

APPENDIX D

Traffic & Collision Data



Location		Year	Collision Cause	Date	Total Property Damage	Surface Condition	Time of Day	Collision Type	Traffic Control	Direction of Travel	Object Type	Driver Age	Driver Gender
51 Avenue	34 Street	2008	Ran Off Road	2008 12 01	1000	Unknown	30	Property Damage	No Control Present	East	Auto	32	M
51 Avenue	34 Street	2008	Ran Off Road	2008 12 01	1000	Unknown	30	Property Damage	No Control Present	#N/A	Curb	0	0
51 Avenue	34 Street	2007	Ran Off Road	2007 12 23	10000	Snowy/Icy	2137	Property Damage	No Control Present	South	Auto	19	M
51 Avenue	34 Street	2007	Ran Off Road	2007 12 23	10000	Snowy/Icy	2137	Property Damage	No Control Present	#N/A	Snow Bank/Drift	0	0
51 Avenue	34 Street	2008	Changing Lanes Improperly	2008 02 14	2000	Snowy/Icy	645	Property Damage	No Control Present	North	Auto	32	M
51 Avenue	34 Street	2008	Changing Lanes Improperly	2008 02 14	2000	Snowy/Icy	645	Property Damage	No Control Present	North	Auto	59	M
51 Avenue	34 Street	2009	Struck Parked Vehicle	2009 06 23	10000	Dry	2300	Property Damage	No Control Present	Unknown	Auto	UN	U
51 Avenue	34 Street	2009	Struck Parked Vehicle	2009 06 23	10000	Dry	2300	Property Damage	No Control Present	#N/A	Auto	0	0
51 Avenue	34 Street	2010	Followed Too Closely	2010 10 22	1001	Dry	745	Property Damage	No Control Present	North	Auto	29	F
51 Avenue	34 Street	2010	Followed Too Closely	2010 10 22	1001	Dry	745	Property Damage	No Control Present	North	Auto	22	M
51 Avenue	34 Street	2011	Ran Off Road	2011 05 01	12000	Dry	420	Injury	No Control Present	South	Auto	21	M
51 Avenue	34 Street	2011	Ran Off Road	2011 05 01	12000	Dry	420	Injury	No Control Present	South	Auto	21	M
51 Avenue	34 Street	2011	Ran Off Road	2011 05 01	12000	Dry	420	Injury	No Control Present	#N/A	Rollover	0	0
54 Avenue	34 Street	2011	Backed Unsafely	2011 06 27	2000	Dry	945	Property Damage	Stop Sign	West	Truck	71	M
54 Avenue	34 Street	2011	Backed Unsafely	2011 06 27	2000	Dry	945	Property Damage	Stop Sign	East	Auto	53	M
56 Avenue	34 Street	2008	Ran Off Road	2008 03 09	1200	Dry	2110	Property Damage	Stop Sign	South	Auto	31	M
56 Avenue	34 Street	2008	Ran Off Road	2008 03 09	1200	Dry	2110	Property Damage	Stop Sign	#N/A	Post, Sign, Parking Meter	0	0
56 Avenue	34 Street	2011	Improper Passing	2011 05 18	5000	Dry	1600	Property Damage	Stop Sign	East	Auto	42	F
56 Avenue	34 Street	2011	Improper Passing	2011 05 18	5000	Dry	1600	Property Damage	Stop Sign	East	Truck	45	M
56 Avenue	34 Street	2012	Improper Turn	2012 01 06	2100	Dry	1520	Property Damage	Stop Sign	East	Auto	23	M
56 Avenue	34 Street	2012	Improper Turn	2012 01 06	2100	Dry	1520	Property Damage	Stop Sign	East	Truck	58	M
56 Avenue	34 Street	2012	Changing Lanes Improperly	2012 03 09	4001	Dry	1540	Property Damage	Stop Sign	East	Auto	51	M
56 Avenue	34 Street	2012	Changing Lanes Improperly	2012 03 09	4001	Dry	1540	Property Damage	Stop Sign	East	Auto	49	M
56 Avenue	34 Street	2009	Ran Off Road	2009 03 14	1000	Snowy/Icy	535	Property Damage	No Control Present	South	Auto	40	M
56 Avenue	34 Street	2009	Ran Off Road	2009 03 14	1000	Snowy/Icy	535	Property Damage	No Control Present	#N/A	Rollover	0	0
56 Avenue	34 Street	2007	ailed to Yield ROW (no control preser	2007 09 18	2000	Dry	742	Property Damage	No Control Present	West	Auto	26	M
56 Avenue	34 Street	2007	ailed to Yield ROW (no control preser	2007 09 18	2000	Dry	742	Property Damage	No Control Present	South	Auto	41	M
56 Avenue	34 Street	2008	Ran Off Road	2008 09 02	3500	Dry	200	Property Damage	No Control Present	North	Auto	17	M
56 Avenue	34 Street	2008	Ran Off Road	2008 09 02	3500	Dry	200	Property Damage	No Control Present	#N/A	Pole	0	0
56 Avenue	34 Street	2009	Followed Too Closely	2009 06 16	8000	Dry	800	Property Damage	No Control Present	North	Auto	23	M
56 Avenue	34 Street	2009	Followed Too Closely	2009 06 16	8000	Dry	800	Property Damage	No Control Present	North	Auto	20	F
56 Avenue	34 Street	2010	Improper Loading	2010 05 05	1000	Unknown	1030	Property Damage	No Control Present	Unknown	Auto	UN	U
56 Avenue	34 Street	2010	Improper Loading	2010 05 05	1000	Unknown	1030	Property Damage	No Control Present	Unknown	Auto	55	M
56 Avenue	34 Street	2011	Ran Off Road	2011 08 30	8000	Dry	2025	Property Damage	No Control Present	South	Auto	19	M
56 Avenue	34 Street	2011	Ran Off Road	2011 08 30	8000	Dry	2025	Property Damage	No Control Present	#N/A	Ditch	0	0
56 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 04 30	4002	Dry	1815	Property Damage	Signal Light	South	Auto	29	M
56 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 04 30	4002	Dry	1815	Property Damage	Signal Light	East	Auto	50	M
63 Avenue	34 Street	2008	Improper Passing	2008 03 28	5000	Dry	1430	Property Damage	No Control Present	North	Auto	43	M
63 Avenue	34 Street	2008	Improper Passing	2008 03 28	5000	Dry	1430	Property Damage	No Control Present	North	le (cnstr, farm equip., off h	26	M
63 Avenue	34 Street	2008	Ran Off Road	2008 09 02	3500	Dry	930	Property Damage	No Control Present	Unknown	Auto	UN	U
63 Avenue	34 Street	2008	Ran Off Road	2008 09 02	3500	Dry	930	Property Damage	No Control Present	#N/A	Pole	0	0
64 Avenue	34 Street	2008	Followed Too Closely	2008 01 21	14000	Dry	655	Injury	Stop Sign	South	Auto	19	M
64 Avenue	34 Street	2008	Followed Too Closely	2008 01 21	14000	Dry	655	Injury	Stop Sign	South	Auto	49	M
64 Avenue	34 Street	2008	Followed Too Closely	2008 01 21	14000	Dry	655	Injury	Stop Sign	South	Auto	30	M
64 Avenue	34 Street	2008	Backed Unsafely	2008 07 15	5000	Unknown	1745	Property Damage	Stop Sign	North	Truck	44	M
64 Avenue	34 Street	2008	Backed Unsafely	2008 07 15	5000	Unknown	1745	Property Damage	Stop Sign	West	Auto	57	M
64 Avenue	34 Street	2011	Ran Off Road	2011 06 14	2000	Wet	630	Property Damage	No Control Present	South	Auto	24	M
64 Avenue	34 Street	2011	Ran Off Road	2011 06 14	2000	Wet	630	Property Damage	No Control Present	#N/A	Ditch	0	0
64 Avenue	34 Street	2008	Left of Centre	2008 10 07	11000	Dry	2332	Injury	No Control Present	North	Auto	28	M
64 Avenue	34 Street	2008	Left of Centre	2008 10 07	11000	Dry	2332	Injury	No Control Present	South	Truck	50	M
64 Avenue	34 Street	2009	Ran Off Road	2009 01 29	5000	Snowy/Icy	145	Property Damage	No Control Present	South	Auto	20	M
64 Avenue	34 Street	2009	Ran Off Road	2009 01 29	5000	Snowy/Icy	145	Property Damage	No Control Present	#N/A	Pole	0	0
64 Avenue	34 Street	2010	Followed Too Closely	2010 03 13	15000	Dry	2355	Property Damage	No Control Present	North	Auto	27	M
64 Avenue	34 Street	2010	Followed Too Closely	2010 03 13	15000	Dry	2355	Property Damage	No Control Present	North	Auto	22	F
64 Avenue	34 Street	2010	Followed Too Closely	2010 11 04	2000	Dry	720	Injury	No Control Present	South	Auto	17	M
64 Avenue	34 Street	2010	Followed Too Closely	2010 11 04	2000	Dry	720	Injury	No Control Present	South	Auto	39	M
64 Avenue	34 Street	2011	ailed to Yield ROW (no control preser	2011 07 08	3000	Wet	1430	Property Damage	No Control Present	West	Auto	65	M
64 Avenue	34 Street	2011	ailed to Yield ROW (no control preser	2011 07 08	3000	Wet	1430	Property Damage	No Control Present	South	Auto	42	M
64 Avenue	34 Street	2011	Ran Off Road	2011 10 06	4000	Dry	1354	Property Damage	No Control Present	Unknown	Auto	UN	U
64 Avenue	34 Street	2011	Ran Off Road	2011 10 06	4000	Dry	1354	Property Damage	No Control Present	#N/A	Pole	0	0

65 Avenue	34 Street	2007	Left Turn Across Path	2007 10 23	1000	Unknown	500	Property Damage	Stop Sign	North	Unknown	UN	U
65 Avenue	34 Street	2007	Left Turn Across Path	2007 10 23	1000	Unknown	500	Property Damage	Stop Sign	South	Auto	34	M
68 Avenue	34 Street	2007	Ran Off Road	2007 09 17	1000	Dry	1214	Property Damage	Stop Sign	West	Truck	23	M
68 Avenue	34 Street	2007	Ran Off Road	2007 09 17	1000	Dry	1214	Property Damage	Stop Sign	#N/A	Ditch	0	0
68 Avenue	34 Street	2011	Followed Too Closely	2011 02 03	2000	Wet	800	Injury	No Control Present	South	Auto	26	M
68 Avenue	34 Street	2011	Followed Too Closely	2011 02 03	2000	Wet	800	Injury	No Control Present	South	Auto	39	M
68 Avenue	34 Street	2008	Followed Too Closely	2008 01 11	2000	Dry	730	Property Damage	No Control Present	North	Auto	29	F
68 Avenue	34 Street	2008	Followed Too Closely	2008 01 11	2000	Dry	730	Property Damage	No Control Present	North	Auto	68	M
68 Avenue	34 Street	2008	Struck Parked Vehicle	2008 07 20	2000	Dry	900	Property Damage	No Control Present	North	Auto	62	M
68 Avenue	34 Street	2008	Struck Parked Vehicle	2008 07 20	2000	Dry	900	Property Damage	No Control Present	#N/A	Truck	0	0
68 Avenue	34 Street	2008	Followed Too Closely	2008 09 09	4700	Dry	1700	Property Damage	No Control Present	North	Auto	25	M
68 Avenue	34 Street	2008	Followed Too Closely	2008 09 09	4700	Dry	1700	Property Damage	No Control Present	North	Auto	25	F
68 Avenue	34 Street	2008	Followed Too Closely	2008 10 09	2000	Dry	741	Property Damage	No Control Present	North	Auto	28	F
68 Avenue	34 Street	2008	Followed Too Closely	2008 10 09	2000	Dry	741	Property Damage	No Control Present	North	Auto	60	M
68 Avenue	34 Street	2009	Followed Too Closely	2009 01 05	4000	Snowy/Icy	740	Property Damage	No Control Present	North	Auto	61	M
68 Avenue	34 Street	2009	Followed Too Closely	2009 01 05	4000	Snowy/Icy	740	Property Damage	No Control Present	North	Auto	23	F
68 Avenue	34 Street	2009	Followed Too Closely	2009 01 05	4000	Snowy/Icy	740	Property Damage	No Control Present	North	Auto	26	M
68 Avenue	34 Street	2009	Followed Too Closely	2009 01 05	4000	Snowy/Icy	740	Property Damage	No Control Present	North	Auto	38	M
68 Avenue	34 Street	2009	Left of Centre	2009 10 09	2400	Unknown	1130	Property Damage	No Control Present	South	Auto	51	F
68 Avenue	34 Street	2009	Left of Centre	2009 10 09	2400	Unknown	1130	Property Damage	No Control Present	North	Auto	45	M
68 Avenue	34 Street	2010	Followed Too Closely	2010 09 24	2000	Dry	710	Property Damage	No Control Present	South	Auto	19	M
68 Avenue	34 Street	2010	Followed Too Closely	2010 09 24	2000	Dry	710	Property Damage	No Control Present	South	Auto	54	M
68 Avenue	34 Street	2011	Followed Too Closely	2011 03 30	4501	Wet	750	Property Damage	No Control Present	North	Auto	41	F
68 Avenue	34 Street	2011	Followed Too Closely	2011 03 30	4501	Wet	750	Property Damage	No Control Present	North	Auto	25	F
68 Avenue	34 Street	2012	Followed Too Closely	2012 03 22	3600	Snowy/Icy	1650	Property Damage	No Control Present	South	Auto	25	M
68 Avenue	34 Street	2012	Followed Too Closely	2012 03 22	3600	Snowy/Icy	1650	Property Damage	No Control Present	South	Auto	29	M
68 Avenue	34 Street	2012	Ran Off Road	2012 06 04	2000	Dry	1137	Injury	No Control Present	South	Auto	45	M
68 Avenue	34 Street	2012	Ran Off Road	2012 06 04	2000	Dry	1137	Injury	No Control Present	#N/A	Ditch	0	0
74 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	6000	Unknown	740	Injury	Stop Sign	North	Auto	UN	U
74 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	6000	Unknown	740	Injury	Stop Sign	North	Auto	47	M
74 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	6000	Unknown	740	Injury	Stop Sign	North	Auto	21	F
74 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	6000	Unknown	740	Injury	Stop Sign	North	Auto	21	F
74 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	6000	Unknown	740	Injury	Stop Sign	North	Auto	47	F
74 Avenue	34 Street	2009	Followed Too Closely	2009 12 15	2000	Snowy/Icy	1055	Property Damage	Stop Sign	North	Auto	52	M
74 Avenue	34 Street	2009	Followed Too Closely	2009 12 15	2000	Snowy/Icy	1055	Property Damage	Stop Sign	North	Truck	45	M
74 Avenue	34 Street	2011	Followed Too Closely	2011 01 31	5500	Snowy/Icy	1700	Property Damage	Stop Sign	East	Auto	25	M
74 Avenue	34 Street	2011	Followed Too Closely	2011 01 31	5500	Snowy/Icy	1700	Property Damage	Stop Sign	East	Auto	42	M
74 Avenue	34 Street	2011	Stop Sign Violation	2011 11 01	3000	Dry	1710	Property Damage	Stop Sign	West	Auto	32	F
74 Avenue	34 Street	2011	Stop Sign Violation	2011 11 01	3000	Dry	1710	Property Damage	Stop Sign	North	Auto	24	M
74 Avenue	34 Street	2011	Followed Too Closely	2011 11 18	15500	Sand/Dirt/C	1743	Property Damage	No Control Present	South	Auto	22	M
74 Avenue	34 Street	2011	Followed Too Closely	2011 11 18	15500	Sand/Dirt/C	1743	Property Damage	No Control Present	South	Auto	43	M
74 Avenue	34 Street	2012	Stop Sign Violation	2012 01 13	7500	Dry	1745	Property Damage	Stop Sign	East	Auto	22	M
74 Avenue	34 Street	2012	Stop Sign Violation	2012 01 13	7500	Dry	1745	Property Damage	Stop Sign	North	Auto	25	M
74 Avenue	34 Street	2012	Stop Sign Violation	2012 01 23	2001	Dry	750	Property Damage	Stop Sign	East	Truck	46	M
74 Avenue	34 Street	2012	Stop Sign Violation	2012 01 23	2001	Dry	750	Property Damage	Stop Sign	South	#N/A	47	F
74 Avenue	34 Street	2012	Followed Too Closely	2012 02 28	4001	Unknown	1710	Property Damage	Stop Sign	East	Auto	26	M
74 Avenue	34 Street	2012	Followed Too Closely	2012 02 28	4001	Unknown	1710	Property Damage	Stop Sign	East	Auto	51	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 11 24	2500	Snowy/Icy	1230	Property Damage	No Control Present	West	Auto	22	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 11 24	2500	Snowy/Icy	1230	Property Damage	No Control Present	West	Auto	26	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 05 18	2000	Dry	800	Property Damage	No Control Present	North	Auto	42	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 05 18	2000	Dry	800	Property Damage	No Control Present	North	Auto	24	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 09 15	24000	Dry	659	Property Damage	No Control Present	North	Auto	26	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 09 15	24000	Dry	659	Property Damage	No Control Present	North	Auto	40	M
74 Avenue	34 Street	2010	Followed Too Closely	2010 09 15	24000	Dry	659	Property Damage	No Control Present	North	Auto	47	F
74 Avenue	34 Street	2008	Followed Too Closely	2008 09 05	8000	Dry	1730	Property Damage	No Control Present	South	Auto	23	M
74 Avenue	34 Street	2008	Followed Too Closely	2008 09 05	8000	Dry	1730	Property Damage	No Control Present	South	Auto	34	M
74 Avenue	34 Street	2008	Followed Too Closely	2008 09 05	8000	Dry	1730	Property Damage	No Control Present	South	Auto	41	M
74 Avenue	34 Street	2012	Ran Off Road	2012 04 05	3000	Dry	730	Property Damage	No Control Present	East	Auto	36	M
74 Avenue	34 Street	2012	Ran Off Road	2012 04 05	3000	Dry	730	Property Damage	No Control Present	#N/A	Post, Sign, Parking Meter	0	0
76 Avenue	34 Street	2007	Ran Off Road	2007 08 12	4000	Dry	30	Property Damage	Signal Light	East	Auto	37	M
76 Avenue	34 Street	2007	Ran Off Road	2007 08 12	4000	Dry	30	Property Damage	Signal Light	#N/A	Restraining Barrier	0	0
76 Avenue	34 Street	2007	Followed Too Closely	2007 08 21	2353	Dry	1640	Property Damage	Signal Light	Unknown	Auto	32	F

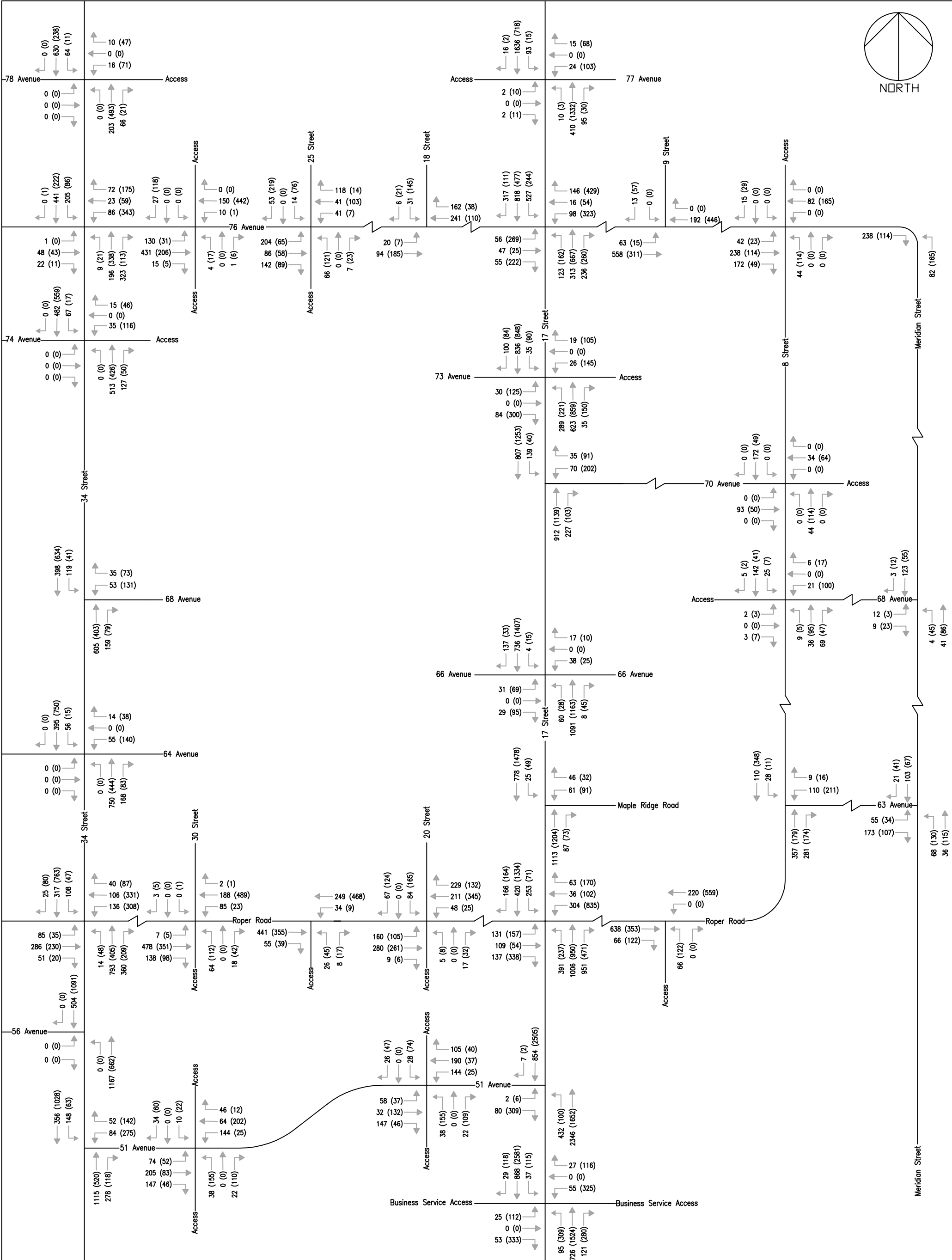
76 Avenue	34 Street	2007	Followed Too Closely	2007 08 21	2353	Dry	1640	Property Damage	Signal Light	Unknown	Auto	34	F
76 Avenue	34 Street	2007	Failed to Observe Traffic Signal	2007 10 23	2000	Dry	1330	Property Damage	Signal Light	South	Auto	48	M
76 Avenue	34 Street	2007	Failed to Observe Traffic Signal	2007 10 23	2000	Dry	1330	Property Damage	Signal Light	West	le (cnstr, farm equip., off h	42	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 11 15	8000	Dry	1720	Property Damage	Signal Light	Unknown	Auto	20	F
76 Avenue	34 Street	2007	Followed Too Closely	2007 11 15	8000	Dry	1720	Property Damage	Signal Light	Unknown	Auto	49	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 11 15	8000	Dry	1720	Property Damage	Signal Light	Unknown	Auto	49	M
76 Avenue	34 Street	2007	Failed to Observe Traffic Signal	2007 12 06	14000	Snowy/lcy	1420	Injury	Signal Light	East	Truck	51	M
76 Avenue	34 Street	2007	Failed to Observe Traffic Signal	2007 12 06	14000	Snowy/lcy	1420	Injury	Signal Light	South	Auto	53	M
76 Avenue	34 Street	2007	Left Turn Across Path	2007 12 19	4000	Wet	1730	Injury	Signal Light	West	Auto	27	M
76 Avenue	34 Street	2007	Left Turn Across Path	2007 12 19	4000	Wet	1730	Injury	Signal Light	East	Auto	52	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 02 13	1000	Snowy/lcy	1510	Property Damage	Signal Light	North	Auto	UN	F
76 Avenue	34 Street	2008	Followed Too Closely	2008 02 13	1000	Snowy/lcy	1510	Property Damage	Signal Light	North	Auto	52	M
76 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 02 26	6000	Wet	1330	Property Damage	Signal Light	West	Auto	27	M
76 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 02 26	6000	Wet	1330	Property Damage	Signal Light	North	Auto	56	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 03 05	2191	Snowy/lcy	730	Property Damage	Signal Light	North	Auto	48	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 03 05	2191	Snowy/lcy	730	Property Damage	Signal Light	North	Auto	42	F
76 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 04 05	3500	Snowy/lcy	900	Property Damage	Signal Light	West	Auto	27	M
76 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 04 05	3500	Snowy/lcy	900	Property Damage	Signal Light	North	Truck	48	M
76 Avenue	34 Street	2008	Left Turn Across Path	2008 04 26	7000	Dry	1415	Injury	Signal Light	East	Auto	45	M
76 Avenue	34 Street	2008	Left Turn Across Path	2008 04 26	7000	Dry	1415	Injury	Signal Light	West	Auto	22	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 09 08	1000	Dry	1400	Property Damage	Signal Light	West	Auto	58	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 09 08	1000	Dry	1400	Property Damage	Signal Light	West	Auto	29	M
76 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 09 30	3700	Unknown	805	Property Damage	Signal Light	East	Auto	60	M
76 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 09 30	3700	Unknown	805	Property Damage	Signal Light	South	Auto	42	M
76 Avenue	34 Street	2008	Ran Off Road	2008 11 13	2500	Wet	1749	Property Damage	Signal Light	East	Auto	22	M
76 Avenue	34 Street	2008	Ran Off Road	2008 11 13	2500	Wet	1749	Property Damage	Signal Light	#N/A	Other Fixed Object	0	0
76 Avenue	34 Street	2009	Improper Turn	2009 03 23	2000	Dry	1400	Property Damage	Signal Light	Unknown	Auto	51	M
76 Avenue	34 Street	2009	Improper Turn	2009 03 23	2000	Dry	1400	Property Damage	Signal Light	Unknown	Truck	48	M
76 Avenue	34 Street	2009	Followed Too Closely	2009 11 03	2000	Dry	730	Property Damage	Signal Light	Unknown	Auto	28	F
76 Avenue	34 Street	2009	Followed Too Closely	2009 11 03	2000	Dry	730	Property Damage	Signal Light	Unknown	Auto	51	F
76 Avenue	34 Street	2010	Left Turn Across Path	2010 01 07	7000	Unknown	750	Property Damage	Signal Light	West	Auto	19	M
76 Avenue	34 Street	2010	Left Turn Across Path	2010 01 07	7000	Unknown	750	Property Damage	Signal Light	East	Auto	27	M
76 Avenue	34 Street	2010	Improper Passing	2010 01 19	20000	Dry	1315	Property Damage	Signal Light	West	Truck	45	M
76 Avenue	34 Street	2010	Improper Passing	2010 01 19	20000	Dry	1315	Property Damage	Signal Light	West	Auto	33	F
76 Avenue	34 Street	2010	Left Turn Across Path	2010 01 22	3500	Snowy/lcy	753	Property Damage	Signal Light	East	Truck	40	M
76 Avenue	34 Street	2010	Left Turn Across Path	2010 01 22	3500	Snowy/lcy	753	Property Damage	Signal Light	West	Auto	30	M
76 Avenue	34 Street	2010	Followed Too Closely	2010 01 29	2000	Dry	820	Property Damage	Signal Light	South	Auto	27	F
76 Avenue	34 Street	2010	Followed Too Closely	2010 01 29	2000	Dry	820	Property Damage	Signal Light	South	Auto	50	M
76 Avenue	34 Street	2010	Followed Too Closely	2010 02 02	2000	Snowy/lcy	757	Injury	Signal Light	North	Auto	25	F
76 Avenue	34 Street	2010	Followed Too Closely	2010 02 02	2000	Snowy/lcy	757	Injury	Signal Light	North	Auto	20	F
76 Avenue	34 Street	2010	Backed Unsafely	2010 07 29	1000	Dry	1100	Property Damage	Signal Light	North	Truck	21	M
76 Avenue	34 Street	2010	Backed Unsafely	2010 07 29	1000	Dry	1100	Property Damage	Signal Light	South	Auto	31	M
76 Avenue	34 Street	2010	Backed Unsafely	2010 11 02	2000	Dry	1400	Property Damage	Signal Light	South	Auto	18	F
76 Avenue	34 Street	2010	Backed Unsafely	2010 11 02	2000	Dry	1400	Property Damage	Signal Light	North	Motorcycle	55	M
76 Avenue	34 Street	2010	Backed Unsafely	2010 11 02	3200	Dry	1145	Property Damage	Signal Light	North	Truck	41	M
76 Avenue	34 Street	2010	Backed Unsafely	2010 11 02	3200	Dry	1145	Property Damage	Signal Light	South	Auto	46	F
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 02 07	4500	Snowy/lcy	1200	Property Damage	Signal Light	North	Truck	UN	M
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 02 07	4500	Snowy/lcy	1200	Property Damage	Signal Light	West	Auto	18	M
76 Avenue	34 Street	2011	Left Turn Across Path	2011 02 28	2000	Snowy/lcy	635	Property Damage	Signal Light	South	Auto	26	M
76 Avenue	34 Street	2011	Left Turn Across Path	2011 02 28	2000	Snowy/lcy	635	Property Damage	Signal Light	North	Auto	48	F
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 03 04	13000	Unknown	1108	Injury	Signal Light	East	Auto	69	M
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 03 04	13000	Unknown	1108	Injury	Signal Light	South	Auto	47	F
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 03 04	13000	Unknown	1108	Injury	Signal Light	South	Auto	47	F
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 03 04	13000	Unknown	1108	Injury	Signal Light	West	Truck	52	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 03 09	4100	Snowy/lcy	1840	Property Damage	Signal Light	North	Truck	48	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 03 09	4100	Snowy/lcy	1840	Property Damage	Signal Light	North	Auto	19	M
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 04 25	18000	Dry	2100	Property Damage	Signal Light	North	Auto	76	M
76 Avenue	34 Street	2011	Failed to Observe Traffic Signal	2011 04 25	18000	Dry	2100	Property Damage	Signal Light	East	Auto	25	M
76 Avenue	34 Street	2011	Improper Passing	2011 05 16	2000	Dry	1145	Property Damage	Signal Light	South	Auto	32	M
76 Avenue	34 Street	2011	Improper Passing	2011 05 16	2000	Dry	1145	Property Damage	Signal Light	South	Auto	61	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 06 16	10100	Dry	1220	Property Damage	Signal Light	North	Auto	18	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 06 16	10100	Dry	1220	Property Damage	Signal Light	North	Auto	24	M

76 Avenue	34 Street	2011	Followed Too Closely	2011 09 22	6003	Dry	1750	Property Damage	Signal Light	North	Auto	65	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 09 22	6003	Dry	1750	Property Damage	Signal Light	North	Auto	21	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 09 22	6003	Dry	1750	Property Damage	Signal Light	North	Auto	52	M
76 Avenue	34 Street	2011	Left Turn Across Path	2011 11 15	7000	Sand/Dirt/C	745	Property Damage	Signal Light	East	Auto	40	F
76 Avenue	34 Street	2011	Left Turn Across Path	2011 11 15	7000	Sand/Dirt/C	745	Property Damage	Signal Light	West	Truck	51	M
76 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 03 08	4001	Snowy/Icy	1730	Property Damage	Signal Light	North	Auto	33	M
76 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 03 08	4001	Snowy/Icy	1730	Property Damage	Signal Light	East	Auto	48	M
76 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 03 08	4001	Snowy/Icy	1730	Property Damage	Signal Light	West	Truck	36	M
76 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 03 22	3300	Snowy/Icy	1815	Property Damage	Signal Light	West	Auto	34	M
76 Avenue	34 Street	2012	Failed to Observe Traffic Signal	2012 03 22	3300	Snowy/Icy	1815	Property Damage	Signal Light	South	Auto	37	F
76 Avenue	34 Street	2007	Changing Lanes Improperly	2007 12 03	1500	Unknown	620	Property Damage	No Control Present	Unknown	Auto	36	F
76 Avenue	34 Street	2007	Changing Lanes Improperly	2007 12 03	1500	Unknown	620	Property Damage	No Control Present	Unknown	Auto	29	M
76 Avenue	34 Street	2007	Struck Parked Vehicle	2007 12 09	2000	Unknown	555	Property Damage	No Control Present	Unknown	Auto	28	M
76 Avenue	34 Street	2007	Struck Parked Vehicle	2007 12 09	2000	Unknown	555	Property Damage	No Control Present	#N/A	Auto	0	0
76 Avenue	34 Street	2010	ailed to Yield ROW (no control preser	2010 04 05	2000	Dry	950	Property Damage	No Control Present	South	Auto	35	M
76 Avenue	34 Street	2010	ailed to Yield ROW (no control preser	2010 04 05	2000	Dry	950	Property Damage	No Control Present	West	Auto	18	M
76 Avenue	34 Street	2011	Backed Unsafely	2011 01 26	4300	Wet	1640	Property Damage	No Control Present	East	Auto	58	F
76 Avenue	34 Street	2011	Backed Unsafely	2011 01 26	4300	Wet	1640	Property Damage	No Control Present	West	Auto	63	F
76 Avenue	34 Street	2012	ailed to Yield ROW (no control preser	2012 06 08	6000	Dry	1640	Injury	No Control Present	North	Auto	28	M
76 Avenue	34 Street	2012	ailed to Yield ROW (no control preser	2012 06 08	6000	Dry	1640	Injury	No Control Present	East	Auto	61	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 10 15	5277	Unknown	1720	Injury	No Control Present	South	Auto	41	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 10 15	5277	Unknown	1720	Injury	No Control Present	South	Auto	44	F
76 Avenue	34 Street	2009	Followed Too Closely	2009 07 13	4500	Dry	910	Property Damage	No Control Present	North	Auto	29	M
76 Avenue	34 Street	2009	Followed Too Closely	2009 07 13	4500	Dry	910	Property Damage	No Control Present	North	Auto	30	M
76 Avenue	34 Street	2010	Backed Unsafely	2010 07 27	2000	Dry	915	Property Damage	No Control Present	North	Auto	52	M
76 Avenue	34 Street	2010	Backed Unsafely	2010 07 27	2000	Dry	915	Property Damage	No Control Present	South	Auto	52	F
76 Avenue	34 Street	2011	Followed Too Closely	2011 03 18	4002	Snowy/Icy	0	Property Damage	No Control Present	North	Auto	29	M
76 Avenue	34 Street	2011	Followed Too Closely	2011 03 18	4002	Snowy/Icy	0	Property Damage	No Control Present	North	Auto	26	F
76 Avenue	34 Street	2011	Followed Too Closely	2011 04 21	3000	Dry	1430	Property Damage	No Control Present	South	Auto	33	F
76 Avenue	34 Street	2011	Followed Too Closely	2011 04 21	3000	Dry	1430	Property Damage	No Control Present	South	Auto	66	M
76 Avenue	34 Street	2011	Ran Off Road	2011 12 18	10000	Dry	120	Property Damage	No Control Present	North	Auto	16	M
76 Avenue	34 Street	2011	Ran Off Road	2011 12 18	10000	Dry	120	Property Damage	No Control Present	#N/A	Pole	0	0
76 Avenue	34 Street	2012	Changing Lanes Improperly	2012 02 28	2001	Dry	655	Property Damage	No Control Present	South	Auto	UN	U
76 Avenue	34 Street	2012	Changing Lanes Improperly	2012 02 28	2001	Dry	655	Property Damage	No Control Present	South	Auto	43	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 09 18	0	Unknown	9999	Injury	No Control Present	Unknown	Auto	50	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 09 18	0	Unknown	9999	Injury	No Control Present	Unknown	Auto	44	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 11 01	2348	Unknown	800	Property Damage	No Control Present	Unknown	Auto	51	M
76 Avenue	34 Street	2007	Followed Too Closely	2007 11 01	2348	Unknown	800	Property Damage	No Control Present	Unknown	Auto	24	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 12 09	1000	Snowy/Icy	700	Property Damage	No Control Present	Unknown	Auto	35	M
76 Avenue	34 Street	2008	Followed Too Closely	2008 12 09	1000	Snowy/Icy	700	Property Damage	No Control Present	Unknown	Auto	34	M
78 Avenue	34 Street	2008	Left Turn Across Path	2008 11 25	2500	Dry	1720	Property Damage	Stop Sign	North	Auto	57	M
78 Avenue	34 Street	2008	Left Turn Across Path	2008 11 25	2500	Dry	1720	Property Damage	Stop Sign	South	Auto	54	M
78 Avenue	34 Street	2011	Followed Too Closely	2011 02 07	3474	Wet	1250	Property Damage	Stop Sign	East	Auto	37	M
78 Avenue	34 Street	2011	Followed Too Closely	2011 02 07	3474	Wet	1250	Property Damage	Stop Sign	East	Auto	60	M
78 Avenue	34 Street	2011	Left Turn Across Path	2011 07 19	3501	Dry	1520	Property Damage	Stop Sign	East	Auto	51	M
78 Avenue	34 Street	2011	Left Turn Across Path	2011 07 19	3501	Dry	1520	Property Damage	Stop Sign	West	Auto	66	M
78 Avenue	34 Street	2011	Left Turn Across Path	2011 10 11	4002	Dry	1330	Property Damage	No Control Present	North	Auto	63	M
78 Avenue	34 Street	2011	Left Turn Across Path	2011 10 11	4002	Dry	1330	Property Damage	No Control Present	South	Auto	22	M
78 Avenue	34 Street	2011	Followed Too Closely	2011 11 30	3100	Dry	1720	Property Damage	No Control Present	North	Auto	24	M
78 Avenue	34 Street	2011	Followed Too Closely	2011 11 30	3100	Dry	1720	Property Damage	No Control Present	North	Auto	60	M
78 Avenue	34 Street	2012	Followed Too Closely	2012 01 23	2001	Snowy/Icy	1445	Property Damage	No Control Present	North	Auto	43	M
78 Avenue	34 Street	2012	Followed Too Closely	2012 01 23	2001	Snowy/Icy	1445	Property Damage	No Control Present	North	Auto	53	M
78 Avenue	34 Street	2009	Improper Turn	2009 05 05	2000	Dry	1615	Property Damage	No Control Present	West	Auto	25	F
78 Avenue	34 Street	2009	Improper Turn	2009 05 05	2000	Dry	1615	Property Damage	No Control Present	West	Auto	47	M
78 Avenue	34 Street	2011	Left of Centre	2011 01 10	5000	Snowy/Icy	1608	Injury	No Control Present	East	Auto	30	M
78 Avenue	34 Street	2011	Left of Centre	2011 01 10	5000	Snowy/Icy	1608	Injury	No Control Present	West	Auto	17	M
78 Avenue	34 Street	2011	Struck Parked Vehicle	2011 02 16	2900	Snowy/Icy	800	Property Damage	No Control Present	North	Auto	25	M
78 Avenue	34 Street	2011	Struck Parked Vehicle	2011 02 16	2900	Snowy/Icy	800	Property Damage	No Control Present	#N/A	Auto	0	0
78 Avenue	34 Street	2007	Followed Too Closely	2007 10 15	1400	Unknown	1740	Property Damage	No Control Present	North	Auto	31	F
78 Avenue	34 Street	2007	Followed Too Closely	2007 10 15	1400	Unknown	1740	Property Damage	No Control Present	North	Auto	27	F
78 Avenue	34 Street	2007	Followed Too Closely	2007 11 22	3500	Dry	742	Property Damage	No Control Present	North	Auto	23	M
78 Avenue	34 Street	2007	Followed Too Closely	2007 11 22	3500	Dry	742	Property Damage	No Control Present	North	Auto	34	M

78 Avenue	34 Street	2008	Followed Too Closely	2008 01 21	2000	Unknown	1630	Property Damage	No Control Present	South	Auto	22	M
78 Avenue	34 Street	2008	Followed Too Closely	2008 01 21	2000	Unknown	1630	Property Damage	No Control Present	South	Auto	45	M
78 Avenue	34 Street	2010	Changing Lanes Improperly	2010 09 09	2000	Unknown	1625	Property Damage	No Control Present	North	Auto	24	M
78 Avenue	34 Street	2010	Changing Lanes Improperly	2010 09 09	2000	Unknown	1625	Property Damage	No Control Present	North	Auto	22	M
78 Avenue	34 Street	2010	Backed Unsafely	2010 10 05	1000	Dry	1650	Property Damage	No Control Present	South	Truck	58	F
78 Avenue	34 Street	2010	Backed Unsafely	2010 10 05	1000	Dry	1650	Property Damage	No Control Present	North	Auto	27	F
78 Avenue	34 Street	2008	Ran Off Road	2008 12 02	1500	Snowy/Icy	1730	Property Damage	No Control Present	Unknown	Auto	26	M
78 Avenue	34 Street	2008	Ran Off Road	2008 12 02	1500	Snowy/Icy	1730	Property Damage	No Control Present	#N/A	Fire Hydrant	0	0
78 Avenue	34 Street	2009	Followed Too Closely	2009 08 18	4000	Unknown	1635	Property Damage	No Control Present	Unknown	Auto	27	M
78 Avenue	34 Street	2009	Followed Too Closely	2009 08 18	4000	Unknown	1635	Property Damage	No Control Present	Unknown	Auto	33	M
78 Avenue	34 Street	2009	Followed Too Closely	2009 10 28	2000	Wet	1714	Property Damage	No Control Present	Unknown	Auto	50	M
78 Avenue	34 Street	2009	Followed Too Closely	2009 10 28	2000	Wet	1714	Property Damage	No Control Present	Unknown	Auto	26	M
82 Avenue	34 Street	2008	Followed Too Closely	2008 02 01	1088	Unknown	1700	Property Damage	No Control Present	Unknown	Auto	34	M
82 Avenue	34 Street	2008	Followed Too Closely	2008 02 01	1088	Unknown	1700	Property Damage	No Control Present	Unknown	Auto	54	F
84 Avenue	34 Street	2007	Followed Too Closely	2007 11 21	2000	Dry	645	Injury	Stop Sign	Unknown	Auto	21	M
84 Avenue	34 Street	2007	Followed Too Closely	2007 11 21	2000	Dry	645	Injury	Stop Sign	Unknown	Auto	55	M
84 Avenue	34 Street	2007	Followed Too Closely	2007 12 04	2000	Snowy/Icy	1030	Property Damage	Stop Sign	North	Auto	22	M
84 Avenue	34 Street	2007	Followed Too Closely	2007 12 04	2000	Snowy/Icy	1030	Property Damage	Stop Sign	North	Truck	45	M
84 Avenue	34 Street	2008	Followed Too Closely	2008 02 27	1000	Unknown	1100	Property Damage	Signal Light	North	Auto	31	M
84 Avenue	34 Street	2008	Followed Too Closely	2008 02 27	1000	Unknown	1100	Property Damage	Signal Light	North	Auto	43	M
84 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 03 19	5000	Dry	640	Injury	Signal Light	North	Auto	57	M
84 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 03 19	5000	Dry	640	Injury	Signal Light	West	Auto	27	F
84 Avenue	34 Street	2008	Failed to Observe Traffic Signal	2008 03 19	5000	Dry	640	Injury	Signal Light	South	Auto	24	M
84 Avenue	34 Street	2008	Followed Too Closely	2008 05 12	200	Unknown	1720	Injury	Stop Sign	Unknown	Auto	22	M
84 Avenue	34 Street	2008	Followed Too Closely	2008 05 12	200	Unknown	1720	Injury	Stop Sign	Unknown	Auto	39	F
84 Avenue	34 Street	2008	Changing Lanes Improperly	2008 05 23	2000	Dry	710	Property Damage	Stop Sign	Unknown	Auto	38	M
84 Avenue	34 Street	2008	Changing Lanes Improperly	2008 05 23	2000	Dry	710	Property Damage	Stop Sign	Unknown	Auto	51	F
84 Avenue	34 Street	2009	Backed Unsafely	2009 01 20	1000	Unknown	1315	Property Damage	Stop Sign	North	Auto	47	M
84 Avenue	34 Street	2009	Backed Unsafely	2009 01 20	1000	Unknown	1315	Property Damage	Stop Sign	South	Auto	61	M
84 Avenue	34 Street	2009	Changing Lanes Improperly	2009 03 24	1000	Unknown	715	Property Damage	Stop Sign	Unknown	Truck	27	M
84 Avenue	34 Street	2009	Changing Lanes Improperly	2009 03 24	1000	Unknown	715	Property Damage	Stop Sign	Unknown	Auto	52	M
84 Avenue	34 Street	2009	Followed Too Closely	2009 07 20	2300	Unknown	1615	Property Damage	Stop Sign	South	Auto	21	M
84 Avenue	34 Street	2009	Followed Too Closely	2009 07 20	2300	Unknown	1615	Property Damage	Stop Sign	South	Auto	58	M
84 Avenue	34 Street	2009	Followed Too Closely	2009 07 20	2300	Unknown	1615	Property Damage	Stop Sign	South	Auto	21	M
84 Avenue	34 Street	2009	Followed Too Closely	2009 07 20	2300	Unknown	1615	Property Damage	Stop Sign	South	Auto	58	M
84 Avenue	34 Street	2010	Ran Off Road	2010 03 13	10100	Dry	1820	Property Damage	No Control Present	North	Auto	19	M
84 Avenue	34 Street	2010	Ran Off Road	2010 03 13	10100	Dry	1820	Property Damage	No Control Present	#N/A	Pole	0	0
84 Avenue	34 Street	2010	Ran Off Road	2010 03 13	10100	Dry	1820	Property Damage	No Control Present	#N/A	Post, Sign, Parking Meter	0	0
84 Avenue	34 Street	2010	Failed to Observe Traffic Signal	2010 10 27	1000	Dry	1855	Property Damage	Signal Light	South	Auto	UN	U
84 Avenue	34 Street	2010	Failed to Observe Traffic Signal	2010 10 27	1000	Dry	1855	Property Damage	Signal Light	West	Auto	44	M
84 Avenue	34 Street	2012	Followed Too Closely	2012 04 05	2201	Snowy/Icy	620	Property Damage	Signal Light	South	Auto	41	M
84 Avenue	34 Street	2012	Followed Too Closely	2012 04 05	2201	Snowy/Icy	620	Property Damage	Signal Light	South	Auto	47	M
84 Avenue	34 Street	2012	Changing Lanes Improperly	2012 06 12	2001	Dry	830	Property Damage	Signal Light	East	Auto	UN	U
84 Avenue	34 Street	2012	Changing Lanes Improperly	2012 06 12	2001	Dry	830	Property Damage	Signal Light	East	Auto	28	M
84 Avenue	34 Street	2008	Left Turn Across Path	2008 07 30	9000	Dry	1130	Injury	No Control Present	West	Auto	33	M
84 Avenue	34 Street	2008	Left Turn Across Path	2008 07 30	9000	Dry	1130	Injury	No Control Present	East	Auto	24	M
84 Avenue	34 Street	2008	Ran Off Road	2008 12 01	5000	Sand/Dirt/C	2130	Property Damage	No Control Present	North	Auto	19	M
84 Avenue	34 Street	2008	Ran Off Road	2008 12 01	5000	Sand/Dirt/C	2130	Property Damage	No Control Present	#N/A	Ditch	0	0
84 Avenue	34 Street	2010	Followed Too Closely	2010 04 09	2000	Unknown	620	Property Damage	No Control Present	Unknown	Auto	50	F
84 Avenue	34 Street	2010	Followed Too Closely	2010 04 09	2000	Unknown	620	Property Damage	No Control Present	Unknown	Auto	31	M
84 Avenue	34 Street	2010	Improper Passing	2010 11 03	6000	Dry	930	Property Damage	No Control Present	East	Auto	49	F
84 Avenue	34 Street	2010	Improper Passing	2010 11 03	6000	Dry	930	Property Damage	No Control Present	East	Auto	37	M
84 Avenue	34 Street	2007	Followed Too Closely	2007 12 03	5000	Snowy/Icy	1130	Property Damage	No Control Present	North	Truck	38	M
84 Avenue	34 Street	2007	Followed Too Closely	2007 12 03	5000	Snowy/Icy	1130	Property Damage	No Control Present	North	Auto	26	M
84 Avenue	34 Street	2007	Followed Too Closely	2007 12 03	5000	Snowy/Icy	1130	Property Damage	No Control Present	West	Auto	58	M
84 Avenue	34 Street	2010	Backed Unsafely	2010 03 18	1000	Unknown	1540	Property Damage	No Control Present	North	Auto	53	M
84 Avenue	34 Street	2010	Backed Unsafely	2010 03 18	1000	Unknown	1540	Property Damage	No Control Present	South	Auto	57	M
92 Avenue	34 Street	2007	Stop Sign Violation	2007 12 04	3000	Snowy/Icy	1300	Property Damage	Stop Sign	South	Auto	24	M
92 Avenue	34 Street	2007	Stop Sign Violation	2007 12 04	3000	Snowy/Icy	1300	Property Damage	Stop Sign	East	Auto	24	M
92 Avenue	34 Street	2008	Followed Too Closely	2008 06 06	2000	Dry	1619	Injury	Stop Sign	North	Auto	38	F
92 Avenue	34 Street	2008	Followed Too Closely	2008 06 06	2000	Dry	1619	Injury	Stop Sign	North	Auto	59	M
92 Avenue	34 Street	2008	Followed Too Closely	2008 06 12	4000	Dry	1630	Property Damage	Stop Sign	North	Auto	21	F

92 Avenue	34 Street	2008	Followed Too Closely	2008 06 12	4000	Dry	1630	Property Damage	Stop Sign	North	Auto	30	M
92 Avenue	34 Street	2008	Followed Too Closely	2008 06 12	4000	Dry	1630	Property Damage	Stop Sign	North	Auto	29	F
92 Avenue	34 Street	2009	Backed Unsafely	2009 10 16	1000	Unknown	1030	Property Damage	Stop Sign	West	Truck	63	M
92 Avenue	34 Street	2009	Backed Unsafely	2009 10 16	1000	Unknown	1030	Property Damage	Stop Sign	East	Auto	49	M
92 Avenue	34 Street	2011	Followed Too Closely	2011 04 14	4002	Snowy/Icy	840	Property Damage	No Control Present	North	Auto	17	F
92 Avenue	34 Street	2011	Followed Too Closely	2011 04 14	4002	Snowy/Icy	840	Property Damage	No Control Present	North	Auto	56	F
92 Avenue	34 Street	2007	Ran Off Road	2007 10 24	2000	Dry	1030	Property Damage	No Control Present	Unknown	Auto	81	M
92 Avenue	34 Street	2007	Ran Off Road	2007 10 24	2000	Dry	1030	Property Damage	No Control Present	#N/A	Curb	0	0
92 Avenue	34 Street	2007	ailed to Yield ROW (no control preser	2007 11 26	1600	Snowy/Icy	1230	Property Damage	No Control Present	South	Auto	54	M
92 Avenue	34 Street	2007	ailed to Yield ROW (no control preser	2007 11 26	1600	Snowy/Icy	1230	Property Damage	No Control Present	West	Auto	18	F
92 Avenue	34 Street	2009	Backed Unsafely	2009 12 08	1000	Snowy/Icy	1650	Property Damage	No Control Present	East	Truck	50	M
92 Avenue	34 Street	2009	Backed Unsafely	2009 12 08	1000	Snowy/Icy	1650	Property Damage	No Control Present	West	Auto	41	F
92 Avenue	34 Street	2010	Backed Unsafely	2010 02 16	1000	Snowy/Icy	1215	Property Damage	R.R. Xing Signs/Contr	East	Truck	39	M
92 Avenue	34 Street	2010	Backed Unsafely	2010 02 16	1000	Snowy/Icy	1215	Property Damage	R.R. Xing Signs/Contr	West	Auto	42	M
92 Avenue	34 Street	2010	Followed Too Closely	2010 07 28	8000	Dry	2045	Property Damage	No Control Present	West	Auto	24	F
92 Avenue	34 Street	2010	Followed Too Closely	2010 07 28	8000	Dry	2045	Property Damage	No Control Present	West	Auto	25	M
92 Avenue	34 Street	2008	Ran Off Road	2008 12 05	1500	Snowy/Icy	630	Property Damage	No Control Present	North	Auto	47	M
92 Avenue	34 Street	2008	Ran Off Road	2008 12 05	1500	Snowy/Icy	630	Property Damage	No Control Present	#N/A	Pole	0	0
92 Avenue	34 Street	2009	Followed Too Closely	2009 03 13	1000	Wet	100	Property Damage	No Control Present	South	Auto	57	M
92 Avenue	34 Street	2009	Followed Too Closely	2009 03 13	1000	Wet	100	Property Damage	No Control Present	South	Auto	16	M
92 Avenue	34 Street	2010	Changing Lanes Improperly	2010 07 26	1000	Unknown	1135	Property Damage	No Control Present	South	Truck	38	M
92 Avenue	34 Street	2010	Changing Lanes Improperly	2010 07 26	1000	Unknown	1135	Property Damage	No Control Present	South	Auto	62	F
92 Avenue	34 Street	2011	Ran Off Road	2011 01 22	4001	Snowy/Icy	1015	Property Damage	No Control Present	Unknown	Auto	54	M
92 Avenue	34 Street	2011	Ran Off Road	2011 01 22	4001	Snowy/Icy	1015	Property Damage	No Control Present	#N/A	Other Fixed Object	0	0
92 Avenue	34 Street	2012	Followed Too Closely	2012 03 22	2500	Snowy/Icy	1600	Property Damage	No Control Present	North	Auto	UN	U
92 Avenue	34 Street	2012	Followed Too Closely	2012 03 22	2500	Snowy/Icy	1600	Property Damage	No Control Present	North	Auto	44	M
92 Avenue	34 Street	2007	Ran Off Road	2007 10 17	2000	Unknown	1030	Property Damage	No Control Present	Unknown	Auto	51	M
92 Avenue	34 Street	2007	Ran Off Road	2007 10 17	2000	Unknown	1030	Property Damage	No Control Present	#N/A	Post, Sign, Parking Meter	0	0
92 Avenue	34 Street	2008	Followed Too Closely	2008 02 20	4487	Dry	1640	Property Damage	Stop Sign	Unknown	Auto	24	M
92 Avenue	34 Street	2008	Followed Too Closely	2008 02 20	4487	Dry	1640	Property Damage	Stop Sign	Unknown	Auto	55	F
92 Avenue	34 Street	2009	Followed Too Closely	2009 11 06	2000	Unknown	1710	Property Damage	No Control Present	Unknown	Auto	34	F
92 Avenue	34 Street	2009	Followed Too Closely	2009 11 06	2000	Unknown	1710	Property Damage	No Control Present	Unknown	Auto	64	M
92 Avenue	34 Street	2012	Improper Passing	2012 02 10	10500	Dry	753	Property Damage	No Control Present	North	Auto	26	F
92 Avenue	34 Street	2012	Improper Passing	2012 02 10	10500	Dry	753	Property Damage	No Control Present	North	Truck	53	M
98 Avenue	34 Street	2007	Stop Sign Violation	2007 12 04	2000	Unknown	1230	Property Damage	Stop Sign	North	Auto	48	M
98 Avenue	34 Street	2007	Stop Sign Violation	2007 12 04	2000	Unknown	1230	Property Damage	Stop Sign	East	Auto	61	F
101 Avenue	34 Street	2008	Ran Off Road	2008 04 22	1000	Snowy/Icy	543	Property Damage	Signal Light	East	Auto	41	M
101 Avenue	34 Street	2008	Ran Off Road	2008 04 22	1000	Snowy/Icy	543	Property Damage	Signal Light	#N/A	Pole	0	0
101 Avenue	34 Street	2008	Followed Too Closely	2008 07 02	5000	Dry	1620	Property Damage	Signal Light	Unknown	Auto	26	F
101 Avenue	34 Street	2008	Followed Too Closely	2008 07 02	5000	Dry	1620	Property Damage	Signal Light	Unknown	Auto	44	F
101 Avenue	34 Street	2008	Ran Off Road	2008 07 11	4000	Wet	2320	Property Damage	Signal Light	East	Auto	41	M
101 Avenue	34 Street	2008	Ran Off Road	2008 07 11	4000	Wet	2320	Property Damage	Signal Light	#N/A	Curb	0	0
101 Avenue	34 Street	2008	Backed Unsafely	2008 12 21	3500	Snowy/Icy	1930	Property Damage	Signal Light	North	Auto	26	F
101 Avenue	34 Street	2008	Backed Unsafely	2008 12 21	3500	Snowy/Icy	1930	Property Damage	Signal Light	South	Auto	19	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	7000	Snowy/Icy	1705	Property Damage	Signal Light	East	Auto	UN	U
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	7000	Snowy/Icy	1705	Property Damage	Signal Light	East	Auto	27	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	7000	Snowy/Icy	1705	Property Damage	Signal Light	East	Auto	49	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	2000	Unknown	1900	Property Damage	Signal Light	Unknown	Auto	21	M
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 06	2000	Unknown	1900	Property Damage	Signal Light	Unknown	Auto	19	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 03 25	4500	Unknown	755	Property Damage	Signal Light	East	Auto	20	M
101 Avenue	34 Street	2009	Followed Too Closely	2009 03 25	4500	Unknown	755	Property Damage	Signal Light	East	Auto	48	M
101 Avenue	34 Street	2009	Followed Too Closely	2009 09 19	2000	Dry	1300	Property Damage	Signal Light	Unknown	Auto	25	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 09 19	2000	Dry	1300	Property Damage	Signal Light	Unknown	Auto	50	M
101 Avenue	34 Street	2010	Left Turn Across Path	2010 01 05	2000	Snowy/Icy	700	Property Damage	Signal Light	West	Auto	50	M
101 Avenue	34 Street	2010	Left Turn Across Path	2010 01 05	2000	Snowy/Icy	700	Property Damage	Signal Light	East	Auto	40	F
101 Avenue	34 Street	2010	Changing Lanes Improperly	2010 03 15	9500	Dry	639	Property Damage	Signal Light	West	Truck	43	M
101 Avenue	34 Street	2010	Changing Lanes Improperly	2010 03 15	9500	Dry	639	Property Damage	Signal Light	West	Truck	54	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 05 01	10000	Dry	605	Property Damage	Signal Light	North	Auto	20	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 05 01	10000	Dry	605	Property Damage	Signal Light	North	Auto	34	F
101 Avenue	34 Street	2010	Followed Too Closely	2010 05 11	2000	Unknown	1230	Property Damage	Signal Light	West	Auto	25	F
101 Avenue	34 Street	2010	Followed Too Closely	2010 05 11	2000	Unknown	1230	Property Damage	Signal Light	West	Auto	38	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 06 07	8500	Wet	1715	Property Damage	Signal Light	West	Auto	17	M

101 Avenue	34 Street	2010	Followed Too Closely	2010 06 07	8500	Wet	1715	Property Damage	Signal Light	West	Auto	50	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 07 20	2000	Dry	2030	Property Damage	Signal Light	Unknown	Auto	53	F
101 Avenue	34 Street	2010	Followed Too Closely	2010 07 20	2000	Dry	2030	Property Damage	Signal Light	Unknown	Auto	49	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 07 28	1500	Dry	740	Property Damage	Yield Sign	East	Auto	66	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 07 28	1500	Dry	740	Property Damage	Yield Sign	East	Auto	30	F
101 Avenue	34 Street	2010	Followed Too Closely	2010 11 23	7000	Unknown	615	Property Damage	Signal Light	East	Auto	36	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 11 23	7000	Unknown	615	Property Damage	Signal Light	East	Auto	49	M
101 Avenue	34 Street	2011	Left Turn Across Path	2011 02 18	4000	Snowy/Icy	620	Property Damage	No Control Present	West	Auto	48	M
101 Avenue	34 Street	2011	Left Turn Across Path	2011 02 18	4000	Snowy/Icy	620	Property Damage	No Control Present	East	Auto	33	M
101 Avenue	34 Street	2012	Left Turn Across Path	2012 04 16	8001	Dry	1510	Property Damage	Signal Light	West	Auto	75	M
101 Avenue	34 Street	2012	Left Turn Across Path	2012 04 16	8001	Dry	1510	Property Damage	Signal Light	East	Auto	27	F
101 Avenue	34 Street	2008	Followed Too Closely	2008 01 28	0	Snowy/Icy	840	Injury	No Control Present	East	Auto	36	M
101 Avenue	34 Street	2008	Followed Too Closely	2008 01 28	0	Snowy/Icy	840	Injury	No Control Present	East	Auto	39	F
101 Avenue	34 Street	2008	Ran Off Road	2008 12 05	1000	Snowy/Icy	500	Property Damage	No Control Present	South	Auto	47	F
101 Avenue	34 Street	2008	Ran Off Road	2008 12 05	1000	Snowy/Icy	500	Property Damage	No Control Present	#N/A	Curb	0	0
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 25	3316	Unknown	1258	Property Damage	No Control Present	Unknown	Auto	51	M
101 Avenue	34 Street	2009	Followed Too Closely	2009 02 25	3316	Unknown	1258	Property Damage	No Control Present	Unknown	Auto	63	M
101 Avenue	34 Street	2009	Backed Unsafely	2009 03 12	2500	Unknown	1012	Property Damage	No Control Present	East	Truck	49	M
101 Avenue	34 Street	2009	Backed Unsafely	2009 03 12	2500	Unknown	1012	Property Damage	No Control Present	West	Auto	25	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 07 27	1500	Dry	1305	Property Damage	Signal Light	West	Auto	68	F
101 Avenue	34 Street	2009	Followed Too Closely	2009 07 27	1500	Dry	1305	Property Damage	Signal Light	West	Auto	59	M
101 Avenue	34 Street	2009	Ran Off Road	2009 11 22	3000	Snowy/Icy	720	Injury	No Control Present	East	Auto	40	F
101 Avenue	34 Street	2009	Ran Off Road	2009 11 22	3000	Snowy/Icy	720	Injury	No Control Present	#N/A	Pole	0	0
101 Avenue	34 Street	2010	Failed to Observe Traffic Signal	2010 11 02	6000	Wet	712	Property Damage	Signal Light	West	Auto	25	M
101 Avenue	34 Street	2010	Failed to Observe Traffic Signal	2010 11 02	6000	Wet	712	Property Damage	Signal Light	East	Auto	53	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 12 22	3000	Snowy/Icy	1630	Property Damage	No Control Present	Unknown	Auto	81	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 12 22	3000	Snowy/Icy	1630	Property Damage	No Control Present	Unknown	Auto	36	M
101 Avenue	34 Street	2011	Improper Turn	2011 01 31	4000	Dry	1200	Property Damage	Signal Light	South	Auto	32	M
101 Avenue	34 Street	2011	Improper Turn	2011 01 31	4000	Dry	1200	Property Damage	Signal Light	West	Truck	68	M
101 Avenue	34 Street	2011	Followed Too Closely	2011 07 12	3000	Dry	1149	Injury	Signal Light	East	Auto	33	M
101 Avenue	34 Street	2011	Followed Too Closely	2011 07 12	3000	Dry	1149	Injury	Signal Light	East	Auto	16	F
101 Avenue	34 Street	2010	Followed Too Closely	2010 05 18	1100	Unknown	1730	Property Damage	No Control Present	North	Auto	36	M
101 Avenue	34 Street	2010	Followed Too Closely	2010 05 18	1100	Unknown	1730	Property Damage	No Control Present	North	Auto	19	M
101 Avenue	34 Street	2008	Ran Off Road	2008 01 28	3000	Snowy/Icy	620	Property Damage	No Control Present	Unknown	Auto	26	M
101 Avenue	34 Street	2008	Ran Off Road	2008 01 28	3000	Snowy/Icy	620	Property Damage	No Control Present	#N/A	Pole	0	0
101 Avenue	34 Street	2008	Ran Off Road	2008 02 02	3000	Snowy/Icy	1715	Property Damage	No Control Present	East	Auto	34	M
101 Avenue	34 Street	2008	Ran Off Road	2008 02 02	3000	Snowy/Icy	1715	Property Damage	No Control Present	#N/A	Post, Sign, Parking Meter	0	0
101 Avenue	34 Street	2012	Ran Off Road	2012 03 23	2001	Wet	100	Property Damage	No Control Present	West	Auto	36	M
101 Avenue	34 Street	2012	Ran Off Road	2012 03 23	2001	Wet	100	Property Damage	No Control Present	#N/A	Restraining Barrier	0	0



Site Generated Traffic Volumes AM(PM)



Legend

- 171 (432) - AM (PM)
- Additional access assumed in traffic assignment between intersections shown on Exhibit

Exhibit 4-1

December 2009

City of Edmonton Long Term Regional Travel Model



Queues
2: 34 Street & 56 Avenue

Long term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	WBL	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	50	33	85	133	2756	145	817	200
v/c Ratio	0.19	0.07	0.44	0.27	0.89	0.66	0.26	0.20
Control Delay	38.6	0.3	53.0	7.2	27.4	43.9	12.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	0.3	53.0	7.2	27.4	43.9	12.0	4.1
Queue Length 50th (m)	9.8	0.0	20.3	10.0	~269.4	26.0	32.8	0.2
Queue Length 95th (m)	20.0	0.0	30.2	18.5	#311.8	m53.2	54.9	m20.0
Internal Link Dist (m)		176.0			265.2		144.5	
Turn Bay Length (m)	50.0		75.0	50.0		50.0		80.0
Base Capacity (vph)	284	485	210	513	3098	245	3190	1019
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.40	0.26	0.89	0.59	0.26	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
2: 34 Street & 56 Avenue

Long term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗		↘	↑↑↑	↗	↘	↑↑↑	↗
Volume (vph)	50	0	33	85	0	0	133	2756	0	145	817	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0			4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00			1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.85		1.00			1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95			0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641			1641	4940		1641	4940	1468
Flt Permitted	0.57	1.00		1.00			0.33	1.00		0.06	1.00	1.00
Satd. Flow (perm)	987	1468		1727			563	4940		95	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	0	33	85	0	0	133	2756	0	145	817	200
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	0	79
Lane Group Flow (vph)	50	3	0	85	0	0	133	2756	0	145	817	121
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	pm+pt	NA		pm+pt			pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	23.1	9.8		12.3			79.7	70.5		84.1	72.7	72.7
Effective Green, g (s)	23.1	9.8		12.3			79.7	70.5		84.1	72.7	72.7
Actuated g/C Ratio	0.19	0.08		0.10			0.66	0.59		0.70	0.61	0.61
Clearance Time (s)	4.0	5.0		4.0			4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0			4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	278	120		170			457	2902		213	2993	889
v/s Ratio Prot	c0.02	0.00		c0.04			0.02	c0.56		c0.06	0.17	
v/s Ratio Perm	0.01			c0.01			0.17			0.41		0.08
v/c Ratio	0.18	0.02		0.50			0.29	0.95		0.68	0.27	0.14
Uniform Delay, d1	40.4	50.7		51.0			7.4	23.1		33.7	11.2	10.2
Progression Factor	1.00	1.00		1.00			1.00	1.00		1.25	1.04	1.86
Incremental Delay, d2	0.4	0.1		3.1			0.5	8.5		8.7	0.2	0.3
Delay (s)	40.8	50.8		54.1			7.9	31.6		50.8	11.8	19.2
Level of Service	D	D		D			A	C		D	B	B
Approach Delay (s)		44.8			54.1			30.5			18.0	
Approach LOS		D			D			C			B	

Intersection Summary

HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: 34 Street & 56 Avenue

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	WBL	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	200	133	275	33	1211	65	2807	50
v/c Ratio	0.45	0.51	0.88	0.21	0.44	0.25	1.00	0.06
Control Delay	39.0	13.4	74.0	11.1	17.0	4.8	19.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	13.4	74.0	11.1	17.0	4.8	19.7	1.3
Queue Length 50th (m)	40.0	0.0	~69.5	2.8	65.3	2.7	~274.6	0.3
Queue Length 95th (m)	62.9	15.5	86.1	6.6	77.3	m2.7	m#273.9	m0.2
Internal Link Dist (m)		176.0			265.2		144.5	
Turn Bay Length (m)	50.0		75.0	50.0		50.0		80.0
Base Capacity (vph)	442	261	317	158	2726	260	2816	851
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.51	0.87	0.21	0.44	0.25	1.00	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

HCM Signalized Intersection Capacity Analysis

2: 34 Street & 56 Avenue

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑	↗	↖	↑↑↑	↗
Volume (vph)	200	0	133	275	0	0	33	1211	0	65	2807	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0			4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00			1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.85		1.00			1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95			0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641			1641	4940		1641	4940	1468
Flt Permitted	0.57	1.00		1.00			0.07	1.00		0.17	1.00	1.00
Satd. Flow (perm)	987	1468		1727			113	4940		292	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	0	133	275	0	0	33	1211	0	65	2807	50
RTOR Reduction (vph)	0	117	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	200	16	0	275	0	0	33	1211	0	65	2807	34
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	pm+pt	NA		pm+pt			pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.0	14.2		22.8			65.6	61.4		68.4	62.8	62.8
Effective Green, g (s)	38.0	14.2		22.8			65.6	61.4		68.4	62.8	62.8
Actuated g/C Ratio	0.32	0.12		0.19			0.55	0.51		0.57	0.52	0.52
Clearance Time (s)	4.0	5.0		4.0			4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0			4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	482	174		314			115	2528		229	2585	768
v/s Ratio Prot	c0.11	0.01		c0.14			0.01	0.25		c0.01	c0.57	
v/s Ratio Perm	0.02			c0.02			0.15			0.15		0.02
v/c Ratio	0.41	0.09		0.88			0.29	0.48		0.28	1.09	0.04
Uniform Delay, d1	31.9	47.1		47.3			26.6	19.0		12.6	28.6	14.0
Progression Factor	1.00	1.00		1.00			1.00	1.00		0.50	0.29	0.19
Incremental Delay, d2	0.8	0.3		23.3			1.9	0.7		0.3	41.2	0.0
Delay (s)	32.7	47.5		70.6			28.5	19.6		6.6	49.6	2.7
Level of Service	C	D		E			C	B		A	D	A
Approach Delay (s)		38.6			70.6			19.8			47.8	
Approach LOS		D			E			B			D	

Intersection Summary

HCM Average Control Delay	41.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues
3: 34 Street & Roper Road

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	147	297	99	168	154	70	212	2226	368	118	895	271
v/c Ratio	0.44	0.62	0.33	0.70	0.32	0.25	0.52	0.88	0.40	0.60	0.37	0.32
Control Delay	37.3	53.4	11.2	70.5	46.6	11.9	10.3	11.5	1.4	34.0	20.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	53.4	11.2	70.5	46.6	11.9	10.3	11.5	1.4	34.0	20.6	3.6
Queue Length 50th (m)	28.7	37.0	0.0	21.3	18.3	0.0	1.0	3.8	0.0	12.1	48.7	0.0
Queue Length 95th (m)	43.4	48.8	14.9	#36.5	27.1	12.7	m2.5	#236.6	m2.6	35.3	70.5	16.5
Internal Link Dist (m)		226.0			226.0			98.0			249.0	
Turn Bay Length (m)	105.0		75.0	105.0		75.0	105.0		100.0	105.0		75.0
Base Capacity (vph)	334	656	373	239	656	350	444	2529	913	214	2419	857
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.45	0.27	0.70	0.23	0.20	0.48	0.88	0.40	0.55	0.37	0.32

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis

3: 34 Street & Roper Road

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑	↗	↘	↑↑↑	↗	↘	↑↑↑	↗
Volume (vph)	147	297	99	168	154	70	212	2226	368	118	895	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	3282	1468	3183	3282	1468	1641	4940	1468	1641	4940	1468
Flt Permitted	0.65	1.00	1.00	0.95	1.00	1.00	0.25	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1130	3282	1468	3183	3282	1468	440	4940	1468	118	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	297	99	168	154	70	212	2226	368	118	895	271
RTOR Reduction (vph)	0	0	85	0	0	60	0	0	162	0	0	138
Lane Group Flow (vph)	147	297	14	168	154	10	212	2226	206	118	895	133
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	28.3	17.5	17.5	9.0	17.7	17.7	74.2	61.5	61.5	68.8	58.8	58.8
Effective Green, g (s)	28.3	17.5	17.5	9.0	17.7	17.7	74.2	61.5	61.5	68.8	58.8	58.8
Actuated g/C Ratio	0.24	0.15	0.15	0.08	0.15	0.15	0.62	0.51	0.51	0.57	0.49	0.49
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	312	479	214	239	484	217	399	2532	752	195	2421	719
v/s Ratio Prot	0.04	c0.09		c0.05	0.05		c0.06	c0.45		0.05	0.18	
v/s Ratio Perm	0.07		0.01			0.01	0.27		0.14	0.30		0.09
v/c Ratio	0.47	0.62	0.07	0.70	0.32	0.05	0.53	0.88	0.27	0.61	0.37	0.18
Uniform Delay, d1	38.5	48.1	44.2	54.2	45.8	43.9	10.8	26.0	16.6	21.6	19.1	17.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.29	0.25	1.00	1.00	1.00
Incremental Delay, d2	1.5	2.8	0.2	9.6	0.5	0.1	0.8	2.3	0.4	6.0	0.4	0.6
Delay (s)	40.0	51.0	44.4	63.8	46.3	44.0	10.0	9.8	4.5	27.7	19.5	17.7
Level of Service	D	D	D	E	D	D	B	A	A	C	B	B
Approach Delay (s)		46.8			53.4			9.1			19.9	
Approach LOS		D			D			A			B	

Intersection Summary

HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
3: 34 Street & Roper Road

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	281	279	217	318	342	97	99	1068	244	75	2387	141
v/c Ratio	0.83	0.61	0.73	0.74	0.66	0.31	0.59	0.43	0.29	0.26	1.01	0.19
Control Delay	54.0	54.5	38.9	61.1	53.9	10.9	49.4	14.9	1.3	13.6	53.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	54.5	38.9	61.1	53.9	10.9	49.4	14.9	1.3	13.6	53.9	7.9
Queue Length 50th (m)	54.8	34.8	25.8	39.2	42.3	0.0	16.9	39.7	0.6	7.6	~237.1	6.5
Queue Length 95th (m)	#91.0	48.6	53.6	55.4	57.2	15.0	#35.4	43.9	3.6	15.4	#266.7	18.7
Internal Link Dist (m)		226.0			226.0			101.2			245.8	
Turn Bay Length (m)	105.0		75.0	105.0		75.0	105.0		100.0	105.0		75.0
Base Capacity (vph)	338	520	324	451	602	348	168	2463	854	286	2354	748
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.54	0.67	0.71	0.57	0.28	0.59	0.43	0.29	0.26	1.01	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis

3: 34 Street & Roper Road

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	281	279	217	318	342	97	99	1068	244	75	2387	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	3282	1468	3183	3282	1468	1641	4940	1468	1641	4940	1468
Flt Permitted	0.44	1.00	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	766	3282	1468	3183	3282	1468	117	4940	1468	372	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	281	279	217	318	342	97	99	1068	244	75	2387	141
RTOR Reduction (vph)	0	0	94	0	0	82	0	0	124	0	0	49
Lane Group Flow (vph)	281	279	123	318	342	15	99	1068	120	75	2387	92
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	32.7	16.7	16.7	16.1	18.8	18.8	67.1	59.1	59.1	63.3	57.2	57.2
Effective Green, g (s)	32.7	16.7	16.7	16.1	18.8	18.8	67.1	59.1	59.1	63.3	57.2	57.2
Actuated g/C Ratio	0.27	0.14	0.14	0.13	0.16	0.16	0.56	0.49	0.49	0.53	0.48	0.48
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	325	457	204	427	514	230	167	2433	723	261	2355	700
v/s Ratio Prot	c0.12	0.09		0.10	0.10		c0.04	0.22		0.01	c0.48	
v/s Ratio Perm	c0.12		0.08			0.01	0.29		0.08	0.14		0.06
v/c Ratio	0.86	0.61	0.60	0.74	0.67	0.07	0.59	0.44	0.17	0.29	1.01	0.13
Uniform Delay, d1	38.8	48.6	48.5	50.0	47.6	43.1	25.8	19.7	16.8	14.4	31.4	17.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	2.02	0.71	0.21	1.00	1.00	1.00
Incremental Delay, d2	21.1	2.8	5.7	7.4	3.6	0.2	5.9	0.5	0.5	0.8	22.0	0.4
Delay (s)	60.0	51.3	54.3	57.3	51.2	43.3	58.1	14.5	3.9	15.3	53.4	17.9
Level of Service	E	D	D	E	D	D	E	B	A	B	D	B
Approach Delay (s)		55.3			52.8			15.7			50.4	
Approach LOS		E			D			B			D	

Intersection Summary

HCM Average Control Delay	42.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues
4: 34 Street & 64 Avenue

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	28	29	55	15	114	2159	170	55	1200	113
v/c Ratio	0.16	0.07	0.32	0.04	0.31	0.64	0.16	0.28	0.38	0.11
Control Delay	36.1	0.3	40.7	0.2	6.6	14.2	5.3	17.7	5.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	0.3	40.7	0.2	6.6	14.2	5.3	17.7	5.8	3.2
Queue Length 50th (m)	5.3	0.0	10.7	0.0	4.0	86.9	4.6	1.7	33.7	3.3
Queue Length 95th (m)	11.0	0.0	18.3	0.0	16.5	#191.9	20.6	17.8	41.5	6.1
Internal Link Dist (m)		150.5		226.0		357.0			382.0	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	50.0		50.0
Base Capacity (vph)	375	596	370	581	408	3399	1041	253	3191	988
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.05	0.15	0.03	0.28	0.64	0.16	0.22	0.38	0.11

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
4: 34 Street & 64 Avenue

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗		↘	↑↑↑	↗	↘	↑↑↑	↗
Volume (vph)	28	0	29	55	0	15	114	2159	170	55	1200	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641	1468		1641	4940	1468	1641	4940	1468
Flt Permitted	0.75	1.00		0.74	1.00		0.20	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1291	1468		1275	1468		337	4940	1468	109	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	0	29	55	0	15	114	2159	170	55	1200	113
RTOR Reduction (vph)	0	25	0	0	13	0	0	0	34	0	0	41
Lane Group Flow (vph)	28	4	0	55	2	0	114	2159	136	55	1200	72
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1		6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.2	12.2		12.2	12.2		74.0	65.6	65.6	69.6	63.4	63.4
Effective Green, g (s)	12.2	12.2		12.2	12.2		74.0	65.6	65.6	69.6	63.4	63.4
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.74	0.66	0.66	0.70	0.63	0.63
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	158	179		156	179		359	3241	963	171	3132	931
v/s Ratio Prot		0.00			0.00		c0.03	c0.44		0.02	0.24	
v/s Ratio Perm	0.02			c0.04			0.21		0.09	0.20		0.05
v/c Ratio	0.18	0.02		0.35	0.01		0.32	0.67	0.14	0.32	0.38	0.08
Uniform Delay, d1	39.4	38.6		40.3	38.6		4.1	10.5	6.5	7.5	8.8	7.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.97	0.52	1.06
Incremental Delay, d2	0.7	0.1		1.9	0.0		0.7	1.1	0.3	1.4	0.3	0.2
Delay (s)	40.1	38.7		42.1	38.6		4.8	11.6	6.8	16.2	4.9	7.6
Level of Service	D	D		D	D		A	B	A	B	A	A
Approach Delay (s)		39.4			41.4			11.0			5.6	
Approach LOS		D			D			B			A	

Intersection Summary

HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
4: 34 Street & 64 Avenue

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	114	114	140	40	28	1333	85	15	2349	28
v/c Ratio	0.48	0.25	0.63	0.09	0.15	0.42	0.09	0.05	0.76	0.03
Control Delay	41.4	1.3	49.0	0.4	7.8	11.0	3.6	9.8	23.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	1.3	49.0	0.4	7.8	11.0	3.6	9.8	23.7	13.5
Queue Length 50th (m)	21.2	0.0	26.8	0.0	1.4	35.6	0.3	0.5	130.0	1.3
Queue Length 95th (m)	33.7	0.0	41.5	0.0	5.5	83.5	8.4	m3.1	#225.2	m5.9
Internal Link Dist (m)		150.5		226.0		357.0			382.0	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	50.0		50.0
Base Capacity (vph)	366	581	342	590	247	3200	980	360	3082	921
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.20	0.41	0.07	0.11	0.42	0.09	0.04	0.76	0.03

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis

4: 34 Street & 64 Avenue

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑	↗	↖	↑↑↑	↗
Volume (vph)	114	0	114	140	0	40	28	1333	85	15	2349	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641	1468		1641	4940	1468	1641	4940	1468
Flt Permitted	0.73	1.00		0.68	1.00		0.06	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	1263	1468		1181	1468		111	4940	1468	299	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	114	0	114	140	0	40	28	1333	85	15	2349	28
RTOR Reduction (vph)	0	93	0	0	33	0	0	0	30	0	0	6
Lane Group Flow (vph)	114	21	0	140	7	0	28	1333	55	15	2349	22
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1		6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	18.7	18.7		18.7	18.7		66.9	62.4	62.4	63.7	60.8	60.8
Effective Green, g (s)	18.7	18.7		18.7	18.7		66.9	62.4	62.4	63.7	60.8	60.8
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.67	0.62	0.62	0.64	0.61	0.61
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	236	275		221	275		143	3083	916	229	3004	893
v/s Ratio Prot		0.01			0.01		c0.01	0.27		0.00	c0.48	
v/s Ratio Perm	0.09			c0.12			0.12		0.04	0.04		0.02
v/c Ratio	0.48	0.08		0.63	0.03		0.20	0.43	0.06	0.07	0.78	0.02
Uniform Delay, d1	36.3	33.5		37.5	33.2		11.2	9.7	7.3	6.9	14.6	7.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.53	1.38	1.71
Incremental Delay, d2	2.1	0.2		6.5	0.1		0.9	0.4	0.1	0.1	1.7	0.0
Delay (s)	38.4	33.7		44.0	33.3		12.2	10.1	7.5	10.6	21.9	13.4
Level of Service	D	C		D	C		B	B	A	B	C	B
Approach Delay (s)		36.1			41.6			10.0			21.7	
Approach LOS		D			D			B			C	

Intersection Summary

HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
5: 34 Street & 68 Avenue

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	9	10	60	40	38	1999	165	135	1298	38
v/c Ratio	0.06	0.04	0.39	0.12	0.17	0.61	0.16	0.58	0.33	0.03
Control Delay	36.4	0.3	46.1	0.7	1.9	2.3	0.3	24.2	0.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	0.3	46.1	0.7	1.9	2.3	0.3	24.2	0.7	0.1
Queue Length 50th (m)	1.7	0.0	11.6	0.0	0.2	3.0	0.0	4.9	0.6	0.0
Queue Length 95th (m)	5.9	0.0	22.2	0.0	m0.3	4.3	m0.0	19.0	1.5	m0.0
Internal Link Dist (m)		126.0		226.0		382.0			235.9	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	50.0		50.0
Base Capacity (vph)	253	366	259	446	230	3270	1015	261	3985	1192
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.03	0.23	0.09	0.17	0.61	0.16	0.52	0.33	0.03

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: 34 Street & 68 Avenue

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑	↗	↖	↑↑↑	↗
Volume (vph)	9	0	10	60	0	40	38	1999	165	135	1298	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641	1468		1641	4940	1468	1641	4940	1468
Flt Permitted	0.73	1.00		0.75	1.00		0.20	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1263	1468		1297	1468		347	4940	1468	112	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	0	10	60	0	40	38	1999	165	135	1298	38
RTOR Reduction (vph)	0	9	0	0	36	0	0	0	45	0	0	8
Lane Group Flow (vph)	9	1	0	60	4	0	38	1999	120	135	1298	30
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1		6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	10.5	10.5		10.5	10.5		65.2	65.2	65.2	78.5	78.5	78.5
Effective Green, g (s)	10.5	10.5		10.5	10.5		65.2	65.2	65.2	78.5	78.5	78.5
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.65	0.65	0.65	0.78	0.78	0.78
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	133	154		136	154		226	3221	957	230	3878	1152
v/s Ratio Prot		0.00			0.00			c0.40		c0.05		0.26
v/s Ratio Perm	0.01			c0.05			0.11		0.08	0.41		0.02
v/c Ratio	0.07	0.01		0.44	0.03		0.17	0.62	0.13	0.59	0.33	0.03
Uniform Delay, d1	40.3	40.1		42.0	40.2		6.8	10.2	6.6	15.7	3.1	2.4
Progression Factor	1.00	1.00		1.00	1.00		0.07	0.14	0.01	1.03	0.15	0.05
Incremental Delay, d2	0.3	0.0		3.1	0.1		1.3	0.7	0.2	4.1	0.2	0.0
Delay (s)	40.6	40.1		45.1	40.3		1.7	2.1	0.3	20.3	0.7	0.1
Level of Service	D	D		D	D		A	A	A	C	A	A
Approach Delay (s)		40.4			43.2			2.0			2.5	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
5: 34 Street & 68 Avenue

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	38	38	135	85	9	1393	85	45	2219	9
v/c Ratio	0.18	0.15	0.62	0.21	0.13	0.45	0.09	0.14	0.62	0.01
Control Delay	34.9	27.6	50.2	1.2	11.1	6.3	0.6	3.3	3.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	27.6	50.2	1.2	11.1	6.3	0.6	3.3	3.3	0.9
Queue Length 50th (m)	6.7	5.1	26.0	0.0	0.4	24.6	0.0	1.0	22.7	0.0
Queue Length 95th (m)	14.7	13.0	42.0	0.0	m1.1	28.3	1.2	m2.1	34.1	m0.0
Internal Link Dist (m)		126.0		226.0		382.0			235.9	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	50.0		50.0
Base Capacity (vph)	303	374	316	509	70	3108	955	350	3553	1058
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.10	0.43	0.17	0.13	0.45	0.09	0.13	0.62	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: 34 Street & 68 Avenue

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗		↘	↑↑↑	↗	↘	↑↑↑	↗
Volume (vph)	38	0	38	135	0	85	9	1393	85	45	2219	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641	1468		1641	4940	1468	1641	4940	1468
Flt Permitted	0.70	1.00		0.73	1.00		0.07	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	1212	1468		1265	1468		113	4940	1468	270	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	0	38	135	0	85	9	1393	85	45	2219	9
RTOR Reduction (vph)	0	7	0	0	70	0	0	0	33	0	0	2
Lane Group Flow (vph)	38	31	0	135	15	0	9	1393	52	45	2219	7
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.1	17.1		17.1	17.1		61.3	61.3	61.3	73.9	71.9	71.9
Effective Green, g (s)	17.1	17.1		17.1	17.1		61.3	61.3	61.3	73.9	71.9	71.9
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.61	0.61	0.61	0.74	0.72	0.72
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	207	251		216	251		69	3028	900	290	3552	1055
v/s Ratio Prot		0.02			0.01			0.28		0.01	c0.45	
v/s Ratio Perm	0.03			c0.11			0.08		0.04	0.10		0.00
v/c Ratio	0.18	0.12		0.62	0.06		0.13	0.46	0.06	0.16	0.62	0.01
Uniform Delay, d1	35.5	35.1		38.5	34.7		8.1	10.4	7.8	7.3	7.2	4.0
Progression Factor	1.00	1.00		1.00	1.00		0.51	0.50	0.14	0.41	0.33	0.26
Incremental Delay, d2	0.6	0.3		6.3	0.1		3.6	0.5	0.1	0.3	0.6	0.0
Delay (s)	36.1	35.4		44.7	34.8		7.7	5.7	1.2	3.3	3.0	1.1
Level of Service	D	D		D	C		A	A	A	A	A	A
Approach Delay (s)		35.7			40.9			5.4			3.0	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
6: 34 Street & 74 Avenue

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	25	82	92	125	1658	265	169	1364	130
v/c Ratio	0.08	0.06	0.41	0.22	0.40	0.59	0.28	0.56	0.45	0.14
Control Delay	36.7	0.3	44.7	1.2	13.6	9.6	2.7	24.6	20.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	0.3	44.7	1.2	13.6	9.6	2.7	24.6	20.2	9.3
Queue Length 50th (m)	2.7	0.0	15.4	0.0	2.5	92.8	13.8	28.4	64.8	4.3
Queue Length 95th (m)	8.5	0.0	29.6	0.0	m16.6	30.9	0.0	m39.7	85.2	m14.3
Internal Link Dist (m)		176.0		101.0		156.1			118.0	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	50.0		50.0
Base Capacity (vph)	241	474	256	472	355	2827	935	363	3008	945
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.32	0.19	0.35	0.59	0.28	0.47	0.45	0.14

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: 34 Street & 74 Avenue

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑	↗	↖	↑↑↑	↗
Volume (vph)	15	0	25	82	0	92	125	1658	265	169	1364	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641	1468		1641	4940	1468	1641	4940	1468
Flt Permitted	0.70	1.00		0.74	1.00		0.17	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1205	1468		1280	1468		293	4940	1468	161	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	0	25	82	0	92	125	1658	265	169	1364	130
RTOR Reduction (vph)	0	21	0	0	78	0	0	0	95	0	0	51
Lane Group Flow (vph)	15	4	0	82	14	0	125	1658	170	169	1364	79
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1		6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	15.6	15.6		15.6	15.6		65.7	57.2	57.2	73.1	60.9	60.9
Effective Green, g (s)	15.6	15.6		15.6	15.6		65.7	57.2	57.2	73.1	60.9	60.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.66	0.57	0.57	0.73	0.61	0.61
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	188	229		200	229		307	2826	840	298	3008	894
v/s Ratio Prot		0.00			0.01		0.03	0.34		c0.07	0.28	
v/s Ratio Perm	0.01			c0.06			0.23		0.12	c0.35		0.05
v/c Ratio	0.08	0.02		0.41	0.06		0.41	0.59	0.20	0.57	0.45	0.09
Uniform Delay, d1	36.1	35.7		38.1	36.0		6.6	13.8	10.4	11.5	10.6	8.1
Progression Factor	1.00	1.00		1.00	1.00		2.30	0.60	0.72	1.86	1.82	5.07
Incremental Delay, d2	0.2	0.0		1.9	0.2		1.0	0.7	0.4	2.0	0.3	0.1
Delay (s)	36.3	35.8		39.9	36.1		16.1	9.0	7.9	23.4	19.6	41.1
Level of Service	D	D		D	D		B	A	A	C	B	D
Approach Delay (s)		36.0			37.9			9.3			21.6	
Approach LOS		D			D			A			C	

Intersection Summary

HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
6: 34 Street & 74 Avenue

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	235	258	212	25	1385	106	71	1780	30
v/c Ratio	0.29	0.37	0.92	0.33	0.13	0.60	0.14	0.30	0.69	0.04
Control Delay	27.2	4.7	70.9	3.3	15.8	36.3	17.5	15.8	14.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	4.7	70.9	3.3	15.8	36.3	17.5	15.8	14.7	7.8
Queue Length 50th (m)	12.3	0.0	47.9	0.0	4.1	108.6	11.0	4.2	57.3	0.3
Queue Length 95th (m)	24.9	15.0	#94.1	10.2	m6.6	124.9	30.2	m6.8	m80.2	m1.5
Internal Link Dist (m)		176.0		101.0		156.1			118.0	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	50.0		50.0
Base Capacity (vph)	329	670	309	674	251	2324	738	275	2598	781
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.35	0.83	0.31	0.10	0.60	0.14	0.26	0.69	0.04

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
6: 34 Street & 74 Avenue

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑	↗	↖	↑↑↑	↗
Volume (vph)	85	0	235	258	0	212	25	1385	106	71	1780	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1468		1641	1468		1641	4940	1468	1641	4940	1468
Flt Permitted	0.54	1.00		0.51	1.00		0.09	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	940	1468		882	1468		150	4940	1468	196	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	0	235	258	0	212	25	1385	106	71	1780	30
RTOR Reduction (vph)	0	161	0	0	145	0	0	0	48	0	0	10
Lane Group Flow (vph)	85	74	0	258	67	0	25	1385	58	71	1780	20
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	31.7	31.7		31.7	31.7		49.4	46.2	46.2	57.2	50.1	50.1
Effective Green, g (s)	31.7	31.7		31.7	31.7		49.4	46.2	46.2	57.2	50.1	50.1
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.49	0.46	0.46	0.57	0.50	0.50
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	298	465		280	465		122	2282	678	215	2475	735
v/s Ratio Prot		0.05			0.05		0.01	0.28		c0.02	c0.36	
v/s Ratio Perm	0.09			c0.29			0.10		0.04	0.17		0.01
v/c Ratio	0.29	0.16		0.92	0.14		0.20	0.61	0.09	0.33	0.72	0.03
Uniform Delay, d1	25.6	24.6		32.9	24.4		14.9	20.1	15.1	11.9	19.5	12.6
Progression Factor	1.00	1.00		1.00	1.00		1.44	1.64	2.96	1.39	0.69	0.85
Incremental Delay, d2	0.7	0.2		34.1	0.2		1.0	1.1	0.2	0.7	1.1	0.0
Delay (s)	26.4	24.8		67.0	24.6		22.5	34.1	44.8	17.3	14.5	10.8
Level of Service	C	C		E	C		C	C	D	B	B	B
Approach Delay (s)		25.2			47.9			34.7			14.6	
Approach LOS		C			D			C			B	

Intersection Summary

HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
7: 34 Street & 76 Avenue

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	245	118	433	275	1165	325	316	1495	210
v/c Ratio	0.35	0.44	0.36	0.60	0.85	0.60	0.42	0.89	0.78	0.31
Control Delay	27.7	33.7	27.6	27.6	53.2	11.6	5.4	55.1	23.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	33.7	27.6	27.6	53.2	11.6	5.4	55.1	23.6	5.6
Queue Length 50th (m)	14.1	20.3	17.7	28.2	23.9	76.9	27.9	44.0	87.0	3.3
Queue Length 95th (m)	24.8	30.9	29.9	43.0	#95.3	32.6	8.2	#107.7	93.9	14.4
Internal Link Dist (m)		226.0		226.0		71.6			167.9	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	80.0		50.0
Base Capacity (vph)	290	663	336	782	323	1927	771	356	1927	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.37	0.35	0.55	0.85	0.60	0.42	0.89	0.78	0.31

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
7: 34 Street & 76 Avenue

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↘		↘	↕↘		↘	↕↕↕	↘	↘	↕↕↕	↘
Volume (vph)	95	185	60	118	255	178	275	1165	325	316	1495	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	3161		1641	3079		1641	4940	1468	1641	4940	1468
Flt Permitted	0.36	1.00		0.50	1.00		0.10	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	620	3161		865	3079		181	4940	1468	261	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	95	185	60	118	255	178	275	1165	325	316	1495	210
RTOR Reduction (vph)	0	32	0	0	127	0	0	0	201	0	0	101
Lane Group Flow (vph)	95	213	0	118	306	0	275	1165	124	316	1495	109
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	25.8	17.4		29.4	19.2		53.4	38.2	38.2	53.4	38.2	38.2
Effective Green, g (s)	25.8	17.4		29.4	19.2		53.4	38.2	38.2	53.4	38.2	38.2
Actuated g/C Ratio	0.26	0.17		0.29	0.19		0.53	0.38	0.38	0.53	0.38	0.38
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	246	550		333	591		319	1887	561	349	1887	561
v/s Ratio Prot	0.03	0.07		c0.04	c0.10		0.13	0.24		c0.14	0.30	
v/s Ratio Perm	0.07			0.07			0.33		0.08	c0.35		0.07
v/c Ratio	0.39	0.39		0.35	0.52		0.86	0.62	0.22	0.91	0.79	0.19
Uniform Delay, d1	29.4	36.6		26.9	36.2		25.7	25.0	20.9	20.7	27.4	20.6
Progression Factor	1.00	1.00		1.00	1.00		1.38	0.43	1.62	1.72	0.78	0.79
Incremental Delay, d2	1.4	0.6		0.9	1.0		18.2	1.3	0.8	22.9	2.9	0.6
Delay (s)	30.7	37.2		27.8	37.3		53.7	11.9	34.5	58.5	24.2	17.0
Level of Service	C	D		C	D		D	B	C	E	C	B
Approach Delay (s)		35.4			35.2			22.6			28.9	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues
7: 34 Street & 76 Avenue

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	300	690	369	653	85	1468	129	144	1234	30
v/c Ratio	0.80	0.87	0.96	0.76	0.38	0.97	0.25	0.60	0.73	0.06
Control Delay	38.3	39.9	65.8	27.4	26.3	36.9	9.1	36.5	30.6	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	39.9	65.8	27.4	26.3	36.9	9.1	36.5	30.6	13.0
Queue Length 50th (m)	39.9	52.2	59.1	38.2	3.3	~23.1	0.0	19.1	61.3	0.5
Queue Length 95th (m)	#71.4	#81.7	#120.0	61.0	m23.8	#140.3	13.6	40.1	75.9	6.5
Internal Link Dist (m)		226.0		226.0		71.6			167.9	
Turn Bay Length (m)	50.0		50.0		50.0		50.0	80.0		50.0
Base Capacity (vph)	417	824	383	864	254	1521	513	251	1679	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.84	0.96	0.76	0.33	0.97	0.25	0.57	0.73	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
7: 34 Street & 76 Avenue

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗		↘	↗		↘	↗	↗	↘	↗	↗
Volume (vph)	300	375	315	369	265	388	85	1468	129	144	1234	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.93		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	3057		1641	2989		1641	4940	1468	1641	4940	1468
Flt Permitted	0.19	1.00		0.19	1.00		0.13	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	329	3057		320	2989		225	4940	1468	209	4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	300	375	315	369	265	388	85	1468	129	144	1234	30
RTOR Reduction (vph)	0	153	0	0	220	0	0	0	61	0	0	16
Lane Group Flow (vph)	300	537	0	369	433	0	85	1468	68	144	1234	14
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	39.4	21.0		40.6	21.6		38.6	30.7	30.7	43.4	33.1	33.1
Effective Green, g (s)	39.4	21.0		40.6	21.6		38.6	30.7	30.7	43.4	33.1	33.1
Actuated g/C Ratio	0.39	0.21		0.41	0.22		0.39	0.31	0.31	0.43	0.33	0.33
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	371	642		381	646		199	1517	451	238	1635	486
v/s Ratio Prot	0.15	0.18		c0.18	0.15		0.03	c0.30		c0.06	0.25	
v/s Ratio Perm	0.17			c0.21			0.13		0.05	0.20		0.01
v/c Ratio	0.81	0.84		0.97	0.67		0.43	0.97	0.15	0.61	0.75	0.03
Uniform Delay, d1	23.8	37.9		26.7	35.9		21.1	34.2	25.2	21.5	29.8	22.6
Progression Factor	1.00	1.00		1.00	1.00		1.40	0.57	0.76	1.42	0.90	1.05
Incremental Delay, d2	12.8	9.6		37.6	3.0		1.8	15.2	0.6	4.8	3.2	0.1
Delay (s)	36.6	47.5		64.3	38.9		31.3	34.7	19.8	35.4	30.0	23.8
Level of Service	D	D		E	D		C	C	B	D	C	C
Approach Delay (s)		44.2			48.1			33.4			30.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	37.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

Long Term (no background growth) AM

9: 34 Street & Sherwood Fwy EB Off-ramp/Sherwood Fwy EB On-ramp

5/15/2013



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	168	168	606	1201	187	99	1560
v/c Ratio	0.60	0.60	0.41	0.41	0.20	0.36	0.65
Control Delay	45.8	45.8	0.9	18.2	8.1	42.2	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	45.8	45.8	0.9	18.2	8.1	42.2	15.7
Queue Length 50th (m)	33.5	33.5	0.0	45.3	3.8	10.8	91.1
Queue Length 95th (m)	51.8	51.8	0.0	71.8	21.7	m17.6	102.5
Internal Link Dist (m)		251.0		228.9			142.0
Turn Bay Length (m)			30.0		75.0		
Base Capacity (vph)	452	452	1468	2942	950	350	2407
Starvation Cap Reductn	0	0	0	0	0	0	172
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.37	0.41	0.41	0.20	0.28	0.70

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

Long Term (no background growth) AM

9: 34 Street & Sherwood Fwy EB Off-ramp/Sherwood Fwy EB On-ramp

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↙	↗					↑↑↑	↗	↘↙	↑↑	
Volume (vph)	336	0	606	0	0	0	0	1201	187	99	1560	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	4.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1559	1559	1468					4940	1468	3183	3438	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1559	1559	1468					4940	1468	3183	3438	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	336	0	606	0	0	0	0	1201	187	99	1560	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	77	0	0	0
Lane Group Flow (vph)	168	168	606	0	0	0	0	1201	110	99	1560	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Split	NA	Free					NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	18.0	18.0	100.0					58.8	58.8	7.2	70.0	
Effective Green, g (s)	18.0	18.0	100.0					58.8	58.8	7.2	70.0	
Actuated g/C Ratio	0.18	0.18	1.00					0.59	0.59	0.07	0.70	
Clearance Time (s)	6.0	6.0						6.0	6.0	4.0	6.0	
Vehicle Extension (s)	5.0	5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)	281	281	1468					2905	863	229	2407	
v/s Ratio Prot	c0.11	0.11						0.24		0.03	c0.45	
v/s Ratio Perm			0.41						0.07			
v/c Ratio	0.60	0.60	0.41					0.41	0.13	0.43	0.65	
Uniform Delay, d1	37.7	37.7	0.0					11.2	9.2	44.4	8.2	
Progression Factor	1.00	1.00	1.00					1.44	3.62	0.92	1.56	
Incremental Delay, d2	5.1	5.1	0.9					0.4	0.3	1.0	1.1	
Delay (s)	42.8	42.8	0.9					16.5	33.5	41.9	13.9	
Level of Service	D	D	A					B	C	D	B	
Approach Delay (s)		15.8			0.0			18.8			15.6	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

Long Term (no background growth) PM

9: 34 Street & Sherwood Fwy EB Off-ramp/Sherwood Fwy EB On-ramp

5/15/2013



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	44	45	341	1446	783	451	947
v/c Ratio	0.26	0.26	0.23	0.52	0.76	0.73	0.34
Control Delay	44.2	44.3	0.4	31.6	28.8	55.4	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	44.3	0.4	31.6	28.8	55.4	2.5
Queue Length 50th (m)	8.8	9.0	0.0	103.3	113.3	51.6	18.7
Queue Length 95th (m)	19.6	20.2	0.0	m120.6	m135.0	68.1	22.3
Internal Link Dist (m)		251.0		228.9			142.0
Turn Bay Length (m)			30.0		75.0		
Base Capacity (vph)	218	218	1468	2800	1028	987	2798
Starvation Cap Reductn	0	0	0	0	0	0	29
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.21	0.23	0.52	0.76	0.46	0.34

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

Long Term (no background growth) PM

9: 34 Street & Sherwood Fwy EB Off-ramp/Sherwood Fwy EB On-ramp

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↖	↗					↑↑↑	↗	↘↖	↑↑	
Volume (vph)	89	0	341	0	0	0	0	1446	783	451	947	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	4.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1559	1559	1468					4940	1468	3183	3438	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1559	1559	1468					4940	1468	3183	3438	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	89	0	341	0	0	0	0	1446	783	451	947	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	201	0	0	0
Lane Group Flow (vph)	44	45	341	0	0	0	0	1446	582	451	947	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type	Split	NA	Free					NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	9.0	9.0	100.0					55.5	55.5	19.5	79.0	
Effective Green, g (s)	9.0	9.0	100.0					55.5	55.5	19.5	79.0	
Actuated g/C Ratio	0.09	0.09	1.00					0.56	0.56	0.20	0.79	
Clearance Time (s)	6.0	6.0						6.0	6.0	4.0	6.0	
Vehicle Extension (s)	5.0	5.0						5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)	140	140	1468					2742	815	621	2716	
v/s Ratio Prot	0.03	0.03						0.29		c0.14	0.28	
v/s Ratio Perm			c0.23						c0.40			
v/c Ratio	0.31	0.32	0.23					0.53	0.71	0.73	0.35	
Uniform Delay, d1	42.6	42.6	0.0					14.0	16.4	37.7	3.0	
Progression Factor	1.00	1.00	1.00					2.06	3.28	1.31	0.66	
Incremental Delay, d2	2.7	2.8	0.4					0.4	2.7	3.7	0.3	
Delay (s)	45.3	45.4	0.4					29.3	56.4	53.3	2.3	
Level of Service	D	D	A					C	E	D	A	
Approach Delay (s)		9.7			0.0			38.8			18.8	
Approach LOS		A			A			D			B	

Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

Long Term (no background growth) AM

10: Sherwood Fwy WB On-ramp/Sherwood Fwy WB Off-ramp & 34 Street

5/15/2013



Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	829	551	376	1161	830	104
v/c Ratio	0.79	0.65	0.70	0.61	0.49	0.18
Control Delay	36.5	32.4	50.3	16.3	14.3	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	32.4	50.3	16.4	14.3	1.8
Queue Length 50th (m)	77.0	53.0	42.9	75.7	27.8	1.8
Queue Length 95th (m)	100.6	73.4	57.9	79.4	29.0	0.1
Internal Link Dist (m)				142.0	160.8	
Turn Bay Length (m)	125.0	75.0	35.0			50.0
Base Capacity (vph)	1082	879	668	1891	1686	570
Starvation Cap Reductn	0	0	0	35	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.63	0.56	0.63	0.49	0.18

Intersection Summary

HCM Signalized Intersection Capacity Analysis

Long Term (no background growth) AM

10: Sherwood Fwy WB On-ramp/Sherwood Fwy WB Off-ramp & 34 Street

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔		↔↔	↔↔	↕↕			↕↕↕	↔
Volume (vph)	0	0	0	829	0	551	376	1161	0	0	830	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	4.0	6.0			6.0	6.0
Lane Util. Factor				0.97		0.88	0.97	0.95			0.91	1.00
Frt				1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3183		2584	3183	3438			4940	1468
Flt Permitted				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3183		2584	3183	3438			4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	829	0	551	376	1161	0	0	830	104
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	69
Lane Group Flow (vph)	0	0	0	829	0	551	376	1161	0	0	830	35
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type				Prot		custom	Prot	NA			NA	Perm
Protected Phases				8			5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				33.0		33.0	16.9	55.0			34.1	34.1
Effective Green, g (s)				33.0		33.0	16.9	55.0			34.1	34.1
Actuated g/C Ratio				0.33		0.33	0.17	0.55			0.34	0.34
Clearance Time (s)				6.0		6.0	4.0	6.0			6.0	6.0
Vehicle Extension (s)				5.0		5.0	3.0	5.0			5.0	5.0
Lane Grp Cap (vph)				1050		853	538	1891			1685	501
v/s Ratio Prot				c0.26			c0.12	c0.34			0.17	
v/s Ratio Perm						0.21						0.02
v/c Ratio				0.79		0.65	0.70	0.61			0.49	0.07
Uniform Delay, d1				30.4		28.5	39.2	15.3			26.1	22.3
Progression Factor				1.00		1.00	1.12	0.94			0.49	0.21
Incremental Delay, d2				4.7		2.3	3.7	1.4			0.9	0.2
Delay (s)				35.0		30.8	47.4	15.8			13.8	4.8
Level of Service				D		C	D	B			B	A
Approach Delay (s)		0.0			33.3			23.6			12.8	
Approach LOS		A			C			C			B	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

Long Term (no background growth) PM

10: Sherwood Fwy WB On-ramp/Sherwood Fwy WB Off-ramp & 34 Street

5/15/2013



Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	237	134	665	870	1161	351
v/c Ratio	0.51	0.35	0.84	0.35	0.53	0.41
Control Delay	42.7	40.2	58.5	4.4	13.1	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	40.2	58.5	4.4	13.1	1.7
Queue Length 50th (m)	23.2	14.2	76.1	3.6	28.2	0.2
Queue Length 95th (m)	33.8	23.1	94.8	49.6	42.8	m4.0
Internal Link Dist (m)				142.0	160.8	
Turn Bay Length (m)	125.0	75.0	35.0			50.0
Base Capacity (vph)	605	491	843	2519	2196	848
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.27	0.79	0.35	0.53	0.41

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

Long Term (no background growth) PM

10: Sherwood Fwy WB On-ramp/Sherwood Fwy WB Off-ramp & 34 Street

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔		↔	↔	↕			↕	↔
Volume (vph)	0	0	0	237	0	134	665	870	0	0	1161	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	4.0	6.0			6.0	6.0
Lane Util. Factor				0.97		0.88	0.97	0.95			0.91	1.00
Fr _t				1.00		0.85	1.00	1.00			1.00	0.85
Fl _t Protected				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3183		2584	3183	3438			4940	1468
Fl _t Permitted				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3183		2584	3183	3438			4940	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	237	0	134	665	870	0	0	1161	351
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	195
Lane Group Flow (vph)	0	0	0	237	0	134	665	870	0	0	1161	156
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	5%	10%	10%	5%	10%
Turn Type				Prot		custom	Prot	NA			NA	Perm
Protected Phases				8			5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				14.7		14.7	24.8	73.3			44.5	44.5
Effective Green, g (s)				14.7		14.7	24.8	73.3			44.5	44.5
Actuated g/C Ratio				0.15		0.15	0.25	0.73			0.44	0.44
Clearance Time (s)				6.0		6.0	4.0	6.0			6.0	6.0
Vehicle Extension (s)				5.0		5.0	3.0	5.0			5.0	5.0
Lane Grp Cap (vph)				468		380	789	2520			2198	653
v/s Ratio Prot				c0.07			c0.21	0.25			c0.24	
v/s Ratio Perm						0.05						0.11
v/c Ratio				0.51		0.35	0.84	0.35			0.53	0.24
Uniform Delay, d ₁				39.3		38.4	35.7	4.8			20.1	17.2
Progression Factor				1.00		1.00	1.38	0.80			0.59	0.27
Incremental Delay, d ₂				1.8		1.2	7.3	0.3			0.6	0.6
Delay (s)				41.1		39.6	56.6	4.2			12.4	5.3
Level of Service				D		D	E	A			B	A
Approach Delay (s)		0.0			40.5			26.9			10.8	
Approach LOS		A			D			C			B	

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
11: 34 Street & 84 Avenue

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	30	66	55	49	40	165	1237	310	70	829	110
v/c Ratio	0.10	0.23	0.18	0.15	0.13	0.41	0.65	0.33	0.26	0.48	0.13
Control Delay	24.5	16.4	25.7	34.9	11.7	9.7	18.4	7.5	7.6	8.9	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	16.4	25.7	34.9	11.7	9.7	18.4	7.5	7.6	8.9	1.4
Queue Length 50th (m)	4.4	2.8	8.2	8.7	0.0	7.8	54.8	8.5	1.8	16.3	0.0
Queue Length 95th (m)	10.3	14.1	16.0	18.2	8.7	31.0	#168.7	33.9	m5.0	33.6	m2.2
Internal Link Dist (m)		276.0		238.2			160.8			438.9	
Turn Bay Length (m)	20.0		50.0		60.0	50.0		50.0	50.0		50.0
Base Capacity (vph)	363	334	344	361	338	430	1902	937	320	1734	827
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.20	0.16	0.14	0.12	0.38	0.65	0.33	0.22	0.48	0.13

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
11: 34 Street & 84 Avenue

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	16	50	55	49	40	165	1237	310	70	829	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1531		1641	1727	1468	1641	3282	1468	1641	3282	1468
Flt Permitted	0.73	1.00		0.62	1.00	1.00	0.26	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	1252	1531		1064	1727	1468	442	3282	1468	254	3282	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	16	50	55	49	40	165	1237	310	70	829	110
RTOR Reduction (vph)	0	43	0	0	0	34	0	0	96	0	0	54
Lane Group Flow (vph)	30	23	0	55	49	6	165	1237	214	70	829	56
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	18.4	13.8		22.8	16.0	16.0	62.5	53.1	53.1	56.3	50.0	50.0
Effective Green, g (s)	18.4	13.8		22.8	16.0	16.0	62.5	53.1	53.1	56.3	50.0	50.0
Actuated g/C Ratio	0.18	0.14		0.23	0.16	0.16	0.62	0.53	0.53	0.56	0.50	0.50
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	248	211		282	276	235	389	1743	780	230	1641	734
v/s Ratio Prot	0.01	0.01		c0.01	0.03		c0.04	c0.38		0.02	0.25	
v/s Ratio Perm	0.02			c0.03		0.00	0.23		0.15	0.15		0.04
v/c Ratio	0.12	0.11		0.20	0.18	0.03	0.42	0.71	0.27	0.30	0.51	0.08
Uniform Delay, d1	33.9	37.7		30.9	36.3	35.4	9.0	17.6	12.9	11.8	16.7	13.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.88	0.82	1.07	0.64	0.44	0.28
Incremental Delay, d2	0.2	0.5		0.3	0.6	0.1	0.6	2.0	0.7	0.6	0.9	0.2
Delay (s)	34.1	38.2		31.2	37.0	35.5	8.5	16.4	14.4	8.2	8.3	3.8
Level of Service	C	D		C	D	D	A	B	B	A	A	A
Approach Delay (s)		36.9			34.4			15.3			7.8	
Approach LOS		D			C			B			A	

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
11: 34 Street & 84 Avenue

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	130	324	165	16	105	55	874	75	25	1087	40
v/c Ratio	0.32	0.79	0.65	0.05	0.31	0.23	0.52	0.09	0.08	0.71	0.06
Control Delay	25.7	31.7	38.4	34.0	9.6	16.7	23.5	11.5	8.6	22.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	31.7	38.4	34.0	9.6	16.7	23.5	11.5	8.6	22.1	5.3
Queue Length 50th (m)	18.5	27.6	24.0	2.7	0.0	4.9	55.1	1.8	1.6	95.2	0.3
Queue Length 95th (m)	32.6	#67.6	40.4	8.6	14.1	11.4	99.8	14.5	4.4	127.9	4.3
Internal Link Dist (m)		276.0		238.2			160.8			438.9	
Turn Bay Length (m)	20.0		50.0		60.0	50.0		50.0	50.0		50.0
Base Capacity (vph)	405	435	257	328	364	292	1695	792	392	1537	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.74	0.64	0.05	0.29	0.19	0.52	0.09	0.06	0.71	0.06

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
11: 34 Street & 84 Avenue

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	64	260	165	16	105	55	874	75	25	1087	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1519		1641	1727	1468	1641	3282	1468	1641	3282	1468
Flt Permitted	0.59	1.00		0.28	1.00	1.00	0.14	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	1017	1519		476	1727	1468	237	3282	1468	454	3282	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	64	260	165	16	105	55	874	75	25	1087	40
RTOR Reduction (vph)	0	148	0	0	0	90	0	0	36	0	0	17
Lane Group Flow (vph)	130	176	0	165	16	15	55	874	39	25	1087	23
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	33.0	18.4		25.2	14.5	14.5	54.2	48.1	48.1	47.6	44.8	44.8
Effective Green, g (s)	33.0	18.4		25.2	14.5	14.5	54.2	48.1	48.1	47.6	44.8	44.8
Actuated g/C Ratio	0.33	0.18		0.25	0.14	0.14	0.54	0.48	0.48	0.48	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	427	279		245	250	213	214	1579	706	249	1470	658
v/s Ratio Prot	c0.04	c0.12		c0.07	0.01		c0.02	0.27		0.00	c0.33	
v/s Ratio Perm	0.06			0.10		0.01	0.12		0.03	0.04		0.02
v/c Ratio	0.30	0.63		0.67	0.06	0.07	0.26	0.55	0.05	0.10	0.74	0.04
Uniform Delay, d1	24.5	37.7		31.5	36.9	36.9	13.9	18.4	13.8	14.3	22.8	15.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.46	1.27	2.33	0.82	0.84	0.62
Incremental Delay, d2	0.4	6.4		7.1	0.2	0.3	0.6	1.3	0.1	0.2	3.4	0.1
Delay (s)	24.9	44.0		38.6	37.1	37.2	20.9	24.7	32.3	12.0	22.6	9.7
Level of Service	C	D		D	D	D	C	C	C	B	C	A
Approach Delay (s)		38.5			38.0			25.1			21.9	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues
13: 34 Street & 92 Avenue/Booster Station

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	35	80	260	687	1289	85
v/c Ratio	0.14	0.17	0.63	0.26	0.68	0.10
Control Delay	38.7	0.8	35.1	0.8	20.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	0.8	35.1	0.8	20.3	6.3
Queue Length 50th (m)	6.3	0.0	24.9	2.8	102.1	2.5
Queue Length 95th (m)	15.6	0.0	55.6	4.6	150.9	11.4
Internal Link Dist (m)		176.0		342.0	190.0	
Turn Bay Length (m)	50.0		50.0			50.0
Base Capacity (vph)	410	597	442	2600	1888	869
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.13	0.59	0.26	0.68	0.10

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 13: 34 Street & 92 Avenue/Booster Station

Long Term (no background growth) AM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗					↖	↕			↕	↗
Volume (vph)	35	0	80	0	0	0	260	687	0	0	1289	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0					4.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	1.00
Frt	1.00	0.85					1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00					0.95	1.00			1.00	1.00
Satd. Flow (prot)	1641	1468					1641	3282			3282	1468
Flt Permitted	0.95	1.00					0.13	1.00			1.00	1.00
Satd. Flow (perm)	1641	1468					222	3282			3282	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	0	80	0	0	0	260	687	0	0	1289	85
RTOR Reduction (vph)	0	70	0	0	0	0	0	0	0	0	0	25
Lane Group Flow (vph)	35	10	0	0	0	0	260	687	0	0	1289	60
Heavy Vehicles (%)	10%	5%	10%	5%	5%	5%	10%	10%	5%	5%	10%	10%
Turn Type	Perm	NA					pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Actuated Green, G (s)	12.0	12.0					77.0	77.0			56.5	56.5
Effective Green, g (s)	12.0	12.0					77.0	77.0			56.5	56.5
Actuated g/C Ratio	0.12	0.12					0.77	0.77			0.56	0.56
Clearance Time (s)	5.0	5.0					4.0	6.0			6.0	6.0
Vehicle Extension (s)	4.0	4.0					4.0	4.0			4.0	4.0
Lane Grp Cap (vph)	197	176					405	2527			1854	829
v/s Ratio Prot		0.01					c0.11	0.21			c0.39	
v/s Ratio Perm	c0.02						0.39					0.04
v/c Ratio	0.18	0.05					0.64	0.27			0.70	0.07
Uniform Delay, d1	39.6	39.0					14.6	3.3			15.6	9.9
Progression Factor	1.00	1.00					2.76	0.16			1.00	1.00
Incremental Delay, d2	0.6	0.2					3.3	0.2			2.2	0.2
Delay (s)	40.2	39.2					43.6	0.8			17.8	10.0
Level of Service	D	D					D	A			B	B
Approach Delay (s)		39.5			0.0			12.5			17.3	
Approach LOS		D			A			B			B	

Intersection Summary

HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues
13: 34 Street & 92 Avenue/Booster Station

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	60	205	75	1394	587	45
v/c Ratio	0.24	0.37	0.13	0.57	0.28	0.05
Control Delay	40.5	2.0	2.1	4.2	8.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	2.0	2.1	4.2	8.6	2.5
Queue Length 50th (m)	11.0	0.0	1.5	19.0	26.4	0.0
Queue Length 95th (m)	23.2	0.0	3.6	26.8	36.7	4.2
Internal Link Dist (m)		176.0		342.0	190.0	
Turn Bay Length (m)	50.0		50.0			50.0
Base Capacity (vph)	410	657	624	2429	2117	963
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.31	0.12	0.57	0.28	0.05

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 13: 34 Street & 92 Avenue/Booster Station

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	0	205	0	0	0	75	1394	0	0	587	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0					4.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	1.00
Frt	1.00	0.85					1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00					0.95	1.00			1.00	1.00
Satd. Flow (prot)	1641	1468					1641	3282			3282	1468
Flt Permitted	0.95	1.00					0.40	1.00			1.00	1.00
Satd. Flow (perm)	1641	1468					683	3282			3282	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	0	205	0	0	0	75	1394	0	0	587	45
RTOR Reduction (vph)	0	174	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	60	31	0	0	0	0	75	1394	0	0	587	29
Heavy Vehicles (%)	10%	5%	10%	5%	5%	5%	10%	10%	5%	5%	10%	10%
Turn Type	Perm	NA					pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Actuated Green, G (s)	15.0	15.0					74.0	74.0			63.7	63.7
Effective Green, g (s)	15.0	15.0					74.0	74.0			63.7	63.7
Actuated g/C Ratio	0.15	0.15					0.74	0.74			0.64	0.64
Clearance Time (s)	5.0	5.0					4.0	6.0			6.0	6.0
Vehicle Extension (s)	4.0	4.0					4.0	4.0			4.0	4.0
Lane Grp Cap (vph)	246	220					566	2429			2091	935
v/s Ratio Prot		0.02					0.01	c0.42			0.18	
v/s Ratio Perm	c0.04						0.09					0.02
v/c Ratio	0.24	0.14					0.13	0.57			0.28	0.03
Uniform Delay, d1	37.5	36.9					3.7	5.9			8.0	6.7
Progression Factor	1.00	1.00					0.56	0.54			1.00	1.00
Incremental Delay, d2	0.7	0.4					0.1	1.0			0.3	0.1
Delay (s)	38.2	37.3					2.2	4.1			8.4	6.8
Level of Service	D	D					A	A			A	A
Approach Delay (s)		37.5			0.0			4.0			8.2	
Approach LOS		D			A			A			A	

Intersection Summary

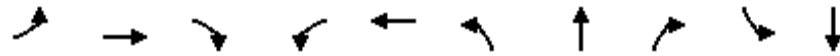
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues
15: 34 Street & Baseline Road

Long Term (no background growth) AM

5/15/2013



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	945	763	651	2660	241	245	176	20	30
v/c Ratio	0.47	0.61	0.81	0.90	0.87	0.71	0.71	0.39	0.12	0.09
Control Delay	40.2	47.6	14.8	72.5	38.7	65.4	65.2	9.2	63.5	46.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	47.6	14.8	72.5	38.7	65.4	65.2	9.2	63.5	46.1
Queue Length 50th (m)	9.1	98.4	21.2	100.9	231.4	73.6	74.9	1.5	5.8	3.0
Queue Length 95th (m)	24.2	121.2	#121.8	#135.5	#292.0	101.4	102.9	21.1	14.8	8.7
Internal Link Dist (m)		276.0			226.0		113.8			276.0
Turn Bay Length (m)	125.0			125.0				50.0	100.0	
Base Capacity (vph)	152	1539	937	749	3050	416	423	516	164	321
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.61	0.81	0.87	0.87	0.58	0.58	0.34	0.12	0.09





























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
15: 34 Street & Baseline Road

Long Term (no background growth) AM

5/15/2013

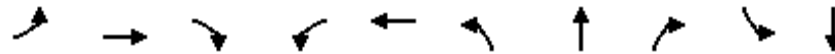
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		  	  						 	
Volume (vph)	65	945	763	651	2575	85	416	70	176	20	20	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.0	6.0	5.5	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.86		0.95	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1641	4715	1468	3183	5913		1559	1584	1468	1641	3118	
Flt Permitted	0.08	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (perm)	145	4715	1468	3183	5913		1559	1584	1468	1641	3118	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	945	763	651	2575	85	416	70	176	20	20	10
RTOR Reduction (vph)	0	0	463	0	3	0	0	0	133	0	9	0
Lane Group Flow (vph)	65	945	300	651	2658	0	241	245	43	20	21	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2		2						3			
Actuated Green, G (s)	54.5	47.7	47.7	34.1	75.0		32.7	32.7	32.7	12.0	12.0	
Effective Green, g (s)	54.5	47.7	47.7	34.1	75.0		32.7	32.7	32.7	12.0	12.0	
Actuated g/C Ratio	0.36	0.32	0.32	0.23	0.50		0.22	0.22	0.22	0.08	0.08	
Clearance Time (s)	5.5	6.0	6.0	5.5	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	6.0	6.0	3.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Grp Cap (vph)	121	1499	467	724	2957		340	345	320	131	249	
v/s Ratio Prot	0.02	0.20		c0.20	c0.45		0.15	c0.15		c0.01	0.01	
v/s Ratio Perm	0.17		0.20						0.03			
v/c Ratio	0.54	0.63	0.64	0.90	0.90		0.71	0.71	0.13	0.15	0.08	
Uniform Delay, d1	34.0	43.6	43.8	56.3	34.1		54.2	54.3	47.3	64.3	63.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	2.0	6.6	14.0	4.9		9.6	9.6	0.5	1.5	0.4	
Delay (s)	38.5	45.7	50.5	70.2	38.9		63.9	63.8	47.8	65.8	64.3	
Level of Service	D	D	D	E	D		E	E	D	E	E	
Approach Delay (s)		47.5			45.1			59.6			64.9	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			47.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			23.5			
Intersection Capacity Utilization			92.9%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Queues
15: 34 Street & Baseline Road

Long Term (no background growth) PM

5/15/2013



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	15	2820	341	196	1470	453	450	576	100	145
v/c Ratio	0.09	1.53	0.52	0.81	0.53	1.10	1.08	1.07	0.54	0.36
Control Delay	20.9	274.9	22.8	92.6	30.1	123.5	119.8	92.5	74.2	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	274.9	22.8	92.6	30.1	123.5	119.8	92.5	74.2	32.0
Queue Length 50th (m)	2.3	~454.5	47.1	32.0	87.3	~169.5	~166.9	~150.9	30.2	10.6
Queue Length 95th (m)	6.6	#479.0	78.7	#59.5	118.4	#244.6	#241.2	#227.7	50.3	22.1
Internal Link Dist (m)		276.0			226.0		113.8			276.0
Turn Bay Length (m)	125.0			125.0				50.0	100.0	
Base Capacity (vph)	187	1842	660	241	2785	413	415	538	206	446
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	1.53	0.52	0.81	0.53	1.10	1.08	1.07	0.49	0.33

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
15: 34 Street & Baseline Road

Long Term (no background growth) PM

5/15/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗	↘↗	↑↑↑		↘	↗	↗	↘	↑↗	
Volume (vph)	15	2820	341	196	1450	20	888	15	576	100	70	75
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.0	6.0	5.5	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.86		0.95	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1641	4715	1468	3183	5930		1559	1565	1468	1641	3027	
Flt Permitted	0.12	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	213	4715	1468	3183	5930		1559	1565	1468	1641	3027	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	2820	341	196	1450	20	888	15	576	100	70	75
RTOR Reduction (vph)	0	0	87	0	1	0	0	0	149	0	67	0
Lane Group Flow (vph)	15	2820	254	196	1469	0	453	450	427	100	78	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2		2						3			
Actuated Green, G (s)	61.9	59.0	59.0	11.4	67.5		40.0	40.0	40.0	17.1	17.1	
Effective Green, g (s)	61.9	59.0	59.0	11.4	67.5		40.0	40.0	40.0	17.1	17.1	
Actuated g/C Ratio	0.41	0.39	0.39	0.08	0.45		0.26	0.26	0.26	0.11	0.11	
Clearance Time (s)	5.5	6.0	6.0	5.5	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	6.0	6.0	3.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Grp Cap (vph)	115	1842	574	240	2651		413	415	389	186	343	
v/s Ratio Prot	0.00	c0.60		c0.06	0.25		0.29	0.29		c0.06	0.03	
v/s Ratio Perm	0.05		0.17						c0.29			
v/c Ratio	0.13	1.53	0.44	0.82	0.55		1.10	1.08	1.10	0.54	0.23	
Uniform Delay, d1	27.0	46.0	33.9	68.8	30.7		55.5	55.5	55.5	63.2	60.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	241.7	2.5	18.9	0.8		73.0	68.7	74.4	6.9	1.0	
Delay (s)	27.5	287.7	36.4	87.7	31.5		128.5	124.2	129.9	70.2	61.9	
Level of Service	C	F	D	F	C		F	F	F	E	E	
Approach Delay (s)		259.5			38.1			127.8			65.3	
Approach LOS		F			D			F			E	

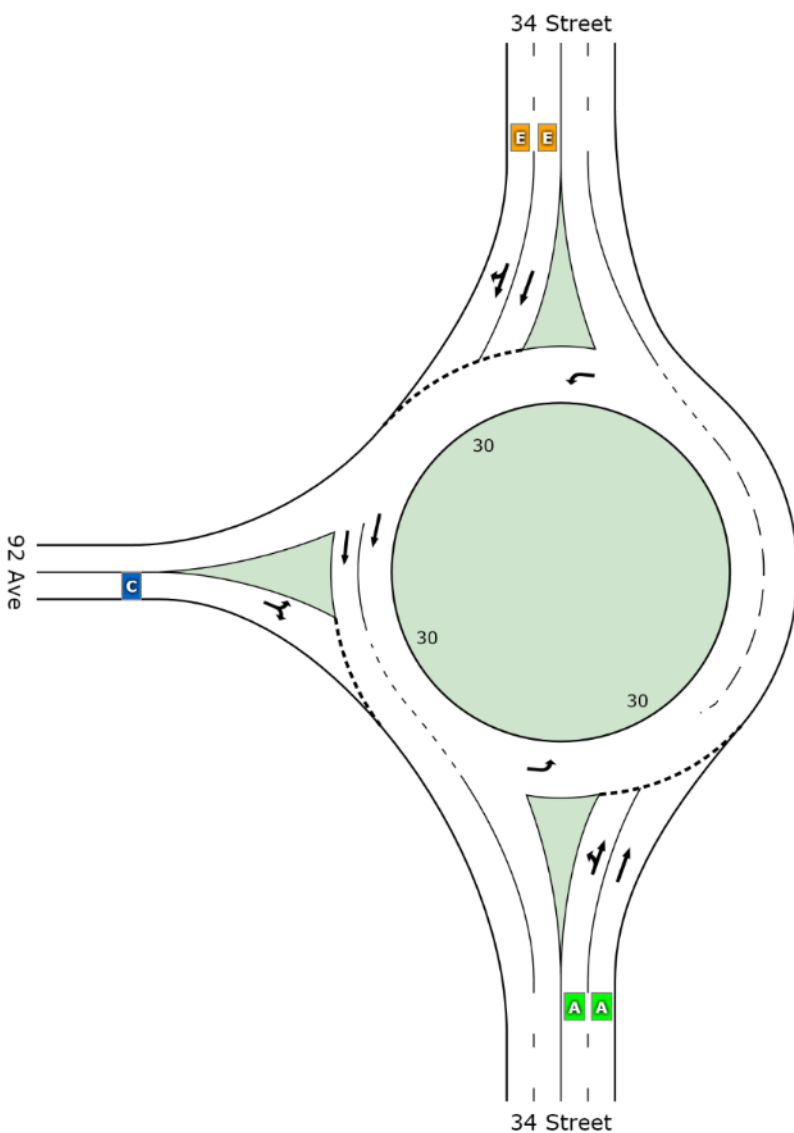
Intersection Summary

HCM Average Control Delay	166.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	151.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

LEVEL OF SERVICE SUMMARY

34 Street Functional Planning Study
Roundabout



	South	North	West	Intersection
LOS	A	E	C	D

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

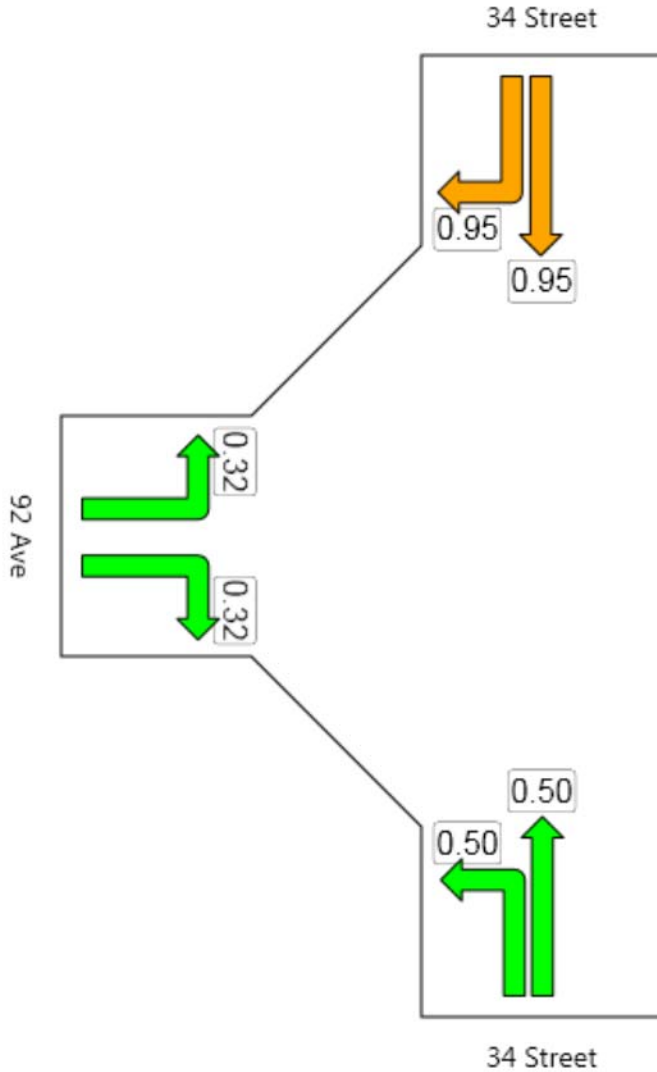
HCM Delay Model used. Geometric Delay not included.

DEGREE OF SATURATION

Site: 34 Street - 92 Ave AM

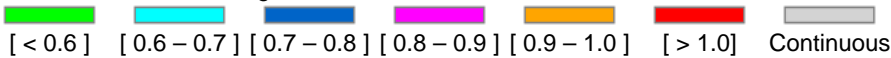
Ratio of Demand Volume to Capacity (v/c ratio)

34 Street Functional Planning Study
Roundabout



	South	North	West	Intersection
Degree of Saturation	0.50	0.95	0.32	0.95

Colour code based on Degree of Saturation

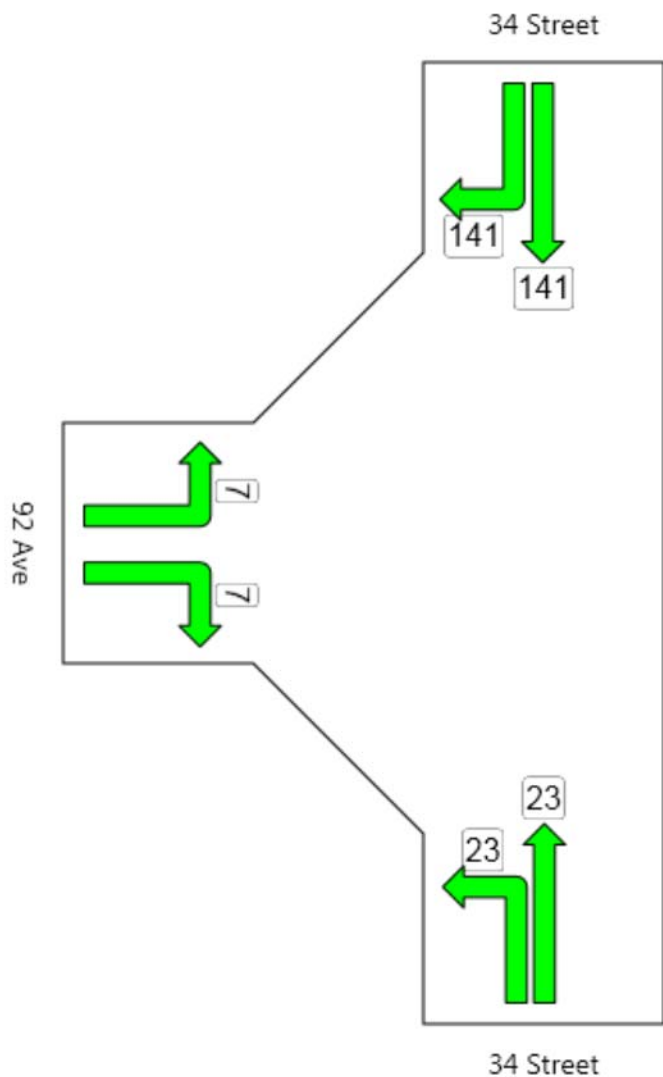


QUEUE DISTANCE

Site: 34 Street - 92 Ave AM

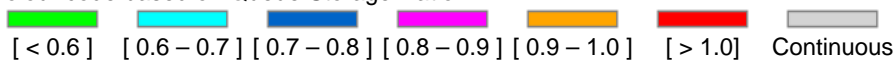
Largest 95% Back of Queue for any lane used by movement (metres)

34 Street Functional Planning Study
Roundabout



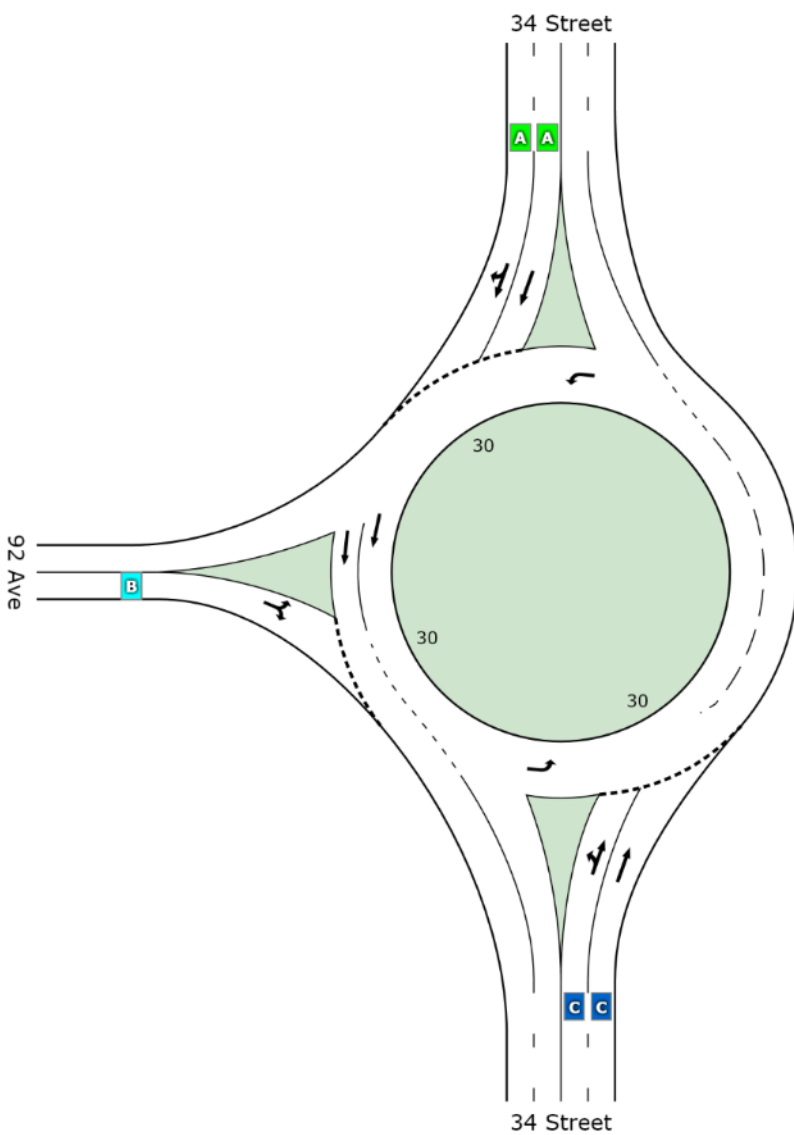
	South	North	West	Intersection
Queue Distance	23	141	7	141

Colour code based on Queue Storage Ratio



LEVEL OF SERVICE SUMMARY

34 Street Functional Planning Study
Roundabout



	South	North	West	Intersection
LOS	C	A	B	C

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

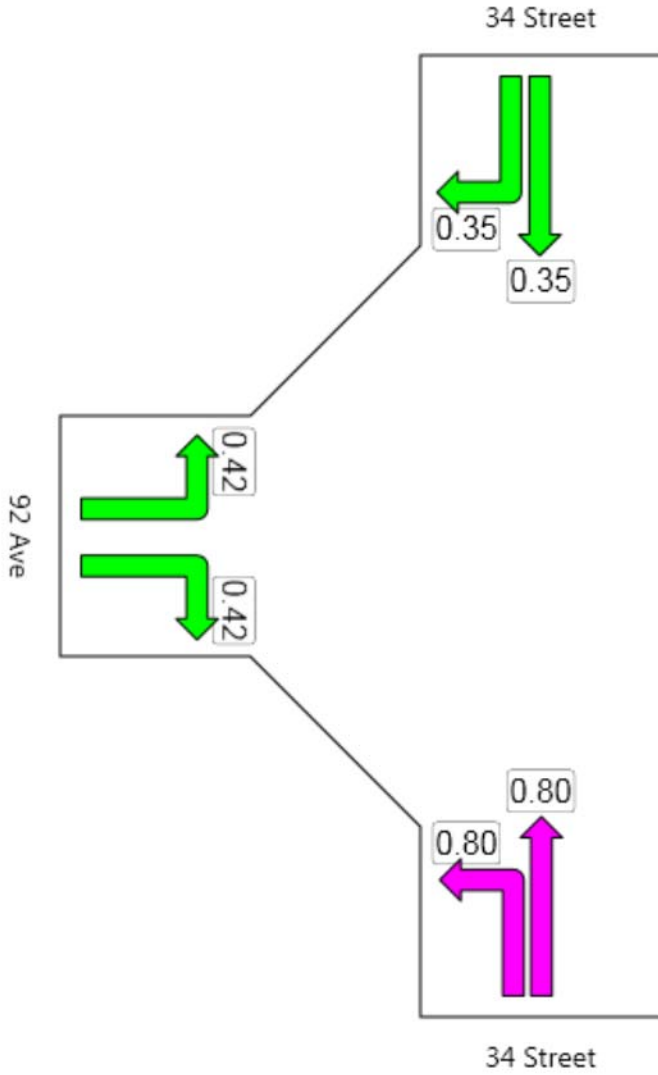
HCM Delay Model used. Geometric Delay not included.

DEGREE OF SATURATION

Site: 34 Street - 92 Ave PM

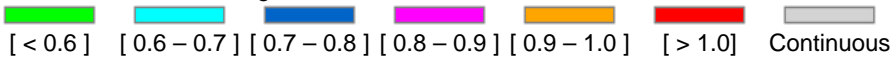
Ratio of Demand Volume to Capacity (v/c ratio)

34 Street Functional Planning Study
Roundabout



	South	North	West	Intersection
Degree of Saturation	0.80	0.35	0.42	0.80

Colour code based on Degree of Saturation

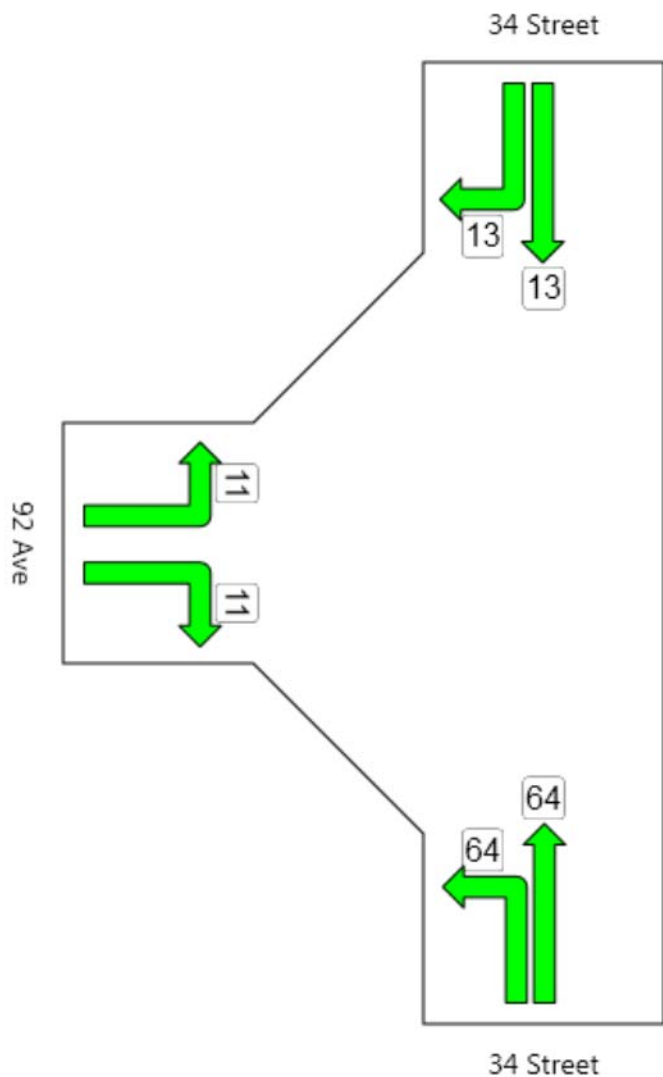


QUEUE DISTANCE

Site: 34 Street - 92 Ave PM

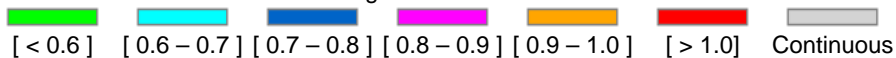
Largest 95% Back of Queue for any lane used by movement (metres)

34 Street Functional Planning Study
Roundabout



	South	North	West	Intersection
Queue Distance	64	13	11	64

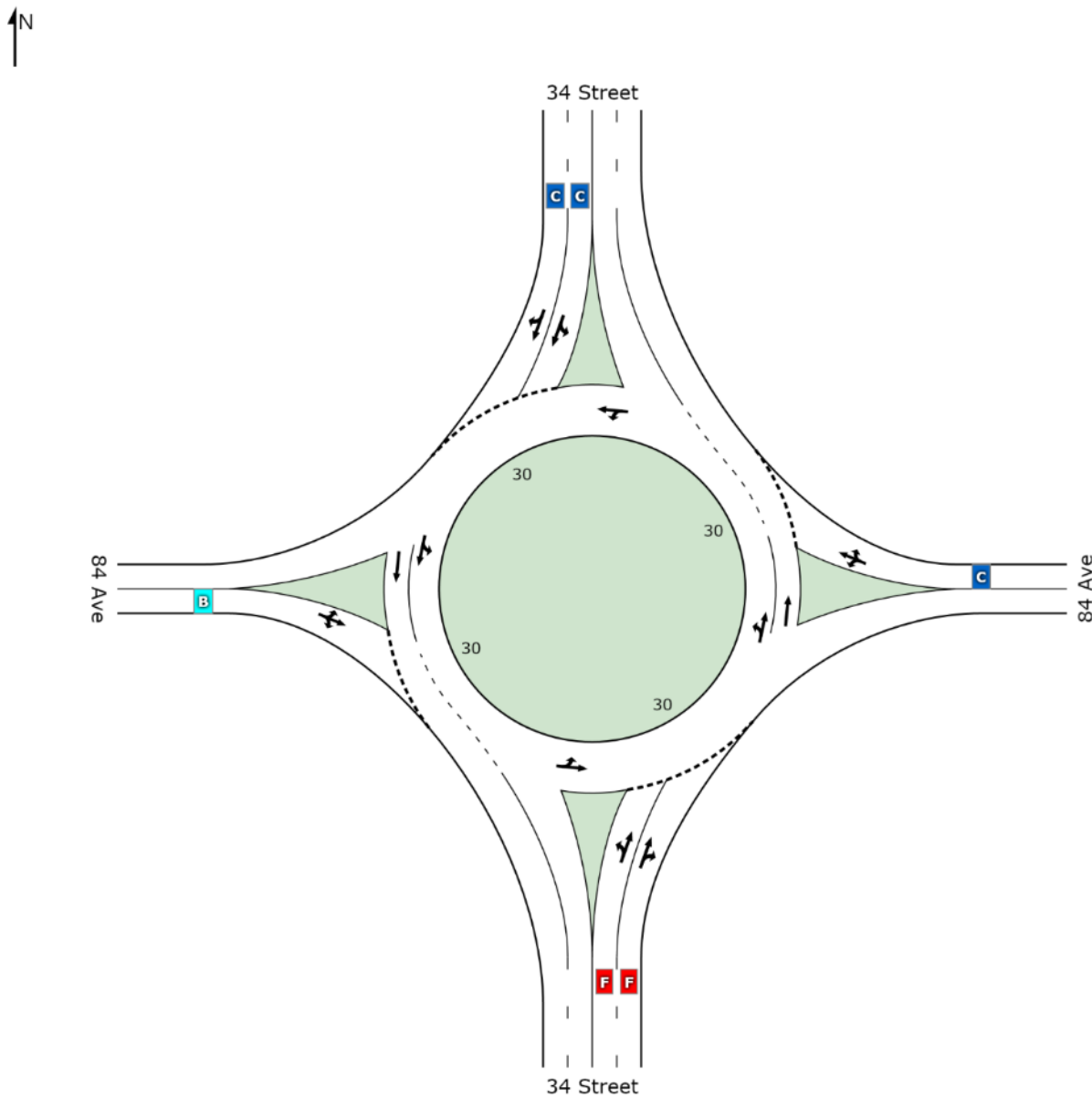
Colour code based on Queue Storage Ratio



LEVEL OF SERVICE SUMMARY

Site: 34 Street - 84 Ave AM

34 Street Functional Planning Study
Roundabout



	South	East	North	West	Intersection
LOS	F	C	C	B	E

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c >$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

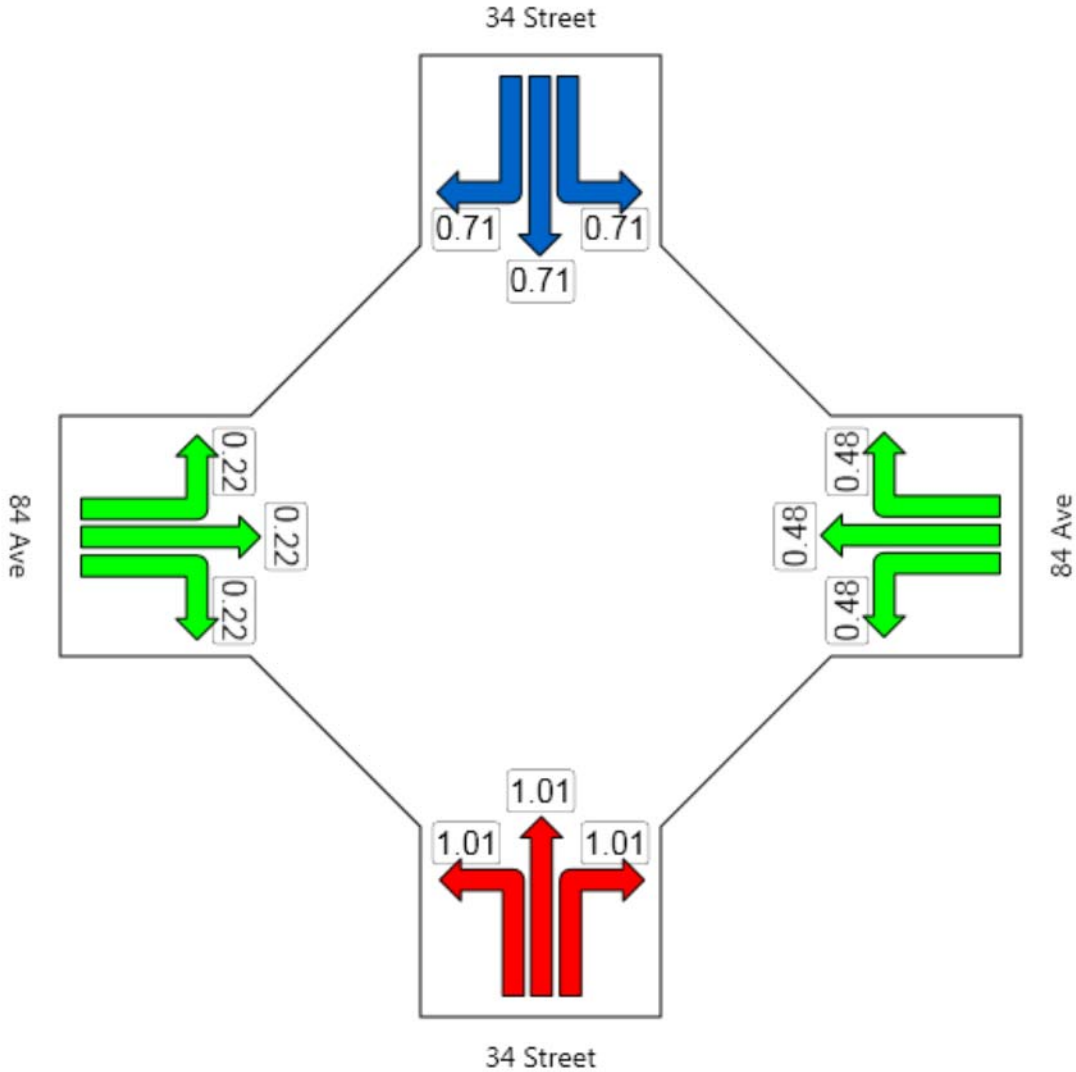
HCM Delay Model used. Geometric Delay not included.

DEGREE OF SATURATION

Site: 34 Street - 84 Ave AM

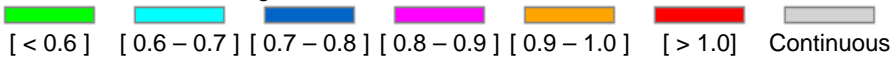
Ratio of Demand Volume to Capacity (v/c ratio)

34 Street Functional Planning Study
Roundabout



	South	East	North	West	Intersection
Degree of Saturation	1.01	0.48	0.71	0.22	1.01

Colour code based on Degree of Saturation

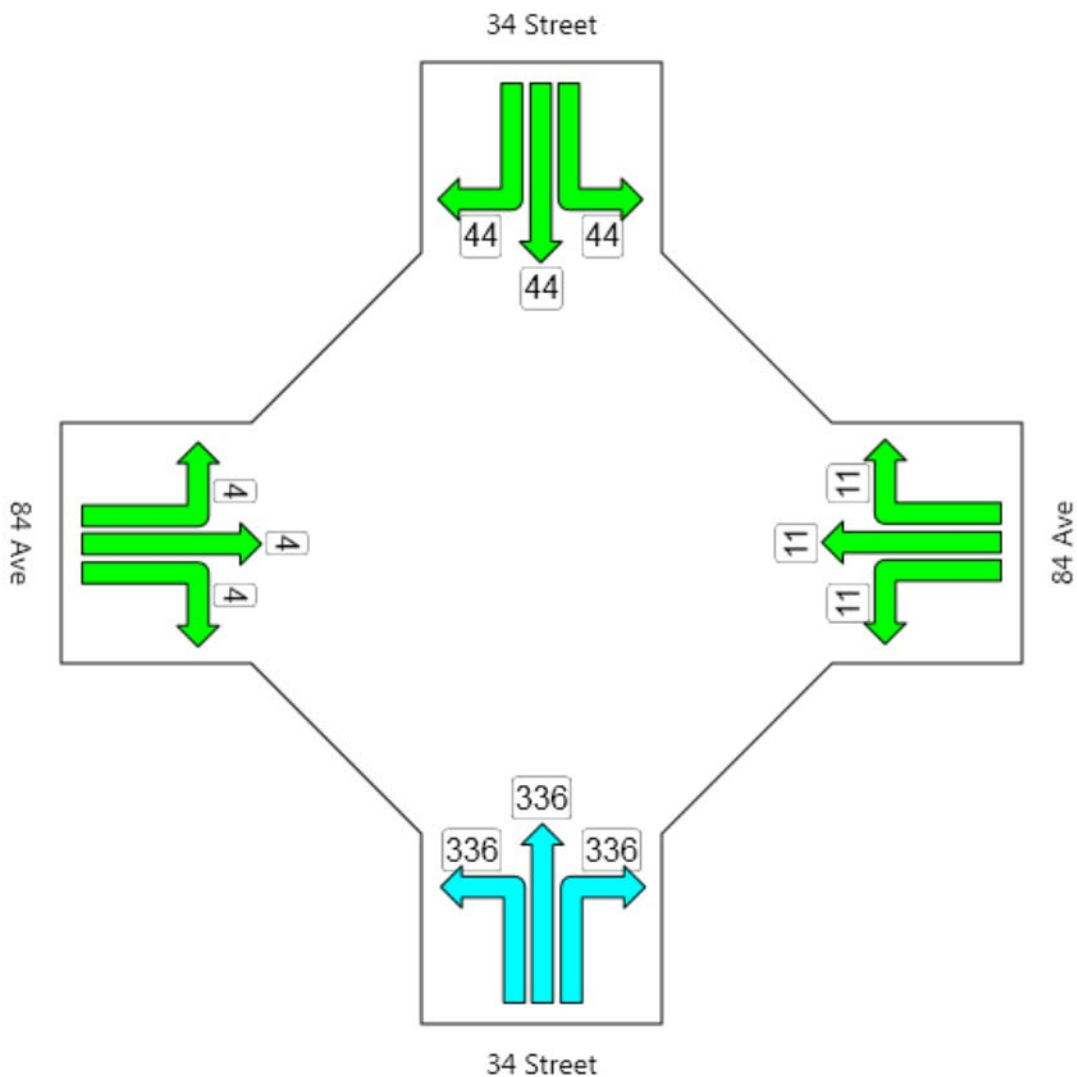


QUEUE DISTANCE

Site: 34 Street - 84 Ave AM

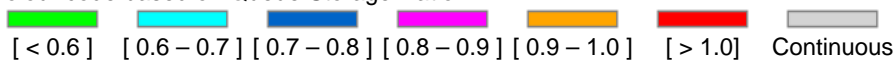
Largest 95% Back of Queue for any lane used by movement (metres)

34 Street Functional Planning Study
Roundabout



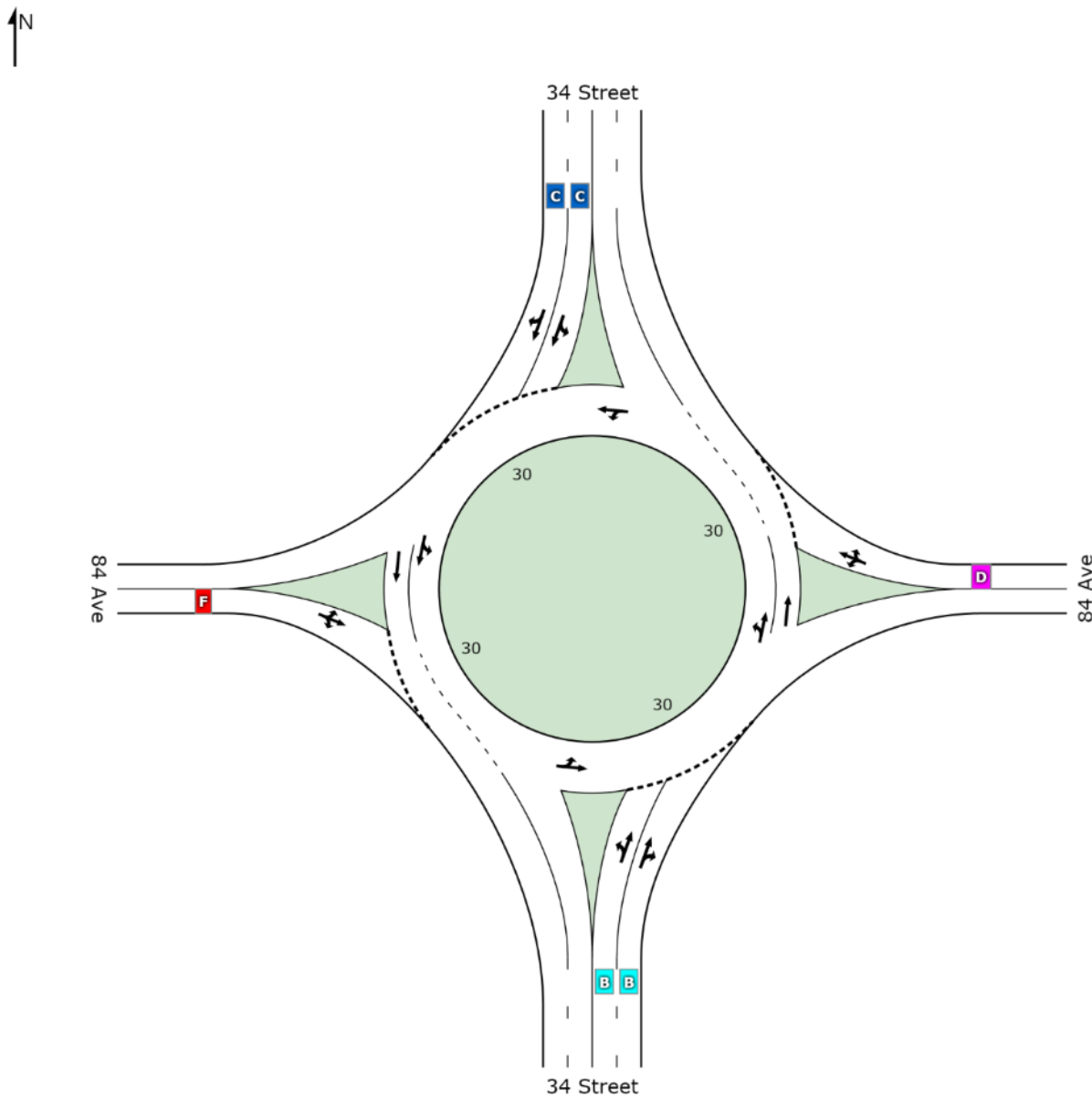
	South	East	North	West	Intersection
Queue Distance	336	11	44	4	336

Colour code based on Queue Storage Ratio



LEVEL OF SERVICE SUMMARY

34 Street Functional Planning Study
Roundabout



	South	East	North	West	Intersection
LOS	B	D	C	F	E

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c >$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

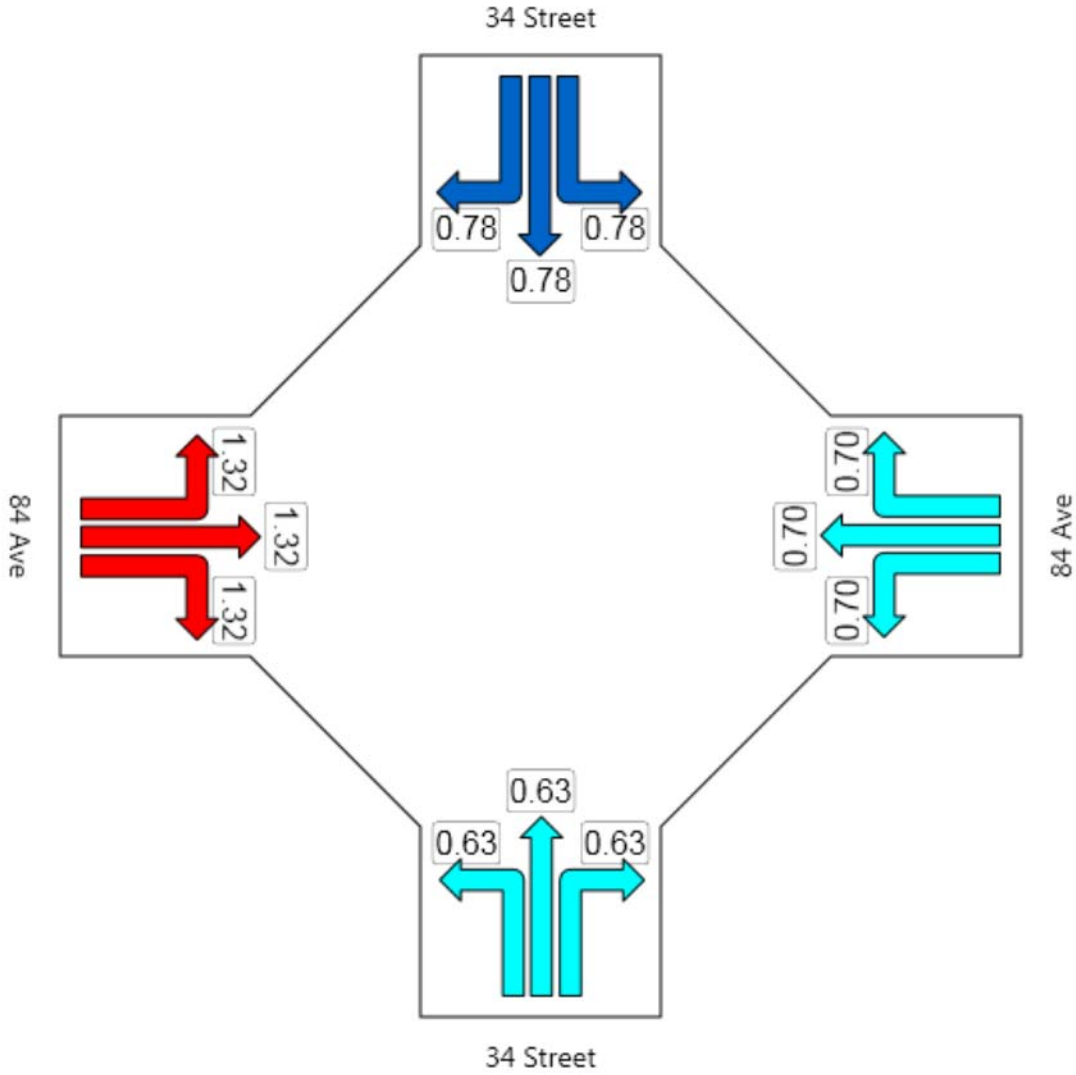
HCM Delay Model used. Geometric Delay not included.

DEGREE OF SATURATION

Site: 34 Street - 84 Ave PM

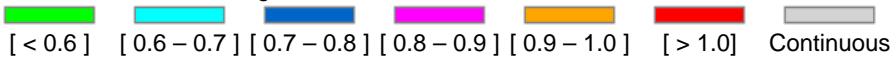
Ratio of Demand Volume to Capacity (v/c ratio)

34 Street Functional Planning Study
Roundabout



	South	East	North	West	Intersection
Degree of Saturation	0.63	0.70	0.78	1.32	1.32

Colour code based on Degree of Saturation

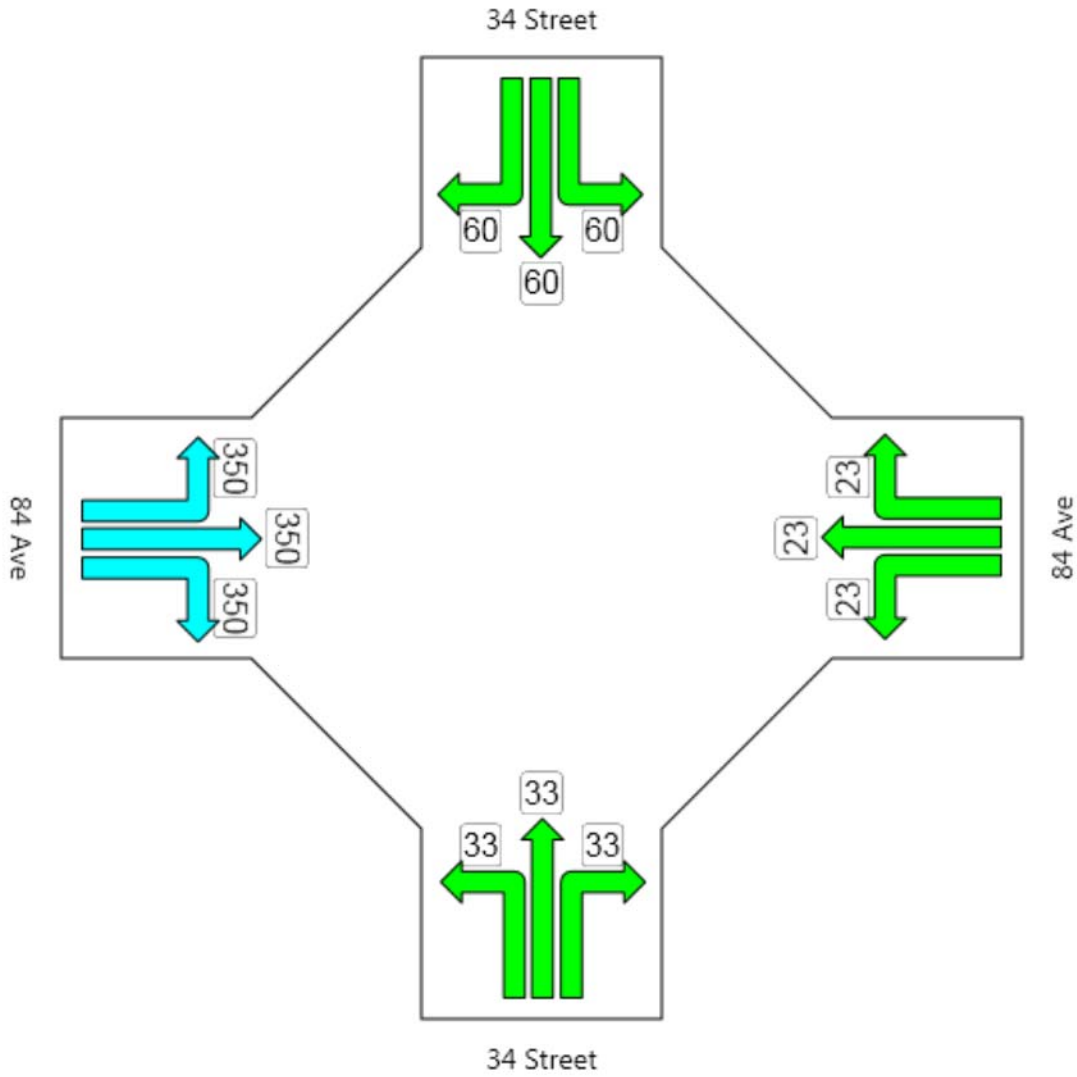


QUEUE DISTANCE

Site: 34 Street - 84 Ave PM

Largest 95% Back of Queue for any lane used by movement (metres)

34 Street Functional Planning Study
Roundabout



	South	East	North	West	Intersection
Queue Distance	33	23	60	350	350

Colour code based on Queue Storage Ratio

