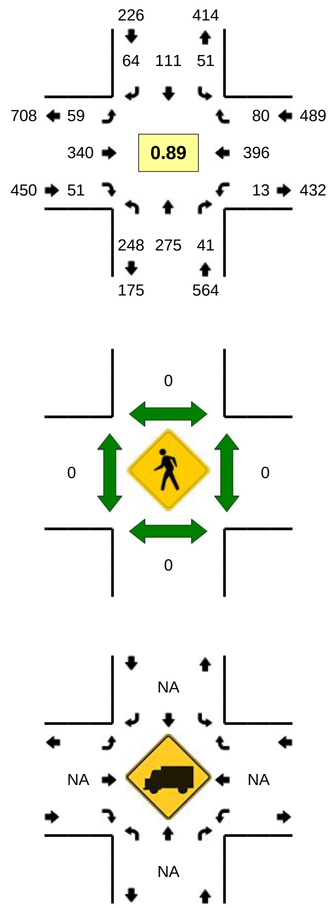
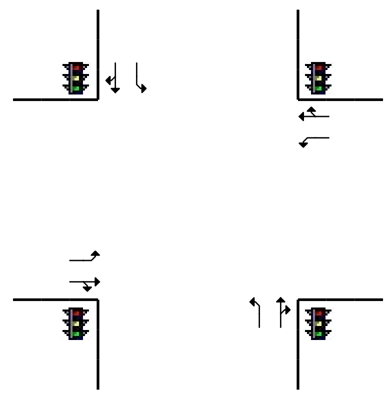
APPENDIX A
EXISTING VEHICLE TURN MOVEMENT COUNTS (AM/PM PEAK)

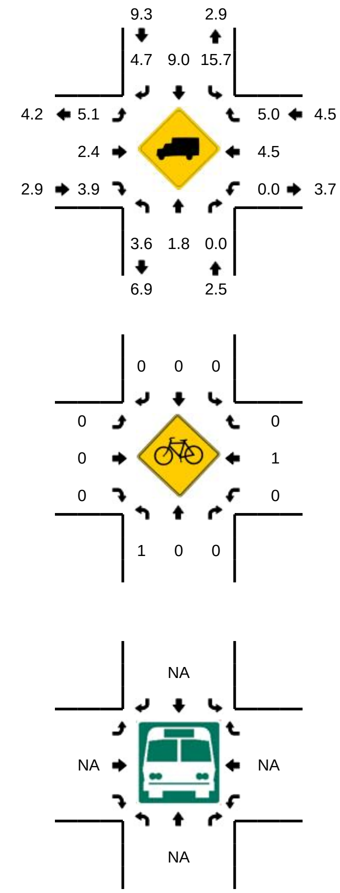
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: 15th St -- Reed Market Rd | **QC JOB #:** 10675701
CITY/STATE: Bend, OR | **DATE:** Tue, Nov 01 2011

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM







5-Min Count Period Beginning At	15th St (Northbound) Left	Thru	Right	U	15th St (Southbound) Left	Thru	Right	U	Reed Market Rd (Eastbound) Left	Thru	Right	U	Reed Market Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
7:00 AM	9	9	2	0	1	4	2	0	2	17	3	0	2	14	10	0	75	
7:05 AM	10	7	1	0	4	3	2	0	4	19	5	0	2	30	2	0	89	
7:10 AM	17	16	1	0	2	4	1	0	5	11	3	0	1	25	5	0	91	
7:15 AM	19	11	5	0	3	4	7	0	0	23	5	0	0	34	3	0	114	
7:20 AM	26	20	7	0	4	3	5	0	3	35	8	0	5	39	10	0	165	
7:25 AM	26	39	4	0	4	11	1	0	2	18	6	0	0	26	7	0	144	
7:30 AM	28	22	2	0	6	10	4	0	1	30	4	0	0	40	12	0	159	
7:35 AM	21	35	2	0	4	17	5	0	1	28	3	0	1	28	7	0	152	
7:40 AM	20	24	2	0	8	12	3	0	8	42	0	0	1	41	7	0	168	
7:45 AM	13	27	6	0	7	19	5	0	11	26	5	0	0	34	5	0	158	
7:50 AM	17	20	4	0	1	9	4	0	15	27	7	0	1	42	12	0	159	
7:55 AM	26	25	4	0	3	7	8	0	6	38	5	0	2	40	5	0	169	1643
8:00 AM	19	22	4	0	5	8	4	0	6	23	3	0	2	20	3	0	119	1687
8:05 AM	16	9	0	0	4	1	9	0	3	25	3	0	0	24	5	0	99	1697
8:10 AM	17	21	1	0	2	10	9	0	3	25	2	0	1	28	4	0	123	1729
8:15 AM	11	6	2	0	0	3	5	0	5	19	6	0	1	39	6	0	103	1718
8:20 AM	12	12	2	0	4	3	8	0	3	30	5	0	0	29	1	0	109	1662
8:25 AM	16	14	3	0	4	3	7	0	6	29	8	0	0	32	7	0	129	1647
8:30 AM	15	20	2	0	5	8	6	0	8	23	10	0	2	29	3	0	131	1619
8:35 AM	15	15	3	0	4	9	10	0	4	22	3	0	0	23	3	0	111	1578
8:40 AM	11	23	11	0	6	7	5	0	9	36	8	0	2	38	1	0	157	1567
8:45 AM	21	20	10	0	2	7	9	0	10	24	3	0	1	28	4	0	139	1548
8:50 AM	12	13	5	0	8	9	6	0	6	37	5	0	1	49	7	0	158	1547
8:55 AM	10	13	1	0	4	6	4	0	4	32	3	0	1	37	13	0	128	1506

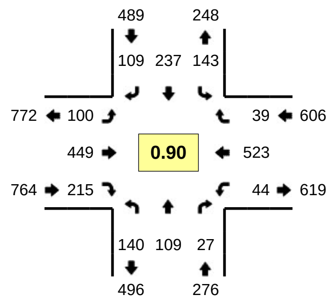
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	224	288	56	0	44	140	68	0	128	364	68	0	12	464	88	0	1944
Heavy Trucks	20	8	0		0	20	8		4	4	0		0	20	8		92
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

Comments:

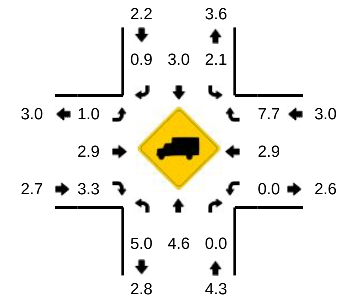
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

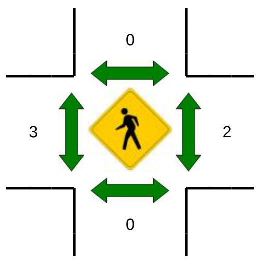
LOCATION: 15th St -- Reed Market Rd | **QC JOB #:** 10675702

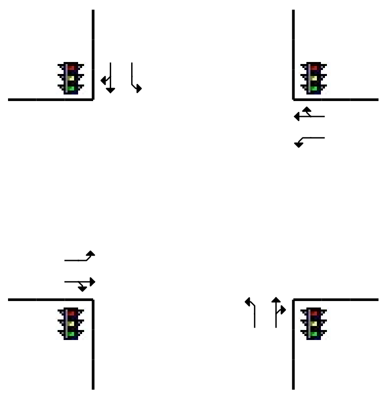
CITY/STATE: Bend, OR | **DATE:** Tue, Nov 01 2011

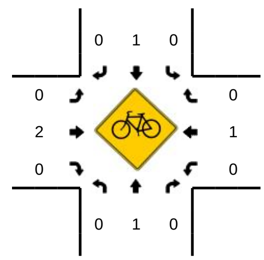


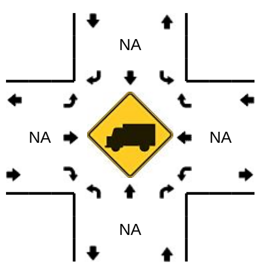
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

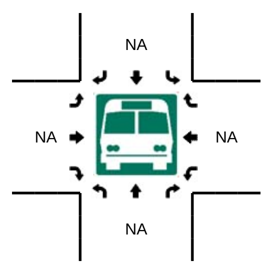












5-Min Count Period Beginning At	15th St (Northbound) Left	Thru	Right	U	15th St (Southbound) Left	Thru	Right	U	Reed Market Rd (Eastbound) Left	Thru	Right	U	Reed Market Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
4:00 PM	19	10	1	0	10	19	15	0	6	34	15	0	3	42	7	0	181	
4:05 PM	18	7	3	0	7	18	4	0	6	40	15	0	2	52	2	0	174	
4:10 PM	11	13	3	0	11	19	11	0	6	37	18	0	0	31	4	0	164	
4:15 PM	10	9	3	0	8	18	6	0	11	38	14	0	5	42	4	0	168	
4:20 PM	8	9	2	0	4	13	10	0	14	51	12	0	2	32	5	0	162	
4:25 PM	5	10	1	0	3	17	9	0	9	41	11	0	1	19	3	0	129	
4:30 PM	9	4	4	0	6	15	8	0	8	33	8	0	4	46	5	0	150	
4:35 PM	9	5	0	0	12	16	9	0	9	34	13	0	1	38	4	0	150	
4:40 PM	11	9	2	0	11	13	13	0	8	41	16	0	3	37	5	0	169	
4:45 PM	12	8	4	0	6	18	9	0	8	44	13	0	5	44	0	0	171	
4:50 PM	13	9	1	0	8	13	7	0	7	41	16	0	5	43	3	0	166	
4:55 PM	9	9	5	0	9	25	5	0	7	43	18	0	4	43	4	0	181	1965
5:00 PM	13	8	3	0	11	20	5	0	7	42	16	0	3	37	5	0	170	1954
5:05 PM	14	10	1	0	9	16	10	0	10	50	17	0	2	57	1	0	197	1977
5:10 PM	10	11	0	0	13	25	10	0	13	42	25	0	6	46	5	0	206	2019
5:15 PM	13	11	1	0	15	23	13	0	6	32	23	0	4	46	4	0	191	2042
5:20 PM	10	11	3	0	13	24	14	0	8	33	16	0	3	53	5	0	193	2073
5:25 PM	11	10	4	0	16	27	6	0	10	26	24	0	4	42	3	0	183	2127
5:30 PM	11	9	2	0	19	19	4	0	7	27	21	0	3	31	0	0	153	2130
5:35 PM	13	4	1	0	13	14	13	0	9	28	10	0	2	44	4	0	155	2135
5:40 PM	7	12	2	0	7	27	13	0	4	18	6	0	5	35	7	0	143	2109
5:45 PM	8	11	3	0	5	11	10	0	10	31	14	0	4	23	4	0	134	2072
5:50 PM	7	3	2	0	6	15	10	0	11	53	29	0	2	57	3	0	198	2104
5:55 PM	18	7	2	0	12	11	7	0	14	25	8	0	3	28	4	0	139	2062

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	148	128	8	0	148	256	132	0	116	496	260	0	48	596	40	0	2376
Heavy Trucks	4	4	0		0	0	0		0	16	8		0	20	0		52
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

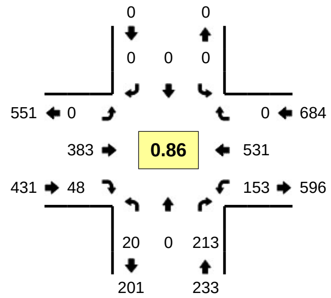
Comments:

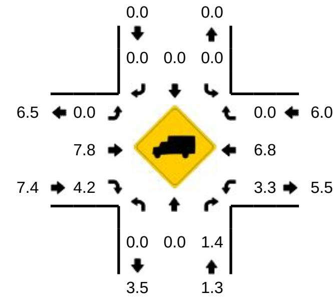
Report generated on 12/20/2011 2:51 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

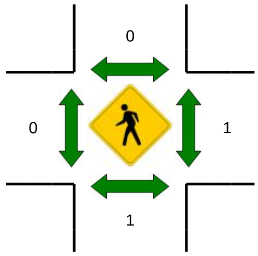
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

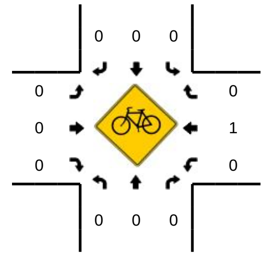
LOCATION: American Lane -- Reed Market Rd | **QC JOB #:** 10675703
CITY/STATE: Bend, OR | **DATE:** Tue, Nov 01 2011

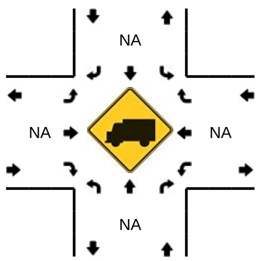
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

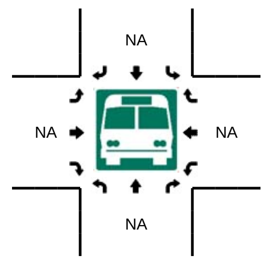












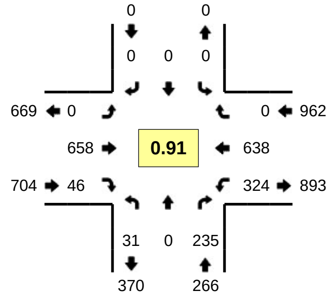
5-Min Count Period Beginning At	American Lane (Northbound) Left	Thru	Right	U	American Lane (Southbound) Left	Thru	Right	U	Reed Market Rd (Eastbound) Left	Thru	Right	U	Reed Market Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
7:00 AM	0	0	9	0	0	0	0	0	0	19	3	0	10	18	0	0	59	
7:05 AM	0	0	14	0	0	0	0	0	0	24	4	0	9	23	0	0	74	
7:10 AM	0	0	10	0	0	0	0	0	0	17	4	0	6	40	0	0	77	
7:15 AM	3	0	21	0	0	0	0	0	0	24	2	0	10	30	0	0	90	
7:20 AM	2	0	30	0	0	0	0	0	0	39	0	0	8	40	0	0	119	
7:25 AM	4	0	27	0	0	0	0	0	0	22	1	0	12	38	0	0	104	
7:30 AM	1	0	19	0	0	0	0	0	0	20	2	0	15	35	0	0	92	
7:35 AM	0	0	28	0	0	0	0	0	0	30	2	0	16	50	0	0	126	
7:40 AM	1	0	29	0	0	0	0	0	0	26	0	0	15	59	0	0	130	
7:45 AM	6	0	24	0	0	0	0	0	0	32	3	0	12	46	0	0	123	
7:50 AM	1	0	21	0	0	0	0	0	0	41	3	0	9	44	0	0	119	
7:55 AM	4	0	22	0	0	0	0	0	0	40	8	0	21	53	0	0	148	1261
8:00 AM	0	0	12	0	0	0	0	0	0	32	4	0	12	31	0	0	91	1293
8:05 AM	2	0	11	0	0	0	0	0	0	27	6	0	18	33	0	0	97	1316
8:10 AM	0	0	12	0	0	0	0	0	0	22	5	0	13	44	0	0	96	1335
8:15 AM	1	0	11	0	0	0	0	0	0	32	5	0	9	42	0	0	100	1345
8:20 AM	1	0	18	0	0	0	0	0	0	25	4	0	11	42	0	0	101	1327
8:25 AM	3	0	13	0	0	0	0	0	0	38	2	0	5	46	0	0	107	1330
8:30 AM	1	0	12	0	0	0	0	0	0	38	6	0	12	41	0	0	110	1348
8:35 AM	3	0	18	0	0	0	0	0	0	28	0	0	6	47	0	0	102	1324
8:40 AM	1	0	15	0	0	0	0	0	0	35	7	0	16	37	0	0	111	1305
8:45 AM	2	0	17	0	0	0	0	0	0	33	3	0	21	49	0	0	125	1307
8:50 AM	1	0	30	0	0	0	0	0	0	36	6	0	12	59	0	0	144	1332
8:55 AM	1	0	16	0	0	0	0	0	0	36	4	0	14	41	0	0	112	1296

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	44	0	268	0	0	0	0	0	0	452	56	0	168	572	0	0	1560
Heavy Trucks	0	0	0		0	0	0		0	32	0		0	32	0		64
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

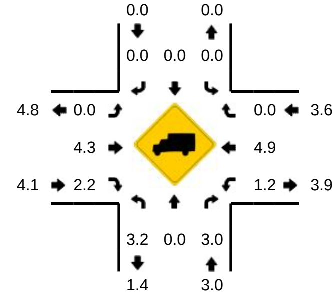
Comments:

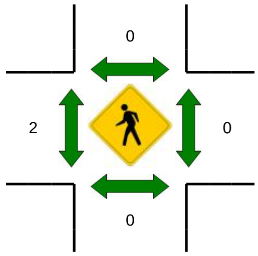
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

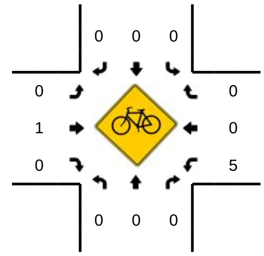
LOCATION: American Lane -- Reed Market Rd | **QC JOB #:** 10675704
CITY/STATE: Bend, OR | **DATE:** Tue, Nov 01 2011

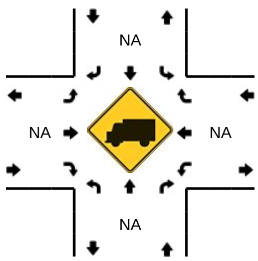


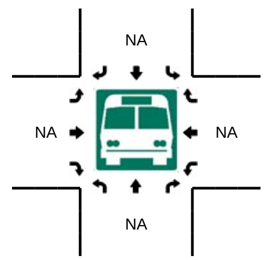
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:05 PM -- 5:20 PM











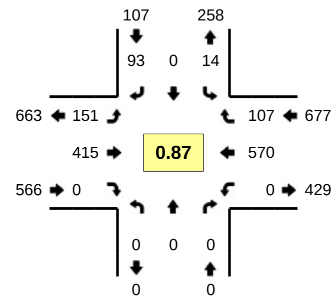
5-Min Count Period Beginning At	American Lane (Northbound)				American Lane (Southbound)				Reed Market Rd (Eastbound)				Reed Market Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	0	21	0	0	0	0	0	0	48	1	0	23	70	0	0	168	
4:05 PM	5	0	19	0	0	0	0	0	0	50	3	0	28	52	0	0	157	
4:10 PM	5	0	21	0	0	0	0	0	0	53	6	0	29	46	0	0	160	
4:15 PM	2	0	32	0	0	0	0	0	0	54	7	0	16	51	0	0	162	
4:20 PM	3	0	23	0	0	0	0	0	0	51	3	0	23	36	0	0	139	
4:25 PM	4	0	14	0	0	0	0	0	0	51	3	0	18	27	0	0	117	
4:30 PM	3	0	18	0	0	0	0	0	0	45	2	0	30	42	0	0	140	
4:35 PM	6	0	15	0	0	0	0	0	0	47	6	0	21	55	0	0	150	
4:40 PM	3	0	26	0	0	0	0	0	0	58	3	0	21	49	0	0	160	
4:45 PM	4	0	22	0	0	0	0	0	0	51	4	0	25	55	0	0	161	
4:50 PM	2	0	24	0	0	0	0	0	0	58	4	0	20	47	0	0	155	
4:55 PM	2	0	23	0	0	0	0	0	0	45	7	0	32	55	0	0	164	1833
5:00 PM	0	0	15	0	0	0	0	0	0	69	2	0	23	41	0	0	150	1815
5:05 PM	2	0	23	0	0	0	0	0	0	70	3	0	22	68	0	0	188	1846
5:10 PM	3	0	17	0	0	0	0	0	0	61	3	0	31	64	0	0	179	1865
5:15 PM	3	0	15	0	0	0	0	0	0	48	7	0	40	52	0	0	165	1868
5:20 PM	1	0	22	0	0	0	0	0	0	44	3	0	33	62	0	0	165	1894
5:25 PM	2	0	15	0	0	0	0	0	0	62	2	0	26	48	0	0	155	1932
5:30 PM	0	0	5	0	0	0	0	0	0	55	2	0	18	35	0	0	115	1907
5:35 PM	1	0	15	0	0	0	0	0	0	40	1	0	20	54	0	0	131	1888
5:40 PM	3	0	3	0	0	0	0	0	0	22	2	0	11	10	0	0	51	1779
5:45 PM	6	0	22	0	0	0	0	0	0	51	4	0	24	67	0	0	174	1792
5:50 PM	2	0	11	0	0	0	0	0	0	77	5	0	21	69	0	0	185	1822
5:55 PM	1	0	14	0	0	0	0	0	0	38	2	0	12	47	0	0	114	1772

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	0	220	0	0	0	0	0	0	716	52	0	372	736	0	0	2128
Heavy Trucks	0	0	4		0	0	0		0	24	0		0	20	0		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		3	0	0		3
Railroad																	
Stopped Buses																	

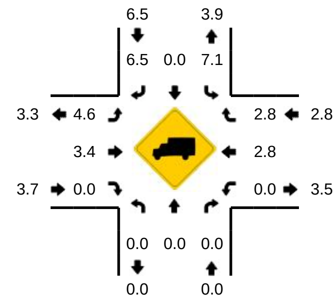
Comments:

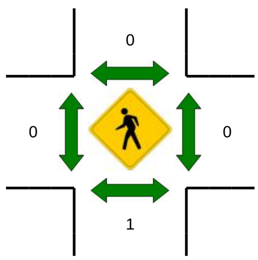
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

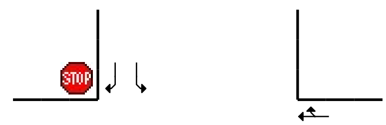
LOCATION: SE 9th St -- Reed Market Rd | **QC JOB #:** 10747701
CITY/STATE: Bend, OR | **DATE:** Thu, Apr 19 2012

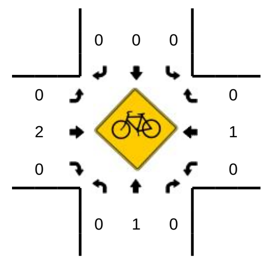


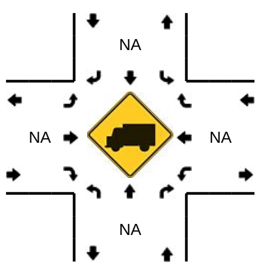
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

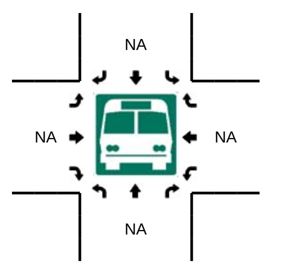












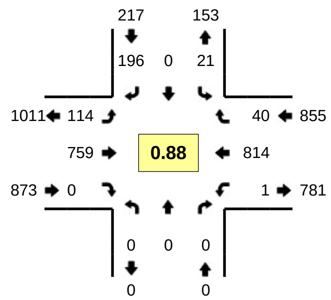
5-Min Count Period Beginning At	SE 9th St (Northbound) Left	Thru	Right	U	SE 9th St (Southbound) Left	Thru	Right	U	Reed Market Rd (Eastbound) Left	Thru	Right	U	Reed Market Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
7:00 AM	0	0	0	0	0	0	4	0	5	20	0	0	0	29	4	0	62	
7:05 AM	0	0	0	0	0	0	4	0	9	30	0	0	0	31	3	0	77	
7:10 AM	0	0	0	0	0	0	3	0	10	32	0	0	0	35	4	0	84	
7:15 AM	0	0	0	0	2	0	6	0	15	27	0	0	0	51	14	0	115	
7:20 AM	0	0	0	0	1	0	7	0	16	37	0	0	0	57	12	0	130	
7:25 AM	0	0	0	0	0	0	2	0	21	33	0	0	0	25	14	0	95	
7:30 AM	0	0	0	0	3	0	6	0	22	29	0	0	0	43	10	0	113	
7:35 AM	0	0	0	0	1	0	12	0	18	31	0	0	0	50	11	0	123	
7:40 AM	0	0	0	0	3	0	9	0	5	31	0	0	0	50	7	0	105	
7:45 AM	0	0	0	0	0	0	9	0	20	57	0	0	0	59	10	0	155	
7:50 AM	0	0	0	0	1	0	15	0	9	47	0	0	0	51	4	0	127	
7:55 AM	0	0	0	0	0	0	3	0	9	34	0	0	0	49	9	0	104	1290
8:00 AM	0	0	0	0	2	0	8	0	6	32	0	0	0	33	6	0	87	1315
8:05 AM	0	0	0	0	1	0	4	0	4	29	0	0	0	53	3	0	94	1332
8:10 AM	0	0	0	0	0	0	12	0	6	28	0	0	0	49	7	0	102	1350
8:15 AM	0	0	0	0	1	0	4	0	7	40	0	0	0	48	6	0	106	1341
8:20 AM	0	0	0	0	1	0	9	0	13	33	0	0	0	44	6	0	106	1317
8:25 AM	0	0	0	0	1	0	9	0	3	39	0	0	0	47	8	0	107	1329
8:30 AM	0	0	0	0	0	0	8	0	12	33	0	0	0	46	3	0	102	1318
8:35 AM	0	0	0	0	0	0	9	0	6	45	0	0	0	45	4	0	109	1304
8:40 AM	0	0	0	0	0	0	14	0	10	42	0	0	0	49	6	0	121	1320
8:45 AM	0	0	0	0	0	0	15	0	17	45	0	0	0	65	3	0	145	1310
8:50 AM	0	0	0	0	3	0	8	0	14	58	0	0	0	43	7	0	133	1316
8:55 AM	0	0	0	0	0	0	8	0	8	50	0	0	0	38	6	0	110	1322

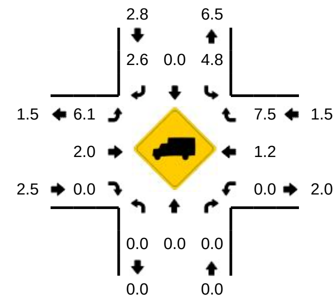
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	0	0	0	16	0	132	0	136	540	0	0	0	640	84	0	1548
Heavy Trucks	0	0	0		4	0	0		4	8	0		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

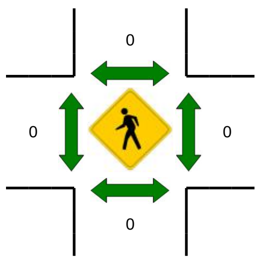
Comments:

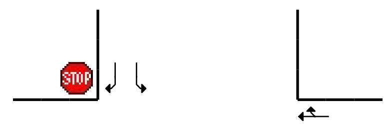
LOCATION: SE 9th St -- Reed Market Rd | **QC JOB #:** 10747702
CITY/STATE: Bend, OR | **DATE:** Thu, Apr 19 2012

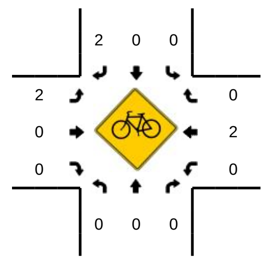
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

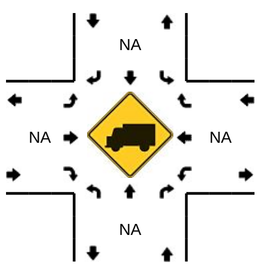


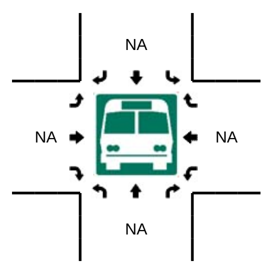












5-Min Count Period Beginning At	SE 9th St (Northbound)				SE 9th St (Southbound)				Reed Market Rd (Eastbound)				Reed Market Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	21	0	10	63	0	0	0	46	3	0	144	
4:05 PM	0	0	0	0	1	0	18	0	13	56	0	0	0	57	6	0	151	
4:10 PM	0	0	0	0	3	0	22	0	11	68	0	0	0	51	1	0	156	
4:15 PM	0	0	0	0	0	0	13	0	12	60	0	0	0	48	7	0	140	
4:20 PM	0	0	0	0	3	0	11	0	8	66	0	0	0	52	5	0	145	
4:25 PM	0	0	0	0	1	0	8	0	8	45	0	0	0	72	3	0	137	
4:30 PM	0	0	0	0	0	0	15	0	13	57	0	0	0	61	1	0	147	
4:35 PM	0	0	0	0	3	0	15	0	15	48	0	0	0	56	4	0	141	
4:40 PM	0	0	0	0	1	0	14	0	10	60	0	0	0	64	4	0	153	
4:45 PM	0	0	0	0	0	0	24	0	11	68	0	0	0	73	6	0	182	
4:50 PM	0	0	0	0	1	0	15	0	9	66	0	0	0	70	3	0	164	
4:55 PM	0	0	0	0	3	0	23	0	9	71	0	0	0	59	4	0	169	1829
5:00 PM	0	0	0	0	2	0	8	0	14	69	0	0	0	72	3	0	168	1853
5:05 PM	0	0	0	0	1	0	15	0	11	63	0	0	0	74	3	0	167	1869
5:10 PM	0	0	0	0	5	0	10	0	5	20	0	0	0	26	4	1	71	1784
5:15 PM	0	0	0	0	0	0	13	0	3	84	0	0	0	90	3	0	193	1837
5:20 PM	0	0	0	0	0	0	18	0	12	74	0	0	0	82	2	0	188	1880
5:25 PM	0	0	0	0	1	0	16	0	10	67	0	0	0	74	3	0	171	1914
5:30 PM	0	0	0	0	2	0	22	0	9	53	0	1	0	71	4	0	162	1929
5:35 PM	0	0	0	0	5	0	18	0	10	64	0	0	0	59	1	0	157	1945
5:40 PM	0	0	0	0	2	0	11	0	4	66	0	0	0	63	1	0	147	1939
5:45 PM	0	0	0	0	2	0	14	0	5	67	0	0	0	52	1	0	141	1898
5:50 PM	0	0	0	0	3	0	27	0	4	55	0	0	0	60	5	0	154	1888
5:55 PM	0	0	0	0	0	0	6	0	7	69	0	0	0	49	3	0	134	1853

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	188	0	100	900	0	0	0	984	32	0	2208
Heavy Trucks	0	0	0		0	0	4		4	20	0		0	0	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	1		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

APPENDIX B

FHWA 13 STANDARD VEHICLE CLASSIFICATION COUNTS

LOCATION: Reed Market Rd. Between 3rd and American Lane
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10675717
DIRECTION: EB/WB
DATE: Nov 01 2011

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	46	5	0	2	0	0	0	0	0	0	0	0	0	53
1:00 AM	0	31	3	0	0	0	0	0	0	0	0	0	0	0	34
2:00 AM	1	32	12	1	6	0	0	0	0	0	0	0	0	0	52
3:00 AM	0	22	9	0	3	0	0	0	0	0	0	0	0	0	34
4:00 AM	0	37	16	2	2	1	0	0	1	0	0	0	0	0	59
5:00 AM	0	91	23	1	15	2	0	1	1	0	0	0	0	2	136
6:00 AM	1	244	96	3	44	1	0	0	0	2	0	0	0	8	399
7:00 AM	1	501	225	6	69	8	1	5	1	4	0	0	1	39	861
8:00 AM	4	548	219	8	75	10	1	21	0	2	0	0	0	67	955
9:00 AM	6	495	224	7	90	13	4	10	3	3	0	0	0	69	924
10:00 AM	4	549	225	2	77	11	2	19	3	0	0	0	0	37	929
11:00 AM	3	677	258	3	84	11	0	19	4	3	0	0	0	62	1124
12:00 PM	6	707	307	5	92	3	0	11	3	1	0	0	0	96	1231
1:00 PM	8	744	260	3	80	9	0	15	2	3	0	0	0	88	1212
2:00 PM	9	729	257	9	84	11	0	12	0	0	0	0	0	87	1198
3:00 PM	3	838	281	6	79	11	0	13	2	1	0	0	0	109	1343
4:00 PM	4	769	280	6	98	4	0	11	3	0	0	1	0	106	1282
5:00 PM	6	822	275	2	72	6	0	9	0	0	0	0	0	107	1299
6:00 PM	3	700	224	3	56	3	0	6	0	0	0	0	0	51	1046
7:00 PM	2	442	128	0	30	2	0	6	0	0	0	0	0	26	636
8:00 PM	2	347	92	1	20	0	0	1	0	0	0	0	0	14	477
9:00 PM	0	201	73	0	10	0	0	0	0	0	0	0	0	4	288
10:00 PM	0	100	45	0	4	0	0	0	0	0	0	0	0	4	153
11:00 PM	0	58	13	0	6	0	0	0	0	0	0	0	0	2	79
Day Total	63	9730	3550	68	1098	106	8	159	23	19	0	1	1	978	15804
Percent	0.4%	61.6%	22.5%	0.4%	6.9%	0.7%	0.1%	1.0%	0.1%	0.1%	0.0%	0.0%	0.0%	6.2%	

ADT
15804

	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
AM Peak	9:00 AM	11:00 AM	11:00 AM	8:00 AM	9:00 AM	9:00 AM	9:00 AM	8:00 AM	11:00 AM	7:00 AM			7:00 AM	9:00 AM	11:00 AM
Volume	6	677	258	8	90	13	4	21	4	4			1	69	1124
PM Peak	2:00 PM	3:00 PM	12:00 PM	2:00 PM	4:00 PM	2:00 PM		1:00 PM	12:00 PM	1:00 PM		4:00 PM		3:00 PM	3:00 PM
Volume	9	838	307	9	98	11		15	3	3		1		109	1343

Comments:

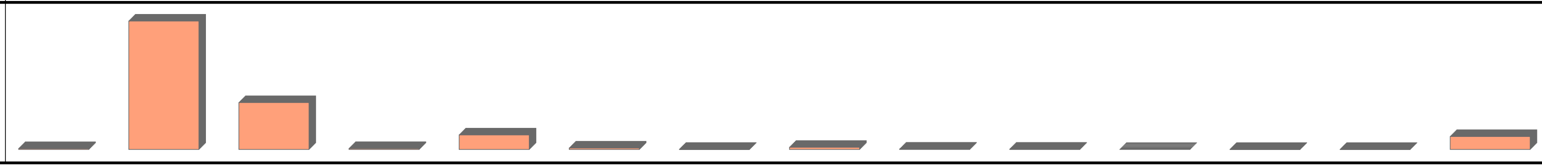
SUMMARY - Tube Count - Vehicle Classification Data

LOCATION: Reed Market Rd. Between 3rd and American Lane
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10675717
DIRECTION: EB/WB
DATE: Nov 01 2011 - Nov 01 2011

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	63	9730	3550	68	1098	106	8	159	23	19	0	1	1	978	15804
Percent	0.4%	61.6%	22.5%	0.4%	6.9%	0.7%	0.1%	1.0%	0.1%	0.1%	0.0%	0.0%	0.0%	6.2%	

ADT
15804



Comments:

LOCATION: Reed Market Rd. between 15th and 27th St.
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10675718
DIRECTION: EB/WB
DATE: Nov 09 2011

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	22	4	0	7	0	0	0	0	0	0	0	0	0	33
1:00 AM	0	13	3	0	3	0	0	0	0	0	0	0	0	0	19
2:00 AM	0	11	3	0	1	0	0	0	0	0	0	0	0	2	17
3:00 AM	0	28	6	0	5	0	0	0	0	0	0	0	0	0	39
4:00 AM	1	18	13	0	1	0	0	1	0	0	0	0	0	1	35
5:00 AM	0	60	20	0	7	0	0	0	0	0	0	0	0	0	87
6:00 AM	0	212	92	1	44	4	**1**	1	0	**4**	0	0	0	3	362
7:00 AM	1	480	174	**6**	79	3	0	7	0	1	0	0	0	**42**	793
8:00 AM	1	434	171	5	61	5	1	8	0	2	0	0	**1**	26	715
9:00 AM	1	382	174	4	63	2	1	8	**1**	3	0	0	0	27	666
10:00 AM	1	433	**196**	3	**80**	**6**	0	8	1	0	0	0	0	36	764
11:00 AM	**2**	**484**	195	4	72	4	0	**11**	0	0	0	0	0	25	**797**
12:00 PM	3	523	199	**8**	**92**	5	0	3	0	1	0	0	0	48	882
1:00 PM	0	596	239	4	64	3	0	**11**	0	**2**	0	0	0	38	957
2:00 PM	**5**	573	219	3	53	2	0	5	0	0	0	0	**1**	42	903
3:00 PM	3	583	**248**	2	84	7	**1**	8	0	2	0	0	0	40	**978**
4:00 PM	3	591	228	0	80	**9**	0	10	**1**	0	0	0	0	**54**	976
5:00 PM	4	**626**	207	1	62	4	0	3	1	0	0	0	0	49	957
6:00 PM	1	433	167	2	45	3	0	2	0	0	0	0	0	20	673
7:00 PM	0	287	91	0	27	0	0	0	0	0	0	0	0	7	412
8:00 PM	2	251	87	0	13	0	0	0	0	1	0	0	0	7	361
9:00 PM	1	154	33	0	9	0	0	0	0	0	0	0	0	2	199
10:00 PM	1	90	25	0	3	0	0	0	0	0	0	0	0	2	121
11:00 PM	0	42	10	0	3	0	0	0	0	0	0	0	0	0	55
Day Total	30	7326	2804	43	958	57	4	86	4	16	0	0	2	471	11801
Percent	0.3%	62.1%	23.8%	0.4%	8.1%	0.5%	0.0%	0.7%	0.0%	0.1%	0.0%	0.0%	0.0%	4.0%	
ADT 11801															
AM Peak	11:00 AM	11:00 AM	10:00 AM	7:00 AM	10:00 AM	10:00 AM	6:00 AM	11:00 AM	9:00 AM	6:00 AM			8:00 AM	7:00 AM	11:00 AM
Volume	2	484	196	6	80	6	1	11	1	4			1	42	797
PM Peak	2:00 PM	5:00 PM	3:00 PM	12:00 PM	12:00 PM	4:00 PM	3:00 PM	1:00 PM	4:00 PM	1:00 PM			2:00 PM	4:00 PM	3:00 PM
Volume	5	626	248	8	92	9	1	11	1	2			1	54	978

Comments:

SUMMARY - Tube Count - Vehicle Classification Data

LOCATION: Reed Market Rd. between 15th and 27th St.
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10675718
DIRECTION: EB/WB
DATE: Nov 09 2011 - Nov 09 2011

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	30	7326	2804	43	958	57	4	86	4	16	0	0	2	471	11801
Percent	0.3%	62.1%	23.8%	0.4%	8.1%	0.5%	0.0%	0.7%	0.0%	0.1%	0.0%	0.0%	0.0%	4.0%	

ADT
11801

Comments:

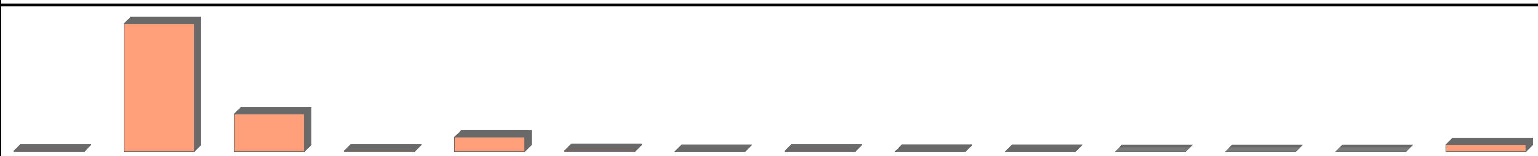
Report generated on 11/14/2011 1:16 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

LOCATION: SE 15th St North of Reed Market Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10701005
DIRECTION: NB/SB
DATE: Jan 31 2012

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	2	7
1:00 AM	0	13	2	0	0	0	0	0	0	0	0	0	0	0	15
2:00 AM	0	4	3	0	0	0	0	0	0	0	0	0	0	0	7
3:00 AM	0	9	1	0	0	0	0	0	0	0	0	0	0	0	10
4:00 AM	0	11	2	0	1	1	0	0	0	0	0	0	0	0	15
5:00 AM	0	52	18	0	4	0	0	0	0	0	0	0	0	0	74
6:00 AM	0	116	52	1	12	2	0	0	0	0	0	0	0	3	186
7:00 AM	**4**	**369**	**116**	**5**	**49**	5	0	2	0	0	0	0	0	15	**565**
8:00 AM	1	305	106	5	42	**6**	0	3	**1**	0	0	0	0	14	483
9:00 AM	0	214	92	1	35	3	0	1	0	**1**	0	0	0	15	362
10:00 AM	3	292	71	3	38	2	0	**5**	0	0	0	0	0	11	425
11:00 AM	0	337	105	0	42	5	**1**	4	0	0	0	0	0	**26**	520
12:00 PM	1	362	119	2	**60**	**5**	0	**3**	0	0	0	0	0	11	563
1:00 PM	2	393	119	2	47	4	0	3	0	0	0	0	0	25	595
2:00 PM	**9**	411	117	4	49	2	0	2	0	0	0	0	0	29	623
3:00 PM	4	458	**161**	**7**	54	2	0	3	**1**	0	0	0	0	32	**722**
4:00 PM	2	472	123	2	53	2	0	3	1	0	0	0	0	28	686
5:00 PM	3	**482**	119	0	38	1	0	0	1	0	0	0	0	**53**	697
6:00 PM	0	284	70	0	34	1	0	0	0	0	0	0	0	7	396
7:00 PM	0	207	42	0	13	0	0	0	0	0	0	0	0	6	268
8:00 PM	0	185	31	1	8	0	0	0	0	0	0	0	0	3	228
9:00 PM	0	105	28	0	6	0	0	0	0	0	0	0	0	0	139
10:00 PM	0	53	14	0	1	1	0	0	0	0	0	0	0	0	69
11:00 PM	0	37	9	1	0	0	0	0	0	0	0	0	0	0	47
Day Total	29	5176	1520	34	586	42	1	29	4	1	0	0	0	280	7702
Percent	0.4%	67.2%	19.7%	0.4%	7.6%	0.5%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	3.6%	
ADT 7702															
AM Peak Volume	7:00 AM 4	7:00 AM 369	7:00 AM 116	7:00 AM 5	7:00 AM 49	8:00 AM 6	11:00 AM 1	10:00 AM 5	8:00 AM 1	9:00 AM 1				11:00 AM 26	7:00 AM 565
PM Peak Volume	2:00 PM 9	5:00 PM 482	3:00 PM 161	3:00 PM 7	12:00 PM 60	12:00 PM 5		12:00 PM 3	3:00 PM 1					5:00 PM 53	3:00 PM 722



Comments:

SUMMARY - Tube Count - Vehicle Classification Data

LOCATION: SE 15th St North of Reed Market Rd
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10701005
DIRECTION: NB/SB
DATE: Jan 31 2012 - Jan 31 2012

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	29	5176	1520	34	586	42	1	29	4	1	0	0	0	280	7702
Percent	0.4%	67.2%	19.7%	0.4%	7.6%	0.5%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	3.6%	
ADT 7702															

Comments:

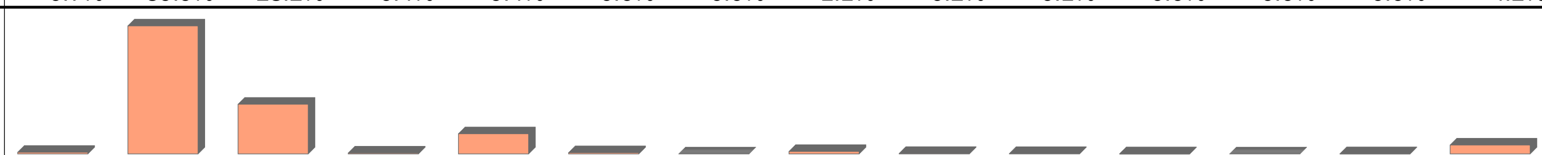
Report generated on 2/1/2012 10:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

LOCATION: SE 9th St North of Reed Market
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10747705
DIRECTION: NB/SB
DATE: Apr 19 2012

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
1:00 AM	1	8	0	0	0	1	0	0	0	0	0	0	0	1	11
2:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
3:00 AM	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
4:00 AM	0	4	3	0	0	0	0	0	0	0	0	0	0	1	8
5:00 AM	0	29	7	0	3	0	0	0	0	0	0	0	0	0	39
6:00 AM	0	72	28	1	11	1	0	1	0	0	0	0	0	0	114
7:00 AM	2	**241**	66	**3**	27	1	0	1	0	**1**	0	0	0	14	**356**
8:00 AM	**5**	144	**92**	2	29	2	0	5	1	0	0	0	0	17	297
9:00 AM	2	106	65	3	**60**	3	0	4	0	0	0	0	0	11	254
10:00 AM	1	132	73	0	33	2	0	**11**	1	0	0	0	**1**	11	265
11:00 AM	2	171	77	0	26	**4**	0	2	**3**	1	0	0	0	**26**	312
12:00 PM	1	198	75	1	21	0	0	4	0	0	0	0	**1**	7	308
1:00 PM	2	152	77	2	31	**4**	0	3	**1**	**2**	**1**	0	0	9	284
2:00 PM	3	187	70	0	28	0	0	2	0	0	0	0	0	14	304
3:00 PM	**4**	201	**91**	**3**	**40**	2	0	**7**	0	0	0	0	0	**19**	367
4:00 PM	3	**236**	83	2	36	2	0	3	1	0	0	0	0	16	**382**
5:00 PM	4	214	71	0	22	1	0	3	1	1	0	0	0	17	334
6:00 PM	0	157	33	0	10	0	0	2	1	0	0	0	0	8	211
7:00 PM	0	98	17	0	7	0	0	0	0	0	0	0	0	0	122
8:00 PM	1	59	26	0	7	1	0	0	0	1	0	0	0	2	97
9:00 PM	0	58	9	0	2	0	0	0	0	0	0	0	0	0	69
10:00 PM	0	23	3	0	2	0	0	0	0	0	0	0	0	1	29
11:00 PM	0	9	6	0	0	0	0	0	0	0	0	0	0	0	15
Day Total	31	2511	974	17	395	24	0	48	9	6	1	0	2	174	4192
Percent	0.7%	59.9%	23.2%	0.4%	9.4%	0.6%	0.0%	1.1%	0.2%	0.1%	0.0%	0.0%	0.0%	4.2%	
ADT 4192															
AM Peak Volume	8:00 AM 5	7:00 AM 241	8:00 AM 92	7:00 AM 3	9:00 AM 60	11:00 AM 4		10:00 AM 11	11:00 AM 3	7:00 AM 1			10:00 AM 1	11:00 AM 26	7:00 AM 356
PM Peak Volume	3:00 PM 4	4:00 PM 236	3:00 PM 91	3:00 PM 3	3:00 PM 40	1:00 PM 4		3:00 PM 7	1:00 PM 1	1:00 PM 2	1:00 PM 1		12:00 PM 1	3:00 PM 19	4:00 PM 382



Comments:

SUMMARY - Tube Count - Vehicle Classification Data

LOCATION: SE 9th St North of Reed Market
SPECIFIC LOCATION: 0 ft from
CITY/STATE: Bend, OR

QC JOB #: 10747705
DIRECTION: NB/SB
DATE: Apr 19 2012 - Apr 19 2012

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	31	2511	974	17	395	24	0	48	9	6	1	0	2	174	4192
Percent	0.7%	59.9%	23.2%	0.4%	9.4%	0.6%	0.0%	1.1%	0.2%	0.1%	0.0%	0.0%	0.0%	4.2%	

ADT
4192

Comments:

Report generated on 4/23/2012 7:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

APPENDIX C

ODOT AND CITY OF BEND COLLISION RECORDS

CITY OF BEND, DESCHUTES COUNTY

REED MARKET RD at AMERICAN LN, City of Bend, Deschutes County, 01/01/2007 to 04/30/2011

Total crash records: 15

	S D																							
	P R S W					INT-TYPE						SPCL USE												
	E A U C O	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH		TRLR QTY	MOVE				A	S						
SER#	E L G H R	DAY	DIST	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL		OWNER	FROM		PRTC	INJ	G	E	LICNS	PED				
INVEST	D C S L K	TIME	FROM	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
00358	N N N	03/13/2009	14	AMERICAN LN	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		FR	0	REED MARKET RD	E		UNKNOWN	N	DRY	REAR		PRVTE	W -E									000		00
		12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	60	F	OR-Y		026	000		07
																			OR<25					
											02	NONE 0	STOP											
												PRVTE	W -E									011		00
												PSNGR CAR		01	DRVR	NONE	62	F	OR-Y		000	000		00
																			OR<25					
01025	N N N	06/08/2008	14	AMERICAN LN	INTER	3-LEG	N	Y	UNK	FIX OBJ	01	NONE 0	TURN-L										030,043	12
NONE		SU	0	REED MARKET RD	S		UNKNOWN	N	UNK	FIX		PRVTE	E -S									007	030,043	00
		10P			06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y		000	000		12
																			OR>25					
00022	N N N N N	01/12/2007	14	AMERICAN LN	INTER	3-LEG	N	N	CLR	O-1TURN	01	NONE 0	STRGHT											02
		FR	0	REED MARKET RD	CN		UNKNOWN	N	DRY	TURN		PRVTE	W -E									000		00
		5P			03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		000	000		00
																			OR<25					
											02	NONE 0	TURN-L											
												PRVTE	E -S									000		00
												PSNGR CAR		01	DRVR	NONE	38	M	OR-Y		028,004	000		02
																			OR<25					
01448	N Y N N N	08/21/2007	16	AMERICAN LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	TURN-R											03,08
CITY		TU	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	S -E									000		00
		4P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJA	36	F	OR-Y		021,001	000		03,08
																			OR<25					
											02	NONE	TURN-L											
												PRVTE	E -S									000		00
												PSNGR CAR		01	DRVR	INJB	35	M	OR-Y		000	000		00
																			OR<25					
00032	N N N	01/03/2008	14	AMERICAN LN	INTER	3-LEG	N	N	CLD	BIKE	01	NONE 0	STRGHT											03
CITY		TH	0	REED MARKET RD	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E -W									000		00
		3P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	16	M	N-VAL		000	000		00
																			OR<25					
													-											
													STRGHT	01	BIKE	INJB	16	M		I INRD	021	034		03
													S N											
00854	N N N N N	05/15/2008	14	AMERICAN LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											03
CITY		TH	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	S -W									000		00
		3P			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	19	M	OR-Y		021	000		03
																			OR<25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									000		00
												PSNGR CAR		01	DRVR	INJC	50	M	OR-Y		000	000		00
																			OR<25					
01458	Y N N N N	09/10/2008	16	AMERICAN LN	INTER	3-LEG	N	N	CLR	O-1TURN	01	NONE 0	STRGHT										013	02,30
CITY		WE	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW-SE									000		00
		5P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		050	000		30
																			OR<25					
											02	NONE 0	TURN-L											
												PRVTE	SE-SW									000	013	00

SER# INVEST	S P E E D / D R A L C / R S U G S / W C H L / O R K	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	SPCL USE TRLR QTY OWNER V# TYPE	MOVE FROM TO	PRTC P# TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
											PSNGR CAR		01 DRVR	NONE	42	M	OR-Y		004,028	000	02
																	OR<25				
											03 NONE 0	STOP									
											PRVTE	SW-NE								012	00
											PSNGR CAR		01 DRVR	NONE	34	M	EXP		000	000	00
																	OR<25				
02032	N N N N N	12/08/2008	12	AMERICAN LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		MO	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN	PRVTE	S -W								015	00
		4P			03	0		N	DUSK	PDO	PSNGR CAR		01 DRVR	NONE	23	M	OR-Y		004,021	000	02
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E								000	00
											PSNGR CAR		01 DRVR	NONE	69	F	OR-Y		000	000	00
																	OR<25				
02054	N N N N N	12/10/2008	12	AMERICAN LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									03
CITY		WE	0	REED MARKET RD	CN		STOP SIGN	N	DRY	ANGL	PRVTE	S -W								000	00
		10A			04	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	17	M	OR-Y		021	000	03
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E								000	00
											PSNGR CAR		01 DRVR	NONE	60	M	OR-Y		000	000	00
																	OR<25				
02104	N N N	12/25/2008	16	AMERICAN LN	INTER	3-LEG	N	N	SNOW	ANGL-OTH	01 NONE 0	STRGHT									03
NONE		TH	0	REED MARKET RD	CN		STOP SIGN	N	SNO	ANGL	PRVTE	S -N								000	00
		7P			02	0		N	DARK	PDO	PSNGR CAR		01 DRVR	NONE	00	F	OR-Y		028,021	000	03
																	UNK				
											02 NONE 0	STRGHT									
											PRVTE	W -E								000	00
											PSNGR CAR		01 DRVR	NONE	18	F	OR-Y		000	000	00
																	OR<25				
01934	N N N	12/04/2008	19	AMERICAN LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		TH	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN	PRVTE	S -W								000	00
		3P			04	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	50	F	OR-Y		028,004	000	02
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W								000	00
											PSNGR CAR		01 DRVR	NONE	55	M	OR-Y		000	000	00
																	OR<25				
01741	N N N	12/24/2009	14	AMERICAN LN	INTER	3-LEG	N	N	UNK	O-1TURN	01 NONE 0	TURN-L									02
NONE		TH	0	REED MARKET RD	CN		UNKNOWN	N	UNK	TURN	PRVTE	E -S								000	00
		7P			03	0		N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	M	UNK		028,004	000	02
																	UNK				
											02 NONE 0	STRGHT									
											PRVTE	W -E								000	00
											PSNGR CAR		01 DRVR	NONE	32	F	OR-Y		000	000	00
																	OR<25				
01524	N N N	11/04/2009	14	AMERICAN LN	INTER	3-LEG	N	N	CLR	O-1TURN	01 NONE 0	TURN-L								013	02
NO RPT		WE	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN	PRVTE	E -S								000	00
		3P			03	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	66	F	OR-Y		004	000	02
																	OR<25				
											02 NONE 0	STRGHT									

CITY OF BEND, DESCHUTES COUNTY

REED MARKET RD at AMERICAN LN, City of Bend, Deschutes County, 01/01/2007 to 04/30/2011

Total crash records: 15

SER# INVEST	S P E E D	A L C	D R U G S	S C H L	W O R K	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																PRVTE	W -E									000	013	00
																PSNGR CAR		01	DRVR	INJB	59	F	OR-Y		000	000		00
																							OR<25					
															03	NONE 0	STOP											
																PRVTE	S -N									011		00
																PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		000	000		00
																							OR<25					
01245	N	N	N	N	N	09/15/2009	16	AMERICAN LN	INTER	3-LEG	N	N	CLR	O-1TURN	01	NONE 0	TURN-L											02
CITY						TU	0	REED MARKET RD	CN		UNKNOWN	N	DRY	TURN		PRVTE	E -S									000		00
						6P			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y		016,004,028	038		02
																							OR>25					
															02	NONE 0	STRGHT											
																PRVTE	W -E									000		00
																PSNGR CAR		01	DRVR	INJC	59	M	OR-Y		000	000		00
																							OR>25					
00627	N	N	N			05/27/2010	14	AMERICAN LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											03
NONE						TH	0	REED MARKET RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	S -W									000		00
						11A			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	87	M	OR-Y		021	000		03
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	E -S									000		00
																PSNGR CAR		01	DRVR	NONE	81	F	OR-Y		000	000		00
																							OR<25					

CRASH_ID	SER_NO	CRASH_DT	ASH_MO_I	ASH_DAY_	RASH_YR_N	H_WK_DA	RASH_HR_N	_HR_SHORT	CNTY_ID	CNTY_NM	ITY_SECT_I	TY_SECT_N	RB_AREA_C	REA_SHOR	FC_CD	_SHORT_DE	NHS_FLG	HWY_NO	WY_SFX_N	WY_MED_N	RDWY_NO	Y_COMPNT	MPNT_SHO	LGE_TYP_C	TYP_SHOR	D_CON_NO	LRS_VAL	AT_DEG_N
1276996	00410	04-Feb-08	02	04	2008	2	18	6P	09	Deschutes	19	Bend	9	BEND UA	14	U PR-ART	FALSE											44
1278866	00883	27-May-08	05	27	2008	3	17	5P	09	Deschutes	19	Bend	9	BEND UA	14	U PR-ART	FALSE											44
1280267	01055	04-Jun-08	06	04	2008	4	15	3P	09	Deschutes	19	Bend	9	BEND UA	14	U PR-ART	FALSE											44
1302788	01449	09-Sep-08	09	09	2008	3	11	11A	09	Deschutes	19	Bend	9	BEND UA	16	U MN-ART	FALSE											44
1303861	01693	24-Oct-08	10	24	2008	6	17	5P	09	Deschutes	19	Bend	9	BEND UA	16	U MN-ART	FALSE											44
1315511	00087	24-Jan-09	01	24	2009	7	13	1P	09	Deschutes	19	Bend	9	BEND UA	14	U PR-ART	FALSE											44
1319868	00264	20-Feb-09	02	20	2009	6	16	4P	09	Deschutes	19	Bend	9	BEND UA	14	U PR-ART	FALSE											44
1340812	00820	19-Jun-09	06	19	2009	6	21	9P	09	Deschutes	19	Bend	9	BEND UA	16	U MN-ART	FALSE											44
1357511	00199	26-Feb-10	02	26	2010	6	16	4P	09	Deschutes	19	Bend	9	BEND UA	16	U MN-ART	FALSE											44
1385093	01196	25-Sep-10	09	25	2010	7	17	5P	09	Deschutes	19	Bend	9	BEND UA	14	U PR-ART	FALSE											44
1396873	01450	13-Nov-10	11	13	2010	7	15	3P	09	Deschutes	19	Bend	9	BEND UA	16	U MN-ART	FALSE											44

MINUTE	AT_SEC_N	GTD_DEG_	TD_MINUT	NGTD_SEC_	CL_JRSDCT	RSDCT_SHO	DCT_GRP_	_GRP_SHOR	AGY_ST_NO	T_FULL_NM	CRE_RD_N	T_AGY_ST_	T_ST_FULL_	_RECRE_RD	ECT_SEQ_N	ISECT_DST	MPSS_DIR_	MP_NO	SPEED_LM	D_CHAR_C	RD_CHAR_SHORT_DESC	F_RDWY_F	ECT_TYP_C	TYP_SHORT	ECT_REL_F	NDABT_FL
2	13.17	-121	17	21.51					02123	REED MARKET RD		08309	E 9TH ST		1	300	7			3	STRGHT	FALSE			FALSE	FALSE
2	13.1	-121	17	16.67					02123	REED MARKET RD		08309	E 9TH ST		1	0	7			1	INTER	FALSE	3	3-LEG	FALSE	FALSE
2	13.16	-121	17	20.87					02123	REED MARKET RD		08309	E 9TH ST		1	300	7			3	STRGHT	FALSE			FALSE	FALSE
2	13.12	-121	17	17.99					02123	REED MARKET RD		08309	E 9TH ST		1	100	7			3	STRGHT	FALSE			FALSE	FALSE
2	13.13	-121	17	18.67					02123	REED MARKET RD		08309	E 9TH ST		1	150	7		35	3	STRGHT	FALSE			FALSE	FALSE
2	13.16	-121	17	20.76					02123	REED MARKET RD		08309	E 9TH ST		1	300	7			3	STRGHT	FALSE			FALSE	FALSE
2	13.07	-121	17	12.73					02123	REED MARKET RD		08309	E 9TH ST		1	300	3			3	STRGHT	FALSE			FALSE	FALSE
2	13.1	-121	17	16.67					02123	REED MARKET RD		08309	E 9TH ST		1	0	3			1	INTER	FALSE	3	3-LEG	FALSE	FALSE
2	13.09719	-121	17	16.6714					02123	REED MARKET RD		08309	E 9TH ST		1	0	9			1	INTER	FALSE	3	3-LEG	FALSE	FALSE
2	13.09719	-121	17	16.6714					02123	REED MARKET RD		08309	E 9TH ST		1	0	7			1	INTER	FALSE	3	3-LEG	FALSE	FALSE
2	13.14936	-121	17	20.11031					02123	REED MARKET RD		08309	E 9TH ST		1	250	7			3	STRGHT	FALSE			FALSE	FALSE

VWY_REL_I	LN_QTY	RNG_LEG_(	EDN_TYP_(	TYP_SHOR	IMPCT_LOC_CD	CRASH_TYP_CD	CRASH_TYP_SHORT_DESC	COLLIS_TYP_CD	COLLIS_TYP_SHORT_DESC	CRASH_SVRTY_CD	CRASH_SVRTY_SHORT_DESC	WTHR_COND_CD	COND_SHO	URF_COND	RF_SHORT	T_COND_	ND_SHOR	TRAF_CNTL_DEVICE_CD
FALSE	2		0	NONE	08	E	S-1STOP	3	REAR	5	PDO	6	SNOW	4	ICE	3	DARK	099
FALSE		0			06	E	S-1STOP	3	REAR	5	PDO	3	RAIN	2	WET	1	DAY	099
FALSE	2		0	NONE	08	E	S-1STOP	3	REAR	5	PDO	1	CLR	1	DRY	1	DAY	099
FALSE	4		0	NONE	07	E	S-1STOP	3	REAR	4	INJ	1	CLR	1	DRY	1	DAY	024
FALSE	4		0	NONE	08	E	S-1STOP	3	REAR	4	INJ	1	CLR	1	DRY	1	DAY	099
FALSE	2		0	NONE	07	E	S-1STOP	3	REAR	4	INJ	2	CLD	1	DRY	1	DAY	024
FALSE	2		0	NONE	08	E	S-1STOP	3	REAR	5	PDO	1	CLR	1	DRY	1	DAY	000
FALSE		0			06	E	S-1STOP	3	REAR	5	PDO	1	CLR	1	DRY	3	DARK	024
FALSE		0			01	B	ANGL-OTH	6	TURN	5	PDO	1	CLR	1	DRY	1	DAY	004
FALSE		0			06	E	S-1STOP	3	REAR	5	PDO	1	CLR	1	DRY	1	DAY	099
FALSE	2		0	NONE	07	C	S-STRGHT	3	REAR	5	PDO	1	CLR	1	DRY	1	DAY	099

_DEVICE_S	CNTL_FUN	/STG_AGY_	INVSTG_AGY_SHORT_DESC	CRASH_EVNT_1_CD	CRASH_EVNT_1_SHORT_DESC	CRASH_EVNT_2_CD	CRASH_EVNT_2_SHORT_DESC	SH_EVNT_3	VNT_3_SHO	CRASH_CAUSE_1_CD	CRASH_CAUSE_1_SHORT_DESC	H_CAUSE_	CRASH_CAUSE_2_SHORT_DESC	H_CAUSE_	USE_3_SH
UNKNOWN	TRUE	0	NONE							07	TOO-CLOS				
UNKNOWN	TRUE	5	NO RPT							01	TOO-FAST	07	TOO-CLOS		
UNKNOWN	TRUE	5	NO RPT	013	FORCED					07	TOO-CLOS				
WIGWAG	TRUE	5	NO RPT	015	RR ROW	013	FORCED			07	TOO-CLOS				
UNKNOWN	TRUE	3	CITY	013	FORCED					07	TOO-CLOS				
WIGWAG	TRUE	5	NO RPT							07	TOO-CLOS				
NONE	TRUE	3	CITY							27	INATTENT	07	TOO-CLOS		
WIGWAG	TRUE	3	CITY							07	TOO-CLOS				
STOP SIGN	TRUE	0	NONE							03	PAS-STOP				
UNKNOWN	TRUE	5	NO RPT							07	TOO-CLOS				
UNKNOWN	TRUE	5	NO RPT							01	TOO-FAST	07	TOO-CLOS		

HL_ZONE_I	RK_ZONE_I	HL_INVLV_	JG_INVLV_	SPEED_INV	H_HIT_RUN	OP_RNG_C	RNG_MED_	D_CNTL_C	NTL_MED_	TE_TYP_CI	RTE_ID	RTE_NM	REG_ID	DIST_ID	EG_MRK_I	PT_LRS_M	NLOCT_FL	CRASH_LAST_UD_DT	T_VHCL_C	T_FATAL_C	TOT_INJ_LVL_A_CNT	TOT_INJ_LVL_B_CNT	TOT_INJ_LVL_C_CNT
		FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6611	4546.889	FALSE	29-Jun-10	2	0	0	0	0
		FALSE	FALSE	TRUE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6617	4900.345	FALSE	29-Jun-10	2	0	0	0	0
		FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6611	4593.641	FALSE	29-Jun-10	3	0	0	0	0
		FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6611	4804.015	FALSE	29-Jun-10	5	0	0	0	1
0	0	FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6611	4754.343	FALSE	29-Jun-10	3	0	0	1	0
		FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6611	4601.673	FALSE	04-May-11	2	0	0	0	1
0	0	FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6617	5188.211	FALSE	04-May-11	2	0	0	0	0
0	0	FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6617	4900.345	FALSE	04-May-11	2	0	0	0	0
		FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6617	5531.15	FALSE	29-Mar-12	2	0	0	0	0
		FALSE	FALSE	FALSE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6617	5531.15	FALSE	29-Mar-12	2	0	0	0	0
		FALSE	FALSE	TRUE	FALSE	7	50,001 to 100,000	3	URBAN CITY STREET				4	10	11_6611	4649.13	FALSE	29-Mar-12	2	0	0	0	0

TOT_INJ_CNT	NJD_AGE0	UNINJD_PE	OT_PED_CN	TOT_PED_FATAL_CNT	TOT_PED_INJ_CNT	_PEDCYCL_	DCYCL_FAT	TOT_PEDCYCL_INJ_CNT	_UNKNWN_	KNWN_FA	NKNWN_IN	T_OCCUP_	PER_INVLV	_EQUIP_U	EQUIP_UN	UIP_USE_UNKNWN_QTY
0	0	2	0	0	0	0	0	0	0	0	0	2	2	1	0	1
0	0	2	0	0	0	0	0	0	0	0	0	2	2	0	0	2
0	0	3	0	0	0	0	0	0	0	0	0	3	3	0	0	3
1	1	6	0	0	0	0	0	0	0	0	0	7	7	5	0	2
1	0	2	0	0	0	0	0	0	0	0	0	3	3	2	1	0
1	0	6	0	0	0	0	0	0	0	0	0	7	7	1	0	6
0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	0	0
0	0	4	0	0	0	0	0	0	0	0	0	4	4	3	0	1
0	0	3	0	0	0	0	0	0	0	0	0	3	3	3	0	0
0	0	2	0	0	0	0	0	0	0	0	0	2	2	1	0	1
0	0	2	0	0	0	0	0	0	0	0	0	2	2	2	0	0

CDS380
11/30/2011

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF BEND, DESCHUTES COUNTY

REED MARKET RD at SE 15TH ST, City of Bend, Deschutes County, 01/01/2007 to 04/30/2011

Total crash records: 17

SER# INVEST	S P E D / D R L C / R A U S / S C G L / W H O R / H K (flags)	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00186	N N N	01/28/2007	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT		SU	0	SE 15TH ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
		5P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		026	000		07
																			OR>25					
											02	NONE 0	STOP											
												PRVTE	E -W									011		00
												PSNGR CAR		01	DRVR	INJB	54	F	OR-Y		000	000		00
																			OR<25					
00825	N N N	06/23/2009	16	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT		TU	0	SE 15TH ST	E		UNKNOWN	N	DRY	REAR		PRVTE	E -W									000		00
		4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		026	000		07
																			OR<25					
											02	NONE 0	STOP											
												PRVTE	E -W									011		00
												PSNGR CAR		01	DRVR	NONE	43	F	OR-Y		000	000		00
																			OR<25					
											03	NONE 0	STOP											
												PRVTE	E -W									011		00
												PSNGR CAR		01	DRVR	INJC	43	F	OR-Y		000	000		00
																			OR<25					
01457	N N N	11/15/2010	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NONE		MO	0	SE 15TH ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
		5P			06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y		026	000		07
																			OR<25					
											02	NONE 0	STOP											
												PRVTE	E -W									011	013	00
												PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		000	000		00
																			OR<25					
											03	NONE 0	STOP											
												PRVTE	E -W									011		00
												PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																			UNK					
00797	N N N	05/02/2008	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											02,07,13
NO RPT		FR	0	SE 15TH ST	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000		00
		2P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		044,083	000		02,07,13
																			OR<25					
											02	NONE 1	STOP											
												PRVTE	S -N									011		00
												PSNGR CAR		01	DRVR	NONE	32	M	OTH-Y		000	000		00
																			OR<25					
00857	N N N	05/15/2008	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		TH	0	SE 15TH ST	S		STOP SIGN	N	DRY	REAR		PRVTE	W -E									000		00
		5P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		026	000		07
																			OR<25					
											02	NONE 0	STOP											
												PRVTE	W -E									011		00
												PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																			UNK					
00470	N N N N N	03/03/2008	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27,07
CITY		MO	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
		3P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		026	000		27,07

SER# INVEST	S P E E D	A L C	D R U G S	S C H L	W O R K	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
																							OR<25				
															02	NONE 0	STOP										
																PRVTE	W -E									011	00
																PSNGR CAR		01	DRVR	NONE	30	M	OR-Y		000	000	00
																							OR<25				
01751	N	N	N			10/29/2008	16	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NO RPT						WE	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000	00
						3P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		043,026	000	07
																							OR<25				
															02	NONE 0	STOP										
																PRVTE	W -E									011	00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK		000	000	00
																							OR<25				
00256	N	N	N			02/19/2009	12	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NO RPT						TH	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000	00
						7P			06	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		026	000	07
																							OR<25				
															02	NONE 0	STOP										
																PRVTE	E -W									011	00
																PSNGR CAR		01	DRVR	NONE	36	M	OR-Y		000	000	00
																							OR<25				
															02	NONE 0	STOP										
																PRVTE	E -W									011	00
																PSNGR CAR		02	PSNG	INJC	39	F			000	000	00
															02	NONE 0	STOP										
																PRVTE	E -W									011	00
																PSNGR CAR		03	PSNG	INJB	11	F			000	000	00
															02	NONE 0	STOP										
																PRVTE	E -W									011	00
																PSNGR CAR		04	PSNG	NO<5	01	F			000	000	00
00890	N	N	N	N	N	07/15/2009	16	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07,27
CITY						WE	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000	00
						11A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	29	M	OR-Y		026,016	000	07,27
																							OR<25				
															02	NONE 0	STOP										
																PRVTE	W -E									011	00
																PSNGR CAR		01	DRVR	INJC	37	M	OR-Y		000	000	00
																							OR<25				
															03	NONE 0	STOP										
																PRVTE	W -E									011	00
																PSNGR CAR		01	DRVR	INJC	23	F	OR-Y		000	000	00
																							OR<25				
															03	NONE 0	STOP										
																PRVTE	W -E									011	00
																PSNGR CAR		02	PSNG	INJC	59	F			000	000	00
															03	NONE 0	STOP										
																PRVTE	W -E									011	00
																PSNGR CAR		03	PSNG	INJC	52	F			000	000	00

CITY OF BEND, DESCHUTES COUNTY

REED MARKET RD at SE 15TH ST, City of Bend, Deschutes County, 01/01/2007 to 04/30/2011

Total crash records: 17

SER# INVEST	S D / P R S W / E A U C O / E L G H R / D C S L K	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01720	N Y N	12/25/2009	14	REED MARKET RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R											08
NO RPT		FR	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	TURN		PRVTE	N -W									000		00
		3P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y		001	000		08
																			OR<25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									000		00
												PSNGR CAR		01	DRVR	NONE	64	M	OR-Y		000	000		00
																			OR<25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									000		00
												PSNGR CAR		02	PSNG	INJA	87	M			000	000		00
00584	N N N	05/18/2010	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		TU	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
		5P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000		07
																			OR<25					
											02	NONE 0	STOP											
												PRVTE	W -E									011		00
												PSNGR CAR		01	DRVR	NONE	23	M	OR-Y		000	000		00
																			OR<25					
00590	N N N	08/07/2010	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT		SA	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
		7A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		026	000		07
																			OR<25					
											01	NONE 0	STRGHT											
												PRVTE	W -E									000		00
												PSNGR CAR		02	PSNG	NO<5	01	M			000	000		00
											01	NONE 0	STRGHT											
												PRVTE	W -E									000		00
												PSNGR CAR		03	PSNG	NO<5	03	M			000	000		00
											02	NONE 0	STOP											
												PRVTE	W -E									011		00
												PSNGR CAR		01	DRVR	INJC	43	F	OR-Y		000	000		00
																			OR<25					
00994	N N N	08/14/2010	16	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NO RPT		SA	0	SE 15TH ST	W		UNKNOWN	N	DRY	REAR		PRVTE	W -E									000		00
		5P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	58	M	OR-Y		026	000		07
																			OR<25					
											02	NONE 0	STOP											
												PRVTE	W -E									011	013	00
												PSNGR CAR		01	DRVR	NONE	21	M	OR-Y		000	000		00
																			OR<25					
											03	NONE 0	STOP											
												PRVTE	W -E									011		00
												PSNGR CAR		01	DRVR	NONE	43	M	OR-Y		000	000		00
																			OR<25					
01207	N N N	09/27/2010	17	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT											32,27
NO RPT		MO	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00

SER# INVEST	S D P R S W E A U C O E L G H R D C S L K	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
		8A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		052,026	000	32,27
																			OR<25				
											02	NONE 0	STOP										
												PRVTE	W -E									011	00
												PSNGR CAR		01	DRVR	NONE	38	F	OR-Y		000	000	00
																			OR<25				
00503	N N N	04/20/2011	14	REED MARKET RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NO RPT		WE	0	SE 15TH ST	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000	00
		5P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	67	F	OR-Y		026	000	07
																			OR<25				
											02	NONE 0	STOP										
												PRVTE	W -E									011	00
												PSNGR CAR		01	DRVR	NONE	53	M	OR-Y		000	000	00
																			OR<25				
00536	N Y N N N	03/19/2008	14	REED MARKET RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										03
CITY		WE	0	SE 15TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	S -N									000	00
		5P			02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	36	M	SUSP		003	000	00
																			OR<25				
											02	NONE 0	STRGHT										
												PRVTE	E -W									000	00
												PSNGR CAR		01	DRVR	NONE	29	F	OR-Y		000	000	00
																			OR>25				
01701	N N N	12/13/2010	16	REED MARKET RD	INTER	CROSS	N	N	CLR	O-1TURN	01	NONE 0	TURN-L										02
NO RPT		MO	0	SE 15TH ST	CN		TRF SIGNAL	N	WET	TURN		PRVTE	W -N									000	00
		6A			02	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y		004,028	000	02
																			OR<25				
											02	NONE 0	STRGHT										
												PRVTE	E -W									000	00
												PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		000	000	00
																			OR<25				

CASE#	AGENCY	DATE	TIME	DAY	CITY/COUNTY	LOCATION	EVENT LOCN	CLASS	TYPE	KIND	CRASH TYPE	FIXED OBJ	REASON	#VEH	#INJ	#KILL
11-03-01198	BPD	2/19/2011	1:46:00 PM	SAT	Bend	61526 AMERICAN LN/61500 AMERICAN LOOP BEND OR	NON-INTERSECTION	PROPERTY DAMAGE	PUBLIC PROPERTY DAMAGE	COLLISION	HEAD ON			2	0	0
11-03-07063	BPD	8/22/2011	7:58:00 PM	MON	Bend	AMERICAN LN/CARMEN LOOP BEND OR	ROADSIDE	INJURY	PHOTOS TAKEN	COLLISION	SIDESWIPE	CURBING	MOTORCYCLE CRASH DUII	1	1	0
11-03-08401	BPD	10/4/2011	1:34:00 AM	TUE	Bend	61585 AMERICAN LOOP BEND OR	SHOULDER	PROPERTY DAMAGE	ESTIMATE UNDER $1500;PHOTOS TAKEN	COLLISION	HEAD ON	BOULDER/ROCK		1	0	0
11-03-08676	BPD	10/12/2011	10:00:00 AM	WED	Bend	61573 AMERICAN LOOP BEND OR	UNKNOWN	PROPERTY DAMAGE	PUBLIC PROPERTY DAMAGE	FIXED OBJECT	MANNER UNKNOWN	MAILBOX		1	0	0
11-03-08746	BPD	10/16/2011	4:14:00 AM	SUN	Bend	AMERICAN LN/SE REED MARKET RD BEND OR	SHOULDER	PROPERTY DAMAGE	PUBLIC PROPERTY DAMAGE;PHOTOS TAKEN	COLLISION	HEAD ON	FIRE HYDRANT		1	0	0

ROAD	WEATHER	LIGHT	TCDS?	COUNTER	PROPERTY	PROP DAMAGE	AGE	SEX	SEAT	SAFETY EQUIP	INJURY	EJECT?	INTOX USE	BA TEST	BA%	FACTORS	EXTR?
SNOW/SLUSH	SNOW	DAYLIGHT (FULL)	N	1	UVB449	NONE	45	F	LF	LAP/SHLDR	N	N	Alcohol	N		TOO FAST FOR COND	N
DRY	CLEAR	SUNSET (DUSK)	N	1	DAMAGE TO CURB AND MOTORCYCLE		24	M	O	NO EQP USED	V	Y	Alcohol	N		TOO FAST FOR COND	N
DRY	OVERCAST/CLOUDY	DARK (UNLIGHTED)	N	1	DAMAGE TO THE UNDERCARRIAGE OF THE VEHICLE		UNK	M	LF	LAP/SHLDR	N	N		N		OTHER	N
DRY	UNKNOWN/OTHER	UNKNOWN	N	1	MAILBOXES	TOTALED NO DAMAGE AMOUNT GIVEN										UNKNOWN	
WET	RAIN	DARK (LIGHTED)	N	1	CIYT OF BEND PROPERTY	AMERICAN LN REED MARKET BARRIER SURROUNDING FIRE HYDRANT	31	M	LF	LAP/SHLDR	N	N	Alcohol	Y	Refused	TOO FAST FOR COND	N

CASE#	AGENCY	DATE	TIME	DAY	CITY/COUNTY	LOCATION	EVENT LOCN	CLASS	TYPE	KIND	CRASH TYPE	FIXED OBJ	REASON	#VEH	#INJ	#KILL
11-03-00660	BPD	1/27/2011	4:04:00 PM	THU	Bend	610 SE 9TH ST BEND OR	NON-INTERSECTION	INJURY	PUBLIC PROPERTY DAMAGE	COLLISION	ANGLE	BOULDER/ROCK		1	1	0
11-03-00959	BPD	2/9/2011	8:04:00 AM	WED	Bend	601 SE 9TH ST/900 SE WILSON AVE BEND OR	INTERSECTION	PROPERTY DAMAGE	PUBLIC PROPERTY DAMAGE;PHOTOS TAKEN	COLLISION	REAR END			2	0	0
11-03-01589	BPD	3/9/2011	8:05:00 AM	WED	Bend	1199 SE 9TH ST/1092 SE REED MARKET RD BEND OR	NON-INTERSECTION	INJURY	ESTIMATE OVER $1500	COLLISION	REAR END				4	0
11-03-02627	BPD	4/16/2011	12:55:00 PM	SAT	Bend	SE 9TH ST/SE REED MARKET RD BEND OR	NON-INTERSECTION	INJURY	ESTIMATE OVER $1500	COLLISION	REAR END				2	0
11-03-04404	BPD	6/16/2011	1:28:00 PM	THU	Bend	NE 9TH ST/NE GREENWOOD AVE BEND OR	DRIVEWAY ACCESS	PROPERTY DAMAGE	ESTIMATE OVER $1500	COLLISION	REAR END	PARKED MOTOR VEHICLE		2	0	0

ROAD	WEATHER	LIGHT	TCDS?	COUNTER	PROPERTY	PROP DAMAGE	AGE	SEX	SEAT	SAFETY EQUIP	INJURY	EJECT?	INTOX USE	BA TEST	BA%	FACTORS	EXTR?
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTO DAMAGE	TOTALED	19	M	LF	UNKNOWN	C	N	Alcohol	N		UNDER INFLUENCE-DRUGS (PED)	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	DAMAGE TO VEHICLES	OVER 1500	49	F	LF	LAP/SHLDR	N	N	Alcohol	N		OTHER	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	4 VEHICLES		35	M	LF	LAP/SHLDR	C	N	Alcohol	N		UNKNOWN	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTO	OVER 1500	26	F	LF	LAP/SHLDR	C	N	Alcohol	N		NONE	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTO	OVER 1500	45	M	LF	LAP/SHLDR	N	N	Alcohol	N		OTHER	N

CASE#	AGENCY	DATE	TIME	DAY	CITY/COUNTY	LOCATION	EVENT LOCN	CLASS	TYPE	KIND	CRASH TYPE	FIXED OBJ	REASON	#VEH	#INJ	#KILL
11-03-00011	BPD	1/1/2011	7:40:00 AM	SAT	Bend	BEAR CREEK RD/NE 15TH ST BEND OR	SHOULDER	PROPERTY DAMAGE	PUBLIC PROPERTY DAMAGE;ESTIMATE OVER $1500	HIT & RUN	MANNER UNKNOWN	FIRE HYDRANT		1	0	0
11-03-01716	BPD	3/14/2011	3:59:00 PM	MON	Bend	700 SE 15TH ST/1400 SE WILSON AVE BEND OR	INTERSECTION	PROPERTY DAMAGE	ESTIMATE OVER $1500	COLLISION	ANGLE			2	0	0
11-03-02041	BPD	3/28/2011	1:00:00 PM	MON	Bend	HWY 20/NE 15TH ST BEND OR	INTERSECTION	INJURY	ESTIMATE OVER $1500	COLLISION	ANGLE			2	2	0
11-03-02964	BPD	4/28/2011	1:47:00 PM	THU	Bend	61599 REED MARKET RD/1499 SE 15TH ST	INTERSECTION	INJURY	ESTIMATE OVER $1500;PUBLIC PROPERTY DAMAGE	COLLISION	REAR END			2	1	0
11-03-04173	BPD	6/9/2011	12:10:00 PM	THU	Bend	SE 15TH ST/SE REED MARKET RD BEND OR	NON-INTERSECTION	PROPERTY DAMAGE	ESTIMATE OVER $1500	COLLISION	REAR END			2	0	0
11-03-04348	BPD	6/14/2011	9:23:00 AM	TUE	Bend	BEAR CREEK RD/SE 15TH ST BEND OR	INTERSECTION RELATED	PROPERTY DAMAGE	ESTIMATE UNDER $1500	COLLISION	REAR END			2	0	0
11-03-05837	BPD	7/20/2011	6:32:00 PM	WED	Bend	SE 15TH ST/SE VIRGINIA RD BEND OR	INTERSECTION	INJURY	ESTIMATE OVER $1500	COLLISION	REAR END			2	2	0
11-03-06341	BPD	8/3/2011	6:40:00 PM	WED	Bend	BEAR CREEK RD/NE 15TH ST BEND OR	INTERSECTION RELATED	INJURY	ESTIMATE UNDER $1500	COLLISION	MANNER UNKNOWN			1	1	0
11-03-07694	BPD	9/11/2011	5:00:00 PM	SUN	Bend	141 SW 15TH ST #31 BEND OR	OTHER OFF ROAD	PROPERTY DAMAGE	HIT & RUN	COLLISION	ANGLE	BOULDER/ROCK		1	0	0
11-03-08819	BPD	10/18/2011	1:55:00 PM	TUE	Bend	575 NE 15TH ST BEND OR	PARKING LOT	PROPERTY DAMAGE	ESTIMATE UNDER $1500	COLLISION	SIDESWIPE	PARKED MOTOR VEHICLE		2	0	0

ROAD	WEATHER	LIGHT	TCDS?	COUNTER	PROPERTY	PROP DAMAGE	AGE	SEX	SEAT	SAFETY EQUIP	INJURY	EJECT?	INTOX USE	BA TEST	BA%	FACTORS	EXTR?
ICY	CLEAR	UNKNOWN	N	1	FIRE HYDRANT	DAMAGED	UNK	M	LF	UNKNOWN	N	N	Alcohol	N		NONE	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTO OVER 1500	1500	50	M	LF	LAP/SHLDR	N	N	Alcohol	N		MADE IMPROPER TURN	N
DRY	OVERCAST/CLOUDY	DAYLIGHT (FULL)	N	1	2 VEHICLES		50	F	LF	LAP/SHLDR	C	N	Alcohol	N		NONE	N
DRY	SNOW	DAYLIGHT (FULL)	N	1	VEHICLES		24	M	LF	LAP/SHLDR	N	N	Alcohol	N		NONE	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTP	OVER		M	LF	LAP/SHLDR	N	N	Alcohol	N		OTHER	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTO	UNDER 1500	21		LR	LAP/SHLDR	N	N	Alcohol	N		UNKNOWN	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	AUTO	OVER	26	M	LF	LAP/SHLDR	N	N	Alcohol	N		FOLLOW TOO CLOSELY	N
DRY	FOG/SMOG	DAYLIGHT (FULL)	N	1			26	M	LF	NONE INSTLD	V	N	Alcohol	N		FOLLOW TOO CLOSELY	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	LANDSCAPING	UNKNOWN	24	M	LF	UNKNOWN	N	N	Alcohol	N		TOO FAST FOR COND	N
DRY	CLEAR	DAYLIGHT (FULL)	N	1	VEH #1	UNDER $1500	44	M	LF	LAP/SHLDR	N	N		N		NONE	N

APPENDIX D
EXISTING 2011 INTERSECTION OPERATIONAL OUTPUT

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	383	48	153	530	20	213
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	445	56	178	616	23	248
Pedestrians				1	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			502		1446	475
vC1, stage 1 conf vol					474	
vC2, stage 2 conf vol					972	
vCu, unblocked vol			502		1446	475
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.3
p0 queue free %			83		92	58
cM capacity (veh/h)			1041		281	588

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	501	178	616	271
Volume Left	0	178	0	23
Volume Right	56	0	0	248
cSH	1700	1041	1700	538
Volume to Capacity	0.29	0.17	0.36	0.50
Queue Length 95th (ft)	0	15	0	70
Control Delay (s)	0.0	9.2	0.0	18.3
Lane LOS		A		C
Approach Delay (s)	0.0	2.1		18.3
Approach LOS				C

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	151	445	590	107	15	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	168	494	656	119	17	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1098			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	774				1545	715
vC1, stage 1 conf vol					715	
vC2, stage 2 conf vol					830	
vCu, unblocked vol	560				1558	483
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.4
p0 queue free %	78				94	77
cM capacity (veh/h)	773				271	443

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	168	494	774	17	103
Volume Left	168	0	0	17	0
Volume Right	0	0	119	0	103
cSH	773	1700	1700	271	443
Volume to Capacity	0.22	0.29	0.46	0.06	0.23
Queue Length 95th (ft)	21	0	0	5	22
Control Delay (s)	10.9	0.0	0.0	19.2	15.6
Lane LOS	B			C	C
Approach Delay (s)	2.8		0.0	16.1	
Approach LOS				C	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	350	51	13	385	80	248	275	41	51	111	64
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1900	1444	1583	1618		1900	1666		1510	1502	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1900	1444	1583	1618		1900	1666		1510	1502	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	66	393	57	15	433	90	279	309	46	57	125	72
RTOR Reduction (vph)	0	0	12	0	9	0	0	6	0	0	25	0
Lane Group Flow (vph)	66	393	45	15	514	0	279	349	0	57	172	0
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	3%	3%	3%	9%	9%	9%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	6.9	29.1	29.1	5.0	27.2		15.1	20.6		8.0	13.5	
Effective Green, g (s)	6.9	29.1	29.1	5.0	27.2		15.1	20.6		8.0	13.5	
Actuated g/C Ratio	0.09	0.37	0.37	0.06	0.35		0.19	0.26		0.10	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	142	703	534	101	559		365	436		153	258	
v/s Ratio Prot	c0.04	0.21		0.01	c0.32		c0.15	c0.21		0.04	0.11	
v/s Ratio Perm			0.03									
v/c Ratio	0.46	0.56	0.08	0.15	0.92		0.76	0.80		0.37	0.67	
Uniform Delay, d1	34.1	19.7	16.1	34.8	24.7		30.1	27.1		33.0	30.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.1	0.1	0.5	20.9		8.8	9.9		1.1	5.8	
Delay (s)	35.0	20.8	16.2	35.3	45.6		38.9	37.0		34.1	36.3	
Level of Service	D	C	B	D	D		D	D		C	D	
Approach Delay (s)		22.1			45.3			37.8			35.8	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	650	46	325	650	31	235
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	714	51	357	714	34	258
Pedestrians	2					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			765		2170	740
vC1, stage 1 conf vol					740	
vC2, stage 2 conf vol					1431	
vCu, unblocked vol			765		2170	740
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			57		71	38
cM capacity (veh/h)			839		119	415

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	765	357	714	292
Volume Left	0	357	0	34
Volume Right	51	0	0	258
cSH	1700	839	1700	322
Volume to Capacity	0.45	0.43	0.42	0.91
Queue Length 95th (ft)	0	54	0	219
Control Delay (s)	0.0	12.4	0.0	66.0
Lane LOS		B		F
Approach Delay (s)	0.0	4.1		66.0
Approach LOS				F

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Reed Market Rd & 9th St 7/26/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	115	770	780	40	20	195
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	128	856	867	44	22	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1098			
pX, platoon unblocked	0.65				0.65	0.65
vC, conflicting volume	911				2000	889
vC1, stage 1 conf vol					889	
vC2, stage 2 conf vol					1111	
vCu, unblocked vol	598				2266	563
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	80				89	37
cM capacity (veh/h)	636				199	342

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	128	856	911	22	217
Volume Left	128	0	0	22	0
Volume Right	0	0	44	0	217
cSH	636	1700	1700	199	342
Volume to Capacity	0.20	0.50	0.54	0.11	0.63
Queue Length 95th (ft)	19	0	0	9	103
Control Delay (s)	12.1	0.0	0.0	25.4	32.1
Lane LOS	B			D	D
Approach Delay (s)	1.6		0.0	31.5	
Approach LOS				D	

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	475	215	44	560	39	140	109	27	143	237	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		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	0.99		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1750	1413	1614	1800		1700	1624		1614	1598	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1750	1413	1614	1800		1700	1624		1614	1598	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	111	528	239	49	622	43	156	121	30	159	263	133
RTOR Reduction (vph)	0	0	33	0	2	0	0	8	0	0	17	0
Lane Group Flow (vph)	111	528	206	49	663	0	156	143	0	159	379	0
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	8.1	42.1	42.1	5.0	39.0		11.4	23.0		11.6	23.2	
Effective Green, g (s)	8.1	42.1	42.1	5.0	39.0		11.4	23.0		11.6	23.2	
Actuated g/C Ratio	0.08	0.43	0.43	0.05	0.40		0.12	0.24		0.12	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	134	754	609	83	719		198	382		192	379	
v/s Ratio Prot	c0.07	c0.30		0.03	c0.37		0.09	0.09		c0.10	c0.24	
v/s Ratio Perm			0.15									
v/c Ratio	0.83	0.70	0.34	0.59	0.92		0.79	0.37		0.83	1.00	
Uniform Delay, d1	44.1	22.7	18.5	45.3	27.9		42.0	31.3		42.1	37.2	
Progression Factor	1.00	0.99	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.2	3.1	0.4	9.1	17.5		17.9	0.4		24.0	46.4	
Delay (s)	75.3	25.6	18.8	54.4	45.4		59.8	31.8		66.1	83.6	
Level of Service	E	C	B	D	D		E	C		E	F	
Approach Delay (s)		30.0			46.0			46.0			78.6	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX D

EXISTING 2011 INTERSECTION OPERATIONAL OUTPUT

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	383	48	153	530	20	213
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	445	56	178	616	23	248
Pedestrians				1	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			502		1446	475
vC1, stage 1 conf vol					474	
vC2, stage 2 conf vol					972	
vCu, unblocked vol			502		1446	475
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.3
p0 queue free %			83		92	58
cM capacity (veh/h)			1041		281	588

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	501	178	616	271
Volume Left	0	178	0	23
Volume Right	56	0	0	248
cSH	1700	1041	1700	538
Volume to Capacity	0.29	0.17	0.36	0.50
Queue Length 95th (ft)	0	15	0	70
Control Delay (s)	0.0	9.2	0.0	18.3
Lane LOS		A		C
Approach Delay (s)	0.0	2.1		18.3
Approach LOS				C

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	151	445	590	107	15	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	168	494	656	119	17	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1098			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	774				1545	715
vC1, stage 1 conf vol					715	
vC2, stage 2 conf vol					830	
vCu, unblocked vol	560				1558	483
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.4
p0 queue free %	78				94	77
cM capacity (veh/h)	773				271	443

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	168	494	774	17	103
Volume Left	168	0	0	17	0
Volume Right	0	0	119	0	103
cSH	773	1700	1700	271	443
Volume to Capacity	0.22	0.29	0.46	0.06	0.23
Queue Length 95th (ft)	21	0	0	5	22
Control Delay (s)	10.9	0.0	0.0	19.2	15.6
Lane LOS	B			C	C
Approach Delay (s)	2.8		0.0	16.1	
Approach LOS				C	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	350	51	13	385	80	248	275	41	51	111	64
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1900	1444	1583	1618		1900	1666		1510	1502	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1900	1444	1583	1618		1900	1666		1510	1502	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	66	393	57	15	433	90	279	309	46	57	125	72
RTOR Reduction (vph)	0	0	12	0	9	0	0	6	0	0	25	0
Lane Group Flow (vph)	66	393	45	15	514	0	279	349	0	57	172	0
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	3%	3%	3%	9%	9%	9%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	6.9	29.1	29.1	5.0	27.2		15.1	20.6		8.0	13.5	
Effective Green, g (s)	6.9	29.1	29.1	5.0	27.2		15.1	20.6		8.0	13.5	
Actuated g/C Ratio	0.09	0.37	0.37	0.06	0.35		0.19	0.26		0.10	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	142	703	534	101	559		365	436		153	258	
v/s Ratio Prot	c0.04	0.21		0.01	c0.32		c0.15	c0.21		0.04	0.11	
v/s Ratio Perm			0.03									
v/c Ratio	0.46	0.56	0.08	0.15	0.92		0.76	0.80		0.37	0.67	
Uniform Delay, d1	34.1	19.7	16.1	34.8	24.7		30.1	27.1		33.0	30.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.1	0.1	0.5	20.9		8.8	9.9		1.1	5.8	
Delay (s)	35.0	20.8	16.2	35.3	45.6		38.9	37.0		34.1	36.3	
Level of Service	D	C	B	D	D		D	D		C	D	
Approach Delay (s)		22.1			45.3			37.8			35.8	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	650	46	325	650	31	235
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	714	51	357	714	34	258
Pedestrians	2					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			765		2170	740
vC1, stage 1 conf vol					740	
vC2, stage 2 conf vol					1431	
vCu, unblocked vol			765		2170	740
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			57		71	38
cM capacity (veh/h)			839		119	415

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	765	357	714	292
Volume Left	0	357	0	34
Volume Right	51	0	0	258
cSH	1700	839	1700	322
Volume to Capacity	0.45	0.43	0.42	0.91
Queue Length 95th (ft)	0	54	0	219
Control Delay (s)	0.0	12.4	0.0	66.0
Lane LOS		B		F
Approach Delay (s)	0.0	4.1		66.0
Approach LOS				F

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	115	770	780	40	20	195
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	128	856	867	44	22	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1098			
pX, platoon unblocked	0.65				0.65	0.65
vC, conflicting volume	911				2000	889
vC1, stage 1 conf vol					889	
vC2, stage 2 conf vol					1111	
vCu, unblocked vol	598				2266	563
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	80				89	37
cM capacity (veh/h)	636				199	342

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	128	856	911	22	217
Volume Left	128	0	0	22	0
Volume Right	0	0	44	0	217
cSH	636	1700	1700	199	342
Volume to Capacity	0.20	0.50	0.54	0.11	0.63
Queue Length 95th (ft)	19	0	0	9	103
Control Delay (s)	12.1	0.0	0.0	25.4	32.1
Lane LOS	B			D	D
Approach Delay (s)	1.6		0.0	31.5	
Approach LOS				D	

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	475	215	44	560	39	140	109	27	143	237	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		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	0.99		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1750	1413	1614	1800		1700	1624		1614	1598	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1750	1413	1614	1800		1700	1624		1614	1598	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	111	528	239	49	622	43	156	121	30	159	263	133
RTOR Reduction (vph)	0	0	33	0	2	0	0	8	0	0	17	0
Lane Group Flow (vph)	111	528	206	49	663	0	156	143	0	159	379	0
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	8.1	42.1	42.1	5.0	39.0		11.4	23.0		11.6	23.2	
Effective Green, g (s)	8.1	42.1	42.1	5.0	39.0		11.4	23.0		11.6	23.2	
Actuated g/C Ratio	0.08	0.43	0.43	0.05	0.40		0.12	0.24		0.12	0.24	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	134	754	609	83	719		198	382		192	379	
v/s Ratio Prot	c0.07	c0.30		0.03	c0.37		0.09	0.09		c0.10	c0.24	
v/s Ratio Perm			0.15									
v/c Ratio	0.83	0.70	0.34	0.59	0.92		0.79	0.37		0.83	1.00	
Uniform Delay, d1	44.1	22.7	18.5	45.3	27.9		42.0	31.3		42.1	37.2	
Progression Factor	1.00	0.99	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.2	3.1	0.4	9.1	17.5		17.9	0.4		24.0	46.4	
Delay (s)	75.3	25.6	18.8	54.4	45.4		59.8	31.8		66.1	83.6	
Level of Service	E	C	B	D	D		E	C		E	F	
Approach Delay (s)		30.0			46.0			46.0			78.6	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX E

FUTURE 2030 FINANCIALLY COMMITTED INTERSECTION OPERATIONAL OUTPUT

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	460	80	255	575	25	325
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	511	89	283	639	28	361
Pedestrians				1	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			601		1762	558
vC1, stage 1 conf vol					557	
vC2, stage 2 conf vol					1206	
vCu, unblocked vol			601		1762	558
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.3
p0 queue free %			70		85	32
cM capacity (veh/h)			956		188	529

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	600	283	639	389
Volume Left	0	283	0	28
Volume Right	89	0	0	361
cSH	1700	956	1700	468
Volume to Capacity	0.35	0.30	0.38	0.83
Queue Length 95th (ft)	0	31	0	203
Control Delay (s)	0.0	10.3	0.0	40.4
Lane LOS		B		E
Approach Delay (s)	0.0	3.2		40.4
Approach LOS				E

Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	265	520	690	145	15	140
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	294	578	767	161	17	156
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1098			
pX, platoon unblocked	0.70				0.70	0.70
vC, conflicting volume	928				2014	847
vC1, stage 1 conf vol					847	
vC2, stage 2 conf vol					1167	
vCu, unblocked vol	685				2232	570
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.4
p0 queue free %	53				88	57
cM capacity (veh/h)	631				139	359

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	294	578	928	17	156
Volume Left	294	0	0	17	0
Volume Right	0	0	161	0	156
cSH	631	1700	1700	139	359
Volume to Capacity	0.47	0.34	0.55	0.12	0.43
Queue Length 95th (ft)	62	0	0	10	53
Control Delay (s)	15.6	0.0	0.0	34.5	22.5
Lane LOS	C			D	C
Approach Delay (s)	5.3		0.0	23.6	
Approach LOS				C	

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	395	70	25	420	155	345	645	90	95	225	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1900	1444	1583	1590		1900	1668		1510	1533	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1900	1444	1583	1590		1900	1668		1510	1533	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	78	439	78	28	467	172	383	717	100	106	250	78
RTOR Reduction (vph)	0	0	9	0	10	0	0	4	0	0	9	0
Lane Group Flow (vph)	78	439	69	28	629	0	383	813	0	106	319	0
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	3%	3%	3%	9%	9%	9%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	8.8	54.0	54.0	4.8	50.0		20.1	33.1		12.2	25.2	
Effective Green, g (s)	8.8	54.0	54.0	4.8	50.0		20.1	33.1		12.2	25.2	
Actuated g/C Ratio	0.07	0.45	0.45	0.04	0.42		0.17	0.28		0.10	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	118	854	649	63	662		318	460		153	322	
v/s Ratio Prot	c0.05	c0.23		0.02	c0.40		c0.20	c0.49		0.07	0.21	
v/s Ratio Perm			0.05									
v/c Ratio	0.66	0.51	0.11	0.44	0.95		1.20	1.77		0.69	0.99	
Uniform Delay, d1	54.2	23.7	19.1	56.3	33.8		50.0	43.5		52.1	47.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.3	0.6	0.1	3.6	23.5		118.0	354.5		11.8	47.7	
Delay (s)	64.5	24.3	19.2	60.0	57.4		168.0	398.0		63.9	95.0	
Level of Service	E	C	B	E	E		F	F		E	F	
Approach Delay (s)		28.9			57.5			324.6			87.4	
Approach LOS		C			E			F			F	

Intersection Summary			
HCM Average Control Delay	166.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	120.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	770	75	540	670	40	360
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	846	82	593	736	44	396
Pedestrians	2					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			929		2812	887
vC1, stage 1 conf vol					887	
vC2, stage 2 conf vol					1925	
vCu, unblocked vol			929		2812	887
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			19		0	0
cM capacity (veh/h)			728		22	341

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	929	593	736	440
Volume Left	0	593	0	44
Volume Right	82	0	0	396
cSH	1700	728	1700	141
Volume to Capacity	0.55	0.81	0.43	3.12
Queue Length 95th (ft)	0	218	0	Err
Control Delay (s)	0.0	27.8	0.0	Err
Lane LOS		D		F
Approach Delay (s)	0.0	12.4		Err
Approach LOS				F

Intersection Summary			
Average Delay	1635.3		
Intersection Capacity Utilization	118.0%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	200	930	910	40	20	300
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	222	1033	1011	44	22	333
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1098			
pX, platoon unblocked	0.64				0.64	0.64
vC, conflicting volume	1056				2511	1033
vC1, stage 1 conf vol					1033	
vC2, stage 2 conf vol					1478	
vCu, unblocked vol	808				3075	773
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	57				79	0
cM capacity (veh/h)	522				105	255

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	222	1033	1056	22	333
Volume Left	222	0	0	22	0
Volume Right	0	0	44	0	333
cSH	522	1700	1700	105	255
Volume to Capacity	0.43	0.61	0.62	0.21	1.31
Queue Length 95th (ft)	53	0	0	19	427
Control Delay (s)	16.9	0.0	0.0	48.2	202.4
Lane LOS	C			E	F
Approach Delay (s)	3.0		0.0	192.8	
Approach LOS				F	

Intersection Summary			
Average Delay	27.1		
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	545	285	90	635	75	195	55	60	260	485	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		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	0.98		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1750	1412	1614	1800		1700	1529		1614	1639	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1750	1412	1614	1800		1700	1529		1614	1639	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	133	606	317	100	706	83	217	61	67	289	539	133
RTOR Reduction (vph)	0	0	33	0	4	0	0	34	0	0	7	0
Lane Group Flow (vph)	133	606	284	100	785	0	217	94	0	289	665	0
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	7.0	43.0	43.0	7.0	43.0		12.0	35.0		15.0	38.0	
Effective Green, g (s)	7.0	43.0	43.0	7.0	43.0		12.0	35.0		15.0	38.0	
Actuated g/C Ratio	0.06	0.37	0.37	0.06	0.37		0.10	0.30		0.13	0.33	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	97	649	523	97	667		176	461		209	537	
v/s Ratio Prot	c0.08	0.35		0.06	c0.44		0.13	0.06		c0.18	c0.41	
v/s Ratio Perm			0.20									
v/c Ratio	1.37	0.93	0.54	1.03	1.18		1.23	0.20		1.38	1.24	
Uniform Delay, d1	54.5	35.1	28.8	54.5	36.5		52.0	30.1		50.5	39.0	
Progression Factor	1.00	1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	219.2	20.8	1.3	100.0	94.8		144.2	0.2		199.2	122.2	
Delay (s)	273.7	55.8	29.9	154.5	131.3		196.2	30.3		249.7	161.2	
Level of Service	F	E	C	F	F		F	C		F	F	
Approach Delay (s)		75.5			133.9			134.6			187.8	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	131.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX F
CONCEPT DEVELOPMENT SKETCHES


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
9TH STREET (NEW ALIGNMENT)
15TH STREET
REED MARKET ROAD
AMERICAN LANE
15TH STREET
BEND
ROUNDABOUT SUPER STREET
CONFIGURATION


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
15TH STREET
15TH STREET
AMERICAN LANE
0
100
200
DIAGONAL ROUNDABOUT (WEST)
ROUNDABOUT (EAST)
CONFIGURATION


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
15TH STREET
15TH STREET
AMERICAN LANE
N
0
100
200
TYPICAL SIGNALS CONFIGURATION

CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
REED MARKET ROAD
AMERICAN LANE
0
100
200
DIAGONAL INTERSECTION (WEST)
CONTINUOUS FLOW INTERSECTION (EAST)
CONFIGURATION


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
15TH STREET
REED MARKET ROAD
AMERICAN LANE
15TH STREET
N
0
100
200
BEND
QUAD FLOW CONFIGURATION
RT IN/ RT OUT


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
15TH STREET
REED MARKET ROAD
AMERICAN LANE
15TH STREET
0
100
200
QUAD FLOW CONFIGURATION

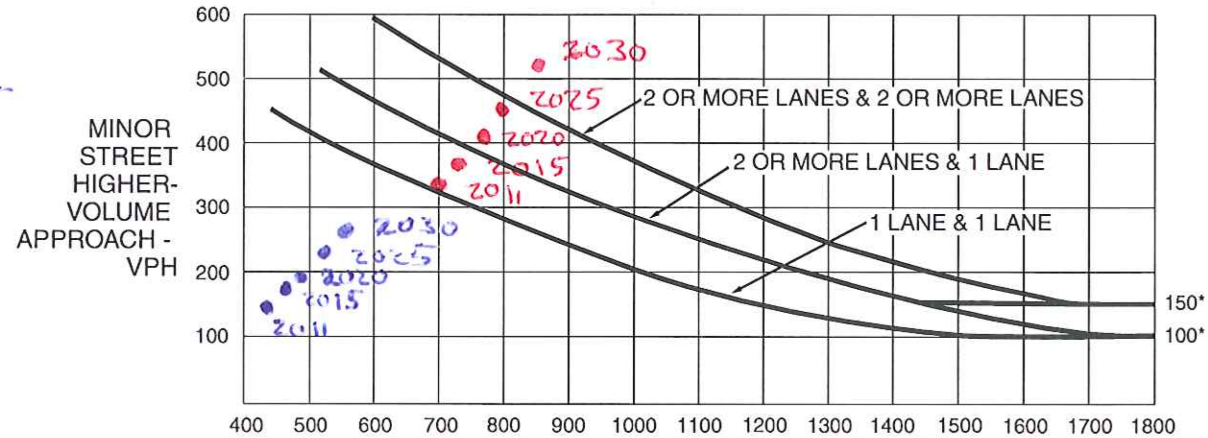
APPENDIX G
MUTCD WARRANT 3 PEAK HOUR – AMERICAN LANE & SE 9TH STREET

American Lane

	AM		PM	
2011	153,	431	325,	696
2015	171	, 453	362,	725
2020	195	, 480	414,	763
2025	223	, 509	473,	803
2030	255	, 540	540,	845

Figure 4C-3. Warrant 3, Peak Hour

WBL



EBT and EBR

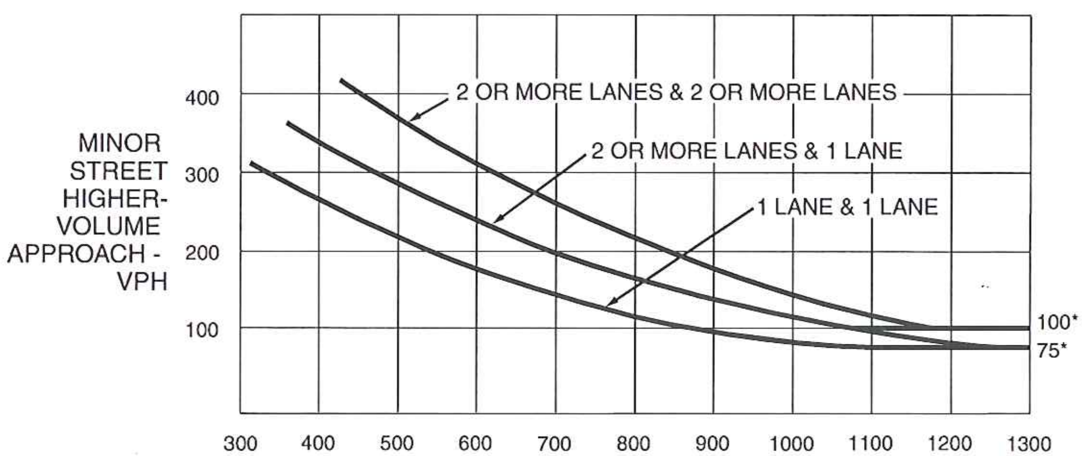
MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

● AM Peak Hour (Year)
● PM Peak Hour (Year)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

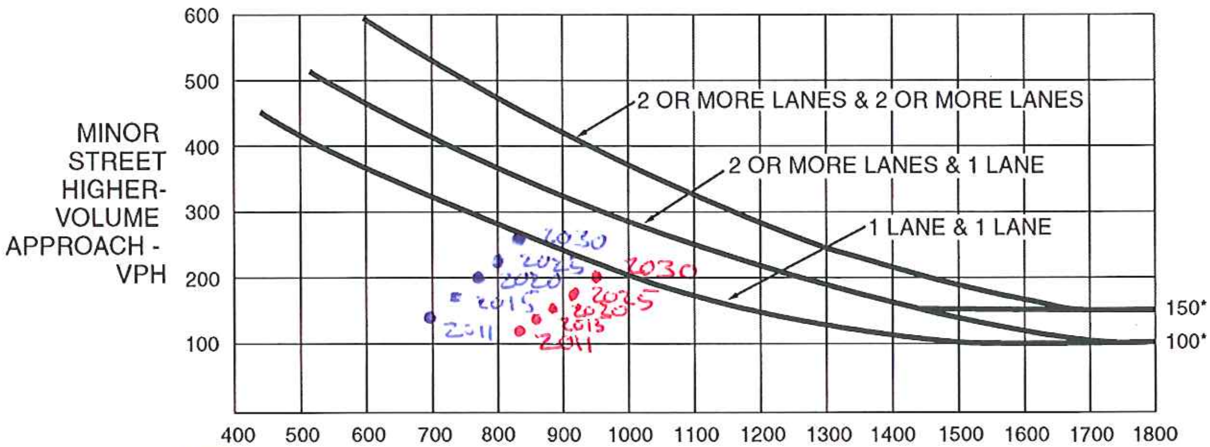
*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

9th Street

	AM	PM
2011	151, 697	115, 820
2015	170, 725	130, 846
2020	198, 760	150, 880
2025	229, 797	173, 914
2030	265, 835	200, 950

Figure 4C-3. Warrant 3, Peak Hour

EBL



WBT and WBR

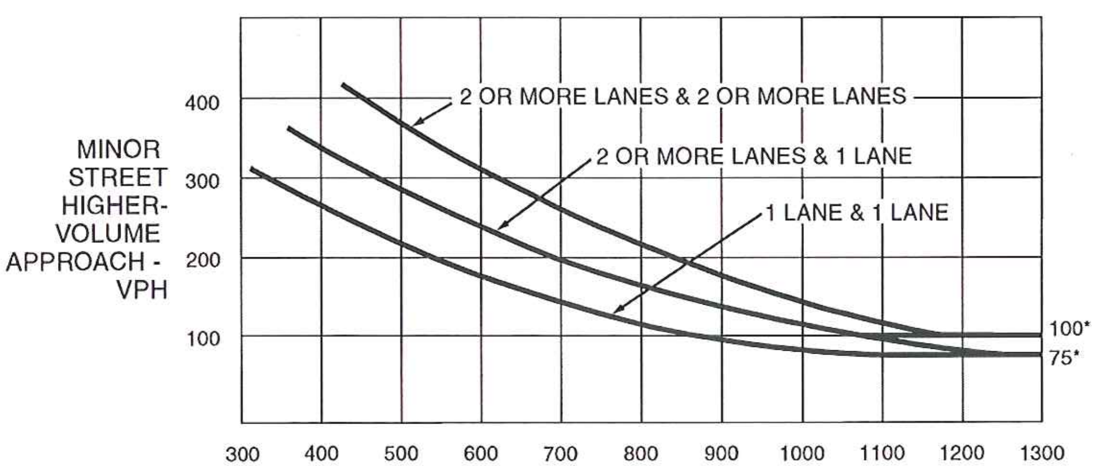
MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

AM Peak Hour (Year)
PM Peak Hour (Year)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

APPENDIX H

CONTINUOUS GREEN "T" CONCEPT DEVELOPMENT SKETCHES


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
15TH STREET
REED MARKET ROAD
AMERICAN LANE
15TH STREET
0
100
200
CONTINUOUS GREEN "T" (WEST)
TYPICAL SIGNALS (EAST)
CONFIGURATION


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
15TH STREET
15TH STREET
AMERICAN LANE
N
0
100
200
CONTINUOUS GREEN "T" (WEST)
ROUNDABOUT (EAST)
CONFIGURATION


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
REED MARKET ROAD
AMERICAN LANE
0
100
200
CONTINUOUS GREEN "T" (WEST)
CONTINUOUS FLOW INTERSECTION (EAST)
CONFIGURATION

APPENDIX I

2030 FULL SIGNAL BUILD OUT OPERATIONAL OUPUT – AMERICAN LANE & SE 9TH STREET

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	460	80	255	575	25	325
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	*0.85		*0.85	1.00	1.00	
Frt	0.98		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	2874		2819	1745	1581	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	2874		2819	1745	1581	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	500	87	277	625	27	353
RTOR Reduction (vph)	14	0	0	0	304	0
Lane Group Flow (vph)	573	0	277	625	76	0
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type	NA		Prot	NA	NA	
Protected Phases	2		1	6		
Permitted Phases					4	
Actuated Green, G (s)	32.9		11.1	48.0	9.0	
Effective Green, g (s)	32.9		11.1	48.0	9.0	
Actuated g/C Ratio	0.51		0.17	0.74	0.14	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1455		481	1289	219	
v/s Ratio Prot	0.20		c0.10	c0.36		
v/s Ratio Perm					c0.05	
v/c Ratio	0.39		0.58	0.48	0.35	
Uniform Delay, d1	9.9		24.8	3.5	25.3	
Progression Factor	1.00		1.06	0.53	1.00	
Incremental Delay, d2	0.8		1.5	1.1	1.0	
Delay (s)	10.7		27.8	3.0	26.3	
Level of Service	B		C	A	C	
Approach Delay (s)	10.7			10.6	26.3	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	265	520	690	145	15	140
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	*0.85	*0.85		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1690	3024	2974		1643	1470
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1690	3024	2974		1643	1470
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	565	750	158	16	152
RTOR Reduction (vph)	0	0	17	0	0	33
Lane Group Flow (vph)	288	565	891	0	16	119
Heavy Vehicles (%)	4%	4%	3%	3%	7%	7%
Turn Type	Prot	NA	NA		NA	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases						8
Actuated Green, G (s)	15.2	52.5	33.3		4.5	19.7
Effective Green, g (s)	15.2	52.5	33.3		4.5	19.7
Actuated g/C Ratio	0.23	0.81	0.51		0.07	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	395	2442	1524		114	536
v/s Ratio Prot	c0.17	0.19	c0.30		0.01	c0.05
v/s Ratio Perm						0.03
v/c Ratio	0.73	0.23	0.58		0.14	0.22
Uniform Delay, d1	23.0	1.5	11.0		28.4	16.9
Progression Factor	0.88	0.23	1.00		1.00	1.00
Incremental Delay, d2	5.9	0.2	1.6		0.6	0.2
Delay (s)	26.1	0.5	12.7		29.0	17.1
Level of Service	C	A	B		C	B
Approach Delay (s)		9.2	12.7		18.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 4: American Lane & Reed Market Rd

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	L	T	LR
Maximum Queue (ft)	167	182	193	132	210	218
Average Queue (ft)	77	85	101	44	70	104
95th Queue (ft)	135	147	163	111	168	191
Link Distance (ft)	293	293		799	799	424
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			240			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	EB	WB	WB	B9	SB	SB
Directions Served	L	T	T	T	TR	T	L	R
Maximum Queue (ft)	240	56	72	198	300	16	52	102
Average Queue (ft)	124	5	12	79	133	1	15	46
95th Queue (ft)	202	29	47	161	231	12	42	81
Link Distance (ft)		799	799	287	287	1736		394
Upstream Blk Time (%)				0	0			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (ft)	200						250	
Storage Blk Time (%)	1							
Queuing Penalty (veh)	3							

Network Summary

Network wide Queuing Penalty: 3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	770	75	540	670	40	360
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	*0.85		*0.85	1.00	1.00	
Frt	0.99		1.00	1.00	0.88	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	2984		2873	1779	1570	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	2984		2873	1779	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	837	82	587	728	43	391
RTOR Reduction (vph)	8	0	0	0	338	0
Lane Group Flow (vph)	911	0	587	728	96	0
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Turn Type	NA		Prot	NA	NA	
Protected Phases	2		1	6		
Permitted Phases					4	
Actuated Green, G (s)	30.5		18.1	52.6	9.4	
Effective Green, g (s)	30.5		18.1	52.6	9.4	
Actuated g/C Ratio	0.44		0.26	0.75	0.13	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1300		743	1337	211	
v/s Ratio Prot	c0.31		c0.20	0.41		
v/s Ratio Perm					c0.06	
v/c Ratio	0.70		0.79	0.54	0.45	
Uniform Delay, d1	16.0		24.2	3.7	27.9	
Progression Factor	1.00		0.85	0.60	1.00	
Incremental Delay, d2	3.2		4.7	1.3	1.5	
Delay (s)	19.2		25.2	3.5	29.5	
Level of Service	B		C	A	C	
Approach Delay (s)	19.2			13.2	29.5	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	200	930	910	40	20	300
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	*0.85	*0.85		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1706	3053	3064		1706	1527
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1706	3053	3064		1706	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1011	989	43	22	326
RTOR Reduction (vph)	0	0	3	0	0	21
Lane Group Flow (vph)	217	1011	1029	0	22	305
Heavy Vehicles (%)	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	NA		NA	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases						8
Actuated Green, G (s)	15.7	57.4	37.7		4.6	20.3
Effective Green, g (s)	15.7	57.4	37.7		4.6	20.3
Actuated g/C Ratio	0.22	0.82	0.54		0.07	0.29
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	383	2503	1650		112	530
v/s Ratio Prot	0.13	0.33	c0.34		0.01	c0.13
v/s Ratio Perm						0.07
v/c Ratio	0.57	0.40	0.62		0.20	0.57
Uniform Delay, d1	24.1	1.7	11.2		31.0	21.2
Progression Factor	1.23	0.17	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.3	1.8		0.9	1.5
Delay (s)	30.9	0.6	13.0		31.8	22.7
Level of Service	C	A	B		C	C
Approach Delay (s)		6.0	13.0		23.3	
Approach LOS		A	B		C	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 4: American Lane & Reed Market Rd

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	L	T	LR
Maximum Queue (ft)	248	262	346	439	295	371
Average Queue (ft)	139	146	195	138	101	172
95th Queue (ft)	213	224	316	310	219	314
Link Distance (ft)	272	272		803	803	431
Upstream Blk Time (%)	0	0				0
Queuing Penalty (veh)	0	0				0
Storage Bay Dist (ft)			250			
Storage Blk Time (%)			9	1		
Queuing Penalty (veh)			23	1		

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	207	27	72	206	239	59	180
Average Queue (ft)	105	3	9	99	116	18	83
95th Queue (ft)	167	18	39	180	202	49	144
Link Distance (ft)		803	803	287	287		394
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)	150					250	
Storage Blk Time (%)	2						
Queuing Penalty (veh)	10						

Network Summary

Network wide Queuing Penalty: 35

APPENDIX J
2030 CGT OEPRATIONAL OUTPUT– AMERICAN LANE & SE 9TH STREET

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	460	80	255	575	25	325
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	4.0	5.0	
Lane Util. Factor	*0.85		*0.85	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	2868		2819	1745	1561	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	2868		2819	1745	1561	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	500	87	277	625	27	353
RTOR Reduction (vph)	15	0	0	0	283	0
Lane Group Flow (vph)	572	0	277	625	97	0
Confl. Peds. (#/hr)		1				1
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type	NA		Prot	NA	NA	
Protected Phases	2		1	6 8!		
Permitted Phases					4!	
Actuated Green, G (s)	26.6		10.5	53.8	12.9	
Effective Green, g (s)	26.6		10.5	53.8	12.9	
Actuated g/C Ratio	0.41		0.16	0.83	0.20	
Clearance Time (s)	5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	1174		455	1444	310	
v/s Ratio Prot	0.20		0.10	c0.36		
v/s Ratio Perm					c0.06	
v/c Ratio	0.49		0.61	0.43	0.31	
Uniform Delay, d1	14.2		25.3	1.5	22.3	
Progression Factor	1.00		0.96	2.63	1.00	
Incremental Delay, d2	1.4		1.8	0.1	0.6	
Delay (s)	15.6		26.0	4.1	22.8	
Level of Service	B		C	A	C	
Approach Delay (s)	15.6			10.8	22.8	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	265	520	690	145	15	140
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0	4.0	5.0		5.0	5.0
Lane Util. Factor	1.00	*0.85	*0.85		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1690	3024	2974		1643	1470
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1690	3024	2974		1643	1470
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	565	750	158	16	152
RTOR Reduction (vph)	0	0	19	0	0	5
Lane Group Flow (vph)	288	565	889	0	16	147
Heavy Vehicles (%)	4%	4%	3%	3%	7%	7%
Turn Type	Prot	NA	NA		NA	custom
Protected Phases	5	2 3!	6		8!	5
Permitted Phases						8 3
Actuated Green, G (s)	15.2	54.0	23.2		11.6	27.8
Effective Green, g (s)	15.2	54.0	23.2		11.6	27.8
Actuated g/C Ratio	0.23	0.83	0.36		0.18	0.43
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	395	2512	1061		293	629
v/s Ratio Prot	c0.17	0.19	c0.30		0.01	c0.05
v/s Ratio Perm						0.05
v/c Ratio	0.73	0.22	0.84		0.05	0.23
Uniform Delay, d1	23.0	1.1	19.2		22.2	11.8
Progression Factor	0.94	2.30	1.00		1.00	1.00
Incremental Delay, d2	6.0	0.0	7.9		0.1	0.2
Delay (s)	27.7	2.7	27.1		22.2	12.0
Level of Service	C	A	C		C	B
Approach Delay (s)		11.1	27.1		13.0	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection: 4: Reed Market Rd

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	L	T	LR
Maximum Queue (ft)	174	184	208	150	71	285
Average Queue (ft)	89	96	110	47	2	112
95th Queue (ft)	158	167	180	121	44	209
Link Distance (ft)	535			780	780	388
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)		200	400			
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	1				

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	EB	WB	WB	B9	SB	SB
Directions Served	L	T	T	T	TR	T	L	R
Maximum Queue (ft)	271	73	77	208	279	12	71	109
Average Queue (ft)	146	5	10	84	147	0	13	49
95th Queue (ft)	237	34	45	171	254	7	47	89
Link Distance (ft)		780	780	287	287	723		396
Upstream Blk Time (%)				0	0			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (ft)	250						250	
Storage Blk Time (%)	1							
Queuing Penalty (veh)	3							

Network Summary

Network wide Queuing Penalty: 4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	770	75	540	670	40	360
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	4.0	5.0	
Lane Util. Factor	*0.85		*0.85	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.99		1.00	1.00	0.88	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	2980		2873	1779	1570	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	2980		2873	1779	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	837	82	587	728	43	391
RTOR Reduction (vph)	9	0	0	0	321	0
Lane Group Flow (vph)	910	0	587	728	113	0
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Turn Type	NA		Prot	NA	NA	
Protected Phases	2		1	6 8!		
Permitted Phases					4!	
Actuated Green, G (s)	23.8		18.6	59.6	12.6	
Effective Green, g (s)	23.8		18.6	59.6	12.6	
Actuated g/C Ratio	0.34		0.27	0.85	0.18	
Clearance Time (s)	5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	1013		763	1515	283	
v/s Ratio Prot	c0.31		c0.20	c0.41		
v/s Ratio Perm					c0.07	
v/c Ratio	0.90		0.77	0.48	0.40	
Uniform Delay, d1	22.0		23.7	1.3	25.4	
Progression Factor	1.00		1.08	2.43	1.00	
Incremental Delay, d2	12.4		3.4	0.2	0.9	
Delay (s)	34.4		29.1	3.3	26.3	
Level of Service	C		C	A	C	
Approach Delay (s)	34.4			14.9	26.3	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
! Phase conflict between lane groups.			
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	200	930	910	40	20	300
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0	4.0	5.0		5.0	5.0
Lane Util. Factor	1.00	*0.85	*0.85		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1706	3053	3064		1706	1527
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1706	3053	3064		1706	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1011	989	43	22	326
RTOR Reduction (vph)	0	0	3	0	0	5
Lane Group Flow (vph)	217	1011	1029	0	22	321
Heavy Vehicles (%)	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	NA		NA	custom
Protected Phases	5	2 3!	6		8!	5
Permitted Phases						8 3
Actuated Green, G (s)	13.3	59.6	28.7		13.0	27.3
Effective Green, g (s)	13.3	59.6	28.7		13.0	27.3
Actuated g/C Ratio	0.19	0.85	0.41		0.19	0.39
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	324	2599	1256		317	596
v/s Ratio Prot	c0.13	0.33	c0.34		0.01	c0.10
v/s Ratio Perm						0.11
v/c Ratio	0.67	0.39	0.82		0.07	0.54
Uniform Delay, d1	26.3	1.2	18.3		23.5	16.5
Progression Factor	0.90	2.72	1.00		1.00	1.00
Incremental Delay, d2	3.4	0.1	6.0		0.1	0.9
Delay (s)	27.1	3.2	24.4		23.6	17.4
Level of Service	C	A	C		C	B
Approach Delay (s)		7.4	24.4		17.8	
Approach LOS		A	C		B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection: 1: Bend

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	449	218
Average Queue (ft)	25	11
95th Queue (ft)	212	141
Link Distance (ft)	524	524
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Reed Market Rd

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	L	T	LR
Maximum Queue (ft)	348	295	363	282	280	391
Average Queue (ft)	177	178	205	121	23	161
95th Queue (ft)	279	269	319	228	140	302
Link Distance (ft)	392			770	770	524
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)		200	400			
Storage Blk Time (%)	4	5	0			
Queuing Penalty (veh)	19	18	0			

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	227	53	90	260	299	66	190
Average Queue (ft)	131	4	10	113	133	20	89
95th Queue (ft)	209	29	46	212	247	51	159
Link Distance (ft)		770	770	287	287		395
Upstream Blk Time (%)				0	0		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (ft)	250					250	
Storage Blk Time (%)	0						0
Queuing Penalty (veh)	1						0

Network Summary

Network wide Queuing Penalty: 39

APPENDIX K

FULL SIGNAL BUILD OUT INTERIM PHASING - AMERICAN LANE & SE 9TH STREET

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	399	54	171	540	21	233
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	*0.85		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2879		1800	1745	1723	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	2879		1658	1745	1723	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	443	60	190	600	23	259
RTOR Reduction (vph)	15	0	0	0	0	126
Lane Group Flow (vph)	488	0	190	600	23	133
Confl. Peds. (#/hr)		1				1
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type	NA		Prot	NA	NA	pm+ov
Protected Phases	2		1	6	4	1
Permitted Phases						4
Actuated Green, G (s)	11.7		7.9	24.6	2.1	10.0
Effective Green, g (s)	11.7		7.9	24.6	2.1	10.0
Actuated g/C Ratio	0.32		0.22	0.67	0.06	0.27
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	918		387	1170	99	629
v/s Ratio Prot	0.17		0.11	c0.34	0.01	c0.05
v/s Ratio Perm						0.04
v/c Ratio	0.53		0.49	0.51	0.23	0.21
Uniform Delay, d1	10.3		12.6	3.0	16.5	10.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6		1.0	0.4	1.2	0.2
Delay (s)	10.8		13.6	3.4	17.7	10.5
Level of Service	B		B	A	B	B
Approach Delay (s)	10.8			5.9	11.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	170	460	610	115	15	102
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	189	511	678	128	17	113
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		813				
pX, platoon unblocked						
vC, conflicting volume	806				1375	742
vC1, stage 1 conf vol					742	
vC2, stage 2 conf vol					633	
vCu, unblocked vol	806				1375	742
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.6	3.4
p0 queue free %	76				94	67
cM capacity (veh/h)	802				285	347

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	SB 2
Volume Total	189	256	256	806	17	113
Volume Left	189	0	0	0	17	0
Volume Right	0	0	0	128	0	113
cSH	802	1700	1700	1700	285	347
Volume to Capacity	0.24	0.15	0.15	0.47	0.06	0.33
Queue Length 95th (ft)	23	0	0	0	5	35
Control Delay (s)	10.9	0.0	0.0	0.0	18.4	20.3
Lane LOS	B				C	C
Approach Delay (s)	2.9			0.0	20.1	
Approach LOS					C	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	674	51	362	655	33	258
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	*0.85		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2988		1800	1779	1706	1527
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	2988		1690	1779	1706	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	733	55	393	712	36	280
RTOR Reduction (vph)	6	0	0	0	0	25
Lane Group Flow (vph)	782	0	393	712	36	255
Confl. Peds. (#/hr)					2	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Turn Type	NA		Prot	NA	NA	pm+ov
Protected Phases	2		1	6	4	1
Permitted Phases						4
Actuated Green, G (s)	21.0		18.4	44.4	5.2	23.6
Effective Green, g (s)	21.0		18.4	44.4	5.2	23.6
Actuated g/C Ratio	0.35		0.31	0.74	0.09	0.40
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1053		556	1325	149	733
v/s Ratio Prot	c0.26		c0.22	0.40	0.02	c0.11
v/s Ratio Perm						0.06
v/c Ratio	0.74		0.71	0.54	0.24	0.35
Uniform Delay, d1	16.9		18.2	3.2	25.4	12.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9		4.1	0.4	0.8	0.3
Delay (s)	19.8		22.3	3.7	26.2	12.9
Level of Service	B		C	A	C	B
Approach Delay (s)	19.8			10.3	14.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	130	802	806	40	20	214
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	872	876	43	22	233
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		813				
pX, platoon unblocked					0.88	
vC, conflicting volume	920				1616	898
vC1, stage 1 conf vol					898	
vC2, stage 2 conf vol					718	
vCu, unblocked vol	920				1419	898
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	81				92	17
cM capacity (veh/h)	732				287	281

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	SB 2
Volume Total	141	436	436	920	22	233
Volume Left	141	0	0	0	22	0
Volume Right	0	0	0	43	0	233
cSH	732	1700	1700	1700	287	281
Volume to Capacity	0.19	0.26	0.26	0.54	0.08	0.83
Queue Length 95th (ft)	18	0	0	0	6	170
Control Delay (s)	11.1	0.0	0.0	0.0	18.6	58.6
Lane LOS	B				C	F
Approach Delay (s)	1.5			0.0	55.2	
Approach LOS					F	

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	418	62	195	553	23	260
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3212		1800	1745	1723	1522
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3212		1658	1745	1723	1522
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	464	69	217	614	26	289
RTOR Reduction (vph)	21	0	0	0	0	232
Lane Group Flow (vph)	512	0	217	614	26	57
Confl. Peds. (#/hr)		1				1
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type			Prot			Perm
Protected Phases	2		1	6	4	
Permitted Phases						4
Actuated Green, G (s)	10.9		7.3	23.2	8.1	8.1
Effective Green, g (s)	10.9		7.3	23.2	8.1	8.1
Actuated g/C Ratio	0.26		0.18	0.56	0.20	0.20
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	848		318	980	338	299
v/s Ratio Prot	0.16		0.12	c0.35	0.02	
v/s Ratio Perm						c0.04
v/c Ratio	0.60		0.68	0.63	0.08	0.19
Uniform Delay, d1	13.3		15.9	6.1	13.5	13.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2		5.9	1.3	0.1	0.3
Delay (s)	14.5		21.8	7.4	13.6	14.2
Level of Service	B		C	A	B	B
Approach Delay (s)	14.5			11.2	14.1	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	198	480	635	124	15	113
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1690	3380	1756		1643	1470
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1690	3380	1756		1643	1470
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	220	533	706	138	17	126
RTOR Reduction (vph)	0	0	6	0	0	97
Lane Group Flow (vph)	220	533	838	0	17	29
Heavy Vehicles (%)	4%	4%	3%	3%	7%	7%
Turn Type	Prot					pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases						8
Actuated Green, G (s)	16.0	77.4	57.4		4.6	20.6
Effective Green, g (s)	16.0	77.4	57.4		4.6	20.6
Actuated g/C Ratio	0.18	0.86	0.64		0.05	0.23
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	300	2907	1120		84	402
v/s Ratio Prot	c0.13	0.16	c0.48		c0.01	0.01
v/s Ratio Perm						0.01
v/c Ratio	0.73	0.18	0.75		0.20	0.07
Uniform Delay, d1	35.0	1.0	11.3		40.9	27.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.9	0.1	4.6		1.2	0.1
Delay (s)	43.9	1.2	15.9		42.1	27.3
Level of Service	D	A	B		D	C
Approach Delay (s)		13.7	15.9		29.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	700	60	410	670	30	290
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3334		1800	1779	1706	1527
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3334		1690	1779	1706	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	761	65	446	728	33	315
RTOR Reduction (vph)	8	0	0	0	0	271
Lane Group Flow (vph)	818	0	446	728	33	44
Confl. Peds. (#/hr)					2	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Turn Type			Prot			Perm
Protected Phases	2		1	6	4	
Permitted Phases						4
Actuated Green, G (s)	19.0		19.4	43.4	8.7	8.7
Effective Green, g (s)	19.0		19.4	43.4	8.7	8.7
Actuated g/C Ratio	0.31		0.31	0.70	0.14	0.14
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1020		562	1243	239	214
v/s Ratio Prot	c0.25		c0.25	0.41	0.02	
v/s Ratio Perm						c0.03
v/c Ratio	0.80		0.79	0.59	0.14	0.21
Uniform Delay, d1	19.8		19.5	4.8	23.4	23.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6		7.6	0.7	0.3	0.5
Delay (s)	24.5		27.1	5.5	23.7	24.1
Level of Service	C		C	A	C	C
Approach Delay (s)	24.5			13.7	24.1	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	150	840	840	40	20	240
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	163	913	913	43	22	261
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		813				
pX, platoon unblocked					0.84	
vC, conflicting volume	957				1717	935
vC1, stage 1 conf vol					935	
vC2, stage 2 conf vol					783	
vCu, unblocked vol	957				1477	935
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	77				92	2
cM capacity (veh/h)	708				270	265

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	SB 2
Volume Total	163	457	457	957	22	261
Volume Left	163	0	0	0	22	0
Volume Right	0	0	0	43	0	261
cSH	708	1700	1700	1700	270	265
Volume to Capacity	0.23	0.27	0.27	0.56	0.08	0.98
Queue Length 95th (ft)	22	0	0	0	7	241
Control Delay (s)	11.6	0.0	0.0	0.0	19.5	92.7
Lane LOS	B				C	F
Approach Delay (s)	1.8			0.0	87.1	
Approach LOS					F	

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	438	70	224	565	24	291
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3208		1800	1745	1723	1522
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3208		1658	1745	1723	1522
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	487	78	249	628	27	323
RTOR Reduction (vph)	23	0	0	0	0	260
Lane Group Flow (vph)	542	0	249	628	27	63
Confl. Peds. (#/hr)		1				1
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type			Prot			Perm
Protected Phases	2		1	6	4	
Permitted Phases						4
Actuated Green, G (s)	11.4		7.3	23.7	8.2	8.2
Effective Green, g (s)	11.4		7.3	23.7	8.2	8.2
Actuated g/C Ratio	0.27		0.17	0.57	0.20	0.20
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	873		314	987	337	298
v/s Ratio Prot	0.17		0.14	c0.36	0.02	
v/s Ratio Perm						c0.04
v/c Ratio	0.62		0.79	0.64	0.08	0.21
Uniform Delay, d1	13.4		16.6	6.2	13.8	14.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		12.9	1.4	0.1	0.4
Delay (s)	14.7		29.4	7.5	13.9	14.5
Level of Service	B		C	A	B	B
Approach Delay (s)	14.7			13.7	14.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	41.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	229	500	663	134	15	126
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1690	3380	1755		1643	1470
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1690	3380	1755		1643	1470
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	254	556	737	149	17	140
RTOR Reduction (vph)	0	0	7	0	0	103
Lane Group Flow (vph)	254	556	879	0	17	37
Heavy Vehicles (%)	4%	4%	3%	3%	7%	7%
Turn Type	Prot					pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases						8
Actuated Green, G (s)	18.9	77.4	54.5		4.6	23.5
Effective Green, g (s)	18.9	77.4	54.5		4.6	23.5
Actuated g/C Ratio	0.21	0.86	0.61		0.05	0.26
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	355	2907	1063		84	449
v/s Ratio Prot	c0.15	0.16	c0.50		c0.01	0.02
v/s Ratio Perm						0.01
v/c Ratio	0.72	0.19	0.83		0.20	0.08
Uniform Delay, d1	33.1	1.1	14.0		40.9	25.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.7	0.1	7.4		1.2	0.1
Delay (s)	39.8	1.2	21.4		42.1	25.2
Level of Service	D	A	C		D	C
Approach Delay (s)		13.3	21.4		27.0	
Approach LOS		B	C		C	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	737	66	473	665	38	322
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	*0.85		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2981		1800	1779	1706	1527
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	2981		1690	1779	1706	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	801	72	514	723	41	350
RTOR Reduction (vph)	7	0	0	0	0	17
Lane Group Flow (vph)	866	0	514	723	41	333
Confl. Peds. (#/hr)					2	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Turn Type	NA		Prot	NA	NA	pm+ov
Protected Phases	2		1	6	4	1
Permitted Phases						4
Actuated Green, G (s)	22.8		22.7	50.5	5.8	28.5
Effective Green, g (s)	22.8		22.7	50.5	5.8	28.5
Actuated g/C Ratio	0.34		0.34	0.76	0.09	0.43
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1025		616	1355	149	772
v/s Ratio Prot	c0.29		c0.29	0.41	0.02	c0.15
v/s Ratio Perm						0.07
v/c Ratio	0.85		0.83	0.53	0.28	0.43
Uniform Delay, d1	20.1		20.1	3.2	28.3	13.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5		9.5	0.4	1.0	0.4
Delay (s)	26.6		29.6	3.6	29.3	13.6
Level of Service	C		C	A	C	B
Approach Delay (s)	26.6			14.4	15.3	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	173	885	874	40	20	268
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	188	962	950	43	22	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		813				
pX, platoon unblocked					0.84	
vC, conflicting volume	993				1829	972
vC1, stage 1 conf vol					972	
vC2, stage 2 conf vol					857	
vCu, unblocked vol	993				1600	972
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	73				91	0
cM capacity (veh/h)	686				244	250

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	SB 2
Volume Total	188	481	481	993	22	291
Volume Left	188	0	0	0	22	0
Volume Right	0	0	0	43	0	291
cSH	686	1700	1700	1700	244	250
Volume to Capacity	0.27	0.28	0.28	0.58	0.09	1.16
Queue Length 95th (ft)	28	0	0	0	7	333
Control Delay (s)	12.2	0.0	0.0	0.0	21.2	150.4
Lane LOS	B				C	F
Approach Delay (s)	2.0			0.0	141.4	
Approach LOS					F	

Intersection Summary			
Average Delay	19.0		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

APPENDIX L

2011 FULL SIGNAL OPENING DAY OF OPERATION – AMERICAN LANE & SE 9TH STREET

HCM Signalized Intersection Capacity Analysis
4: American Ln & Reed Market Rd

7/26/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	383	48	153	530	20	213
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	*0.85		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2884		1800	1745	1723	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	2884		1658	1745	1723	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	426	53	170	589	22	237
RTOR Reduction (vph)	13	0	0	0	0	136
Lane Group Flow (vph)	466	0	170	589	22	101
Confl. Peds. (#/hr)		1				1
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type	NA		Prot	NA	NA	pm+ov
Protected Phases	2		1	6	4	1
Permitted Phases						4
Actuated Green, G (s)	12.2		7.9	25.1	2.1	10.0
Effective Green, g (s)	12.2		7.9	25.1	2.1	10.0
Actuated g/C Ratio	0.33		0.21	0.67	0.06	0.27
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	946		382	1177	97	620
v/s Ratio Prot	0.16		0.09	c0.34	0.01	c0.03
v/s Ratio Perm						0.03
v/c Ratio	0.49		0.45	0.50	0.23	0.16
Uniform Delay, d1	10.0		12.7	3.0	16.8	10.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.8	0.3	1.2	0.1
Delay (s)	10.4		13.6	3.3	18.0	10.5
Level of Service	B		B	A	B	B
Approach Delay (s)	10.4			5.6	11.2	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	37.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	151	445	590	107	15	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	168	494	656	119	17	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		813				
pX, platoon unblocked						
vC, conflicting volume	774				1298	715
vC1, stage 1 conf vol					715	
vC2, stage 2 conf vol					583	
vCu, unblocked vol	774				1298	715
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.6	3.4
p0 queue free %	80				95	71
cM capacity (veh/h)	824				310	362

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	SB 2
Volume Total	168	247	247	774	17	103
Volume Left	168	0	0	0	17	0
Volume Right	0	0	0	119	0	103
cSH	824	1700	1700	1700	310	362
Volume to Capacity	0.20	0.15	0.15	0.46	0.05	0.29
Queue Length 95th (ft)	19	0	0	0	4	29
Control Delay (s)	10.5	0.0	0.0	0.0	17.3	18.9
Lane LOS	B				C	C
Approach Delay (s)	2.7			0.0	18.6	
Approach LOS					C	

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection: 4: American Ln & Reed Market Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	TR	L	T	L	R
Maximum Queue (ft)	104	121	130	182	51	115
Average Queue (ft)	40	48	62	27	14	53
95th Queue (ft)	84	92	105	99	40	89
Link Distance (ft)	517			752		738
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		400	400		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	109	22	37	78
Average Queue (ft)	45	1	11	38
95th Queue (ft)	84	10	35	65
Link Distance (ft)		1041		407
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200		250	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	650	46	325	650	31	235
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	*0.85		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2990		1800	1779	1706	1527
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	2990		1690	1779	1706	1527
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	707	50	353	707	34	255
RTOR Reduction (vph)	7	0	0	0	0	27
Lane Group Flow (vph)	750	0	353	707	34	228
Confl. Peds. (#/hr)					2	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Turn Type	NA		Prot	NA	NA	pm+ov
Protected Phases	2		1	6	4	1
Permitted Phases						4
Actuated Green, G (s)	15.9		12.9	33.8	3.8	16.7
Effective Green, g (s)	15.9		12.9	33.8	3.8	16.7
Actuated g/C Ratio	0.33		0.27	0.71	0.08	0.35
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	999		488	1263	136	696
v/s Ratio Prot	c0.25		c0.20	0.40	0.02	c0.09
v/s Ratio Perm						0.06
v/c Ratio	0.75		0.72	0.56	0.25	0.33
Uniform Delay, d1	14.1		15.7	3.3	20.6	11.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2		5.3	0.5	1.0	0.3
Delay (s)	17.3		21.0	3.9	21.5	11.6
Level of Service	B		C	A	C	B
Approach Delay (s)	17.3			9.6	12.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	115	770	780	40	20	195
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	125	837	848	43	22	212
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		813				
pX, platoon unblocked					0.91	
vC, conflicting volume	891				1538	870
vC1, stage 1 conf vol					870	
vC2, stage 2 conf vol					668	
vCu, unblocked vol	891				1390	870
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	83				93	28
cM capacity (veh/h)	750				298	293

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	SB 2
Volume Total	125	418	418	891	22	212
Volume Left	125	0	0	0	22	0
Volume Right	0	0	0	43	0	212
cSH	750	1700	1700	1700	298	293
Volume to Capacity	0.17	0.25	0.25	0.52	0.07	0.72
Queue Length 95th (ft)	15	0	0	0	6	130
Control Delay (s)	10.8	0.0	0.0	0.0	18.0	43.8
Lane LOS	B				C	E
Approach Delay (s)	1.4			0.0	41.4	
Approach LOS					E	

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection: 4: American Ln & Reed Market Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	TR	L	T	L	R
Maximum Queue (ft)	142	161	211	220	72	117
Average Queue (ft)	73	86	115	59	26	56
95th Queue (ft)	127	144	183	161	60	95
Link Distance (ft)	553			752		738
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		400	400		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	90	4	56	155
Average Queue (ft)	41	0	15	68
95th Queue (ft)	77	3	44	121
Link Distance (ft)		1830		407
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200		250	
Storage Blk Time (%)				
Queuing Penalty (veh)				

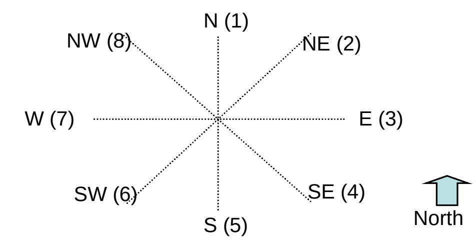
Network Summary

Network wide Queuing Penalty: 0

APPENDIX M

2030 FULL ROUNDABOUT OPEARATIONAL OUPUT – REED/15TH

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	AM Peak
Jurisdiction:	City of Bend
Year:	2030



Volumes	Roundabout Approach/Entry Legs							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Volumes to Leg # N (1), vph						155		
NE (2), vph								
E (3), vph	95							
SE (4), vph								
S (5), vph	112	113			25			
SW (6), vph								
W (7), vph		70			210	210		
NW (8), vph								
Entry Volume, vph	207	183	0	0	235	365	0	0
	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
N (1), vph	322	323			70			
NE (2), vph								
E (3), vph		90			197	198		
SE (4), vph								
S (5), vph						70		
SW (6), vph								
W (7), vph	345							
NW (8), vph								
Entry Volume, vph	667	413	0	0	267	268	0	0

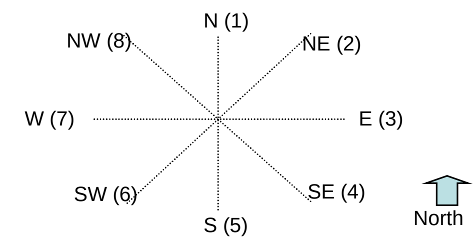
Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	155	0	322	0	0	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	95	0	0	0	0	0	198	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	112	0	0	0	0	0	70	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	210	0	345	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	207	0	365	0	667	0	268	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
F_{hv}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	174	0	729	0	78	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	105	0	0	0	102	0	442	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	249	0	28	0	0	0	78	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	78	0	470	0	390	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	203	0	354	0	641	0	260	0
Conflicting flow, pce/h	888	1869	1198	1847	626	982	383	1321
Entry capacity, pce/h	607	NA	489	NA	729	NA	864	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	199	0	344	0	617	0	253	0
Entry Capacity, vph	595		474		701		839	
Leg v/c ratio	0.33		0.73		0.88		0.30	
Control Delay, s/veh	10.7		28.7		35.0		7.6	
LOS	B		D		E		A	
95th Percentile Queue (ft)	38	0	153	0	288	0	33	0

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	PM Peak
Jurisdiction:	City of Bend
Year:	2030



Volumes		Roundabout Approach/Entry Legs							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Volumes	N (1), vph						75		
to Leg #	NE (2), vph								
	E (3), vph	260							
	SE (4), vph								
	S (5), vph	242	243			90			
	SW (6), vph								
	W (7), vph		120			318	317		
	NW (8), vph								
	Entry Volume, vph	502	363	0	0	408	392	0	0
		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	N (1), vph	127	128			120			
	NE (2), vph								
	E (3), vph		60			355	190		
	SE (4), vph								
	S (5), vph						285		
	SW (6), vph								
	W (7), vph	195							
	NW (8), vph								
	Entry Volume, vph	322	188	0	0	475	475	0	0

Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	0	0	127	0	120	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	260	0	0	0	0	0	355	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	242	0	90	0	0	0	0	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	318	0	195	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	502	0	408	0	322	0	475	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
F_{hv}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

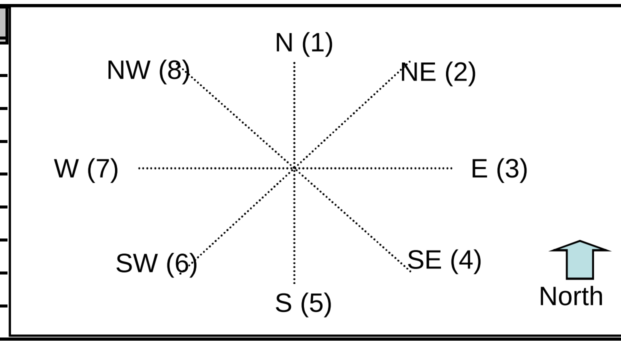
Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	84	0	288	0	134	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	288	0	0	0	68	0	610	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	538	0	101	0	0	0	319	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	133	0	711	0	220	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	492	0	396	0	310	0	461	0
Conflicting flow, pce/h	1032	1539	643	1609	1033	1990	927	1991
Entry capacity, pce/h	549	NA	720	NA	548	NA	591	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	483	0	385	0	298	0	448	0
Entry Capacity, vph	538		699		527		573	
Leg v/c ratio	0.90		0.55		0.56		0.78	
Control Delay, s/veh	44.9		14.0		18.1		29.0	
LOS	E		B		C		D	
95th Percentile Queue (ft)	269	0	88	0	92	0	191	0

APPENDIX N

ROUNDABOUT INTERIM PHASING – REED/15TH

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	AM Peak
Jurisdiction:	City of Bend
Year:	2020 with Slip Lanes



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			110		412		64	
Volumes	NE (2), vph								
to Leg #	E (3), vph	69				0		371	
	SE (4), vph								
	S (5), vph	156		18				0	
	SW (6), vph								
	W (7), vph	0		402		290			
	NW (8), vph								
Output	Total Vehicles	225	0	530	0	702	0	435	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	9.0	0.0	5.0	0.0	3.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F_{HV}	0.917	1.000	0.952	1.000	0.971	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	126	0	461	0	72	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	82	0	0	0	0	0	415	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	185	0	21	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	459	0	325	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	267	0	605	0	786	0	487	0
Conflicting flow, pce/h	804	1462	858	1355	569	774	287	1071
Entry capacity, pce/h	701	NA	671	NA	846	NA	1059	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	245	0	576	0	763	0	473	0
Entry Capacity, vph	643		639		821		1029	
Leg v/c ratio	0.38		0.90		0.93		0.46	
Control Delay, s/veh	10.9		40.6		38.8		8.7	
LOS	B		E		E		A	
95th Percentile Queue (ft)	51	0	304	0	358	0	65	0

For Hourly Queuing Calc (PHF = 1.0)

Volume Characteristics	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
% Trucks	9.0	0.0	5.0	0.0	3.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F_{HV}	0.917	1.000	0.952	1.000	0.971	1.000	0.971	1.000

Entry/Conflicting Flows	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Flow to Leg # N (1), pce/h	0	0	116	0	424	0	66	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	75	0	0	0	0	0	382	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	170	0	19	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	422	0	299	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	245	0	557	0	723	0	448	0
Conflicting flow, pce/h	740	1345	789	1246	523	712	264	985
Entry capacity, pce/h	738	NA	709	NA	877	NA	1079	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	225	0	530	0	702	0	435	0
Entry Capacity, vph	677		675		852		1048	
Leg v/c ratio	0.33		0.78		0.82		0.42	
Control Delay, s/veh	9.6		25.8		24.8		7.9	
LOS	A		D		C		A	
95th Percentile Queue (ft)	42	0	261	0	318	0	55	0

General & Site Information	
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Agency/Company:	DKS Associates, Inc.
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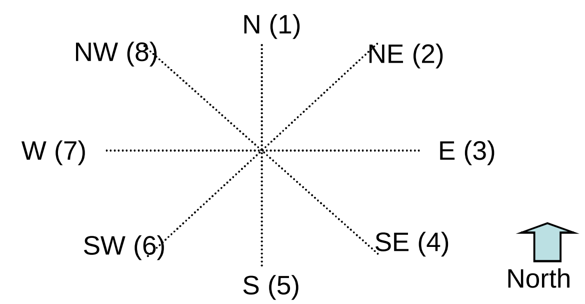
Intersection:	15th/Reed Market
Analysis Time Period:	PM Peak
Jurisdiction:	City of Bend
Year:	2020 with Slip Lanes



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			54		164		110	
Volumes	NE (2), vph								
to Leg #	E (3), vph	190				0		507	
	SE (4), vph								
	S (5), vph	333		62				0	
	SW (6), vph								
	W (7), vph	0		595		164			
	NW (8), vph								
Output	Total Vehicles	523	0	711	0	328	0	617	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	60	0	185	0	123	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	211	0	0	0	0	0	568	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	369	0	69	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	666	0	185	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	580	0	796	0	371	0	691	0
Conflicting flow, pce/h	921	1290	494	1272	901	1340	649	1501
Entry capacity, pce/h	638	NA	898	NA	648	NA	793	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	568	0	773	0	357	0	671	0
Entry Capacity, vph	626		872		623		770	
Leg v/c ratio	0.91		0.89		0.57		0.87	
Control Delay, s/veh	42.4		31.0		16.1		31.7	
LOS	E		D		C		D	
95th Percentile Queue (ft)	296	0	313	0	96	0	284	0

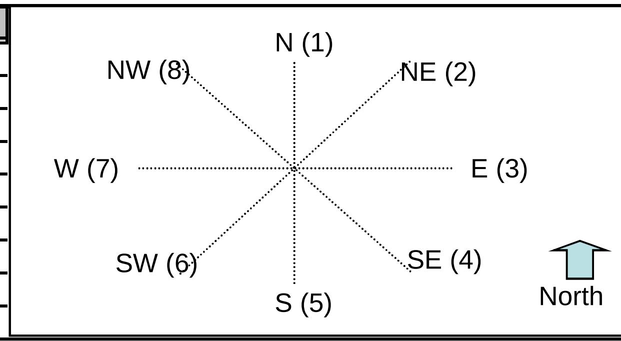
For Hourly Queuing Calc (PHF = 1.0)

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	56	0	171	0	113	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	194	0	0	0	0	0	522	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	340	0	64	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	613	0	171	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	533	0	732	0	341	0	636	0
Conflicting flow, pce/h	847	1187	454	1170	829	1233	597	1381
Entry capacity, pce/h	677	NA	927	NA	687	NA	827	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	523	0	711	0	328	0	617	0
Entry Capacity, vph	664		900		660		803	
Leg v/c ratio	0.79		0.79		0.50		0.77	
Control Delay, s/veh	26.5		21.2		13.2		21.6	
LOS	D		C		B		C	
95th Percentile Queue (ft)	253	0	267	0	77	0	238	0

General & Site Information

Analyst:	K.Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	AM Peak
Jurisdiction:	City of Bend
Year:	2025



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			0		516		67	
Volumes	NE (2), vph								
to Leg #	E (3), vph	81				0		383	
	SE (4), vph								
	S (5), vph	187		22				0	
	SW (6), vph								
	W (7), vph	0		411		317			
	NW (8), vph								
Output	Total Vehicles	268	0	433	0	833	0	450	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	0	0	596	0	77	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	92	0	0	0	0	0	438	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	212	0	25	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	470	0	366	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	304	0	496	0	963	0	515	0
Conflicting flow, pce/h	862	1535	1039	1569	607	844	329	1166
Entry capacity, pce/h	669	NA	580	NA	820	NA	1025	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	298	0	481	0	926	0	500	0
Entry Capacity, vph	656		564		789		995	
Leg v/c ratio	0.45		0.85		1.17		0.50	
Control Delay, s/veh	12.2		37.2		111.3		9.7	
LOS	B		E		F		A	
95th Percentile Queue (ft)	61	0	242	0	773	0	76	0

For Hourly Queuing Calc (PHF = 1.0)

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	0	0	537	0	69	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	83	0	0	0	0	0	394	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	191	0	23	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	423	0	330	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	273	0	446	0	866	0	464	0
Conflicting flow, pce/h	776	1381	935	1412	546	760	296	1049
Entry capacity, pce/h	717	NA	631	NA	861	NA	1052	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	268	0	433	0	833	0	450	0
Entry Capacity, vph	703		612		828		1021	
Leg v/c ratio	0.38		0.71		1.01		0.44	
Control Delay, s/veh	10.2		22.3		55.1		8.5	
LOS	B		C		F		A	
95th Percentile Queue (ft)	47	0	176	0	974	0	61	0

General & Site Information	
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Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
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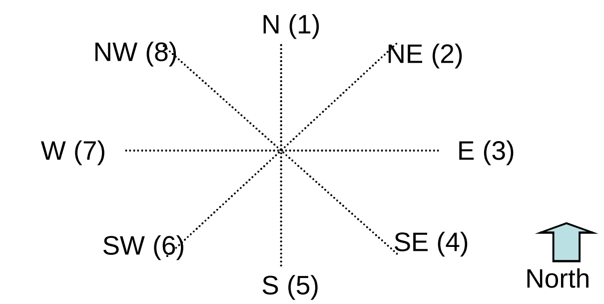

Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			0		204		115	
Volumes	NE (2), vph								
to Leg #	E (3), vph	223				0		526	
	SE (4), vph								
	S (5), vph	402		75				0	
	SW (6), vph								
	W (7), vph	0		615		179			
	NW (8), vph								
Output	Total Vehicles	625	0	690	0	383	0	641	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	0	0	236	0	132	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	253	0	0	0	0	0	602	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	456	0	86	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	704	0	207	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	708	0	790	0	443	0	734	0
Conflicting flow, pce/h	997	1364	574	1429	986	1528	794	1705
Entry capacity, pce/h	601	NA	842	NA	606	NA	706	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	694	0	767	0	426	0	712	0
Entry Capacity, vph	589		818		582		686	
Leg v/c ratio	1.18		0.94		0.73		1.04	
Control Delay, s/veh	121.3		40.4		24.8		69.3	
LOS	F		E		C		F	
95th Percentile Queue (ft)	620	0	369	0	165	0	474	0

For Hourly Queuing Calc (PHF = 1.0)

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	0	0	212	0	118	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	227	0	0	0	0	0	542	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	410	0	77	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	633	0	186	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	638	0	711	0	398	0	660	0
Conflicting flow, pce/h	897	1227	517	1286	888	1375	715	1534
Entry capacity, pce/h	650	NA	882	NA	655	NA	752	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	625	0	690	0	383	0	641	0
Entry Capacity, vph	638		856		630		731	
Leg v/c ratio	0.98		0.81		0.61		0.88	
Control Delay, s/veh	56.2		23.2		17.2		33.8	
LOS	F		C		C		D	
95th Percentile Queue (ft)	712	0	289	0	119	0	415	0

General & Site Information

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Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
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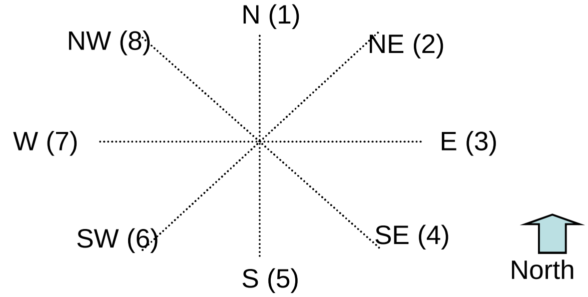
Intersection:	15th/Reed Market
Analysis Time Period:	AM Peak
Jurisdiction:	City of Bend
Year:	2025 Partial Multi-Lane



Volumes

Volumes to Leg #	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
N (1), vph						131		
NE (2), vph								
E (3), vph	81							
SE (4), vph								
S (5), vph	94	92			22			
SW (6), vph								
W (7), vph		69			411			
NW (8), vph								
Entry Volume, vph	175	161	0	0	433	131	0	0
	S1 (5)	**S2 (5)**	**SW1 (6)**	**SW2 (6)**	**W1 (7)**	**W2 (7)**	**NW1 (8)**	**NW2 (8)**
N (1), vph	258	258			67			
NE (2), vph								
E (3), vph		74			191	192		
SE (4), vph								
S (5), vph						65		
SW (6), vph								
W (7), vph	317							
NW (8), vph								
Entry Volume, vph	575	332	0	0	258	257	0	0

Critical Lane Volumes

Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	0	0	258	0	67	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	81	0	0	0	0	0	191	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	94	0	22	0	0	0	0	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	411	0	317	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	175	0	433	0	575	0	258	0

Volume Characteristics

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
F_{hv}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

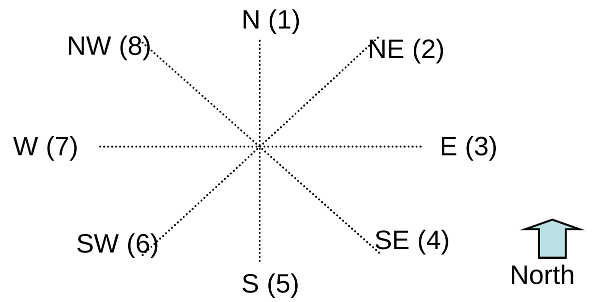
Entry/Conflicting Flows

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	147	0	583	0	75	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	90	0	0	0	84	0	429	0

SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	206	0	25	0	0	0	73	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	77	0	460	0	358	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	172	0	420	0	553	0	250	0
Conflicting flow, pce/h	843	1648	1017	1619	594	897	321	1216
Entry capacity, pce/h	679	NA	555	NA	746	NA	903	NA

Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	168	0	408	0	532	0	243	0
Entry Capacity, vph	666		538		717		877	
Leg v/c ratio	0.25		0.76		0.74		0.28	
Control Delay, s/veh	8.5		28.4		21.7		7.1	
LOS	A		D		C		A	
95th Percentile Queue (ft)	26	0	175	0	178	0	30	0

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	PM Peak
Jurisdiction:	City of Bend
Year:	2025 Partial Multi-Lane



Volumes		Roundabout Approach/Entry Legs							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Volumes	N (1), vph						64		
to Leg #	NE (2), vph								
	E (3), vph	223							
	SE (4), vph								
	S (5), vph	201	201			75			
	SW (6), vph								
	W (7), vph		120			615			
	NW (8), vph								
	Entry Volume, vph	424	321	0	0	690	64	0	0
		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	N (1), vph	102	102			115			
	NE (2), vph								
	E (3), vph		49			263	263		
	SE (4), vph								
	S (5), vph						265		
	SW (6), vph								
	W (7), vph	179							
	NW (8), vph								
	Entry Volume, vph	281	151	0	0	378	528	0	0

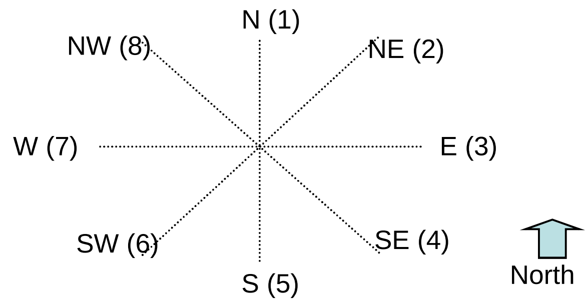
Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	0	0	102	0	0	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	223	0	0	0	0	0	263	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	201	0	75	0	0	0	265	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	615	0	179	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	424	0	690	0	281	0	528	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
F_{hv}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	72	0	231	0	129	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	247	0	0	0	55	0	589	0

SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	446	0	84	0	0	0	297	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	133	0	689	0	202	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	416	0	670	0	270	0	513	0
Conflicting flow, pce/h	975	1406	562	1453	965	1791	777	1801
Entry capacity, pce/h	611	NA	763	NA	575	NA	656	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	408	0	650	0	260	0	498	0
Entry Capacity, vph	599		740		553		637	
Leg v/c ratio	0.68		0.88		0.47		0.78	
Control Delay, s/veh	21.2		33.6		14.5		26.8	
LOS	C		D		B		D	
95th Percentile Queue (ft)	135	0	287	0	66	0	196	0

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	AM Peak
Jurisdiction:	City of Bend
Year:	2030



Volumes		Roundabout Approach/Entry Legs							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Volumes	N (1), vph						155		
to Leg #	NE (2), vph								
	E (3), vph	95							
	SE (4), vph								
	S (5), vph	112	113			25			
	SW (6), vph								
	W (7), vph		70			420			
	NW (8), vph								
	Entry Volume, vph	207	183	0	0	445	155	0	0
		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	N (1), vph	322	323			70			
	NE (2), vph								
	E (3), vph		90			197	198		
	SE (4), vph								
	S (5), vph						70		
	SW (6), vph								
	W (7), vph	345							
	NW (8), vph								
	Entry Volume, vph	667	413	0	0	267	268	0	0

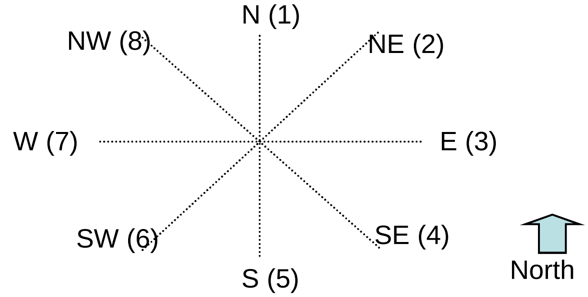
Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	0	0	322	0	0	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	95	0	0	0	0	0	198	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	112	0	25	0	0	0	70	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	420	0	345	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	207	0	445	0	667	0	268	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
F_{hv}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	174	0	729	0	78	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	105	0	0	0	102	0	442	0

SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	249	0	28	0	0	0	78	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	78	0	470	0	390	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	203	0	432	0	641	0	260	0
Conflicting flow, pce/h	888	1869	1198	1847	626	982	383	1321
Entry capacity, pce/h	607	NA	489	NA	729	NA	864	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	199	0	419	0	617	0	253	0
Entry Capacity, vph	595		474		701		839	
Leg v/c ratio	0.33		0.88		0.88		0.30	
Control Delay, s/veh	10.7		46.7		35.0		7.6	
LOS	B		E		E		A	
95th Percentile Queue (ft)	38	0	251	0	288	0	33	0

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	PM Peak
Jurisdiction:	City of Bend
Year:	2030



Volumes — Roundabout Approach/Entry Legs

Volumes to Leg #	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
N (1), vph						75		
NE (2), vph								
E (3), vph	260							
SE (4), vph								
S (5), vph	242	243			90			
SW (6), vph								
W (7), vph		120			635			
NW (8), vph								
Entry Volume, vph	502	363	0	0	725	75	0	0
	S1 (5)	**S2 (5)**	**SW1 (6)**	**SW2 (6)**	**W1 (7)**	**W2 (7)**	**NW1 (8)**	**NW2 (8)**
N (1), vph	127	128			120			
NE (2), vph								
E (3), vph		60			272	273		
SE (4), vph								
S (5), vph						285		
SW (6), vph								
W (7), vph	195							
NW (8), vph								
Entry Volume, vph	322	188	0	0	392	558	0	0

Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	0	0	127	0	0	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	260	0	0	0	0	0	273	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	242	0	90	0	0	0	285	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	635	0	195	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	502	0	725	0	322	0	558	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
F_{hv}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

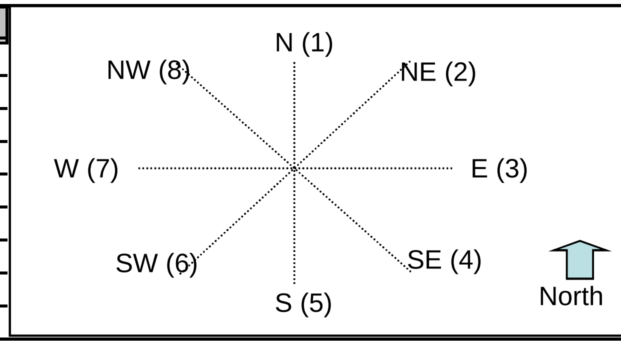
Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	84	0	288	0	134	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	288	0	0	0	68	0	610	0

SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	538	0	101	0	0	0	319	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	133	0	711	0	220	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	492	0	704	0	310	0	542	0
Conflicting flow, pce/h	1032	1539	643	1609	1033	1990	927	1991
Entry capacity, pce/h	584	NA	720	NA	548	NA	591	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	483	0	683	0	298	0	526	0
Entry Capacity, vph	572		699		527		573	
Leg v/c ratio	0.84		0.98		0.56		0.92	
Control Delay, s/veh	35.5		52.7		18.1		46.4	
LOS	E		F		C		E	
95th Percentile Queue (ft)	231	0	394	0	92	0	298	0

APPENDIX O

2011 ROUNDABOUT OPENING DAY OPERATIONAL – REED/15TH

General & Site Information	
Analyst:	K. Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	AM Peak
Jurisdiction:	City of Bend
Year:	2011 with Slip Lanes



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			80		275		59	
Volumes	NE (2), vph								
to Leg #	E (3), vph	51				0		350	
	SE (4), vph								
	S (5), vph	111		13				0	
	SW (6), vph								
	W (7), vph	0		385		248			
	NW (8), vph								
Output	Total Vehicles	162	0	478	0	523	0	409	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	9.0	0.0	5.0	0.0	3.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F_{HV}	0.917	1.000	0.952	1.000	0.971	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	91	0	308	0	66	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	60	0	0	0	0	0	392	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	132	0	15	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	439	0	278	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	192	0	546	0	586	0	458	0
Conflicting flow, pce/h	732	1197	652	1104	518	665	207	924
Entry capacity, pce/h	742	NA	791	NA	881	NA	1130	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	176	0	520	0	568	0	445	0
Entry Capacity, vph	681		754		855		1097	
Leg v/c ratio	0.26		0.69		0.66		0.41	
Control Delay, s/veh	8.4		18.1		15.5		7.5	
LOS	A		C		C		A	
95th Percentile Queue (ft)	29	0	151	0	136	0	52	0

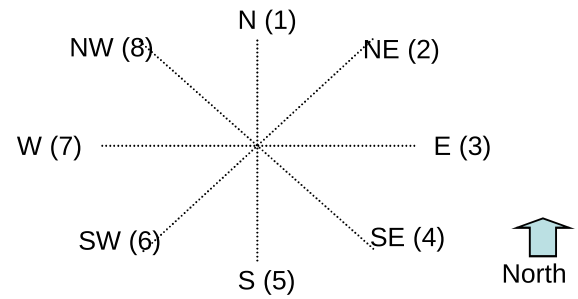
For Hourly Queuing Calc (PHF = 1.0)

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	9.0	0.0	5.0	0.0	3.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F_{HV}	0.917	1.000	0.952	1.000	0.971	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	84	0	283	0	61	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	56	0	0	0	0	0	361	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	121	0	14	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	404	0	255	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	177	0	502	0	539	0	421	0
Conflicting flow, pce/h	673	1101	599	1016	477	612	190	850
Entry capacity, pce/h	778	NA	825	NA	910	NA	1145	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	162	0	478	0	523	0	409	0
Entry Capacity, vph	714		786		884		1111	
Leg v/c ratio	0.23		0.61		0.59		0.37	
Control Delay, s/veh	7.7		14.5		12.8		7.0	
LOS	A		B		B		A	
95th Percentile Queue (ft)	25	0	122	0	111	0	46	0

General & Site Information

Analyst:	K.Svicarovich
Agency/Company:	DKS Associates, Inc.
Date:	5/8/2012
Project Name:	Bend G.O. Bond Projects
Intersection:	15th/Reed Market
Analysis Time Period:	PM Peak
Jurisdiction:	City of Bend
Year:	2011 with Slip Lanes



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			39		109		100	
Volumes	NE (2), vph								
to Leg #	E (3), vph	143				0		475	
	SE (4), vph								
	S (5), vph	237		44				0	
	SW (6), vph								
	W (7), vph	0		560		140			
	NW (8), vph								
Output	Total Vehicles	380	0	643	0	249	0	575	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pce/h	0	0	44	0	123	0	112	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	159	0	0	0	0	0	532	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	263	0	49	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	627	0	158	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	421	0	720	0	281	0	644	0
Conflicting flow, pce/h	834	1113	393	1084	802	1114	471	1256
Entry capacity, pce/h	684	NA	973	NA	702	NA	915	NA

Results	N	NE	E	SE	S	SW	W	NW
Entry Volume, vph	413	0	699	0	271	0	625	0
Entry Capacity, vph	670		945		675		888	
Leg v/c ratio	0.62		0.74		0.40		0.70	
Control Delay, s/veh	16.7		17.5		10.9		16.6	
LOS	C		C		B		C	
95th Percentile Queue (ft)	110	0	182	0	51	0	158	0

For Hourly Queuing Calc (PHF = 1.0)

Volume Characteristics	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
% Trucks	2.0	0.0	3.0	0.0	4.0	0.0	3.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F_{HV}	0.980	1.000	0.971	1.000	0.962	1.000	0.971	1.000

Entry/Conflicting Flows	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Flow to Leg # N (1), pce/h	0	0	40	0	113	0	103	0
NE (2), pce/h	0	0	0	0	0	0	0	0
E (3), pce/h	146	0	0	0	0	0	489	0
SE (4), pce/h	0	0	0	0	0	0	0	0
S (5), pce/h	242	0	45	0	0	0	0	0
SW (6), pce/h	0	0	0	0	0	0	0	0
W (7), pce/h	0	0	577	0	146	0	0	0
NW (8), pce/h	0	0	0	0	0	0	0	0
Entry flow, pce/h	388	0	662	0	259	0	592	0
Conflicting flow, pce/h	768	1024	362	997	738	1025	433	1155
Entry capacity, pce/h	721	NA	998	NA	739	NA	943	NA
Results	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Volume, vph	380	0	643	0	249	0	575	0
Entry Capacity, vph	707		969		710		915	
Leg v/c ratio	0.54		0.66		0.35		0.63	
Control Delay, s/veh	13.5		14.0		9.5		13.5	
LOS	B		B		A		B	
95th Percentile Queue (ft)	88	0	150	0	43	0	129	0

APPENDIX P

2030 FULL SIGNAL OPERATIONAL OUPUT – REED/15TH

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	395	70	25	420	155	345	645	90	95	225	70
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.75		0.97	1.00		*0.85	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		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	0.98		1.00	0.96		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	2974		1706	2571		3278	1743		2900	1725	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1706	2974		1706	2571		3278	1743		2900	1725	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	429	76	27	457	168	375	701	98	103	245	76
RTOR Reduction (vph)	0	12	0	0	24	0	0	5	0	0	11	0
Lane Group Flow (vph)	76	493	0	27	601	0	375	794	0	103	310	0
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	5.4	28.9		3.0	26.5		15.6	46.5		5.6	36.5	
Effective Green, g (s)	5.4	28.9		3.0	26.5		15.6	46.5		5.6	36.5	
Actuated g/C Ratio	0.05	0.29		0.03	0.26		0.16	0.46		0.06	0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5		2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	92	859		51	681		511	810		162	630	
v/s Ratio Prot	c0.04	0.17		0.02	c0.23		c0.11	c0.46		0.04	0.18	
v/s Ratio Perm												
v/c Ratio	0.83	0.57		0.53	0.88		0.73	0.98		0.64	0.49	
Uniform Delay, d1	46.8	30.3		47.8	35.3		40.2	26.3		46.2	24.6	
Progression Factor	1.37	0.79		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	41.0	2.8		7.4	15.3		5.1	26.7		7.0	0.4	
Delay (s)	105.2	26.6		55.2	50.6		45.3	53.0		53.2	25.0	
Level of Service	F	C		E	D		D	D		D	C	
Approach Delay (s)		36.9			50.8			50.6			31.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
2030 AM Peak Hour

5/14/2012

Intersection: 4: Reed Market Rd & American Lane

Movement	EB	EB	EB	WB	WB	WB	NB
Directions Served	T	T	R	L	L	T	LR
Maximum Queue (ft)	194	136	62	228	152	160	332
Average Queue (ft)	75	51	16	131	69	29	113
95th Queue (ft)	147	102	47	205	132	106	269
Link Distance (ft)	611	611			489	489	520
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200	240			
Storage Blk Time (%)		0		1			
Queuing Penalty (veh)		0		1			

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	EB	WB	WB	WB	B9	SB	SB
Directions Served	L	T	T	T	T	R	T	L	R
Maximum Queue (ft)	299	370	127	111	120	81	12	49	98
Average Queue (ft)	165	24	7	31	45	22	0	12	38
95th Queue (ft)	269	154	65	82	96	59	9	38	71
Link Distance (ft)		489	489	288	288	288	697		387
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		1							
Storage Bay Dist (ft)	200							250	
Storage Blk Time (%)	5								
Queuing Penalty (veh)	14								

Intersection: 29: Reed Market Rd & 15th St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	L	TR	L	L	TR
Maximum Queue (ft)	157	248	184	68	246	287	213	300	1631	122	92	279
Average Queue (ft)	66	134	77	23	119	161	116	205	1315	59	20	138
95th Queue (ft)	138	210	156	58	202	249	179	357	2145	102	57	238
Link Distance (ft)		697	697		940	940			1714			1424
Upstream Blk Time (%)									13			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	500			200			200	200		225	225	
Storage Blk Time (%)					1		0	1	38			1
Queuing Penalty (veh)					0		2	4	131			1

Network Summary

Network wide Queuing Penalty: 154

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	545	285	90	635	75	195	55	60	260	485	120
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.75		0.97	1.00		*0.85	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		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	0.95		1.00	0.98		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	2874		1706	2645		3278	1627		2900	1737	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1706	2874		1706	2645		3278	1627		2900	1737	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	592	310	98	690	82	212	60	65	283	527	130
RTOR Reduction (vph)	0	46	0	0	6	0	0	35	0	0	8	0
Lane Group Flow (vph)	130	856	0	98	766	0	212	90	0	283	649	0
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.0	37.0		7.0	35.0		8.0	35.2		14.8	42.0	
Effective Green, g (s)	9.0	37.0		7.0	35.0		8.0	35.2		14.8	42.0	
Actuated g/C Ratio	0.08	0.34		0.06	0.32		0.07	0.32		0.13	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.0	3.5		2.5	3.5		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	140	967		109	842		238	521		390	663	
v/s Ratio Prot	c0.08	c0.30		0.06	0.29		c0.06	0.06		0.10	c0.37	
v/s Ratio Perm												
v/c Ratio	0.93	0.89		0.90	0.91		0.89	0.17		0.73	0.98	
Uniform Delay, d1	50.2	34.5		51.1	36.0		50.6	26.9		45.7	33.6	
Progression Factor	1.19	0.67		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	52.6	11.4		54.8	15.6		31.1	0.1		6.2	29.3	
Delay (s)	112.2	34.6		106.0	51.5		81.6	27.0		51.8	62.9	
Level of Service	F	C		F	D		F	C		D	E	
Approach Delay (s)		44.4			57.7			61.4			59.6	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM Average Control Delay	54.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	272	106	98	128	112	31	61	213
Average Queue (ft)	126	11	9	33	32	4	17	91
95th Queue (ft)	216	56	47	90	84	21	49	171
Link Distance (ft)		485	485	288	288	288		387
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250						250	
Storage Blk Time (%)	1							0
Queuing Penalty (veh)	4							0

Intersection: 29: Reed Market Rd & 15th St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	L	TR	L	L	TR
Maximum Queue (ft)	256	309	278	220	289	314	168	174	152	208	325	1190
Average Queue (ft)	126	176	146	92	177	183	83	87	63	124	136	658
95th Queue (ft)	233	280	249	184	268	280	139	145	123	194	342	1212
Link Distance (ft)		697	697		940	940			1714			1424
Upstream Blk Time (%)												2
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	500			200			200	200		225	225	
Storage Blk Time (%)				1	5		0	0		0		38
Queuing Penalty (veh)				4	4		0	0		1		100

Network Summary

Network wide Queuing Penalty: 118

APPENDIX Q

TRAFFIC SIGNAL INTERIM PHASING – REED/15TH

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	371	60	18	402	110	290	412	60	69	156	67
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1527	1674	1762	1471	1706	1762		1596	1680	1403
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1527	1674	1762	1471	1706	1762		1596	1680	1403
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	71	412	67	20	447	122	322	458	67	77	173	74
RTOR Reduction (vph)	0	0	31	0	0	78	0	7	0	0	0	53
Lane Group Flow (vph)	71	412	36	20	447	44	322	518	0	77	173	21
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	3%	3%	3%	9%	9%	9%
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8		7	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	3.7	24.0	39.4	1.8	22.1	26.6	15.4	27.8		4.5	16.9	20.6
Effective Green, g (s)	3.7	24.0	39.4	1.8	22.1	26.6	15.4	27.8		4.5	16.9	20.6
Actuated g/C Ratio	0.05	0.32	0.53	0.02	0.30	0.36	0.21	0.38		0.06	0.23	0.28
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	3.5	2.5	2.5	3.5	2.5	2.5	2.5		2.5	2.5	2.0
Lane Grp Cap (vph)	85	582	894	41	526	607	355	661		97	383	466
v/s Ratio Prot	c0.04	0.23	0.01	0.01	c0.25	0.00	c0.19	c0.29		0.05	0.10	0.00
v/s Ratio Perm			0.02			0.03						0.01
v/c Ratio	0.84	0.71	0.04	0.49	0.85	0.07	0.91	0.78		0.79	0.45	0.04
Uniform Delay, d1	34.9	22.0	8.3	35.7	24.4	15.6	28.7	20.5		34.3	24.6	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	46.0	4.1	0.0	6.5	12.5	0.0	25.7	5.8		33.7	0.6	0.0
Delay (s)	80.9	26.0	8.3	42.2	36.9	15.7	54.4	26.3		68.1	25.2	19.6
Level of Service	F	C	A	D	D	B	D	C		E	C	B
Approach Delay (s)		31.0			32.7			37.0			34.1	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	74.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 4: Reed Market Rd & American Ln

Movement	EB	WB	WB	WB	NB
Directions Served	TR	L	L	T	LR
Maximum Queue (ft)	224	112	74	164	124
Average Queue (ft)	92	63	14	63	72
95th Queue (ft)	163	93	44	138	107
Link Distance (ft)	230		763	763	743
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		300			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	199	45	43	72
Average Queue (ft)	68	2	10	39
95th Queue (ft)	141	17	30	62
Link Distance (ft)		1025		394
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300		250	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Reed Market Rd & 15th St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	88	241	19	53	336	52	299	325	88	133	64
Average Queue (ft)	44	122	4	18	158	27	137	156	37	78	18
95th Queue (ft)	78	205	15	47	275	50	232	252	73	128	43
Link Distance (ft)		1025			2574			1715		1426	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	400		400	200		400	200		225		250
Storage Blk Time (%)					2		3	2			
Queuing Penalty (veh)					3		16	6			

Network Summary

Network wide Queuing Penalty: 25

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	500	250	60	600	50	160	160	40	190	330	120
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1501	1706	1796	1503	1690	1717		1706	1796	1496
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1501	1706	1796	1503	1690	1717		1706	1796	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	543	272	65	652	54	174	174	43	207	359	130
RTOR Reduction (vph)	0	0	92	0	0	26	0	10	0	0	0	83
Lane Group Flow (vph)	120	543	180	65	652	28	174	207	0	207	359	47
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8		7	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	7.0	36.2	46.9	4.7	33.9	44.9	10.7	20.2		11.0	20.5	27.5
Effective Green, g (s)	7.0	36.2	46.9	4.7	33.9	44.9	10.7	20.2		11.0	20.5	27.5
Actuated g/C Ratio	0.08	0.41	0.53	0.05	0.38	0.51	0.12	0.23		0.12	0.23	0.31
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	3.5	2.5	2.5	3.5	2.5	2.5	2.5		2.5	2.5	2.0
Lane Grp Cap (vph)	136	738	867	91	691	834	205	394		213	418	535
v/s Ratio Prot	c0.07	0.30	0.03	0.04	c0.36	0.00	0.10	0.12		c0.12	c0.20	0.01
v/s Ratio Perm			0.09			0.01						0.02
v/c Ratio	0.88	0.74	0.21	0.71	0.94	0.03	0.85	0.53		0.97	0.86	0.09
Uniform Delay, d1	40.1	21.9	10.8	41.0	26.2	10.8	37.9	29.7		38.4	32.4	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	43.0	4.0	0.1	21.8	21.6	0.0	26.1	1.0		53.3	15.7	0.0
Delay (s)	83.1	25.9	10.9	62.9	47.7	10.8	64.0	30.7		91.7	48.2	21.5
Level of Service	F	C	B	E	D	B	E	C		F	D	C
Approach Delay (s)		28.9			46.4			45.5			56.1	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	42.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 4: Reed Market Rd & American Ln

Movement	EB	B8	WB	WB	WB	NB
Directions Served	TR	T	L	L	T	LR
Maximum Queue (ft)	304	424	303	185	251	311
Average Queue (ft)	248	90	159	80	88	136
95th Queue (ft)	352	303	259	161	206	254
Link Distance (ft)	230	1792		763	763	743
Upstream Blk Time (%)	15					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			300			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			1			

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	147	28	82	172
Average Queue (ft)	62	2	23	79
95th Queue (ft)	114	14	67	143
Link Distance (ft)		1025		394
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300		250	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Reed Market Rd & 15th St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	162	410	137	300	888	319	209	185	287	405	210
Average Queue (ft)	81	202	44	68	427	29	99	90	136	175	45
95th Queue (ft)	146	346	94	197	793	162	181	159	233	306	129
Link Distance (ft)		1025			2574			1715		1426	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	400		400	200		400	200		225		250
Storage Blk Time (%)		0			33		2	0	3	5	
Queuing Penalty (veh)		1			36		4	0	13	15	

Network Summary

Network wide Queuing Penalty: 71

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑	↱
Volume (vph)	67	383	65	22	411	131	317	516	74	81	187	69
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1527	1674	1762	1471	1706	1762		1596	1680	1403
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1527	1674	1762	1471	1706	1762		1596	1680	1403
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	426	72	24	457	146	352	573	82	90	208	77
RTOR Reduction (vph)	0	0	32	0	0	92	0	5	0	0	0	56
Lane Group Flow (vph)	74	426	40	24	457	54	352	650	0	90	208	21
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	3%	3%	3%	9%	9%	9%
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8		7	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	5.0	33.6	54.7	1.9	30.5	36.5	21.1	36.9		6.0	21.8	26.8
Effective Green, g (s)	5.0	33.6	54.7	1.9	30.5	36.5	21.1	36.9		6.0	21.8	26.8
Actuated g/C Ratio	0.05	0.34	0.56	0.02	0.31	0.37	0.21	0.37		0.06	0.22	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	3.5	2.5	2.5	3.5	2.5	2.5	2.5		2.5	2.5	2.0
Lane Grp Cap (vph)	87	613	926	32	546	620	366	661		97	372	453
v/s Ratio Prot	c0.04	c0.24	0.01	0.01	c0.26	0.01	c0.21	c0.37		0.06	0.12	0.00
v/s Ratio Perm			0.02			0.03						0.01
v/c Ratio	0.85	0.69	0.04	0.75	0.84	0.09	0.96	0.98		0.93	0.56	0.05
Uniform Delay, d1	46.3	28.0	9.9	48.0	31.6	20.1	38.3	30.4		46.0	34.0	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	49.5	3.5	0.0	62.8	11.0	0.0	36.9	30.6		67.5	1.5	0.0
Delay (s)	95.8	31.5	10.0	110.8	42.6	20.2	75.1	61.1		113.5	35.5	26.4
Level of Service	F	C	A	F	D	C	E	E		F	D	C
Approach Delay (s)		37.1			40.0			66.0			52.4	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	438	70	224	565	24	291
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	1.00		0.97	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.88	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1694		3217	1745	1550	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1694		3217	1745	1550	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	487	78	249	628	27	323
RTOR Reduction (vph)	8	0	0	0	270	0
Lane Group Flow (vph)	557	0	249	628	80	0
Confl. Peds. (#/hr)		1				1
Heavy Vehicles (%)	7%	7%	6%	6%	2%	2%
Turn Type			Prot			
Protected Phases	2		1	6	4	
Permitted Phases						
Actuated Green, G (s)	21.5		8.8	35.3	8.8	
Effective Green, g (s)	21.5		8.8	35.3	8.8	
Actuated g/C Ratio	0.40		0.16	0.65	0.16	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	673		523	1139	252	
v/s Ratio Prot	c0.33		0.08	c0.36	c0.05	
v/s Ratio Perm						
v/c Ratio	0.83		0.48	0.55	0.32	
Uniform Delay, d1	14.6		20.6	5.1	20.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	8.3		0.7	0.6	0.7	
Delay (s)	22.9		21.2	5.7	20.7	
Level of Service	C		C	A	C	
Approach Delay (s)	22.9			10.1	20.7	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	229	500	663	134	15	126
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	254	556	737	149	17	140
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		813	1098			
pX, platoon unblocked	0.76				0.83	0.76
vC, conflicting volume	886				1876	811
vC1, stage 1 conf vol					811	
vC2, stage 2 conf vol					1064	
vCu, unblocked vol	690				1573	592
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	63				91	64
cM capacity (veh/h)	686				178	384

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	254	556	886	17	140
Volume Left	254	0	0	17	0
Volume Right	0	0	149	0	140
cSH	686	1700	1700	178	384
Volume to Capacity	0.37	0.33	0.52	0.09	0.36
Queue Length 95th (ft)	43	0	0	8	41
Control Delay (s)	13.3	0.0	0.0	27.3	19.7
Lane LOS	B			D	C
Approach Delay (s)	4.2		0.0	20.5	
Approach LOS				C	

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	383	65	22	411	131	317	516	74	81	187	69
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1527	1674	1762	1471	1706	1762		1596	1680	1403
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1527	1674	1762	1471	1706	1762		1596	1680	1403
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	426	72	24	457	146	352	573	82	90	208	77
RTOR Reduction (vph)	0	0	32	0	0	92	0	5	0	0	0	56
Lane Group Flow (vph)	74	426	40	24	457	54	352	650	0	90	208	21
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	3%	3%	3%	9%	9%	9%
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8		7	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	5.0	33.6	54.7	1.9	30.5	36.5	21.1	36.9		6.0	21.8	26.8
Effective Green, g (s)	5.0	33.6	54.7	1.9	30.5	36.5	21.1	36.9		6.0	21.8	26.8
Actuated g/C Ratio	0.05	0.34	0.56	0.02	0.31	0.37	0.21	0.37		0.06	0.22	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	3.5	2.5	2.5	3.5	2.5	2.5	2.5		2.5	2.5	2.0
Lane Grp Cap (vph)	87	613	926	32	546	620	366	661		97	372	453
v/s Ratio Prot	c0.04	c0.24	0.01	0.01	c0.26	0.01	c0.21	c0.37		0.06	0.12	0.00
v/s Ratio Perm			0.02			0.03						0.01
v/c Ratio	0.85	0.69	0.04	0.75	0.84	0.09	0.96	0.98		0.93	0.56	0.05
Uniform Delay, d1	46.3	28.0	9.9	48.0	31.6	20.1	38.3	30.4		46.0	34.0	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	49.5	3.5	0.0	62.8	11.0	0.0	36.9	30.6		67.5	1.5	0.0
Delay (s)	95.8	31.5	10.0	110.8	42.6	20.2	75.1	61.1		113.5	35.5	26.4
Level of Service	F	C	A	F	D	C	E	E		F	D	C
Approach Delay (s)		37.1			40.0			66.0			52.4	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	526	265	75	615	64	179	204	49	223	402	120
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1501	1706	1796	1504	1690	1719		1706	1796	1494
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1501	1706	1796	1504	1690	1719		1706	1796	1494
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	572	288	82	668	70	195	222	53	242	437	130
RTOR Reduction (vph)	0	0	63	0	0	32	0	8	0	0	0	84
Lane Group Flow (vph)	125	572	225	82	668	38	195	267	0	242	437	46
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8		7	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	9.0	45.4	58.4	6.3	42.7	58.7	13.0	24.1		16.0	27.1	36.1
Effective Green, g (s)	9.0	45.4	58.4	6.3	42.7	58.7	13.0	24.1		16.0	27.1	36.1
Actuated g/C Ratio	0.08	0.42	0.54	0.06	0.40	0.54	0.12	0.22		0.15	0.25	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	3.5	2.5	2.5	3.5	2.5	2.5	2.5		2.5	2.5	2.0
Lane Grp Cap (vph)	142	756	869	100	711	875	204	384		253	451	556
v/s Ratio Prot	c0.07	c0.32	0.03	0.05	c0.37	0.01	0.12	0.16		c0.14	c0.24	0.01
v/s Ratio Perm			0.12			0.02						0.02
v/c Ratio	0.88	0.76	0.26	0.82	0.94	0.04	0.96	0.70		0.96	0.97	0.08
Uniform Delay, d1	48.9	26.5	13.2	50.2	31.3	11.5	47.1	38.5		45.6	39.9	24.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	41.3	4.5	0.1	38.6	20.3	0.0	50.0	5.0		44.2	34.0	0.0
Delay (s)	90.2	31.0	13.3	88.8	51.6	11.5	97.1	43.5		89.7	73.9	24.6
Level of Service	F	C	B	F	D	B	F	D		F	E	C
Approach Delay (s)		33.3			51.9			65.7			70.7	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM Average Control Delay	53.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	107.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 4: Reed Market Rd & American Ln

Movement	EB	B8	WB	WB	WB	NB
Directions Served	TR	T	L	L	T	LR
Maximum Queue (ft)	316	609	333	254	264	391
Average Queue (ft)	277	186	207	120	106	173
95th Queue (ft)	338	549	330	246	227	337
Link Distance (ft)	230	1792		763	763	743
Upstream Blk Time (%)	25					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			300			
Storage Blk Time (%)			4	1		
Queuing Penalty (veh)			10	3		

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	163	28	80	219
Average Queue (ft)	69	1	20	97
95th Queue (ft)	130	14	58	177
Link Distance (ft)		1025		394
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300		250	
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 29: Reed Market Rd & 15th St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	177	422	156	299	818	407	290	572	324	1000	350
Average Queue (ft)	87	244	58	90	400	36	178	216	200	415	87
95th Queue (ft)	162	386	119	223	729	183	306	537	333	841	253
Link Distance (ft)		1025			2574			1715		1426	
Upstream Blk Time (%)										0	
Queuing Penalty (veh)										0	
Storage Bay Dist (ft)	400		400	200		400	200		225		250
Storage Blk Time (%)		0			27		21	5	7	30	
Queuing Penalty (veh)		1			38		53	8	36	102	

Network Summary

Network wide Queuing Penalty: 250

APPENDIX R

2011 TRAFFIC SIGNAL OPENING DAY OF OPERATION – REED/15TH

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	350	51	13	385	80	248	275	41	51	111	64
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	1.00		*1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1494	1706	1796	1495	1690	1738		1706	1796	1483
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1494	1706	1796	1495	1690	1738		1706	1796	1483
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	380	55	14	418	87	270	299	45	55	121	70
RTOR Reduction (vph)	0	0	29	0	0	51	0	7	0	0	0	60
Lane Group Flow (vph)	64	380	26	14	418	36	270	337	0	55	121	10
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	6.7	42.5	42.5	1.4	37.2	37.2	17.2	24.4		5.7	12.9	12.9
Effective Green, g (s)	6.7	42.5	42.5	1.4	37.2	37.2	17.2	24.4		5.7	12.9	12.9
Actuated g/C Ratio	0.07	0.47	0.47	0.02	0.41	0.41	0.19	0.27		0.06	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5	3.5	2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	127	848	706	27	742	618	323	471		108	257	213
v/s Ratio Prot	c0.04	0.21		0.01	c0.23		c0.16	c0.19		0.03	0.07	
v/s Ratio Perm			0.02			0.02						0.01
v/c Ratio	0.50	0.45	0.04	0.52	0.56	0.06	0.84	0.71		0.51	0.47	0.05
Uniform Delay, d1	40.1	15.9	12.8	44.0	20.2	15.9	35.0	29.7		40.8	35.4	33.2
Progression Factor	0.84	0.95	1.37	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	1.7	0.1	12.0	3.1	0.2	16.6	4.8		2.7	1.0	0.1
Delay (s)	34.6	16.7	17.6	55.9	23.3	16.0	51.6	34.4		43.5	36.4	33.3
Level of Service	C	B	B	E	C	B	D	C		D	D	C
Approach Delay (s)		19.1			22.9			42.0			37.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 4: American Ln & Reed Market Rd

Movement	EB	B8	WB	WB	WB	NB
Directions Served	TR	T	L	L	T	LR
Maximum Queue (ft)	518	44	145	96	285	196
Average Queue (ft)	243	2	69	22	67	89
95th Queue (ft)	461	36	122	70	189	164
Link Distance (ft)	501	1792		491	491	523
Upstream Blk Time (%)	1					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			200			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	184	147	736	48	87
Average Queue (ft)	76	23	218	11	32
95th Queue (ft)	148	96	555	34	68
Link Distance (ft)		491	1025		396
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			1		
Storage Bay Dist (ft)	200			250	
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	1	0			

Intersection: 29: 15th St & Reed Market Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	124	274	46	58	320	73	273	328	88	155	66
Average Queue (ft)	46	113	11	15	145	27	144	151	37	65	23
95th Queue (ft)	96	231	32	45	263	59	240	263	75	125	50
Link Distance (ft)		1025			2574			1715		1426	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	400		400	200		400	200		225		250
Storage Blk Time (%)					3		3	3		0	
Queuing Penalty (veh)					3		10	7		0	

Network Summary

Network wide Queuing Penalty: 23

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	475	215	44	560	39	140	109	27	143	237	120
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Grade (%)		0%			0%			0%			2%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	1.00		*1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1706	1796	1494	1706	1796	1495	1690	1717		1706	1796	1484
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1706	1796	1494	1706	1796	1495	1690	1717		1706	1796	1484
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	516	234	48	609	42	152	118	29	155	258	130
RTOR Reduction (vph)	0	0	124	0	0	24	0	10	0	0	0	105
Lane Group Flow (vph)	109	516	110	48	609	18	152	137	0	155	258	25
Confl. Peds. (#/hr)							3		2	2		3
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	8.9	42.4	42.4	4.1	37.6	37.6	10.0	17.4		10.1	17.5	17.5
Effective Green, g (s)	8.9	42.4	42.4	4.1	37.6	37.6	10.0	17.4		10.1	17.5	17.5
Actuated g/C Ratio	0.10	0.47	0.47	0.05	0.42	0.42	0.11	0.19		0.11	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	3.5	3.5	2.5	3.5	3.5	2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	169	846	704	78	750	625	188	332		191	349	289
v/s Ratio Prot	c0.06	0.29		0.03	c0.34		0.09	0.08		c0.09	c0.14	
v/s Ratio Perm			0.07			0.01						0.02
v/c Ratio	0.64	0.61	0.16	0.62	0.81	0.03	0.81	0.41		0.81	0.74	0.09
Uniform Delay, d1	39.0	17.7	13.6	42.2	23.1	15.4	39.1	31.8		39.0	34.1	29.7
Progression Factor	1.11	0.94	1.83	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.4	2.9	0.4	11.7	9.3	0.1	21.4	0.6		21.9	7.5	0.1
Delay (s)	49.0	19.4	25.3	53.9	32.4	15.5	60.4	32.4		60.9	41.6	29.8
Level of Service	D	B	C	D	C	B	E	C		E	D	C
Approach Delay (s)		24.8			32.9			46.7			44.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	34.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Bend

Movement	SW
Directions Served	T
Maximum Queue (ft)	58
Average Queue (ft)	4
95th Queue (ft)	81
Link Distance (ft)	523
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: American Ln & Reed Market Rd

Movement	EB	B8	WB	WB	WB	NB
Directions Served	TR	T	L	L	T	LR
Maximum Queue (ft)	571	367	234	179	373	252
Average Queue (ft)	379	39	130	58	128	127
95th Queue (ft)	605	219	212	138	295	217
Link Distance (ft)	501	1792		491	491	523
Upstream Blk Time (%)	6				0	
Queuing Penalty (veh)	0				0	
Storage Bay Dist (ft)			200			
Storage Blk Time (%)			1	0		
Queuing Penalty (veh)			2	0		

Intersection: 5: Reed Market Rd & 9th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	201	266	882	48	170
Average Queue (ft)	69	45	324	15	67
95th Queue (ft)	140	157	737	39	127
Link Distance (ft)		491	1025		396
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			1		
Storage Bay Dist (ft)	200			250	
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	0	0			

Intersection: 29: 15th St & Reed Market Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	156	393	142	170	488	103	194	156	190	262	99
Average Queue (ft)	63	213	51	40	246	17	93	68	89	126	41
95th Queue (ft)	124	363	111	116	413	71	167	129	161	212	80
Link Distance (ft)		1025			2574			1715		1426	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	400		400	200		400	200		225		250
Storage Blk Time (%)		0			12		1	0	0	1	
Queuing Penalty (veh)		1			10		1	0	2	2	

Network Summary

Network wide Queuing Penalty: 19

APPENDIX S

2030 AND INTERIM CONFIGURATION SKETCHES


CENTENNIAL STREET
PAIUTE WAY
9TH STREET
AMERICAN LANE
REED MARKET ROAD
15TH STREET
15TH STREET
0
100
200
RECOMMENDED
INTERIM CONFIGURATION

CENTENNIAL STREET
PAIUTE WAY
9TH STREET
AMERICAN LANE
REED MARKET ROAD
15TH STREET
15TH STREET
N
0
100
200
2030 RECOMMENDED
CONFIGURATION