	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.95	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.97									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5336									2947	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5336									2947	
Peak-hour factor, PHF	0.64	0.64	0.64	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	788	219	0	0	0	0	0	0	138	733	0
RTOR Reduction (vph)	0	84	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	923	0	0	0	0	0	0	0	0	863	0
Confl. Peds. (#/hr)			42								32	
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1423									1768	
v/s Ratio Prot		c0.17										
v/s Ratio Perm											0.29	
v/c Ratio		0.65									0.49	
Uniform Delay, d1		19.5									6.8	
Progression Factor		1.00									1.70	
Incremental Delay, d2		2.3									0.1	
Delay (s)		21.8									11.6	
Level of Service		C									B	
Approach Delay (s)		21.8			0.0			0.0			11.6	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.1								B	
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			49.7%							A		
ICU Level of Service												
Analysis Period (min)			15									

c Critical Lane Group




















Queues  
8: 13th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

			
Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	107	961	1008
v/c Ratio	0.26	0.82	0.40
Control Delay	2.0	16.2	6.8
Queue Delay	0.0	0.0	0.0
Total Delay	2.0	16.2	6.8
Queue Length 50th (ft)	0	45	60
Queue Length 95th (ft)	1	35	82
Internal Link Dist (ft)		317	231
Turn Bay Length (ft)	50		
Base Capacity (vph)	416	1170	2542
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.82	0.40
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
8: 13th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	63	567	0	0	0	0	0	774	183	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0				
Lane Util. Factor	1.00	0.91						0.91				
Frbp, ped/bikes	1.00	1.00						0.99				
Flpb, ped/bikes	0.97	1.00						1.00				
Frt	1.00	1.00						0.97				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1353	4386						4233				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1353	4386						4233				
Peak-hour factor, PHF	0.59	0.59	0.59	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	107	961	0	0	0	0	0	815	193	0	0	0
RTOR Reduction (vph)	55	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	52	961	0	0	0	0	0	1005	0	0	0	0
Confl. Peds. (#/hr)	26								36			
Confl. Bikes (#/hr)									11			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)	16.0	16.0						36.0				
Effective Green, g (s)	16.0	16.0						36.0				
Actuated g/C Ratio	0.27	0.27						0.60				
Clearance Time (s)	5.0	5.0						3.0				
Lane Grp Cap (vph)	361	1170						2540				
v/s Ratio Prot		c0.22						c0.24				
v/s Ratio Perm	0.04											
v/c Ratio	0.14	0.82						0.40				
Uniform Delay, d1	16.8	20.7						6.3				
Progression Factor	0.10	0.46						1.00				
Incremental Delay, d2	0.7	5.5						0.5				
Delay (s)	2.4	15.1						6.8				
Level of Service	A	B						A				
Approach Delay (s)		13.8			0.0			6.8			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.4				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			84.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Cumulative 2035 + Project  
Timing Plan: AM PEAK















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	826	58	2199	994
v/c Ratio	0.81	0.13	0.99	0.62
Control Delay	24.1	5.2	21.0	10.6
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	24.1	5.2	21.1	10.6
Queue Length 50th (ft)	114	0	22	94
Queue Length 95th (ft)	#164	17	1	132
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1019	433	2226	1607
Starvation Cap Reductn	0	0	1	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.13	0.99	0.62

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 9: 13th St & Lake Merritt Blvd






Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	702	49	0	0	1495	0	0	0	855	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frbp, ped/bikes		1.00	0.99			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Frt		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1229			2508				3090		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1229			2508				3090		
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.25	0.25	0.25	0.86	0.86	0.86
Adj. Flow (vph)	0	826	58	0	0	2199	0	0	0	994	0	0
RTOR Reduction (vph)	0	0	39	0	0	922	0	0	0	0	0	0
Lane Group Flow (vph)	0	826	19	0	0	1277	0	0	0	994	0	0
Confl. Bikes (#/hr)			3									
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			26.0				26.0		
Effective Green, g (s)		16.0	16.0			26.0				26.0		
Actuated g/C Ratio		0.32	0.32			0.52				0.52		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1019	393			1304				1607		
v/s Ratio Prot						c0.51				0.32		
v/s Ratio Perm		c0.26	0.02									
v/c Ratio		0.81	0.05			0.98				0.62		
Uniform Delay, d1		15.6	11.7			11.7				8.5		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		7.0	0.2			20.5				1.8		
Delay (s)		22.6	12.0			32.2				10.3		
Level of Service		C	B			C				B		
Approach Delay (s)		21.9			32.2			0.0			10.3	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			24.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			61.4%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Cumulative 2035 + Project  
Timing Plan: AM PEAK

					
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	93	459	748	2294
v/c Ratio	0.03	0.30	0.48	1.10	1.44
Control Delay	28.0	39.7	42.0	106.8	228.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	39.7	42.0	106.8	228.6
Queue Length 50th (ft)	2	56	110	~219	~1191
Queue Length 95th (ft)	3	99	137	#232	#1324
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	284	315	955	682	1591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.30	0.48	1.10	1.44














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.



HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	2	79	390	461	115	2029	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1346	1496	4577	4236		3073	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1346	1496	4577	4236		3073	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	93	459	599	149	2136	158
RTOR Reduction (vph)	3	3	0	37	0	0	0
Lane Group Flow (vph)	5	90	459	711	0	2294	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	24.0	24.0	24.0	17.5		59.5	
Effective Green, g (s)	24.0	24.0	24.0	17.5		59.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.15		0.52	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	281	312	955	645		1590	
v/s Ratio Prot			c0.10	c0.17		c0.75	
v/s Ratio Perm	0.00	0.06					
v/c Ratio	0.02	0.29	0.48	1.10		1.44	
Uniform Delay, d1	36.1	38.3	40.0	48.8		27.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	2.3	1.7	66.6		202.9	
Delay (s)	36.2	40.6	41.7	115.4		230.6	
Level of Service	D	D	D	F		F	
Approach Delay (s)			41.6	115.4		230.6	
Approach LOS			D	F		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			177.3		HCM Level of Service		F
HCM Volume to Capacity ratio			1.16				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			102.4%		ICU Level of Service		G
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
11: 12th St & Broadway

Cumulative 2035 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1057	102	338	524
v/c Ratio	0.72	0.86	0.21	0.48
Control Delay	20.0	85.0	8.6	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.0	85.0	8.6	15.4
Queue Length 50th (ft)	115	37	32	68
Queue Length 95th (ft)	144	#115	53	108
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1460	119	1587	1082
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.86	0.21	0.48

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↑	↑↑			↑↑	
Volume (vph)	0	0	0	126	687	75	98	324	0	0	438	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.5			4.5	
Lane Util. Factor					0.91		1.00	0.95			0.95	
Frbp, ped/bikes					0.99		1.00	1.00			0.95	
Flpb, ped/bikes					0.98		1.00	1.00			1.00	
Frt					0.99		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4120		1593	3122			2886	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					4120		1593	3122			2886	
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.96	0.96	0.96	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	150	818	89	102	338	0	0	447	77
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	0	1039	0	102	338	0	0	501	0
Confl. Peds. (#/hr)				164		113	522					522
Confl. Bikes (#/hr)						6						10
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10
Parking (#/hr)				5	5	5						
Turn Type					Perm			Prot				
Protected Phases						4		5	2			6
Permitted Phases				4								
Actuated Green, G (s)					21.0		4.5	30.5			22.0	
Effective Green, g (s)					21.0		4.5	30.5			22.0	
Actuated g/C Ratio					0.35		0.08	0.51			0.37	
Clearance Time (s)					4.0		4.0	4.5			4.5	
Lane Grp Cap (vph)					1442		119	1587			1058	
v/s Ratio Prot							c0.06	0.11			c0.17	
v/s Ratio Perm					0.25							
v/c Ratio					0.72		0.86	0.21			0.47	
Uniform Delay, d1					16.9		27.4	8.1			14.6	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					3.1		50.7	0.3			1.5	
Delay (s)					20.1		78.2	8.4			16.1	
Level of Service					C		E	A			B	
Approach Delay (s)		0.0			20.1			24.6			16.1	
Approach LOS		A			C			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.0									C
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			60.0								12.5	
Intersection Capacity Utilization			58.1%									B
Analysis Period (min)			15									

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1241	689	159
v/c Ratio	0.40	0.77	0.38
Control Delay	7.1	15.8	3.6
Queue Delay	0.0	98.1	0.0
Total Delay	7.2	113.9	3.6
Queue Length 50th (ft)	60	61	2
Queue Length 95th (ft)	74	#124	m8
Internal Link Dist (ft)	319	229	
Turn Bay Length (ft)			
Base Capacity (vph)	3133	896	423
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	74	327	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	1.21	0.38

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.

HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

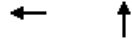
Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4TTL						4T	T
Volume (vph)	0	0	0	243	824	0	0	0	0	0	661	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						4.0	4.0
Lane Util. Factor					0.86						0.95	1.00
Frbp, ped/bikes					1.00						1.00	0.91
Flpb, ped/bikes					0.99						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					5410						2986	1129
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					5410						2986	1129
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	283	958	0	0	0	0	0	689	159
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	85
Lane Group Flow (vph)	0	0	0	0	1220	0	0	0	0	0	689	74
Confl. Peds. (#/hr)				50								65
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					6						4	
Permitted Phases				6								4
Actuated Green, G (s)					34.5						18.0	18.0
Effective Green, g (s)					34.5						18.0	18.0
Actuated g/C Ratio					0.58						0.30	0.30
Clearance Time (s)					3.5						4.0	4.0
Lane Grp Cap (vph)					3111						896	339
v/s Ratio Prot											c0.23	
v/s Ratio Perm					0.23							0.07
v/c Ratio					0.39						0.77	0.22
Uniform Delay, d1					7.0						19.1	15.7
Progression Factor					1.00						0.49	0.23
Incremental Delay, d2					0.4						5.4	1.3
Delay (s)					7.4						14.9	4.8
Level of Service					A						B	A
Approach Delay (s)		0.0			7.4			0.0			13.0	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.7									A
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			60.0								7.5	
Intersection Capacity Utilization			44.3%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
13: 12th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK





















Lane Group	WBT	NBT
Lane Group Flow (vph)	846	1347
v/c Ratio	0.36	0.90
Control Delay	8.8	23.8
Queue Delay	0.0	0.0
Total Delay	8.8	23.8
Queue Length 50th (ft)	38	108
Queue Length 95th (ft)	55	#193
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	2380	1496
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.90

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	758	38	365	901	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.91				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.95				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5455			4041				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5455			4041				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	806	40	388	959	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	59	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	831	0	0	1288	0	0	0	0
Confl. Peds. (#/hr)						151	217					
Confl. Bikes (#/hr)						9						
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					19.5			16.0				
Effective Green, g (s)					19.5			16.0				
Actuated g/C Ratio					0.43			0.36				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					2364			1437				
v/s Ratio Prot					c0.15							
v/s Ratio Perm								0.32				
v/c Ratio					0.35			0.90				
Uniform Delay, d1					8.5			13.7				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.4			9.1				
Delay (s)					8.9			22.8				
Level of Service					A			C				
Approach Delay (s)		0.0			8.9			22.8			0.0	
Approach LOS		A			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.4		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			45.0		Sum of lost time (s)					9.5		
Intersection Capacity Utilization			48.8%		ICU Level of Service					A		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035 + Project  
Timing Plan: AM PEAK

	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	788	922	1869	1789
v/c Ratio	0.46	0.56	1.11	1.09
Control Delay	11.3	12.8	77.9	77.1
Queue Delay	0.5	0.0	0.0	44.8
Total Delay	11.8	12.8	77.9	121.9
Queue Length 50th (ft)	85	127	~495	~328
Queue Length 95th (ft)	110	148	#512	#398
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1718	1633	1684	1634
Starvation Cap Reductn	465	0	0	140
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.56	1.11	1.20












**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.



HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	670	738	1495	1547	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frbp, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4573	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4573	
Peak-hour factor, PHF	0.85	0.85	0.80	0.80	0.87	0.87
Adj. Flow (vph)	0	788	922	1869	1778	11
RTOR Reduction (vph)	0	1	0	0	1	0
Lane Group Flow (vph)	0	787	922	1869	1788	0
Confl. Bikes (#/hr)		7				
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		37.0	37.0	37.0	25.0	
Effective Green, g (s)		37.0	37.0	37.0	25.0	
Actuated g/C Ratio		0.53	0.53	0.53	0.36	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1717	1633	1684	1633	
v/s Ratio Prot		0.24	0.30	c0.59	c0.39	
v/s Ratio Perm						
v/c Ratio		0.46	0.56	1.11	1.10	
Uniform Delay, d1		10.3	11.1	16.5	22.5	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.9	1.4	58.6	53.1	
Delay (s)		11.1	12.5	75.1	75.6	
Level of Service		B	B	E	E	
Approach Delay (s)	11.1			54.4	75.6	
Approach LOS	B			D	E	
<b>Intersection Summary</b>						
HCM Average Control Delay			55.1		HCM Level of Service	E
HCM Volume to Capacity ratio			1.10			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			63.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
15: International Blvd & Lake Merritt Blvd

Cumulative 2035 + Project  
Timing Plan: AM PEAK


















Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	358	55	482	413	1591
v/c Ratio	0.28	0.11	0.25	0.28	1.00
Control Delay	17.6	5.6	9.6	1.6	41.6
Queue Delay	0.0	0.0	0.7	0.3	0.0
Total Delay	17.6	5.6	10.3	1.8	41.6
Queue Length 50th (ft)	59	0	58	0	-361
Queue Length 95th (ft)	89	21	84	20	#532
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1259	497	1911	1456	1591
Starvation Cap Reductn	0	0	1049	474	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.11	0.56	0.42	1.00

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.

HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	319	49	458	392	62	1354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frbp, ped/bikes	1.00	0.95	1.00	0.86		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1260	3539	2344		3245
Flt Permitted	0.95	1.00	1.00	1.00		0.91
Satd. Flow (perm)	3433	1260	3539	2344		2947
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	358	55	482	413	70	1521
RTOR Reduction (vph)	0	35	0	190	0	0
Lane Group Flow (vph)	358	20	482	223	0	1591
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.5	27.5	40.5	40.5		40.5
Effective Green, g (s)	27.5	27.5	40.5	40.5		40.5
Actuated g/C Ratio	0.37	0.37	0.54	0.54		0.54
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1259	462	1911	1266		1591
v/s Ratio Prot	c0.10		0.14			
v/s Ratio Perm		0.02		0.10		c0.54
v/c Ratio	0.28	0.04	0.25	0.18		1.00
Uniform Delay, d1	16.8	15.3	9.2	8.8		17.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.6	0.2	0.3	0.3		22.6
Delay (s)	17.4	15.5	9.5	9.1		39.8
Level of Service	B	B	A	A		D
Approach Delay (s)	17.1		9.3			39.8
Approach LOS	B		A			D

Intersection Summary

HCM Average Control Delay		27.2	HCM Level of Service	C
HCM Volume to Capacity ratio		0.71		
Actuated Cycle Length (s)		75.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization		97.6%	ICU Level of Service	F
Analysis Period (min)		15		

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Cumulative 2035 + Project  
Timing Plan: AM PEAK

















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	675	68	564	117	592
v/c Ratio	0.49	0.11	0.39	0.86	0.34
Control Delay	16.1	4.3	2.7	81.9	10.2
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	16.1	4.3	2.8	81.9	10.2
Queue Length 50th (ft)	98	0	3	47	67
Queue Length 95th (ft)	130	18	30	#131	97
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1373	603	1452	136	1761
Starvation Cap Reductn	0	0	182	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.11	0.44	0.86	0.34

Intersection Summary

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





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Volume (vph)	567	57	23	479	104	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.93	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.86		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1406	2914		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1406	2914		1770	3468
Peak-hour factor, PHF	0.84	0.84	0.89	0.89	0.89	0.89
Adj. Flow (vph)	675	68	26	538	117	592
RTOR Reduction (vph)	0	41	331	0	0	0
Lane Group Flow (vph)	675	27	233	0	117	592
Confl. Peds. (#/hr)	19	82		33	33	
Confl. Bikes (#/hr)				5		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0	25.0		5.0	33.0
Effective Green, g (s)	26.0	26.0	25.0		5.0	33.0
Actuated g/C Ratio	0.40	0.40	0.38		0.08	0.51
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1373	562	1121		136	1761
v/s Ratio Prot	c0.20		0.08		c0.07	c0.17
v/s Ratio Perm		0.02				
v/c Ratio	0.49	0.05	0.21		0.86	0.34
Uniform Delay, d1	14.6	11.9	13.4		29.7	9.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.2	0.4		46.7	0.5
Delay (s)	15.8	12.1	13.8		76.4	10.0
Level of Service	B	B	B		E	B
Approach Delay (s)	15.5		13.8			21.0
Approach LOS	B		B			C
<b>Intersection Summary</b>						
HCM Average Control Delay			16.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			56.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Cumulative 2035 + Project  
Timing Plan: AM PEAK


















				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	184	862	1531	202
v/c Ratio	0.27	0.33	1.68	0.38
Control Delay	3.4	18.4	341.5	44.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	18.4	341.5	44.1
Queue Length 50th (ft)	0	116	~612	68
Queue Length 95th (ft)	46	142	#699	105
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	685	2645	911	528
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.33	1.68	0.38

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.

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

							
Movement	EBL	EBT	NBT	NBR	NEL	NER	
Lane Configurations		  	  		 	 	
Volume (vph)	169	793	1276	86	123	65	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	4.5	5.0		5.0		
Lane Util. Factor	0.81	0.81	0.91		0.97		
Frbp, ped/bikes	1.00	1.00	1.00		0.99		
Flpb, ped/bikes	0.94	1.00	1.00		1.00		
Frt	1.00	1.00	0.99		0.95		
Flt Protected	0.95	1.00	1.00		0.97		
Satd. Flow (prot)	1212	5432	4338		2965		
Flt Permitted	0.95	1.00	1.00		0.97		
Satd. Flow (perm)	1212	5432	4338		2965		
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93	
Adj. Flow (vph)	184	862	1434	97	132	70	
RTOR Reduction (vph)	94	0	6	0	0	0	
Lane Group Flow (vph)	90	862	1525	0	202	0	
Confl. Peds. (#/hr)	37			5	37	5	
Parking (#/hr)			5	5			
Turn Type	Perm						
Protected Phases		4	2		1		
Permitted Phases	4						
Actuated Green, G (s)	56.0	56.0	24.0		20.5		
Effective Green, g (s)	56.0	56.0	24.0		20.5		
Actuated g/C Ratio	0.49	0.49	0.21		0.18		
Clearance Time (s)	4.5	4.5	5.0		5.0		
Lane Grp Cap (vph)	590	2645	905		529		
v/s Ratio Prot			c0.35		c0.07		
v/s Ratio Perm	0.07	0.16					
v/c Ratio	0.15	0.33	1.68		0.38		
Uniform Delay, d1	16.3	18.0	45.5		41.7		
Progression Factor	1.00	1.00	1.00		1.00		
Incremental Delay, d2	0.5	0.3	312.9		2.1		
Delay (s)	16.9	18.3	358.4		43.7		
Level of Service	B	B	F		D		
Approach Delay (s)		18.1	358.4		43.7		
Approach LOS		B	F		D		
<b>Intersection Summary</b>							
HCM Average Control Delay			207.5		HCM Level of Service	F	
HCM Volume to Capacity ratio			0.66				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)	14.5	
Intersection Capacity Utilization			67.7%		ICU Level of Service	C	
Analysis Period (min)			15				

c Critical Lane Group

Queues  
18: 11th St & Broadway

Cumulative 2035 + Project  
Timing Plan: AM PEAK

	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	763	4	442	208	420
v/c Ratio	0.70	0.01	0.52	1.20	0.28
Control Delay	18.5	7.5	17.2	159.8	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	7.5	17.2	159.8	9.5
Queue Length 50th (ft)	106	0	55	-86	41
Queue Length 95th (ft)	161	2	93	#191	64
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1092	751	846	174	1476
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.01	0.52	1.20	0.28























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.



HCM Signalized Intersection Capacity Analysis  
 18: 11th St & Broadway

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 		 	 	
Volume (vph)	99	595	4	0	0	0	0	321	95	185	374	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frb, ped/bikes		1.00	0.85					0.93		1.00	1.00	
Flpb, ped/bikes		0.98	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2860	1960					2800		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2860	1960					2800		1593	3122	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	109	654	4	0	0	0	0	341	101	208	420	0
RTOR Reduction (vph)	0	0	2	0	0	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	763	2	0	0	0	0	411	0	208	420	0
Confl. Peds. (#/hr)	139		172						313	313		
Confl. Bikes (#/hr)			11						3			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1092	748					815		174	1476	
v/s Ratio Prot								c0.15		c0.13	0.13	
v/s Ratio Perm		0.27	0.00									
v/c Ratio		0.70	0.00					0.50		1.20	0.28	
Uniform Delay, d1		14.3	10.5					16.2		24.5	8.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		3.7	0.0					2.2		130.6	0.5	
Delay (s)		18.1	10.5					18.4		155.1	9.3	
Level of Service		B	B					B		F	A	
Approach Delay (s)		18.0			0.0			18.4			57.6	
Approach LOS		B			A			B			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.6									HCM Level of Service C
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			55.0								12.0	
Intersection Capacity Utilization			58.1%									ICU Level of Service B
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	201	709	1016
v/c Ratio	0.31	0.64	0.86
Control Delay	13.7	16.3	20.8
Queue Delay	0.0	0.0	68.3
Total Delay	13.7	16.3	89.1
Queue Length 50th (ft)	47	95	182
Queue Length 95th (ft)	90	140	#287
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	650	1115	1177
Starvation Cap Reductn	0	0	292
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.64	1.15

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

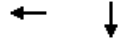
Cumulative 2035 + Project  
 Timing Plan: AM PEAK

	↖	→	↘	↘	↓
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations	↖	↕↗			↖↗
Volume (vph)	185	364	253	154	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			0.99
Frt	1.00	0.94			1.00
Flt Protected	0.95	1.00			0.99
Satd. Flow (prot)	1593	2662			2881
Flt Permitted	0.95	1.00			0.99
Satd. Flow (perm)	1593	2662			2881
Peak-hour factor, PHF	0.92	0.87	0.87	0.89	0.89
Adj. Flow (vph)	201	418	291	173	843
RTOR Reduction (vph)	0	29	0	0	0
Lane Group Flow (vph)	201	680	0	0	1016
Confl. Peds. (#/hr)			52	38	
Confl. Bikes (#/hr)			4		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	24.5	24.5			24.5
Effective Green, g (s)	24.5	24.5			24.5
Actuated g/C Ratio	0.41	0.41			0.41
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	650	1087			1176
v/s Ratio Prot		c0.26			
v/s Ratio Perm	0.13				0.35
v/c Ratio	0.31	0.63			0.86
Uniform Delay, d1	12.0	14.1			16.2
Progression Factor	1.00	1.00			0.77
Incremental Delay, d2	1.2	2.7			6.8
Delay (s)	13.3	16.8			19.3
Level of Service	B	B			B
Approach Delay (s)		16.0			19.3
Approach LOS		B			B
<b>Intersection Summary</b>					
HCM Average Control Delay			17.8	HCM Level of Service	B
HCM Volume to Capacity ratio			0.74		
Actuated Cycle Length (s)			60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			59.0%	ICU Level of Service	B
Analysis Period (min)			15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK


















Lane Group	WBT	SBT
Lane Group Flow (vph)	915	1035
v/c Ratio	2.19	0.61
Control Delay	555.5	6.9
Queue Delay	0.0	0.2
Total Delay	555.5	7.1
Queue Length 50th (ft)	~580	79
Queue Length 95th (ft)	m#218	m112
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	418	1693
Starvation Cap Reductn	0	139
Spillback Cap Reductn	0	4
Storage Cap Reductn	0	0
Reduced v/c Ratio	2.19	0.67

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.

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Volume (vph)	0	0	0	243	535	0	0	0	0	128	822	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						0.99	
Frt					1.00						0.99	
Flt Protected					0.98						0.99	
Satd. Flow (prot)					1433						2848	
Flt Permitted					0.98						0.99	
Satd. Flow (perm)					1433						2848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	286	629	0	0	0	0	132	847	56
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	915	0	0	0	0	0	1028	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					418						1685	
v/s Ratio Prot												
v/s Ratio Perm					0.64						0.36	
v/c Ratio					2.19						0.61	
Uniform Delay, d1					21.2						7.8	
Progression Factor					1.09						0.75	
Incremental Delay, d2					535.8						0.9	
Delay (s)					559.0						6.8	
Level of Service					F						A	
Approach Delay (s)		0.0			559.0			0.0			6.8	
Approach LOS		A			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			265.9								HCM Level of Service	F
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	7.0
Intersection Capacity Utilization			84.4%								ICU Level of Service	E
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK


















	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	169	965	1240
v/c Ratio	1.22	2.62	0.46
Control Delay	173.4	751.9	2.7
Queue Delay	0.0	0.0	0.1
Total Delay	173.4	751.9	2.8
Queue Length 50th (ft)	~79	~618	20
Queue Length 95th (ft)	#102	#761	27
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	138	369	2717
Starvation Cap Reductn	0	0	305
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.22	2.62	0.51

**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.

HCM Signalized Intersection Capacity Analysis  
 21: 10th St & Oak Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	13	90	0	0	641	170	136	898	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frb, ped/bikes		1.00			0.99			1.00				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.97			0.99				
Flt Protected		0.99			1.00			0.99				
Satd. Flow (prot)		1457			1411			4379				
Flt Permitted		0.37			1.00			0.99				
Satd. Flow (perm)		549			1411			4379				
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	21	148	0	0	763	202	149	987	104	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	169	0	0	949	0	0	1222	0	0	0	0
Confl. Peds. (#/hr)	26					26	72		91			
Confl. Bikes (#/hr)						7			11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		137			353			2700				
v/s Ratio Prot					c0.67							
v/s Ratio Perm		0.31						0.28				
v/c Ratio		1.23			2.69			0.45				
Uniform Delay, d1		22.5			22.5			6.1				
Progression Factor		1.01			1.00			0.37				
Incremental Delay, d2		148.9			768.1			0.5				
Delay (s)		171.5			790.6			2.8				
Level of Service		F			F			A				
Approach Delay (s)		171.5			790.6			2.8			0.0	
Approach LOS		F			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			335.0				HCM Level of Service		F			
HCM Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			87.0%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
22: 9th Street & Webster Street













Cumulative 2035 + Project  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	65	112	1433
v/c Ratio	0.07	0.29	0.80
Control Delay	22.9	7.0	30.9
Queue Delay	0.0	0.0	37.3
Total Delay	22.9	7.0	68.2
Queue Length 50th (ft)	13	0	207
Queue Length 95th (ft)	27	32	224
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	389	1791
Starvation Cap Reductn	0	0	457
Spillback Cap Reductn	0	4	212
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.07	0.29	1.07
<b>Intersection Summary</b>			



HCM Signalized Intersection Capacity Analysis  
 22: 9th Street & Webster Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑								↓	↓
Volume (vph)	0	55	94	0	0	0	0	0	0	177	1013	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.86								1.00	
Flpb, ped/bikes		1.00	1.00								0.99	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1034								5448	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1034								5448	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	0	65	112	0	0	0	0	0	0	213	1220	0
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	0	0	35	0
Lane Group Flow (vph)	0	65	34	0	0	0	0	0	0	0	1398	0
Confl. Peds. (#/hr)			124								55	
Confl. Bikes (#/hr)			4									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5								5	5
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2								1	
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	310								1755	
v/s Ratio Prot		0.02										
v/s Ratio Perm			0.03								0.26	
v/c Ratio		0.07	0.11								0.80	
Uniform Delay, d1		22.5	22.8								27.8	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		0.2	0.7								3.9	
Delay (s)		22.7	23.5								31.7	
Level of Service		C	C								C	
Approach Delay (s)		23.2			0.0			0.0			31.7	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			30.7								HCM Level of Service	C
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			90.0							Sum of lost time (s)	34.0	
Intersection Capacity Utilization			48.5%							ICU Level of Service	A	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 23: 9th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK













	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	404	1160
v/c Ratio	0.37	0.66
Control Delay	14.0	7.5
Queue Delay	0.0	1.5
Total Delay	14.0	9.1
Queue Length 50th (ft)	30	46
Queue Length 95th (ft)	53	m147
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1081	1757
Starvation Cap Reductn	0	389
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.85

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑	
Volume (vph)	0	220	155	0	0	0	0	0	0	149	918	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.95	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3960									2892	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3960									2892	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	237	167	0	0	0	0	0	0	162	998	0
RTOR Reduction (vph)	0	91	0	0	0	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1138	0
Confl. Peds. (#/hr)			62								43	
Confl. Bikes (#/hr)			7									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0										36.0
Effective Green, g (s)		15.0										36.0
Actuated g/C Ratio		0.25										0.60
Clearance Time (s)		4.5										4.5
Lane Grp Cap (vph)		990										1735
v/s Ratio Prot		c0.08										
v/s Ratio Perm												0.39
v/c Ratio		0.32										0.66
Uniform Delay, d1		18.3										7.9
Progression Factor		1.00										0.90
Incremental Delay, d2		0.8										0.5
Delay (s)		19.2										7.6
Level of Service		B										A
Approach Delay (s)		19.2			0.0			0.0				7.6
Approach LOS		B			A			A				A
<b>Intersection Summary</b>												
HCM Average Control Delay			10.6									B
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			60.0								9.0	
Intersection Capacity Utilization			53.0%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
24: 9th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK













	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	460	1162
v/c Ratio	0.38	0.43
Control Delay	10.4	2.7
Queue Delay	0.0	0.1
Total Delay	10.4	2.8
Queue Length 50th (ft)	27	27
Queue Length 95th (ft)	36	m30
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1223	2674
Starvation Cap Reductn	0	467
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.38	0.53

**Intersection Summary**

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

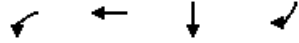
HCM Signalized Intersection Capacity Analysis  
 24: 9th Street & Oak Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	124	253	0	0	0	0	0	969	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.99				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		4274						4302				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		4274						4302				
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	309	0	0	0	0	0	1053	109	0	0	0
RTOR Reduction (vph)	0	84	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	376	0	0	0	0	0	1141	0	0	0	0
Confl. Peds. (#/hr)	26								84			
Confl. Bikes (#/hr)									11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1140						2653				
v/s Ratio Prot								c0.27				
v/s Ratio Perm		0.09										
v/c Ratio		0.33						0.43				
Uniform Delay, d1		17.7						6.0				
Progression Factor		0.71						0.41				
Incremental Delay, d2		0.7						0.3				
Delay (s)		13.3						2.8				
Level of Service		B						A				
Approach Delay (s)		13.3			0.0			2.8			0.0	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			5.8									A
HCM Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			45.7%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
25: 8th Street & Webster Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	718	2249	682	552
v/c Ratio	0.99	1.83	0.51	0.85
Control Delay	43.3	402.3	4.3	24.9
Queue Delay	0.0	0.0	0.4	163.9
Total Delay	43.3	402.3	4.7	188.8
Queue Length 50th (ft)	168	~757	12	368
Queue Length 95th (ft)	#401	#782	17	m#509
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	722	1227	1336	653
Starvation Cap Reductn	0	0	249	248
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	1.83	0.63	1.36

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.

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	603	1889	0	0	0	0	0	600	486	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0	4.0						4.0	4.0	
Lane Util. Factor				0.86	0.86						0.86	0.86	
Frbp, ped/bikes				1.00	1.00						1.00	0.98	
Flpb, ped/bikes				1.00	1.00						1.00	1.00	
Frt				1.00	1.00						1.00	0.85	
Flt Protected				0.95	1.00						1.00	1.00	
Satd. Flow (prot)				1198	4090						4145	1010	
Flt Permitted				0.95	1.00						1.00	1.00	
Satd. Flow (perm)				1198	4090						4145	1010	
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	718	2249	0	0	0	0	0	682	552	
RTOR Reduction (vph)	0	0	0	363	0	0	0	0	0	0	0	328	
Lane Group Flow (vph)	0	0	0	355	2249	0	0	0	0	0	682	224	
Confl. Bikes (#/hr)												10	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm								Perm	
Protected Phases					2						1		
Permitted Phases				2								1	
Actuated Green, G (s)				27.0	27.0						29.0	29.0	
Effective Green, g (s)				27.0	27.0						29.0	29.0	
Actuated g/C Ratio				0.30	0.30						0.32	0.32	
Clearance Time (s)				4.0	4.0						4.0	4.0	
Lane Grp Cap (vph)				359	1227						1336	325	
v/s Ratio Prot											0.16		
v/s Ratio Perm				0.30	0.55							c0.22	
v/c Ratio				0.99	1.83						0.51	0.69	
Uniform Delay, d1				31.4	31.5						24.7	26.6	
Progression Factor				1.00	1.00						0.13	3.65	
Incremental Delay, d2				45.1	378.0						0.9	7.4	
Delay (s)				76.4	409.5						4.2	104.4	
Level of Service				E	F						A	F	
Approach Delay (s)		0.0			328.9			0.0			49.0		
Approach LOS		A			F			A			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			246.7	HCM Level of Service								F	
HCM Volume to Capacity ratio			1.24										
Actuated Cycle Length (s)			90.0	Sum of lost time (s)							34.0		
Intersection Capacity Utilization			91.9%	ICU Level of Service							F		
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
26: 8th Street & Harrison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2196	631	1204
v/c Ratio	1.61	0.87	0.53
Control Delay	301.9	14.3	2.8
Queue Delay	0.0	24.3	0.5
Total Delay	301.9	38.7	3.3
Queue Length 50th (ft)	~438	34	21
Queue Length 95th (ft)	#400	m40	24
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1360	726	2273
Starvation Cap Reductn	0	115	565
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.61	1.03	0.70













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.



HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑		↗	↑↑↑				
Volume (vph)	0	0	0	0	1498	127	985	446	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.91		0.86	0.86				
Frbp, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.96	0.98				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	0.97				
Satd. Flow (prot)					4244		1320	4135				
Flt Permitted					1.00		0.95	0.97				
Satd. Flow (perm)					4244		1320	4135				
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2024	172	1263	572	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2180	0	631	1204	0	0	0	0
Confl. Peds. (#/hr)							88	65				
Confl. Bikes (#/hr)							7					
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0
Parking (#/hr)					5	5						
Turn Type							Perm					
Protected Phases					8			1				
Permitted Phases								1				
Actuated Green, G (s)					19.0		32.5	32.5				
Effective Green, g (s)					19.0		33.0	33.0				
Actuated g/C Ratio					0.32		0.55	0.55				
Clearance Time (s)					4.0		4.5	4.5				
Lane Grp Cap (vph)					1344		726	2274				
v/s Ratio Prot					c0.51							
v/s Ratio Perm							c0.48	0.29				
v/c Ratio					1.62		0.87	0.53				
Uniform Delay, d1					20.5		11.6	8.6				
Progression Factor					1.00		0.33	0.27				
Incremental Delay, d2					283.2		7.6	0.5				
Delay (s)					303.7		11.4	2.7				
Level of Service					F		B	A				
Approach Delay (s)		0.0			303.7			5.7			0.0	
Approach LOS		A			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			168.1				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			74.9%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
27: 8th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK















Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1940	386	383
v/c Ratio	1.63	0.57	0.47
Control Delay	306.2	13.2	9.9
Queue Delay	0.0	4.6	1.7
Total Delay	306.2	17.8	11.6
Queue Length 50th (ft)	~403	143	71
Queue Length 95th (ft)	m#234	m142	101
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1189	679	810
Starvation Cap Reductn	0	219	266
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.63	0.84	0.70

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.

HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

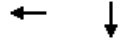
Cumulative 2035 + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑			↑			↑		
Volume (vph)	0	0	0	88	1474	184	99	248	0	0	227	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.91			1.00			1.00		
Frb, ped/bikes					0.98			1.00			0.99		
Flpb, ped/bikes					0.99			1.00			1.00		
Frt					0.98			1.00			0.97		
Flt Protected					1.00			0.99			1.00		
Satd. Flow (prot)					4113			1440			1409		
Flt Permitted					1.00			0.81			1.00		
Satd. Flow (perm)					4113			1180			1409		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77	
Adj. Flow (vph)	0	0	0	98	1638	204	110	276	0	0	295	88	
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1916	0	0	386	0	0	383	0	
Confl. Peds. (#/hr)				129		97	51					51	
Confl. Bikes (#/hr)						8						1	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type					Perm			Perm					
Protected Phases					1			2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					17.0			34.0			34.0		
Effective Green, g (s)					17.0			34.5			34.5		
Actuated g/C Ratio					0.28			0.58			0.58		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1165			679			810		
v/s Ratio Prot											0.27		
v/s Ratio Perm					0.47			c0.33					
v/c Ratio					1.64			0.57			0.47		
Uniform Delay, d1					21.5			8.1			7.4		
Progression Factor					0.94			1.47			1.00		
Incremental Delay, d2					290.3			0.3			2.0		
Delay (s)					310.5			12.1			9.4		
Level of Service					F			B			A		
Approach Delay (s)		0.0			310.5			12.1			9.4		
Approach LOS		A			F			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			225.4		HCM Level of Service						F		
HCM Volume to Capacity ratio			0.92										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			98.1%		ICU Level of Service					F			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
 28: 8th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	2552	1115
v/c Ratio	1.48	0.56
Control Delay	238.4	10.2
Queue Delay	184.3	0.3
Total Delay	422.7	10.5
Queue Length 50th (ft)	~317	63
Queue Length 95th (ft)	m120	88
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1722	1978
Starvation Cap Reductn	0	308
Spillback Cap Reductn	373	240
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.89	0.67

Intersection Summary

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

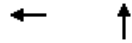
HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑↑	
Volume (vph)	0	0	0	698	1624	0	0	0	0	0	938	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.91						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.98	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					4212						4238	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					4212						4238	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	767	1785	0	0	0	0	0	998	117
RTOR Reduction (vph)	0	0	0	0	38	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	2514	0	0	0	0	0	1114	0
Confl. Peds. (#/hr)				36								34
Confl. Bikes (#/hr)												7
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								
Protected Phases					8						2	
Permitted Phases				8								
Actuated Green, G (s)					23.5						27.5	
Effective Green, g (s)					24.0						28.0	
Actuated g/C Ratio					0.40						0.47	
Clearance Time (s)					4.5						4.5	
Lane Grp Cap (vph)					1685						1978	
v/s Ratio Prot											c0.26	
v/s Ratio Perm					0.60							
v/c Ratio					1.49						0.56	
Uniform Delay, d1					18.0						11.6	
Progression Factor					1.02						0.79	
Incremental Delay, d2					221.7						0.9	
Delay (s)					240.1						10.0	
Level of Service					F						B	
Approach Delay (s)		0.0			240.1			0.0			10.0	
Approach LOS		A			F			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			170.2		HCM Level of Service						F	
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			90.7%		ICU Level of Service					E		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
29: 8th Street & Oak Street















Lane Group	WBT	NBT
Lane Group Flow (vph)	2565	1221
v/c Ratio	1.71	0.56
Control Delay	341.4	3.9
Queue Delay	0.0	1.3
Total Delay	341.4	5.2
Queue Length 50th (ft)	~524	17
Queue Length 95th (ft)	#619	m19
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1504	2184
Starvation Cap Reductn	0	687
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.71	0.82

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.

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	2129	231	198	852	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.99				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4236			4226				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4236			4226				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2314	251	230	991	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	22	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2543	0	0	1221	0	0	0	0
Confl. Peds. (#/hr)						62	131					
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					21.0			31.0				
Effective Green, g (s)					21.0			31.0				
Actuated g/C Ratio					0.35			0.52				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1483			2183				
v/s Ratio Prot					c0.60							
v/s Ratio Perm								0.29				
v/c Ratio					1.71			0.56				
Uniform Delay, d1					19.5			9.9				
Progression Factor					1.00			0.36				
Incremental Delay, d2					324.5			0.3				
Delay (s)					344.0			3.8				
Level of Service					F			A				
Approach Delay (s)		0.0			344.0			3.8			0.0	
Approach LOS		A			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			234.3				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			81.3%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

Intersection Sign configuration not allowed in HCM analysis.















Queues  
31: 7th Street & Harrison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	697	1678	1549
v/c Ratio	0.35	0.92	0.63
Control Delay	10.8	27.1	1.2
Queue Delay	0.0	0.6	0.0
Total Delay	10.8	27.7	1.2
Queue Length 50th (ft)	54	202	0
Queue Length 95th (ft)	65	184	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	1974	1831	2457
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	28	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.35	0.93	0.63
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑	↑↑			
Volume (vph)	218	326	0	0	0	0	0	1208	1115	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	3.0			
Lane Util. Factor		0.91						0.91	0.88			
Frbp, ped/bikes		1.00						1.00	0.98			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.98						1.00	1.00			
Satd. Flow (prot)		4229						4577	2457			
Flt Permitted		0.98						1.00	1.00			
Satd. Flow (perm)		4229						4577	2457			
Peak-hour factor, PHF	0.78	0.78	0.78	0.92	0.92	0.92	0.72	0.72	0.72	0.92	0.92	0.92
Adj. Flow (vph)	279	418	0	0	0	0	0	1678	1549	0	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	695	0	0	0	0	0	1678	1549	0	0	0
Confl. Peds. (#/hr)	12								29			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	5	5										
Turn Type	Perm								Free			
Protected Phases		2						4				
Permitted Phases	2								Free			
Actuated Green, G (s)		27.0						23.0	60.0			
Effective Green, g (s)		28.0						24.0	60.0			
Actuated g/C Ratio		0.47						0.40	1.00			
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1974						1831	2457			
v/s Ratio Prot								c0.37				
v/s Ratio Perm		0.16							c0.63			
v/c Ratio		0.35						0.92	0.63			
Uniform Delay, d1		10.2						17.1	0.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.5						8.7	1.2			
Delay (s)		10.7						25.8	1.2			
Level of Service		B						C	A			
Approach Delay (s)		10.7			0.0			14.0			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.4									B
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			60.0								4.0	
Intersection Capacity Utilization			66.3%									C
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
32: 7th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



















	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1384	250	474	370
v/c Ratio	0.61	0.39	1.08	1.47
Control Delay	8.8	3.0	91.5	249.5
Queue Delay	0.1	0.0	28.8	0.0
Total Delay	8.8	3.0	120.3	249.5
Queue Length 50th (ft)	93	0	~189	~195
Queue Length 95th (ft)	106	20	#352	m#270
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2260	639	437	252
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	85	0	27	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.39	1.16	1.47

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.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	36	836	386	0	0	0	0	302	129	44	282	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frbp, ped/bikes		0.98	0.91					0.97			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.97	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		3895	937					1370			1451	
Flt Permitted		1.00	1.00					1.00			0.57	
Satd. Flow (perm)		3895	937					1370			840	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	47	1086	501	0	0	0	0	332	142	50	320	0
RTOR Reduction (vph)	0	53	108	0	0	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	1331	142	0	0	0	0	448	0	0	370	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2207	531					411			252	
v/s Ratio Prot								0.33				
v/s Ratio Perm		0.34	0.15								0.44	
v/c Ratio		0.60	0.27					1.09			1.47	
Uniform Delay, d1		8.6	6.6					21.0			21.0	
Progression Factor		0.97	1.17					1.00			1.22	
Incremental Delay, d2		1.0	1.0					70.9			223.9	
Delay (s)		9.4	8.8					91.9			249.4	
Level of Service		A	A					F			F	
Approach Delay (s)		9.3			0.0			91.9			249.4	
Approach LOS		A			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			60.9									E
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			79.8%									D
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
33: 7th Street & Madison Street




















	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1285	344	1363
v/c Ratio	0.48	0.62	1.33
Control Delay	12.9	13.5	173.8
Queue Delay	0.0	0.8	79.9
Total Delay	12.9	14.3	253.8
Queue Length 50th (ft)	100	63	~352
Queue Length 95th (ft)	m118	m77	m#339
Internal Link Dist (ft)	296		190
Turn Bay Length (ft)			
Base Capacity (vph)	2676	552	1024
Starvation Cap Reductn	0	56	121
Spillback Cap Reductn	101	0	32
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.69	1.51

**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.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  								 	 	
Volume (vph)	0	723	356	0	0	0	0	0	0	327	1295	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.86								1.00	0.95	
Frbp, ped/bikes		0.98								1.00	1.00	
Flpb, ped/bikes		1.00								0.97	1.00	
Frt		0.95								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		5172								1353	2926	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		5172								1353	2926	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	861	424	0	0	0	0	0	0	344	1363	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	79	0	0
Lane Group Flow (vph)	0	1283	0	0	0	0	0	0	0	265	1363	0
Confl. Peds. (#/hr)			33							31		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		31.0								22.0	22.0	
Effective Green, g (s)		31.0								21.0	21.0	
Actuated g/C Ratio		0.52								0.35	0.35	
Clearance Time (s)		4.0								3.0	3.0	
Lane Grp Cap (vph)		2672								474	1024	
v/s Ratio Prot		c0.25									c0.47	
v/s Ratio Perm										0.20		
v/c Ratio		0.48								0.56	1.33	
Uniform Delay, d1		9.3								15.8	19.5	
Progression Factor		1.32								1.09	1.05	
Incremental Delay, d2		0.4								1.4	151.1	
Delay (s)		12.8								18.6	171.4	
Level of Service		B								B	F	
Approach Delay (s)		12.8			0.0			0.0			140.6	
Approach LOS		B			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			85.7									F
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			103.0%									G
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
34: 7th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	1169	1808
v/c Ratio	0.49	1.40dr
Control Delay	8.8	52.4
Queue Delay	0.0	36.7
Total Delay	8.8	89.1
Queue Length 50th (ft)	56	~264
Queue Length 95th (ft)	73	#327
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2398	1736
Starvation Cap Reductn	0	136
Spillback Cap Reductn	0	6
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.49	1.13

**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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
34: 7th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	144	862	0	0	0	0	0	905	650	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.97				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.94				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5477						3944				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5477						3944				
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	167	1002	0	0	0	0	0	1052	756	0	0	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	1145	0	0	0	0	0	1780	0	0	0	0
Confl. Peds. (#/hr)	26								75			
Confl. Bikes (#/hr)									3			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		25.0						25.0				
Effective Green, g (s)		26.0						26.0				
Actuated g/C Ratio		0.43						0.43				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2373						1709				
v/s Ratio Prot								c0.45				
v/s Ratio Perm		0.21										
v/c Ratio		0.48						1.40dr				
Uniform Delay, d1		12.2						17.0				
Progression Factor		0.69						1.00				
Incremental Delay, d2		0.6						33.5				
Delay (s)		9.0						50.5				
Level of Service		A						D				
Approach Delay (s)		9.0			0.0			50.5			0.0	
Approach LOS		A			A			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.2				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			60.7%				ICU Level of Service		B			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												



Queues  
35: 7th Street & 5th Ave

Cumulative 2035 + Project  
Timing Plan: AM PEAK
























Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	186	858	43	286	1900	775	622
v/c Ratio	1.62	0.39	0.07	1.33	1.25	1.66	0.93
Control Delay	336.8	13.3	4.4	200.2	138.6	326.5	41.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	336.8	13.3	4.4	200.2	138.6	326.5	41.3
Queue Length 50th (ft)	~109	81	0	~151	~513	~460	220
Queue Length 95th (ft)	#176	106	15	#285	#647	#583	#429
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		50	110			
Base Capacity (vph)	115	2190	606	215	1523	467	667
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.62	0.39	0.07	1.33	1.25	1.66	0.93

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.

HCM Signalized Intersection Capacity Analysis  
35: 7th Street & 5th Ave

Cumulative 2035 + Project  
Timing Plan: AM PEAK

													
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Volume (vph)	34	129	755	38	272	1794	11	168	326	141	37	322	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes		1.00	1.00	0.97	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			0.97			0.95	
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)		1769	5085	1350	1767	3535			1554			1535	
Flt Permitted		0.14	1.00	1.00	0.27	1.00			0.62			0.94	
Satd. Flow (perm)		266	5085	1350	500	3535			980			1442	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90	
Adj. Flow (vph)	39	147	858	43	286	1888	12	205	398	172	41	358	
RTOR Reduction (vph)	0	0	0	24	0	1	0	0	16	0	0	1	
Lane Group Flow (vph)	0	186	858	19	286	1899	0	0	759	0	0	621	
Confl. Peds. (#/hr)		10		4	4		10	8		3	3		
Confl. Bikes (#/hr)				1			2			4			
Parking (#/hr)				5					5	5		5	
Turn Type	Perm	Perm		Perm	Perm			Perm			Perm		
Protected Phases			1			1			2			2	
Permitted Phases	1	1		1	1			2			2		
Actuated Green, G (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0	
Effective Green, g (s)		28.0	28.0	28.0	28.0	28.0			30.0			30.0	
Actuated g/C Ratio		0.43	0.43	0.43	0.43	0.43			0.46			0.46	
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5			3.5			3.5	
Lane Grp Cap (vph)		115	2190	582	215	1523			452			666	
v/s Ratio Prot			0.17			0.54							
v/s Ratio Perm		c0.70		0.01	0.57				c0.78			0.43	
v/c Ratio		1.62	0.39	0.03	1.33	1.25			1.68			0.93	
Uniform Delay, d1		18.5	12.7	10.7	18.5	18.5			17.5			16.5	
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		314.1	0.5	0.1	176.9	116.9			315.6			21.7	
Delay (s)		332.6	13.2	10.8	195.4	135.4			333.1			38.3	
Level of Service		F	B	B	F	F			F			D	
Approach Delay (s)			67.8			143.3			333.1			38.3	
Approach LOS			E			F			F			D	
<b>Intersection Summary</b>													
HCM Average Control Delay			143.2			HCM Level of Service			F				
HCM Volume to Capacity ratio			1.65										
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			7.0				
Intersection Capacity Utilization			139.0%			ICU Level of Service			H				
Analysis Period (min)			15										
c Critical Lane Group													



Movement	SBR
Lane Configurations	
Volume (vph)	201
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	0.90
Adj. Flow (vph)	223
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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	

Queues  
36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	17	1262	263	257	439	375
v/c Ratio	0.03	1.88	1.01	0.42	0.72	0.67
Control Delay	8.4	422.0	71.9	14.6	19.9	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	422.0	71.9	14.6	19.9	18.2
Queue Length 50th (ft)	3	~528	~78	64	89	73
Queue Length 95th (ft)	11	#725	m#126	m80	#156	131
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	260	619	607	557
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	0.03	1.88	1.01	0.42	0.72	0.67

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.

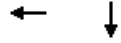
HCM Signalized Intersection Capacity Analysis  
36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	15	1136	0	237	231	0	0	98	569
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frbp, ped/bikes				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
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1588	1676		1593	1467			1419	1300
Flt Permitted				0.95	1.00		0.37	1.00			1.00	1.00
Satd. Flow (perm)				1588	1676		615	1467			1419	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	17	1262	0	263	257	0	0	120	694
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	8	8
Lane Group Flow (vph)	0	0	0	17	1262	0	263	257	0	0	431	367
Confl. Peds. (#/hr)				2		2						
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				635	670		260	619			599	549
v/s Ratio Prot					c0.75			0.18			0.30	
v/s Ratio Perm				0.01			c0.43					0.28
v/c Ratio				0.03	1.88		1.01	0.42			0.72	0.67
Uniform Delay, d1				8.2	13.5		13.0	9.1			10.8	10.5
Progression Factor				1.00	1.00		1.36	1.38			1.00	1.00
Incremental Delay, d2				0.1	403.3		46.6	1.3			7.3	6.3
Delay (s)				8.3	416.8		64.3	13.9			18.1	16.8
Level of Service				A	F		E	B			B	B
Approach Delay (s)		0.0			411.3			39.4			17.5	
Approach LOS		A			F			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			214.6									F
HCM Volume to Capacity ratio			1.44									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			117.1%									H
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
37: 6th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	623	1756
v/c Ratio	0.66	1.23dr
Control Delay	21.4	85.4
Queue Delay	0.0	46.9
Total Delay	21.4	132.3
Queue Length 50th (ft)	98	~130
Queue Length 95th (ft)	144	m83
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	950	1517
Starvation Cap Reductn	0	127
Spillback Cap Reductn	0	46
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	1.26

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 						 		
Volume (vph)	0	0	0	26	522	0	0	0	0	0	804	811	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.95						0.95		
Frbp, ped/bikes					1.00						0.97		
Flpb, ped/bikes					1.00						1.00		
Frt					1.00						0.92		
Flt Protected					1.00						1.00		
Satd. Flow (prot)					2979						2690		
Flt Permitted					1.00						1.00		
Satd. Flow (perm)					2979						2690		
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	30	593	0	0	0	0	0	874	882	
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	37	0	
Lane Group Flow (vph)	0	0	0	0	617	0	0	0	0	0	1719	0	
Confl. Peds. (#/hr)				2		11						45	
Confl. Bikes (#/hr)												9	
Parking (#/hr)					5						5	5	
Turn Type				Perm									
Protected Phases					4						2		
Permitted Phases				4									
Actuated Green, G (s)					19.0						33.0		
Effective Green, g (s)					19.0						33.0		
Actuated g/C Ratio					0.32						0.55		
Clearance Time (s)					4.0						4.0		
Lane Grp Cap (vph)					943						1480		
v/s Ratio Prot											c0.64		
v/s Ratio Perm					0.21								
v/c Ratio					0.65						1.23dr		
Uniform Delay, d1					17.7						13.5		
Progression Factor					1.00						0.62		
Incremental Delay, d2					3.5						73.5		
Delay (s)					21.2						81.9		
Level of Service					C						F		
Approach Delay (s)		0.0			21.2			0.0			81.9		
Approach LOS		A			C			A			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			66.0		HCM Level of Service						E		
HCM Volume to Capacity ratio			0.98										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			79.0%		ICU Level of Service					D			
Analysis Period (min)			15										
dr Defacto Right Lane. Recode with 1 though lane as a right lane.													
c Critical Lane Group													

Queues  
38: 6th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1316	731	419	27
v/c Ratio	2.60	0.53	0.69	0.04
Control Delay	735.4	10.2	17.2	2.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	735.4	10.2	17.2	2.9
Queue Length 50th (ft)	~601	62	84	0
Queue Length 95th (ft)	m#490	86	147	6
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	507	1371	611	616
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.60	0.53	0.69	0.04

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.



HCM Signalized Intersection Capacity Analysis  
38: 6th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↶		↷	↶	↷
Volume (vph)	372	813	104	151	688	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.98		0.98	1.00	1.00
Satd. Flow (prot)		1442		2910	1297	1269
Flt Permitted		0.98		0.98	1.00	1.00
Satd. Flow (perm)		1442		2910	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	413	903	127	184	839	27
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	1316	0	731	419	13
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		506		1371	611	598
v/s Ratio Prot				0.25	c0.32	
v/s Ratio Perm		0.91				0.01
v/c Ratio		2.60		0.53	0.69	0.02
Uniform Delay, d1		14.6		8.4	9.3	6.4
Progression Factor		1.19		1.00	1.00	1.00
Incremental Delay, d2		720.9		1.5	6.2	0.1
Delay (s)		738.3		9.9	15.5	6.4
Level of Service		F		A	B	A
Approach Delay (s)		738.3		11.9		
Approach LOS		F		B		

Intersection Summary

HCM Average Control Delay	395.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1465	298	135
v/c Ratio	1.09	0.39	0.23
Control Delay	70.2	7.4	11.8
Queue Delay	0.0	0.0	0.0
Total Delay	70.2	7.4	11.8
Queue Length 50th (ft)	~150	35	26
Queue Length 95th (ft)	#229	64	m45
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1346	770	581
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.09	0.39	0.23

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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	261	713	345	0	0	0	0	196	48	67	46	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.97			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4169						1421			1425	
Flt Permitted		0.99						1.00			0.74	
Satd. Flow (perm)		4169						1421			1089	
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.82	0.82	0.82	0.84	0.84	0.84
Adj. Flow (vph)	290	792	383	0	0	0	0	239	59	80	55	0
RTOR Reduction (vph)	0	142	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	1323	0	0	0	0	0	285	0	0	135	0
Confl. Peds. (#/hr)	4								21			
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		12.5						23.5			23.5	
Effective Green, g (s)		13.0						24.0			24.0	
Actuated g/C Ratio		0.29						0.53			0.53	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1204						758			581	
v/s Ratio Prot								c0.20				
v/s Ratio Perm		0.32									0.12	
v/c Ratio		1.10						0.38			0.23	
Uniform Delay, d1		16.0						6.1			5.6	
Progression Factor		1.00						1.00			1.85	
Incremental Delay, d2		57.5						1.4			0.7	
Delay (s)		73.5						7.6			11.1	
Level of Service		E						A			B	
Approach Delay (s)		73.5			0.0			7.6			11.1	
Approach LOS		E			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			58.7									E
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			66.2%									C
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK




















	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	920	334	629
v/c Ratio	0.63	0.47	0.86
Control Delay	18.9	6.5	11.2
Queue Delay	0.0	0.9	9.7
Total Delay	18.9	7.4	20.9
Queue Length 50th (ft)	98	37	78
Queue Length 95th (ft)	132	m33	m69
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1459	711	733
Starvation Cap Reductn	0	165	86
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.63	0.61	0.97

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 40: 5th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  								 	 	
Volume (vph)	0	763	47	0	0	0	0	0	0	548	242	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.95	0.95	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.99	0.99	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	0.97	
Satd. Flow (prot)		4344								1306	1348	
Flt Permitted		1.00								0.95	0.97	
Satd. Flow (perm)		4344								1306	1348	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	867	53	0	0	0	0	0	0	668	295	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	15	15	0
Lane Group Flow (vph)	0	909	0	0	0	0	0	0	0	319	614	0
Confl. Peds. (#/hr)			4							16		
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		20.0								32.0	32.0	
Effective Green, g (s)		20.0								32.0	32.0	
Actuated g/C Ratio		0.33								0.53	0.53	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		1448								697	719	
v/s Ratio Prot		c0.21										
v/s Ratio Perm										0.24	0.46	
v/c Ratio		0.63								0.46	0.85	
Uniform Delay, d1		16.9								8.6	12.0	
Progression Factor		1.00								0.76	0.64	
Incremental Delay, d2		2.1								0.2	1.3	
Delay (s)		18.9								6.8	9.0	
Level of Service		B								A	A	
Approach Delay (s)		18.9			0.0			0.0			8.2	
Approach LOS		B			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.5								B	
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			79.0%								D	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: AM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1359	877	157
v/c Ratio	0.62	1.79	0.45
Control Delay	9.6	382.8	20.2
Queue Delay	0.0	0.0	0.0
Total Delay	9.6	382.8	20.2
Queue Length 50th (ft)	80	~367	45
Queue Length 95th (ft)	115	#550	76
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2180	490	348
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	1.79	0.45

**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.

HCM Signalized Intersection Capacity Analysis  
41: 5th Street & Oak Street













Cumulative 2035 + Project  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	498	678	129	0	0	0	0	699	99	1	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Fr		0.99						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4401						1437			1466	
Flt Permitted		0.98						1.00			0.71	
Satd. Flow (perm)		4401						1437			1044	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	519	706	134	0	0	0	0	768	109	1	156	0
RTOR Reduction (vph)	0	30	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1329	0	0	0	0	0	866	0	0	157	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2152						479			348	
v/s Ratio Prot								c0.60				
v/s Ratio Perm		0.30									0.15	
v/c Ratio		0.62						1.81			0.45	
Uniform Delay, d1		8.4						15.0			11.8	
Progression Factor		1.00						1.00			1.28	
Incremental Delay, d2		1.3						371.5			3.8	
Delay (s)		9.8						386.5			18.9	
Level of Service		A						F			B	
Approach Delay (s)		9.8			0.0			386.5			18.9	
Approach LOS		A			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			148.4								HCM Level of Service	F
HCM Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			45.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			85.1%								ICU Level of Service	E
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 42: Embarcadero W & Oak Street

Cumulative 2035 + Project  
 Timing Plan: AM PEAK

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Volume (veh/h)	0	0	0	0	0	0	
Sign Control	Stop			Free		Free	
Grade	0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	0	0	0	0	0	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)						1112	
pX, platoon unblocked							
vC, conflicting volume	0	0	0				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	0	0				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	100	100				
cM capacity (veh/h)	1023	1084	1622				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			0.0%			ICU Level of Service	
Analysis Period (min)			15				



## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	8.8	35.0	0.15	15.0	C
Madison Street	IV	25	18.9	12.9	31.8	0.07	8.1	E
Oak Street	IV	25	19.3	8.8	28.1	0.07	9.3	D
Total	IV		64.4	30.5	94.9	0.29	11.0	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	341.4	357.4	0.06	0.6	F
Madison Street	IV	25	19.5	238.4	257.9	0.07	1.0	F
Jackson Street	IV	25	18.8	306.2	325.0	0.07	0.8	F
Alice Street	IV	25	19.7	18.3	38.0	0.07	7.1	E
Harrison Street	IV	25	19.0	301.9	320.9	0.07	0.8	F
Webster Street	IV	25	18.8	402.3	421.1	0.07	0.6	F
Total	IV		111.8	1608.5	1720.3	0.42	0.9	F

## Arterial Level of Service: SB Madison Street









Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	6.9	22.2	0.06	9.4	D
9th Street	IV	25	13.2	7.5	20.7	0.05	8.7	E
8th Street	IV	25	13.9	10.2	24.1	0.05	7.8	E
7th Street	IV	25	13.6	173.8	187.4	0.05	1.0	F
Total	IV		56.0	198.4	254.4	0.21	3.0	F

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	3.9	17.4	0.05	10.5	D
9th Street	IV	25	14.7	2.7	17.4	0.06	11.4	D
10th St	IV	25	13.3	2.7	16.0	0.05	11.3	D
11th St	IV	25	14.7	10.8	25.5	0.06	7.8	E
12th St	IV	25	12.5	23.8	36.3	0.05	4.7	F
Total	IV		68.7	43.9	112.6	0.26	8.3	E

Queues  
1: W Grand Ave & Broadway

Cumulative 2035 + Project  
Timing Plan: PM PEAK

								
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	338	2191	1836	367	991	276	93	618
v/c Ratio	4.28	1.44	3.00dl	1.54	0.73	0.60	0.82	0.48
Control Delay	1516.4	226.1	622.4	288.0	24.5	25.4	73.5	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1516.4	226.1	622.4	288.0	24.5	25.4	73.5	19.0
Queue Length 50th (ft)	~301	~855	~867	~279	226	110	43	120
Queue Length 95th (ft)	#201	291	#422	#446	300	195	#130	162
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	79	1519	787	238	1349	462	114	1284
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	4.28	1.44	2.33	1.54	0.73	0.60	0.82	0.48

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
1: W Grand Ave & Broadway

Cumulative 2035 + Project  
Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	156	957	73	124	690	67	1	337	912	254	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frb, ped/bikes		1.00	1.00			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		1.00	1.00			1.00			0.99	1.00	1.00	
Frt		1.00	0.99			0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1593	3136			3111			1571	3185	1087	
Flt Permitted		0.10	1.00			0.52			0.34	1.00	1.00	
Satd. Flow (perm)		164	3136			1617			560	3185	1087	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	332	2036	155	258	1438	140	1	366	991	276	1
RTOR Reduction (vph)	0	0	7	0	0	7	0	0	0	0	1	0
Lane Group Flow (vph)	0	338	2184	0	0	1829	0	0	367	991	275	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Effective Green, g (s)		41.0	41.0			41.0			36.0	36.0	36.0	
Actuated g/C Ratio		0.48	0.48			0.48			0.42	0.42	0.42	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		79	1513			780			237	1349	460	
v/s Ratio Prot			0.70							0.31		
v/s Ratio Perm		c2.07				1.13			c0.66		0.25	
v/c Ratio		4.28	1.44			3.00dl			1.55	0.73	0.60	
Uniform Delay, d1		22.0	22.0			22.0			24.5	20.5	18.9	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		1504.5	203.4			609.0			266.7	3.6	5.6	
Delay (s)		1526.5	225.4			631.0			291.2	24.1	24.5	
Level of Service		F	F			F			F	C	C	
Approach Delay (s)			399.3			631.0				84.2		
Approach LOS			F			F				F		

Intersection Summary		
HCM Average Control Delay	346.4	HCM Level of Service F
HCM Volume to Capacity ratio	3.00	
Actuated Cycle Length (s)	85.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	119.3%	ICU Level of Service H
Analysis Period (min)	15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035 + Project  
 Timing Plan: PM PEAK










Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	81	405	139
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.99	
Flpb, ped/bikes	0.99	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1580	3017	
Flt Permitted	0.16	1.00	
Satd. Flow (perm)	267	3017	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	92	460	158
RTOR Reduction (vph)	0	6	0
Lane Group Flow (vph)	93	612	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	36.0	36.0	
Effective Green, g (s)	36.0	36.0	
Actuated g/C Ratio	0.42	0.42	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	113	1278	
v/s Ratio Prot		0.20	
v/s Ratio Perm	0.35		
v/c Ratio	0.82	0.48	
Uniform Delay, d1	21.7	17.7	
Progression Factor	1.00	1.00	
Incremental Delay, d2	46.7	1.3	
Delay (s)	68.4	19.0	
Level of Service	E	B	
Approach Delay (s)		25.5	
Approach LOS		C	

Intersection Summary













Queues  
2: 20th St & Kaiser DWY

Cumulative 2035 + Project  
Timing Plan: PM PEAK

							
Lane Group	EBT	WBL	WBT	WBR	NBT	NBR	SBR
Lane Group Flow (vph)	357	212	165	2	444	427	34
v/c Ratio	0.32	0.30	0.14	0.01	0.71	0.61	0.06
Control Delay	20.2	23.8	15.7	11.0	18.9	6.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	23.8	15.7	11.0	18.9	6.3	0.2
Queue Length 50th (ft)	41	39	24	0	96	0	0
Queue Length 95th (ft)	62	59	40	4	190	49	0
Internal Link Dist (ft)	337		517		577		
Turn Bay Length (ft)		120		90			
Base Capacity (vph)	1106	706	1138	348	621	698	570
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.30	0.14	0.01	0.71	0.61	0.06
<b>Intersection Summary</b>							

HCM Signalized Intersection Capacity Analysis  
2: 20th St & Kaiser DWY

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑	↑		↔	↑			↑
Volume (vph)	0	269	42	172	134	2	104	12	633	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.91		0.97	0.95	1.00		0.95	0.95			1.00
Frbp, ped/bikes		0.99		1.00	1.00	0.71		1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.98		1.00	1.00	0.85		0.90	0.85			0.86
Flt Protected		1.00		0.95	1.00	1.00		0.99	1.00			1.00
Satd. Flow (prot)		4433		3090	3185	971		1407	1185			1450
Flt Permitted		1.00		0.95	1.00	1.00		0.99	1.00			1.00
Satd. Flow (perm)		4433		3090	3185	971		1407	1185			1450
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	309	48	212	165	2	121	14	736	0	0	34
RTOR Reduction (vph)	0	30	0	0	0	1	0	118	275	0	0	30
Lane Group Flow (vph)	0	327	0	212	165	1	0	326	153	0	0	4
Confl. Peds. (#/hr)			54			181	125					
Confl. Bikes (#/hr)			9									
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5						5			
Turn Type				Prot		Perm	Split		Prot			custom
Protected Phases				2	6		8	8	8			5
Permitted Phases		1				6						
Actuated Green, G (s)		17.0		16.0	25.0	25.0		25.0	25.0			8.0
Effective Green, g (s)		17.0		16.0	25.0	25.0		25.0	25.0			8.0
Actuated g/C Ratio		0.24		0.23	0.36	0.36		0.36	0.36			0.11
Clearance Time (s)		4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Grp Cap (vph)		1077		706	1138	347		503	423			166
v/s Ratio Prot				c0.07	0.05			c0.23	0.13			0.00
v/s Ratio Perm		c0.07				0.00						
v/c Ratio		0.30		0.30	0.14	0.00		0.65	0.36			0.02
Uniform Delay, d1		21.7		22.4	15.3	14.5		18.8	16.6			27.5
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.7		1.1	0.3	0.0		6.4	2.4			0.3
Delay (s)		22.4		23.5	15.5	14.5		25.2	19.0			27.8
Level of Service		C		C	B	B		C	B			C
Approach Delay (s)		22.4			20.0			22.1			27.8	
Approach LOS		C			B			C			C	

Intersection Summary		
HCM Average Control Delay	21.8	HCM Level of Service C
HCM Volume to Capacity ratio	0.45	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	57.3%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

Queues  
3: 19th St & Lakeside Dr

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	WBT	WBR	SBT
Lane Group Flow (vph)	83	1348	1293
v/c Ratio	0.13	1.09	0.54
Control Delay	16.4	62.0	13.0
Queue Delay	0.0	0.0	0.0
Total Delay	16.4	62.0	13.0
Queue Length 50th (ft)	10	-58	0
Queue Length 95th (ft)	30	#713	#495
Internal Link Dist (ft)	259		346
Turn Bay Length (ft)			
Base Capacity (vph)	1120	1234	2410
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.07	1.09	0.54













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.



HCM Signalized Intersection Capacity Analysis  
3: 19th St & Lakeside Dr

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↗					↑↑	
Volume (vph)	0	0	0	0	75	1213	0	0	0	0	1135	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	4.0					3.0	
Lane Util. Factor					0.95	1.00					0.95	
Frb, ped/bikes					1.00	1.00					1.00	
Flpb, ped/bikes					1.00	1.00					1.00	
Frt					1.00	0.85					1.00	
Flt Protected					1.00	1.00					1.00	
Satd. Flow (prot)					3185	1247					3177	
Flt Permitted					1.00	1.00					1.00	
Satd. Flow (perm)					3185	1247					3177	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	83	1348	0	0	0	0	1275	18
RTOR Reduction (vph)	0	0	0	0	0	186	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	83	1162	0	0	0	0	1292	0
Confl. Peds. (#/hr)				22								22
Parking (#/hr)						5						5
Turn Type					custom							
Protected Phases					2						1	
Permitted Phases						3						
Actuated Green, G (s)					6.2	44.4					35.7	
Effective Green, g (s)					6.2	44.4					35.7	
Actuated g/C Ratio					0.12	0.83					0.67	
Clearance Time (s)					3.5	4.0					3.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					369	1035					2120	
v/s Ratio Prot					0.03						0.41	
v/s Ratio Perm						c0.93						
v/c Ratio					0.22	1.12					0.61	
Uniform Delay, d1					21.5	4.6					5.0	
Progression Factor					1.00	1.00					1.00	
Incremental Delay, d2					0.3	68.3					0.5	
Delay (s)					21.8	72.8					5.5	
Level of Service					C	E					A	
Approach Delay (s)		0.0			69.9			0.0			5.5	
Approach LOS		A			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			39.3		HCM Level of Service						D	
HCM Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			53.5		Sum of lost time (s)					9.1		
Intersection Capacity Utilization			86.8%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												


















Queues  
4: 17th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	248	63	1355
v/c Ratio	0.39	0.07	0.74
Control Delay	16.7	1.7	11.2
Queue Delay	0.0	0.0	33.4
Total Delay	16.7	1.7	44.5
Queue Length 50th (ft)	30	0	154
Queue Length 95th (ft)	58	11	227
Internal Link Dist (ft)	281		166
Turn Bay Length (ft)			
Base Capacity (vph)	631	880	1841
Starvation Cap Reductn	0	0	566
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.07	1.06
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
4: 17th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									 	
Volume (vph)	0	32	196	0	0	0	0	0	0	57	1233	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.95								1.00	0.95	
Frbp, ped/bikes		0.91								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.87								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		2363								1388	2986	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		2363								1388	2986	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	35	213	0	0	0	0	0	0	63	1355	0
RTOR Reduction (vph)	0	40	0	0	0	0	0	0	0	24	0	0
Lane Group Flow (vph)	0	208	0	0	0	0	0	0	0	39	1355	0
Confl. Peds. (#/hr)	34		78							8		18
Confl. Bikes (#/hr)			4						1			
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		2										1
Permitted Phases										1		
Actuated Green, G (s)		15.0								37.0	37.0	
Effective Green, g (s)		15.0								37.0	37.0	
Actuated g/C Ratio		0.25								0.62	0.62	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		591								856	1841	
v/s Ratio Prot		c0.09									c0.45	
v/s Ratio Perm										0.03		
v/c Ratio		0.35								0.05	0.74	
Uniform Delay, d1		18.5								4.5	8.1	
Progression Factor		1.00								1.00	1.00	
Incremental Delay, d2		1.6								0.1	2.7	
Delay (s)		20.2								4.6	10.7	
Level of Service		C								A	B	
Approach Delay (s)		20.2			0.0			0.0			10.5	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.9								HCM Level of Service	B
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			86.8%								ICU Level of Service	E
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
5: 14th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	731	815	1825
v/c Ratio	0.41	0.61	2.22
Control Delay	7.4	17.8	574.4
Queue Delay	0.0	0.1	123.5
Total Delay	7.4	17.8	697.9
Queue Length 50th (ft)	64	108	~614
Queue Length 95th (ft)	95	145	#686
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1800	1343	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	46	34	487
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.62	5.46



















**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.

# HCM Signalized Intersection Capacity Analysis

## 5: 14th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 						 		
Volume (vph)	0	573	122	126	550	0	0	0	0	398	1119	16	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0			3.0						4.5		
Lane Util. Factor		0.95			0.95						0.95		
Frbp, ped/bikes		0.98			1.00						1.00		
Flpb, ped/bikes		1.00			0.99						0.98		
Frt		0.97			1.00						1.00		
Flt Protected		1.00			0.99						0.99		
Satd. Flow (prot)		3040			3137						2893		
Flt Permitted		1.00			0.72						0.99		
Satd. Flow (perm)		3040			2269						2893		
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84	
Adj. Flow (vph)	0	603	128	152	663	0	0	0	0	474	1332	19	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	731	0	0	815	0	0	0	0	0	1824	0	
Confl. Peds. (#/hr)	122		88	88		122				52		45	
Confl. Bikes (#/hr)			16									10	
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0	
Parking (#/hr)			5			5				5	5	5	
Turn Type				Perm							Perm		
Protected Phases		4			4							2	
Permitted Phases				4							2		
Actuated Green, G (s)		35.5			35.5							17.0	
Effective Green, g (s)		35.5			35.5							17.0	
Actuated g/C Ratio		0.59			0.59							0.28	
Clearance Time (s)		3.0			3.0							4.5	
Lane Grp Cap (vph)		1799			1342							820	
v/s Ratio Prot		0.24											
v/s Ratio Perm					c0.36							0.63	
v/c Ratio		0.41			0.61							2.22	
Uniform Delay, d1		6.6			7.8							21.5	
Progression Factor		1.00			2.00							1.38	
Incremental Delay, d2		0.7			1.4							553.9	
Delay (s)		7.3			17.0							583.7	
Level of Service		A			B							F	
Approach Delay (s)		7.3			17.0			0.0				583.7	
Approach LOS		A			B			A				F	
<b>Intersection Summary</b>													
HCM Average Control Delay			321.7									HCM Level of Service	F
HCM Volume to Capacity ratio			1.13										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	7.5
Intersection Capacity Utilization			102.1%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

Queues  
6: 14th St & Lakeside Dr

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1056	671	948	822	82
v/c Ratio	1.77	0.79	1.89	0.46	0.12
Control Delay	369.9	29.0	427.6	12.7	10.6
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	369.9	29.0	427.6	12.9	10.6
Queue Length 50th (ft)	~324	117	~495	94	17
Queue Length 95th (ft)	m#278	148	#595	140	40
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	596	849	501	1775	687
Starvation Cap Reductn	0	0	0	309	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.77	0.79	1.89	0.56	0.12













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.

# HCM Signalized Intersection Capacity Analysis

## 6: 14th St & Lakeside Dr

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕↕	↗		↔↔	↗			
Volume (vph)	53	918	0	0	537	758	139	634	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.94		1.00	0.97			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2916			3185	1333		3133	1209			
Flt Permitted		0.76			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2233			3185	1333		3133	1209			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	58	998	0	0	671	948	148	674	82	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	145	0	0	2	0	0	0
Lane Group Flow (vph)	0	1056	0	0	671	803	0	822	80	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		16.0			16.0	16.0		34.0	34.0			
Effective Green, g (s)		16.0			16.0	16.0		34.0	34.0			
Actuated g/C Ratio		0.27			0.27	0.27		0.57	0.57			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		595			849	355		1775	685			
v/s Ratio Prot					0.21							
v/s Ratio Perm		0.47				c0.60		0.26	0.07			
v/c Ratio		1.77			0.79	2.26		0.46	0.12			
Uniform Delay, d1		22.0			20.4	22.0		7.6	6.0			
Progression Factor		1.02			1.00	1.00		1.51	1.73			
Incremental Delay, d2		349.3			7.4	576.6		0.8	0.3			
Delay (s)		371.8			27.9	598.6		12.4	10.7			
Level of Service		F			C	F		B	B			
Approach Delay (s)		371.8			362.0			12.2			0.0	
Approach LOS		F			F			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay		276.5										F
HCM Volume to Capacity ratio		1.04										
Actuated Cycle Length (s)		60.0										10.0
Intersection Capacity Utilization		125.9%										H
Analysis Period (min)		15										

c Critical Lane Group

Queues  
7: 13th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1183	1776
v/c Ratio	0.82	1.00
Control Delay	26.1	24.3
Queue Delay	0.0	278.2
Total Delay	26.1	302.5
Queue Length 50th (ft)	113	379
Queue Length 95th (ft)	121	m191
Internal Link Dist (ft)	286	153
Turn Bay Length (ft)		
Base Capacity (vph)	1444	1776
Starvation Cap Reductn	0	694
Spillback Cap Reductn	4	375
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.82	1.64


















**Intersection Summary**

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



HCM Signalized Intersection Capacity Analysis  
7: 13th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  									 	
Volume (vph)	0	683	228	0	0	0	0	0	0	163	1204	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									3.5	
Lane Util. Factor		0.86									0.95	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5340									2954	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5340									2954	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	887	296	0	0	0	0	0	0	212	1564	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1162	0	0	0	0	0	0	0	0	1772	0
Confl. Peds. (#/hr)	14		11							38		28
Confl. Bikes (#/hr)			4									8
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		16.0									36.0	
Effective Green, g (s)		16.0									36.0	
Actuated g/C Ratio		0.27									0.60	
Clearance Time (s)		4.5									3.5	
Lane Grp Cap (vph)		1424									1772	
v/s Ratio Prot		c0.22										
v/s Ratio Perm											0.60	
v/c Ratio		0.82									1.00	
Uniform Delay, d1		20.6									12.0	
Progression Factor		1.00									1.34	
Incremental Delay, d2		5.3									6.4	
Delay (s)		25.9									22.5	
Level of Service		C									C	
Approach Delay (s)		25.9			0.0			0.0			22.5	
Approach LOS		C			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.8								HCM Level of Service	C
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			64.8%								ICU Level of Service	C
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
8: 13th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	↖	→	↑
Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	194	999	1064
v/c Ratio	0.42	0.85	0.43
Control Delay	18.7	36.3	1.3
Queue Delay	0.0	0.0	0.0
Total Delay	18.7	36.3	1.3
Queue Length 50th (ft)	37	124	9
Queue Length 95th (ft)	m44	128	m9
Internal Link Dist (ft)		132	231
Turn Bay Length (ft)	50		
Base Capacity (vph)	460	1170	2467
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	4
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.85	0.43




















**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 8: 13th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  				
Volume (vph)	138	709	0	0	0	0	0	651	360	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0						3.0				
Lane Util. Factor	1.00	0.91						0.91				
Frbp, ped/bikes	1.00	1.00						0.99				
Flpb, ped/bikes	0.98	1.00						1.00				
Frft	1.00	1.00						0.95				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1367	4386						4106				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1367	4386						4106				
Peak-hour factor, PHF	0.71	0.71	0.71	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	194	999	0	0	0	0	0	685	379	0	0	0
RTOR Reduction (vph)	95	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	99	999	0	0	0	0	0	1062	0	0	0	0
Confl. Peds. (#/hr)	17		17				86		18			
Confl. Bikes (#/hr)			1						27			
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)	16.0	16.0						36.0				
Effective Green, g (s)	16.0	16.0						36.0				
Actuated g/C Ratio	0.27	0.27						0.60				
Clearance Time (s)	5.0	5.0						3.0				
Lane Grp Cap (vph)	365	1170						2464				
v/s Ratio Prot		c0.23						c0.26				
v/s Ratio Perm	0.07											
v/c Ratio	0.27	0.85						0.43				
Uniform Delay, d1	17.4	20.9						6.5				
Progression Factor	2.28	1.46						0.20				
Incremental Delay, d2	1.1	4.9						0.0				
Delay (s)	40.7	35.4						1.3				
Level of Service	D	D						A				
Approach Delay (s)		36.2			0.0			1.3			0.0	
Approach LOS		D			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.8				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			108.9%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
9: 13th St & Lake Merritt Blvd

Cumulative 2035 + Project  
Timing Plan: PM PEAK















Lane Group	EBT	EBR	WBR	SBL
Lane Group Flow (vph)	613	51	1506	1309
v/c Ratio	0.54	0.11	0.69	0.91
Control Delay	13.8	4.5	10.5	23.3
Queue Delay	3.9	0.0	1.0	234.9
Total Delay	17.7	4.5	11.4	258.3
Queue Length 50th (ft)	64	0	387	146
Queue Length 95th (ft)	97	15	m432	164
Internal Link Dist (ft)	86			
Turn Bay Length (ft)				
Base Capacity (vph)	1132	476	2194	1442
Starvation Cap Reductn	0	0	394	0
Spillback Cap Reductn	422	0	0	584
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.11	0.84	1.53

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 9: 13th St & Lake Merritt Blvd

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗			↖↖				↖↖		
Volume (vph)	0	533	44	0	0	1295	0	0	0	995	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0				4.0		
Lane Util. Factor		0.95	1.00			0.88				0.97		
Frbp, ped/bikes		1.00	1.00			1.00				1.00		
Flpb, ped/bikes		1.00	1.00			1.00				1.00		
Fr		1.00	0.85			0.85				1.00		
Flt Protected		1.00	1.00			1.00				0.95		
Satd. Flow (prot)		3185	1247			2508				3090		
Flt Permitted		1.00	1.00			1.00				0.95		
Satd. Flow (perm)		3185	1247			2508				3090		
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.25	0.25	0.25	0.76	0.76	0.76
Adj. Flow (vph)	0	613	51	0	0	1506	0	0	0	1309	0	0
RTOR Reduction (vph)	0	0	33	0	0	803	0	0	0	0	0	0
Lane Group Flow (vph)	0	613	18	0	0	703	0	0	0	1309	0	0
Confl. Peds. (#/hr)	20					20						
Parking (#/hr)			5									
Turn Type		custom				Over				Prot		
Protected Phases						6				6		
Permitted Phases		4	4									
Actuated Green, G (s)		16.0	16.0			21.0				21.0		
Effective Green, g (s)		16.0	16.0			21.0				21.0		
Actuated g/C Ratio		0.36	0.36			0.47				0.47		
Clearance Time (s)		4.0	4.0			4.0				4.0		
Lane Grp Cap (vph)		1132	443			1170				1442		
v/s Ratio Prot						0.28				c0.42		
v/s Ratio Perm		c0.19	0.01									
v/c Ratio		0.54	0.04			0.60				0.91		
Uniform Delay, d1		11.6	9.5			8.9				11.1		
Progression Factor		1.00	1.00			1.00				1.00		
Incremental Delay, d2		1.9	0.2			1.0				9.9		
Delay (s)		13.4	9.7			9.9				21.0		
Level of Service		B	A			A				C		
Approach Delay (s)		13.1			9.9			0.0			21.0	
Approach LOS		B			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.7			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			55.6%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Cumulative 2035 + Project  
Timing Plan: PM PEAK














	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	184	652	542	1535
v/c Ratio	0.03	0.37	0.47	0.48	1.83
Control Delay	0.0	18.3	25.2	24.5	400.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	18.3	25.2	24.5	400.1
Queue Length 50th (ft)	0	51	102	76	-646
Queue Length 95th (ft)	0	98	128	109	#776
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	440	494	1400	1121	841
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.37	0.47	0.48	1.83

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	156	554	385	108	1275	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.98	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1337	1485	4577	4195		3039	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1337	1485	4577	4195		3039	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	184	652	423	119	1328	207
RTOR Reduction (vph)	8	40	0	60	0	0	0
Lane Group Flow (vph)	4	144	652	482	0	1535	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	26.0	26.0	26.0	21.5		23.5	
Effective Green, g (s)	26.0	26.0	26.0	21.5		23.5	
Actuated g/C Ratio	0.31	0.31	0.31	0.25		0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	409	454	1400	1061		840	
v/s Ratio Prot			c0.14	c0.11		c0.51	
v/s Ratio Perm	0.00	0.10					
v/c Ratio	0.01	0.32	0.47	0.45		1.83	
Uniform Delay, d1	20.5	22.7	23.9	26.8		30.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.8	1.1	1.4		377.0	
Delay (s)	20.6	24.5	25.0	28.2		407.7	
Level of Service	C	C	C	C		F	
Approach Delay (s)			24.9	28.2		407.7	
Approach LOS			C	C		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			226.4		HCM Level of Service		F
HCM Volume to Capacity ratio			0.91				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			83.7%		ICU Level of Service		E
Analysis Period (min)			15				

c Critical Lane Group

Queues  
11: 12th St & Broadway

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1417	84	443	905
v/c Ratio	0.97	0.71	0.28	0.83
Control Delay	37.4	61.5	9.0	25.5
Queue Delay	0.0	0.0	0.0	1.6
Total Delay	37.4	61.5	9.0	27.0
Queue Length 50th (ft)	176	31	44	146
Queue Length 95th (ft)	166	#94	69	#210
Internal Link Dist (ft)	310		185	208
Turn Bay Length (ft)		90		
Base Capacity (vph)	1468	119	1587	1086
Starvation Cap Reductn	0	0	0	69
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.71	0.28	0.89













Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
 11: 12th St & Broadway

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑↑			↑↑		
Volume (vph)	0	0	0	134	770	117	76	403	0	0	669	109	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.5			4.5		
Lane Util. Factor					0.91		1.00	0.95			0.95		
Frbp, ped/bikes					0.99		1.00	1.00			0.95		
Flpb, ped/bikes					0.99		1.00	1.00			1.00		
Frt					0.98		1.00	1.00			0.98		
Flt Protected					0.99		0.95	1.00			1.00		
Satd. Flow (prot)					4140		1593	3122			2904		
Flt Permitted					0.99		0.95	1.00			1.00		
Satd. Flow (perm)					4140		1593	3122			2904		
Peak-hour factor, PHF	0.92	0.92	0.92	0.72	0.72	0.72	0.91	0.91	0.91	0.86	0.86	0.86	
Adj. Flow (vph)	0	0	0	186	1069	162	84	443	0	0	778	127	
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	22	0	
Lane Group Flow (vph)	0	0	0	0	1398	0	84	443	0	0	883	0	
Confl. Peds. (#/hr)				125		48	446		455	455		446	
Confl. Bikes (#/hr)						6			10			9	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	10	0	0	10	10	
Parking (#/hr)				5	5	5							
Turn Type					Perm			Prot					
Protected Phases						4		5	2			6	
Permitted Phases				4									
Actuated Green, G (s)					21.0		4.5	30.5			22.0		
Effective Green, g (s)					21.0		4.5	30.5			22.0		
Actuated g/C Ratio					0.35		0.08	0.51			0.37		
Clearance Time (s)					4.0		4.0	4.5			4.5		
Lane Grp Cap (vph)					1449		119	1587			1065		
v/s Ratio Prot							c0.05	0.14			c0.30		
v/s Ratio Perm					0.34								
v/c Ratio					0.96		0.71	0.28			0.83		
Uniform Delay, d1					19.1		27.1	8.5			17.3		
Progression Factor					1.00		1.00	1.00			1.00		
Incremental Delay, d2					16.6		29.7	0.4			7.5		
Delay (s)					35.7		56.8	8.9			24.8		
Level of Service					D		E	A			C		
Approach Delay (s)		0.0			35.7			16.5			24.8		
Approach LOS		A			D			B			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			28.7		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					12.5			
Intersection Capacity Utilization			63.7%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
12: 12th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1960	1288	459
v/c Ratio	0.69	1.23	1.11
Control Delay	5.6	130.3	84.8
Queue Delay	0.1	17.9	0.0
Total Delay	5.8	148.2	84.8
Queue Length 50th (ft)	47	~309	~128
Queue Length 95th (ft)	m54	m#319	m#138
Internal Link Dist (ft)	319	229	
Turn Bay Length (ft)			
Base Capacity (vph)	2833	1045	413
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	180	33	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.74	1.27	1.11

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.

HCM Signalized Intersection Capacity Analysis  
 12: 12th St & Madison Street

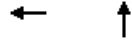
Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4↑↑↑						↑↑	↑
Volume (vph)	0	0	0	379	1306	0	0	0	0	0	1056	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						4.0	4.0
Lane Util. Factor					0.86						0.95	1.00
Frbp, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					0.99						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					5389						2986	1155
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					5389						2986	1155
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	441	1519	0	0	0	0	0	1288	459
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1957	0	0	0	0	0	1288	450
Confl. Peds. (#/hr)				69		76						45
Confl. Bikes (#/hr)						5						15
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0
Parking (#/hr)				5	5						5	5
Turn Type					Perm							Perm
Protected Phases						6						4
Permitted Phases				6								4
Actuated Green, G (s)						31.5					21.0	21.0
Effective Green, g (s)						31.5					21.0	21.0
Actuated g/C Ratio						0.52					0.35	0.35
Clearance Time (s)						3.5					4.0	4.0
Lane Grp Cap (vph)						2829					1045	404
v/s Ratio Prot											c0.43	
v/s Ratio Perm						0.36						0.39
v/c Ratio						0.69					1.23	1.11
Uniform Delay, d1						10.6					19.5	19.5
Progression Factor						0.42					1.06	1.07
Incremental Delay, d2						1.1					107.2	61.4
Delay (s)						5.5					127.7	82.3
Level of Service						A					F	F
Approach Delay (s)		0.0				5.5		0.0			115.8	
Approach LOS		A				A		A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			57.5			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			7.5			
Intersection Capacity Utilization			66.5%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
13: 12th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK





















Lane Group	WBT	NBT
Lane Group Flow (vph)	1873	1262
v/c Ratio	0.60	1.13
Control Delay	9.3	92.9
Queue Delay	0.2	7.9
Total Delay	9.5	100.8
Queue Length 50th (ft)	112	~200
Queue Length 95th (ft)	127	#277
Internal Link Dist (ft)	266	169
Turn Bay Length (ft)		
Base Capacity (vph)	3128	1120
Starvation Cap Reductn	457	18
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	1.15

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.

HCM Signalized Intersection Capacity Analysis  
 13: 12th St & Oak Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Volume (vph)	0	0	0	0	1493	81	192	931	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.5			4.0				
Lane Util. Factor					0.86			0.91				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.97				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5442			4154				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5442			4154				
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1777	96	216	1046	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1873	0	0	1250	0	0	0	0
Confl. Peds. (#/hr)						140	166		148			
Bus Blockages (#/hr)	0	0	0	0	10	10	10	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					6			4				
Permitted Phases							4					
Actuated Green, G (s)					34.5			16.0				
Effective Green, g (s)					34.5			16.0				
Actuated g/C Ratio					0.58			0.27				
Clearance Time (s)					5.5			4.0				
Lane Grp Cap (vph)					3129			1108				
v/s Ratio Prot					c0.34							
v/s Ratio Perm								0.30				
v/c Ratio					0.60			1.13				
Uniform Delay, d1					8.3			22.0				
Progression Factor					1.00			1.00				
Incremental Delay, d2					0.9			69.6				
Delay (s)					9.1			91.6				
Level of Service					A			F				
Approach Delay (s)		0.0			9.1			91.6			0.0	
Approach LOS		A			A			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			42.3				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		9.5			
Intersection Capacity Utilization			58.1%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035 + Project  
Timing Plan: PM PEAK











	↘	↙	↑	↓
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	795	1689	1439	2295
v/c Ratio	0.50	1.12	0.92	1.19
Control Delay	16.9	87.0	33.1	114.2
Queue Delay	1.3	0.0	88.5	115.3
Total Delay	18.2	87.0	121.6	229.5
Queue Length 50th (ft)	128	-575	384	-584
Queue Length 95th (ft)	164	#708	#548	#655
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)		400		
Base Capacity (vph)	1589	1511	1557	1931
Starvation Cap Reductn	547	0	0	344
Spillback Cap Reductn	0	0	357	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	1.12	1.20	1.45

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.

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	700	1520	1295	2010	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		0.76	0.97	0.95	0.91	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3249	3090	3185	4573	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3249	3090	3185	4573	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	795	1689	1439	2284	11
RTOR Reduction (vph)	0	1	0	0	1	0
Lane Group Flow (vph)	0	794	1689	1439	2294	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		44.0	44.0	44.0	38.0	
Effective Green, g (s)		44.0	44.0	44.0	38.0	
Actuated g/C Ratio		0.49	0.49	0.49	0.42	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		1588	1511	1557	1931	
v/s Ratio Prot		0.24	c0.55	0.45	c0.50	
v/s Ratio Perm						
v/c Ratio		0.50	1.12	0.92	1.19	
Uniform Delay, d1		15.6	23.0	21.4	26.0	
Progression Factor		1.00	1.00	1.00	0.94	
Incremental Delay, d2		1.1	62.6	10.7	88.9	
Delay (s)		16.7	85.6	32.2	113.2	
Level of Service		B	F	C	F	
Approach Delay (s)	16.7			61.0	113.2	
Approach LOS	B			E	F	
<b>Intersection Summary</b>						
HCM Average Control Delay			74.6		HCM Level of Service	E
HCM Volume to Capacity ratio			1.15			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			98.2%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
15: International Blvd & Lake Merritt Blvd

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	485	91	1379	671	1803
v/c Ratio	0.46	0.23	0.63	0.41	1.22
Control Delay	27.0	17.2	12.5	1.4	124.3
Queue Delay	0.0	0.0	55.2	0.6	0.0
Total Delay	27.0	17.2	67.7	2.0	124.3
Queue Length 50th (ft)	113	24	235	0	-667
Queue Length 95th (ft)	155	59	300	21	#720
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)	100	100			
Base Capacity (vph)	1049	400	2182	1632	1482
Starvation Cap Reductn	0	0	945	543	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.23	1.11	0.62	1.22
















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.



HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 
Volume (vph)	427	80	1324	644	62	1452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	0.88		0.95
Frpb, ped/bikes	1.00	0.93	1.00	0.82		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Fr t	1.00	0.85	1.00	0.85		1.00
Fl t Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	1232	3539	2230		3245
Fl t Permitted	0.95	1.00	1.00	1.00		0.74
Satd. Flow (perm)	3433	1232	3539	2230		2403
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.84	0.84
Adj. Flow (vph)	485	91	1379	671	74	1729
RTOR Reduction (vph)	0	24	0	257	0	0
Lane Group Flow (vph)	485	67	1379	414	0	1803
Confl. Peds. (#/hr)		63		103		
Confl. Bikes (#/hr)				33		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	27.5	27.5	55.5	55.5		55.5
Effective Green, g (s)	27.5	27.5	55.5	55.5		55.5
Actuated g/C Ratio	0.31	0.31	0.62	0.62		0.62
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	1049	376	2182	1375		1482
v/s Ratio Prot	c0.14		0.39			
v/s Ratio Perm		0.05		0.19		c0.75
v/c Ratio	0.46	0.18	0.63	0.30		1.22
Uniform Delay, d1	25.3	23.0	10.8	8.1		17.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.5	1.0	1.4	0.6		103.9
Delay (s)	26.7	24.0	12.2	8.7		121.1
Level of Service	C	C	B	A		F
Approach Delay (s)	26.3		11.1			121.1
Approach LOS	C		B			F

Intersection Summary			
HCM Average Control Delay		57.9	HCM Level of Service E
HCM Volume to Capacity ratio		0.97	
Actuated Cycle Length (s)		90.0	Sum of lost time (s) 7.0
Intersection Capacity Utilization		111.0%	ICU Level of Service H
Analysis Period (min)		15	

c Critical Lane Group

Queues  
16: E 18th St & Lakeshore Ave

Cumulative 2035 + Project  
Timing Plan: PM PEAK


















Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	455	28	1217	118	269
v/c Ratio	0.34	0.05	0.72	0.62	0.15
Control Delay	15.1	5.7	7.0	44.0	8.3
Queue Delay	0.0	0.0	0.4	0.0	0.0
Total Delay	15.1	5.7	7.4	44.0	8.3
Queue Length 50th (ft)	63	0	43	46	26
Queue Length 95th (ft)	90	12	104	#107	43
Internal Link Dist (ft)	677		204		677
Turn Bay Length (ft)		100		200	
Base Capacity (vph)	1320	555	1692	191	1814
Starvation Cap Reductn	0	0	130	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.05	0.78	0.62	0.15

Intersection Summary

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





HCM Signalized Intersection Capacity Analysis  
 16: E 18th St & Lakeshore Ave

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Volume (vph)	387	24	265	843	104	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.97	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.92	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.89		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1398	3026		1770	3468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1398	3026		1770	3468
Peak-hour factor, PHF	0.85	0.85	0.91	0.91	0.88	0.88
Adj. Flow (vph)	455	28	291	926	118	269
RTOR Reduction (vph)	0	17	574	0	0	0
Lane Group Flow (vph)	455	11	643	0	118	269
Confl. Peds. (#/hr)	28	89		24	24	
Confl. Bikes (#/hr)				25		
Bus Blockages (#/hr)	0	10	0	10	0	10
Turn Type		Perm			Prot	
Protected Phases	4		2		1	1 2
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0	24.0		7.0	34.0
Effective Green, g (s)	25.0	25.0	24.0		7.0	34.0
Actuated g/C Ratio	0.38	0.38	0.37		0.11	0.52
Clearance Time (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	1320	538	1117		191	1814
v/s Ratio Prot	c0.13		c0.21		c0.07	0.08
v/s Ratio Perm		0.01				
v/c Ratio	0.34	0.02	0.58		0.62	0.15
Uniform Delay, d1	14.2	12.4	16.4		27.7	8.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.1	2.2		14.1	0.2
Delay (s)	14.9	12.5	18.6		41.8	8.2
Level of Service	B	B	B		D	A
Approach Delay (s)	14.8		18.6			18.4
Approach LOS	B		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			17.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			72.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
17: 11th St & Castro St

Cumulative 2035 + Project  
Timing Plan: PM PEAK
















				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	187	774	2202	175
v/c Ratio	0.43	0.53	1.34	0.32
Control Delay	12.2	27.9	183.0	32.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.2	27.9	183.0	32.0
Queue Length 50th (ft)	27	108	~573	42
Queue Length 95th (ft)	85	131	#602	65
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	430	1470	1644	548
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.53	1.34	0.32

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.

HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

						
Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations		  	  		 	
Volume (vph)	159	658	1766	84	111	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.95	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1229	5432	4351		3005	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1229	5432	4351		3005	
Peak-hour factor, PHF	0.85	0.85	0.84	0.84	0.83	0.83
Adj. Flow (vph)	187	774	2102	100	134	41
RTOR Reduction (vph)	97	0	6	0	0	0
Lane Group Flow (vph)	90	774	2196	0	175	0
Confl. Peds. (#/hr)	39			8		8
Confl. Bikes (#/hr)				1		
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	23.0	23.0	32.0		15.5	
Effective Green, g (s)	23.0	23.0	32.0		15.5	
Actuated g/C Ratio	0.27	0.27	0.38		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	333	1470	1638		548	
v/s Ratio Prot			c0.50		c0.06	
v/s Ratio Perm	0.07	0.14				
v/c Ratio	0.27	0.53	1.34		0.32	
Uniform Delay, d1	24.4	26.4	26.5		30.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.0	1.4	157.4		1.5	
Delay (s)	26.4	27.7	183.9		31.7	
Level of Service	C	C	F		C	
Approach Delay (s)		27.5	183.9		31.7	
Approach LOS		C	F		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			130.9		HCM Level of Service	F
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			85.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			76.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
18: 11th St & Broadway

Cumulative 2035 + Project  
Timing Plan: PM PEAK























	→	↘	↑	↙	↓
Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	868	147	474	188	683
v/c Ratio	0.79	0.25	0.56	1.08	0.46
Control Delay	21.9	11.8	18.6	122.2	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay	21.9	11.8	18.6	122.2	11.7
Queue Length 50th (ft)	126	15	64	-72	73
Queue Length 95th (ft)	#201	34	102	#175	111
Internal Link Dist (ft)	1829		193		185
Turn Bay Length (ft)				85	
Base Capacity (vph)	1100	598	846	174	1476
Starvation Cap Reductn	0	0	0	0	422
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.79	0.25	0.56	1.08	0.65

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.

HCM Signalized Intersection Capacity Analysis  
 18: 11th St & Broadway

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 	 					 		 	 	
Volume (vph)	121	695	138	0	0	0	0	347	75	169	615	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		0.95	0.88					0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.67					0.94		1.00	1.00	
Flpb, ped/bikes		0.99	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.97		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		2879	1541					2846		1593	3122	
Flt Permitted		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		2879	1541					2846		1593	3122	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	129	739	147	0	0	0	0	390	84	188	683	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	868	138	0	0	0	0	456	0	188	683	0
Confl. Peds. (#/hr)	77		535					490		535	535	490
Confl. Bikes (#/hr)			6							9		16
Bus Blockages (#/hr)	0	10	10	0	0	0	0	10	10	0	10	0
Parking (#/hr)	5	5	5									
Turn Type	Perm		Perm							Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)		21.0	21.0					16.0		6.0	26.0	
Effective Green, g (s)		21.0	21.0					16.0		6.0	26.0	
Actuated g/C Ratio		0.38	0.38					0.29		0.11	0.47	
Clearance Time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Grp Cap (vph)		1099	588					828		174	1476	
v/s Ratio Prot								c0.16		c0.12	0.22	
v/s Ratio Perm		0.30	0.09									
v/c Ratio		0.79	0.23					0.55		1.08	0.46	
Uniform Delay, d1		15.0	11.5					16.5		24.5	9.8	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		5.8	0.9					2.6		91.3	1.0	
Delay (s)		20.8	12.5					19.1		115.8	10.8	
Level of Service		C	B					B		F	B	
Approach Delay (s)		19.6			0.0			19.1			33.5	
Approach LOS		B			A			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			24.6									C
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			55.0							12.0		
Intersection Capacity Utilization			63.7%									B
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	1163	1730
v/c Ratio	0.18	1.16	1.35
Control Delay	13.6	106.4	171.5
Queue Delay	0.0	324.4	288.1
Total Delay	13.6	430.8	459.5
Queue Length 50th (ft)	25	~273	~448
Queue Length 95th (ft)	54	#328	m#361
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	597	1000	1286
Starvation Cap Reductn	0	0	87
Spillback Cap Reductn	0	384	415
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.18	1.89	1.99











**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.



HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

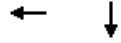
					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		 			 
Volume (vph)	97	530	412	75	1361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.93			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	2660			2913
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	2660			2913
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	654	509	90	1640
RTOR Reduction (vph)	0	3	0	0	0
Lane Group Flow (vph)	105	1161	0	0	1730
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	22.5	22.5			26.5
Effective Green, g (s)	22.5	22.5			26.5
Actuated g/C Ratio	0.38	0.38			0.44
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	597	998			1287
v/s Ratio Prot		c0.44			
v/s Ratio Perm	0.07				0.59
v/c Ratio	0.18	1.16			1.34
Uniform Delay, d1	12.5	18.8			16.8
Progression Factor	1.00	1.00			0.45
Incremental Delay, d2	0.6	84.4			155.4
Delay (s)	13.2	103.2			163.0
Level of Service	B	F			F
Approach Delay (s)		95.7			163.0
Approach LOS		F			F

Intersection Summary				
HCM Average Control Delay		134.5	HCM Level of Service	F
HCM Volume to Capacity ratio		1.26		
Actuated Cycle Length (s)		60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization		85.9%	ICU Level of Service	E
Analysis Period (min)		15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK


















Lane Group	WBT	SBT
Lane Group Flow (vph)	529	2163
v/c Ratio	1.28	1.29
Control Delay	148.0	151.5
Queue Delay	0.0	179.9
Total Delay	148.0	331.4
Queue Length 50th (ft)	~229	~548
Queue Length 95th (ft)	m#199	m336
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	414	1683
Starvation Cap Reductn	0	400
Spillback Cap Reductn	0	177
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.28	1.69

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.

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Volume (vph)	0	0	0	176	327	0	0	0	0	381	1277	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.98						0.99	
Frt					1.00						0.99	
Flt Protected					0.98						0.99	
Satd. Flow (prot)					1420						2832	
Flt Permitted					0.98						0.99	
Satd. Flow (perm)					1420						2832	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	185	344	0	0	0	0	465	1557	141
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	0	529	0	0	0	0	0	2154	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					17.5						35.5	
Effective Green, g (s)					17.5						35.5	
Actuated g/C Ratio					0.29						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					414						1676	
v/s Ratio Prot												
v/s Ratio Perm					0.37						0.76	
v/c Ratio					1.28						1.29	
Uniform Delay, d1					21.2						12.2	
Progression Factor					0.75						1.68	
Incremental Delay, d2					126.8						128.9	
Delay (s)					142.7						149.5	
Level of Service					F						F	
Approach Delay (s)		0.0			142.7			0.0			149.5	
Approach LOS		A			F			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			148.2								HCM Level of Service	F
HCM Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	7.0
Intersection Capacity Utilization			92.4%								ICU Level of Service	F
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK


















	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	538	525	1389
v/c Ratio	2.82	1.41	0.52
Control Delay	834.8	222.0	3.3
Queue Delay	0.0	0.0	0.1
Total Delay	834.8	222.0	3.4
Queue Length 50th (ft)	~333	~257	22
Queue Length 95th (ft)	m#294	#426	27
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	191	373	2672
Starvation Cap Reductn	0	0	236
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	2.82	1.41	0.57

**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.

HCM Signalized Intersection Capacity Analysis  
 21: 10th St & Oak Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	8	412	0	0	328	145	123	969	186	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frb, ped/bikes		1.00			0.99			0.98				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.96			0.98				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1465			1388			4307				
Flt Permitted		0.52			1.00			1.00				
Satd. Flow (perm)		764			1388			4307				
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	528	0	0	364	161	134	1053	202	0	0	0
RTOR Reduction (vph)	0	0	0	0	26	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	538	0	0	499	0	0	1372	0	0	0	0
Confl. Peds. (#/hr)	22		35	35		22	62		168			
Confl. Bikes (#/hr)			14			6			45			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm							Perm				
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		15.0			15.0			37.0				
Effective Green, g (s)		15.0			15.0			37.0				
Actuated g/C Ratio		0.25			0.25			0.62				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		191			347			2656				
v/s Ratio Prot					0.36							
v/s Ratio Perm		c0.70						0.32				
v/c Ratio		2.82			1.44			0.52				
Uniform Delay, d1		22.5			22.5			6.5				
Progression Factor		0.78			1.00			0.42				
Incremental Delay, d2		818.9			212.6			0.6				
Delay (s)		836.4			235.1			3.3				
Level of Service		F			F			A				
Approach Delay (s)		836.4			235.1			3.3			0.0	
Approach LOS		F			F			A			A	

Intersection Summary		
HCM Average Control Delay	235.7	HCM Level of Service F
HCM Volume to Capacity ratio	1.18	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	68.7%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group













	→	↘	↓
Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	312	183	2065
v/c Ratio	0.35	0.38	1.14
Control Delay	26.0	6.4	100.2
Queue Delay	0.0	0.0	139.1
Total Delay	26.0	6.4	239.3
Queue Length 50th (ft)	72	0	~397
Queue Length 95th (ft)	103	41	#475
Internal Link Dist (ft)	296		192
Turn Bay Length (ft)			
Base Capacity (vph)	896	481	1809
Starvation Cap Reductn	0	0	388
Spillback Cap Reductn	0	7	234
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.35	0.39	1.45

**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.

HCM Signalized Intersection Capacity Analysis  
22: 9th Street & Webster Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↖↑↑	
Volume (vph)	0	268	157	0	0	0	0	0	0	319	1540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0								4.0	
Lane Util. Factor		0.95	1.00								0.86	
Frbp, ped/bikes		1.00	0.98								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		2986	1176								5484	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		2986	1176								5484	
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	0	312	183	0	0	0	0	0	0	354	1711	0
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	41	0
Lane Group Flow (vph)	0	312	55	0	0	0	0	0	0	0	2024	0
Confl. Bikes (#/hr)			8									
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type			Perm								Perm	
Protected Phases		2										1
Permitted Phases			2							1		
Actuated Green, G (s)		27.0	27.0								29.0	
Effective Green, g (s)		27.0	27.0								29.0	
Actuated g/C Ratio		0.30	0.30								0.32	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		896	353								1767	
v/s Ratio Prot		c0.10										
v/s Ratio Perm			0.05								0.37	
v/c Ratio		0.35	0.16								1.15	
Uniform Delay, d1		24.6	23.1								30.5	
Progression Factor		1.00	1.00								1.00	
Incremental Delay, d2		1.1	0.9								72.6	
Delay (s)		25.7	24.1								103.1	
Level of Service		C	C								F	
Approach Delay (s)		25.1			0.0			0.0			103.1	
Approach LOS		C			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			88.0								HCM Level of Service	F
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			90.0							Sum of lost time (s)	34.0	
Intersection Capacity Utilization			47.7%							ICU Level of Service	A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 23: 9th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	663	1698
v/c Ratio	0.85dr	0.97
Control Delay	22.7	10.3
Queue Delay	0.0	106.4
Total Delay	22.7	116.7
Queue Length 50th (ft)	73	77
Queue Length 95th (ft)	107	m22
Internal Link Dist (ft)	291	184
Turn Bay Length (ft)		
Base Capacity (vph)	1008	1759
Starvation Cap Reductn	0	396
Spillback Cap Reductn	0	77
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	1.25













Intersection Summary

- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.



HCM Signalized Intersection Capacity Analysis  
 23: 9th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑									↑↑	
Volume (vph)	0	339	251	0	0	0	0	0	0	201	1276	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.91									0.95	
Frbp, ped/bikes		0.96									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.94									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3921									2897	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3921									2897	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	0	381	282	0	0	0	0	0	0	231	1467	0
RTOR Reduction (vph)	0	28	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	635	0	0	0	0	0	0	0	0	1677	0
Confl. Peds. (#/hr)			68							29		20
Confl. Bikes (#/hr)			18									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										2
Permitted Phases										2		
Actuated Green, G (s)		15.0									36.0	
Effective Green, g (s)		15.0									36.0	
Actuated g/C Ratio		0.25									0.60	
Clearance Time (s)		4.5									4.5	
Lane Grp Cap (vph)		980									1738	
v/s Ratio Prot		c0.16										
v/s Ratio Perm											0.58	
v/c Ratio		0.85dr									0.97	
Uniform Delay, d1		20.1									11.4	
Progression Factor		1.00									0.48	
Incremental Delay, d2		3.3									2.2	
Delay (s)		23.5									7.7	
Level of Service		C									A	
Approach Delay (s)		23.5			0.0			0.0			7.7	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.2		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					9.0		
Intersection Capacity Utilization			68.8%		ICU Level of Service					C		
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
24: 9th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	597	1397
v/c Ratio	0.50	0.53
Control Delay	21.1	1.9
Queue Delay	0.0	0.2
Total Delay	21.1	2.1
Queue Length 50th (ft)	68	18
Queue Length 95th (ft)	m89	m21
Internal Link Dist (ft)	317	212
Turn Bay Length (ft)		
Base Capacity (vph)	1196	2654
Starvation Cap Reductn	0	452
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.50	0.63













**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 24: 9th Street & Oak Street

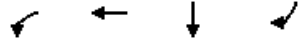
Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	129	402	0	0	0	0	0	1138	161	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4329						4256				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4329						4256				
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	145	452	0	0	0	0	0	1224	173	0	0	0
RTOR Reduction (vph)	0	42	0	0	0	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	555	0	0	0	0	0	1366	0	0	0	0
Confl. Peds. (#/hr)	4		5					69		146		
Confl. Bikes (#/hr)										31		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		2						1				
Permitted Phases	2											
Actuated Green, G (s)		16.0						37.0				
Effective Green, g (s)		16.0						37.0				
Actuated g/C Ratio		0.27						0.62				
Clearance Time (s)		4.0						3.0				
Lane Grp Cap (vph)		1154						2625				
v/s Ratio Prot								c0.32				
v/s Ratio Perm		0.13										
v/c Ratio		0.48						0.52				
Uniform Delay, d1		18.5						6.5				
Progression Factor		1.19						0.24				
Incremental Delay, d2		0.9						0.4				
Delay (s)		22.9						2.0				
Level of Service		C						A				
Approach Delay (s)		22.9			0.0			2.0			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.2									A
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			60.0								7.0	
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	800	2102	1138	752
v/c Ratio	1.13	1.71	0.85	1.15
Control Delay	89.1	349.7	6.1	90.8
Queue Delay	0.0	0.0	14.9	233.4
Total Delay	89.1	349.7	21.0	324.2
Queue Length 50th (ft)	~368	~689	22	~595
Queue Length 95th (ft)	#522	#707	m23	m#494
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	709	1227	1336	654
Starvation Cap Reductn	0	0	209	205
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	1.71	1.01	1.67

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.

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	664	1745	0	0	0	0	0	1013	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frb, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1011
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1011
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	800	2102	0	0	0	0	0	1138	752
RTOR Reduction (vph)	0	0	0	349	0	0	0	0	0	0	0	328
Lane Group Flow (vph)	0	0	0	451	2102	0	0	0	0	0	1138	424
Confl. Bikes (#/hr)												9
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	326
v/s Ratio Prot											0.27	
v/s Ratio Perm				0.38	0.51							c0.42
v/c Ratio				1.26	1.71						0.85	1.30
Uniform Delay, d1				31.5	31.5						28.5	30.5
Progression Factor				1.00	1.00						0.16	2.58
Incremental Delay, d2				135.8	324.4						0.7	137.3
Delay (s)				167.3	355.9						5.3	215.9
Level of Service				F	F						A	F
Approach Delay (s)		0.0			303.9			0.0			89.1	
Approach LOS		A			F			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			219.2									F
HCM Volume to Capacity ratio			1.50									
Actuated Cycle Length (s)			90.0								34.0	
Intersection Capacity Utilization			101.5%								G	
Analysis Period (min)			15									
c Critical Lane Group												















Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1897	485	1132
v/c Ratio	1.15	0.82	0.58
Control Delay	97.8	21.6	9.3
Queue Delay	0.0	22.1	1.1
Total Delay	97.8	43.7	10.4
Queue Length 50th (ft)	~306	198	148
Queue Length 95th (ft)	#384	m253	m171
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1644	588	1948
Starvation Cap Reductn	0	110	522
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.15	1.01	0.79

**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.

HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↵	↑↑↑					
Volume (vph)	0	0	0	0	1557	113	874	581	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.91		0.86	0.86					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.89	0.95					
Frt					0.99		1.00	1.00					
Flt Protected					1.00		0.95	0.98					
Satd. Flow (prot)					4252		1215	4029					
Flt Permitted					1.00		0.95	0.98					
Satd. Flow (perm)					4252		1215	4029					
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	1769	128	971	646	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	14	0	1	1	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1883	0	484	1131	0	0	0	0	
Confl. Peds. (#/hr)				40		125	179		40	40		179	
Confl. Bikes (#/hr)						6							
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type							Perm						
Protected Phases					8			1					
Permitted Phases							1						
Actuated Green, G (s)					23.0		28.5	28.5					
Effective Green, g (s)					23.0		29.0	29.0					
Actuated g/C Ratio					0.38		0.48	0.48					
Clearance Time (s)					4.0		4.5	4.5					
Lane Grp Cap (vph)					1630		587	1947					
v/s Ratio Prot					c0.44								
v/s Ratio Perm							c0.40	0.28					
v/c Ratio					1.16		0.83	0.58					
Uniform Delay, d1					18.5		13.3	11.1					
Progression Factor					1.00		0.83	0.75					
Incremental Delay, d2					77.4		7.9	0.8					
Delay (s)					95.9		19.0	9.2					
Level of Service					F		B	A					
Approach Delay (s)		0.0			95.9			12.1			0.0		
Approach LOS		A			F			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			57.3		HCM Level of Service				E				
HCM Volume to Capacity ratio			0.97										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			87.3%		ICU Level of Service				E				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
27: 8th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	1851	667	423
v/c Ratio	1.05	1.78	0.69
Control Delay	40.5	376.3	20.6
Queue Delay	0.0	0.0	4.4
Total Delay	40.5	376.3	25.0
Queue Length 50th (ft)	~288	~348	115
Queue Length 95th (ft)	m185	m#123	#213
Internal Link Dist (ft)	294	192	195
Turn Bay Length (ft)			
Base Capacity (vph)	1760	374	615
Starvation Cap Reductn	0	0	125
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.05	1.78	0.86



















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.



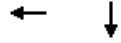
HCM Signalized Intersection Capacity Analysis  
27: 8th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						 		
Volume (vph)	0	0	0	113	1408	145	183	437	0	0	278	111	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5			4.0			4.0		
Lane Util. Factor					0.91			1.00			1.00		
Frb, ped/bikes					0.99			1.00			0.99		
Flpb, ped/bikes					0.99			0.99			1.00		
Frt					0.99			1.00			0.96		
Flt Protected					1.00			0.99			1.00		
Satd. Flow (prot)					4177			1438			1390		
Flt Permitted					1.00			0.58			1.00		
Satd. Flow (perm)					4177			847			1390		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	126	1564	161	197	470	0	0	302	121	
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	2	0	
Lane Group Flow (vph)	0	0	0	0	1832	0	0	667	0	0	421	0	
Confl. Peds. (#/hr)				88		91	53					53	
Confl. Bikes (#/hr)						9						7	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5		5			5	5	
Turn Type					Perm			Perm					
Protected Phases						1			2			2	
Permitted Phases				1			2						
Actuated Green, G (s)					25.0			26.0			26.0		
Effective Green, g (s)					25.0			26.5			26.5		
Actuated g/C Ratio					0.42			0.44			0.44		
Clearance Time (s)					4.5			4.5			4.5		
Lane Grp Cap (vph)					1740			374			614		
v/s Ratio Prot											0.30		
v/s Ratio Perm					0.44			c0.79					
v/c Ratio					1.05			1.78			0.69		
Uniform Delay, d1					17.5			16.8			13.4		
Progression Factor					0.70			1.51			1.00		
Incremental Delay, d2					25.6			353.5			6.1		
Delay (s)					37.9			378.9			19.6		
Level of Service					D			F			B		
Approach Delay (s)		0.0			37.9			378.9			19.6		
Approach LOS		A			D			F			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			112.6		HCM Level of Service						F		
HCM Volume to Capacity ratio			1.43										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			109.0%		ICU Level of Service					H			
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
28: 8th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	2361	1749
v/c Ratio	1.60	0.80
Control Delay	290.4	7.5
Queue Delay	25.1	279.8
Total Delay	315.5	287.3
Queue Length 50th (ft)	~481	73
Queue Length 95th (ft)	m#299	m102
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	1480	2194
Starvation Cap Reductn	0	380
Spillback Cap Reductn	50	1115
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.65	1.62

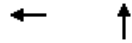
Intersection Summary

- ~ 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.

HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	684	1489	0	0	0	0	0	1387	152	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.98						1.00		
Frt					1.00						0.99		
Flt Protected					0.98						1.00		
Satd. Flow (prot)					4194						4245		
Flt Permitted					0.98						1.00		
Satd. Flow (perm)					4194						4245		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	743	1618	0	0	0	0	0	1576	173	
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	0	0	0	2350	0	0	0	0	0	1748	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					20.5						30.5		
Effective Green, g (s)					21.0						31.0		
Actuated g/C Ratio					0.35						0.52		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					1468						2193		
v/s Ratio Prot											c0.41		
v/s Ratio Perm					0.56								
v/c Ratio					1.60						0.80		
Uniform Delay, d1					19.5						11.9		
Progression Factor					1.08						0.51		
Incremental Delay, d2					270.6						1.2		
Delay (s)					291.7						7.4		
Level of Service					F						A		
Approach Delay (s)		0.0			291.7			0.0			7.4		
Approach LOS		A			F			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			170.7		HCM Level of Service						F		
HCM Volume to Capacity ratio			1.12										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			112.4%		ICU Level of Service					H			
Analysis Period (min)			15										
c Critical Lane Group													















Lane Group	WBT	NBT
Lane Group Flow (vph)	2099	1649
v/c Ratio	1.54	0.72
Control Delay	270.8	16.3
Queue Delay	0.0	60.4
Total Delay	270.8	76.7
Queue Length 50th (ft)	~409	214
Queue Length 95th (ft)	#502	m169
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	1359	2300
Starvation Cap Reductn	0	839
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.54	1.13

**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.

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	1776	176	377	1124	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.98				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4230			4180				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4230			4180				
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1910	189	414	1235	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2079	0	0	1649	0	0	0	0
Confl. Peds. (#/hr)						92	160					
Confl. Bikes (#/hr)						6						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type							Perm					
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					19.0			33.0				
Effective Green, g (s)					19.0			33.0				
Actuated g/C Ratio					0.32			0.55				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					1340			2299				
v/s Ratio Prot					c0.49							
v/s Ratio Perm								0.39				
v/c Ratio					1.55			0.72				
Uniform Delay, d1					20.5			10.0				
Progression Factor					1.00			1.57				
Incremental Delay, d2					252.0			0.2				
Delay (s)					272.5			15.9				
Level of Service					F			B				
Approach Delay (s)		0.0			272.5			15.9			0.0	
Approach LOS		A			F			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			159.6				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			82.3%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

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Intersection Sign configuration not allowed in HCM analysis.

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Queues  
31: 7th Street & Harrison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK













	→	↑	↗
Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	1314	1166	1161
v/c Ratio	0.53	0.90	0.47
Control Delay	8.5	32.2	0.6
Queue Delay	0.1	1.5	0.0
Total Delay	8.5	33.7	0.6
Queue Length 50th (ft)	91	147	0
Queue Length 95th (ft)	112	#226	0
Internal Link Dist (ft)	291	227	
Turn Bay Length (ft)			180
Base Capacity (vph)	2477	1297	2475
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	144	43	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.93	0.47

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
 31: 7th Street & Harrison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑						↑↑↑	↑↑				
Volume (vph)	341	776	0	0	0	0	0	1108	1103	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0						4.0	3.0				
Lane Util. Factor		0.91						0.91	0.88				
Frbp, ped/bikes		1.00						1.00	0.99				
Flpb, ped/bikes		1.00						1.00	1.00				
Frt		1.00						1.00	0.85				
Flt Protected		0.98						1.00	1.00				
Satd. Flow (prot)		4243						4577	2475				
Flt Permitted		0.98						1.00	1.00				
Satd. Flow (perm)		4243						4577	2475				
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	
Adj. Flow (vph)	401	913	0	0	0	0	0	1166	1161	0	0	0	
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1312	0	0	0	0	0	1166	1161	0	0	0	
Confl. Peds. (#/hr)	28								3				
Confl. Bikes (#/hr)			1						1				
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	5	5											
Turn Type	Perm						Free						
Protected Phases		2						4					
Permitted Phases	2									Free			
Actuated Green, G (s)		34.0						16.0	60.0				
Effective Green, g (s)		35.0						17.0	60.0				
Actuated g/C Ratio		0.58						0.28	1.00				
Clearance Time (s)		5.0						5.0					
Lane Grp Cap (vph)		2475						1297	2475				
v/s Ratio Prot								c0.25					
v/s Ratio Perm		0.31							0.47				
v/c Ratio		0.53						0.90	0.47				
Uniform Delay, d1		7.5						20.7	0.0				
Progression Factor		1.00						1.00	1.00				
Incremental Delay, d2		0.8						10.1	0.6				
Delay (s)		8.4						30.8	0.6				
Level of Service		A						C	A				
Approach Delay (s)		8.4			0.0			15.7			0.0		
Approach LOS		A			A			B			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			13.1		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.65										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			67.5%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
32: 7th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1873	132	874	399
v/c Ratio	0.82	0.22	2.05	5.70
Control Delay	10.4	1.0	496.1	2142.1
Queue Delay	102.1	0.0	201.5	0.0
Total Delay	112.5	1.0	697.6	2142.1
Queue Length 50th (ft)	84	0	~507	~273
Queue Length 95th (ft)	198	m4	m#603	m#360
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	2290	600	427	70
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	761	0	135	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.22	0.22	2.99	5.70

**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.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	74	1561	249	0	0	0	0	554	250	64	291	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		1.00	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.99	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		4018	958					1389			1453	
Flt Permitted		1.00	1.00					1.00			0.16	
Satd. Flow (perm)		4018	958					1389			233	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	79	1661	265	0	0	0	0	602	272	72	327	0
RTOR Reduction (vph)	0	13	57	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1860	75	0	0	0	0	864	0	0	399	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		33.0	33.0					18.0			18.0	
Effective Green, g (s)		34.0	34.0					18.0			18.0	
Actuated g/C Ratio		0.57	0.57					0.30			0.30	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		2277	543					417			70	
v/s Ratio Prot								0.62				
v/s Ratio Perm		0.46	0.08								c1.71	
v/c Ratio		0.82	0.14					2.07			5.70	
Uniform Delay, d1		10.5	6.1					21.0			21.0	
Progression Factor		0.69	0.20					0.94			0.73	
Incremental Delay, d2		3.0	0.5					487.4			2132.9	
Delay (s)		10.2	1.7					507.2			2148.3	
Level of Service		B	A					F			F	
Approach Delay (s)		9.6			0.0			507.2			2148.3	
Approach LOS		A			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			402.6								HCM Level of Service	F
HCM Volume to Capacity ratio			2.51									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			118.4%								ICU Level of Service	H
Analysis Period (min)			15									

c Critical Lane Group

Queues  
33: 7th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK






















Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2130	724	1578
v/c Ratio	0.70	1.79	1.80
Control Delay	10.5	378.6	380.6
Queue Delay	0.4	12.1	207.1
Total Delay	10.9	390.7	587.7
Queue Length 50th (ft)	128	~429	~494
Queue Length 95th (ft)	m153	m#460	m#501
Internal Link Dist (ft)	296		190
Turn Bay Length (ft)			
Base Capacity (vph)	3037	404	878
Starvation Cap Reductn	122	1	27
Spillback Cap Reductn	377	6	179
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	1.82	2.26

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.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  								 	 	
Volume (vph)	0	1574	300	0	0	0	0	0	0	659	1436	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.86								1.00	0.95	
Frb, ped/bikes		0.99								1.00	1.00	
Flpb, ped/bikes		1.00								0.94	1.00	
Frt		0.98								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		5359								1313	2926	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		5359								1313	2926	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	1789	341	0	0	0	0	0	0	724	1578	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	11	0	0
Lane Group Flow (vph)	0	2130	0	0	0	0	0	0	0	714	1578	0
Confl. Peds. (#/hr)			30							61		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		34.0								19.0	19.0	
Effective Green, g (s)		34.0								18.0	18.0	
Actuated g/C Ratio		0.57								0.30	0.30	
Clearance Time (s)		4.0								3.0	3.0	
Lane Grp Cap (vph)		3037								394	878	
v/s Ratio Prot		c0.40									0.54	
v/s Ratio Perm										c0.54		
v/c Ratio		0.70								1.81	1.80	
Uniform Delay, d1		9.3								21.0	21.0	
Progression Factor		1.08								1.02	1.02	
Incremental Delay, d2		0.1								365.8	359.2	
Delay (s)		10.3								387.3	380.6	
Level of Service		B								F	F	
Approach Delay (s)		10.3			0.0			0.0			382.7	
Approach LOS		B			A			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			203.7								F	
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			122.5%								H	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
34: 7th Street & Oak Street




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	2444	2075
v/c Ratio	0.92	1.59dr
Control Delay	21.3	183.2
Queue Delay	15.8	67.4
Total Delay	37.1	250.5
Queue Length 50th (ft)	259	~377
Queue Length 95th (ft)	m246	#438
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2651	1538
Starvation Cap Reductn	0	41
Spillback Cap Reductn	272	154
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.03	1.50

**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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	342	1931	0	0	0	0	0	1159	625	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.98				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.95				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5473						4010				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5473						4010				
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	368	2076	0	0	0	0	0	1348	727	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2439	0	0	0	0	0	2073	0	0	0	0
Confl. Peds. (#/hr)	31								57			
Confl. Bikes (#/hr)									10			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		28.0						22.0				
Effective Green, g (s)		29.0						23.0				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2645						1537				
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.45										
v/c Ratio		0.92						1.59dr				
Uniform Delay, d1		14.4						18.5				
Progression Factor		1.37						1.00				
Incremental Delay, d2		0.7						161.4				
Delay (s)		20.5						179.9				
Level of Service		C						F				
Approach Delay (s)		20.5			0.0			179.9			0.0	
Approach LOS		C			A			F			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			93.7				HCM Level of Service		F			
HCM Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			85.5%				ICU Level of Service		E			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
35: E 8th Street & 5th Ave

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	311	2309	257	170	1623	960	940
v/c Ratio	2.70	1.05	0.35	1.48	1.07	2.22	1.68
Control Delay	807.6	56.0	3.4	279.6	64.0	575.9	335.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	807.6	56.0	3.4	279.6	64.0	575.9	335.0
Queue Length 50th (ft)	~176	~376	0	~96	~385	~631	~569
Queue Length 95th (ft)	#278	#388	26	#141	#437	#838	#633
Internal Link Dist (ft)		987			303	672	454
Turn Bay Length (ft)	170		60	110			
Base Capacity (vph)	115	2190	727	115	1522	432	559
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.70	1.05	0.35	1.48	1.07	2.22	1.68























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.

# HCM Signalized Intersection Capacity Analysis

## 35: E 8th Street & 5th Ave

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations			  				 			 		
Volume (vph)	41	211	1870	208	2	138	1314	17	174	540	150	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Util. Factor		1.00	0.91	1.00		1.00	0.95			1.00		
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00		
Frt		1.00	1.00	0.85		1.00	1.00			0.98		
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.99		
Satd. Flow (prot)		1769	5085	1349		1769	3531			1571		
Flt Permitted		0.14	1.00	1.00		0.14	1.00			0.59		
Satd. Flow (perm)		266	5085	1349		266	3531			936		
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77
Adj. Flow (vph)	51	260	2309	257	2	168	1602	21	193	600	167	113
RTOR Reduction (vph)	0	0	0	146	0	0	1	0	0	0	0	0
Lane Group Flow (vph)	0	311	2309	111	0	170	1622	0	0	960	0	0
Confl. Peds. (#/hr)		8		4		4		8	7		1	1
Confl. Bikes (#/hr)				2				2			7	
Parking (#/hr)				5						5	5	
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm
Protected Phases			1				1			2		
Permitted Phases	1	1		1	1	1			2			2
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0			30.0		
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43			0.46		
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5			3.5		
Lane Grp Cap (vph)		115	2190	581		115	1521			432		
v/s Ratio Prot			0.45			0.46						
v/s Ratio Perm		c1.17		0.08		0.64				c1.03		
v/c Ratio		2.70	1.05	0.19		1.48	1.07			2.22		
Uniform Delay, d1		18.5	18.5	11.5		18.5	18.5			17.5		
Progression Factor		1.00	1.00	1.00		1.00	1.00			1.00		
Incremental Delay, d2		791.0	35.5	0.7		255.9	43.0			557.5		
Delay (s)		809.5	54.0	12.2		274.4	61.5			575.0		
Level of Service		F	D	B		F	E			F		
Approach Delay (s)			131.9				81.7			575.0		
Approach LOS			F				F			F		
<b>Intersection Summary</b>												
HCM Average Control Delay			211.6			HCM Level of Service				F		
HCM Volume to Capacity ratio			2.46									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)				7.0		
Intersection Capacity Utilization			137.0%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 35: E 8th Street & 5th Ave

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↕	
Volume (vph)	378	259
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	0.99	
Satd. Flow (prot)	1532	
Flt Permitted	0.78	
Satd. Flow (perm)	1206	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	491	336
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	937	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	557	
v/s Ratio Prot		
v/s Ratio Perm	0.78	
v/c Ratio	1.68	
Uniform Delay, d1	17.5	
Progression Factor	1.00	
Incremental Delay, d2	315.0	
Delay (s)	332.5	
Level of Service	F	
Approach Delay (s)	332.5	
Approach LOS	F	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	27	947	502	804	356	319
v/c Ratio	0.06	2.12	0.99	0.91	0.42	0.41
Control Delay	18.3	527.3	54.4	29.0	5.0	5.0
Queue Delay	0.0	0.0	15.8	65.3	1.0	0.7
Total Delay	18.3	527.3	70.2	94.3	6.0	5.7
Queue Length 50th (ft)	8	-574	155	223	46	41
Queue Length 95th (ft)	m12	m#537	#311	#410	m30	m27
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	507	880	849	783
Starvation Cap Reductn	0	0	27	178	264	209
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	2.12	1.05	1.15	0.61	0.56

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.

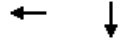
HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	22	767	0	417	667	0	0	67	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1570	1676		1593	1467			1410	1300
Flt Permitted				0.95	1.00		0.50	1.00			1.00	1.00
Satd. Flow (perm)				1570	1676		845	1467			1410	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	27	947	0	502	804	0	0	84	591
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	3	3
Lane Group Flow (vph)	0	0	0	27	947	0	502	804	0	0	353	316
Confl. Peds. (#/hr)				7		1				34		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				419	447		507	880			846	780
v/s Ratio Prot					c0.56			0.55			0.25	
v/s Ratio Perm				0.02			c0.59					0.24
v/c Ratio				0.06	2.12		0.99	0.91			0.42	0.40
Uniform Delay, d1				16.4	22.0		11.8	10.6			6.4	6.3
Progression Factor				1.08	1.06		1.00	1.00			0.74	0.74
Incremental Delay, d2				0.1	507.1		37.6	15.5			0.1	0.1
Delay (s)				17.9	530.4		49.4	26.1			4.9	4.8
Level of Service				B	F		D	C			A	A
Approach Delay (s)		0.0			516.2			35.1			4.9	
Approach LOS		A			F			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			186.8									F
HCM Volume to Capacity ratio			1.34									
Actuated Cycle Length (s)			60.0									8.0
Intersection Capacity Utilization			102.2%									G
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
37: 6th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	341	2044
v/c Ratio	0.40	1.20
Control Delay	18.7	113.6
Queue Delay	0.0	87.6
Total Delay	18.7	201.2
Queue Length 50th (ft)	50	~321
Queue Length 95th (ft)	83	m168
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	850	1703
Starvation Cap Reductn	0	239
Spillback Cap Reductn	0	72
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.40	1.40

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						 	
Volume (vph)	0	0	0	14	310	0	0	0	0	0	1114	685
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					2979						2752	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					2979						2752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	326	0	0	0	0	0	1266	778
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	98	0
Lane Group Flow (vph)	0	0	0	0	335	0	0	0	0	0	1947	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					17.0						35.0	
Effective Green, g (s)					17.0						35.0	
Actuated g/C Ratio					0.28						0.58	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					844						1605	
v/s Ratio Prot											c0.71	
v/s Ratio Perm					0.11							
v/c Ratio					0.40						1.21	
Uniform Delay, d1					17.4						12.5	
Progression Factor					1.00						1.94	
Incremental Delay, d2					1.4						96.3	
Delay (s)					18.8						120.5	
Level of Service					B						F	
Approach Delay (s)		0.0			18.8			0.0			120.5	
Approach LOS		A			B			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			106.0								F	
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			79.4%							D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1398	639	392	73
v/c Ratio	2.75	0.47	0.64	0.12
Control Delay	802.1	9.5	15.2	6.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	802.1	9.5	15.2	6.4
Queue Length 50th (ft)	~706	52	76	8
Queue Length 95th (ft)	m#509	79	146	22
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	509	1365	611	597
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.75	0.47	0.64	0.12

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.

HCM Signalized Intersection Capacity Analysis  
38: 6th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↶		↶	↶	↶
Volume (vph)	240	1018	127	84	675	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1450		2897	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1450		2897	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	267	1131	148	98	785	73
RTOR Reduction (vph)	0	0	0	0	0	7
Lane Group Flow (vph)	0	1398	0	639	392	66
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		16.3		22.2	22.2	22.2
Effective Green, g (s)		15.8		21.2	21.2	21.2
Actuated g/C Ratio		0.35		0.47	0.47	0.47
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		509		1365	611	590
v/s Ratio Prot				0.22	c0.30	
v/s Ratio Perm		0.96				0.05
v/c Ratio		2.75		0.47	0.64	0.11
Uniform Delay, d1		14.6		8.1	9.0	6.6
Progression Factor		0.91		1.00	1.00	1.00
Incremental Delay, d2		786.5		1.2	5.1	0.4
Delay (s)		799.7		9.2	14.1	7.0
Level of Service		F		A	B	A
Approach Delay (s)		799.7		11.1		
Approach LOS		F		B		
<b>Intersection Summary</b>						
HCM Average Control Delay			451.6		HCM Level of Service	F
HCM Volume to Capacity ratio			1.54			
Actuated Cycle Length (s)			45.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			119.6%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

Queues  
39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	2167	801	128
v/c Ratio	1.19	1.23	0.27
Control Delay	112.3	137.6	12.3
Queue Delay	0.0	0.0	0.0
Total Delay	112.3	137.6	12.3
Queue Length 50th (ft)	~354	~369	27
Queue Length 95th (ft)	#439	#464	43
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1818	651	483
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.19	1.23	0.27


















**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.



HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Cumulative 2035 + Project  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	467	1212	249	0	0	0	0	588	45	6	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.98						0.99			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4247						1451			1462	
Flt Permitted		0.99						1.00			0.74	
Satd. Flow (perm)		4247						1451			1084	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	525	1362	280	0	0	0	0	744	57	9	119	0
RTOR Reduction (vph)	0	33	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2134	0	0	0	0	0	797	0	0	128	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						26.0			26.0	
Effective Green, g (s)		25.0						26.5			26.5	
Actuated g/C Ratio		0.42						0.45			0.45	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1784						646			483	
v/s Ratio Prot								c0.55				
v/s Ratio Perm		0.50									0.12	
v/c Ratio		1.20						1.23			0.27	
Uniform Delay, d1		17.2						16.5			10.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		94.0						118.0			1.3	
Delay (s)		111.3						134.5			11.7	
Level of Service		F						F			B	
Approach Delay (s)		111.3			0.0			134.5			11.7	
Approach LOS		F			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			113.2								F	
HCM Volume to Capacity ratio			1.21									
Actuated Cycle Length (s)			59.5							8.0		
Intersection Capacity Utilization			86.9%								E	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
40: 5th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1389	533	890
v/c Ratio	1.09	0.70	1.13
Control Delay	77.5	5.9	75.2
Queue Delay	0.0	3.7	24.9
Total Delay	77.5	9.6	100.1
Queue Length 50th (ft)	~206	55	~396
Queue Length 95th (ft)	#291	m48	m84
Internal Link Dist (ft)	297		198
Turn Bay Length (ft)			
Base Capacity (vph)	1270	764	785
Starvation Cap Reductn	0	150	38
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.09	0.87	1.19




















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.

# HCM Signalized Intersection Capacity Analysis

## 40: 5th Street & Madison Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  								 	 	
Volume (vph)	0	1025	239	0	0	0	0	0	0	864	288	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0								4.0	4.0	
Lane Util. Factor		0.91								0.95	0.95	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.99	0.99	
Frt		0.97								1.00	1.00	
Flt Protected		1.00								0.95	0.97	
Satd. Flow (prot)		4251								1307	1343	
Flt Permitted		1.00								0.95	0.97	
Satd. Flow (perm)		4251								1307	1343	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	0	1126	263	0	0	0	0	0	0	1067	356	0
RTOR Reduction (vph)	0	65	0	0	0	0	0	0	0	2	2	0
Lane Group Flow (vph)	0	1325	0	0	0	0	0	0	0	531	888	0
Confl. Peds. (#/hr)	2		1							15		45
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4										6
Permitted Phases										6		
Actuated Green, G (s)		17.0								35.0	35.0	
Effective Green, g (s)		17.0								35.0	35.0	
Actuated g/C Ratio		0.28								0.58	0.58	
Clearance Time (s)		4.0								4.0	4.0	
Lane Grp Cap (vph)		1204								762	783	
v/s Ratio Prot		c0.31										
v/s Ratio Perm										0.41	0.66	
v/c Ratio		1.10								0.70	1.13	
Uniform Delay, d1		21.5								8.8	12.5	
Progression Factor		1.00								0.56	0.53	
Incremental Delay, d2		57.8								0.5	62.2	
Delay (s)		79.3								5.4	68.8	
Level of Service		E								A	E	
Approach Delay (s)		79.3			0.0			0.0			45.1	
Approach LOS		E			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			62.0									E
HCM Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			79.4%									D
Analysis Period (min)			15									

c Critical Lane Group

Queues  
41: 5th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	2031	889	171
v/c Ratio	0.94	1.82	0.59
Control Delay	21.7	397.0	18.7
Queue Delay	0.0	0.0	0.0
Total Delay	21.7	397.0	18.7
Queue Length 50th (ft)	157	~376	40
Queue Length 95th (ft)	#279	#535	#92
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	2171	488	289
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.94	1.82	0.59



















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.

# HCM Signalized Intersection Capacity Analysis













## 41: 5th Street & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 				
Volume (vph)	560	1145	184	0	0	0	0	698	76	6	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4385						1437			1463	
Flt Permitted		0.99						1.00			0.59	
Satd. Flow (perm)		4385						1437			867	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	602	1231	198	0	0	0	0	802	87	7	164	0
RTOR Reduction (vph)	0	29	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	2002	0	0	0	0	0	880	0	0	171	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		22.5						15.5			15.5	
Effective Green, g (s)		22.0						15.0			15.0	
Actuated g/C Ratio		0.49						0.33			0.33	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		2144						479			289	
v/s Ratio Prot								c0.61				
v/s Ratio Perm		0.46									0.20	
v/c Ratio		0.93						1.84			0.59	
Uniform Delay, d1		10.8						15.0			12.5	
Progression Factor		1.00						1.00			0.65	
Incremental Delay, d2		9.1						385.1			8.1	
Delay (s)		19.9						400.1			16.1	
Level of Service		B						F			B	
Approach Delay (s)		19.9			0.0			400.1			16.1	
Approach LOS		B			A			F			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			129.0									F
HCM Volume to Capacity ratio			1.30									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			94.9%									F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
42: Embarcadero W & Oak Street

Cumulative 2035 + Project  
Timing Plan: PM PEAK

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	0	0	0	0	0	0	0	
Sign Control	Stop			Free		Free		
Grade	0%			0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	0	0	0	0	0	0	
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (ft)					1112			
pX, platoon unblocked								
vC, conflicting volume	0	0	0					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	0					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	100	100					
cM capacity (veh/h)	1023	1084	1622					
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	
Volume Total	0	0	0	0	0	0	0	
Volume Left	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Queue Length 95th (ft)	0	0	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A	A						
Approach Delay (s)	0.0		0.0			0.0		
Approach LOS	A							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization			0.0%			ICU Level of Service		A
Analysis Period (min)	15							

**Arterial Level of Service: EB 7th Street**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	30	21.9	10.4	32.3	0.15	16.3	C
Madison Street	IV	30	16.2	10.5	26.7	0.07	9.6	D
Oak Street	IV	30	16.6	21.3	37.9	0.07	6.9	F
Total	IV		54.7	42.2	96.9	0.29	10.8	D

**Arterial Level of Service: WB 8th Street**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	30	13.7	270.8	284.5	0.06	0.8	F
Madison Street	IV	30	16.7	290.4	307.1	0.07	0.9	F
Jackson Street	IV	30	16.1	40.5	56.6	0.07	4.5	F
Alice Street	IV	30	16.9	20.7	37.6	0.07	7.1	E
Harrison Street	IV	30	16.3	97.8	114.1	0.07	2.3	F
Webster Street	IV	30	16.1	349.7	365.8	0.07	0.7	F
Total	IV		95.8	1069.9	1165.7	0.42	1.3	F

**Arterial Level of Service: SB Madison Street**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	30	13.1	151.5	164.6	0.06	1.3	F
9th Street	IV	30	11.4	10.3	21.7	0.05	8.3	E
8th Street	IV	30	11.9	7.5	19.4	0.05	9.7	D
7th Street	IV	30	11.6	380.6	392.2	0.05	0.5	F
Total	IV		48.0	549.9	597.9	0.21	1.3	F

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	30	11.5	16.3	27.8	0.05	6.6	F
9th Street	IV	30	12.6	1.9	14.5	0.06	13.7	C
10th St	IV	30	11.4	3.3	14.7	0.05	12.3	D
11th St	IV	30	12.6	11.0	23.6	0.06	8.4	E
12th St	IV	30	10.7	92.9	103.6	0.05	1.6	F
Total	IV		58.8	125.4	184.2	0.26	5.1	F



# **QUEUING SUMMARY**







**EXISTING PLUS PROJECT (MITIGATED)  
TRAFFIC CONDITIONS**

Queues  
10: 12th St & I-980 Off-Ramp

Existing + Project (Mitigated)  
Timing Plan: AM PEAK

	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	62	136	659	2092
v/c Ratio	0.04	0.30	0.22	1.08	1.06
Control Delay	22.0	52.5	59.1	115.6	67.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	52.5	59.1	115.6	67.6
Queue Length 50th (ft)	0	45	44	~254	~1160
Queue Length 95th (ft)	0	88	64	#260	#1288
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	185	205	610	612	1965
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.30	0.22	1.08	1.06

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Existing + Project (Mitigated)  
 Timing Plan: AM PEAK

	↘	↙	←	↓	↘	↙	↙
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↖	↑↑↑	↑↑↑		↖↗	
Volume (vph)	2	53	116	418	89	1970	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.91	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.92	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1319	1467	4577	4251		3094	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1319	1467	4577	4251		3094	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	62	136	543	116	2074	18
RTOR Reduction (vph)	7	10	0	22	0	0	0
Lane Group Flow (vph)	1	52	136	637	0	2092	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	20.0	20.0	20.0	20.8		95.2	
Effective Green, g (s)	20.0	20.0	20.0	20.8		95.2	
Actuated g/C Ratio	0.13	0.13	0.13	0.14		0.63	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	176	196	610	589		1964	
v/s Ratio Prot			0.03	c0.15		c0.68	
v/s Ratio Perm	0.00	c0.04					
v/c Ratio	0.01	0.27	0.22	1.08		1.07	
Uniform Delay, d1	56.4	58.4	58.1	64.6		27.4	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	3.3	0.8	60.8		40.2	
Delay (s)	56.4	61.7	58.9	125.4		67.6	
Level of Service	E	E	E	F		E	
Approach Delay (s)			59.8	125.4		67.6	
Approach LOS			E	F		E	
<b>Intersection Summary</b>							
HCM Average Control Delay			80.0		HCM Level of Service		E
HCM Volume to Capacity ratio			0.95				
Actuated Cycle Length (s)			150.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			90.5%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Queues

Existing + Project (Mitigated)

15: International Blvd & Lake Merritt Blvd

Timing Plan: AM PEAK



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	563	131	379	209	1011
v/c Ratio	1.02	0.28	0.18	0.25	1.04
Control Delay	81.8	7.6	9.0	1.9	61.9
Queue Delay	0.0	0.0	1.0	1.1	6.7
Total Delay	81.8	7.6	10.0	3.0	68.7
Queue Length 50th (ft)	~423	4	57	0	~773
Queue Length 95th (ft)	#625	48	80	29	#1001
Internal Link Dist (ft)	1342		177		20
Turn Bay Length (ft)					
Base Capacity (vph)	552	469	2117	842	972
Starvation Cap Reductn	0	0	1449	427	17
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.02	0.28	0.57	0.50	1.06













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.



HCM Signalized Intersection Capacity Analysis  
 15: International Blvd & Lake Merritt Blvd

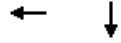
Existing + Project (Mitigated)  
 Timing Plan: AM PEAK

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			
Volume (vph)	501	117	360	199	11	889
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	1.00	1.00	0.91	0.91		1.00
Frbp, ped/bikes	1.00	0.93	1.00	0.88		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1770	1234	3390	1222		1564
Flt Permitted	0.95	1.00	1.00	1.00		0.99
Satd. Flow (perm)	1770	1234	3390	1222		1556
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.89	0.89
Adj. Flow (vph)	563	131	379	209	12	999
RTOR Reduction (vph)	0	84	0	78	0	0
Lane Group Flow (vph)	563	47	379	131	0	1011
Confl. Peds. (#/hr)		50		98		
Confl. Bikes (#/hr)				9		
Bus Blockages (#/hr)	0	10	0	10	0	10
Parking (#/hr)		5				5
Turn Type		Perm		Perm	Perm	
Protected Phases	1		2			2
Permitted Phases		1		2	2	
Actuated Green, G (s)	34.3	34.3	68.7	68.7		68.7
Effective Green, g (s)	34.3	34.3	68.7	68.7		68.7
Actuated g/C Ratio	0.31	0.31	0.62	0.62		0.62
Clearance Time (s)	3.5	3.5	3.5	3.5		3.5
Lane Grp Cap (vph)	552	385	2117	763		972
v/s Ratio Prot	c0.32		0.11			
v/s Ratio Perm		0.04		0.11		c0.65
v/c Ratio	1.02	0.12	0.18	0.17		1.04
Uniform Delay, d1	37.9	27.1	8.7	8.7		20.6
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	43.4	0.6	0.2	0.5		39.8
Delay (s)	81.3	27.7	8.9	9.2		60.5
Level of Service	F	C	A	A		E
Approach Delay (s)	71.2		9.0			60.5
Approach LOS	E		A			E
<b>Intersection Summary</b>						
HCM Average Control Delay			50.5		HCM Level of Service	D
HCM Volume to Capacity ratio			1.03			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	7.0
Intersection Capacity Utilization			90.0%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Existing + Project (Mitigated)  
Timing Plan: AM PEAK


















Lane Group	WBT	SBT
Lane Group Flow (vph)	608	841
v/c Ratio	0.81	0.80
Control Delay	23.6	20.0
Queue Delay	0.4	0.8
Total Delay	23.9	20.8
Queue Length 50th (ft)	168	151
Queue Length 95th (ft)	#319	m#232
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	748	1050
Starvation Cap Reductn	14	2
Spillback Cap Reductn	0	52
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.83	0.84

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.

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Existing + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Volume (vph)	0	0	0	96	421	0	0	0	0	88	640	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						0.99	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					1447						2821	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					1447						2821	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	113	495	0	0	0	0	91	660	90
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	608	0	0	0	0	0	826	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					31.0						22.0	
Effective Green, g (s)					31.0						22.0	
Actuated g/C Ratio					0.52						0.37	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					748						1034	
v/s Ratio Prot												
v/s Ratio Perm					0.42						0.29	
v/c Ratio					0.81						0.80	
Uniform Delay, d1					12.1						17.0	
Progression Factor					1.00						0.85	
Incremental Delay, d2					9.4						4.9	
Delay (s)					21.5						19.4	
Level of Service					C						B	
Approach Delay (s)		0.0			21.5			0.0			19.4	
Approach LOS		A			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.2		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			63.2%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Existing + Project (Mitigated)  
Timing Plan: AM PEAK


















	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	187	717	1057
v/c Ratio	0.44	1.15	0.52
Control Delay	19.7	108.3	16.1
Queue Delay	0.0	76.1	2.2
Total Delay	19.7	184.3	18.2
Queue Length 50th (ft)	63	~418	128
Queue Length 95th (ft)	71	#562	166
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	429	624	2044
Starvation Cap Reductn	0	82	805
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	1.32	0.85

**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.

HCM Signalized Intersection Capacity Analysis  
 21: 10th St & Oak Street

Existing + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	14	100	0	0	402	200	104	808	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frb, ped/bikes		1.00			0.98			1.00				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.96			0.99				
Flt Protected		0.99			1.00			0.99				
Satd. Flow (prot)		1458			1375			4402				
Flt Permitted		0.67			1.00			0.99				
Satd. Flow (perm)		982			1375			4402				
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	23	164	0	0	479	238	114	888	55	0	0	0
RTOR Reduction (vph)	0	0	0	0	23	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	187	0	0	695	0	0	1049	0	0	0	0
Confl. Peds. (#/hr)	26					26	72		91			
Confl. Bikes (#/hr)						7			11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		35.0			35.0			37.0				
Effective Green, g (s)		35.0			35.0			37.0				
Actuated g/C Ratio		0.44			0.44			0.46				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		430			602			2036				
v/s Ratio Prot					c0.51							
v/s Ratio Perm		0.19						0.24				
v/c Ratio		0.43			1.15			0.52				
Uniform Delay, d1		15.6			22.5			15.2				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		3.2			87.0			0.9				
Delay (s)		18.8			109.5			16.1				
Level of Service		B			F			B				
Approach Delay (s)		18.8			109.5			16.1			0.0	
Approach LOS		B			F			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			50.5				HCM Level of Service		D			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			75.4%				ICU Level of Service		D			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
32: 7th Street & Jackson Street

Existing + Project (Mitigated)  
Timing Plan: AM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1421	615	593	420
v/c Ratio	0.92dr	1.02	0.95	0.72
Control Delay	16.2	54.9	47.0	18.7
Queue Delay	0.0	4.9	1.6	0.9
Total Delay	16.3	59.8	48.6	19.6
Queue Length 50th (ft)	147	~187	199	85
Queue Length 95th (ft)	151	#318	#412	144
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	1802	602	627	584
Starvation Cap Reductn	0	0	8	38
Spillback Cap Reductn	6	9	0	30
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	1.04	0.96	0.77

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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 32: 7th Street & Jackson Street

Existing + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	35	586	947	0	0	0	0	389	151	24	346	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.96	0.90					0.97			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.94	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3636	924					1371			1460	
Flt Permitted		1.00	1.00					1.00			0.90	
Satd. Flow (perm)		3636	924					1371			1318	
Peak-hour factor, PHF	0.77	0.77	0.77	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	45	761	1230	0	0	0	0	427	166	27	393	0
RTOR Reduction (vph)	0	193	193	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	1228	422	0	0	0	0	573	0	0	420	0
Confl. Peds. (#/hr)	51		75						79	79		
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		30.0	30.0					31.0			31.0	
Effective Green, g (s)		31.0	31.0					31.0			31.0	
Actuated g/C Ratio		0.44	0.44					0.44			0.44	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		1610	409					607			584	
v/s Ratio Prot								c0.42				
v/s Ratio Perm		0.34	c0.46								0.32	
v/c Ratio		0.92dr	1.03					0.94			0.72	
Uniform Delay, d1		16.4	19.5					18.7			15.9	
Progression Factor		1.00	1.00					1.13			0.70	
Incremental Delay, d2		3.5	53.1					24.6			6.4	
Delay (s)		19.9	72.6					45.8			17.6	
Level of Service		B	E					D			B	
Approach Delay (s)		35.8			0.0			45.8			17.6	
Approach LOS		D			A			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			35.2					HCM Level of Service			D	
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			70.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			76.9%					ICU Level of Service		D		
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	16.2	42.4	0.15	12.4	D
Madison Street	IV	25	18.9	8.4	27.3	0.07	9.4	D
Oak Street	IV	25	19.3	6.1	25.4	0.07	10.3	D
Total	IV		64.4	30.7	95.1	0.29	11.0	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	16.9	32.9	0.06	6.6	F
Madison Street	IV	25	19.5	5.4	24.9	0.07	10.7	D
Jackson Street	IV	25	18.8	24.6	43.4	0.07	5.9	F
Alice Street	IV	25	19.7	9.0	28.7	0.07	9.3	D
Harrison Street	IV	25	19.0	18.4	37.4	0.07	6.9	F
Webster Street	IV	25	18.8	28.8	47.6	0.07	5.4	F
Total	IV		111.8	103.1	214.9	0.42	7.1	E

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	20.0	35.3	0.06	5.9	F
9th Street	IV	25	13.2	5.7	18.9	0.05	9.5	D
8th Street	IV	25	13.9	3.7	17.6	0.05	10.7	D
7th Street	IV	25	13.6	58.0	71.6	0.05	2.6	F
Total	IV		56.0	87.4	143.4	0.21	5.3	F



Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	3.4	16.9	0.05	10.8	D
9th Street	IV	25	14.7	2.3	17.0	0.06	11.7	D
10th St	IV	25	13.3	16.1	29.4	0.05	6.1	F
11th St	IV	25	14.7	10.9	25.6	0.06	7.8	E
12th St	IV	25	12.5	14.4	26.9	0.05	6.3	F
Total	IV		68.7	47.1	115.8	0.26	8.0	E

Queues

Existing + Project (Mitigated)

10: 12th St & I-980 Off-Ramp

Timing Plan: PM PEAK














	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	106	140	353	1174
v/c Ratio	0.03	0.27	0.13	0.45	0.90
Control Delay	0.3	16.5	26.1	30.3	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	16.5	26.1	30.3	33.9
Queue Length 50th (ft)	0	22	21	56	292
Queue Length 95th (ft)	0	58	35	85	#426
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	346	391	1077	779	1305
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.27	0.13	0.45	0.90

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	90	119	275	46	1084	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.98		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1337	1485	4577	4260		3082	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1337	1485	4577	4260		3082	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	106	140	302	51	1129	45
RTOR Reduction (vph)	9	41	0	28	0	0	0
Lane Group Flow (vph)	3	65	140	325	0	1174	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	20.0	20.0	20.0	15.0		36.0	
Effective Green, g (s)	20.0	20.0	20.0	15.0		36.0	
Actuated g/C Ratio	0.24	0.24	0.24	0.18		0.42	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	315	349	1077	752		1305	
v/s Ratio Prot			0.03	c0.08		c0.38	
v/s Ratio Perm	0.00	c0.04					
v/c Ratio	0.01	0.19	0.13	0.43		0.90	
Uniform Delay, d1	24.9	26.0	25.6	31.2		22.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.2	0.2	1.8		10.1	
Delay (s)	25.0	27.2	25.9	33.0		32.9	
Level of Service	C	C	C	C		C	
Approach Delay (s)			26.4	33.0		32.9	
Approach LOS			C	C		C	
<b>Intersection Summary</b>							
HCM Average Control Delay			32.0		HCM Level of Service		C
HCM Volume to Capacity ratio			0.60				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			65.6%		ICU Level of Service		C
Analysis Period (min)			15				





c Critical Lane Group

Queues

Existing + Project (Mitigated)

14: 12th St / 11th St & Lake Merritt Blvd

Timing Plan: PM PEAK

				
Lane Group	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	792	540	382	855
v/c Ratio	1.18	0.40	0.53	1.18
Control Delay	113.5	12.8	15.8	98.8
Queue Delay	69.7	0.0	0.0	11.6
Total Delay	183.2	12.8	15.8	110.3
Queue Length 50th (ft)	~339	65	96	~360
Queue Length 95th (ft)	#517	100	167	m#328
Internal Link Dist (ft)			571	240
Turn Bay Length (ft)				
Base Capacity (vph)	674	1339	726	726
Starvation Cap Reductn	80	0	0	16
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.33	0.40	0.53	1.20

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.

HCM Signalized Intersection Capacity Analysis  
 14: 12th St / 11th St & Lake Merritt Blvd

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	697	486	344	750	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	0.97	1.00	1.00	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1450	3090	1676	1676	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1450	3090	1676	1676	
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.88	0.88
Adj. Flow (vph)	0	792	540	382	852	3
RTOR Reduction (vph)	0	45	0	0	0	0
Lane Group Flow (vph)	0	747	540	382	855	0
Turn Type		Over	Prot			
Protected Phases		5	5	1	3	
Permitted Phases						
Actuated Green, G (s)		26.0	26.0	26.0	26.0	
Effective Green, g (s)		26.0	26.0	26.0	26.0	
Actuated g/C Ratio		0.43	0.43	0.43	0.43	
Clearance Time (s)		4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		628	1339	726	726	
v/s Ratio Prot		c0.51	0.17	0.23	c0.51	
v/s Ratio Perm						
v/c Ratio		1.19	0.40	0.53	1.18	
Uniform Delay, d1		17.0	11.7	12.5	17.0	
Progression Factor		1.00	1.00	1.00	0.68	
Incremental Delay, d2		100.3	0.9	2.7	81.4	
Delay (s)		117.3	12.6	15.2	93.0	
Level of Service		F	B	B	F	
Approach Delay (s)	117.3			13.7	93.0	
Approach LOS	F			B	F	
<b>Intersection Summary</b>						
HCM Average Control Delay			72.0		HCM Level of Service	E
HCM Volume to Capacity ratio			1.18			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			98.7%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

## Queues

Existing + Project (Mitigated)

## 32: 7th Street &amp; Jackson Street

Timing Plan: PM PEAK



















	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1314	288	482	538
v/c Ratio	0.84	0.53	0.67	0.77
Control Delay	26.9	6.4	11.5	16.8
Queue Delay	0.1	0.1	0.2	1.0
Total Delay	26.9	6.5	11.8	17.8
Queue Length 50th (ft)	211	0	40	99
Queue Length 95th (ft)	276	63	221	#133
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	1560	540	718	702
Starvation Cap Reductn	0	0	26	43
Spillback Cap Reductn	8	9	0	22
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.54	0.70	0.82

## Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 32: 7th Street & Jackson Street

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	35	930	541	0	0	0	0	297	146	41	438	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		0.98	0.91					0.98			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.97	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			1.00	
Satd. Flow (prot)		3873	938					1381			1459	
Flt Permitted		1.00	1.00					1.00			0.93	
Satd. Flow (perm)		3873	938					1381			1369	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	37	989	576	0	0	0	0	323	159	46	492	0
RTOR Reduction (vph)	0	59	176	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1255	112	0	0	0	0	471	0	0	538	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		30.0	30.0					41.0			41.0	
Effective Green, g (s)		31.0	31.0					41.0			41.0	
Actuated g/C Ratio		0.39	0.39					0.51			0.51	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		1501	363					708			702	
v/s Ratio Prot								0.34				
v/s Ratio Perm		0.32	0.12								c0.39	
v/c Ratio		0.84	0.31					0.66			0.77	
Uniform Delay, d1		22.2	17.0					14.4			15.7	
Progression Factor		1.00	1.00					0.47			0.59	
Incremental Delay, d2		5.7	2.2					4.6			6.4	
Delay (s)		27.9	19.2					11.4			15.6	
Level of Service		C	B					B			B	
Approach Delay (s)		26.3			0.0			11.4			15.6	
Approach LOS		C			A			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.4								C	
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			80.0							8.0		
Intersection Capacity Utilization			92.0%							F		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
 33: 7th Street & Madison Street

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK

	→	↓
Lane Group	EBT	SBT
Lane Group Flow (vph)	1240	1326
v/c Ratio	0.72	0.88
Control Delay	19.5	20.2
Queue Delay	0.0	7.1
Total Delay	19.5	27.3
Queue Length 50th (ft)	104	263
Queue Length 95th (ft)	135	#385
Internal Link Dist (ft)	296	190
Turn Bay Length (ft)		
Base Capacity (vph)	1722	1513
Starvation Cap Reductn	0	160
Spillback Cap Reductn	0	92
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.72	0.98
















**Intersection Summary**

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



HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	782	309	0	0	0	0	0	0	293	914	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.86									0.91	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									0.99	
Frt		0.96									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		5227									2731	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		5227									2731	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	889	351	0	0	0	0	0	0	322	1004	0
RTOR Reduction (vph)	0	66	0	0	0	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	1174	0	0	0	0	0	0	0	0	1315	0
Confl. Peds. (#/hr)			30							61		
Confl. Bikes (#/hr)			2									
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0
Parking (#/hr)		5	5							5	5	
Turn Type										Perm		
Protected Phases		4									6	
Permitted Phases										6		
Actuated Green, G (s)		19.0									34.0	
Effective Green, g (s)		19.0									33.0	
Actuated g/C Ratio		0.32									0.55	
Clearance Time (s)		4.0									3.0	
Lane Grp Cap (vph)		1655									1502	
v/s Ratio Prot		c0.22										
v/s Ratio Perm											0.48	
v/c Ratio		0.71									0.88	
Uniform Delay, d1		18.1									11.7	
Progression Factor		1.00									1.07	
Incremental Delay, d2		2.6									6.5	
Delay (s)		20.7									19.0	
Level of Service		C									B	
Approach Delay (s)		20.7			0.0			0.0			19.0	
Approach LOS		C			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.8								B	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			70.4%								C	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
38: 6th Street & Oak Street

Existing + Project (Mitigated)  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	874	614	390	73
v/c Ratio	1.08	0.65	0.92	0.13
Control Delay	75.7	23.9	52.6	0.5
Queue Delay	91.4	0.0	0.0	0.0
Total Delay	167.2	23.9	52.6	0.5
Queue Length 50th (ft)	~432	114	174	0
Queue Length 95th (ft)	#640	156	#325	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	807	949	426	546
Starvation Cap Reductn	132	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.29	0.65	0.92	0.13

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.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↔		↔	↔	↔
Volume (vph)	138	649	87	105	672	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.90	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1450		2889	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1450		2889	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	153	721	101	122	781	73
RTOR Reduction (vph)	0	0	0	0	0	49
Lane Group Flow (vph)	0	874	0	614	390	24
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		39.5		24.0	24.0	24.0
Effective Green, g (s)		39.0		23.0	23.0	23.0
Actuated g/C Ratio		0.56		0.33	0.33	0.33
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		808		949	426	411
v/s Ratio Prot				0.21	c0.30	
v/s Ratio Perm		0.60				0.02
v/c Ratio		1.08		0.65	0.92	0.06
Uniform Delay, d1		15.5		20.0	22.6	16.1
Progression Factor		1.00		1.00	1.00	1.00
Incremental Delay, d2		56.1		3.4	26.8	0.3
Delay (s)		71.6		23.4	49.4	16.4
Level of Service		E		C	D	B
Approach Delay (s)		71.6		33.5		
Approach LOS		E		C		

Intersection Summary			
HCM Average Control Delay	49.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

## Queues

Existing + Project (Mitigated)

## 39: I-880 SB Off-Ramp &amp; Jackson Street

Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1163	615	422
v/c Ratio	0.84	0.72	1.45
Control Delay	29.9	17.6	234.8
Queue Delay	0.0	0.0	0.0
Total Delay	29.9	17.6	234.8
Queue Length 50th (ft)	178	197	~293
Queue Length 95th (ft)	230	252	#325
Internal Link Dist (ft)	69	194	191
Turn Bay Length (ft)			
Base Capacity (vph)	1382	857	291
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	4	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.84	0.72	1.45

## 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.

HCM Signalized Intersection Capacity Analysis  
 39: I-880 SB Off-Ramp & Jackson Street

Existing + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	228	535	272	0	0	0	0	458	28	212	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.96						0.99			1.00	
Flt Protected		0.99						1.00			0.97	
Satd. Flow (prot)		4164						1454			1414	
Flt Permitted		0.99						1.00			0.34	
Satd. Flow (perm)		4164						1454			495	
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.79	0.79	0.79	0.70	0.70	0.70
Adj. Flow (vph)	256	601	306	0	0	0	0	580	35	303	119	0
RTOR Reduction (vph)	0	80	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	1083	0	0	0	0	0	612	0	0	422	0
Confl. Peds. (#/hr)	4								7	7		
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1									2		
Actuated Green, G (s)		24.5						46.5			46.5	
Effective Green, g (s)		25.0						47.0			47.0	
Actuated g/C Ratio		0.31						0.59			0.59	
Clearance Time (s)		4.5						4.5			4.5	
Lane Grp Cap (vph)		1301						854			291	
v/s Ratio Prot								0.42				
v/s Ratio Perm		0.26									c0.85	
v/c Ratio		0.83						0.72			1.45	
Uniform Delay, d1		25.6						11.8			16.5	
Progression Factor		1.00						1.00			0.47	
Incremental Delay, d2		6.3						5.1			217.6	
Delay (s)		31.9						16.9			225.4	
Level of Service		C						B			F	
Approach Delay (s)		31.9			0.0			16.9			225.4	
Approach LOS		C			A			B			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			64.8									E
HCM Volume to Capacity ratio			1.24									
Actuated Cycle Length (s)			80.0							8.0		
Intersection Capacity Utilization			80.0%									D
Analysis Period (min)			15									

c Critical Lane Group

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	26.9	53.1	0.15	9.9	D
Madison Street	IV	25	18.9	19.5	38.4	0.07	6.7	F
Oak Street	IV	25	19.3	19.7	39.0	0.07	6.7	F
Total	IV		64.4	66.1	130.5	0.29	8.0	E

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	17.9	33.9	0.06	6.4	F
Madison Street	IV	25	19.5	17.3	36.8	0.07	7.2	E
Jackson Street	IV	25	18.8	23.0	41.8	0.07	6.1	F
Alice Street	IV	25	19.7	4.8	24.5	0.07	10.9	D
Harrison Street	IV	25	19.0	13.9	32.9	0.07	7.8	E
Webster Street	IV	25	18.8	27.3	46.1	0.07	5.5	F
Total	IV		111.8	104.2	216.0	0.42	7.0	E

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	18.0	33.3	0.06	6.2	F
9th Street	IV	25	13.2	2.5	15.7	0.05	11.5	D
8th Street	IV	25	13.9	5.8	19.7	0.05	9.6	D
7th Street	IV	25	13.6	20.2	33.8	0.05	5.4	F
Total	IV		56.0	46.5	102.5	0.21	7.4	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	14.4	27.9	0.05	6.5	F
9th Street	IV	25	14.7	1.3	16.0	0.06	12.4	D
10th St	IV	25	13.3	1.9	15.2	0.05	11.9	D
11th St	IV	25	14.7	9.3	24.0	0.06	8.3	E
12th St	IV	25	12.5	17.6	30.1	0.05	5.6	F
Total	IV		68.7	44.5	113.2	0.26	8.2	E

**INTERIM 2020 PLUS PROJECT (MITIGATED)  
TRAFFIC CONDITIONS**



Queues  
10: 12th St & I-980 Off-Ramp

Interim 2020 + Project (Mitigated)  
Timing Plan: AM PEAK








	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	8	66	208	680	2112
v/c Ratio	0.03	0.25	0.26	1.13	1.20
Control Delay	24.0	39.4	42.1	120.0	121.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	39.4	42.1	120.0	121.9
Queue Length 50th (ft)	1	38	49	-205	-980
Queue Length 95th (ft)	1	76	69	#221	#1115
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	240	266	796	603	1758
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.25	0.26	1.13	1.20

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.

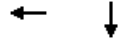
HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Interim 2020 + Project (Mitigated)  
 Timing Plan: AM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations	↗	↖	↑↑↑	↑↑↑		↘↘	
Volume (vph)	2	56	177	427	96	1946	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.93	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.94	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1345	1496	4577	4247		3087	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1345	1496	4577	4247		3087	
Peak-hour factor, PHF	0.25	0.85	0.85	0.77	0.77	0.95	0.95
Adj. Flow (vph)	8	66	208	555	125	2048	64
RTOR Reduction (vph)	6	6	0	31	0	0	0
Lane Group Flow (vph)	2	60	208	649	0	2112	0
Confl. Peds. (#/hr)	35	35			4	35	4
Confl. Bikes (#/hr)	1				1		
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	20.0	20.0	20.0	15.5		65.5	
Effective Green, g (s)	20.0	20.0	20.0	15.5		65.5	
Actuated g/C Ratio	0.17	0.17	0.17	0.13		0.57	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	234	260	796	572		1758	
v/s Ratio Prot			c0.05	c0.15		c0.68	
v/s Ratio Perm	0.00	0.04					
v/c Ratio	0.01	0.23	0.26	1.13		1.20	
Uniform Delay, d1	39.3	40.9	41.1	49.8		24.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	2.1	0.8	80.4		96.4	
Delay (s)	39.4	43.0	41.9	130.2		121.1	
Level of Service	D	D	D	F		F	
Approach Delay (s)			42.2	130.2		121.1	
Approach LOS			D	F		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			115.9		HCM Level of Service		F
HCM Volume to Capacity ratio			1.00				
Actuated Cycle Length (s)			115.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			91.8%		ICU Level of Service		F
Analysis Period (min)			15				
c Critical Lane Group							

Queues  
 20: 10th St & Madison Street
















Interim 2020 + Project (Mitigated)  
 Timing Plan: AM PEAK



Lane Group	WBT	SBT
Lane Group Flow (vph)	562	647
v/c Ratio	0.76	0.61
Control Delay	20.8	6.9
Queue Delay	0.1	0.0
Total Delay	21.0	6.9
Queue Length 50th (ft)	150	30
Queue Length 95th (ft)	243	44
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	737	1067
Starvation Cap Reductn	9	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.77	0.61
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Interim 2020 + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Volume (vph)	0	0	0	79	399	0	0	0	0	97	458	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						0.99	
Frt					1.00						0.98	
Flt Protected					0.99						0.99	
Satd. Flow (prot)					1449						2800	
Flt Permitted					0.99						0.99	
Satd. Flow (perm)					1449						2800	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	93	469	0	0	0	0	100	472	75
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	0	0	0	562	0	0	0	0	0	630	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					30.5						22.5	
Effective Green, g (s)					30.5						22.5	
Actuated g/C Ratio					0.51						0.38	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					737						1050	
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.23	
v/c Ratio					0.76						0.60	
Uniform Delay, d1					11.8						15.1	
Progression Factor					1.00						0.31	
Incremental Delay, d2					7.3						2.3	
Delay (s)					19.2						7.0	
Level of Service					B						A	
Approach Delay (s)		0.0			19.2			0.0			7.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.7		HCM Level of Service						B	
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			55.2%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
38: 6th Street & Oak Street

Interim 2020 + Project (Mitigated)  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	756	617	372	27
v/c Ratio	0.93	0.63	0.85	0.04
Control Delay	30.6	25.8	45.0	0.1
Queue Delay	21.2	0.0	0.0	0.0
Total Delay	51.8	25.8	45.0	0.1
Queue Length 50th (ft)	243	131	186	0
Queue Length 95th (ft)	#578	164	#303	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	810	979	438	650
Starvation Cap Reductn	81	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.04	0.63	0.85	0.04

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Interim 2020 + Project (Mitigated)  
 Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↕		↕	↕	↕
Volume (vph)	218	463	81	119	611	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.98		0.98	1.00	1.00
Satd. Flow (prot)		1440		2900	1297	1269
Flt Permitted		0.98		0.98	1.00	1.00
Satd. Flow (perm)		1440		2900	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	242	514	99	145	745	27
RTOR Reduction (vph)	0	0	0	0	0	18
Lane Group Flow (vph)	0	756	0	617	372	9
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		45.5		28.0	28.0	28.0
Effective Green, g (s)		45.0		27.0	27.0	27.0
Actuated g/C Ratio		0.56		0.34	0.34	0.34
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		810		979	438	428
v/s Ratio Prot				0.21	c0.29	
v/s Ratio Perm		0.52				0.01
v/c Ratio		0.93		0.63	0.85	0.02
Uniform Delay, d1		16.1		22.3	24.6	17.7
Progression Factor		0.82		1.00	1.00	1.00
Incremental Delay, d2		14.9		3.1	18.3	0.1
Delay (s)		28.1		25.4	42.9	17.8
Level of Service		C		C	D	B
Approach Delay (s)		28.1		32.0		
Approach LOS		C		C		

Intersection Summary			
HCM Average Control Delay	30.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	7.0	33.2	0.15	15.8	C
Madison Street	IV	25	18.9	11.3	30.2	0.07	8.5	E
Oak Street	IV	25	19.3	15.7	35.0	0.07	7.5	E
Total	IV		64.4	34.0	98.4	0.29	10.6	D

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	20.6	36.6	0.06	5.9	F
Madison Street	IV	25	19.5	20.6	40.1	0.07	6.6	F
Jackson Street	IV	25	18.8	27.7	46.5	0.07	5.5	F
Alice Street	IV	25	19.7	10.1	29.8	0.07	9.0	E
Harrison Street	IV	25	19.0	32.9	51.9	0.07	5.0	F
Webster Street	IV	25	18.8	52.2	71.0	0.07	3.6	F
Total	IV		111.8	164.1	275.9	0.42	5.5	F

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	6.9	22.2	0.06	9.4	D
9th Street	IV	25	13.2	3.7	16.9	0.05	10.7	D
8th Street	IV	25	13.9	4.2	18.1	0.05	10.4	D
7th Street	IV	25	13.6	25.6	39.2	0.05	4.7	F
Total	IV		56.0	40.4	96.4	0.21	7.9	E

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	9.9	23.4	0.05	7.8	E
9th Street	IV	25	14.7	2.4	17.1	0.06	11.6	D
10th St	IV	25	13.3	5.8	19.1	0.05	9.5	D
11th St	IV	25	14.7	7.1	21.8	0.06	9.1	D
12th St	IV	25	12.5	9.1	21.6	0.05	7.9	E
Total	IV		68.7	34.3	103.0	0.26	9.0	D



Queues  
5: 14th St & Madison Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK



















	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	675	684	1390
v/c Ratio	0.65	0.82	0.89
Control Delay	19.6	28.5	21.8
Queue Delay	0.0	0.0	36.5
Total Delay	19.6	28.5	58.3
Queue Length 50th (ft)	101	116	193
Queue Length 95th (ft)	152	#160	#242
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1044	837	1556
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	1	0	264
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.65	0.82	1.08

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
5: 14th St & Madison Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	550	91	58	510	0	0	0	0	383	768	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.98			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						0.98	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.99						0.98	
Satd. Flow (prot)		3065			3159						2869	
Flt Permitted		1.00			0.79						0.98	
Satd. Flow (perm)		3065			2512						2869	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	579	96	70	614	0	0	0	0	456	914	20
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	653	0	0	684	0	0	0	0	0	1388	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						32.5	
Effective Green, g (s)		20.0			20.0						32.5	
Actuated g/C Ratio		0.33			0.33						0.54	
Clearance Time (s)		3.0			3.0						4.5	
Lane Grp Cap (vph)		1022			837						1554	
v/s Ratio Prot		0.21										
v/s Ratio Perm					c0.27						0.48	
v/c Ratio		0.64			0.82						0.89	
Uniform Delay, d1		16.9			18.3						12.2	
Progression Factor		1.00			1.00						1.02	
Incremental Delay, d2		3.1			8.7						7.9	
Delay (s)		20.0			27.0						20.4	
Level of Service		C			C						C	
Approach Delay (s)		20.0			27.0			0.0			20.4	
Approach LOS		C			C			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.9		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				7.5			
Intersection Capacity Utilization			85.5%		ICU Level of Service				E			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
6: 14th St & Oak Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK























Lane Group	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	1014	538	762	703	37
v/c Ratio	0.78	0.33	1.04	0.60	0.08
Control Delay	23.2	11.9	60.7	14.9	2.5
Queue Delay	3.3	0.0	0.5	1.6	0.0
Total Delay	26.5	11.9	61.2	16.5	2.5
Queue Length 50th (ft)	234	91	~306	178	3
Queue Length 95th (ft)	322	108	#373	247	m8
Internal Link Dist (ft)	315	125		150	
Turn Bay Length (ft)			85		
Base Capacity (vph)	1298	1628	734	1176	475
Starvation Cap Reductn	192	0	1	289	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.92	0.33	1.04	0.79	0.08

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.

HCM Signalized Intersection Capacity Analysis  
6: 14th St & Oak Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Volume (vph)	63	870	0	0	430	610	137	524	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Util. Factor		0.95			0.95	1.00		0.95	1.00			
Frbp, ped/bikes		1.00			1.00	0.92		1.00	0.96			
Flpb, ped/bikes		1.00			1.00	1.00		0.99	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.99	1.00			
Satd. Flow (prot)		2912			3185	1317		3111	1197			
Flt Permitted		0.87			1.00	1.00		0.99	1.00			
Satd. Flow (perm)		2538			3185	1317		3111	1197			
Peak-hour factor, PHF	0.92	0.92	0.92	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	68	946	0	0	538	762	146	557	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	61	0	0	23	0	0	0
Lane Group Flow (vph)	0	1014	0	0	538	701	0	703	14	0	0	0
Confl. Peds. (#/hr)	34		11	11		34	80		32			
Confl. Bikes (#/hr)						19			5			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5							5			
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		1			1			2				
Permitted Phases	1					1	2		2			
Actuated Green, G (s)		46.0			46.0	46.0		34.0	34.0			
Effective Green, g (s)		46.0			46.0	46.0		34.0	34.0			
Actuated g/C Ratio		0.51			0.51	0.51		0.38	0.38			
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0			
Lane Grp Cap (vph)		1297			1628	673		1175	452			
v/s Ratio Prot					0.17							
v/s Ratio Perm		0.40				c0.53		0.23	0.01			
v/c Ratio		0.78			0.33	1.04		0.60	0.03			
Uniform Delay, d1		17.9			12.9	22.0		22.5	17.6			
Progression Factor		1.00			0.87	0.91		0.56	0.35			
Incremental Delay, d2		4.7			0.5	43.8		2.1	0.1			
Delay (s)		22.7			11.8	63.9		14.7	6.2			
Level of Service		C			B	E		B	A			
Approach Delay (s)		22.7			42.3			14.3			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK














	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	119	284	392	1262
v/c Ratio	0.04	0.31	0.26	0.50	0.97
Control Delay	1.7	19.3	27.3	30.3	44.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.7	19.3	27.3	30.3	44.9
Queue Length 50th (ft)	0	31	45	61	330
Queue Length 95th (ft)	0	71	64	92	#481
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	342	385	1077	785	1296
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.26	0.50	0.97

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Interim 2020 + Project (Mitigated)  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	101	241	295	62	1104	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.99	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1337	1485	4577	4235		3062	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1337	1485	4577	4235		3062	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	119	284	324	68	1150	112
RTOR Reduction (vph)	9	36	0	38	0	0	0
Lane Group Flow (vph)	3	83	284	354	0	1262	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	20.0	20.0	20.0	15.0		36.0	
Effective Green, g (s)	20.0	20.0	20.0	15.0		36.0	
Actuated g/C Ratio	0.24	0.24	0.24	0.18		0.42	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	315	349	1077	747		1297	
v/s Ratio Prot			c0.06	c0.08		c0.41	
v/s Ratio Perm	0.00	0.06					
v/c Ratio	0.01	0.24	0.26	0.47		0.97	
Uniform Delay, d1	24.9	26.3	26.5	31.5		24.0	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.6	0.6	2.2		19.3	
Delay (s)	25.0	27.9	27.1	33.6		43.3	
Level of Service	C	C	C	C		D	
Approach Delay (s)			27.3	33.6		43.3	
Approach LOS			C	C		D	
<b>Intersection Summary</b>							
HCM Average Control Delay			38.3		HCM Level of Service		D
HCM Volume to Capacity ratio			0.67				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			69.3%		ICU Level of Service		C
Analysis Period (min)			15				

c Critical Lane Group

Queues  
38: 6th Street & Oak Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1165	344	221	73
v/c Ratio	1.21	0.49	0.70	0.17
Control Delay	115.1	31.9	44.3	0.8
Queue Delay	40.1	0.5	40.1	0.2
Total Delay	155.3	32.5	84.4	1.0
Queue Length 50th (ft)	~819	86	126	0
Queue Length 95th (ft)	m#819	122	#208	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	963	706	317	439
Starvation Cap Reductn	67	0	0	0
Spillback Cap Reductn	40	116	104	108
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.30	0.58	1.04	0.22

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.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Interim 2020 + Project (Mitigated)  
 Timing Plan: PM PEAK

Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations						
Volume (vph)	214	834	54	51	381	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.90	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1445		2886	1297	1251
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1445		2886	1297	1251
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	238	927	63	59	443	73
RTOR Reduction (vph)	0	0	0	0	0	55
Lane Group Flow (vph)	0	1165	0	344	221	18
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		60.5		23.0	23.0	23.0
Effective Green, g (s)		60.0		22.0	22.0	22.0
Actuated g/C Ratio		0.67		0.24	0.24	0.24
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		963		705	317	306
v/s Ratio Prot				0.12	c0.17	
v/s Ratio Perm		0.81				0.01
v/c Ratio		1.21		0.49	0.70	0.06
Uniform Delay, d1		15.0		29.2	31.0	26.1
Progression Factor		0.87		1.00	1.00	1.00
Incremental Delay, d2		97.3		2.4	12.0	0.4
Delay (s)		110.4		31.6	43.0	26.4
Level of Service		F		C	D	C
Approach Delay (s)		110.4		36.0		
Approach LOS		F		D		
<b>Intersection Summary</b>						
HCM Average Control Delay			83.7		HCM Level of Service	F
HCM Volume to Capacity ratio			1.07			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			93.7%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						



Queues  
41: 5th Street & Oak Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK




















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1687	765	118
v/c Ratio	1.02	1.00	0.16
Control Delay	54.9	54.9	16.5
Queue Delay	70.6	45.9	0.0
Total Delay	125.5	100.8	16.5
Queue Length 50th (ft)	~356	406	55
Queue Length 95th (ft)	#469	#638	90
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	1660	766	761
Starvation Cap Reductn	193	0	0
Spillback Cap Reductn	240	87	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.19	1.13	0.16

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.

HCM Signalized Intersection Capacity Analysis  
41: 5th Street & Oak Street

Interim 2020 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	417	1031	121	0	0	0	0	590	76	5	91	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.98						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4367						1426			1463	
Flt Permitted		0.99						1.00			0.97	
Satd. Flow (perm)		4367						1426			1426	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	448	1109	130	0	0	0	0	678	87	6	112	0
RTOR Reduction (vph)	0	11	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1676	0	0	0	0	0	760	0	0	118	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		34.5						48.5			48.5	
Effective Green, g (s)		34.0						48.0			48.0	
Actuated g/C Ratio		0.38						0.53			0.53	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1650						761			761	
v/s Ratio Prot								c0.53				
v/s Ratio Perm		0.38									0.08	
v/c Ratio		1.02						1.00			0.16	
Uniform Delay, d1		28.0						21.0			10.7	
Progression Factor		1.00						1.00			1.47	
Incremental Delay, d2		26.2						32.3			0.4	
Delay (s)		54.2						53.2			16.1	
Level of Service		D						D			B	
Approach Delay (s)		54.2			0.0			53.2			16.1	
Approach LOS		D			A			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			52.2								HCM Level of Service	D
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.4%								ICU Level of Service	D
Analysis Period (min)			15									
c Critical Lane Group												

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**Arterial Level of Service: EB 7th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	7.2	33.4	0.15	15.7	C
Madison Street	IV	25	18.9	9.0	27.9	0.07	9.2	D
Oak Street	IV	25	19.3	24.2	43.5	0.07	6.0	F
Total	IV		64.4	40.4	104.8	0.29	10.0	D

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**Arterial Level of Service: WB 8th Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	19.5	35.5	0.06	6.1	F
Madison Street	IV	25	19.5	18.8	38.3	0.07	6.9	F
Jackson Street	IV	25	18.8	7.3	26.1	0.07	9.8	D
Alice Street	IV	25	19.7	9.4	29.1	0.07	9.2	D
Harrison Street	IV	25	19.0	14.8	33.8	0.07	7.6	E
Webster Street	IV	25	18.8	32.4	51.2	0.07	5.0	F
Total	IV		111.8	102.2	214.0	0.42	7.1	E

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**Arterial Level of Service: SB Madison Street**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	22.7	38.0	0.06	5.5	F
9th Street	IV	25	13.2	3.2	16.4	0.05	11.0	D
8th Street	IV	25	13.9	4.8	18.7	0.05	10.1	D
7th Street	IV	25	13.6	139.7	153.3	0.05	1.2	F
Total	IV		56.0	170.4	226.4	0.21	3.4	F

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	5.0	18.5	0.05	9.9	D
9th Street	IV	25	14.7	2.8	17.5	0.06	11.4	D
10th St	IV	25	13.3	7.0	20.3	0.05	8.9	E
11th St	IV	25	14.7	9.8	24.5	0.06	8.1	E
12th St	IV	25	12.5	19.6	32.1	0.05	5.3	F
Total	IV		68.7	44.2	112.9	0.26	8.2	E

**CUMULATIVE 2035 PLUS PROJECT  
(MITIGATED) TRAFFIC CONDITIONS**

Queues  
5: 14th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK



















	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	327	1058	1379
v/c Ratio	0.27	1.05	1.04dl
Control Delay	11.4	62.5	39.3
Queue Delay	0.0	0.0	0.0
Total Delay	11.4	62.5	39.3
Queue Length 50th (ft)	34	~226	~157
Queue Length 95th (ft)	54	#251	#387
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1204	1012	1368
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	1.05	1.01

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.





HCM Signalized Intersection Capacity Analysis  
5: 14th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	226	49	119	685	0	0	0	0	626	625	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						0.96	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						0.98	
Satd. Flow (prot)		3062			3149						2779	
Flt Permitted		1.00			0.83						0.98	
Satd. Flow (perm)		3062			2640						2779	
Peak-hour factor, PHF	0.84	0.84	0.84	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	269	58	157	901	0	0	0	0	680	679	20
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	296	0	0	1058	0	0	0	0	0	1377	0
Confl. Peds. (#/hr)			38	38						73		60
Confl. Bikes (#/hr)			30									7
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm							Perm	
Protected Phases		4			4							2
Permitted Phases				4						2		
Actuated Green, G (s)		23.0			23.0							29.5
Effective Green, g (s)		23.0			23.0							29.5
Actuated g/C Ratio		0.38			0.38							0.49
Clearance Time (s)		3.0			3.0							4.5
Lane Grp Cap (vph)		1174			1012							1366
v/s Ratio Prot		0.10										
v/s Ratio Perm					c0.40							0.50
v/c Ratio		0.25			1.05							1.04dl
Uniform Delay, d1		12.6			18.5							15.2
Progression Factor		1.00			1.00							0.72
Incremental Delay, d2		0.5			40.9							25.2
Delay (s)		13.1			59.4							36.2
Level of Service		B			E							D
Approach Delay (s)		13.1			59.4			0.0				36.2
Approach LOS		B			E			A				D
<b>Intersection Summary</b>												
HCM Average Control Delay			42.3		HCM Level of Service						D	
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.5		
Intersection Capacity Utilization			88.7%		ICU Level of Service					E		
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

Queues  
17: 11th St & Castro St
















Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK

				
Lane Group	EBL	EBT	NBT	NEL
Lane Group Flow (vph)	184	862	1531	202
v/c Ratio	0.47	0.56	0.75	0.56
Control Delay	25.6	36.9	27.6	54.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.6	36.9	27.6	54.2
Queue Length 50th (ft)	85	167	328	73
Queue Length 95th (ft)	174	205	382	113
Internal Link Dist (ft)		428	454	389
Turn Bay Length (ft)	140			
Base Capacity (vph)	391	1535	2042	360
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.56	0.75	0.56
<b>Intersection Summary</b>				



HCM Signalized Intersection Capacity Analysis  
 17: 11th St & Castro St

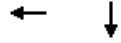
Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

						
Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations		  	  		 	
Volume (vph)	169	793	1276	86	123	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frbp, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.94	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1212	5432	4338		2961	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1212	5432	4338		2961	
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.93	0.93
Adj. Flow (vph)	184	862	1434	97	132	70
RTOR Reduction (vph)	49	0	6	0	0	0
Lane Group Flow (vph)	135	862	1525	0	202	0
Confl. Peds. (#/hr)	37			5	37	5
Parking (#/hr)			5	5		
Turn Type	Perm					
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	32.5	32.5	54.0		14.0	
Effective Green, g (s)	32.5	32.5	54.0		14.0	
Actuated g/C Ratio	0.28	0.28	0.47		0.12	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Lane Grp Cap (vph)	343	1535	2037		360	
v/s Ratio Prot			c0.35		c0.07	
v/s Ratio Perm	0.11	0.16				
v/c Ratio	0.39	0.56	0.75		0.56	
Uniform Delay, d1	33.3	35.2	24.9		47.6	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.4	1.5	2.6		6.2	
Delay (s)	36.7	36.7	27.5		53.8	
Level of Service	D	D	C		D	
Approach Delay (s)		36.7	27.5		53.8	
Approach LOS		D	C		D	
<b>Intersection Summary</b>						
HCM Average Control Delay			32.9		HCM Level of Service	C
HCM Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			115.0		Sum of lost time (s)	14.5
Intersection Capacity Utilization			67.7%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK



















Lane Group	WBT	SBT
Lane Group Flow (vph)	915	1035
v/c Ratio	1.26	0.96
Control Delay	145.7	33.7
Queue Delay	2.3	0.0
Total Delay	147.9	33.7
Queue Length 50th (ft)	~429	204
Queue Length 95th (ft)	#576	#320
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	729	1075
Starvation Cap Reductn	3	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.26	0.96

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.

HCM Signalized Intersection Capacity Analysis  
20: 10th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											  	
Volume (vph)	0	0	0	243	535	0	0	0	0	128	822	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.99						0.99	
Frt					1.00						0.99	
Flt Protected					0.98						0.99	
Satd. Flow (prot)					1433						2848	
Flt Permitted					0.98						0.99	
Satd. Flow (perm)					1433						2848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	286	629	0	0	0	0	132	847	56
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	915	0	0	0	0	0	1028	0
Confl. Peds. (#/hr)				23						52		60
Confl. Bikes (#/hr)												14
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					30.5						22.5	
Effective Green, g (s)					30.5						22.5	
Actuated g/C Ratio					0.51						0.38	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					728						1068	
v/s Ratio Prot												
v/s Ratio Perm					0.64						0.36	
v/c Ratio					1.26						0.96	
Uniform Delay, d1					14.8						18.3	
Progression Factor					1.00						0.90	
Incremental Delay, d2					126.6						14.7	
Delay (s)					141.4						31.2	
Level of Service					F						C	
Approach Delay (s)		0.0			141.4			0.0			31.2	
Approach LOS		A			F			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			82.9		HCM Level of Service						F	
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					7.0		
Intersection Capacity Utilization			84.4%		ICU Level of Service					E		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK


















	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	169	965	1240
v/c Ratio	0.37	1.24	0.77
Control Delay	15.7	141.5	11.9
Queue Delay	0.0	95.4	1.4
Total Delay	15.7	236.8	13.3
Queue Length 50th (ft)	58	~767	92
Queue Length 95th (ft)	63	#908	108
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	456	780	1618
Starvation Cap Reductn	0	115	197
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.37	1.45	0.87

**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.

HCM Signalized Intersection Capacity Analysis  
 21: 10th St & Oak Street

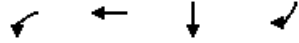
Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	13	90	0	0	641	170	136	898	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frbp, ped/bikes		1.00			0.99			0.99				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.97			0.99				
Flt Protected		0.99			1.00			0.99				
Satd. Flow (prot)		1458			1406			4347				
Flt Permitted		0.57			1.00			0.99				
Satd. Flow (perm)		829			1406			4347				
Peak-hour factor, PHF	0.61	0.61	0.61	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	21	148	0	0	763	202	149	987	104	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	169	0	0	958	0	0	1229	0	0	0	0
Confl. Peds. (#/hr)	26					26	72		91			
Confl. Bikes (#/hr)						7			11			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		55.0			55.0			37.0				
Effective Green, g (s)		55.0			55.0			37.0				
Actuated g/C Ratio		0.55			0.55			0.37				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		456			773			1608				
v/s Ratio Prot					c0.68							
v/s Ratio Perm		0.20						0.28				
v/c Ratio		0.37			1.24			0.76				
Uniform Delay, d1		12.7			22.5			27.7				
Progression Factor		1.00			1.00			0.31				
Incremental Delay, d2		2.3			118.8			3.3				
Delay (s)		15.0			141.3			11.9				
Level of Service		B			F			B				
Approach Delay (s)		15.0			141.3			11.9			0.0	
Approach LOS		B			F			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			64.7				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			87.0%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	718	2249	682	552
v/c Ratio	0.99	1.83	0.51	0.85
Control Delay	43.3	402.3	4.3	24.9
Queue Delay	0.0	0.0	0.4	163.9
Total Delay	43.3	402.3	4.7	188.8
Queue Length 50th (ft)	168	~757	12	368
Queue Length 95th (ft)	#401	#782	17	m#509
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	722	1227	1336	653
Starvation Cap Reductn	0	0	249	248
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	1.83	0.63	1.36

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.

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  						  	
Volume (vph)	0	0	0	603	1889	0	0	0	0	0	600	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frbp, ped/bikes				1.00	1.00						1.00	0.98
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				1198	4090						4145	1010
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				1198	4090						4145	1010
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	718	2249	0	0	0	0	0	682	552
RTOR Reduction (vph)	0	0	0	363	0	0	0	0	0	0	0	328
Lane Group Flow (vph)	0	0	0	355	2249	0	0	0	0	0	682	224
Confl. Bikes (#/hr)												10
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10
Parking (#/hr)				5	5						5	5
Turn Type				Perm								Perm
Protected Phases					2						1	
Permitted Phases				2								1
Actuated Green, G (s)				27.0	27.0						29.0	29.0
Effective Green, g (s)				27.0	27.0						29.0	29.0
Actuated g/C Ratio				0.30	0.30						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				359	1227						1336	325
v/s Ratio Prot											0.16	
v/s Ratio Perm				0.30	0.55							c0.22
v/c Ratio				0.99	1.83						0.51	0.69
Uniform Delay, d1				31.4	31.5						24.7	26.6
Progression Factor				1.00	1.00						0.13	3.65
Incremental Delay, d2				45.1	378.0						0.9	7.4
Delay (s)				76.4	409.5						4.2	104.4
Level of Service				E	F						A	F
Approach Delay (s)		0.0			328.9			0.0			49.0	
Approach LOS		A			F			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			246.7									F
HCM Volume to Capacity ratio			1.24									
Actuated Cycle Length (s)			90.0								34.0	
Intersection Capacity Utilization			91.9%									F
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2196	631	1204
v/c Ratio	1.61	0.87	0.53
Control Delay	301.9	14.3	2.8
Queue Delay	0.0	24.3	0.5
Total Delay	301.9	38.7	3.3
Queue Length 50th (ft)	~438	34	21
Queue Length 95th (ft)	#400	m40	24
Internal Link Dist (ft)	298		195
Turn Bay Length (ft)		75	
Base Capacity (vph)	1360	726	2273
Starvation Cap Reductn	0	115	565
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.61	1.03	0.70













**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.



HCM Signalized Intersection Capacity Analysis  
 26: 8th Street & Harrison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↖	↑↑↑					
Volume (vph)	0	0	0	0	1498	127	985	446	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.91		0.86	0.86					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.96	0.98					
Frt					0.99		1.00	1.00					
Flt Protected					1.00		0.95	0.97					
Satd. Flow (prot)					4244		1320	4135					
Flt Permitted					1.00		0.95	0.97					
Satd. Flow (perm)					4244		1320	4135					
Peak-hour factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74	0.78	0.78	0.78	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	2024	172	1263	572	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2180	0	631	1204	0	0	0	0	
Confl. Peds. (#/hr)							88	65					
Confl. Bikes (#/hr)							7						
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)					5	5							
Turn Type								Perm					
Protected Phases					8			1					
Permitted Phases								1					
Actuated Green, G (s)					19.0			32.5	32.5				
Effective Green, g (s)					19.0			33.0	33.0				
Actuated g/C Ratio					0.32			0.55	0.55				
Clearance Time (s)					4.0			4.5	4.5				
Lane Grp Cap (vph)					1344			726	2274				
v/s Ratio Prot					c0.51								
v/s Ratio Perm								c0.48	0.29				
v/c Ratio					1.62			0.87	0.53				
Uniform Delay, d1					20.5			11.6	8.6				
Progression Factor					1.00			0.33	0.27				
Incremental Delay, d2					283.2			7.6	0.5				
Delay (s)					303.7			11.4	2.7				
Level of Service					F			B	A				
Approach Delay (s)		0.0			303.7			5.7			0.0		
Approach LOS		A			F			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			168.1		HCM Level of Service				F				
HCM Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			74.9%		ICU Level of Service				D				
Analysis Period (min)			15										

c Critical Lane Group

Queues  
27: 8th Street & Jackson Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1940	110	276	383
v/c Ratio	0.92	0.53	0.48	0.70
Control Delay	28.4	32.8	24.3	29.8
Queue Delay	54.9	0.0	5.0	29.6
Total Delay	83.4	32.8	29.3	59.4
Queue Length 50th (ft)	347	47	116	174
Queue Length 95th (ft)	#479	107	190	221
Internal Link Dist (ft)	294		192	195
Turn Bay Length (ft)		130		
Base Capacity (vph)	2109	206	571	551
Starvation Cap Reductn	380	0	226	177
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.12	0.53	0.80	1.02

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 27: 8th Street & Jackson Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑		↑	↑			↑		
Volume (vph)	0	0	0	88	1474	184	99	248	0	0	227	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5		4.0	4.0			4.0		
Lane Util. Factor					0.91		1.00	1.00			1.00		
Frbp, ped/bikes					0.97		1.00	1.00			0.99		
Flpb, ped/bikes					0.98		0.98	1.00			1.00		
Frt					0.98		1.00	1.00			0.97		
Flt Protected					1.00		0.95	1.00			1.00		
Satd. Flow (prot)					4054		1366	1467			1404		
Flt Permitted					1.00		0.37	1.00			1.00		
Satd. Flow (perm)					4054		530	1467			1404		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.77	0.77	0.77	
Adj. Flow (vph)	0	0	0	98	1638	204	110	276	0	0	295	88	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	5	0	
Lane Group Flow (vph)	0	0	0	0	1924	0	110	276	0	0	378	0	
Confl. Peds. (#/hr)				129		97	51					51	
Confl. Bikes (#/hr)						8						1	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5	5	5			5	5	
Turn Type					Perm			Perm					
Protected Phases						1		2			2		
Permitted Phases				1			2						
Actuated Green, G (s)					46.5		34.5	34.5			34.5		
Effective Green, g (s)					46.5		35.0	35.0			35.0		
Actuated g/C Ratio					0.52		0.39	0.39			0.39		
Clearance Time (s)					4.5		4.5	4.5			4.5		
Lane Grp Cap (vph)					2095		206	571			546		
v/s Ratio Prot								0.19			c0.27		
v/s Ratio Perm					0.47		0.21						
v/c Ratio					0.92		0.53	0.48			0.69		
Uniform Delay, d1					20.0		21.2	20.7			23.0		
Progression Factor					1.00		1.00	1.00			0.97		
Incremental Delay, d2					7.9		9.6	2.9			7.1		
Delay (s)					28.0		30.8	23.6			29.3		
Level of Service					C		C	C			C		
Approach Delay (s)		0.0			28.0			25.7			29.3		
Approach LOS		A			C			C			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			27.8		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.82										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			83.6%		ICU Level of Service					E			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
28: 8th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	2552	1115
v/c Ratio	1.09	0.83
Control Delay	65.8	25.7
Queue Delay	12.5	0.4
Total Delay	78.3	26.1
Queue Length 50th (ft)	~395	108
Queue Length 95th (ft)	#491	#157
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	2336	1336
Starvation Cap Reductn	60	31
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.12	0.85

Intersection Summary

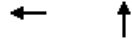
- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	698	1624	0	0	0	0	0	938	110	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						0.99		
Flpb, ped/bikes					0.99						1.00		
Frt					1.00						0.98		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					4212						4237		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					4212						4237		
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.94	0.94	0.94	
Adj. Flow (vph)	0	0	0	767	1785	0	0	0	0	0	998	117	
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	9	0	
Lane Group Flow (vph)	0	0	0	0	2546	0	0	0	0	0	1106	0	
Confl. Peds. (#/hr)				36								34	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					32.7						18.3		
Effective Green, g (s)					33.2						18.8		
Actuated g/C Ratio					0.55						0.31		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					2331						1328		
v/s Ratio Prot											c0.26		
v/s Ratio Perm					0.60								
v/c Ratio					1.09						0.83		
Uniform Delay, d1					13.4						19.1		
Progression Factor					1.00						1.05		
Incremental Delay, d2					49.2						4.9		
Delay (s)					62.6						25.0		
Level of Service					E						C		
Approach Delay (s)		0.0			62.6			0.0			25.0		
Approach LOS		A			E			A			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			51.1		HCM Level of Service						D		
HCM Volume to Capacity ratio			1.00										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			90.7%		ICU Level of Service					E			
Analysis Period (min)			15										

c Critical Lane Group















Lane Group	WBT	NBT
Lane Group Flow (vph)	2565	1221
v/c Ratio	1.01	0.91
Control Delay	41.1	38.9
Queue Delay	0.0	58.7
Total Delay	41.1	97.6
Queue Length 50th (ft)	~578	204
Queue Length 95th (ft)	#728	#279
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	2539	1343
Starvation Cap Reductn	0	262
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.01	1.13

**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.

HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	2129	231	198	852	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.98				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4222			4185				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4222			4185				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2314	251	230	991	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2559	0	0	1218	0	0	0	0
Confl. Peds. (#/hr)						62	131					
Confl. Bikes (#/hr)						4						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					60.0			32.0				
Effective Green, g (s)					60.0			32.0				
Actuated g/C Ratio					0.60			0.32				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					2533			1339				
v/s Ratio Prot					c0.61							
v/s Ratio Perm								0.29				
v/c Ratio					1.01			0.91				
Uniform Delay, d1					20.0			32.6				
Progression Factor					1.00			0.96				
Incremental Delay, d2					20.4			7.2				
Delay (s)					40.4			38.5				
Level of Service					D			D				
Approach Delay (s)		0.0			40.4			38.5			0.0	
Approach LOS		A			D			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			39.8				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			81.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
33: 7th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK

	→	↘	↓
Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1285	344	1363
v/c Ratio	1.09dr	0.44	0.82
Control Delay	18.4	5.1	8.5
Queue Delay	0.0	0.6	0.8
Total Delay	18.5	5.7	9.2
Queue Length 50th (ft)	78	38	111
Queue Length 95th (ft)	m80	m42	m125
Internal Link Dist (ft)	296		190
Turn Bay Length (ft)			
Base Capacity (vph)	1582	776	1658
Starvation Cap Reductn	0	170	92
Spillback Cap Reductn	8	0	84
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.82	0.57	0.87






















**Intersection Summary**

- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.



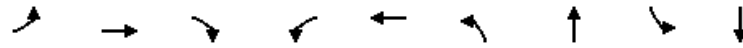
HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  								  	  		
Volume (vph)	0	723	356	0	0	0	0	0	0	327	1295	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.86								1.00	0.95		
Frbp, ped/bikes		0.98								1.00	1.00		
Flpb, ped/bikes		1.00								0.97	1.00		
Frt		0.95								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		5171								1353	2926		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		5171								1353	2926		
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	
Adj. Flow (vph)	0	861	424	0	0	0	0	0	0	344	1363	0	
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	10	0	0	
Lane Group Flow (vph)	0	1255	0	0	0	0	0	0	0	334	1363	0	
Confl. Peds. (#/hr)			33							31			
Confl. Bikes (#/hr)			2										
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		18.0								35.0	35.0		
Effective Green, g (s)		18.0								34.0	34.0		
Actuated g/C Ratio		0.30								0.57	0.57		
Clearance Time (s)		4.0								3.0	3.0		
Lane Grp Cap (vph)		1551								767	1658		
v/s Ratio Prot		c0.24									c0.47		
v/s Ratio Perm										0.25			
v/c Ratio		1.09dr								0.44	0.82		
Uniform Delay, d1		19.4								7.5	10.5		
Progression Factor		0.77								0.60	0.57		
Incremental Delay, d2		3.3								0.6	1.6		
Delay (s)		18.4								5.1	7.7		
Level of Service		B								A	A		
Approach Delay (s)		18.4			0.0			0.0			7.2		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			12.0		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.82										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			103.0%		ICU Level of Service					G			
Analysis Period (min)			15										
dr Defacto Right Lane. Recode with 1 though lane as a right lane.													
c Critical Lane Group													

Queues  
35: 7th Street & 5th Ave

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK
























Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	858	43	286	1900	205	570	41	581
v/c Ratio	2.00	0.33	0.06	1.08	1.06	1.49	0.88	0.28	0.93
Control Delay	506.1	12.2	3.7	103.7	61.3	278.0	38.0	22.3	47.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	506.1	12.2	3.7	103.7	61.3	278.0	38.0	22.3	47.9
Queue Length 50th (ft)	~103	87	0	~163	~560	~144	243	13	268
Queue Length 95th (ft)	#222	111	14	#311	#698	#242	#369	40	#479
Internal Link Dist (ft)		987			303		672		454
Turn Bay Length (ft)	170		50	110		190		110	
Base Capacity (vph)	93	2574	704	264	1790	138	649	147	622
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	2.00	0.33	0.06	1.08	1.06	1.49	0.88	0.28	0.93

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.

HCM Signalized Intersection Capacity Analysis  
35: 7th Street & 5th Ave

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK

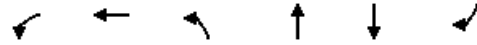
												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	34	129	755	38	272	1794	11	168	326	141	37	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5
Lane Util. Factor		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		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
Frt		1.00	1.00	0.85	1.00	1.00		1.00	0.95		1.00	0.94
Flt Protected		0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		1770	5085	1349	1767	3535		1766	1548		1768	1524
Flt Permitted		0.10	1.00	1.00	0.28	1.00		0.18	1.00		0.19	1.00
Satd. Flow (perm)		184	5085	1349	520	3535		341	1548		361	1524
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.82	0.82	0.82	0.90	0.90
Adj. Flow (vph)	39	147	858	43	286	1888	12	205	398	172	41	358
RTOR Reduction (vph)	0	0	0	21	0	0	0	0	20	0	0	3
Lane Group Flow (vph)	0	186	858	22	286	1900	0	205	550	0	41	578
Confl. Peds. (#/hr)		10		4	4		10	8		3	3	
Confl. Bikes (#/hr)				1			2			4		
Parking (#/hr)				5					5	5		5
Turn Type	Perm	Perm		Perm	Perm			Perm			Perm	
Protected Phases			1			1			2			2
Permitted Phases	1	1		1	1			2			2	
Actuated Green, G (s)		40.5	40.5	40.5	40.5	40.5		32.5	32.5		32.5	32.5
Effective Green, g (s)		40.5	40.5	40.5	40.5	40.5		32.5	32.5		32.5	32.5
Actuated g/C Ratio		0.51	0.51	0.51	0.51	0.51		0.41	0.41		0.41	0.41
Clearance Time (s)		3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5
Lane Grp Cap (vph)		93	2574	683	263	1790		139	629		147	619
v/s Ratio Prot			0.17			0.54			0.36			0.38
v/s Ratio Perm		c1.01		0.02	0.55			c0.60			0.11	
v/c Ratio		2.00	0.33	0.03	1.09	1.06		1.47	0.88		0.28	0.93
Uniform Delay, d1		19.8	11.7	9.9	19.8	19.8		23.8	21.9		15.9	22.7
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2		485.9	0.3	0.1	80.8	39.6		248.3	15.7		4.7	23.1
Delay (s)		505.6	12.1	10.0	100.6	59.4		272.0	37.6		20.6	45.8
Level of Service		F	B	A	F	E		F	D		C	D
Approach Delay (s)			96.4			64.8			99.6			44.2
Approach LOS			F			E			F			D
<b>Intersection Summary</b>												
HCM Average Control Delay			75.2			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.77									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			7.0			
Intersection Capacity Utilization			111.2%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lan <sup>o</sup> Configurations	
Volume (vph)	201
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	0.90
Adj. Flow (vph)	223
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	5
Parking (#/hr)	5
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (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	

Queues  
36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK





















Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	17	1262	263	257	439	375
v/c Ratio	0.03	1.88	1.01	0.42	0.72	0.67
Control Delay	8.4	422.0	71.9	14.6	19.9	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	422.0	71.9	14.6	19.9	18.2
Queue Length 50th (ft)	3	~528	~78	64	89	73
Queue Length 95th (ft)	11	#725	m#126	m80	#156	131
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	635	670	260	619	607	557
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	0.03	1.88	1.01	0.42	0.72	0.67

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.

HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	15	1136	0	237	231	0	0	98	569
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frb, ped/bikes				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
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1588	1676		1593	1467			1419	1300
Flt Permitted				0.95	1.00		0.37	1.00			1.00	1.00
Satd. Flow (perm)				1588	1676		615	1467			1419	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	17	1262	0	263	257	0	0	120	694
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	8	8
Lane Group Flow (vph)	0	0	0	17	1262	0	263	257	0	0	431	367
Confl. Peds. (#/hr)				2		2						
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				16.5	16.5		17.5	17.5			17.5	17.5
Effective Green, g (s)				18.0	18.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio				0.40	0.40		0.42	0.42			0.42	0.42
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				635	670		260	619			599	549
v/s Ratio Prot					c0.75			0.18			0.30	
v/s Ratio Perm				0.01			c0.43					0.28
v/c Ratio				0.03	1.88		1.01	0.42			0.72	0.67
Uniform Delay, d1				8.2	13.5		13.0	9.1			10.8	10.5
Progression Factor				1.00	1.00		1.36	1.38			1.00	1.00
Incremental Delay, d2				0.1	403.3		46.6	1.3			7.3	6.3
Delay (s)				8.3	416.8		64.3	13.9			18.1	16.8
Level of Service				A	F		E	B			B	B
Approach Delay (s)		0.0			411.3			39.4			17.5	
Approach LOS		A			F			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			214.6									F
HCM Volume to Capacity ratio			1.44									
Actuated Cycle Length (s)			45.0								8.0	
Intersection Capacity Utilization			117.1%									H
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1316	731	419	27
v/c Ratio	1.43	1.05dr	1.15	0.06
Control Delay	214.7	50.0	130.8	0.2
Queue Delay	81.5	0.0	0.0	0.0
Total Delay	296.1	50.0	130.8	0.2
Queue Length 50th (ft)	~1151	230	~348	0
Queue Length 95th (ft)	m#1160	#270	#480	0
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	922	815	363	478
Starvation Cap Reductn	104	0	0	0
Spillback Cap Reductn	40	0	0	5
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.61	0.90	1.15	0.06

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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↶		↷	↶	↷
Volume (vph)	372	813	104	151	688	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.98		0.98	1.00	1.00
Satd. Flow (prot)		1440		2910	1297	1269
Flt Permitted		0.98		0.98	1.00	1.00
Satd. Flow (perm)		1440		2910	1297	1269
Peak-hour factor, PHF	0.90	0.90	0.82	0.82	0.82	0.82
Adj. Flow (vph)	413	903	127	184	839	27
RTOR Reduction (vph)	0	0	0	0	0	19
Lane Group Flow (vph)	0	1316	0	731	419	8
Confl. Peds. (#/hr)	5		9			
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		64.5		29.0	29.0	29.0
Effective Green, g (s)		64.0		28.0	28.0	28.0
Actuated g/C Ratio		0.64		0.28	0.28	0.28
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		922		815	363	355
v/s Ratio Prot				0.25	c0.32	
v/s Ratio Perm		0.91				0.01
v/c Ratio		1.43		1.05dr	1.15	0.02
Uniform Delay, d1		18.0		34.6	36.0	26.1
Progression Factor		0.91		1.00	1.00	1.00
Incremental Delay, d2		194.0		14.6	96.2	0.1
Delay (s)		210.4		49.2	132.2	26.2
Level of Service		F		D	F	C
Approach Delay (s)		210.4		79.5		
Approach LOS		F		E		

Intersection Summary			
HCM Average Control Delay	148.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.  
 c Critical Lane Group



Queues  
41: 5th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: AM PEAK

	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1359	877	157
v/c Ratio	1.07dl	0.98	0.17
Control Delay	65.9	46.0	15.2
Queue Delay	37.9	100.8	0.9
Total Delay	103.8	146.7	16.1
Queue Length 50th (ft)	~336	494	49
Queue Length 95th (ft)	#432	#808	m63
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	1327	893	908
Starvation Cap Reductn	84	0	531
Spillback Cap Reductn	114	188	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.12	1.24	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.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 41: 5th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: AM PEAK

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	498	678	129	0	0	0	0	699	99	1	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frb, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		0.99						0.98			1.00	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		4382						1434			1466	
Flt Permitted		0.98						1.00			1.00	
Satd. Flow (perm)		4382						1434			1464	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	519	706	134	0	0	0	0	768	109	1	156	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1346	0	0	0	0	0	872	0	0	157	0
Confl. Peds. (#/hr)	7		8						19	19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2			2	
Permitted Phases	1	1								2		
Actuated Green, G (s)		30.5						62.5			62.5	
Effective Green, g (s)		30.0						62.0			62.0	
Actuated g/C Ratio		0.30						0.62			0.62	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1315						889			908	
v/s Ratio Prot								c0.61				
v/s Ratio Perm		0.31									0.11	
v/c Ratio		1.07dl						0.98			0.17	
Uniform Delay, d1		35.0						18.4			8.1	
Progression Factor		1.00						1.00			1.81	
Incremental Delay, d2		30.9						25.9			0.3	
Delay (s)		65.9						44.3			14.9	
Level of Service		E						D			B	
Approach Delay (s)		65.9			0.0			44.3			14.9	
Approach LOS		E			A			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			54.7								HCM Level of Service	D
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			100.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			85.1%								ICU Level of Service	E
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	25	26.2	8.8	35.0	0.15	15.0	C
Madison Street	IV	25	18.9	18.4	37.3	0.07	6.9	F
Oak Street	IV	25	19.3	30.2	49.5	0.07	5.3	F
Total	IV		64.4	57.4	121.8	0.29	8.6	E

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	25	16.0	41.2	57.2	0.06	3.8	F
Madison Street	IV	25	19.5	65.8	85.3	0.07	3.1	F
Jackson Street	IV	25	18.8	28.4	47.2	0.07	5.4	F
Alice Street	IV	25	19.7	18.3	38.0	0.07	7.1	E
Harrison Street	IV	25	19.0	301.9	320.9	0.07	0.8	F
Webster Street	IV	25	18.8	402.3	421.1	0.07	0.6	F
Total	IV		111.8	857.9	969.7	0.42	1.6	F

## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	25	15.3	33.7	49.0	0.06	4.2	F
9th Street	IV	25	13.2	6.0	19.2	0.05	9.4	D
8th Street	IV	25	13.9	25.7	39.6	0.05	4.8	F
7th Street	IV	25	13.6	8.5	22.1	0.05	8.3	E
Total	IV		56.0	73.9	129.9	0.21	5.9	F

Arterial Level of Service: NB Oak Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	25	13.5	38.9	52.4	0.05	3.5	F
9th Street	IV	25	14.7	2.4	17.1	0.06	11.6	D
10th St	IV	25	13.3	11.9	25.2	0.05	7.2	E
11th St	IV	25	14.7	10.8	25.5	0.06	7.8	E
12th St	IV	25	12.5	14.4	26.9	0.05	6.3	F
Total	IV		68.7	78.4	147.1	0.26	6.3	F

Queues  
1: W Grand Ave & Broadway

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	338	2191	1836	367	991	276	93	618
v/c Ratio	4.28	1.34	3.00dl	1.77	0.80	0.65	1.04	0.52
Control Delay	1516.3	181.8	555.4	389.8	29.2	29.8	141.0	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1516.3	181.8	555.4	389.8	29.2	29.8	141.0	21.4
Queue Length 50th (ft)	~300	~821	~850	~296	241	117	~54	127
Queue Length 95th (ft)	#200	268	#405	#463	321	208	#143	172
Internal Link Dist (ft)		1676	1262		931			197
Turn Bay Length (ft)	200			140		85	105	
Base Capacity (vph)	79	1630	841	207	1237	423	89	1181
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	4.28	1.34	2.18	1.77	0.80	0.65	1.04	0.52

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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (vph)	3	156	957	73	124	690	67	1	337	912	254	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Lane Util. Factor		1.00	0.95			0.95			1.00	0.95	1.00	
Frbp, ped/bikes		1.00	1.00			1.00			1.00	1.00	0.91	
Flpb, ped/bikes		1.00	1.00			1.00			0.99	1.00	1.00	
Frt		1.00	0.99			0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00			0.99			0.95	1.00	1.00	
Satd. Flow (prot)		1593	3136			3111			1571	3185	1085	
Flt Permitted		0.09	1.00			0.51			0.32	1.00	1.00	
Satd. Flow (perm)		152	3136			1611			534	3185	1085	
Peak-hour factor, PHF	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.92	0.92	0.92	0.92	0.88
Adj. Flow (vph)	6	332	2036	155	258	1438	140	1	366	991	276	1
RTOR Reduction (vph)	0	0	7	0	0	7	0	0	0	0	2	0
Lane Group Flow (vph)	0	338	2184	0	0	1829	0	0	367	991	274	0
Confl. Peds. (#/hr)		47		62	62		47		43		66	
Confl. Bikes (#/hr)				10			19				35	
Bus Blockages (#/hr)	0	0	0	0	0	0	10	0	0	0	10	0
Parking (#/hr)				5			5				5	
Turn Type	Perm	Perm			Perm			Perm	Perm		Perm	Perm
Protected Phases			4			8				2		
Permitted Phases	4	4			8			2	2		2	6
Actuated Green, G (s)		44.0	44.0			44.0			33.0	33.0	33.0	
Effective Green, g (s)		44.0	44.0			44.0			33.0	33.0	33.0	
Actuated g/C Ratio		0.52	0.52			0.52			0.39	0.39	0.39	
Clearance Time (s)		4.0	4.0			4.0			4.0	4.0	4.0	
Vehicle Extension (s)		2.0	2.0			2.0			2.0	2.0	2.0	
Lane Grp Cap (vph)		79	1623			834			207	1237	421	
v/s Ratio Prot			0.70							0.31		
v/s Ratio Perm		c2.22				1.14			c0.69		0.25	
v/c Ratio		4.28	1.35			3.00dl			1.77	0.80	0.65	
Uniform Delay, d1		20.5	20.5			20.5			26.0	23.1	21.3	
Progression Factor		1.00	1.00			1.00			1.00	1.00	1.00	
Incremental Delay, d2		1504.5	159.8			540.7			366.7	5.5	7.6	
Delay (s)		1525.0	180.3			561.2			392.7	28.6	28.9	
Level of Service		F	F			F			F	C	C	
Approach Delay (s)			360.0			561.2				110.4		
Approach LOS			F			F				F		

Intersection Summary		
HCM Average Control Delay	320.0	HCM Level of Service F
HCM Volume to Capacity ratio	3.21	
Actuated Cycle Length (s)	85.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	119.3%	ICU Level of Service H
Analysis Period (min)	15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: W Grand Ave & Broadway

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	81	405	139
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.98	
Flpb, ped/bikes	0.99	1.00	
Frt	1.00	0.96	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1580	3016	
Flt Permitted	0.14	1.00	
Satd. Flow (perm)	230	3016	
Peak-hour factor, PHF	0.88	0.88	0.88
Adj. Flow (vph)	92	460	158
RTOR Reduction (vph)	0	9	0
Lane Group Flow (vph)	93	609	0
Confl. Peds. (#/hr)	47		43
Confl. Bikes (#/hr)			22
Bus Blockages (#/hr)	0	0	10
Parking (#/hr)			5
Turn Type	Perm		
Protected Phases		6	
Permitted Phases	6		
Actuated Green, G (s)	33.0	33.0	
Effective Green, g (s)	33.0	33.0	
Actuated g/C Ratio	0.39	0.39	
Clearance Time (s)	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	89	1171	
v/s Ratio Prot		0.20	
v/s Ratio Perm	0.40		
v/c Ratio	1.04	0.52	
Uniform Delay, d1	26.0	19.9	
Progression Factor	1.00	1.00	
Incremental Delay, d2	108.2	1.7	
Delay (s)	134.2	21.6	
Level of Service	F	C	
Approach Delay (s)		36.3	
Approach LOS		D	
<b>Intersection Summary</b>			

Queues  
5: 14th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

	→	←	↓
Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	731	815	1825
v/c Ratio	0.66	1.19	1.18
Control Delay	21.7	122.8	107.9
Queue Delay	0.0	0.0	0.0
Total Delay	21.7	122.8	107.9
Queue Length 50th (ft)	131	~227	~511
Queue Length 95th (ft)	188	#295	#576
Internal Link Dist (ft)	285	315	1054
Turn Bay Length (ft)			
Base Capacity (vph)	1101	687	1546
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.66	1.19	1.18



















**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.



HCM Signalized Intersection Capacity Analysis  
5: 14th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (vph)	0	573	122	126	550	0	0	0	0	398	1119	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0						4.5	
Lane Util. Factor		0.95			0.95						0.95	
Frbp, ped/bikes		0.98			1.00						1.00	
Flpb, ped/bikes		1.00			0.99						0.98	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		3029			3138						2885	
Flt Permitted		1.00			0.61						0.99	
Satd. Flow (perm)		3029			1921						2885	
Peak-hour factor, PHF	0.95	0.95	0.95	0.83	0.83	0.83	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	0	603	128	152	663	0	0	0	0	474	1332	19
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	712	0	0	815	0	0	0	0	0	1824	0
Confl. Peds. (#/hr)	122		88	88		122				52		45
Confl. Bikes (#/hr)			16									10
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Parking (#/hr)			5			5				5	5	5
Turn Type				Perm							Perm	
Protected Phases		4			4							2
Permitted Phases				4						2		
Actuated Green, G (s)		25.0			25.0							37.5
Effective Green, g (s)		25.0			25.0							37.5
Actuated g/C Ratio		0.36			0.36							0.54
Clearance Time (s)		3.0			3.0							4.5
Lane Grp Cap (vph)		1082			686							1546
v/s Ratio Prot		0.23										
v/s Ratio Perm					c0.42							0.63
v/c Ratio		0.66			1.19							1.18
Uniform Delay, d1		18.9			22.5							16.2
Progression Factor		1.00			1.00							1.00
Incremental Delay, d2		3.1			98.8							88.0
Delay (s)		22.0			121.3							104.2
Level of Service		C			F							F
Approach Delay (s)		22.0			121.3			0.0				104.2
Approach LOS		C			F			A				F
<b>Intersection Summary</b>												
HCM Average Control Delay			90.5		HCM Level of Service					F		
HCM Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			70.0		Sum of lost time (s)				7.5			
Intersection Capacity Utilization			102.1%		ICU Level of Service				G			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
10: 12th St & I-980 Off-Ramp

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK














	↘	↙	←	↓	↘
Lane Group	EBR	WBL	WBT	SBT	SWL
Lane Group Flow (vph)	12	184	652	542	1535
v/c Ratio	0.04	0.51	0.61	0.68	1.19
Control Delay	9.7	31.6	31.8	33.0	119.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	31.6	31.8	33.0	119.0
Queue Length 50th (ft)	0	78	113	86	-516
Queue Length 95th (ft)	0	133	142	124	#646
Internal Link Dist (ft)			433	464	295
Turn Bay Length (ft)		285			
Base Capacity (vph)	328	361	1077	800	1290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.51	0.61	0.68	1.19

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.

HCM Signalized Intersection Capacity Analysis  
 10: 12th St & I-980 Off-Ramp

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

							
Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Volume (vph)	3	156	554	385	108	1275	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frbp, ped/bikes	0.92	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	0.93	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.97		0.98	
Flt Protected	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1337	1485	4577	4195		3043	
Flt Permitted	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1337	1485	4577	4195		3043	
Peak-hour factor, PHF	0.25	0.85	0.85	0.91	0.91	0.96	0.96
Adj. Flow (vph)	12	184	652	423	119	1328	207
RTOR Reduction (vph)	9	11	0	60	0	0	0
Lane Group Flow (vph)	3	173	652	482	0	1535	0
Confl. Peds. (#/hr)	53	53			23	53	23
Parking (#/hr)				5	5		
Turn Type	custom	Perm					
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	20.0	20.0	20.0	15.0		36.0	
Effective Green, g (s)	20.0	20.0	20.0	15.0		36.0	
Actuated g/C Ratio	0.24	0.24	0.24	0.18		0.42	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.0	
Lane Grp Cap (vph)	315	349	1077	740		1289	
v/s Ratio Prot			c0.14	c0.11		c0.50	
v/s Ratio Perm	0.00	0.12					
v/c Ratio	0.01	0.49	0.61	0.65		1.19	
Uniform Delay, d1	24.9	28.1	29.0	32.6		24.5	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	4.9	2.5	4.4		93.9	
Delay (s)	25.0	33.1	31.5	37.0		118.4	
Level of Service	C	C	C	D		F	
Approach Delay (s)			31.9	37.0		118.4	
Approach LOS			C	D		F	
<b>Intersection Summary</b>							
HCM Average Control Delay			78.2		HCM Level of Service		E
HCM Volume to Capacity ratio			0.91				
Actuated Cycle Length (s)			85.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization			83.7%		ICU Level of Service		E
Analysis Period (min)			15				

c Critical Lane Group











	↖	→	↓
Lane Group	EBL	EBT	SBT
Lane Group Flow (vph)	105	1163	1730
v/c Ratio	0.17	1.15	1.28
Control Delay	15.5	105.0	145.5
Queue Delay	0.0	19.8	0.0
Total Delay	15.5	124.8	145.5
Queue Length 50th (ft)	29	~320	~515
Queue Length 95th (ft)	61	#372	#556
Internal Link Dist (ft)		289	171
Turn Bay Length (ft)			
Base Capacity (vph)	603	1007	1352
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	38	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	1.20	1.28

**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.

HCM Signalized Intersection Capacity Analysis  
 19: 11th St &

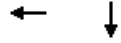
Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

					
Movement	EBL	EBT	EBR	SBL	SBT
Lane Configurations		 			 
Volume (vph)	97	530	412	75	1361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5
Lane Util. Factor	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.97			1.00
Flpb, ped/bikes	1.00	1.00			1.00
Frt	1.00	0.93			1.00
Flt Protected	0.95	1.00			1.00
Satd. Flow (prot)	1593	2651			2912
Flt Permitted	0.95	1.00			1.00
Satd. Flow (perm)	1593	2651			2912
Peak-hour factor, PHF	0.92	0.81	0.81	0.83	0.83
Adj. Flow (vph)	105	654	509	90	1640
RTOR Reduction (vph)	0	4	0	0	0
Lane Group Flow (vph)	105	1159	0	0	1730
Confl. Peds. (#/hr)			41	35	
Confl. Bikes (#/hr)			3		
Bus Blockages (#/hr)	0	10	10	10	10
Parking (#/hr)		5	5	5	5
Turn Type	Perm			Perm	
Protected Phases		2			4
Permitted Phases	2			4	
Actuated Green, G (s)	26.5	26.5			32.5
Effective Green, g (s)	26.5	26.5			32.5
Actuated g/C Ratio	0.38	0.38			0.46
Clearance Time (s)	5.5	5.5			5.5
Lane Grp Cap (vph)	603	1004			1352
v/s Ratio Prot		c0.44			
v/s Ratio Perm	0.07				0.59
v/c Ratio	0.17	1.15			1.28
Uniform Delay, d1	14.5	21.8			18.8
Progression Factor	1.00	1.00			0.60
Incremental Delay, d2	0.6	81.1			128.4
Delay (s)	15.1	102.8			139.7
Level of Service	B	F			F
Approach Delay (s)		95.6			139.7
Approach LOS		F			F
<b>Intersection Summary</b>					
HCM Average Control Delay			121.0	HCM Level of Service	F
HCM Volume to Capacity ratio			1.22		
Actuated Cycle Length (s)			70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization			85.9%	ICU Level of Service	E
Analysis Period (min)			15		

c Critical Lane Group

Queues  
20: 10th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK


















Lane Group	WBT	SBT
Lane Group Flow (vph)	529	2163
v/c Ratio	1.22	1.29
Control Delay	142.9	142.2
Queue Delay	0.0	14.4
Total Delay	142.9	156.5
Queue Length 50th (ft)	~286	~631
Queue Length 95th (ft)	#461	m#117
Internal Link Dist (ft)	322	225
Turn Bay Length (ft)		
Base Capacity (vph)	435	1682
Starvation Cap Reductn	0	41
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.22	1.32

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.

HCM Signalized Intersection Capacity Analysis  
 20: 10th St & Madison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Volume (vph)	0	0	0	176	327	0	0	0	0	381	1277	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5						3.5	
Lane Util. Factor					1.00						0.95	
Frbp, ped/bikes					1.00						1.00	
Flpb, ped/bikes					0.98						0.99	
Frt					1.00						0.99	
Flt Protected					0.98						0.99	
Satd. Flow (prot)					1416						2827	
Flt Permitted					0.98						0.99	
Satd. Flow (perm)					1416						2827	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	185	344	0	0	0	0	465	1557	141
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	529	0	0	0	0	0	2156	0
Confl. Peds. (#/hr)				41		16				34		19
Confl. Bikes (#/hr)												21
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	10	10
Parking (#/hr)					5					5	5	5
Turn Type				Perm							Perm	
Protected Phases					4						2	
Permitted Phases				4						2		
Actuated Green, G (s)					21.5						41.5	
Effective Green, g (s)					21.5						41.5	
Actuated g/C Ratio					0.31						0.59	
Clearance Time (s)					3.5						3.5	
Lane Grp Cap (vph)					435						1676	
v/s Ratio Prot												
v/s Ratio Perm					0.37						0.76	
v/c Ratio					1.22						1.29	
Uniform Delay, d1					24.2						14.2	
Progression Factor					1.00						0.31	
Incremental Delay, d2					116.7						129.2	
Delay (s)					140.9						133.7	
Level of Service					F						F	
Approach Delay (s)		0.0			140.9			0.0			133.7	
Approach LOS		A			F			A			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			135.1									F
HCM Volume to Capacity ratio			1.26									
Actuated Cycle Length (s)			70.0							7.0		
Intersection Capacity Utilization			92.4%									F
Analysis Period (min)			15									

c Critical Lane Group

Queues  
21: 10th St & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

	→	←	↑
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	538	525	1389
v/c Ratio	0.85	0.85	0.69
Control Delay	35.1	35.2	5.5
Queue Delay	4.7	31.0	0.2
Total Delay	39.8	66.3	5.7
Queue Length 50th (ft)	231	220	36
Queue Length 95th (ft)	293	#411	42
Internal Link Dist (ft)	322	248	185
Turn Bay Length (ft)			
Base Capacity (vph)	635	616	2009
Starvation Cap Reductn	54	115	126
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	1.05	0.74


















**Intersection Summary**

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



HCM Signalized Intersection Capacity Analysis  
21: 10th St & Oak Street

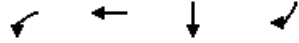
Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Volume (vph)	8	412	0	0	328	145	123	969	186	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frbp, ped/bikes		1.00			0.98			0.98				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.96			0.98				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1465			1385			4281				
Flt Permitted		0.99			1.00			1.00				
Satd. Flow (perm)		1452			1385			4281				
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	528	0	0	364	161	134	1053	202	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	30	0	0	0	0
Lane Group Flow (vph)	0	538	0	0	515	0	0	1359	0	0	0	0
Confl. Peds. (#/hr)	22		35	35		22	62		168			
Confl. Bikes (#/hr)			14			6			45			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)		5			5	5	5		5			
Turn Type	Perm						Perm					
Protected Phases		2			2			1				
Permitted Phases	2						1					
Actuated Green, G (s)		35.0			35.0			37.0				
Effective Green, g (s)		35.0			35.0			37.0				
Actuated g/C Ratio		0.44			0.44			0.46				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		635			606			1980				
v/s Ratio Prot					c0.37							
v/s Ratio Perm		0.37						0.32				
v/c Ratio		0.85			0.85			0.69				
Uniform Delay, d1		20.1			20.1			16.9				
Progression Factor		1.00			1.00			0.23				
Incremental Delay, d2		13.2			13.9			1.7				
Delay (s)		33.3			34.1			5.6				
Level of Service		C			C			A				
Approach Delay (s)		33.3			34.1			5.6			0.0	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.8		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			68.7%		ICU Level of Service				C			
Analysis Period (min)			15									

c Critical Lane Group

Queues  
25: 8th Street & Webster Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK























Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	800	2102	1138	752
v/c Ratio	1.13	1.71	0.85	1.15
Control Delay	89.1	349.7	6.1	90.8
Queue Delay	0.0	0.0	14.9	233.4
Total Delay	89.1	349.7	21.0	324.2
Queue Length 50th (ft)	~368	~689	22	~595
Queue Length 95th (ft)	#522	#707	m23	m#494
Internal Link Dist (ft)		294	191	
Turn Bay Length (ft)				
Base Capacity (vph)	709	1227	1336	654
Starvation Cap Reductn	0	0	209	205
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	1.71	1.01	1.67

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.

HCM Signalized Intersection Capacity Analysis  
 25: 8th Street & Webster Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					  						  		
Volume (vph)	0	0	0	664	1745	0	0	0	0	0	1013	669	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0	4.0						4.0	4.0	
Lane Util. Factor				0.86	0.86						0.86	0.86	
Frbp, ped/bikes				1.00	1.00						1.00	0.98	
Flpb, ped/bikes				1.00	1.00						1.00	1.00	
Frt				1.00	1.00						1.00	0.85	
Flt Protected				0.95	1.00						1.00	1.00	
Satd. Flow (prot)				1198	4090						4145	1011	
Flt Permitted				0.95	1.00						1.00	1.00	
Satd. Flow (perm)				1198	4090						4145	1011	
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89	
Adj. Flow (vph)	0	0	0	800	2102	0	0	0	0	0	1138	752	
RTOR Reduction (vph)	0	0	0	349	0	0	0	0	0	0	0	328	
Lane Group Flow (vph)	0	0	0	451	2102	0	0	0	0	0	1138	424	
Confl. Bikes (#/hr)												9	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm								Perm	
Protected Phases					2						1		
Permitted Phases				2								1	
Actuated Green, G (s)				27.0	27.0						29.0	29.0	
Effective Green, g (s)				27.0	27.0						29.0	29.0	
Actuated g/C Ratio				0.30	0.30						0.32	0.32	
Clearance Time (s)				4.0	4.0						4.0	4.0	
Lane Grp Cap (vph)				359	1227						1336	326	
v/s Ratio Prot											0.27		
v/s Ratio Perm				0.38	0.51							c0.42	
v/c Ratio				1.26	1.71						0.85	1.30	
Uniform Delay, d1				31.5	31.5						28.5	30.5	
Progression Factor				1.00	1.00						0.16	2.58	
Incremental Delay, d2				135.8	324.4						0.7	137.3	
Delay (s)				167.3	355.9						5.3	215.9	
Level of Service				F	F						A	F	
Approach Delay (s)		0.0			303.9			0.0			89.1		
Approach LOS		A			F			A			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			219.2	HCM Level of Service								F	
HCM Volume to Capacity ratio			1.50										
Actuated Cycle Length (s)			90.0	Sum of lost time (s)							34.0		
Intersection Capacity Utilization			101.5%	ICU Level of Service							G		
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
27: 8th Street & Jackson Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK















Lane Group	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	1851	197	470	423
v/c Ratio	0.92	0.85	0.80	0.76
Control Delay	16.4	54.9	31.4	28.6
Queue Delay	28.6	0.0	37.1	15.9
Total Delay	45.0	54.9	68.4	44.5
Queue Length 50th (ft)	314	75	173	149
Queue Length 95th (ft)	m275	#194	#330	#292
Internal Link Dist (ft)	294		192	195
Turn Bay Length (ft)		130		
Base Capacity (vph)	2010	231	587	559
Starvation Cap Reductn	263	0	143	126
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.06	0.85	1.06	0.98

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.

HCM Signalized Intersection Capacity Analysis  
27: 8th Street & Jackson Street

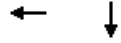
Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					←←←		←	↑			↓	←	
Volume (vph)	0	0	0	113	1408	145	183	437	0	0	278	111	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.5		4.0	4.0			4.0		
Lane Util. Factor					0.91		1.00	1.00			1.00		
Frbp, ped/bikes					0.99		1.00	1.00			0.98		
Flpb, ped/bikes					0.99		0.98	1.00			1.00		
Frt					0.99		1.00	1.00			0.96		
Flt Protected					1.00		0.95	1.00			1.00		
Satd. Flow (prot)					4166		1561	1467			1387		
Flt Permitted					1.00		0.35	1.00			1.00		
Satd. Flow (perm)					4166		578	1467			1387		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	126	1564	161	197	470	0	0	302	121	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	4	0	
Lane Group Flow (vph)	0	0	0	0	1835	0	197	470	0	0	419	0	
Confl. Peds. (#/hr)				88		91	53					53	
Confl. Bikes (#/hr)						9						7	
Bus Blockages (#/hr)	0	0	0	0	10	10	0	0	0	0	0	0	
Parking (#/hr)				5	5	5		5			5	5	
Turn Type					Perm		Perm						
Protected Phases					1		2				2		
Permitted Phases				1			2						
Actuated Green, G (s)					33.5		27.5	27.5			27.5		
Effective Green, g (s)					33.5		28.0	28.0			28.0		
Actuated g/C Ratio					0.48		0.40	0.40			0.40		
Clearance Time (s)					4.5		4.5	4.5			4.5		
Lane Grp Cap (vph)					1994		231	587			555		
v/s Ratio Prot								0.32			0.30		
v/s Ratio Perm					0.44		c0.34						
v/c Ratio					0.92		0.85	0.80			0.75		
Uniform Delay, d1					17.0		19.1	18.5			18.0		
Progression Factor					0.86		1.00	1.00			1.00		
Incremental Delay, d2					0.9		30.8	11.0			9.2		
Delay (s)					15.6		49.9	29.5			27.3		
Level of Service					B		D	C			C		
Approach Delay (s)		0.0			15.6			35.5			27.3		
Approach LOS		A			B			D			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			21.8		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			70.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			83.5%		ICU Level of Service					E			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
28: 8th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK















Lane Group	WBT	SBT
Lane Group Flow (vph)	2361	1749
v/c Ratio	1.16	1.03
Control Delay	98.7	47.4
Queue Delay	54.8	74.6
Total Delay	153.5	121.9
Queue Length 50th (ft)	~454	~264
Queue Length 95th (ft)	#551	m#370
Internal Link Dist (ft)	309	196
Turn Bay Length (ft)		
Base Capacity (vph)	2035	1703
Starvation Cap Reductn	71	251
Spillback Cap Reductn	195	124
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.28	1.20

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.

HCM Signalized Intersection Capacity Analysis  
 28: 8th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑						↑↑↑		
Volume (vph)	0	0	0	684	1489	0	0	0	0	0	1387	152	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.0						4.0		
Lane Util. Factor					0.91						0.91		
Frbp, ped/bikes					1.00						1.00		
Flpb, ped/bikes					0.98						1.00		
Frt					1.00						0.99		
Flt Protected					0.98						1.00		
Satd. Flow (prot)					4183						4242		
Flt Permitted					0.98						1.00		
Satd. Flow (perm)					4183						4242		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	743	1618	0	0	0	0	0	1576	173	
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	7	0	
Lane Group Flow (vph)	0	0	0	0	2358	0	0	0	0	0	1742	0	
Confl. Peds. (#/hr)				44								30	
Confl. Bikes (#/hr)												7	
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	10	10	
Parking (#/hr)				5	5						5	5	
Turn Type				Perm									
Protected Phases					8						2		
Permitted Phases				8									
Actuated Green, G (s)					33.5						27.5		
Effective Green, g (s)					34.0						28.0		
Actuated g/C Ratio					0.49						0.40		
Clearance Time (s)					4.5						4.5		
Lane Grp Cap (vph)					2032						1697		
v/s Ratio Prot											c0.41		
v/s Ratio Perm					0.56								
v/c Ratio					1.16						1.03		
Uniform Delay, d1					18.0						21.0		
Progression Factor					1.00						1.12		
Incremental Delay, d2					78.2						22.4		
Delay (s)					96.2						46.0		
Level of Service					F						D		
Approach Delay (s)		0.0			96.2			0.0			46.0		
Approach LOS		A			F			A			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			74.8		HCM Level of Service						E		
HCM Volume to Capacity ratio			1.10										
Actuated Cycle Length (s)			70.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			112.4%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
29: 8th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK



Lane Group	WBT	NBT
Lane Group Flow (vph)	2099	1649
v/c Ratio	1.02	0.96
Control Delay	45.6	15.0
Queue Delay	0.0	72.6
Total Delay	45.6	87.6
Queue Length 50th (ft)	~382	78
Queue Length 95th (ft)	#508	m72
Internal Link Dist (ft)	238	188
Turn Bay Length (ft)		
Base Capacity (vph)	2066	1715
Starvation Cap Reductn	0	304
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.02	1.17













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.



HCM Signalized Intersection Capacity Analysis  
 29: 8th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑↑				
Volume (vph)	0	0	0	0	1776	176	377	1124	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.91			0.91				
Frb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.97				
Frt					0.99			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					4220			4149				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4220			4149				
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1910	189	414	1235	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2090	0	0	1646	0	0	0	0
Confl. Peds. (#/hr)						92	160					
Confl. Bikes (#/hr)						6						
Bus Blockages (#/hr)	0	0	0	0	10	0	0	10	0	0	0	0
Parking (#/hr)					5	5	5	5				
Turn Type								Perm				
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					39.0			33.0				
Effective Green, g (s)					39.0			33.0				
Actuated g/C Ratio					0.49			0.41				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					2057			1711				
v/s Ratio Prot					c0.50							
v/s Ratio Perm								0.40				
v/c Ratio					1.02			0.96				
Uniform Delay, d1					20.5			22.9				
Progression Factor					1.00			0.48				
Incremental Delay, d2					23.9			2.1				
Delay (s)					44.4			13.1				
Level of Service					D			B				
Approach Delay (s)		0.0			44.4			13.1			0.0	
Approach LOS		A			D			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			30.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			82.3%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

Queues  
32: 7th Street & Jackson Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK













	→	↘	↑	↓
Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	1873	132	874	399
v/c Ratio	1.21	0.29	1.30	1.68
Control Delay	117.5	3.1	162.6	345.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	117.5	3.1	162.6	345.6
Queue Length 50th (ft)	~331	0	~409	~218
Queue Length 95th (ft)	#428	m15	m#505	#285
Internal Link Dist (ft)	306		91	192
Turn Bay Length (ft)				
Base Capacity (vph)	1553	449	672	237
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.21	0.29	1.30	1.68

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.

HCM Signalized Intersection Capacity Analysis  
32: 7th Street & Jackson Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑			↑	
Volume (vph)	74	1561	249	0	0	0	0	554	250	64	291	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		0.86	0.86					1.00			1.00	
Frb, ped/bikes		1.00	0.93					0.99			1.00	
Flpb, ped/bikes		1.00	1.00					1.00			1.00	
Frt		0.99	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		4018	958					1389			1454	
Flt Permitted		1.00	1.00					1.00			0.33	
Satd. Flow (perm)		4018	958					1389			490	
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	79	1661	265	0	0	0	0	602	272	72	327	0
RTOR Reduction (vph)	0	14	81	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	1859	51	0	0	0	0	873	0	0	399	0
Confl. Peds. (#/hr)			55						25	25		
Confl. Bikes (#/hr)			1						2			
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	0	0
Parking (#/hr)		5	5					5	5	5	5	
Turn Type	Perm		Perm							Perm		
Protected Phases		2						4			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		22.0	22.0					29.0			29.0	
Effective Green, g (s)		23.0	23.0					29.0			29.0	
Actuated g/C Ratio		0.38	0.38					0.48			0.48	
Clearance Time (s)		5.0	5.0					4.0			4.0	
Lane Grp Cap (vph)		1540	367					671			237	
v/s Ratio Prot								0.63				
v/s Ratio Perm		0.46	0.05								c0.81	
v/c Ratio		1.21	0.14					1.30			1.68	
Uniform Delay, d1		18.5	12.0					15.5			15.5	
Progression Factor		0.82	0.53					0.95			1.00	
Incremental Delay, d2		99.0	0.7					142.9			325.3	
Delay (s)		114.1	7.0					157.6			340.8	
Level of Service		F	A					F			F	
Approach Delay (s)		107.1			0.0			157.6			340.8	
Approach LOS		F			A			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			149.0								F	
HCM Volume to Capacity ratio			1.47									
Actuated Cycle Length (s)			60.0							8.0		
Intersection Capacity Utilization			118.4%								H	
Analysis Period (min)			15									

c Critical Lane Group

Queues  
33: 7th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK






















Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	2130	724	1578
v/c Ratio	1.07	1.08	1.05
Control Delay	63.7	53.3	35.4
Queue Delay	4.7	11.3	25.4
Total Delay	68.4	64.7	60.8
Queue Length 50th (ft)	~300	~345	~150
Queue Length 95th (ft)	#362	m#112	m122
Internal Link Dist (ft)	296		190
Turn Bay Length (ft)			
Base Capacity (vph)	1999	669	1505
Starvation Cap Reductn	0	17	84
Spillback Cap Reductn	21	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.08	1.11	1.11

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.

HCM Signalized Intersection Capacity Analysis  
 33: 7th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  								 	 		
Volume (vph)	0	1574	300	0	0	0	0	0	0	659	1436	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.86								1.00	0.95		
Frb, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	1.00		
Frt		0.98								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		5353								1300	2926		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		5353								1300	2926		
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	
Adj. Flow (vph)	0	1789	341	0	0	0	0	0	0	724	1578	0	
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	2119	0	0	0	0	0	0	0	724	1578	0	
Confl. Peds. (#/hr)			30							61			
Confl. Bikes (#/hr)			2										
Bus Blockages (#/hr)	0	10	10	0	0	0	0	0	0	0	10	0	
Parking (#/hr)		5	5							5	5		
Turn Type										Perm			
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		26.0								37.0	37.0		
Effective Green, g (s)		26.0								36.0	36.0		
Actuated g/C Ratio		0.37								0.51	0.51		
Clearance Time (s)		4.0								3.0	3.0		
Lane Grp Cap (vph)		1988								669	1505		
v/s Ratio Prot		c0.40									0.54		
v/s Ratio Perm										c0.56			
v/c Ratio		1.07								1.08	1.05		
Uniform Delay, d1		22.0								17.0	17.0		
Progression Factor		1.00								0.43	0.43		
Incremental Delay, d2		40.5								39.6	23.9		
Delay (s)		62.5								47.0	31.3		
Level of Service		E								D	C		
Approach Delay (s)		62.5			0.0			0.0			36.2		
Approach LOS		E			A			A			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			48.8		HCM Level of Service						D		
HCM Volume to Capacity ratio			1.08										
Actuated Cycle Length (s)			70.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			122.5%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group

Queues  
34: 7th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK




















	→	↑
Lane Group	EBT	NBT
Lane Group Flow (vph)	2444	2075
v/c Ratio	1.05	1.29dr
Control Delay	55.8	63.7
Queue Delay	16.4	35.6
Total Delay	72.2	99.2
Queue Length 50th (ft)	~390	~441
Queue Length 95th (ft)	#468	m201
Internal Link Dist (ft)	305	213
Turn Bay Length (ft)		
Base Capacity (vph)	2338	1894
Starvation Cap Reductn	86	131
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.09	1.18

**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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

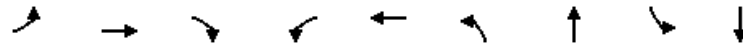
HCM Signalized Intersection Capacity Analysis  
 34: 7th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		   						  				
Volume (vph)	342	1931	0	0	0	0	0	1159	625	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.86						0.91				
Frbp, ped/bikes		1.00						0.97				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.95				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		5468						3989				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		5468						3989				
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	368	2076	0	0	0	0	0	1348	727	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	2431	0	0	0	0	0	2074	0	0	0	0
Confl. Peds. (#/hr)	31								57			
Confl. Bikes (#/hr)									10			
Bus Blockages (#/hr)	0	10	0	0	0	0	0	10	10	0	0	0
Parking (#/hr)	5	5						5	5			
Turn Type	Perm											
Protected Phases		1						2				
Permitted Phases	1											
Actuated Green, G (s)		33.0						37.0				
Effective Green, g (s)		34.0						38.0				
Actuated g/C Ratio		0.42						0.48				
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		2324						1895				
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.44										
v/c Ratio		1.05						1.29dr				
Uniform Delay, d1		23.0						21.0				
Progression Factor		1.00						0.82				
Incremental Delay, d2		32.0						43.6				
Delay (s)		55.0						60.9				
Level of Service		E						E				
Approach Delay (s)		55.0			0.0			60.9			0.0	
Approach LOS		E			A			E			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			57.7				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			85.5%				ICU Level of Service		E			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Queues  
35: E 8th Street & 5th Ave

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	311	2309	257	170	1623	193	767	113	827
v/c Ratio	2.70	1.05	0.35	1.48	1.07	1.69	1.06	0.99	1.17
Control Delay	807.6	56.0	3.4	279.6	64.0	368.4	70.9	109.3	114.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	807.6	56.0	3.4	279.6	64.0	368.4	70.9	109.3	114.3
Queue Length 50th (ft)	~176	~376	0	~96	~385	~115	~343	42	~405
Queue Length 95th (ft)	#278	#388	26	#141	#437	#190	#536	#110	#476
Internal Link Dist (ft)		987			303		672		454
Turn Bay Length (ft)	170		60	110		190		110	
Base Capacity (vph)	115	2190	727	115	1522	114	725	114	704
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	2.70	1.05	0.35	1.48	1.07	1.69	1.06	0.99	1.17

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.



HCM Signalized Intersection Capacity Analysis  
 35: E 8th Street & 5th Ave

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	41	211	1870	208	2	138	1314	17	174	540	150	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	3.5		3.5	3.5		3.5	3.5		3.5
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	0.97		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
Frt		1.00	1.00	0.85		1.00	1.00		1.00	0.97		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1769	5085	1349		1769	3531		1768	1571		1769
Flt Permitted		0.14	1.00	1.00		0.14	1.00		0.13	1.00		0.13
Satd. Flow (perm)		266	5085	1349		266	3531		248	1571		248
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.92	0.82	0.82	0.82	0.90	0.90	0.90	0.77
Adj. Flow (vph)	51	260	2309	257	2	168	1602	21	193	600	167	113
RTOR Reduction (vph)	0	0	0	146	0	0	1	0	0	0	0	0
Lane Group Flow (vph)	0	311	2309	111	0	170	1622	0	193	767	0	113
Confl. Peds. (#/hr)		8		4		4		8	7		1	1
Confl. Bikes (#/hr)				2				2			7	
Parking (#/hr)				5						5	5	
Turn Type	Perm	Perm		Perm	Perm	Perm			Perm			Perm
Protected Phases			1				1			2		
Permitted Phases	1	1		1	1	1			2			2
Actuated Green, G (s)		28.0	28.0	28.0		28.0	28.0		30.0	30.0		30.0
Effective Green, g (s)		28.0	28.0	28.0		28.0	28.0		30.0	30.0		30.0
Actuated g/C Ratio		0.43	0.43	0.43		0.43	0.43		0.46	0.46		0.46
Clearance Time (s)		3.5	3.5	3.5		3.5	3.5		3.5	3.5		3.5
Lane Grp Cap (vph)		115	2190	581		115	1521		114	725		114
v/s Ratio Prot			0.45				0.46			0.49		
v/s Ratio Perm		c1.17		0.08		0.64			c0.78			0.46
v/c Ratio		2.70	1.05	0.19		1.48	1.07		1.69	1.06		0.99
Uniform Delay, d1		18.5	18.5	11.5		18.5	18.5		17.5	17.5		17.4
Progression Factor		1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2		791.0	35.5	0.7		255.9	43.0		346.6	49.8		82.0
Delay (s)		809.5	54.0	12.2		274.4	61.5		364.1	67.3		99.3
Level of Service		F	D	B		F	E		F	E		F
Approach Delay (s)			131.9				81.7			127.0		
Approach LOS			F				F			F		
<b>Intersection Summary</b>												
HCM Average Control Delay			114.3				HCM Level of Service			F		
HCM Volume to Capacity ratio			2.18									
Actuated Cycle Length (s)			65.0				Sum of lost time (s)			7.0		
Intersection Capacity Utilization			109.8%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 35: E 8th Street & 5th Ave

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

Movement	SBT	SBR
Lane Configurations	↓	↘
Volume (vph)	378	259
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.5	
Lane Util. Factor	1.00	
Frb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.94	
Flt Protected	1.00	
Satd. Flow (prot)	1519	
Flt Permitted	1.00	
Satd. Flow (perm)	1519	
Peak-hour factor, PHF	0.77	0.77
Adj. Flow (vph)	491	336
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	824	0
Confl. Peds. (#/hr)		7
Confl. Bikes (#/hr)		3
Parking (#/hr)	5	5
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.0	
Effective Green, g (s)	30.0	
Actuated g/C Ratio	0.46	
Clearance Time (s)	3.5	
Lane Grp Cap (vph)	701	
v/s Ratio Prot	0.54	
v/s Ratio Perm		
v/c Ratio	1.18	
Uniform Delay, d1	17.5	
Progression Factor	1.00	
Incremental Delay, d2	93.7	
Delay (s)	111.2	
Level of Service	F	
Approach Delay (s)	109.7	
Approach LOS	F	
<b>Intersection Summary</b>		

Queues  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	27	947	502	804	356	319
v/c Ratio	0.06	2.12	0.99	0.91	0.42	0.41
Control Delay	17.0	530.7	54.4	29.0	6.0	6.0
Queue Delay	0.0	0.0	15.8	65.3	0.8	0.6
Total Delay	17.0	530.7	70.2	94.3	6.8	6.6
Queue Length 50th (ft)	7	-563	155	223	50	45
Queue Length 95th (ft)	21	#671	#311	#410	m44	m40
Internal Link Dist (ft)		72		191	60	
Turn Bay Length (ft)						
Base Capacity (vph)	419	447	507	880	849	783
Starvation Cap Reductn	0	0	27	178	246	197
Spillback Cap Reductn	0	0	0	61	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	2.12	1.05	1.15	0.59	0.54

Intersection Summary

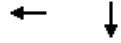
- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 36: I-880 NB On-Ramp & Jackson Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	22	767	0	417	667	0	0	67	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor				1.00	1.00		1.00	1.00			0.95	0.95
Frbp, ped/bikes				1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes				0.99	1.00		1.00	1.00			1.00	1.00
Frt				1.00	1.00		1.00	1.00			0.89	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1570	1676		1593	1467			1410	1300
Flt Permitted				0.95	1.00		0.50	1.00			1.00	1.00
Satd. Flow (perm)				1570	1676		845	1467			1410	1300
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.81	0.81	0.83	0.83	0.83	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	27	947	0	502	804	0	0	84	591
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	3	3
Lane Group Flow (vph)	0	0	0	27	947	0	502	804	0	0	353	316
Confl. Peds. (#/hr)				7		1				34		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	10
Parking (#/hr)								5				
Turn Type				Perm			Perm					Perm
Protected Phases					1			2			2	
Permitted Phases				1			2					2
Actuated Green, G (s)				14.5	14.5		34.5	34.5			34.5	34.5
Effective Green, g (s)				16.0	16.0		36.0	36.0			36.0	36.0
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.60	0.60
Clearance Time (s)				5.5	5.5		5.5	5.5			5.5	5.5
Lane Grp Cap (vph)				419	447		507	880			846	780
v/s Ratio Prot					c0.56			0.55			0.25	
v/s Ratio Perm				0.02			c0.59					0.24
v/c Ratio				0.06	2.12		0.99	0.91			0.42	0.40
Uniform Delay, d1				16.4	22.0		11.8	10.6			6.4	6.3
Progression Factor				1.00	1.00		1.00	1.00			0.89	0.89
Incremental Delay, d2				0.3	510.9		37.6	15.5			0.1	0.1
Delay (s)				16.7	532.9		49.4	26.1			5.8	5.8
Level of Service				B	F		D	C			A	A
Approach Delay (s)		0.0			518.6			35.1			5.8	
Approach LOS		A			F			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			187.7									F
HCM Volume to Capacity ratio			1.34									
Actuated Cycle Length (s)			60.0								8.0	
Intersection Capacity Utilization			102.2%									G
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
 37: 6th Street & Madison Street



















Lane Group	WBT	SBT
Lane Group Flow (vph)	341	2044
v/c Ratio	0.53	1.08
Control Delay	27.4	49.1
Queue Delay	0.0	18.7
Total Delay	27.4	67.8
Queue Length 50th (ft)	67	-505
Queue Length 95th (ft)	106	m#145
Internal Link Dist (ft)	300	222
Turn Bay Length (ft)		
Base Capacity (vph)	643	1889
Starvation Cap Reductn	0	4
Spillback Cap Reductn	0	73
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.53	1.13

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.

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street & Madison Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 						 	
Volume (vph)	0	0	0	14	310	0	0	0	0	0	1114	685
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.97	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					2979						2745	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					2979						2745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	15	326	0	0	0	0	0	1266	778
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	46	0
Lane Group Flow (vph)	0	0	0	0	336	0	0	0	0	0	1998	0
Confl. Peds. (#/hr)				3		4				25		54
Confl. Bikes (#/hr)												12
Parking (#/hr)					5						5	5
Turn Type				Perm								
Protected Phases					4						2	
Permitted Phases				4								
Actuated Green, G (s)					15.0						47.0	
Effective Green, g (s)					15.0						47.0	
Actuated g/C Ratio					0.21						0.67	
Clearance Time (s)					4.0						4.0	
Lane Grp Cap (vph)					638						1843	
v/s Ratio Prot											c0.73	
v/s Ratio Perm					0.11							
v/c Ratio					0.53						1.08	
Uniform Delay, d1					24.4						11.5	
Progression Factor					1.00						0.42	
Incremental Delay, d2					3.1						40.8	
Delay (s)					27.5						45.6	
Level of Service					C						D	
Approach Delay (s)		0.0			27.5			0.0			45.6	
Approach LOS		A			C			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			43.0								HCM Level of Service	D
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			70.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.4%								ICU Level of Service	D
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
38: 6th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK



Lane Group	NBT	NWL	NWR	SWR2
Lane Group Flow (vph)	1398	639	392	73
v/c Ratio	1.58	0.96dr	1.05	0.17
Control Delay	278.7	33.4	91.6	4.4
Queue Delay	144.2	2.4	131.4	0.2
Total Delay	422.9	35.7	222.9	4.6
Queue Length 50th (ft)	~1015	149	~238	0
Queue Length 95th (ft)	m#765	197	#393	18
Internal Link Dist (ft)	205	235		
Turn Bay Length (ft)		195	195	
Base Capacity (vph)	887	833	373	427
Starvation Cap Reductn	62	0	0	0
Spillback Cap Reductn	150	96	86	98
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.90	0.87	1.37	0.22

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.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis  
 38: 6th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
 Timing Plan: PM PEAK



Movement	NBL	NBT	NWL2	NWL	NWR	SWR2
Lane Configurations		↶		↶	↶	↶
Volume (vph)	240	1018	127	84	675	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00		1.00	1.00	1.00
Frt		1.00		0.91	0.85	0.86
Flt Protected		0.99		0.98	1.00	1.00
Satd. Flow (prot)		1447		2897	1297	1252
Flt Permitted		0.99		0.98	1.00	1.00
Satd. Flow (perm)		1447		2897	1297	1252
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	267	1131	148	98	785	73
RTOR Reduction (vph)	0	0	0	0	0	52
Lane Group Flow (vph)	0	1398	0	639	392	21
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)						2
Parking (#/hr)		5				5
Turn Type	Perm		Split		Prot	custom
Protected Phases		3	1	1	1	
Permitted Phases	3					2
Actuated Green, G (s)		49.5		24.0	24.0	24.0
Effective Green, g (s)		49.0		23.0	23.0	23.0
Actuated g/C Ratio		0.61		0.29	0.29	0.29
Clearance Time (s)		3.5		3.0	3.0	3.0
Lane Grp Cap (vph)		886		833	373	360
v/s Ratio Prot				0.22	c0.30	
v/s Ratio Perm		0.97				0.02
v/c Ratio		1.58		0.96dr	1.05	0.06
Uniform Delay, d1		15.5		26.1	28.5	20.7
Progression Factor		0.81		1.00	1.00	1.00
Incremental Delay, d2		260.5		6.7	60.6	0.3
Delay (s)		273.1		32.7	89.1	21.0
Level of Service		F		C	F	C
Approach Delay (s)		273.1		54.2		
Approach LOS		F		D		

Intersection Summary			
HCM Average Control Delay	175.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.  
 c Critical Lane Group



Queues  
41: 5th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK


















	→	↑	↓
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	2031	889	171
v/c Ratio	1.12	1.26	0.32
Control Delay	88.0	152.3	22.1
Queue Delay	144.1	32.9	0.0
Total Delay	232.1	185.2	22.1
Queue Length 50th (ft)	~435	~570	90
Queue Length 95th (ft)	#531	#755	m120
Internal Link Dist (ft)	295	80	205
Turn Bay Length (ft)			
Base Capacity (vph)	1808	704	531
Starvation Cap Reductn	152	0	0
Spillback Cap Reductn	404	39	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.45	1.34	0.32

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.

HCM Signalized Intersection Capacity Analysis  
41: 5th Street & Oak Street

Cumulative 2035 + Project (Mitigated)  
Timing Plan: PM PEAK

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  										
Volume (vph)	560	1145	184	0	0	0	0	698	76	6	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.91						1.00			1.00	
Frbp, ped/bikes		1.00						0.99			1.00	
Flpb, ped/bikes		0.98						1.00			1.00	
Frt		0.99						0.99			1.00	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		4345						1433			1464	
Flt Permitted		0.99						1.00			0.74	
Satd. Flow (perm)		4345						1433			1090	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.81	0.81	0.81
Adj. Flow (vph)	602	1231	198	0	0	0	0	802	87	7	164	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	2015	0	0	0	0	0	884	0	0	171	0
Confl. Peds. (#/hr)	37		5					45		56	56	45
Confl. Bikes (#/hr)										19		
Parking (#/hr)								5	5	5	5	
Turn Type	Perm						Perm					
Protected Phases		1						2				2
Permitted Phases	1	1								2		
Actuated Green, G (s)		33.5						39.5			39.5	
Effective Green, g (s)		33.0						39.0			39.0	
Actuated g/C Ratio		0.41						0.49			0.49	
Clearance Time (s)		3.5						3.5			3.5	
Lane Grp Cap (vph)		1792						699			531	
v/s Ratio Prot								c0.62				
v/s Ratio Perm		0.46									0.16	
v/c Ratio		1.12						1.26			0.32	
Uniform Delay, d1		23.5						20.5			12.5	
Progression Factor		1.00						1.00			1.60	
Incremental Delay, d2		63.8						130.3			1.2	
Delay (s)		87.3						150.8			21.2	
Level of Service		F						F			C	
Approach Delay (s)		87.3			0.0			150.8			21.2	
Approach LOS		F			A			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			101.9									F
HCM Volume to Capacity ratio			1.20									
Actuated Cycle Length (s)			80.0								8.0	
Intersection Capacity Utilization			94.9%									F
Analysis Period (min)			15									
c Critical Lane Group												

## Arterial Level of Service: EB 7th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Jackson Street	IV	30	21.9	117.5	139.4	0.15	3.8	F
Madison Street	IV	30	16.2	63.7	79.9	0.07	3.2	F
Oak Street	IV	30	16.6	55.8	72.4	0.07	3.6	F
Total	IV		54.7	237.0	291.7	0.29	3.6	F

## Arterial Level of Service: WB 8th Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Oak Street	IV	30	13.7	45.6	59.3	0.06	3.7	F
Madison Street	IV	30	16.7	98.7	115.4	0.07	2.3	F
Jackson Street	IV	30	16.1	16.4	32.5	0.07	7.8	E
Alice Street	IV	30	16.9	20.7	37.6	0.07	7.1	E
Harrison Street	IV	30	16.3	97.8	114.1	0.07	2.3	F
Webster Street	IV	30	16.1	349.7	365.8	0.07	0.7	F
Total	IV		95.8	628.9	724.7	0.42	2.1	F

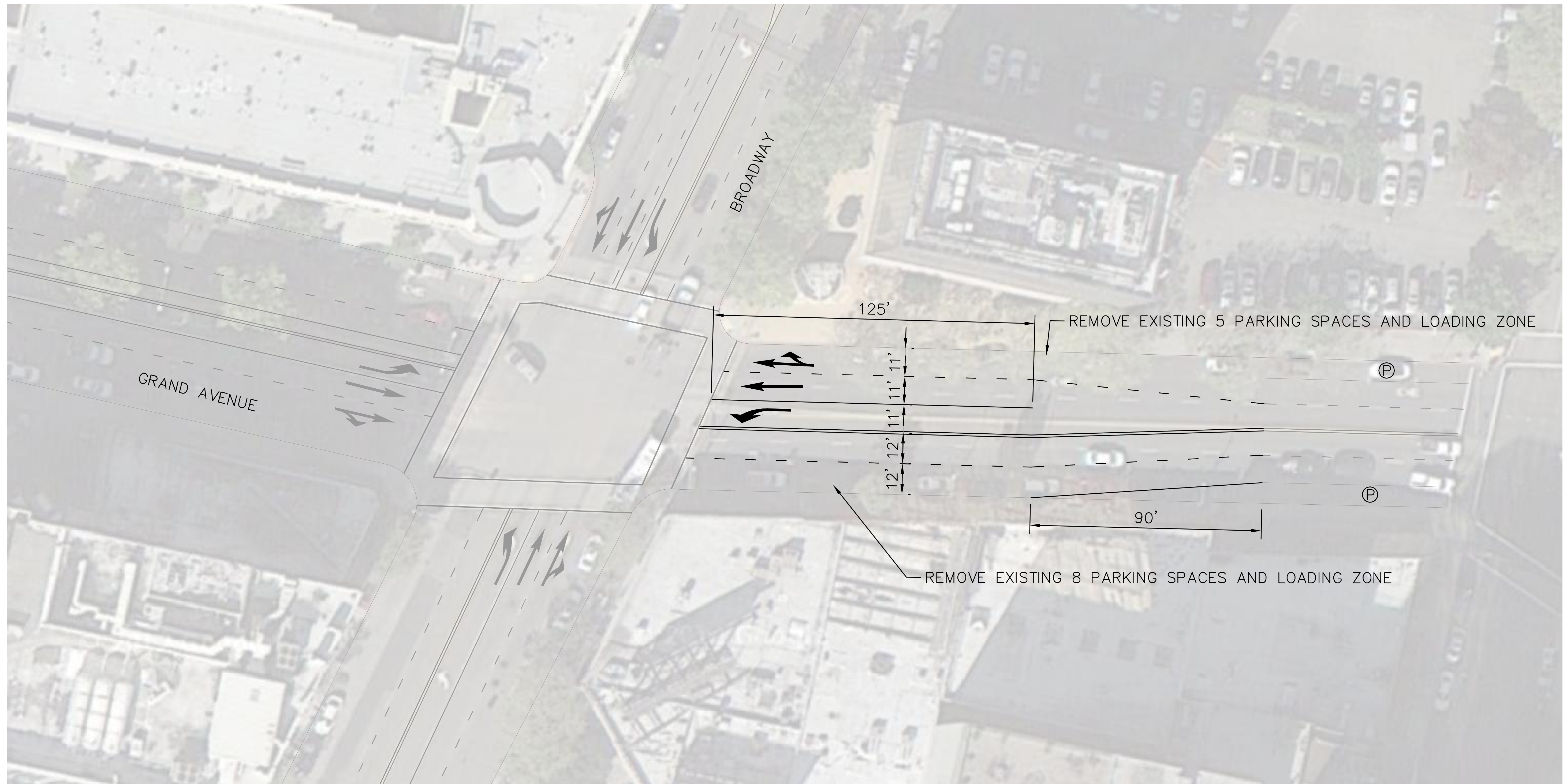
## Arterial Level of Service: SB Madison Street

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
10th St	IV	30	13.1	142.2	155.3	0.06	1.3	F
9th Street	IV	30	11.4	3.5	14.9	0.05	12.1	D
8th Street	IV	30	11.9	47.4	59.3	0.05	3.2	F
7th Street	IV	30	11.6	35.4	47.0	0.05	3.9	F
Total	IV		48.0	228.5	276.5	0.21	2.7	F

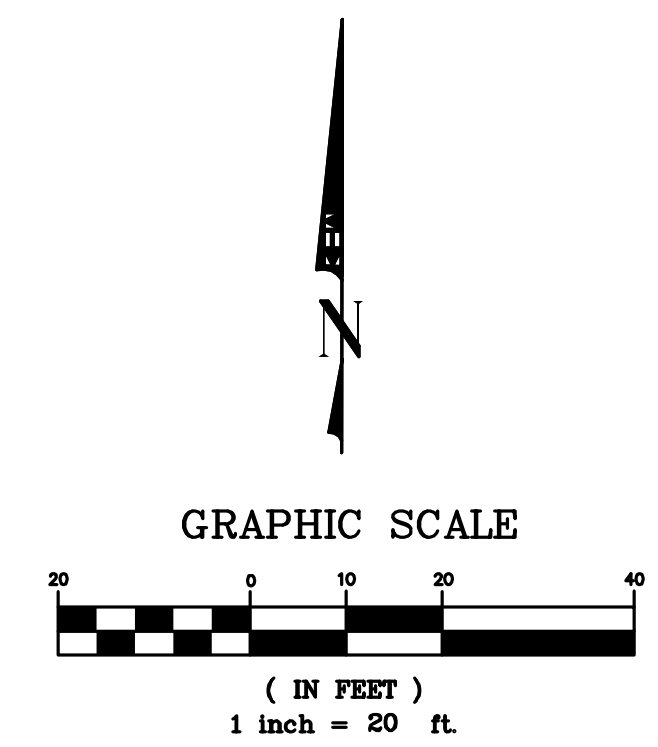
Arterial Level of Service: NB Oak Street

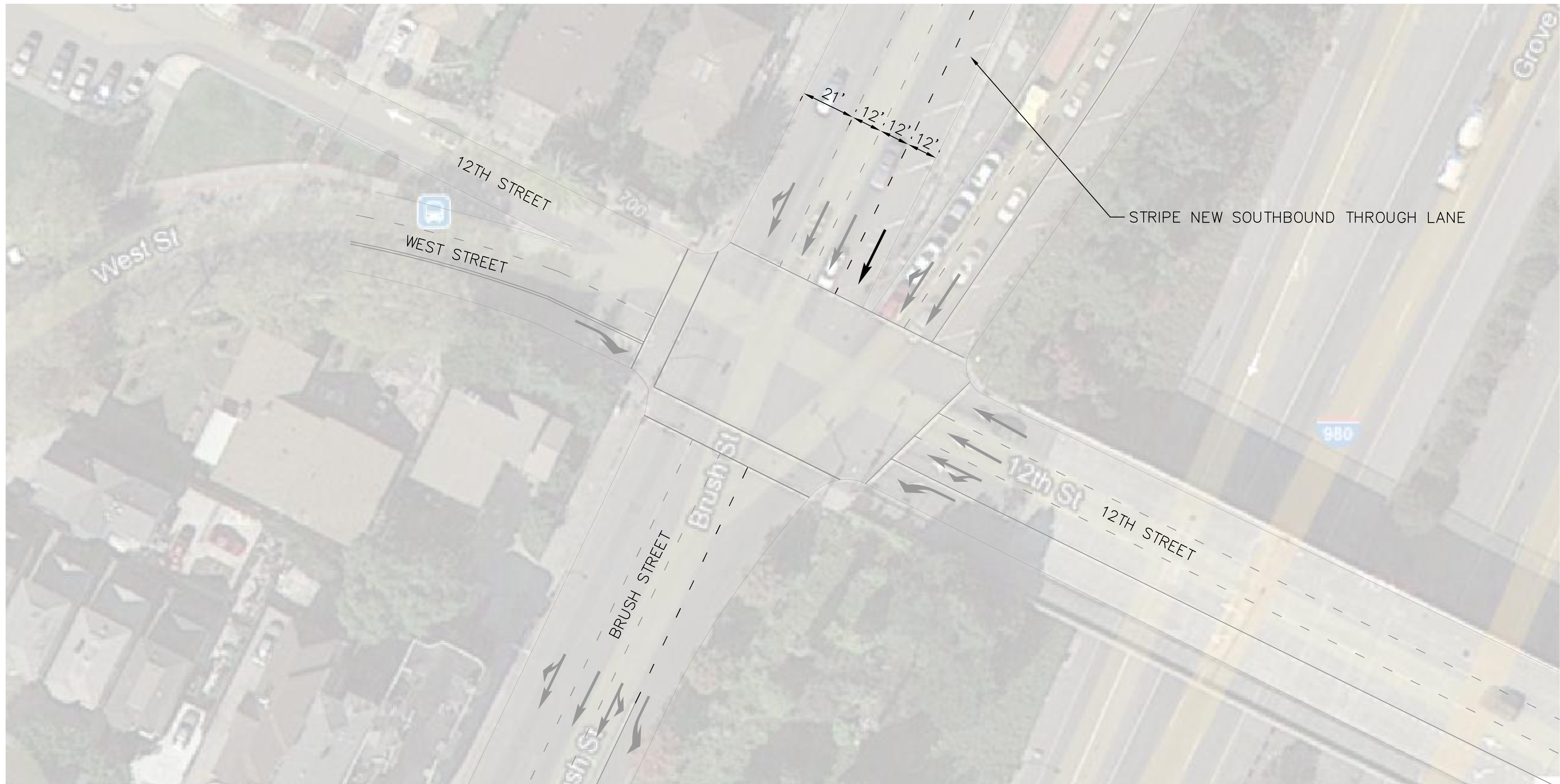
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
8th Street	IV	30	11.5	15.0	26.5	0.05	6.9	F
9th Street	IV	30	12.6	1.5	14.1	0.06	14.1	C
10th St	IV	30	11.4	5.5	16.9	0.05	10.7	D
11th St	IV	30	12.6	12.2	24.8	0.06	8.0	E
12th St	IV	30	10.7	12.0	22.7	0.05	7.5	E
Total	IV		58.8	46.2	105.0	0.26	8.9	E

# **CONCEPTUAL PLANS**

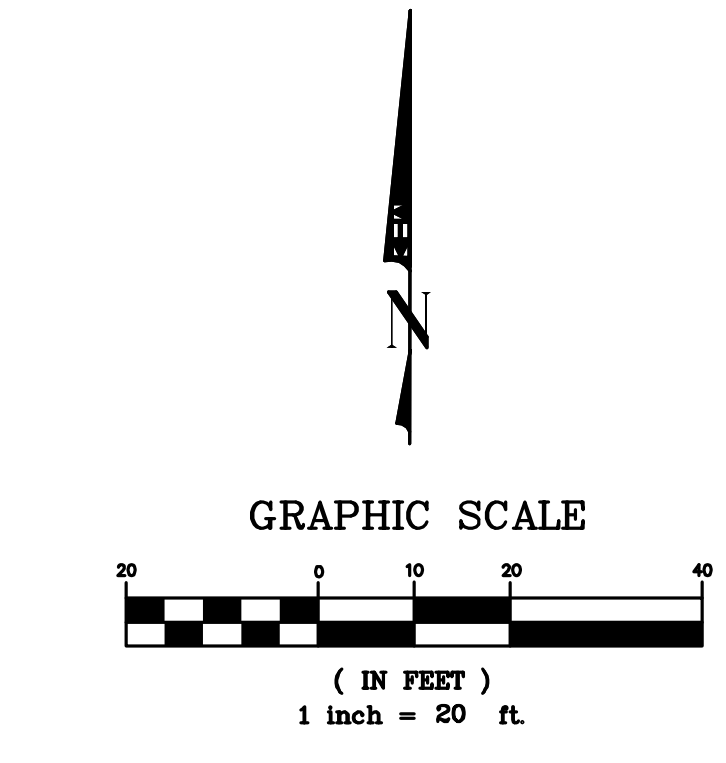


**BROADWAY AND GRAND AVENUE CONCEPT PLAN**  
**INSTALL WESTBOUND LEFT TURN LANE FOR 125 FEET**  
**OAKLAND, CA**  
**DECEMBER 2012**



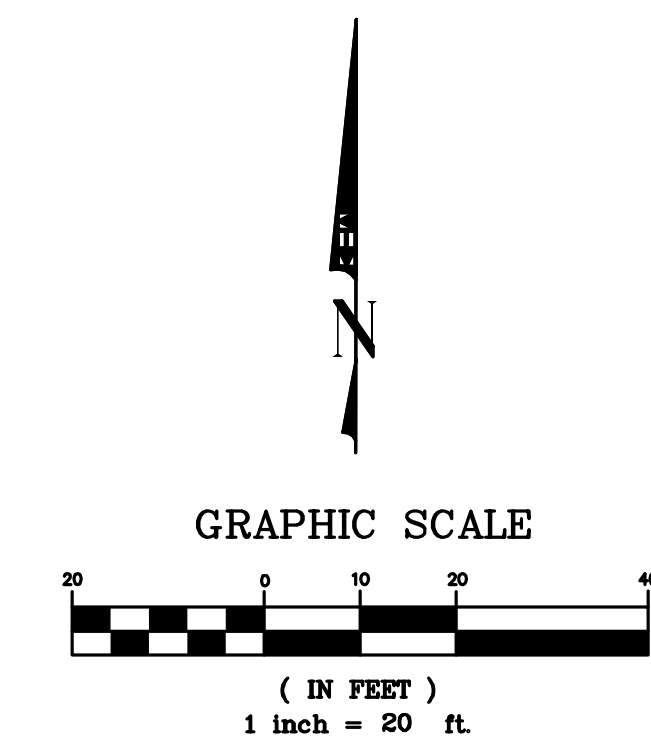


**BRUSH STREET AND 12TH STREET CONCEPT PLAN**  
**STRIPE ADDITIONAL SOUTHBOUND THROUGH LANE**  
**OAKLAND, CA**  
**DECEMBER 2012**



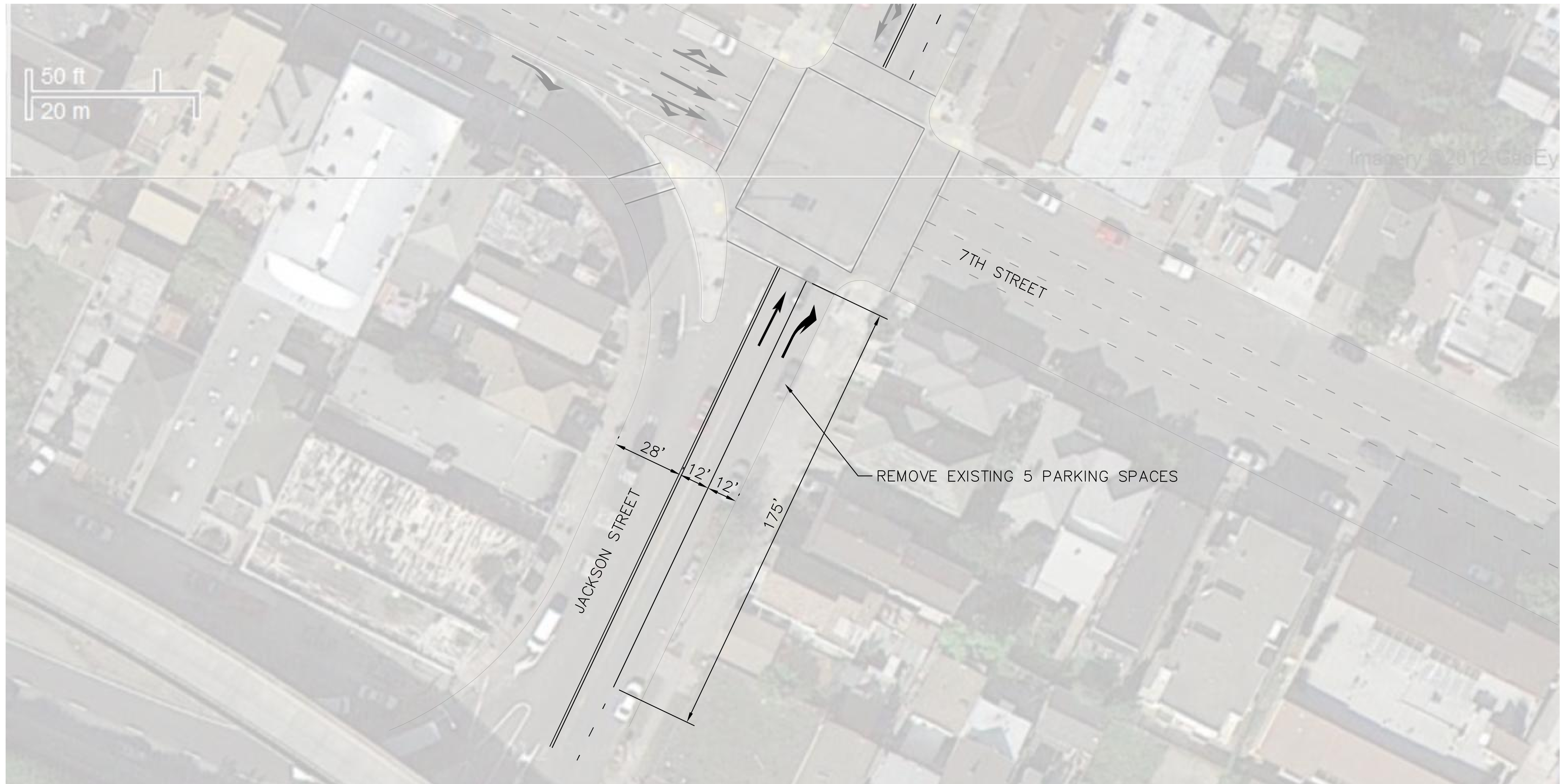


**JACKSON AVENUE AND 8TH STREET CONCEPT PLAN**  
**INSTALL NORTHBOUND LEFT TURN LANE FOR 130 FEET**  
**OAKLAND, CA**  
**DECEMBER 2012**

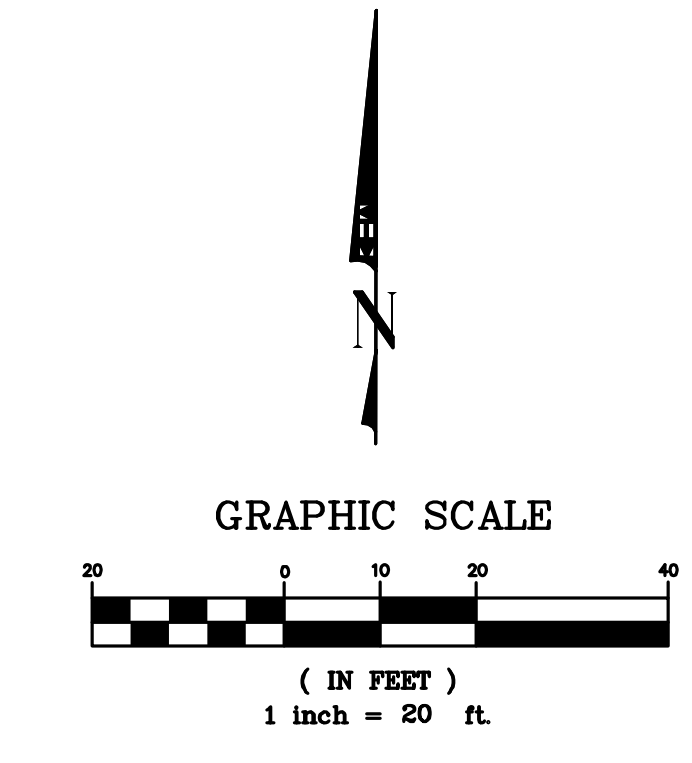


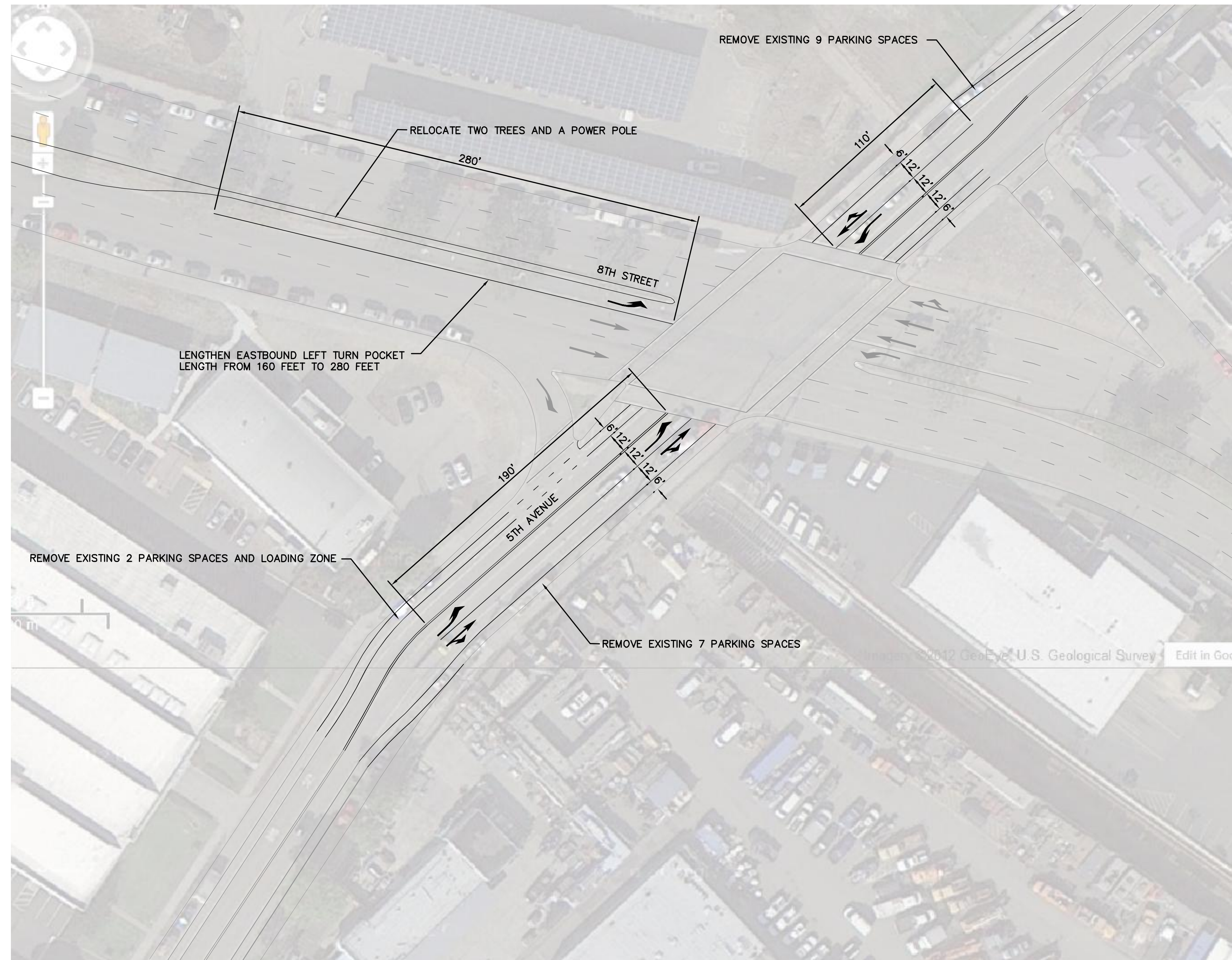


CONCEPT DESIGN  
FOR REVIEW ONLY  
DECEMBER 2012



**JACKSON AVENUE AND 7TH STREET CONCEPT PLAN**  
**INSTALL NORTHBOUND RIGHT TURN LANE FOR 175 FEET**  
**OAKLAND, CA**  
**DECEMBER 2012**





5TH AVENUE AND 8TH STREET CONCEPT PLAN  
INSTALL NORTHBOUND LEFT TURN LANE FOR 190 FEET AND  
INSTALL SOUTHBOUND LEFT TURN LANE FOR 110 FEET  
LENGTHEN EASTBOUND LEFT TURN LANE FOR FROM 160 FEET TO 280 FEET  
OAKLAND, CA  
DECEMBER 2012

