MEMORANDUM

To: Ms. Nora Loughnane
Town Planner, Town of Westwood

Fr: Nancy B. Doherty, PE
Jeffrey S. Dirk, PE, PTOE, FITE

Re: **University Station – Southbound Crosswalk Impact Analyses**

Dt: February 21, 2013

At the request of BETA Group, Tetra Tech and Vanasse & Associates, Inc. (Tt/VAI) have prepared supplemental information and analyses with respect to the potential impact on motorist delays and vehicle queuing associated with providing crosswalks (and the associated pedestrian actuations) on the southbound approaches to the following four intersections along University Avenue.:

- University Avenue at Harvard Street
- University Avenue at South Site Drive
- University Avenue at North Site Drive
- University Avenue at Relocated Rosemont Street

Based on this analysis, it has been concluded that the current refinements to the design of University Avenue coupled with the addition of crosswalks to the southbound approaches of the four aforementioned intersections would not result in a significant impact (increase) on motorist delays or vehicle queuing at the intersections when compared to conditions without the additional crossings. The University Avenue/Harvard Street intersection is currently designed with crosswalks on the southbound and westbound approaches.

The Capacity analyses that have been provided to date for the University Avenue intersections with South Site Drive, North Site Drive and Relocated Rosemont Street have been based on the assumptions that crosswalks would be provided on all approaches except for the southbound approach and that the estimated maximum crossing distance would be 78 feet or less requiring a pedestrian crossing phase duration of 29 seconds. Concurrent pedestrian phases (with the non-conflicting vehicle phase) were assumed for the University Avenue/Harvard Street intersection.

As the design of University Avenue cross-section has evolved, the lengths of the various crosswalks (and the associated pedestrian crossing distances) have also been refined. The capacity analyses conducted for the purpose of determining the potential impact on operating conditions with a crosswalk added to the southbound approaches of the subject intersections reflect the updated crossing distances pursuant to the current design plans for University Avenue. Table 1 summarizes the maximum crossing distance, the calculated Flashing Don't Walk interval and the total pedestrian phase assumed for the analyses for each intersection. At Harvard Street,

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pedestrians will cross concurrent with non-conflicting vehicular traffic. Thus, the pedestrian phase durations shown in Table 1 for the Harvard Street intersection reflect the minimum signal phase for the minor street approaches (Harvard Street and the opposing driveway).

Table 1 Pedestrian Phase Analysis

	Without SB Crosswalk			With SB Crosswalk		
University Avenue at	Maximum Crossing Distance (feet)	Flashing Don't Walk Interval (seconds)	Total Pedestrian Phase (seconds)	Maximum Crossing Distance (feet)	Flashing Don't Walk Interval (seconds)	Total Pedestrian Phase (seconds)
Relocated Rosemont Street	82	24	31	97	28	35
North Site Drive	71	21	28	93	27	34
South Site Drive	71	21	28	82	23	30
Harvard Street	52	15	20	52	15	20

Each of the four intersections have been analyzed for the 2017 and 2022 weekday morning, weekday afternoon and Saturday mid-day peak hours, with and without the addition of the crosswalks on the southbound approaches. The only exception is the Harvard Street intersection where crosswalks are not recommended for the northbound or eastbound approaches due to high conflicting vehicular traffic. The capacity analyses are attached and summarized in Tables 2 through 7. As shown in the tables, the increased crossing times and corresponding pedestrian phases were found to have only a minor effect on the overall operations of the four intersections. The four intersections will operate at LOS D or better with the addition of the southbound crosswalks under 2017 and 2022 peak hour conditions.

It was also requested that queuing diagrams be prepared for the 2017 and 2022 morning and afternoon peak hours for the current design of University Avenue which does not include the southbound crosswalks. These diagrams are provided in Figures 1 through 4.

Attachments:
Capacity Analyses

\\RAIS011FS1\Project\3659\127-3659-12003\Docs\Reports\Traffic\2013.02.18 Ped. Sens. Analysis\2013.02.21 Final Ped Memo.docx

Table 2 2017 AM Build Condition – Capacity Analyses Summary

	Without SB Crosswalk					With SB Crosswalk				
Location	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**
University Avenue/Harvard Street										
Harvard St. EB LT	0.22	26	C	7	24	0.22	26	C	7	24
Harvard St. EB R	0.06	21	C	1	21	0.06	21	C	1	21
Drive WB LTR	0.01	25	C	0	5	0.01	25	C	0	5
University Ave. NB LTR	0.46	3	A	0	88	0.46	3	A	0	93
University Ave. SB LTR	0.38	5	A	30	152	0.38	5	A	30	157
Intersection	**0.43**	**5**	**A**			**0.44**	**5**	**A**		
University Avenue/South Site Drive										
South Site Dr. EB L	0.40	49	D	43	88	0.40	49	D	43	88
South Site Dr. EB LT	0.40	49	D	43	88	0.40	49	D	43	88
South Site Dr. EB R	0.05	39	D	0	26	0.05	39	D	0	26
Site Dr. WB LTR	0.06	54	D	1	14	0.06	54	D	1	14
University Ave. NB L	0.21	6	A	10	80	0.21	6	A	10	83
University Ave. NB TR	0.21	5	A	26	155	0.21	6	A	26	161
University Ave. SB L	0.01	2	A	0	m1	0.01	5	A	0	m3
University Ave. SB T	0.31	3	A	19	30	0.31	5	A	25	67
University Ave. SB R	0.14	0	A	0	1	0.14	2	A	0	0
Intersection	**0.31**	**9**	**A**			**0.31**	**10**	**A**		
University Avenue/North Site Drive										
North Site Dr. EB L	0.60	54	D	69	127	0.60	54	D	69	127
North Site Dr. EB LTR	0.43	49	D	44	101	0.43	49	D	44	101
Site Drive WB LTR	0.34	52	D	22	65	0.34	52	D	22	65
University Ave. NB L	0.08	7	A	5	22	0.09	7	A	5	31
University Ave. NB TR	0.27	7	A	50	161	0.27	7	A	51	150
University Ave. SB L	0.09	2	A	5	3	0.09	2	A	6	4
University Ave. SB T	0.39	3	A	57	25	0.40	3	A	66	71
University Ave. SB R	0.13	1	A	0	1	0.13	1	A	0	1
Intersection	**0.41**	**10**	**A**			**0.41**	**10**	**B**		
University Avenue/Relocated Rosemont Road										
Relocated Rosemont Rd. EB L	0.27	46	D	34	71	0.27	46	D	34	71
Relocated Rosemont Rd. EB LTR	0.19	45	D	21	57	0.19	45	D	21	57
Site Drive WB LT	0.30	49	D	27	63	0.30	49	D	27	63
Site Drive WB R	0.06	48	D	0	52	0.06	48	D	0	52
University Ave. NB L	0.03	12	B	2	m12	0.03	14	B	2	m13
University Ave. NB TR	0.30	13	B	76	142	0.31	15	B	76	153
University Ave. SB L	0.43	5	A	14	57	0.43	7	A	18	75
University Ave. SB T	0.45	4	A	37	95	0.45	5	A	49	168
University Ave. SB R	0.40	15	B	45	120	0.40	14	B	45	120
Intersection	**0.42**	**13**	**B**			**0.43**	**13**	**B**		

Note: v/c = volume-to-capacity ratio, Del. = Average delay expressed in seconds per vehicle, LOS= Level of Service, 50th Percentile Queue in feet, 95th Percentile Queue in feet, m = Queue metered by upstream signal, ~= 50th percentile queue may be longer # = 95th percentile volume exceeds capacity, queue may be longer

Table 3 2017 PM Build Condition – Capacity Analyses Summary

	Without SB Crosswalk					With SB Crosswalk				
Location	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**
University Avenue/Harvard Street										
Harvard St. EB LT	0.48	21	C	32	69	0.47	21	C	32	69
Harvard St. EB R	0.74	21	C	88	150	0.73	20	C	88	150
Drive WB LTR	0.05	18	B	2	18	0.05	18	B	2	17
University Ave. NB LTR	0.57	5	A	65	126	0.58	5	A	65	133
University Ave. SB LTR	0.68	13	B	122	#231	0.68	13	B	122	#244
Intersection	**0.69**	**11**	**B**			**0.69**	**11**	**B**		
University Avenue/South Site Drive										
South Site Dr. EB L	0.79	58	E	193	#343	0.80	60	E	196	#343
South Site Dr. EB LT	0.79	58	E	193	#343	0.80	60	E	196	#343
South Site Dr. EB R	0.25	31	C	18	49	0.26	31	C	20	49
Site Dr. WB LTR	0.12	56	E	6	33	0.12	56	E	6	33
University Ave. NB L	0.56	14	B	86	215	0.56	14	B	83	221
University Ave. NB TR	0.36	12	B	141	295	0.36	12	B	135	305
University Ave. SB L	0.05	10	B	2	m5	0.05	6	A	2	m3
University Ave. SB T	0.44	12	B	48	#154	0.44	8	A	37	#67
University Ave. SB R	0.37	33	C	1	230	0.37	46	D	0	268
Intersection	**0.58**	**26**	**C**			**0.58**	**28**	**C**		
University Avenue/North Site Drive										
North Site Dr. EB L	0.85	62	E	248	#404	0.85	62	E	248	#404
North Site Dr. EB LTR	0.79	56	E	217	#358	0.79	56	E	217	#358
Site Drive WB LTR	0.70	72	E	63	#153	0.70	72	E	63	#153
University Ave. NB L	0.43	23	C	14	m106	0.44	26	C	17	m118
University Ave. NB TR	0.61	17	B	90	#460	0.62	19	B	107	#648
University Ave. SB L	0.17	9	A	5	m9	0.17	13	B	5	m12
University Ave. SB T	0.71	11	B	119	#657	0.72	15	B	130	#730
University Ave. SB R	0.34	21	C	2	m500	0.35	13	B	2	m515
Intersection	**0.75**	**25**	**C**			**0.76**	**25**	**C**		
University Avenue/Relocated Rosemont Road										
Relocated Rosemont Rd. EB L	0.85	71	E	185	#326	0.85	71	E	185	#326
Relocated Rosemont Rd. EB LTR	0.84	69	E	181	#318	0.84	69	E	181	#318
Site Drive WB LT	0.71	71	E	73	#157	0.71	71	E	73	#157
Site Drive WB R	0.13	52	D	0	77	0.13	52	D	0	77
University Ave. NB L	0.21	25	C	6	m17	0.23	27	C	6	m16
University Ave. NB TR	0.73	23	C	208	#647	0.74	24	C	200	#694
University Ave. SB L	0.72	66	E	85	m#243	0.72	66	E	85	m#249
University Ave. SB T	0.75	10	B	82	#915	0.76	11	B	82	#938
University Ave. SB R	0.07	0	A	0	m1	0.07	0	A	0	m0
Intersection	**0.77**	**27**	**C**			**0.77**	**28**	**C**		

Note: v/c = volume-to-capacity ratio, Del. = Average delay expressed in seconds per vehicle, LOS= Level of Service, 50th Percentile Queue in feet, 95th Percentile Queue in feet, m = Queue metered by upstream signal, ~= 50th percentile queue may be longer # = 95th percentile volume exceeds capacity, queue may be longer

Table 4 2017 Build SAT Condition – Capacity Analyses Summary

	Without SB Crosswalk					With SB Crosswalk				
Location	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**
University Avenue/Harvard Street										
Harvard St. EB LT	0.46	23	C	30	66	0.45	23	C	30	66
Harvard St. EB R	0.38	17	B	28	67	0.38	17	B	28	67
Drive WB LTR	0	20	B	0	5	0.00	20	B	0	5
University Ave. NB LTR	0.44	4	A	44	88	0.45	4	A	44	93
University Ave. SB LTR	0.45	9	A	83	151	0.45	9	A	83	155
Intersection	**0.44**	**9**	**A**			**0.45**	**9**	**A**		
University Avenue/South Site Drive										
South Site Dr. EB L	0.80	56	E	230	#383	0.80	56	E	230	#383
South Site Dr. EB LT	0.80	56	E	231	#383	0.80	56	E	231	#383
South Site Dr. EB R	0.31	28	C	32	51	0.31	28	C	34	51
Site Dr. WB LTR	0.14	56	E	7	37	0.14	56	E	7	37
University Ave. NB L	0.53	14	B	101	254	0.53	15	B	101	261
University Ave. NB TR	0.19	12	B	63	147	0.19	12	B	63	152
University Ave. SB L	0.06	10	B	3	m9	0.06	12	B	3	m9
University Ave. SB T	0.31	11	B	28	m135	0.31	13	B	30	m85
University Ave. SB R	0.47	86	F	412	m684	0.47	88	F	156	m720
Intersection	**0.58**	**43**	**D**			**0.58**	**44**	**D**		
University Avenue/North Site Drive										
North Site Dr. EB L	0.92	71	E	291	#482	0.92	71	E	291	#482
North Site Dr. EB LTR	0.86	61	E	257	#433	0.86	61	E	257	#433
Site Drive WB LTR	0.43	58	E	29	77	0.43	58	E	29	77
University Ave. NB L	0.42	18	B	11	m109	0.43	20	B	11	m112
University Ave. NB TR	0.45	11	B	50	366	0.46	13	B	48	376
University Ave. SB L	0.12	10	A	5	m19	0.12	9	A	5	m21
University Ave. SB T	0.66	13	B	146	#620	0.68	13	B	131	#697
University Ave. SB R	0.43	35	D	0	582	0.45	30	C	0	589
Intersection	**0.71**	**28**	**C**			**0.72**	**28**	**C**		
University Avenue/Relocated Rosemont Road										
Relocated Rosemont Rd. EB L	0.52	60	E	37	81	0.52	60	E	37	81
Relocated Rosemont Rd. EB LTR	0.33	57	E	23	64	0.33	57	E	23	64
Site Drive WB LT	0.76	79	E	73	#166	0.76	79	E	73	#166
Site Drive WB R	0.13	53	D	0	#80	0.13	53	D	0	#80
University Ave. NB L	0.26	19	B	9	m37	0.27	22	C	7	m43
University Ave. NB TR	0.52	16	B	197	m374	0.53	18	B	187	m#473
University Ave. SB L	0.70	52	D	98	#262	0.71	52	D	99	#276
University Ave. SB T	0.66	8	A	107	#261	0.67	8	A	107	#362
University Ave. SB R	0.05	0	A	0	m0	0.05	0	A	0	m0
Intersection	**0.69**	**19**	**B**			**0.69**	**20**	**B**		

Note: v/c = volume-to-capacity ratio, Del. = Average delay expressed in seconds per vehicle, LOS= Level of Service, 50th Percentile Queue in feet, 95th Percentile Queue in feet, m = Queue metered by upstream signal, ~= 50th percentile queue may be longer # = 95th percentile volume exceeds capacity, queue may be longer

Table 5 2022 AM Build Condition – Capacity Analyses Summary

	Without SB Crosswalk					With SB Crosswalk				
Location	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**
University Avenue/Harvard Street										
Harvard St. EB LT	0.22	26	C	7	24	0.22	26	C	7	24
Harvard St. EB R	0.11	22	C	5	24	0.11	21	C	5	23
Drive WB LTR	0.01	25	C	0	5	0.01	25	C	0	5
University Ave. NB LTR	0.7	5	A	0	#182	0.71	5	A	0	#198
University Ave. SB LTR	0.4	5	A	32	164	0.40	5	A	33	169
Intersection	**0.65**	**6**	**A**			**0.65**	**6**	**A**		
University Avenue/South Site Drive										
South Site Dr. EB L	0.40	49	D	43	88	0.40	49	D	43	88
South Site Dr. EB LT	0.40	49	D	43	88	0.40	49	D	43	88
South Site Dr. EB R	0.05	38	D	0	25	0.05	38	D	0	24
Site Dr. WB LTR	0.06	54	D	1	14	0.06	54	D	1	14
University Ave. NB L	0.31	6	A	15	111	0.31	6	A	15	115
University Ave. NB TR	0.26	6	A	35	198	0.26	6	A	35	205
University Ave. SB L	0.01	2	A	0	m1	0.01	2	A	0	m1
University Ave. SB T	0.33	2	A	17	27	0.34	3	A	17	34
University Ave. SB R	0.12	0	A	0	0	0.12	0	A	0	0
Intersection	**0.33**	**8**	**A**			**0.34**	**9**	**A**		
University Avenue/North Site Drive										
North Site Dr. EB L	0.51	48	D	68	121	0.51	48	D	68	121
North Site Dr. EB LTR	0.35	46	D	42	94	0.35	46	D	42	94
Site Drive WB LTR	0.32	51	D	22	65	0.32	51	D	22	65
University Ave. NB L	0.12	10	B	8	49	0.12	12	B	8	57
University Ave. NB TR	0.33	10	A	70	232	0.33	11	B	70	254
University Ave. SB L	0.08	4	A	3	8	0.09	5	A	3	12
University Ave. SB T	0.41	6	A	87	121	0.42	7	A	87	#384
University Ave. SB R	0.10	1	A	0	0	0.10	1	A	0	0
Intersection	**0.42**	**12**	**B**			**0.42**	**13**	**B**		
University Avenue/Relocated Rosemont Road										
Relocated Rosemont Rd. EB L	0.39	51	D	35	75	0.39	51	D	35	75
Relocated Rosemont Rd. EB LTR	0.26	49	D	22	61	0.26	49	D	22	61
Site Drive WB LT	0.30	49	D	27	63	0.30	49	D	27	63
Site Drive WB R	0.06	48	D	0	51	0.06	48	D	0	51
University Ave. NB L	0.03	10	A	2	m8	0.03	12	B	2	m10
University Ave. NB TR	0.31	11	B	71	126	0.32	13	B	72	152
University Ave. SB L	0.37	5	A	13	51	0.37	6	A	16	63
University Ave. SB T	0.41	3	A	41	104	0.41	4	A	48	118
University Ave. SB R	0.33	4	A	6	30	0.33	3	A	6	30
Intersection	**0.40**	**10**	**A**			**0.40**	**11**	**B**		

Note: v/c = volume-to-capacity ratio, Del. = Average delay expressed in seconds per vehicle, LOS= Level of Service, 50th Percentile Queue in feet, 95th Percentile Queue in feet, m = Queue metered by upstream signal, ~= 50th percentile queue may be longer # = 95th percentile volume exceeds capacity, queue may be longer

Table 6 2022 Build PM Condition – Capacity Analyses Summary

	Without SB Crosswalk					With SB Crosswalk				
Location	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**	**V/C**	**Del.**	**LOS**	**50th Q**	**95th Q**
University Avenue/Harvard Street										
Harvard St. EB LT	0.49	22	C	33	72	0.48	22	C	33	72
Harvard St. EB R	0.75	22	C	93	159	0.75	22	C	93	159
Drive WB LTR	0.05	19	B	2	19	0.05	19	B	2	18
University Ave. NB LTR	0.82	10	A	99	#247	0.83	10	A	99	#257
University Ave. SB LTR	0.66	12	B	124	227	0.66	12	B	124	232
Intersection	**0.79**	**13**	**B**			**0.79**	**13**	**B**		
University Avenue/South Site Drive										
South Site Dr. EB L	0.84	67	E	205	#378	0.84	67	E	205	#378
South Site Dr. EB LT	0.84	67	E	205	#378	0.84	67	E	205	#378
South Site Dr. EB R	0.23	23	C	14	47	0.24	24	C	14	44
Site Dr. WB LTR	0.12	56	E	6	33	0.12	56	E	6	33
University Ave. NB L	0.68	18	B	119	#395	0.69	18	B	119	#407
University Ave. NB TR	0.41	12	B	145	333	0.41	12	B	145	344
University Ave. SB L	0.07	18	B	2	m8	0.07	19	B	2	m7
University Ave. SB T	0.55	18	B	70	m#340	0.55	19	B	132	m#354
University Ave. SB R	0.31	25	C	0	m140	0.31	34	C	21	m167
Intersection	**0.68**	**26**	**C**			**0.69**	**27**	**C**		
University Avenue/North Site Drive										
North Site Dr. EB L	0.93	77	E	256	#440	1.06	118	F	~285	#476
North Site Dr. EB LTR	0.86	66	E	225	#393	0.99	99	F	233	#430
Site Drive WB LTR	0.70	72	E	63	#153	0.70	72	E	63	#153
University Ave. NB L	0.47	19	B	18	m118	0.46	18	B	19	m122
University Ave. NB TR	0.63	15	B	128	#406	0.62	14	B	93	#640
University Ave. SB L	0.17	10	B	5	m12	0.16	9	A	5	m12
University Ave. SB T	0.63	12	B	184	m#530	0.61	11	B	118	m#565
University Ave. SB R	0.27	9	A	12	m37	0.28	9	A	11	m48
Intersection	**0.71**	**25**	**C**			**0.72**	**30**	**C**		
University Avenue/Relocated Rosemont Road										
Relocated Rosemont Rd. EB L	1.04	123	F	~206	#377	1.04	123	F	~206	#377
Relocated Rosemont Rd. EB LTR	1.02	116	F	~192	#369	1.02	116	F	~192	#369
Site Drive WB LT	0.79	84	F	74	#170	0.79	84	F	74	#170
Site Drive WB R	0.13	53	D	0	#82	0.13	53	D	0	#82
University Ave. NB L	0.13	18	B	6	m17	0.13	20	B	6	m17
University Ave. NB TR	0.69	20	B	206	m#598	0.70	21	C	208	m#613
University Ave. SB L	0.67	62	E	71	m#221	0.68	59	E	69	m#227
University Ave. SB T	0.62	8	A	59	666	0.62	8	A	59	#720
University Ave. SB R	0.05	0	A	0	m1	0.05	0	A	0	m1
Intersection	**0.73**	**31**	**C**			**0.74**	**32**	**C**		

Note: v/c = volume-to-capacity ratio, Del. = Average delay expressed in seconds per vehicle, LOS= Level of Service, 50th Percentile Queue in feet, 95th Percentile Queue in feet, m = Queue metered by upstream signal, ~= 50th percentile queue may be longer # = 95th percentile volume exceeds capacity, queue may be longer

Table 7 2022 Build SAT Condition – Capacity Analyses Summary

Location	Without SB Crosswalk					With SB Crosswalk				
	V/C	Del.	LOS	50th Q	95th Q	V/C	Del.	LOS	50th Q	95th Q
University Avenue/Harvard Street										
Harvard St. EB LT	0.60	42	D	53	104	0.59	40	D	52	102
Harvard St. EB R	0.20	29	C	6	59	0.22	29	C	9	62
Drive WB LTR	0.01	33	C	1	7	0.01	33	C	1	7
University Ave. NB LTR	0.63	5	A	87	136	0.63	5	A	86	144
University Ave. SB LTR	0.35	6	A	91	139	0.35	6	A	91	144
Intersection	**0.62**	**10**	**A**			**0.62**	**10**	**A**		
University Avenue/South Site Drive										
South Site Dr. EB L	0.84	57	E	217	#393	0.84	57	E	217	#393
South Site Dr. EB LT	0.84	57	E	217	#395	0.84	57	E	217	#395
South Site Dr. EB R	0.26	17	B	13	35	0.26	17	B	13	35
Site Dr. WB LTR	0.13	51	D	6	34	0.13	51	D	6	34
University Ave. NB L	0.69	18	B	151	#458	0.70	18	B	151	#471
University Ave. NB TR	0.24	12	B	71	172	0.24	12	B	71	174
University Ave. SB L	0.09	24	C	3	m12	0.09	30	C	3	m17
University Ave. SB T	0.47	23	C	46	m#252	0.47	27	C	64	m#243
University Ave. SB R	0.38	103	F	305	m520	0.38	111	F	288	m379
Intersection	**0.69**	**43**	**D**			**0.69**	**45**	**D**		
University Avenue/North Site Drive										
North Site Dr. EB L	0.94	73	E	267	#461	1.18	154	F	~325	#520
North Site Dr. EB LTR	0.88	61	E	235	#412	1.10	126	F	~278	#472
Site Drive WB LTR	0.37	52	D	25	69	0.37	52	D	25	69
University Ave. NB L	0.50	16	B	15	m136	0.46	14	B	14	m128
University Ave. NB TR	0.48	12	B	48	342	0.45	10	A	45	313
University Ave. SB L	0.12	12	B	5	m20	0.11	7	A	5	m19
University Ave. SB T	0.62	14	B	149	#506	0.56	10	B	94	#517
University Ave. SB R	0.35	20	B	0	450	0.35	26	C	0	461
Intersection	**0.68**	**27**	**C**			**0.69**	**41**	**D**		
University Avenue/Relocated Rosemont Road										
Relocated Rosemont Rd. EB L	0.47	53	D	34	75	0.47	53	D	34	75
Relocated Rosemont Rd. EB LTR	0.31	51	D	21	61	0.31	51	D	21	61
Site Drive WB LT	0.71	66	E	66	#150	0.71	66	E	66	#150
Site Drive WB R	0.13	48	D	0	#75	0.13	48	D	0	#75
University Ave. NB L	0.19	17	B	9	m33	0.19	21	C	8	m42
University Ave. NB TR	0.55	17	B	182	m351	0.56	21	C	236	m#429
University Ave. SB L	0.68	49	D	68	#249	0.69	48	D	70	#263
University Ave. SB T	0.57	5	A	53	618	0.58	5	A	53	#241
University Ave. SB R	0.04	0	A	0	0	0.04	0	A	0	1
Intersection	**0.66**	**18**	**B**			**0.66**	**20**	**B**		

Note: v/c = volume-to-capacity ratio, Del. = Average delay expressed in seconds per vehicle, LOS= Level of Service,
50th Percentile Queue in feet, 95th Percentile Queue in feet, m = Queue metered by upstream signal,
~= 50th percentile queue may be longer # = 95th percentile volume exceeds capacity, queue may be longer

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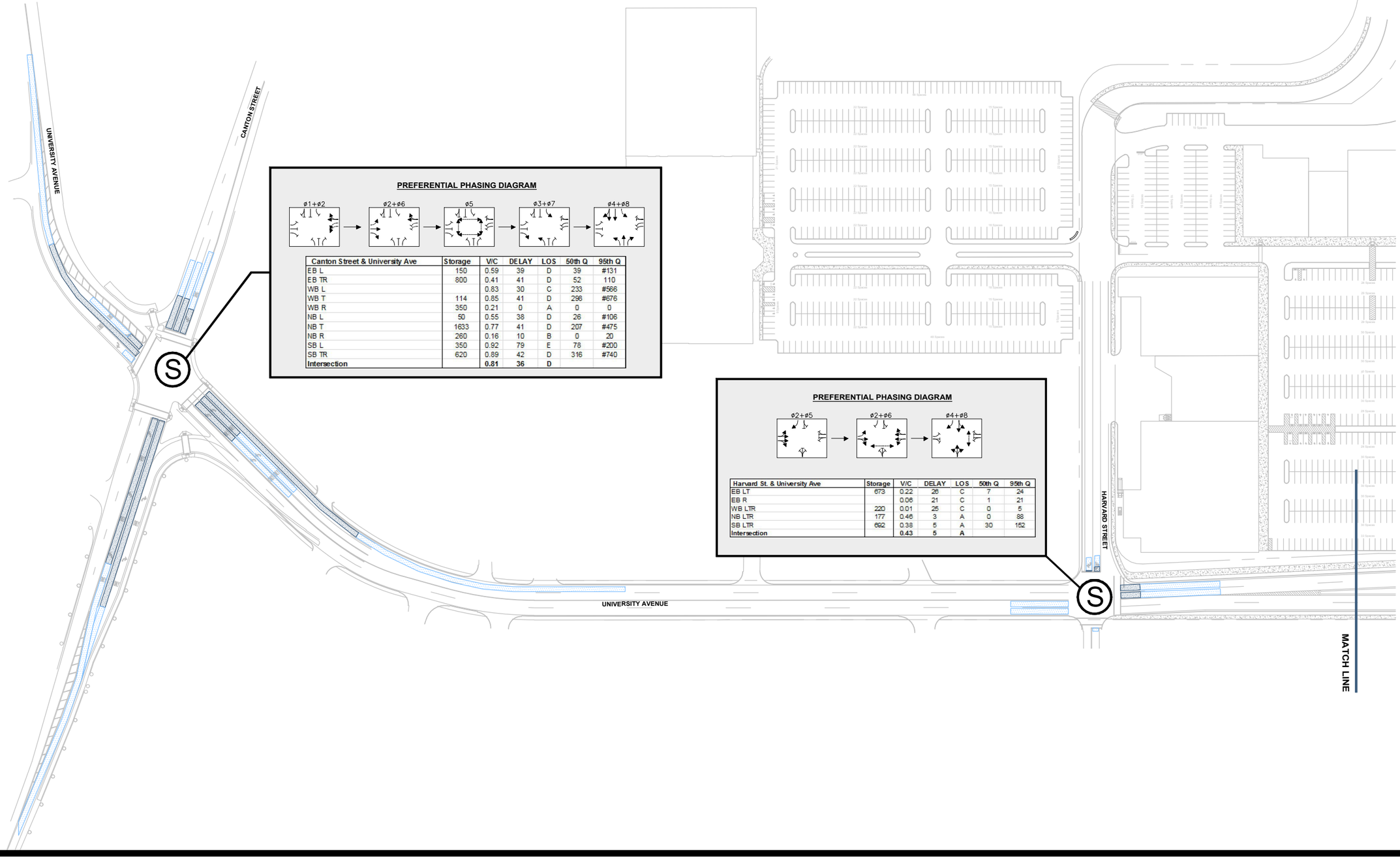

Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

University Station
Westwood, Massachusetts

2017 Build Morning Intersection Queue Summary

Figure 1a

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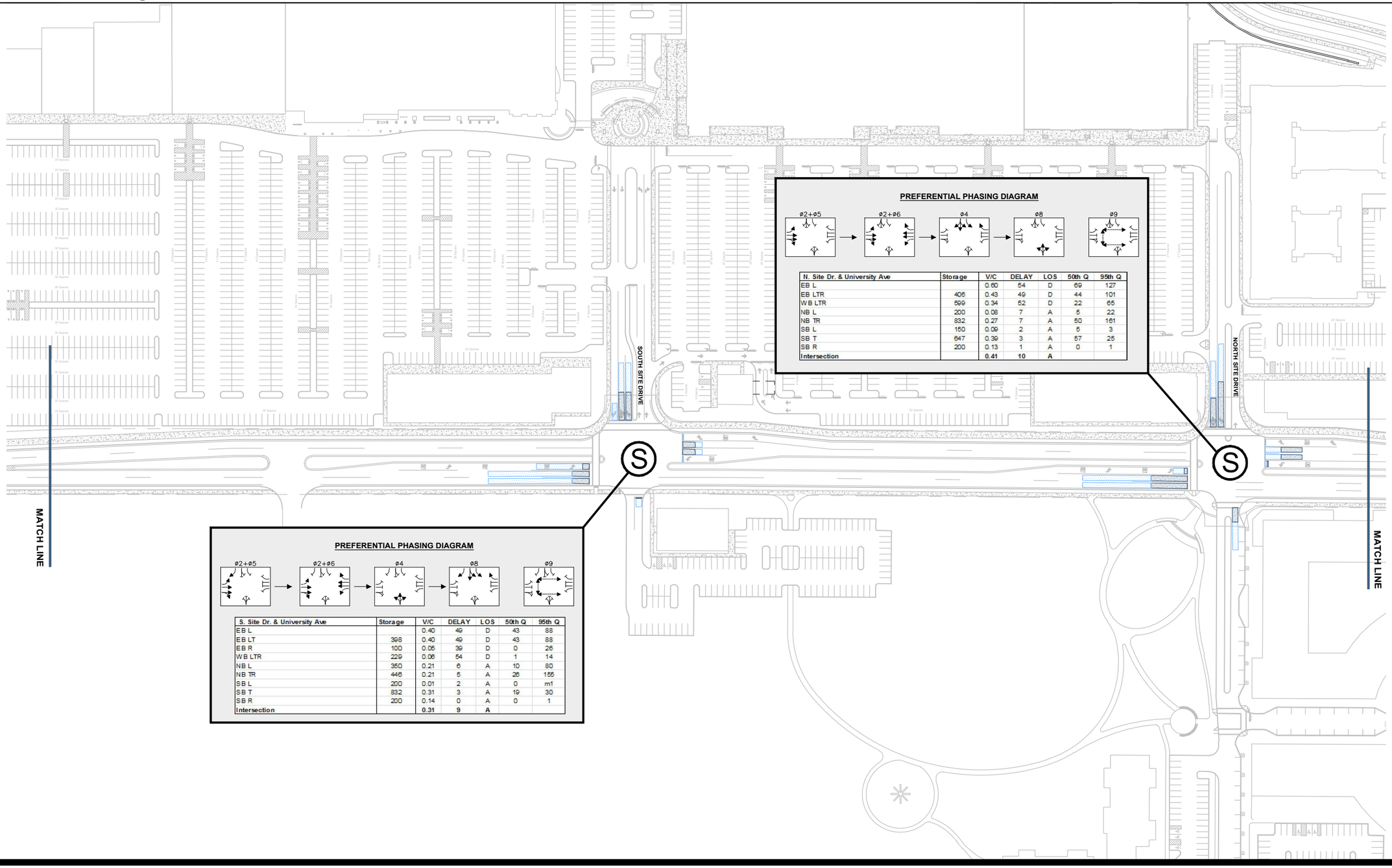


PREFERENTIAL PHASING DIAGRAM

ø2+ø5 → ø2+ø6 → ø4 → ø8 → ø9

N. Site Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.60	54	D	69	127
EB LTR	406	0.43	49	D	44	101
WB LTR	599	0.34	52	D	22	65
NB L	200	0.08	7	A	5	22
NB TR	832	0.27	7	A	50	161
SB L	150	0.09	2	A	5	3
SB T	647	0.39	3	A	57	25
SB R	200	0.13	1	A	0	1
Intersection		**0.41**	**10**	**A**		

PREFERENTIAL PHASING DIAGRAM

ø2+ø5 → ø2+ø6 → ø4 → ø8 → ø9

S. Site Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.40	49	D	43	88
EB LT	398	0.40	49	D	43	88
EB R	100	0.05	39	D	0	26
WB LTR	229	0.06	54	D	1	14
NB L	350	0.21	6	A	10	80
NB TR	446	0.21	5	A	26	155
SB L	200	0.01	2	A	0	m1
SB T	832	0.31	3	A	19	30
SB R	200	0.14	0	A	0	1
Intersection		**0.31**	**9**	**A**		

Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

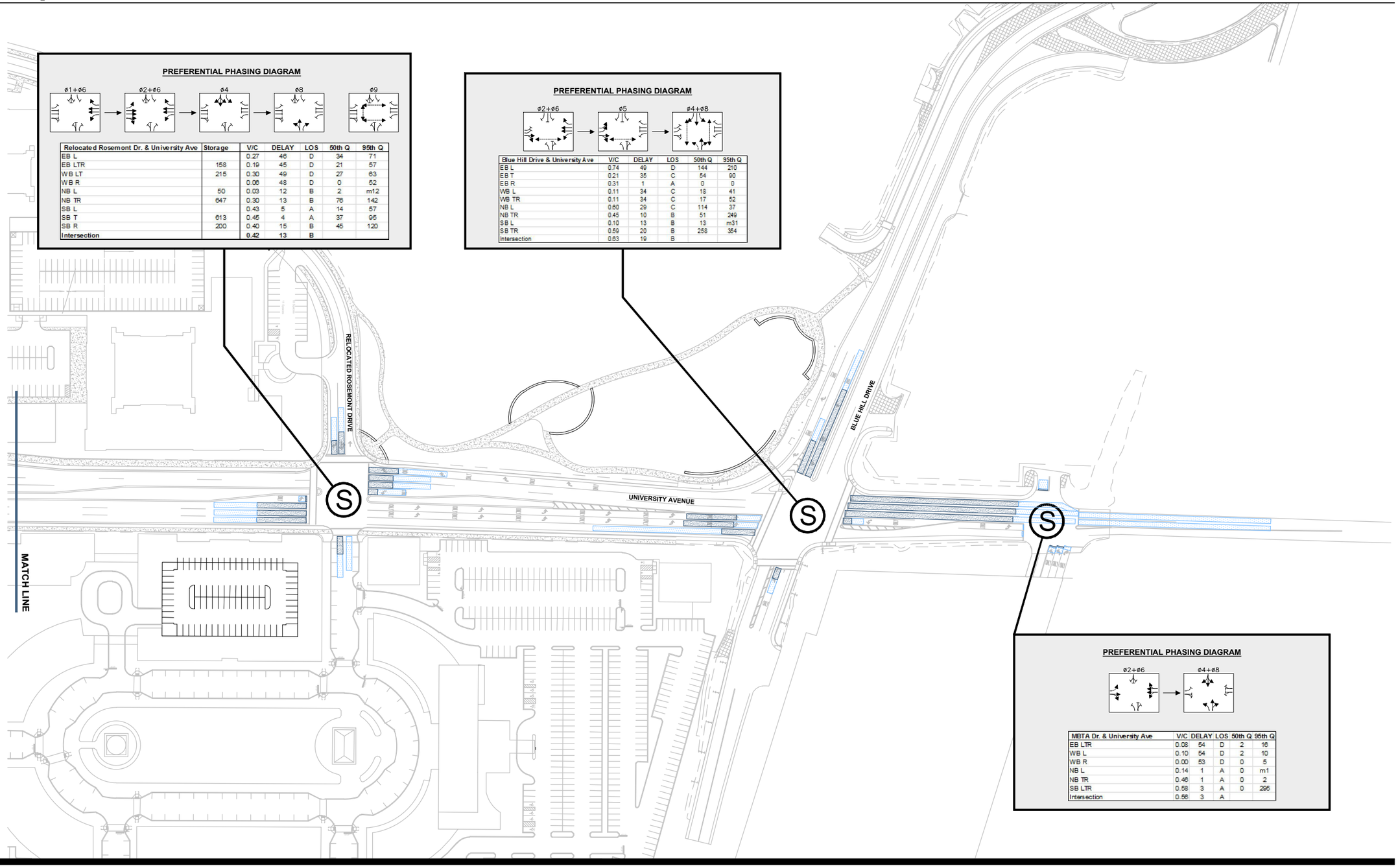
150 0 36 75 150

Approximate Scale in Feet

University Station
Westwood, Massachusetts

2017 Build Morning Intersection Queue Summary

Figure 1b



Relocated Rosemont Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.27	46	D	34	71
EB LTR	158	0.19	45	D	21	57
WB LT	215	0.30	49	D	27	63
WB R		0.06	48	D	0	52
NB L	50	0.03	12	B	2	m12
NB TR	647	0.30	13	B	76	142
SB L		0.43	5	A	14	57
SB T	613	0.45	4	A	37	95
SB R	200	0.40	15	B	45	120
Intersection		**0.42**	**13**	**B**		

Blue Hill Drive & University Ave	V/C	DELAY	LOS	50th Q	95th Q
EB L	0.74	49	D	144	210
EB T	0.21	35	C	54	90
EB R	0.31	1	A	0	0
WB L	0.11	34	C	18	41
WB TR	0.11	34	C	17	52
NB L	0.60	29	C	114	37
NB TR	0.45	10	B	51	249
SB L	0.10	13	B	13	m31
SB TR	0.59	20	B	258	354
Intersection	0.63	19	B		

MBTA Dr. & University Ave	V/C	DELAY	LOS	50th Q	95th Q
EB LTR	0.08	54	D	2	16
WB L	0.10	54	D	2	10
WB R	0.00	53	D	0	5
NB L	0.14	1	A	0	m1
NB TR	0.48	1	A	0	2
SB LTR	0.58	3	A	0	295
Intersection	0.56	3	A		

Not to Scale

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

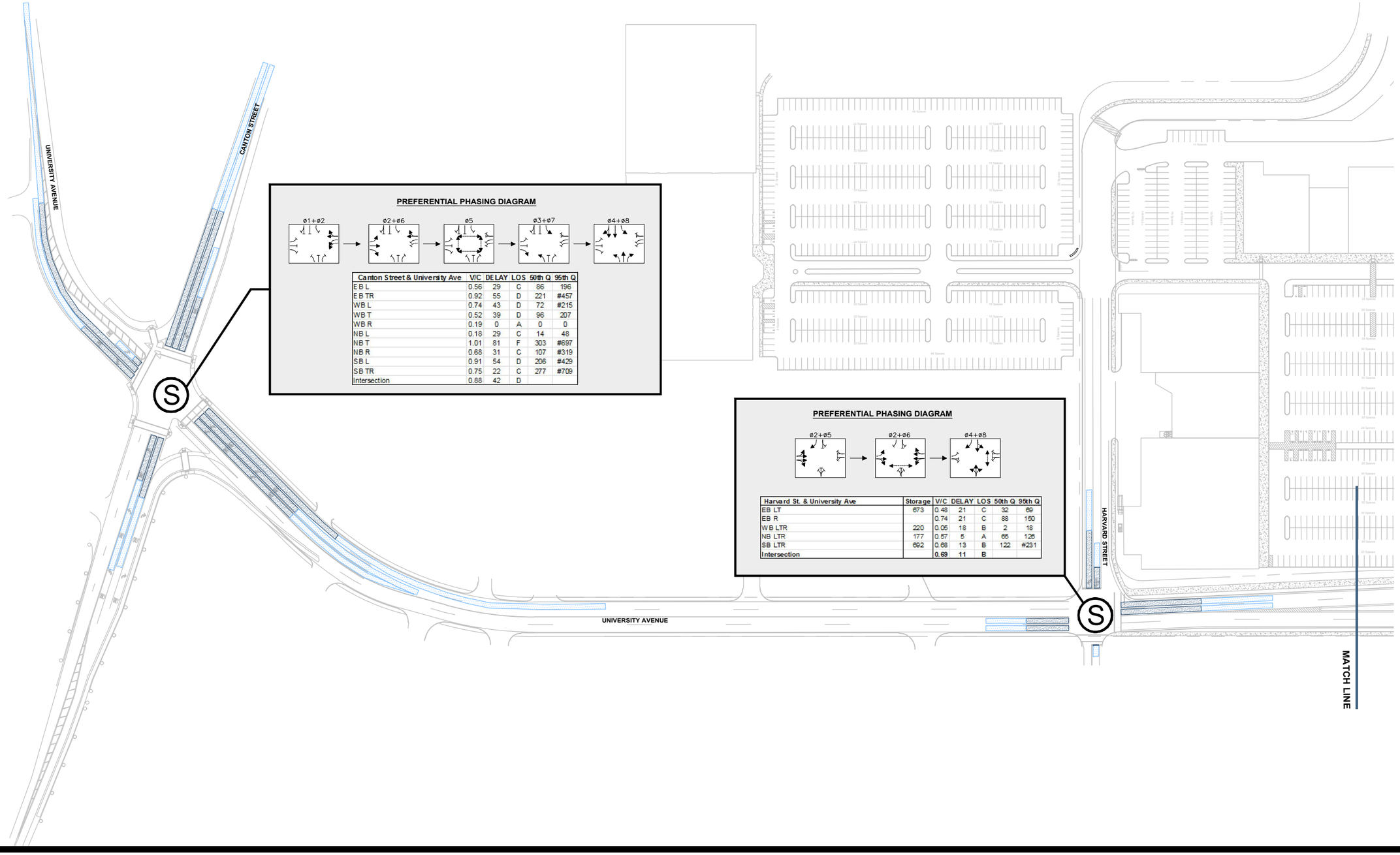
TETRA TECH | VAi

University Station
Westwood, Massachusetts

2017 Build Morning Intersection Queue Summary

Figure 1c

P:\3659\127-3659-12003\CAD\Conceptual\Traffic Figures\Queues Figure_3.dwg



Not to Scale

TETRATECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

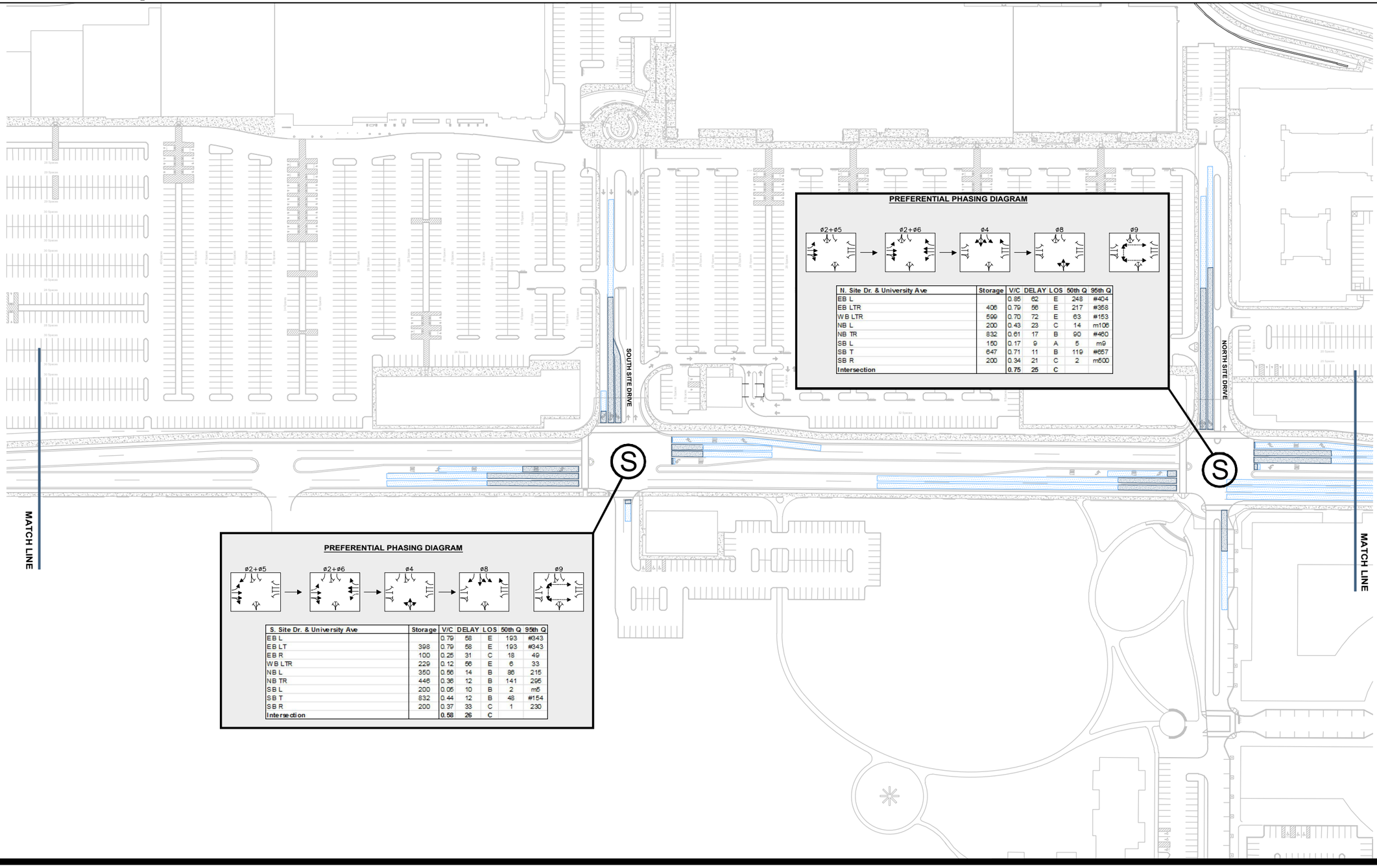
Approximate Scale in Feet

University Station
Westwood, Massachusetts

2017 Build Afternoon Intersection Queue Summary

Figure 2a

P:\3659\127-3659-12003\CAD\Conceptual\Traffic Figures\Queues Figure_3.dwg



N. Site Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.85	62	E	248	#404
EB LTR	406	0.79	56	E	217	#358
WB LTR	599	0.70	72	E	83	#153
NB L	200	0.43	29	C	14	m106
NB TR	832	0.61	17	B	90	#460
SB L	150	0.17	9	A	5	m9
SB T	647	0.71	11	B	119	#657
SB R	200	0.34	21	C	2	m500
Intersection		0.75	25	C		

S. Site Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.79	58	E	193	#343
EB LT	398	0.79	58	E	193	#343
EB R	100	0.25	31	C	18	49
WB LTR	229	0.12	56	E	6	33
NB L	350	0.56	14	B	86	215
NB TR	446	0.36	12	B	141	296
SB L	200	0.05	10	B	2	m5
SB T	832	0.44	12	B	48	#154
SB R	200	0.37	33	C	1	230
Intersection		0.58	26	C		

Not to Scale

TETRATECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

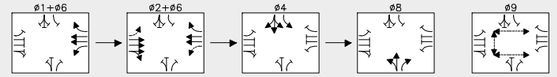
University Station
Westwood, Massachusetts

2017 Build Afternoon Intersection Queue Summary

Figure 2b

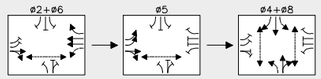
P:\3659\127-3659-12003\CAD\Conceptual\Traffic Figures\Queues Figure_3.dwg

PREFERENTIAL PHASING DIAGRAM



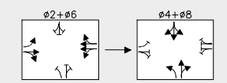
Relocated Rosemont Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.85	71	E	185	#326
EB LTR	158	0.84	69	E	181	#318
WB LT	215	0.71	71	E	73	#157
WB R		0.13	52	D	0	77
NB L	50	0.21	25	C	6	m17
NB TR	647	0.73	23	C	208	#647
SB L		0.72	66	E	85	m#243
SB T	613	0.75	10	B	82	#615
SB R	200	0.07	0	A	0	m1
Intersection		0.77	27	C		

PREFERENTIAL PHASING DIAGRAM



Blue Hill Drive & University Ave	V/C	DELAY	LOS	50th Q	95th Q
EB L	0.21	45	D	24	48
EB T	0.23	45	D	47	75
EB R	0.35	1	A	0	0
WB L	0.32	46	D	48	78
WB TR	0.32	46	D	58	99
NB L	1.08	71	E	~638	#782
NB TR	0.55	5	A	57	168
SB L	0.22	24	C	15	m30
SB TR	0.77	32	C	275	#532
Intersection	0.81	37	D		

PREFERENTIAL PHASING DIAGRAM



MBTA Dr. & University Ave	V/C	DELAY	LOS	50th Q	95th Q
EB LTR	0.08	27	C	2	23
WB L	0.36	24	C	29	55
WB R	0.08	23	C	0	40
NB L	0.05	5	A	1	m2
NB TR	0.74	15	B	235	553
SB LTR	0.61	9	A	81	223
Intersection	0.62	13	B		

RELOCATED ROSEMONT DRIVE

BLUE HILL DRIVE

UNIVERSITY AVENUE

MATCH LINE

Not to Scale

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

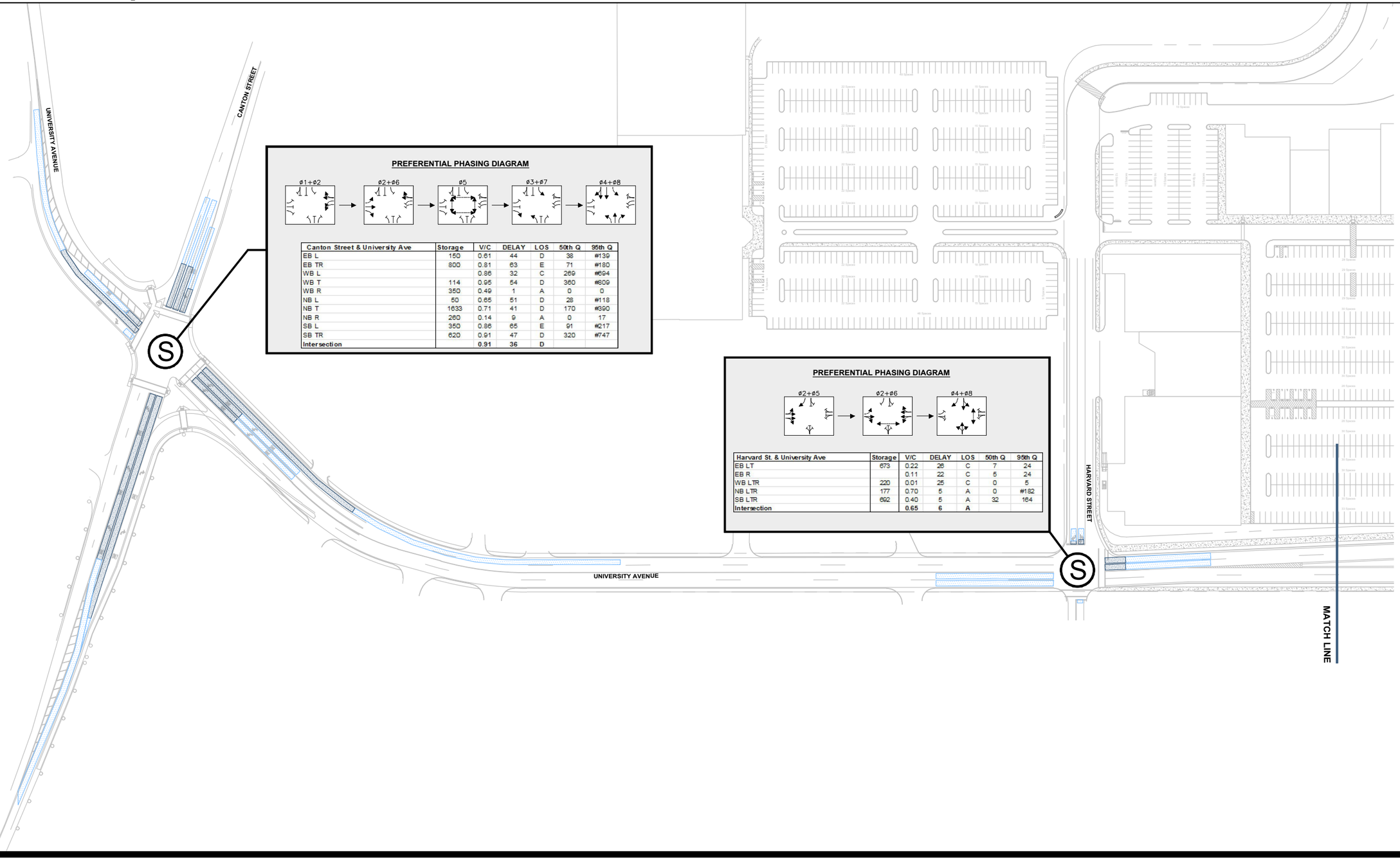
150 0 36 75 150

Approximate Scale in Feet

TETRATECH | VAi

University Station
Westwood, Massachusetts
2017 Build
Afternoon Intersection
Queue Summary

Figure 2c



PREFERENTIAL PHASING DIAGRAM

ø1+ø2 → ø2+ø6 → ø5 → ø3+ø7 → ø4+ø8

Canton Street & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L	150	0.61	44	D	38	#139
EB TR	800	0.81	63	E	71	#180
WB L		0.86	32	C	269	#694
WB T	114	0.95	54	D	360	#809
WB R	350	0.49	1	A	0	0
NB L	50	0.65	51	D	28	#118
NB T	1633	0.71	41	D	170	#390
NB R	260	0.14	9	A	0	17
SB L	350	0.86	65	E	91	#217
SB TR	620	0.91	47	D	320	#747
Intersection		**0.91**	**36**	**D**		

PREFERENTIAL PHASING DIAGRAM

ø2+ø5 → ø2+ø6 → ø4+ø8

Harvard St. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB LT	673	0.22	28	C	7	24
EB R		0.11	22	C	5	24
WB LTR	220	0.01	25	C	0	5
NB LTR	177	0.70	5	A	0	#182
SB LTR	662	0.40	5	A	32	164
Intersection		**0.65**	**6**	**A**		

Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

University Station
Westwood, Massachusetts

2022 Build Morning Intersection Queue Summary

Figure 3a

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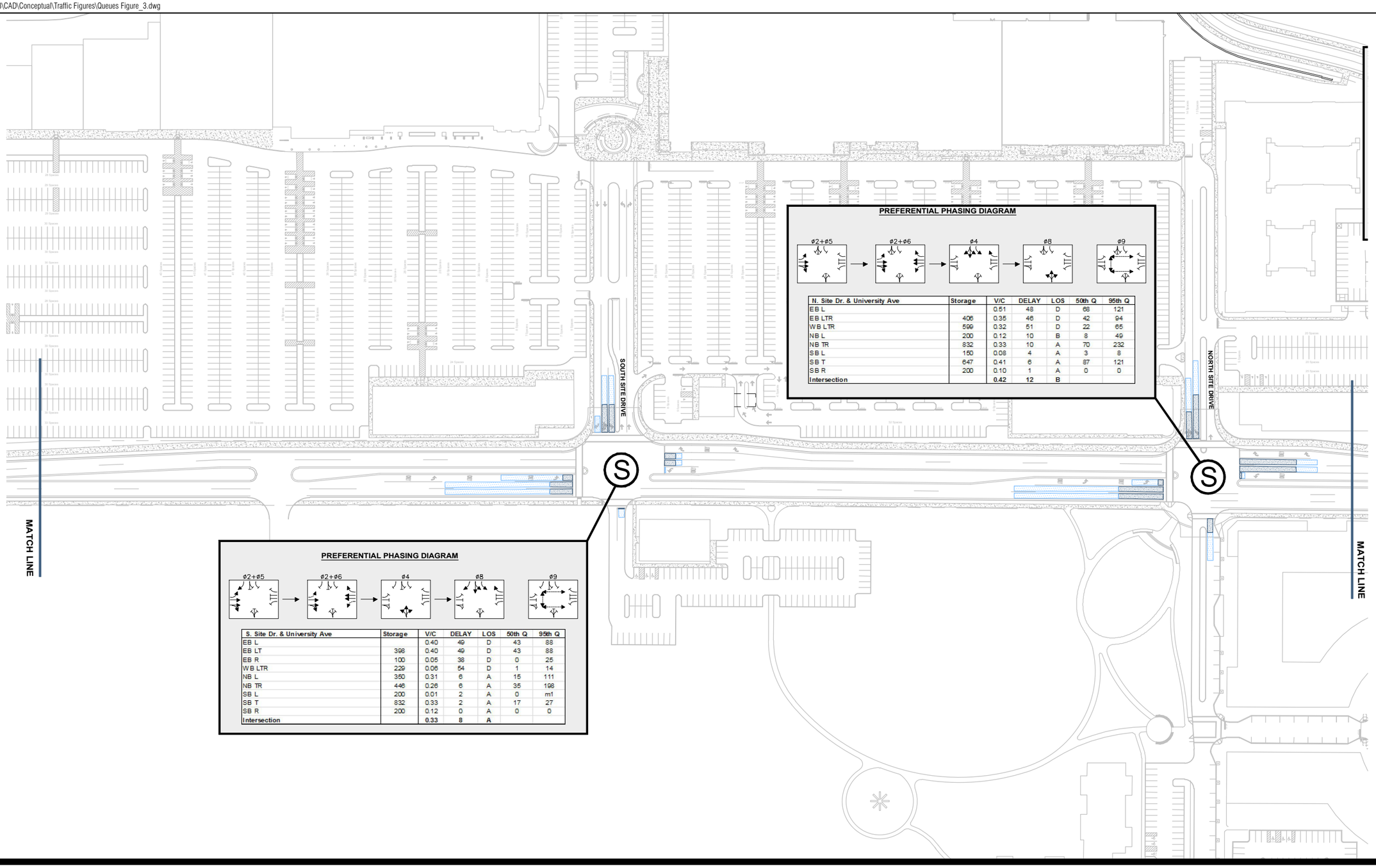

Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

University Station
Westwood, Massachusetts

2022 Build Morning Intersection Queue Summary

Figure 3b

P:\3659\127-3659-12003\CAD\Conceptual\Traffic Figures\Queues Figure_3.dwg

PREFERENTIAL PHASING DIAGRAM

ø1+ø6 → ø2+ø6 → ø4 → ø8 → ø9

Relocated Rosemont Dr. & University Ave	Storage	V/C	DELAY	LOS	50th Q	95th Q
EB L		0.39	51	D	35	75
EB LTR	158	0.26	49	D	22	61
WB LT	215	0.30	49	D	27	63
WB R		0.06	48	D	0	51
NB L	50	0.03	10	A	2	m8
NB TR	647	0.31	11	B	71	126
SB L		0.37	5	A	13	51
SB T	613	0.41	3	A	41	104
SB R	200	0.33	4	A	6	30
Intersection		**0.40**	**10**	**A**		

PREFERENTIAL PHASING DIAGRAM

ø2+ø6 → ø5 → ø4+ø8

Blue Hill Drive & University Ave	V/C	DELAY	LOS	50th Q	95th Q
EB L	0.74	49	D	148	212
EB T	0.22	34	C	55	89
EB R	0.32	1	A	0	0
WB L	0.11	33	C	18	40
WB TR	0.11	33	C	17	52
NB L	0.59	31	C	125	82
NB TR	0.62	10	B	54	311
SB L	0.13	15	B	14	42
SB TR	0.49	19	B	201	286
Intersection	0.60	19	B		

PREFERENTIAL PHASING DIAGRAM

ø2+ø6 → ø4+ø8

MBTA Dr. & University Ave	V/C	DELAY	LOS	50th Q	95th Q
EB LTR	0.08	54	D	2	16
WB L	0.10	54	D	2	10
WB R	0.00	53	D	0	5
NB L	0.10	1	A	0	m5
NB TR	0.52	2	A	0	158
SB LTR	0.47	3	A	0	204
Intersection	0.50	3	A		

RELOCATED ROSEMONT DRIVE

UNIVERSITY AVENUE

BLUE HILL DRIVE

MATCH LINE

Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

University Station
Westwood, Massachusetts

2022 Build Morning Intersection Queue Summary

Figure 3c

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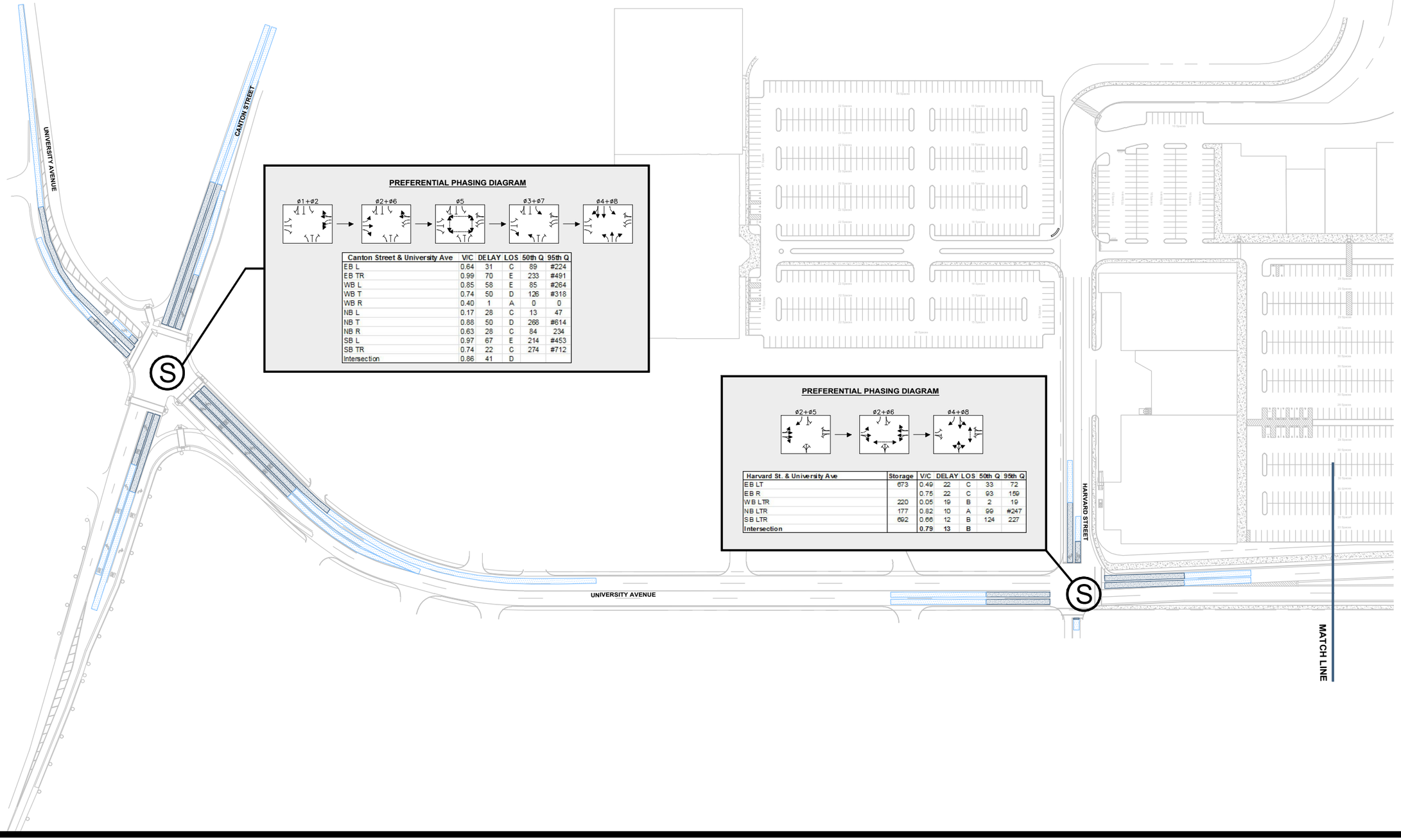


Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

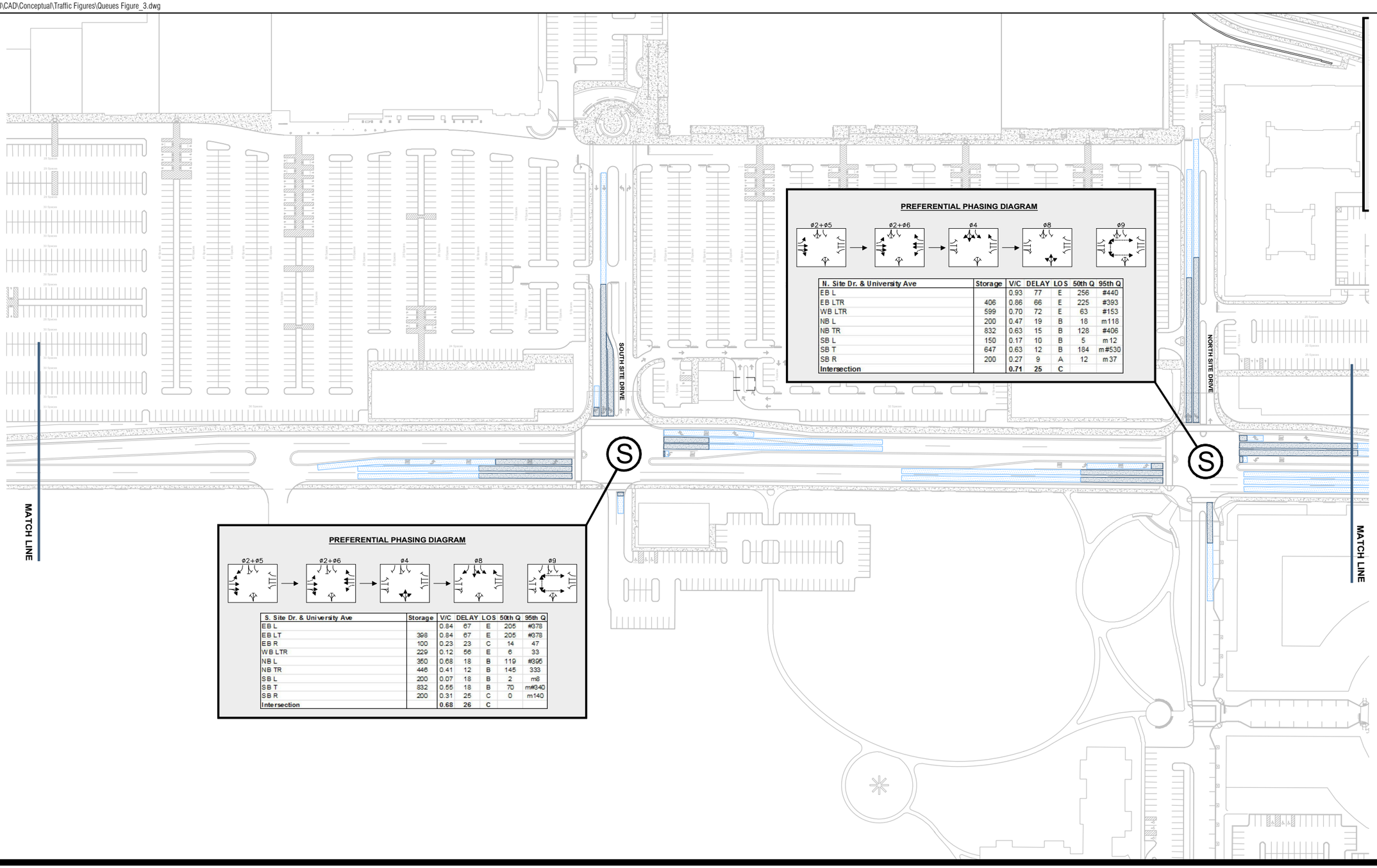
Approximate Scale in Feet

University Station
Westwood, Massachusetts

2022 Build Afternoon Intersection Queue Summary

Figure 4a

P:\3659\127-3659-12003\CAD\Conceptual\Traffic Figures\Queues Figure_3.dwg



Not to Scale

TETRA TECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

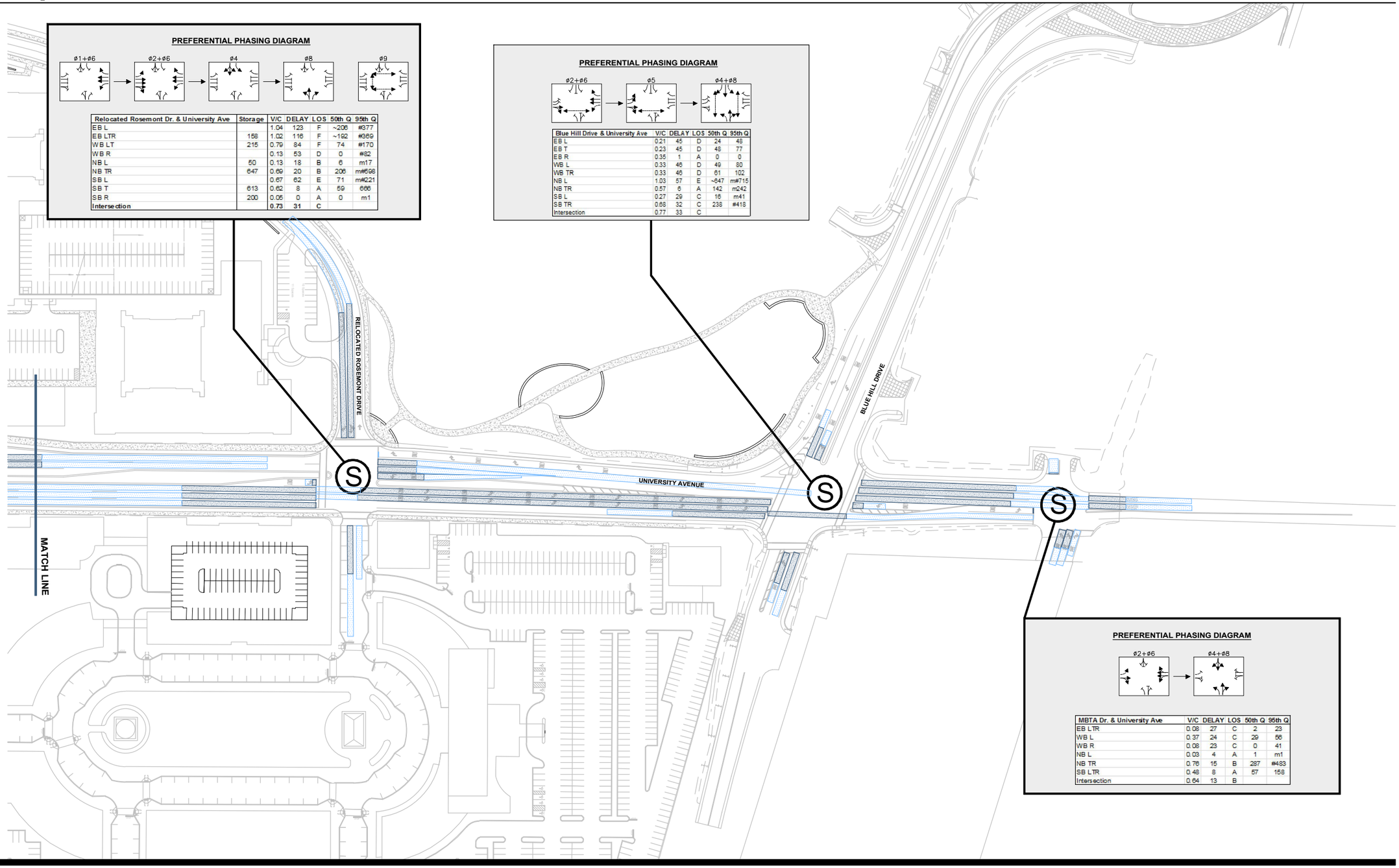
Approximate Scale in Feet

University Station
Westwood, Massachusetts

2022 Build Afternoon Intersection Queue Summary

Figure 4b

P:\3659\127-3659-12003\CAD\Conceptual\Traffic Figures\Queues Figure_3.dwg



Not to Scale

TETRATECH | VAi

LEGEND

= 50th % Queue (in Feet)

= 95th % Queue (in Feet)

150 0 36 75 150

Approximate Scale in Feet

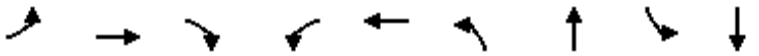
University Station
Westwood, Massachusetts

2022 Build Afternoon Intersection Queue Summary

Figure 4c

Attachment A

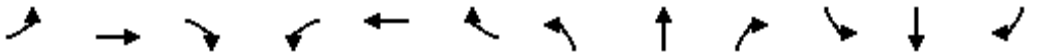
Capacity Analyses



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	25	0	79	1	0	219	474	6	712
Lane Group Flow (vph)	0	27	86	0	2	0	758	0	818
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.0	19.0	12.0	19.0	19.0	12.0	19.0	19.0	19.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		8.7	12.6		8.4		46.4		40.6
Actuated g/C Ratio		0.16	0.23		0.15		0.85		0.74
v/c Ratio		0.12	0.20		0.01		0.43		0.34
Control Delay		19.6	4.5		15.5		3.5		6.4
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		19.6	4.5		15.5		3.5		6.4
LOS		B	A		B		A		A
Approach Delay		8.1			15.5		3.5		6.4
Approach LOS		A			B		A		A
Queue Length 50th (ft)		7	1		0		0		30
Queue Length 95th (ft)		24	21		5		88		152
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		419	504		289		1760		2430
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.06	0.17		0.01		0.43		0.34

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.8	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 5.2	Intersection LOS: A
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	0	79	1	0	1	219	474	5	6	712	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.98			1.00	
Satd. Flow (prot)		1736	1615		1160			3368			3449	
Flt Permitted		0.78	1.00		0.83			0.58			0.95	
Satd. Flow (perm)		1433	1615		985			1982			3277	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	86	1	0	1	238	515	5	7	774	37
RTOR Reduction (vph)	0	0	70	0	1	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	27	16	0	1	0	0	758	0	0	815	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	98%	0%	8%	0%	16%	4%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		4.1	7.4		4.1			45.3			38.0	
Effective Green, g (s)		5.1	9.4		5.1			46.3			39.0	
Actuated g/C Ratio		0.09	0.16		0.09			0.78			0.66	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		123	256		85			1645			2152	
v/s Ratio Prot			0.00					c0.03				
v/s Ratio Perm		c0.02	0.01		0.00			c0.33			0.25	
v/c Ratio		0.22	0.06		0.01			0.46			0.38	
Uniform Delay, d1		25.3	21.3		24.8			2.3			4.7	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		0.9	0.1		0.1			0.2			0.1	
Delay (s)		26.2	21.4		24.9			2.5			4.8	
Level of Service		C	C		C			A			A	
Approach Delay (s)		22.5			24.9			2.5			4.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

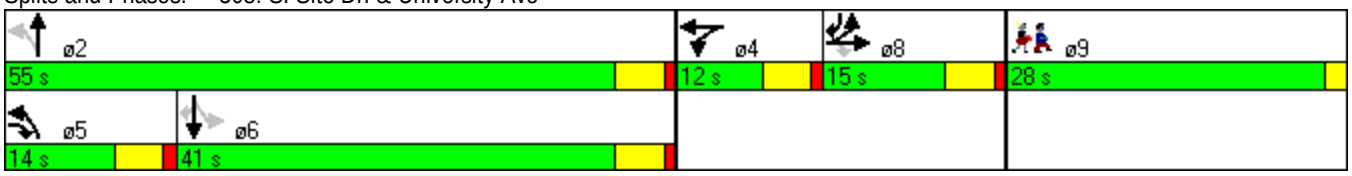
308: S. Site Dr. & University Ave

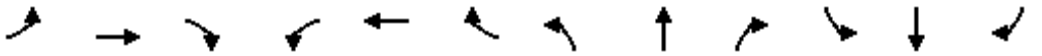
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	112	0	80	0	105	466	6	600	212	
Lane Group Flow (vph)	61	61	87	5	114	509	7	652	230	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	15.0	15.0	14.0	12.0	14.0	55.0	41.0	41.0	15.0	28.0
Total Split (%)	13.6%	13.6%	12.7%	10.9%	12.7%	50.0%	37.3%	37.3%	13.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	9.8	9.8	21.0	6.8	84.3	84.3	72.3	72.3	85.3	
Actuated g/C Ratio	0.09	0.09	0.19	0.06	0.77	0.77	0.66	0.66	0.78	
v/c Ratio	0.40	0.40	0.23	0.05	0.20	0.20	0.01	0.29	0.18	
Control Delay	54.9	54.9	6.8	37.6	7.8	6.6	3.5	2.8	0.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.9	54.9	6.8	37.6	7.8	6.6	3.5	2.8	0.3	
LOS	D	D	A	D	A	A	A	A	A	
Approach Delay		34.9		37.6		6.8		2.1		
Approach LOS		C		D		A		A		
Queue Length 50th (ft)	43	43	0	1	10	26	0	19	0	
Queue Length 95th (ft)	88	88	26	14	80	155	m1	30	1	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	173	173	403	126	602	2608	575	2281	1309	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.35	0.22	0.04	0.19	0.20	0.01	0.29	0.18	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 25 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 7.9 Intersection LOS: A
Intersection Capacity Utilization 39.1% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	80	2	0	3	105	466	2	6	600	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1695		1787	3404		1787	3471	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.35	1.00		0.46	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1695		650	3404		874	3471	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	0	87	2	0	3	114	507	2	7	652	230
RTOR Reduction (vph)	0	0	73	0	3	0	0	0	0	0	0	70
Lane Group Flow (vph)	61	61	14	0	2	0	114	509	0	7	652	160
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	4%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	8.8	8.8	15.8		1.3		77.7	77.7		65.7	65.7	74.5
Effective Green, g (s)	9.8	9.8	17.8		2.3		78.7	78.7		66.7	66.7	76.5
Actuated g/C Ratio	0.09	0.09	0.16		0.02		0.72	0.72		0.61	0.61	0.70
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	151	151	259		35		548	2435		530	2105	1112
v/s Ratio Prot	c0.04	0.04	0.00		c0.00		0.02	c0.15			c0.19	0.01
v/s Ratio Perm			0.00				0.13			0.01		0.09
v/c Ratio	0.40	0.40	0.05		0.06		0.21	0.21		0.01	0.31	0.14
Uniform Delay, d1	47.3	47.3	39.0		52.8		5.3	5.2		8.6	10.5	5.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.22	0.21	0.00
Incremental Delay, d2	1.8	1.8	0.1		0.7		0.2	0.2		0.0	0.4	0.1
Delay (s)	49.1	49.1	39.1		53.5		5.5	5.4		1.9	2.6	0.1
Level of Service	D	D	D		D		A	A		A	A	A
Approach Delay (s)		44.9			53.5			5.4			1.9	
Approach LOS		D			D			A			A	

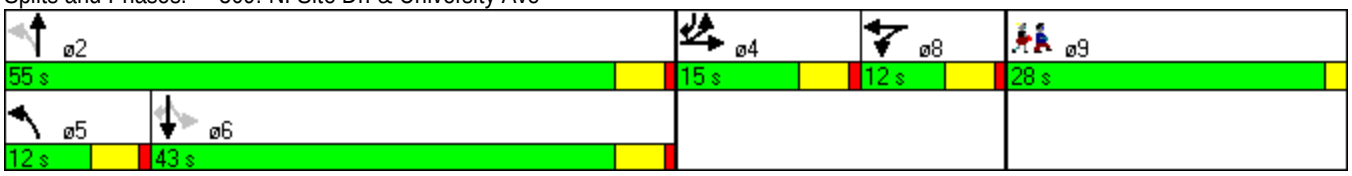
Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

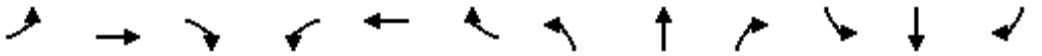
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	134	1	3	31	522	38	750	197	
Lane Group Flow (vph)	96	93	58	34	597	41	815	214	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	15.0	15.0	12.0	12.0	55.0	43.0	43.0	15.0	28.0
Total Split (%)	13.6%	13.6%	10.9%	10.9%	50.0%	39.1%	39.1%	13.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	10.3	10.3	7.5	76.6	76.6	69.8	69.8	84.9	
Actuated g/C Ratio	0.09	0.09	0.07	0.70	0.70	0.63	0.63	0.77	
v/c Ratio	0.60	0.52	0.41	0.08	0.26	0.08	0.36	0.17	
Control Delay	63.8	43.1	40.3	9.2	7.7	2.5	2.7	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	63.8	43.1	40.3	9.2	7.7	2.5	2.7	0.6	
LOS	E	D	D	A	A	A	A	A	
Approach Delay		53.6	40.3		7.8		2.3		
Approach LOS		D	D		A		A		
Queue Length 50th (ft)	69	44	22	5	50	5	57	0	
Queue Length 95th (ft)	127	101	65	22	161	3	25	1	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	170	190	150	457	2321	513	2244	1294	
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	0.56	0.49	0.39	0.07	0.26	0.08	0.36	0.17	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 5 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	1	39	28	3	23	31	522	28	38	750	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.93			0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1630			1744		1805	3330		1805	3539	1615
Flt Permitted	0.95	0.97			0.97		0.27	1.00		0.43	1.00	1.00
Satd. Flow (perm)	1698	1630			1744		522	3330		810	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	1	42	30	3	25	34	567	30	41	815	214
RTOR Reduction (vph)	0	27	0	0	24	0	0	2	0	0	0	67
Lane Group Flow (vph)	96	66	0	0	34	0	34	595	0	41	815	147
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	8%	0%	0%	2%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	9.3	9.3			5.4		73.1	73.1		64.2	64.2	73.5
Effective Green, g (s)	10.3	10.3			6.4		74.1	74.1		65.2	65.2	75.5
Actuated g/C Ratio	0.09	0.09			0.06		0.67	0.67		0.59	0.59	0.69
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	153			101		409	2243		480	2098	1167
v/s Ratio Prot	c0.06	0.04			c0.02		0.00	c0.18			c0.23	0.01
v/s Ratio Perm							0.05			0.05		0.08
v/c Ratio	0.60	0.43			0.34		0.08	0.27		0.09	0.39	0.13
Uniform Delay, d1	47.9	47.1			49.8		6.9	7.1		9.6	11.9	5.9
Progression Factor	1.00	1.00			1.00		0.92	0.87		0.15	0.17	0.20
Incremental Delay, d2	6.3	1.9			2.0		0.1	0.3		0.3	0.5	0.0
Delay (s)	54.2	49.0			51.8		6.5	6.5		1.7	2.5	1.3
Level of Service	D	D			D		A	A		A	A	A
Approach Delay (s)		51.7			51.8			6.5			2.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

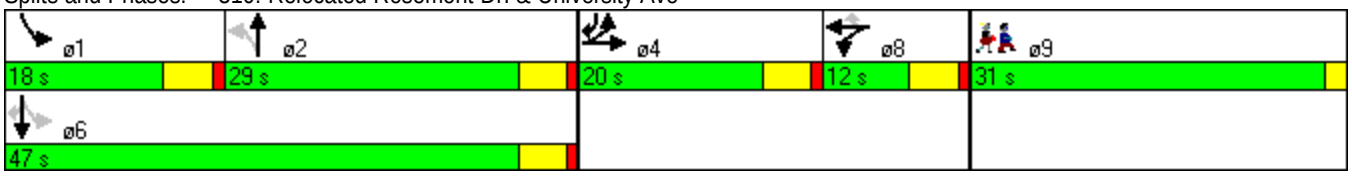
310: Relocated Rosemont Dr. & University Ave

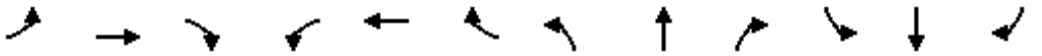
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	73	2	1	90	7	636	192	933	622	
Lane Group Flow (vph)	50	47	40	98	8	730	209	1014	676	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	31.0
Total Split (s)	20.0	20.0	12.0	12.0	29.0	29.0	18.0	47.0	20.0	31.0
Total Split (%)	18.2%	18.2%	10.9%	10.9%	26.4%	26.4%	16.4%	42.7%	18.2%	28%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	11.8	11.8	8.2	8.2	56.6	56.6	71.8	71.8	87.6	
Actuated g/C Ratio	0.11	0.11	0.07	0.07	0.51	0.51	0.65	0.65	0.80	
v/c Ratio	0.27	0.25	0.30	0.47	0.03	0.29	0.42	0.44	0.48	
Control Delay	47.7	34.7	53.9	17.5	20.9	15.0	8.2	4.8	3.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	
Total Delay	47.7	34.7	53.9	17.5	20.9	15.0	8.2	4.8	3.4	
LOS	D	C	D	B	C	B	A	A	A	
Approach Delay		41.4	28.1			15.0		4.7		
Approach LOS		D	C			B		A		
Queue Length 50th (ft)	34	21	27	0	2	76	14	37	45	
Queue Length 95th (ft)	71	57	63	52	m12	142	57	95	120	
Internal Link Dist (ft)		989	200			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	247	253	140	215	274	2508	528	2310	1446	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	201	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.19	0.29	0.46	0.03	0.29	0.40	0.44	0.54	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.48
Intersection Signal Delay: 9.7 Intersection LOS: A
Intersection Capacity Utilization 55.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave

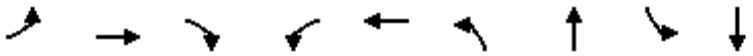




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	2	15	36	1	90	7	636	36	192	933	622
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.95			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1645			1794	1599	1787	4866		1787	3539	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.28	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1698	1645			1794	1599	532	4866		571	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	2	16	39	1	98	8	691	39	209	1014	676
RTOR Reduction (vph)	0	14	0	0	0	91	0	4	0	0	0	172
Lane Group Flow (vph)	50	33	0	0	40	7	8	727	0	209	1014	504
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	10.8	10.8			7.2	7.2	54.0	54.0		69.2	69.2	80.0
Effective Green, g (s)	11.8	11.8			8.2	8.2	55.0	55.0		70.2	70.2	82.0
Actuated g/C Ratio	0.11	0.11			0.07	0.07	0.50	0.50		0.64	0.64	0.75
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	182	176			134	119	266	2433		488	2259	1250
v/s Ratio Prot	0.03	0.02			c0.02			0.15		0.04	c0.29	c0.04
v/s Ratio Perm						0.00	0.02			0.23		0.27
v/c Ratio	0.27	0.19			0.30	0.06	0.03	0.30		0.43	0.45	0.40
Uniform Delay, d1	45.2	44.7			48.2	47.3	14.0	16.2		8.8	10.1	5.1
Progression Factor	1.00	1.00			1.00	1.00	0.84	0.78		0.53	0.34	2.91
Incremental Delay, d2	0.8	0.5			1.3	0.2	0.2	0.3		0.5	0.6	0.2
Delay (s)	46.0	45.2			49.4	47.5	11.9	13.0		5.2	4.0	15.0
Level of Service	D	D			D	D	B	B		A	A	B
Approach Delay (s)		45.6			48.1			12.9			8.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

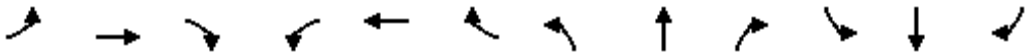
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	25	0	79	1	0	219	474	6	712
Lane Group Flow (vph)	0	27	86	0	2	0	758	0	818
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		8.8	12.7		8.6		46.4		40.7
Actuated g/C Ratio		0.16	0.23		0.16		0.84		0.74
v/c Ratio		0.12	0.20		0.01		0.43		0.34
Control Delay		19.5	4.4		15.5		3.6		6.6
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		19.5	4.4		15.5		3.6		6.6
LOS		B	A		B		A		A
Approach Delay		8.0			15.5		3.6		6.6
Approach LOS		A			B		A		A
Queue Length 50th (ft)		7	1		0		0		30
Queue Length 95th (ft)		24	21		5		93		157
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		410	506		288		1756		2425
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.07	0.17		0.01		0.43		0.34

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 55	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	0	79	1	0	1	219	474	5	6	712	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.98			1.00	
Satd. Flow (prot)		1736	1615		1160			3368			3449	
Flt Permitted		0.77	1.00		0.83			0.58			0.95	
Satd. Flow (perm)		1405	1615		985			1981			3277	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	86	1	0	1	238	515	5	7	774	37
RTOR Reduction (vph)	0	0	70	0	1	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	27	16	0	1	0	0	758	0	0	815	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	98%	0%	8%	0%	16%	4%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		4.2	7.5		4.2			45.3			38.0	
Effective Green, g (s)		5.2	9.5		5.2			46.3			39.0	
Actuated g/C Ratio		0.09	0.16		0.09			0.78			0.66	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		123	258		86			1642			2148	
v/s Ratio Prot			0.00					c0.03				
v/s Ratio Perm		c0.02	0.01		0.00			c0.33			0.25	
v/c Ratio		0.22	0.06		0.01			0.46			0.38	
Uniform Delay, d1		25.3	21.2		24.8			2.3			4.7	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		0.9	0.1		0.1			0.2			0.1	
Delay (s)		26.2	21.3		24.9			2.5			4.8	
Level of Service		C	C		C			A			A	
Approach Delay (s)		22.5			24.9			2.5			4.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

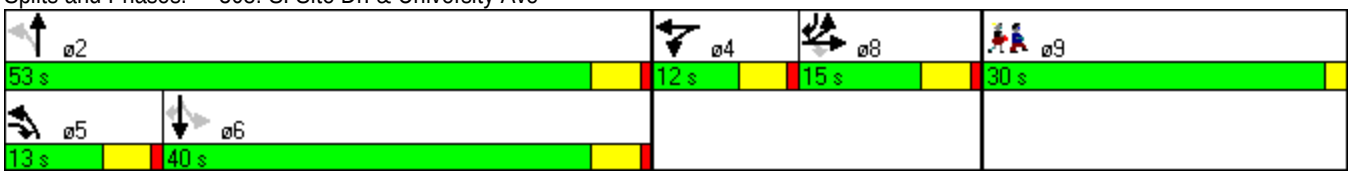
308: S. Site Dr. & University Ave

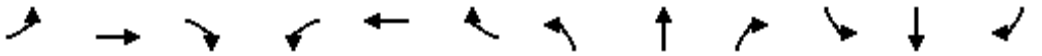
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	112	0	80	0	105	466	6	600	212	
Lane Group Flow (vph)	61	61	87	5	114	509	7	652	230	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	15.0	15.0	13.0	12.0	13.0	53.0	40.0	40.0	15.0	30.0
Total Split (%)	13.6%	13.6%	11.8%	10.9%	11.8%	48.2%	36.4%	36.4%	13.6%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	9.8	9.8	20.8	6.8	83.9	83.9	72.1	72.1	85.1	
Actuated g/C Ratio	0.09	0.09	0.19	0.06	0.76	0.76	0.66	0.66	0.77	
v/c Ratio	0.40	0.40	0.23	0.05	0.20	0.20	0.01	0.29	0.18	
Control Delay	54.9	54.9	6.8	37.6	8.2	7.0	8.2	5.3	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.9	54.9	6.8	37.6	8.2	7.0	8.2	5.3	0.6	
LOS	D	D	A	D	A	A	A	A	A	
Approach Delay		34.9		37.6		7.2		4.1		
Approach LOS		C		D		A		A		
Queue Length 50th (ft)	43	43	0	1	10	26	0	25	0	
Queue Length 95th (ft)	88	88	26	14	83	161	m3	67	0	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	173	173	389	126	588	2596	573	2275	1307	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.35	0.22	0.04	0.19	0.20	0.01	0.29	0.18	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 26 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 9.1 Intersection LOS: A
Intersection Capacity Utilization 39.1% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	80	2	0	3	105	466	2	6	600	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1695		1787	3404		1787	3471	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.35	1.00		0.46	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1695		650	3404		874	3471	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	0	87	2	0	3	114	507	2	7	652	230
RTOR Reduction (vph)	0	0	73	0	3	0	0	0	0	0	0	70
Lane Group Flow (vph)	61	61	14	0	2	0	114	509	0	7	652	160
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	4%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	8.8	8.8	15.6		1.3		77.3	77.3		65.5	65.5	74.3
Effective Green, g (s)	9.8	9.8	17.6		2.3		78.3	78.3		66.5	66.5	76.3
Actuated g/C Ratio	0.09	0.09	0.16		0.02		0.71	0.71		0.60	0.60	0.69
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	151	151	256		35		543	2423		528	2098	1109
v/s Ratio Prot	c0.04	0.04	0.00		c0.00		0.01	c0.15			c0.19	0.01
v/s Ratio Perm			0.00				0.13			0.01		0.09
v/c Ratio	0.40	0.40	0.05		0.06		0.21	0.21		0.01	0.31	0.14
Uniform Delay, d1	47.3	47.3	39.1		52.8		5.4	5.4		8.7	10.6	5.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.51	0.42	0.26
Incremental Delay, d2	1.8	1.8	0.1		0.7		0.2	0.2		0.0	0.4	0.1
Delay (s)	49.1	49.1	39.2		53.5		5.6	5.6		4.5	4.8	1.6
Level of Service	D	D	D		D		A	A		A	A	A
Approach Delay (s)		45.0			53.5			5.6			4.0	
Approach LOS		D			D			A			A	

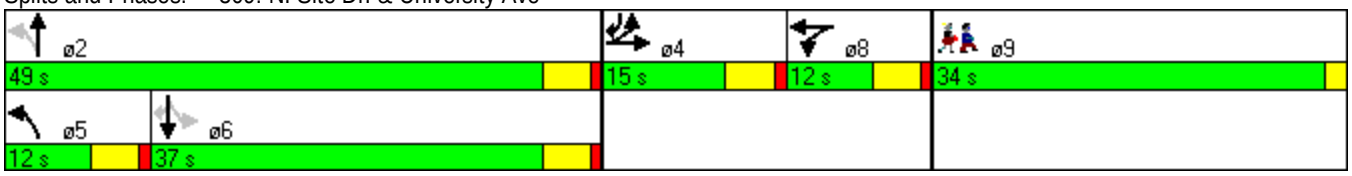
Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.6
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

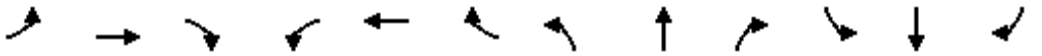
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	134	1	3	31	522	38	750	197	
Lane Group Flow (vph)	96	93	58	34	597	41	815	214	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	34.0
Total Split (s)	15.0	15.0	12.0	12.0	49.0	37.0	37.0	15.0	34.0
Total Split (%)	13.6%	13.6%	10.9%	10.9%	44.5%	33.6%	33.6%	13.6%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	10.3	10.3	7.5	75.4	75.4	68.6	68.6	83.7	
Actuated g/C Ratio	0.09	0.09	0.07	0.69	0.69	0.62	0.62	0.76	
v/c Ratio	0.60	0.52	0.41	0.08	0.26	0.08	0.37	0.17	
Control Delay	63.8	43.1	40.3	10.2	8.2	3.0	3.3	0.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	63.8	43.1	40.3	10.2	8.2	3.0	3.3	0.7	
LOS	E	D	D	B	A	A	A	A	
Approach Delay		53.6	40.3		8.3		2.7		
Approach LOS		D	D		A		A		
Queue Length 50th (ft)	69	44	22	5	51	6	66	0	
Queue Length 95th (ft)	127	101	65	31	150	4	71	1	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	170	190	150	447	2284	504	2206	1278	
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	0.56	0.49	0.39	0.08	0.26	0.08	0.37	0.17	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 14 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 10.6	Intersection LOS: B
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	1	39	28	3	23	31	522	28	38	750	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.93			0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1630			1744		1805	3330		1805	3539	1615
Flt Permitted	0.95	0.97			0.97		0.27	1.00		0.43	1.00	1.00
Satd. Flow (perm)	1698	1630			1744		516	3330		810	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	1	42	30	3	25	34	567	30	41	815	214
RTOR Reduction (vph)	0	27	0	0	24	0	0	2	0	0	0	69
Lane Group Flow (vph)	96	66	0	0	34	0	34	595	0	41	815	145
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	8%	0%	0%	2%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	9.3	9.3			5.4		71.9	71.9		63.0	63.0	72.3
Effective Green, g (s)	10.3	10.3			6.4		72.9	72.9		64.0	64.0	74.3
Actuated g/C Ratio	0.09	0.09			0.06		0.66	0.66		0.58	0.58	0.68
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	153			101		399	2207		471	2059	1150
v/s Ratio Prot	c0.06	0.04			c0.02		0.00	c0.18			c0.23	0.01
v/s Ratio Perm							0.05			0.05		0.08
v/c Ratio	0.60	0.43			0.34		0.09	0.27		0.09	0.40	0.13
Uniform Delay, d1	47.9	47.1			49.8		7.4	7.6		10.1	12.5	6.3
Progression Factor	1.00	1.00			1.00		0.88	0.81		0.16	0.19	0.21
Incremental Delay, d2	6.3	1.9			2.0		0.1	0.3		0.3	0.5	0.0
Delay (s)	54.2	49.0			51.8		6.6	6.5		1.9	2.9	1.3
Level of Service	D	D			D		A	A		A	A	A
Approach Delay (s)		51.7			51.8			6.5			2.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	24.4
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

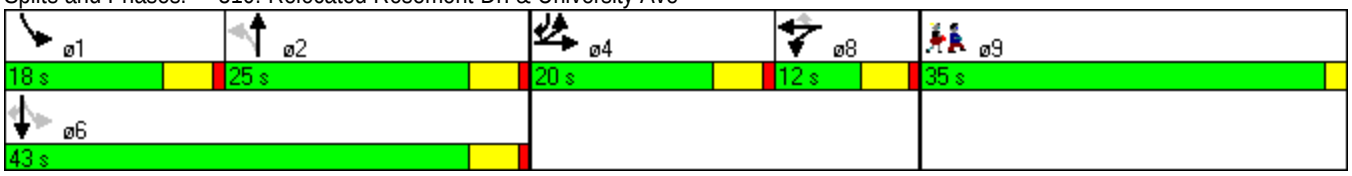
310: Relocated Rosemont Dr. & University Ave

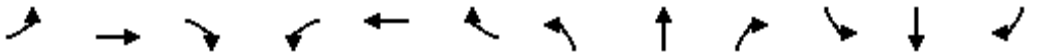
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	73	2	1	90	7	636	192	933	622	
Lane Group Flow (vph)	50	47	40	98	8	730	209	1014	676	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	35.0
Total Split (s)	20.0	20.0	12.0	12.0	25.0	25.0	18.0	43.0	20.0	35.0
Total Split (%)	18.2%	18.2%	10.9%	10.9%	22.7%	22.7%	16.4%	39.1%	18.2%	32%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	11.8	11.8	8.2	8.2	54.9	54.9	71.0	71.0	86.8	
Actuated g/C Ratio	0.11	0.11	0.07	0.07	0.50	0.50	0.65	0.65	0.79	
v/c Ratio	0.27	0.25	0.30	0.47	0.03	0.30	0.42	0.44	0.48	
Control Delay	47.7	34.7	53.9	17.5	24.6	17.0	10.5	6.3	3.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
Total Delay	47.7	34.7	53.9	17.5	24.6	17.0	10.5	6.3	3.4	
LOS	D	C	D	B	C	B	B	A	A	
Approach Delay		41.4	28.1			17.1		5.7		
Approach LOS		D	C			B		A		
Queue Length 50th (ft)	34	21	27	0	2	76	18	49	45	
Queue Length 95th (ft)	71	57	63	52	m13	153	75	168	120	
Internal Link Dist (ft)		989	200			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	247	253	140	215	266	2433	522	2284	1440	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	160	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.19	0.29	0.46	0.03	0.30	0.40	0.44	0.53	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 10 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.48
Intersection Signal Delay: 10.9 Intersection LOS: B
Intersection Capacity Utilization 55.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave



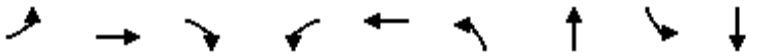


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	2	15	36	1	90	7	636	36	192	933	622
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.95			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1645			1794	1599	1787	4866		1787	3539	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.28	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1698	1645			1794	1599	532	4866		564	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	2	16	39	1	98	8	691	39	209	1014	676
RTOR Reduction (vph)	0	14	0	0	0	91	0	4	0	0	0	177
Lane Group Flow (vph)	50	33	0	0	40	7	8	726	0	209	1014	499
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	10.8	10.8			7.2	7.2	52.3	52.3		68.4	68.4	79.2
Effective Green, g (s)	11.8	11.8			8.2	8.2	53.3	53.3		69.4	69.4	81.2
Actuated g/C Ratio	0.11	0.11			0.07	0.07	0.48	0.48		0.63	0.63	0.74
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	182	176			134	119	258	2358		490	2233	1238
v/s Ratio Prot	0.03	0.02			c0.02			0.15		0.05	c0.29	c0.04
v/s Ratio Perm						0.00	0.02			0.22		0.27
v/c Ratio	0.27	0.19			0.30	0.06	0.03	0.31		0.43	0.45	0.40
Uniform Delay, d1	45.2	44.7			48.2	47.3	14.8	17.2		9.1	10.5	5.4
Progression Factor	1.00	1.00			1.00	1.00	0.91	0.83		0.68	0.43	2.49
Incremental Delay, d2	0.8	0.5			1.3	0.2	0.2	0.3		0.5	0.6	0.2
Delay (s)	46.0	45.2			49.4	47.5	13.7	14.5		6.7	5.1	13.5
Level of Service	D	D			D	D	B	B		A	A	B
Approach Delay (s)		45.6			48.1			14.5			8.3	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

306: Harvard St. & University Ave

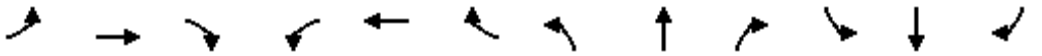


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	107	0	389	8	0	124	808	1	855
Lane Group Flow (vph)	0	116	423	0	26	0	1013	0	1031
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.0	19.0	12.0	19.0	19.0	12.0	19.0	19.0	19.0
Total Split (s)	22.0	22.0	12.0	22.0	22.0	12.0	38.0	26.0	26.0
Total Split (%)	36.7%	36.7%	20.0%	36.7%	36.7%	20.0%	63.3%	43.3%	43.3%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		10.5	20.3		10.5		35.0		23.5
Actuated g/C Ratio		0.21	0.40		0.21		0.69		0.46
v/c Ratio		0.40	0.64		0.08		0.57		0.67
Control Delay		22.4	15.3		11.2		6.4		15.3
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		22.4	15.3		11.2		6.4		15.3
LOS		C	B		B		A		B
Approach Delay		16.8			11.2		6.4		15.3
Approach LOS		B			B		A		B
Queue Length 50th (ft)		32	88		2		65		122
Queue Length 95th (ft)		69	150		18		126		#231
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		504	687		536		1778		1536
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.23	0.62		0.05		0.57		0.67

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 50.9	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	389	8	0	16	124	808	0	1	855	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.91			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1805	1615		1635			3516			3457	
Flt Permitted		0.74	1.00		0.88			0.66			0.95	
Satd. Flow (perm)		1407	1615		1464			2335			3299	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	0	423	9	0	17	135	878	0	1	929	101
RTOR Reduction (vph)	0	0	24	0	14	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	116	399	0	12	0	0	1013	0	0	1019	0
Heavy Vehicles (%)	0%	0%	0%	12%	0%	0%	2%	2%	0%	98%	3%	1%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.0	15.4		8.0			34.0			22.6	
Effective Green, g (s)		9.0	17.4		9.0			35.0			23.6	
Actuated g/C Ratio		0.17	0.33		0.17			0.67			0.45	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		244	540		253			1762			1497	
v/s Ratio Prot			c0.12					0.09				
v/s Ratio Perm		0.08	0.13		0.01			0.29			c0.31	
v/c Ratio		0.48	0.74		0.05			0.57			0.68	
Uniform Delay, d1		19.4	15.3		17.9			4.5			11.2	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.5	5.3		0.1			0.5			1.3	
Delay (s)		20.8	20.5		18.0			5.0			12.5	
Level of Service		C	C		B			A			B	
Approach Delay (s)		20.6			18.0			5.0			12.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

308: S. Site Dr. & University Ave

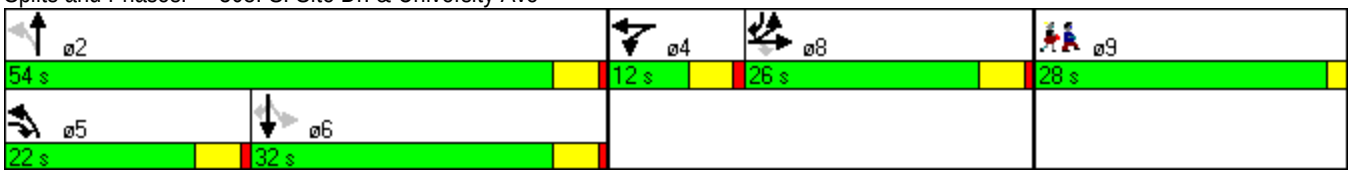
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	467	0	301	0	251	716	15	615	548	
Lane Group Flow (vph)	254	254	327	23	273	783	16	668	596	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	26.0	26.0	22.0	12.0	22.0	54.0	32.0	32.0	26.0	28.0
Total Split (%)	21.7%	21.7%	18.3%	10.0%	18.3%	45.0%	26.7%	26.7%	21.7%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	22.8	22.8	41.6	7.2	76.6	76.6	57.0	57.0	81.4	
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.64	0.64	0.48	0.48	0.68	
v/c Ratio	0.79	0.79	0.44	0.20	0.54	0.35	0.05	0.41	0.47	
Control Delay	64.5	64.5	5.3	34.3	16.9	13.3	14.7	13.0	4.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.5	64.5	5.3	34.3	16.9	13.3	14.7	13.0	4.1	
LOS	E	E	A	C	B	B	B	B	A	
Approach Delay		41.3		34.3		14.2		8.9		
Approach LOS		D		C		B		A		
Queue Length 50th (ft)	193	193	18	6	86	141	2	48	1	
Queue Length 95th (ft)	#343	#343	49	33	215	295	m5	#154	230	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	330	330	775	126	536	2258	317	1633	1281	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.77	0.77	0.42	0.18	0.51	0.35	0.05	0.41	0.47	

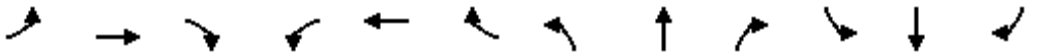
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 51 (43%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 19.3	Intersection LOS: B
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	467	0	301	7	0	14	251	716	5	15	615	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1686		1787	3536		1787	3438	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.29	1.00		0.36	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1686		538	3536		668	3438	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	0	327	8	0	15	273	778	5	16	668	596
RTOR Reduction (vph)	0	0	197	0	14	0	0	0	0	0	0	218
Lane Group Flow (vph)	254	254	130	0	9	0	273	783	0	16	668	378
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	5%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	21.8	21.8	36.4		4.0		72.0	72.0		52.4	52.4	74.2
Effective Green, g (s)	22.8	22.8	38.4		5.0		73.0	73.0		53.4	53.4	76.2
Actuated g/C Ratio	0.19	0.19	0.32		0.04		0.61	0.61		0.44	0.44	0.64
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	323	323	512		70		490	2151		297	1530	1015
v/s Ratio Prot	c0.15	0.15	0.03		c0.01		c0.07	0.22			0.19	0.07
v/s Ratio Perm			0.05				c0.27			0.02		0.17
v/c Ratio	0.79	0.79	0.25		0.12		0.56	0.36		0.05	0.44	0.37
Uniform Delay, d1	46.3	46.3	30.2		55.4		12.6	11.8		18.9	22.9	10.5
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.52	0.48	3.17
Incremental Delay, d2	11.9	11.9	0.3		0.8		1.4	0.5		0.2	0.6	0.2
Delay (s)	58.2	58.2	30.5		56.2		14.0	12.3		10.2	11.7	33.4
Level of Service	E	E	C		E		B	B		B	B	C
Approach Delay (s)		47.3			56.2			12.7			21.7	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

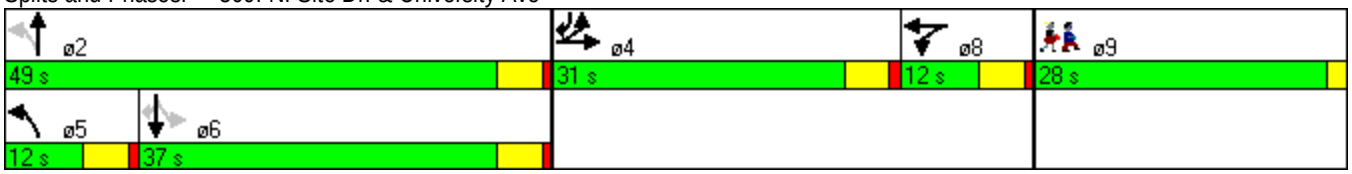
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	451	18	11	92	1078	24	1030	520	
Lane Group Flow (vph)	318	303	100	100	1201	26	1120	565	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	31.0	31.0	12.0	12.0	49.0	37.0	37.0	31.0	28.0
Total Split (%)	25.8%	25.8%	10.0%	10.0%	40.8%	30.8%	30.8%	25.8%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	26.1	26.1	8.0	68.3	68.3	55.7	55.7	85.8	
Actuated g/C Ratio	0.22	0.22	0.07	0.57	0.57	0.46	0.46	0.72	
v/c Ratio	0.85	0.80	0.74	0.42	0.60	0.16	0.69	0.43	
Control Delay	66.6	58.2	75.5	23.1	18.7	11.0	13.8	3.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	
Total Delay	66.6	58.2	75.5	23.1	18.7	11.0	13.8	4.0	
LOS	E	E	E	C	B	B	B	A	
Approach Delay		62.5	75.5		19.0		10.5		
Approach LOS		E	E		B		B		
Queue Length 50th (ft)	248	217	63	14	90	5	119	2	
Queue Length 95th (ft)	#404	#358	#153	m106	#460	m9	#657	m500	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	386	389	135	239	2009	160	1628	1321	
Starvation Cap Reductn	0	0	0	0	0	0	0	367	
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	0.82	0.78	0.74	0.42	0.60	0.16	0.69	0.59	

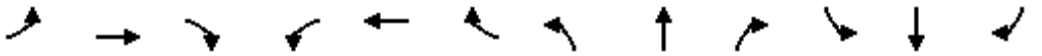
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 31 (26%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 23.9	Intersection LOS: C
Intersection Capacity Utilization 66.7%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	18	102	47	11	34	92	1078	27	24	1030	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.95		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1715	1653			1760		1805	3528		1805	3505	1615
Flt Permitted	0.95	0.97			0.98		0.11	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1715	1653			1760		216	3528		345	3505	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	490	20	111	51	12	37	100	1172	29	26	1120	565
RTOR Reduction (vph)	0	17	0	0	18	0	0	1	0	0	0	184
Lane Group Flow (vph)	318	286	0	0	82	0	100	1200	0	26	1120	381
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	25.1	25.1			7.0		65.7	65.7		53.1	53.1	78.2
Effective Green, g (s)	26.1	26.1			8.0		66.7	66.7		54.1	54.1	80.2
Actuated g/C Ratio	0.22	0.22			0.07		0.56	0.56		0.45	0.45	0.67
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	373	360			117		234	1961		156	1580	1133
v/s Ratio Prot	c0.19	0.17			c0.05		0.03	c0.34			c0.32	0.07
v/s Ratio Perm							0.21			0.08		0.16
v/c Ratio	0.85	0.79			0.70		0.43	0.61		0.17	0.71	0.34
Uniform Delay, d1	45.1	44.4			54.8		17.9	17.9		19.6	26.6	8.5
Progression Factor	1.00	1.00			1.00		1.22	0.89		0.36	0.34	2.49
Incremental Delay, d2	16.9	11.4			17.4		1.1	1.3		1.5	1.8	0.1
Delay (s)	62.0	55.8			72.2		22.9	17.3		8.6	10.9	21.3
Level of Service	E	E			E		C	B		A	B	C
Approach Delay (s)		59.0			72.2			17.7			14.3	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	397	6	3	193	17	1483	178	1467	98	
Lane Group Flow (vph)	233	231	95	210	18	1680	193	1595	107	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	31.0
Total Split (s)	24.0	24.0	13.0	13.0	38.0	38.0	14.0	52.0	24.0	31.0
Total Split (%)	20.0%	20.0%	10.8%	10.8%	31.7%	31.7%	11.7%	43.3%	20.0%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	19.3	19.3	8.9	8.9	55.9	55.9	73.6	73.6	96.9	
Actuated g/C Ratio	0.16	0.16	0.07	0.07	0.47	0.47	0.61	0.61	0.81	
v/c Ratio	0.85	0.84	0.71	0.67	0.21	0.71	0.72	0.74	0.08	
Control Delay	76.7	74.3	82.0	18.4	34.6	23.9	58.0	12.7	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	
Total Delay	76.7	74.3	82.0	18.4	34.6	23.9	58.0	12.8	0.1	
LOS	E	E	F	B	C	C	E	B	A	
Approach Delay		75.5	38.2			24.0		16.7		
Approach LOS		E	D			C		B		
Queue Length 50th (ft)	185	181	73	0	6	208	85	82	0	
Queue Length 95th (ft)	#326	#318	#157	77	m17	#647	m#243	#915	m1	
Internal Link Dist (ft)		158	200			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	283	284	135	314	87	2379	269	2170	1317	
Starvation Cap Reductn	0	0	0	0	0	0	0	61	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.82	0.81	0.70	0.67	0.21	0.71	0.72	0.76	0.08	

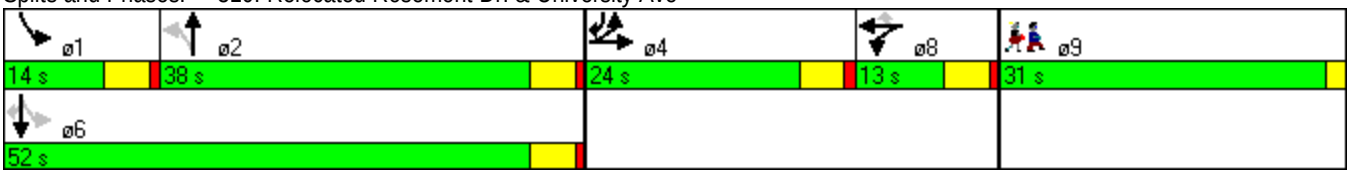
Intersection Summary

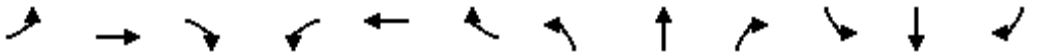
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 27.3 Intersection LOS: C
Intersection Capacity Utilization 72.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave



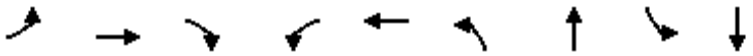


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	397	6	23	85	3	193	17	1483	63	178	1467	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.98			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1686			1794	1599	1787	5104		1787	3539	1599
Flt Permitted	0.95	0.96			0.95	1.00	0.10	1.00		0.07	1.00	1.00
Satd. Flow (perm)	1698	1686			1794	1599	186	5104		129	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	432	7	25	92	3	210	18	1612	68	193	1595	107
RTOR Reduction (vph)	0	3	0	0	0	194	0	3	0	0	0	21
Lane Group Flow (vph)	233	228	0	0	95	16	18	1677	0	193	1595	86
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	18.3	18.3			7.9	7.9	53.3	53.3		71.0	71.0	89.3
Effective Green, g (s)	19.3	19.3			8.9	8.9	54.3	54.3		72.0	72.0	91.3
Actuated g/C Ratio	0.16	0.16			0.07	0.07	0.45	0.45		0.60	0.60	0.76
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	273	271			133	119	84	2310		267	2123	1270
v/s Ratio Prot	c0.14	0.14			c0.05			0.33		0.08	c0.45	0.01
v/s Ratio Perm						0.01	0.10			0.35		0.04
v/c Ratio	0.85	0.84			0.71	0.13	0.21	0.73		0.72	0.75	0.07
Uniform Delay, d1	49.0	48.9			54.3	51.9	19.9	26.8		29.8	17.5	3.6
Progression Factor	1.00	1.00			1.00	1.00	1.05	0.79		1.97	0.48	0.02
Incremental Delay, d2	21.9	20.3			16.6	0.5	4.3	1.5		7.3	2.0	0.0
Delay (s)	70.9	69.1			70.9	52.4	25.2	22.7		66.1	10.4	0.1
Level of Service	E	E			E	D	C	C		E	B	A
Approach Delay (s)		70.0			58.2			22.7			15.5	
Approach LOS		E			E			C			B	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.8
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

306: Harvard St. & University Ave

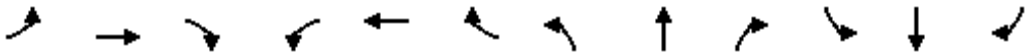


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	107	0	389	8	0	124	808	1	855
Lane Group Flow (vph)	0	116	423	0	26	0	1013	0	1031
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	20.0	20.0	20.0
Total Split (s)	22.0	22.0	12.0	22.0	22.0	12.0	38.0	26.0	26.0
Total Split (%)	36.7%	36.7%	20.0%	36.7%	36.7%	20.0%	63.3%	43.3%	43.3%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		10.7	20.4		10.6		35.0		23.6
Actuated g/C Ratio		0.21	0.40		0.21		0.68		0.46
v/c Ratio		0.39	0.63		0.08		0.57		0.67
Control Delay		22.1	15.2		11.0		6.6		15.6
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		22.1	15.2		11.0		6.6		15.6
LOS		C	B		B		A		B
Approach Delay		16.7			11.0		6.6		15.6
Approach LOS		B			B		A		B
Queue Length 50th (ft)		32	88		2		65		122
Queue Length 95th (ft)		69	150		17		133		#244
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		503	689		536		1769		1532
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.23	0.61		0.05		0.57		0.67

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 51.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 12.3	Intersection LOS: B
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	389	8	0	16	124	808	0	1	855	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.91			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1805	1615		1635			3516			3457	
Flt Permitted		0.74	1.00		0.88			0.66			0.95	
Satd. Flow (perm)		1407	1615		1467			2329			3299	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	0	423	9	0	17	135	878	0	1	929	101
RTOR Reduction (vph)	0	0	24	0	14	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	116	399	0	12	0	0	1013	0	0	1019	0
Heavy Vehicles (%)	0%	0%	0%	12%	0%	0%	2%	2%	0%	98%	3%	1%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.2	15.6		8.2			34.0			22.6	
Effective Green, g (s)		9.2	17.6		9.2			35.0			23.6	
Actuated g/C Ratio		0.18	0.34		0.18			0.67			0.45	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		248	545		259			1753			1492	
v/s Ratio Prot			c0.12					0.09				
v/s Ratio Perm		0.08	0.13		0.01			0.29			c0.31	
v/c Ratio		0.47	0.73		0.05			0.58			0.68	
Uniform Delay, d1		19.3	15.2		17.9			4.6			11.3	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.4	5.0		0.1			0.5			1.3	
Delay (s)		20.7	20.3		17.9			5.1			12.6	
Level of Service		C	C		B			A			B	
Approach Delay (s)		20.4			17.9			5.1			12.6	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

308: S. Site Dr. & University Ave

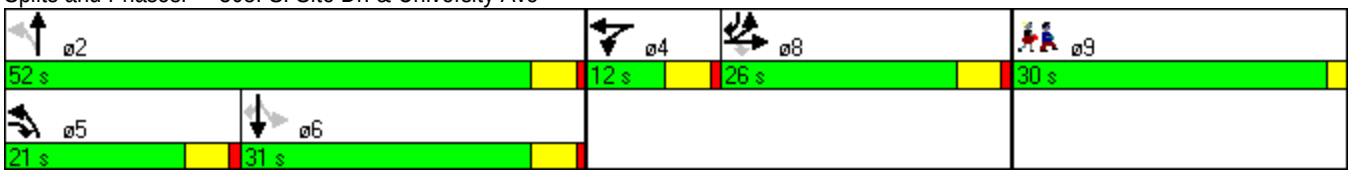
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	467	0	301	0	251	716	15	615	548	
Lane Group Flow (vph)	254	254	327	23	273	783	16	668	596	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	26.0	26.0	21.0	12.0	21.0	52.0	31.0	31.0	26.0	30.0
Total Split (%)	21.7%	21.7%	17.5%	10.0%	17.5%	43.3%	25.8%	25.8%	21.7%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	22.5	22.5	41.5	7.2	76.5	76.5	56.7	56.7	80.8	
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.64	0.64	0.47	0.47	0.67	
v/c Ratio	0.80	0.80	0.44	0.20	0.54	0.35	0.05	0.41	0.47	
Control Delay	65.9	65.9	5.5	34.3	17.5	13.6	8.0	9.2	5.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	65.9	65.9	5.5	34.3	17.5	13.6	8.0	9.2	5.3	
LOS	E	E	A	C	B	B	A	A	A	
Approach Delay		42.2		34.3		14.6		7.4		
Approach LOS		D		C		B		A		
Queue Length 50th (ft)	196	196	20	6	83	135	2	37	0	
Queue Length 95th (ft)	#343	#343	49	33	221	305	m3	#67	268	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	326	326	761	126	527	2255	316	1626	1276	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.78	0.78	0.43	0.18	0.52	0.35	0.05	0.41	0.47	

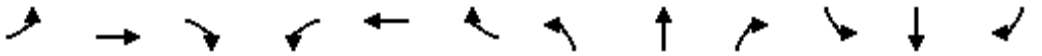
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 19.1	Intersection LOS: B
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	467	0	301	7	0	14	251	716	5	15	615	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1686		1787	3536		1787	3438	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.28	1.00		0.36	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1686		535	3536		668	3438	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	0	327	8	0	15	273	778	5	16	668	596
RTOR Reduction (vph)	0	0	195	0	14	0	0	0	0	0	0	221
Lane Group Flow (vph)	254	254	132	0	9	0	273	783	0	16	668	375
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	5%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	21.5	21.5	36.3		4.0		71.9	71.9		52.1	52.1	73.6
Effective Green, g (s)	22.5	22.5	38.3		5.0		72.9	72.9		53.1	53.1	75.6
Actuated g/C Ratio	0.19	0.19	0.32		0.04		0.61	0.61		0.44	0.44	0.63
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	318	318	510		70		490	2148		296	1521	1007
v/s Ratio Prot	c0.15	0.15	0.03		c0.01		c0.07	0.22			0.19	0.07
v/s Ratio Perm			0.05				c0.26			0.02		0.16
v/c Ratio	0.80	0.80	0.26		0.12		0.56	0.36		0.05	0.44	0.37
Uniform Delay, d1	46.6	46.6	30.3		55.4		12.6	11.9		19.1	23.1	10.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.28	0.31	4.25
Incremental Delay, d2	13.1	13.1	0.3		0.8		1.4	0.5		0.2	0.6	0.2
Delay (s)	59.7	59.7	30.6		56.2		14.0	12.4		5.6	7.8	45.8
Level of Service	E	E	C		E		B	B		A	A	D
Approach Delay (s)		48.3			56.2			12.8			25.5	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

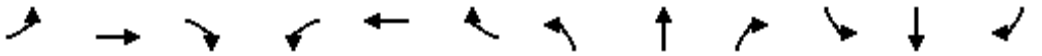
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	451	18	11	92	1078	24	1030	520	
Lane Group Flow (vph)	318	303	100	100	1201	26	1120	565	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	34.0
Total Split (s)	31.0	31.0	12.0	12.0	43.0	31.0	31.0	31.0	34.0
Total Split (%)	25.8%	25.8%	10.0%	10.0%	35.8%	25.8%	25.8%	25.8%	28%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	26.1	26.1	8.0	67.1	67.1	54.5	54.5	84.6	
Actuated g/C Ratio	0.22	0.22	0.07	0.56	0.56	0.45	0.45	0.70	
v/c Ratio	0.85	0.80	0.74	0.44	0.61	0.17	0.70	0.44	
Control Delay	66.6	58.2	75.5	26.9	20.6	17.2	18.3	3.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	
Total Delay	66.6	58.2	75.5	26.9	20.6	17.2	18.3	3.9	
LOS	E	E	E	C	C	B	B	A	
Approach Delay		62.5	75.5		21.0		13.5		
Approach LOS		E	E		C		B		
Queue Length 50th (ft)	248	217	63	17	107	5	130	2	
Queue Length 95th (ft)	#404	#358	#153	m118	#648	m12	#730	m515	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	386	389	135	231	1974	153	1593	1295	
Starvation Cap Reductn	0	0	0	0	0	0	0	326	
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	0.82	0.78	0.74	0.43	0.61	0.17	0.70	0.58	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 30 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 66.7%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	18	102	47	11	34	92	1078	27	24	1030	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.95		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1715	1653			1760		1805	3528		1805	3505	1615
Flt Permitted	0.95	0.97			0.98		0.11	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1715	1653			1760		206	3528		337	3505	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	490	20	111	51	12	37	100	1172	29	26	1120	565
RTOR Reduction (vph)	0	17	0	0	18	0	0	1	0	0	0	171
Lane Group Flow (vph)	318	286	0	0	82	0	100	1200	0	26	1120	394
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	25.1	25.1			7.0		64.5	64.5		51.9	51.9	77.0
Effective Green, g (s)	26.1	26.1			8.0		65.5	65.5		52.9	52.9	79.0
Actuated g/C Ratio	0.22	0.22			0.07		0.55	0.55		0.44	0.44	0.66
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	373	360			117		227	1926		149	1545	1117
v/s Ratio Prot	c0.19	0.17			c0.05		0.03	c0.34			c0.32	0.08
v/s Ratio Perm							0.21			0.08		0.17
v/c Ratio	0.85	0.79			0.70		0.44	0.62		0.17	0.72	0.35
Uniform Delay, d1	45.1	44.4			54.8		18.7	18.8		20.3	27.6	9.1
Progression Factor	1.00	1.00			1.00		1.30	0.92		0.54	0.47	1.42
Incremental Delay, d2	16.9	11.4			17.4		1.2	1.3		1.7	2.0	0.1
Delay (s)	62.0	55.8			72.2		25.6	18.6		12.7	14.9	13.0
Level of Service	E	E			E		C	B		B	B	B
Approach Delay (s)		59.0			72.2			19.2			14.2	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.4
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	397	6	3	193	17	1483	178	1467	98	
Lane Group Flow (vph)	233	231	95	210	18	1680	193	1595	107	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	35.0
Total Split (s)	24.0	24.0	13.0	13.0	34.0	34.0	14.0	48.0	24.0	35.0
Total Split (%)	20.0%	20.0%	10.8%	10.8%	28.3%	28.3%	11.7%	40.0%	20.0%	29%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	19.3	19.3	8.9	8.9	55.1	55.1	72.8	72.8	96.1	
Actuated g/C Ratio	0.16	0.16	0.07	0.07	0.46	0.46	0.61	0.61	0.80	
v/c Ratio	0.85	0.84	0.71	0.67	0.22	0.72	0.72	0.74	0.08	
Control Delay	76.7	74.3	82.0	18.4	37.5	25.2	57.8	13.4	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	76.7	74.3	82.0	18.4	37.5	25.2	57.8	13.4	0.2	
LOS	E	E	F	B	D	C	E	B	A	
Approach Delay		75.5	38.2			25.3		17.2		
Approach LOS		E	D			C		B		
Queue Length 50th (ft)	185	181	73	0	6	200	85	82	0	
Queue Length 95th (ft)	#326	#318	#157	77	m16	#694	m#249	#938	m0	
Internal Link Dist (ft)		158	200			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	283	284	135	314	83	2348	268	2147	1305	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.82	0.81	0.70	0.67	0.22	0.72	0.72	0.74	0.08	

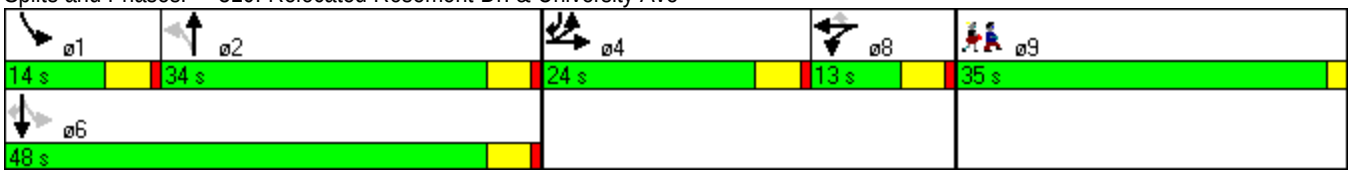
Intersection Summary

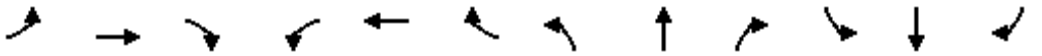
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 28.0 Intersection LOS: C
Intersection Capacity Utilization 72.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	397	6	23	85	3	193	17	1483	63	178	1467	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.98			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1686			1794	1599	1787	5104		1787	3539	1599
Flt Permitted	0.95	0.96			0.95	1.00	0.10	1.00		0.07	1.00	1.00
Satd. Flow (perm)	1698	1686			1794	1599	180	5104		131	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	432	7	25	92	3	210	18	1612	68	193	1595	107
RTOR Reduction (vph)	0	3	0	0	0	194	0	3	0	0	0	19
Lane Group Flow (vph)	233	228	0	0	95	16	18	1677	0	193	1595	88
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	18.3	18.3			7.9	7.9	52.5	52.5		70.2	70.2	88.5
Effective Green, g (s)	19.3	19.3			8.9	8.9	53.5	53.5		71.2	71.2	90.5
Actuated g/C Ratio	0.16	0.16			0.07	0.07	0.45	0.45		0.59	0.59	0.75
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	273	271			133	119	80	2276		267	2100	1259
v/s Ratio Prot	c0.14	0.14			c0.05			0.33		0.08	c0.45	0.01
v/s Ratio Perm						0.01	0.10			0.35		0.04
v/c Ratio	0.85	0.84			0.71	0.13	0.23	0.74		0.72	0.76	0.07
Uniform Delay, d1	49.0	48.9			54.3	51.9	20.5	27.4		29.8	18.1	3.8
Progression Factor	1.00	1.00			1.00	1.00	1.07	0.82		1.96	0.47	0.03
Incremental Delay, d2	21.9	20.3			16.6	0.5	4.7	1.6		7.3	2.1	0.0
Delay (s)	70.9	69.1			70.9	52.4	26.6	24.0		65.7	10.6	0.1
Level of Service	E	E			E	D	C	C		E	B	A
Approach Delay (s)		70.0			58.2			24.0			15.6	
Approach LOS		E			E			C			B	

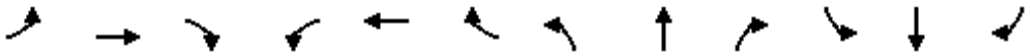
Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Configurations								
Volume (vph)	96	0	220	1	0	152	556	651
Lane Group Flow (vph)	0	104	239	0	2	0	769	841
Turn Type	Perm		pm+ov	Perm		pm+pt		
Protected Phases		4	5		8	5	2	6
Permitted Phases	4		4	8		2		
Detector Phase	4	4	5	8	8	5	2	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.0	19.0	12.0	19.0	19.0	12.0	19.0	19.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	Max	Min
Act Effct Green (s)		10.5	19.1		10.4		39.1	29.3
Actuated g/C Ratio		0.19	0.34		0.19		0.71	0.53
v/c Ratio		0.40	0.41		0.01		0.44	0.45
Control Delay		23.8	8.7		15.0		5.1	10.0
Queue Delay		0.0	0.0		0.0		0.0	0.0
Total Delay		23.8	8.7		15.0		5.1	10.0
LOS		C	A		B		A	B
Approach Delay		13.3			15.0		5.1	10.0
Approach LOS		B			B		A	B
Queue Length 50th (ft)		30	28		0		44	83
Queue Length 95th (ft)		66	67		5		88	151
Internal Link Dist (ft)		673			220		177	692
Turn Bay Length (ft)								
Base Capacity (vph)		400	640		449		1740	1867
Starvation Cap Reductn		0	0		0		0	0
Spillback Cap Reductn		0	0		0		0	0
Storage Cap Reductn		0	0		0		0	0
Reduced v/c Ratio		0.26	0.37		0.00		0.44	0.45

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 55.4	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	0	220	1	0	1	152	556	0	0	651	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.98	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1736	1495		1729			3529			3495	
Flt Permitted		0.76	1.00		0.87			0.64			1.00	
Satd. Flow (perm)		1382	1495		1550			2281			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	0	239	1	0	1	165	604	0	0	708	133
RTOR Reduction (vph)	0	0	75	0	1	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	104	164	0	1	0	0	769	0	0	820	0
Heavy Vehicles (%)	4%	0%	8%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.3	14.1		8.3			38.1			28.3	
Effective Green, g (s)		9.3	16.1		9.3			39.1			29.3	
Actuated g/C Ratio		0.16	0.29		0.16			0.69			0.52	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		228	427		256			1732			1816	
v/s Ratio Prot			0.05					c0.05			0.23	
v/s Ratio Perm		c0.08	0.06		0.00			c0.25				
v/c Ratio		0.46	0.38		0.00			0.44			0.45	
Uniform Delay, d1		21.3	16.2		19.7			3.8			8.5	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.4	0.6		0.0			0.2			0.2	
Delay (s)		22.7	16.7		19.7			4.0			8.7	
Level of Service		C	B		B			A			A	
Approach Delay (s)		18.6			19.7			4.0			8.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

308: S. Site Dr. & University Ave

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	551	0	342	0	278	352	21	412	686	
Lane Group Flow (vph)	299	300	372	27	302	390	23	448	746	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	30.0	30.0	25.0	12.0	25.0	50.0	25.0	25.0	30.0	28.0
Total Split (%)	25.0%	25.0%	20.8%	10.0%	20.8%	41.7%	20.8%	20.8%	25.0%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	26.4	26.4	45.7	7.2	73.0	73.0	52.9	52.9	80.8	
Actuated g/C Ratio	0.22	0.22	0.38	0.06	0.61	0.61	0.44	0.44	0.67	
v/c Ratio	0.80	0.80	0.47	0.23	0.51	0.18	0.05	0.28	0.56	
Control Delay	61.5	61.7	5.8	33.4	17.9	13.4	14.4	12.3	9.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	61.5	61.7	5.8	33.4	17.9	13.4	14.4	12.3	9.2	
LOS	E	E	A	C	B	B	B	B	A	
Approach Delay		40.2		33.4		15.4		10.4		
Approach LOS		D		C		B		B		
Queue Length 50th (ft)	230	231	32	7	101	63	3	28	412	
Queue Length 95th (ft)	#383	#383	51	37	254	147	m9	m135	m684	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	381	381	851	129	634	2148	432	1574	1324	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.78	0.79	0.44	0.21	0.48	0.18	0.05	0.28	0.56	

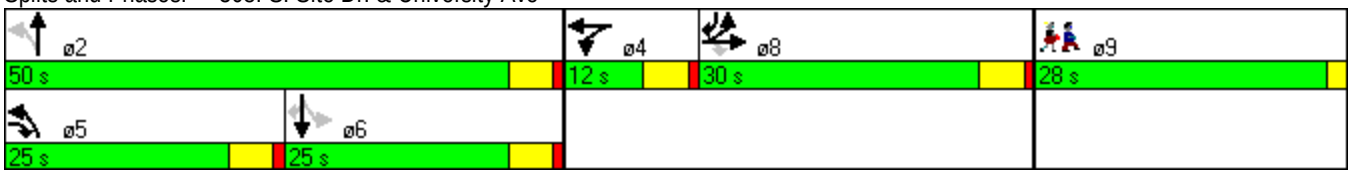
Intersection Summary

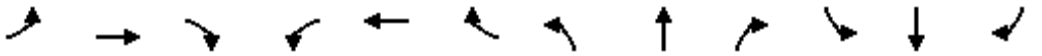
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 21.8 Intersection LOS: C
Intersection Capacity Utilization 71.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	551	0	342	8	0	17	278	352	6	21	412	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1684		1787	3530		1787	3574	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.39	1.00		0.52	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1684		741	3530		981	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	599	0	372	9	0	18	302	383	7	23	448	746
RTOR Reduction (vph)	0	0	197	0	17	0	0	1	0	0	0	276
Lane Group Flow (vph)	299	300	175	0	10	0	302	389	0	23	448	470
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	25.4	25.4	40.6		4.0		68.4	68.4		48.2	48.2	73.6
Effective Green, g (s)	26.4	26.4	42.6		5.0		69.4	69.4		49.2	49.2	75.6
Actuated g/C Ratio	0.22	0.22	0.36		0.04		0.58	0.58		0.41	0.41	0.63
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	374	374	568		70		570	2042		402	1465	1007
v/s Ratio Prot	0.18	c0.18	0.04		c0.01		c0.07	0.11			0.13	0.10
v/s Ratio Perm			0.07				c0.23			0.02		0.19
v/c Ratio	0.80	0.80	0.31		0.14		0.53	0.19		0.06	0.31	0.47
Uniform Delay, d1	44.3	44.3	28.0		55.4		13.5	12.0		21.4	23.9	11.6
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.47	0.46	7.36
Incremental Delay, d2	11.4	11.7	0.3		0.9		0.9	0.2		0.2	0.4	0.3
Delay (s)	55.6	56.1	28.3		56.3		14.4	12.2		10.4	11.3	85.9
Level of Service	E	E	C		E		B	B		B	B	F
Approach Delay (s)		45.3			56.3			13.2			57.0	
Approach LOS		D			E			B			E	

Intersection Summary			
HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

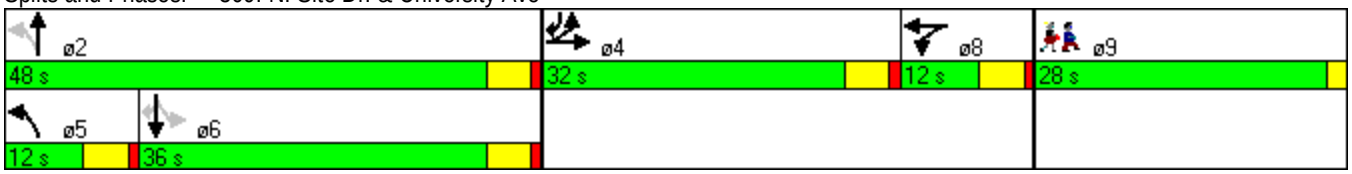
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	540	6	3	96	796	28	982	654	
Lane Group Flow (vph)	364	346	63	104	894	30	1067	711	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	32.0	32.0	12.0	12.0	48.0	36.0	36.0	32.0	28.0
Total Split (%)	26.7%	26.7%	10.0%	10.0%	40.0%	30.0%	30.0%	26.7%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	28.0	28.0	7.6	68.9	68.9	56.2	56.2	88.2	
Actuated g/C Ratio	0.23	0.23	0.06	0.57	0.57	0.47	0.47	0.74	
v/c Ratio	0.92	0.86	0.47	0.41	0.43	0.11	0.63	0.53	
Control Delay	74.4	63.4	48.3	19.0	11.6	12.1	15.5	5.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	
Total Delay	74.4	63.4	48.3	19.0	11.6	12.1	15.5	5.7	
LOS	E	E	D	B	B	B	B	A	
Approach Delay		69.0	48.3		12.4		11.6		
Approach LOS		E	D		B		B		
Queue Length 50th (ft)	291	257	29	11	50	5	146	0	
Queue Length 95th (ft)	#482	#433	77	m109	366	m19	#620	582	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	396	401	139	254	2063	272	1692	1341	
Starvation Cap Reductn	0	0	0	0	0	0	0	302	
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	0.92	0.86	0.45	0.41	0.43	0.11	0.63	0.68	

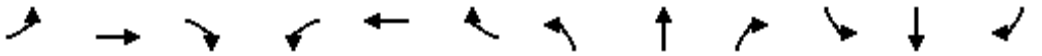
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 99 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 23.9	Intersection LOS: C
Intersection Capacity Utilization 67.5%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	6	107	30	3	25	96	796	27	28	982	654
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1650			1744		1805	3592		1805	3610	1568
Flt Permitted	0.95	0.97			0.97		0.13	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1698	1650			1744		243	3592		579	3610	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	587	7	116	33	3	27	104	865	29	30	1067	711
RTOR Reduction (vph)	0	15	0	0	23	0	0	1	0	0	0	228
Lane Group Flow (vph)	364	331	0	0	40	0	104	893	0	30	1067	483
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	27.0	27.0			5.5		65.3	65.3		52.6	52.6	79.6
Effective Green, g (s)	28.0	28.0			6.5		66.3	66.3		53.6	53.6	81.6
Actuated g/C Ratio	0.23	0.23			0.05		0.55	0.55		0.45	0.45	0.68
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	396	385			94		248	1985		259	1612	1119
v/s Ratio Prot	c0.21	0.20			c0.02		0.03	c0.25			c0.30	0.10
v/s Ratio Perm							0.20			0.05		0.21
v/c Ratio	0.92	0.86			0.43		0.42	0.45		0.12	0.66	0.43
Uniform Delay, d1	44.9	44.1			55.0		17.5	16.0		19.4	26.1	8.7
Progression Factor	1.00	1.00			1.00		0.96	0.64		0.45	0.45	4.03
Incremental Delay, d2	25.9	17.0			3.1		1.0	0.6		0.7	1.6	0.2
Delay (s)	70.8	61.2			58.1		17.7	10.9		9.5	13.3	35.3
Level of Service	E	E			E		B	B		A	B	D
Approach Delay (s)		66.1			58.1			11.6			21.9	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	69	2	3	191	29	1263	244	1565	75	
Lane Group Flow (vph)	48	46	94	208	32	1447	265	1701	82	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	31.0
Total Split (s)	12.0	12.0	12.0	12.0	44.0	44.0	21.0	65.0	12.0	31.0
Total Split (%)	10.0%	10.0%	10.0%	10.0%	36.7%	36.7%	17.5%	54.2%	10.0%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	7.7	7.7	8.2	8.2	66.7	66.7	88.0	88.0	99.7	
Actuated g/C Ratio	0.06	0.06	0.07	0.07	0.56	0.56	0.73	0.73	0.83	
v/c Ratio	0.44	0.38	0.76	0.69	0.25	0.51	0.69	0.64	0.06	
Control Delay	67.0	47.1	91.1	19.5	28.2	16.9	46.7	9.1	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	
Total Delay	67.0	47.1	91.1	19.5	28.2	16.9	46.7	9.2	0.1	
LOS	E	D	F	B	C	B	D	A	A	
Approach Delay		57.2	41.8			17.2		13.7		
Approach LOS		E	D			B		B		
Queue Length 50th (ft)	37	23	73	0	9	197	98	107	0	
Queue Length 95th (ft)	81	64	#166	#80	m37	m374	#262	#261	m0	
Internal Link Dist (ft)		158	200			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	113	125	123	303	127	2864	398	2647	1343	
Starvation Cap Reductn	0	0	0	0	0	0	0	89	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.42	0.37	0.76	0.69	0.25	0.51	0.67	0.66	0.06	

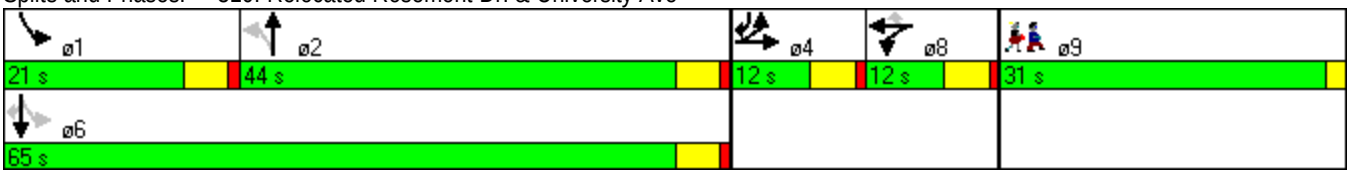
Intersection Summary

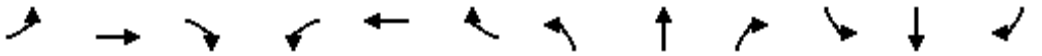
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 78 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 18.2 Intersection LOS: B
Intersection Capacity Utilization 68.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	2	16	84	3	191	29	1263	68	244	1565	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1640			1794	1599	1787	5145		1787	3610	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.12	1.00		0.11	1.00	1.00
Satd. Flow (perm)	1698	1640			1794	1599	228	5145		212	3610	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	2	17	91	3	208	32	1373	74	265	1701	82
RTOR Reduction (vph)	0	16	0	0	0	194	0	3	0	0	0	15
Lane Group Flow (vph)	48	30	0	0	94	14	32	1444	0	265	1701	67
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	0%	1%	1%	0%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	5.6	5.6			7.2	7.2	63.2	63.2		84.4	84.4	90.0
Effective Green, g (s)	6.6	6.6			8.2	8.2	64.2	64.2		85.4	85.4	92.0
Actuated g/C Ratio	0.05	0.05			0.07	0.07	0.54	0.54		0.71	0.71	0.77
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	93	90			123	109	122	2753		377	2569	1279
v/s Ratio Prot	c0.03	0.02			c0.05			0.28		0.10	c0.47	0.00
v/s Ratio Perm						0.01	0.14			c0.40		0.04
v/c Ratio	0.52	0.33			0.76	0.13	0.26	0.52		0.70	0.66	0.05
Uniform Delay, d1	55.1	54.6			54.9	52.5	15.1	18.0		19.7	9.4	3.4
Progression Factor	1.00	1.00			1.00	1.00	1.00	0.84		2.41	0.67	0.00
Incremental Delay, d2	4.8	2.2			24.1	0.5	4.1	0.6		4.9	1.1	0.0
Delay (s)	59.9	56.8			79.1	53.1	19.2	15.8		52.4	7.5	0.0
Level of Service	E	E			E	D	B	B		D	A	A
Approach Delay (s)		58.4			61.2			15.8			13.0	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.8
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

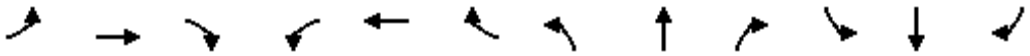
c Critical Lane Group

306: Harvard St. & University Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Configurations								
Volume (vph)	96	0	220	1	0	152	556	651
Lane Group Flow (vph)	0	104	239	0	2	0	769	841
Turn Type	Perm		pm+ov	Perm		pm+pt		
Protected Phases		4	5		8	5	2	6
Permitted Phases	4		4	8		2		
Detector Phase	4	4	5	8	8	5	2	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	20.0	20.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	Max	Min
Act Effct Green (s)		10.6	19.3		10.6		39.1	29.3
Actuated g/C Ratio		0.19	0.35		0.19		0.70	0.53
v/c Ratio		0.39	0.41		0.01		0.44	0.45
Control Delay		23.5	8.6		15.0		5.2	10.2
Queue Delay		0.0	0.0		0.0		0.0	0.0
Total Delay		23.5	8.6		15.0		5.2	10.2
LOS		C	A		B		A	B
Approach Delay		13.1			15.0		5.2	10.2
Approach LOS		B			B		A	B
Queue Length 50th (ft)		30	28		0		44	83
Queue Length 95th (ft)		66	67		5		93	155
Internal Link Dist (ft)		673			220		177	692
Turn Bay Length (ft)								
Base Capacity (vph)		399	643		448		1731	1861
Starvation Cap Reductn		0	0		0		0	0
Spillback Cap Reductn		0	0		0		0	0
Storage Cap Reductn		0	0		0		0	0
Reduced v/c Ratio		0.26	0.37		0.00		0.44	0.45

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 55.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.8	Intersection LOS: A
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	0	220	1	0	1	152	556	0	0	651	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.98	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1736	1495		1729			3529			3495	
Flt Permitted		0.76	1.00		0.88			0.64			1.00	
Satd. Flow (perm)		1382	1495		1554			2277			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	0	239	1	0	1	165	604	0	0	708	133
RTOR Reduction (vph)	0	0	75	0	1	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	104	164	0	1	0	0	769	0	0	820	0
Heavy Vehicles (%)	4%	0%	8%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.5	14.3		8.5			38.1			28.3	
Effective Green, g (s)		9.5	16.3		9.5			39.1			29.3	
Actuated g/C Ratio		0.17	0.29		0.17			0.69			0.52	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		232	431		261			1723			1809	
v/s Ratio Prot			0.05					c0.05			0.23	
v/s Ratio Perm		c0.08	0.06		0.00			c0.25				
v/c Ratio		0.45	0.38		0.00			0.45			0.45	
Uniform Delay, d1		21.2	16.1		19.6			3.9			8.6	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.4	0.6		0.0			0.2			0.2	
Delay (s)		22.6	16.7		19.6			4.1			8.8	
Level of Service		C	B		B			A			A	
Approach Delay (s)		18.5			19.6			4.1			8.8	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	56.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

308: S. Site Dr. & University Ave

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	551	0	342	0	278	352	21	412	686	
Lane Group Flow (vph)	299	300	372	27	302	390	23	448	746	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	30.0	30.0	24.0	12.0	24.0	48.0	24.0	24.0	30.0	30.0
Total Split (%)	25.0%	25.0%	20.0%	10.0%	20.0%	40.0%	20.0%	20.0%	25.0%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	26.4	26.4	45.9	7.2	72.6	72.6	52.2	52.2	80.2	
Actuated g/C Ratio	0.22	0.22	0.38	0.06	0.60	0.60	0.44	0.44	0.67	
v/c Ratio	0.80	0.80	0.47	0.23	0.51	0.18	0.05	0.29	0.57	
Control Delay	61.5	61.7	6.0	33.4	18.6	13.8	17.3	14.1	9.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	61.5	61.7	6.0	33.4	18.6	13.8	17.3	14.1	9.5	
LOS	E	E	A	C	B	B	B	B	A	
Approach Delay		40.3		33.4		15.9		11.3		
Approach LOS		D		C		B		B		
Queue Length 50th (ft)	230	231	34	7	101	63	3	30	156	
Queue Length 95th (ft)	#383	#383	51	37	261	152	m9	m85	m720	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	381	381	838	129	621	2136	427	1556	1320	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.78	0.79	0.44	0.21	0.49	0.18	0.05	0.29	0.57	

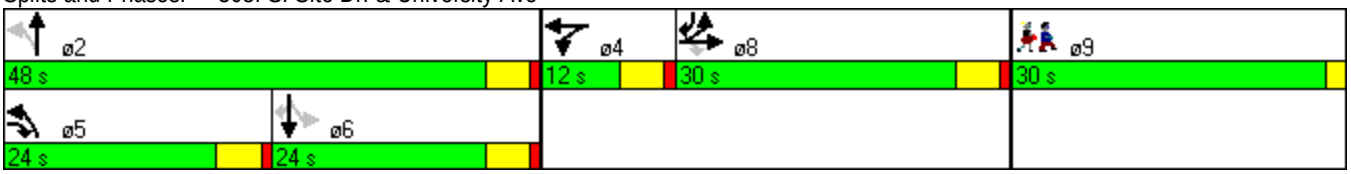
Intersection Summary

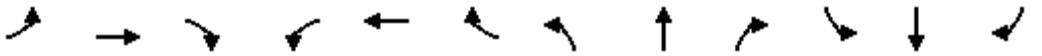
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 22.3 Intersection LOS: C
Intersection Capacity Utilization 71.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave

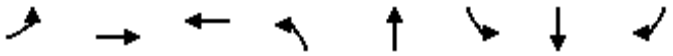




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	551	0	342	8	0	17	278	352	6	21	412	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1684		1787	3530		1787	3574	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.39	1.00		0.52	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1684		738	3530		981	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	599	0	372	9	0	18	302	383	7	23	448	746
RTOR Reduction (vph)	0	0	194	0	17	0	0	1	0	0	0	280
Lane Group Flow (vph)	299	300	178	0	10	0	302	389	0	23	448	466
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	25.4	25.4	40.8		4.0		68.0	68.0		47.6	47.6	73.0
Effective Green, g (s)	26.4	26.4	42.8		5.0		69.0	69.0		48.6	48.6	75.0
Actuated g/C Ratio	0.22	0.22	0.36		0.04		0.58	0.58		0.41	0.41	0.62
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	374	374	570		70		568	2030		397	1447	999
v/s Ratio Prot	0.18	c0.18	0.04		c0.01		c0.07	0.11			0.13	0.10
v/s Ratio Perm			0.07				c0.23			0.02		0.19
v/c Ratio	0.80	0.80	0.31		0.14		0.53	0.19		0.06	0.31	0.47
Uniform Delay, d1	44.3	44.3	27.9		55.4		13.8	12.2		21.8	24.3	11.9
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.56	0.51	7.39
Incremental Delay, d2	11.4	11.7	0.3		0.9		1.0	0.2		0.2	0.4	0.3
Delay (s)	55.6	56.1	28.3		56.3		14.7	12.4		12.3	12.9	88.3
Level of Service	E	E	C		E		B	B		B	B	F
Approach Delay (s)		45.3			56.3			13.4			59.1	
Approach LOS		D			E			B			E	

Intersection Summary			
HCM Average Control Delay	43.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



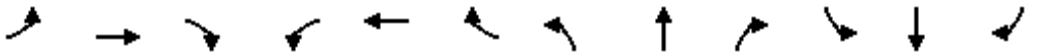
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	540	6	3	96	796	28	982	654	
Lane Group Flow (vph)	364	346	63	104	894	30	1067	711	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	34.0
Total Split (s)	32.0	32.0	12.0	12.0	42.0	30.0	30.0	32.0	34.0
Total Split (%)	26.7%	26.7%	10.0%	10.0%	35.0%	25.0%	25.0%	26.7%	28%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	28.0	28.0	7.6	67.7	67.7	55.0	55.0	87.0	
Actuated g/C Ratio	0.23	0.23	0.06	0.56	0.56	0.46	0.46	0.72	
v/c Ratio	0.92	0.86	0.47	0.43	0.44	0.11	0.64	0.54	
Control Delay	74.4	63.4	48.3	22.1	13.7	12.0	16.6	6.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	
Total Delay	74.4	63.4	48.3	22.1	13.7	12.0	16.6	7.1	
LOS	E	E	D	C	B	B	B	A	
Approach Delay		69.0	48.3		14.6		12.8		
Approach LOS		E	D		B		B		
Queue Length 50th (ft)	291	257	29	11	48	5	131	0	
Queue Length 95th (ft)	#482	#433	77	m112	376	m21	#697	589	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	396	401	139	247	2028	263	1656	1319	
Starvation Cap Reductn	0	0	0	0	0	0	0	276	
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	0.92	0.86	0.45	0.42	0.44	0.11	0.64	0.68	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 44 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 67.5%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	6	107	30	3	25	96	796	27	28	982	654
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1650			1744		1805	3592		1805	3610	1568
Flt Permitted	0.95	0.97			0.97		0.12	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1698	1650			1744		233	3592		573	3610	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	587	7	116	33	3	27	104	865	29	30	1067	711
RTOR Reduction (vph)	0	15	0	0	23	0	0	1	0	0	0	218
Lane Group Flow (vph)	364	331	0	0	40	0	104	893	0	30	1067	493
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	27.0	27.0			5.5		64.1	64.1		51.4	51.4	78.4
Effective Green, g (s)	28.0	28.0			6.5		65.1	65.1		52.4	52.4	80.4
Actuated g/C Ratio	0.23	0.23			0.05		0.54	0.54		0.44	0.44	0.67
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	396	385			94		240	1949		250	1576	1103
v/s Ratio Prot	c0.21	0.20			c0.02		0.03	c0.25			c0.30	0.10
v/s Ratio Perm							0.20			0.05		0.21
v/c Ratio	0.92	0.86			0.43		0.43	0.46		0.12	0.68	0.45
Uniform Delay, d1	44.9	44.1			55.0		18.2	16.7		20.1	27.0	9.3
Progression Factor	1.00	1.00			1.00		1.02	0.71		0.41	0.42	3.19
Incremental Delay, d2	25.9	17.0			3.1		1.1	0.7		0.7	1.8	0.2
Delay (s)	70.8	61.2			58.1		19.7	12.5		9.0	13.1	30.0
Level of Service	E	E			E		B	B		A	B	C
Approach Delay (s)		66.1			58.1			13.2			19.7	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.4
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

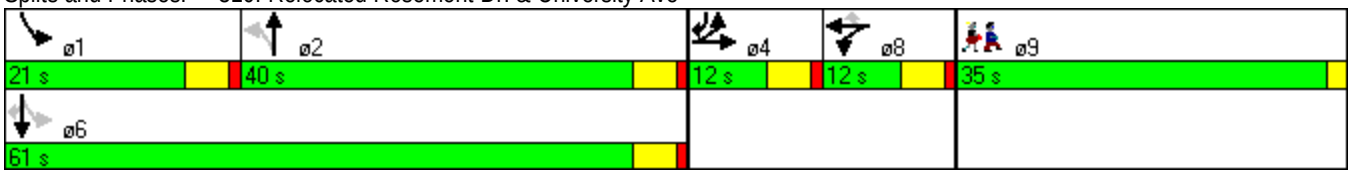
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	69	2	3	191	29	1263	244	1565	75	
Lane Group Flow (vph)	48	46	94	208	32	1447	265	1701	82	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	35.0
Total Split (s)	12.0	12.0	12.0	12.0	40.0	40.0	21.0	61.0	12.0	35.0
Total Split (%)	10.0%	10.0%	10.0%	10.0%	33.3%	33.3%	17.5%	50.8%	10.0%	29%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	7.7	7.7	8.2	8.2	66.1	66.1	87.2	87.2	98.9	
Actuated g/C Ratio	0.06	0.06	0.07	0.07	0.55	0.55	0.73	0.73	0.82	
v/c Ratio	0.44	0.38	0.76	0.69	0.26	0.51	0.70	0.65	0.06	
Control Delay	67.0	47.1	91.1	19.5	34.2	19.6	46.8	10.3	0.1	
Queue Delay	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	67.0	47.1	94.3	19.5	34.2	19.6	46.8	10.3	0.1	
LOS	E	D	F	B	C	B	D	B	A	
Approach Delay		57.2	42.8			19.9		14.6		
Approach LOS		E	D			B		B		
Queue Length 50th (ft)	37	23	73	0	7	187	99	107	0	
Queue Length 95th (ft)	81	64	#166	#80	m43	m#473	#276	#362	m0	
Internal Link Dist (ft)		158	200			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	113	125	123	303	123	2834	394	2623	1332	
Starvation Cap Reductn	0	0	0	0	0	0	0	5	0	
Spillback Cap Reductn	0	0	6	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.42	0.37	0.80	0.69	0.26	0.51	0.67	0.65	0.06	

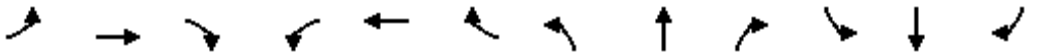
Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 18 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 115		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 19.8	Intersection LOS: B	
Intersection Capacity Utilization 68.1%	ICU Level of Service C	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave

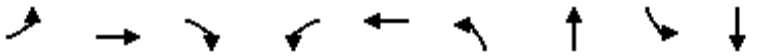




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	2	16	84	3	191	29	1263	68	244	1565	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1640			1794	1599	1787	5145		1787	3610	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.12	1.00		0.11	1.00	1.00
Satd. Flow (perm)	1698	1640			1794	1599	224	5145		210	3610	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	2	17	91	3	208	32	1373	74	265	1701	82
RTOR Reduction (vph)	0	16	0	0	0	194	0	3	0	0	0	14
Lane Group Flow (vph)	48	30	0	0	94	14	32	1444	0	265	1701	68
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	0%	1%	1%	0%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	5.6	5.6			7.2	7.2	62.5	62.5		83.6	83.6	89.2
Effective Green, g (s)	6.6	6.6			8.2	8.2	63.5	63.5		84.6	84.6	91.2
Actuated g/C Ratio	0.05	0.05			0.07	0.07	0.53	0.53		0.70	0.70	0.76
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	93	90			123	109	119	2723		373	2545	1269
v/s Ratio Prot	c0.03	0.02			c0.05			0.28		0.10	c0.47	0.00
v/s Ratio Perm						0.01	0.14			c0.40		0.04
v/c Ratio	0.52	0.33			0.76	0.13	0.27	0.53		0.71	0.67	0.05
Uniform Delay, d1	55.1	54.6			54.9	52.5	15.5	18.5		20.3	9.9	3.6
Progression Factor	1.00	1.00			1.00	1.00	1.16	0.93		2.32	0.70	0.00
Incremental Delay, d2	4.8	2.2			24.1	0.5	4.3	0.6		5.2	1.2	0.0
Delay (s)	59.9	56.8			79.1	53.1	22.3	17.8		52.4	8.1	0.0
Level of Service	E	E			E	D	C	B		D	A	A
Approach Delay (s)		58.4			61.2			17.9			13.5	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

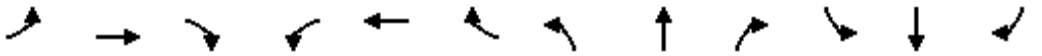


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	25	0	80	1	0	387	636	6	757
Lane Group Flow (vph)	0	27	87	0	2	0	1117	0	863
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.0	19.0	12.0	19.0	19.0	12.0	19.0	19.0	19.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		8.7	12.6		8.4		46.3		40.5
Actuated g/C Ratio		0.16	0.23		0.15		0.85		0.74
v/c Ratio		0.12	0.20		0.01		0.66		0.36
Control Delay		19.6	5.9		15.5		7.1		6.6
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		19.6	5.9		15.5		7.1		6.6
LOS		B	A		B		A		A
Approach Delay		9.1			15.5		7.1		6.6
Approach LOS		A			B		A		A
Queue Length 50th (ft)		7	5		0		0		32
Queue Length 95th (ft)		24	24		5		#182		164
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		420	495		289		1691		2420
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.06	0.18		0.01		0.66		0.36

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.7	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 64.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	0	80	1	0	1	387	636	5	6	757	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.98			1.00	
Satd. Flow (prot)		1736	1615		1160			3374			3452	
Flt Permitted		0.78	1.00		0.83			0.55			0.95	
Satd. Flow (perm)		1433	1615		985			1892			3269	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	87	1	0	1	421	691	5	7	823	33
RTOR Reduction (vph)	0	0	59	0	1	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	27	28	0	1	0	0	1117	0	0	860	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	98%	0%	8%	0%	16%	4%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		4.1	7.5		4.1			45.3			37.9	
Effective Green, g (s)		5.1	9.5		5.1			46.3			38.9	
Actuated g/C Ratio		0.09	0.16		0.09			0.78			0.65	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		123	258		85			1585			2141	
v/s Ratio Prot			0.01					c0.05				
v/s Ratio Perm		c0.02	0.01		0.00			c0.50			0.26	
v/c Ratio		0.22	0.11		0.01			0.70			0.40	
Uniform Delay, d1		25.3	21.3		24.8			3.2			4.8	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		0.9	0.2		0.1			1.4			0.1	
Delay (s)		26.2	21.5		24.9			4.7			4.9	
Level of Service		C	C		C			A			A	
Approach Delay (s)		22.6			24.9			4.7			4.9	
Approach LOS		C			C			A			A	

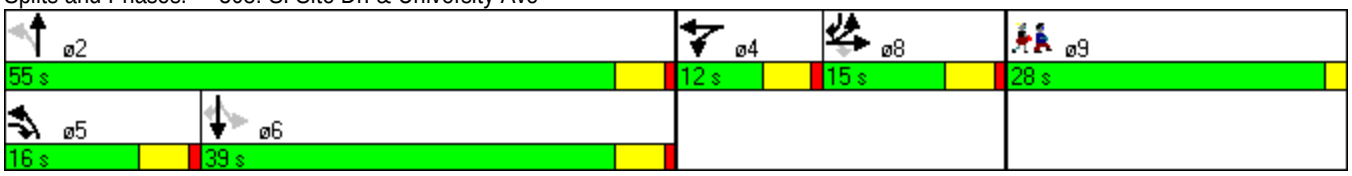
Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

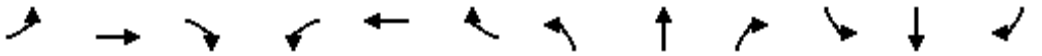
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	112	0	80	0	151	583	5	640	175	
Lane Group Flow (vph)	61	61	87	5	164	637	5	696	190	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	15.0	15.0	16.0	12.0	16.0	55.0	39.0	39.0	15.0	28.0
Total Split (%)	13.6%	13.6%	14.5%	10.9%	14.5%	50.0%	35.5%	35.5%	13.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	9.8	9.8	21.8	6.8	84.3	84.3	71.5	71.5	84.5	
Actuated g/C Ratio	0.09	0.09	0.20	0.06	0.77	0.77	0.65	0.65	0.77	
v/c Ratio	0.40	0.40	0.22	0.05	0.29	0.24	0.01	0.31	0.15	
Control Delay	54.9	54.9	6.5	37.6	8.2	6.9	3.0	2.5	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.9	54.9	6.5	37.6	8.2	6.9	3.0	2.5	0.2	
LOS	D	D	A	D	A	A	A	A	A	
Approach Delay		34.7		37.6		7.2		2.0		
Approach LOS		C		D		A		A		
Queue Length 50th (ft)	43	43	0	1	15	35	0	17	0	
Queue Length 95th (ft)	88	88	25	14	111	198	m1	27	0	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		200	
Base Capacity (vph)	173	173	431	126	597	2608	501	2256	1290	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.35	0.20	0.04	0.27	0.24	0.01	0.31	0.15	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 20 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 7.9	Intersection LOS: A
Intersection Capacity Utilization 42.7%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	80	2	0	3	151	583	3	5	640	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1695		1787	3404		1787	3471	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.32	1.00		0.41	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1695		611	3404		771	3471	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	0	87	2	0	3	164	634	3	5	696	190
RTOR Reduction (vph)	0	0	72	0	3	0	0	0	0	0	0	59
Lane Group Flow (vph)	61	61	15	0	2	0	164	637	0	5	696	131
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	4%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	8.8	8.8	16.6		1.3		77.7	77.7		64.9	64.9	73.7
Effective Green, g (s)	9.8	9.8	18.6		2.3		78.7	78.7		65.9	65.9	75.7
Actuated g/C Ratio	0.09	0.09	0.17		0.02		0.72	0.72		0.60	0.60	0.69
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	151	151	270		35		531	2435		462	2079	1100
v/s Ratio Prot	c0.04	0.04	0.00		c0.00		c0.02	0.19			c0.20	0.01
v/s Ratio Perm			0.00				0.20			0.01		0.07
v/c Ratio	0.40	0.40	0.05		0.06		0.31	0.26		0.01	0.33	0.12
Uniform Delay, d1	47.3	47.3	38.3		52.8		5.6	5.5		8.9	11.1	5.8
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.18	0.17	0.01
Incremental Delay, d2	1.8	1.8	0.1		0.7		0.3	0.3		0.0	0.4	0.0
Delay (s)	49.1	49.1	38.4		53.5		6.0	5.7		1.6	2.3	0.1
Level of Service	D	D	D		D		A	A		A	A	A
Approach Delay (s)		44.7			53.5			5.8			1.8	
Approach LOS		D			D			A			A	

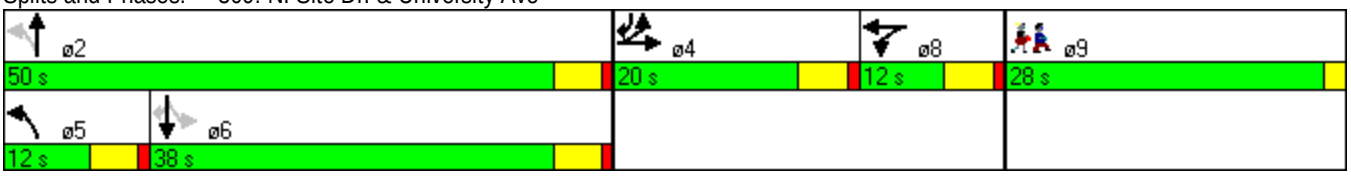
Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

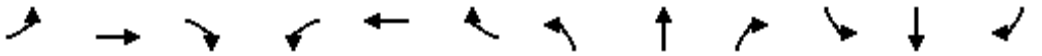
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	134	1	3	44	606	31	752	161	
Lane Group Flow (vph)	96	93	58	48	711	34	817	175	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	20.0	20.0	12.0	12.0	50.0	38.0	38.0	20.0	28.0
Total Split (%)	18.2%	18.2%	10.9%	10.9%	45.5%	34.5%	34.5%	18.2%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	12.3	12.3	8.0	74.2	74.2	65.0	65.0	82.1	
Actuated g/C Ratio	0.11	0.11	0.07	0.67	0.67	0.59	0.59	0.75	
v/c Ratio	0.51	0.44	0.39	0.11	0.32	0.08	0.39	0.14	
Control Delay	54.7	36.6	38.9	14.4	11.9	6.9	7.0	0.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.7	36.6	38.9	14.4	11.9	6.9	7.0	0.5	
LOS	D	D	D	B	B	A	A	A	
Approach Delay		45.8	38.9		12.1		5.9		
Approach LOS		D	D		B		A		
Queue Length 50th (ft)	68	42	22	8	70	3	87	0	
Queue Length 95th (ft)	121	94	65	49	232	8	121	0	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	247	264	157	432	2246	428	2091	1277	
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	0.39	0.35	0.37	0.11	0.32	0.08	0.39	0.14	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 43.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	1	39	28	3	23	44	606	48	31	752	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.93			0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1630			1744		1805	3324		1805	3539	1615
Flt Permitted	0.95	0.97			0.97		0.26	1.00		0.38	1.00	1.00
Satd. Flow (perm)	1698	1630			1744		501	3324		725	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	1	42	30	3	25	48	659	52	34	817	175
RTOR Reduction (vph)	0	28	0	0	23	0	0	3	0	0	0	58
Lane Group Flow (vph)	96	65	0	0	35	0	48	708	0	34	817	117
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	8%	0%	0%	2%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	11.3	11.3			5.9		70.6	70.6		60.4	60.4	71.7
Effective Green, g (s)	12.3	12.3			6.9		71.6	71.6		61.4	61.4	73.7
Actuated g/C Ratio	0.11	0.11			0.06		0.65	0.65		0.56	0.56	0.67
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	190	182			109		400	2164		405	1975	1141
v/s Ratio Prot	c0.06	0.04			c0.02		0.01	c0.21			c0.23	0.01
v/s Ratio Perm							0.07			0.05		0.06
v/c Ratio	0.51	0.35			0.32		0.12	0.33		0.08	0.41	0.10
Uniform Delay, d1	46.0	45.2			49.3		8.0	8.5		11.3	14.0	6.4
Progression Factor	1.00	1.00			1.00		1.24	1.11		0.36	0.39	0.15
Incremental Delay, d2	2.1	1.2			1.7		0.1	0.4		0.4	0.6	0.0
Delay (s)	48.1	46.4			51.0		10.1	9.8		4.4	6.0	1.0
Level of Service	D	D			D		B	A		A	A	A
Approach Delay (s)		47.2			51.0			9.8			5.1	
Approach LOS		D			D			A			A	

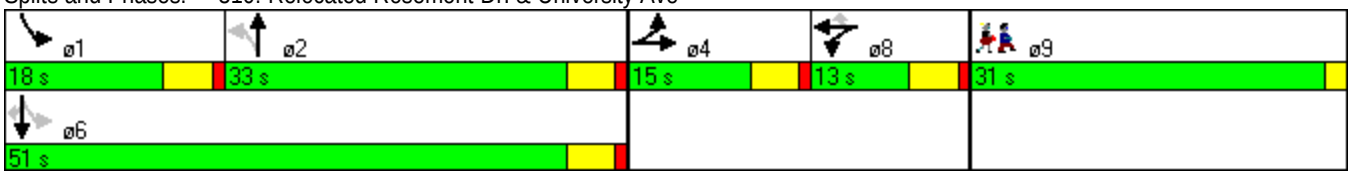
Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

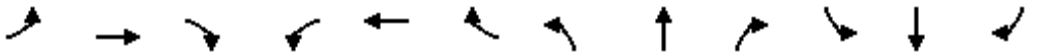
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	73	2	1	90	7	701	159	893	479	
Lane Group Flow (vph)	50	47	40	98	8	822	173	971	521	
Turn Type	Split			Perm	Perm		pm+pt		Perm	
Protected Phases	4	4	8			2	1	6		9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	6	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	31.0
Total Split (s)	15.0	15.0	13.0	13.0	33.0	33.0	18.0	51.0	51.0	31.0
Total Split (%)	13.6%	13.6%	11.8%	11.8%	30.0%	30.0%	16.4%	46.4%	46.4%	28%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
Act Effct Green (s)	9.3	9.3	8.2	8.2	62.3	62.3	76.4	76.4	76.4	
Actuated g/C Ratio	0.08	0.08	0.07	0.07	0.57	0.57	0.69	0.69	0.69	
v/c Ratio	0.35	0.31	0.30	0.47	0.03	0.30	0.36	0.40	0.41	
Control Delay	53.8	39.2	53.8	17.4	17.7	12.5	7.8	4.1	1.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	53.8	39.2	53.8	17.4	17.7	12.5	7.8	4.1	1.5	
LOS	D	D	D	B	B	B	A	A	A	
Approach Delay		46.7	27.9			12.5		3.7		
Approach LOS		D	C			B		A		
Queue Length 50th (ft)	35	22	27	0	2	71	13	41	6	
Queue Length 95th (ft)	75	61	63	51	m8	126	51	104	30	
Internal Link Dist (ft)		158	215			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	170	179	147	221	314	2756	524	2458	1270	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.29	0.26	0.27	0.44	0.03	0.30	0.33	0.40	0.41	

Intersection Summary		
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 109 (99%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.47		
Intersection Signal Delay: 9.1	Intersection LOS: A	
Intersection Capacity Utilization 47.2%	ICU Level of Service A	
Analysis Period (min) 15		
m Volume for 95th percentile queue is metered by upstream signal.		

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave

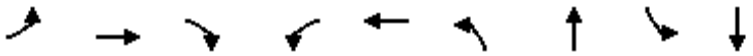




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	2	15	36	1	90	7	701	55	159	893	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.95			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1645			1794	1599	1787	4857		1787	3539	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.29	1.00		0.28	1.00	1.00
Satd. Flow (perm)	1698	1645			1794	1599	555	4857		522	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	2	16	39	1	98	8	762	60	173	971	521
RTOR Reduction (vph)	0	15	0	0	0	91	0	5	0	0	0	171
Lane Group Flow (vph)	50	32	0	0	40	7	8	817	0	173	971	350
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	7.2	7.2			7.2	7.2	58.7	58.7		72.8	72.8	72.8
Effective Green, g (s)	8.2	8.2			8.2	8.2	59.7	59.7		73.8	73.8	73.8
Actuated g/C Ratio	0.07	0.07			0.07	0.07	0.54	0.54		0.67	0.67	0.67
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	127	123			134	119	301	2636		466	2374	1073
v/s Ratio Prot	c0.03	0.02			c0.02			0.17		0.03	c0.27	
v/s Ratio Perm						0.00	0.01			0.21		0.22
v/c Ratio	0.39	0.26			0.30	0.06	0.03	0.31		0.37	0.41	0.33
Uniform Delay, d1	48.5	48.0			48.2	47.3	11.7	13.8		7.2	8.2	7.6
Progression Factor	1.00	1.00			1.00	1.00	0.81	0.75		0.62	0.35	0.39
Incremental Delay, d2	2.0	1.1			1.3	0.2	0.2	0.3		0.5	0.5	0.7
Delay (s)	50.5	49.2			49.4	47.5	9.6	10.7		4.9	3.4	3.7
Level of Service	D	D			D	D	A	B		A	A	A
Approach Delay (s)		49.9			48.1			10.7			3.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.8
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

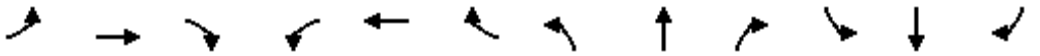


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	25	0	80	1	0	387	636	6	757
Lane Group Flow (vph)	0	27	87	0	2	0	1117	0	863
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		8.8	12.8		8.6		46.3		40.4
Actuated g/C Ratio		0.16	0.23		0.16		0.84		0.74
v/c Ratio		0.12	0.20		0.01		0.66		0.36
Control Delay		19.4	5.8		15.5		7.4		6.8
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		19.4	5.8		15.5		7.4		6.8
LOS		B	A		B		A		A
Approach Delay		9.0			15.5		7.4		6.8
Approach LOS		A			B		A		A
Queue Length 50th (ft)		7	5		0		0		33
Queue Length 95th (ft)		24	23		5		#198		169
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		411	498		288		1689		2409
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.07	0.17		0.01		0.66		0.36

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 64.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	0	80	1	0	1	387	636	5	6	757	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.98			1.00	
Satd. Flow (prot)		1736	1615		1160			3374			3452	
Flt Permitted		0.77	1.00		0.83			0.55			0.95	
Satd. Flow (perm)		1405	1615		985			1891			3269	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	87	1	0	1	421	691	5	7	823	33
RTOR Reduction (vph)	0	0	59	0	1	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	27	28	0	1	0	0	1117	0	0	860	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	98%	0%	8%	0%	16%	4%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		4.2	7.7		4.2			45.3			37.8	
Effective Green, g (s)		5.2	9.7		5.2			46.3			38.8	
Actuated g/C Ratio		0.09	0.16		0.09			0.78			0.65	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		123	263		86			1584			2132	
v/s Ratio Prot			0.01					c0.05				
v/s Ratio Perm		c0.02	0.01		0.00			c0.50			0.26	
v/c Ratio		0.22	0.11		0.01			0.71			0.40	
Uniform Delay, d1		25.3	21.2		24.8			3.2			4.9	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		0.9	0.2		0.1			1.5			0.1	
Delay (s)		26.2	21.4		24.9			4.7			5.0	
Level of Service		C	C		C			A			A	
Approach Delay (s)		22.5			24.9			4.7			5.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

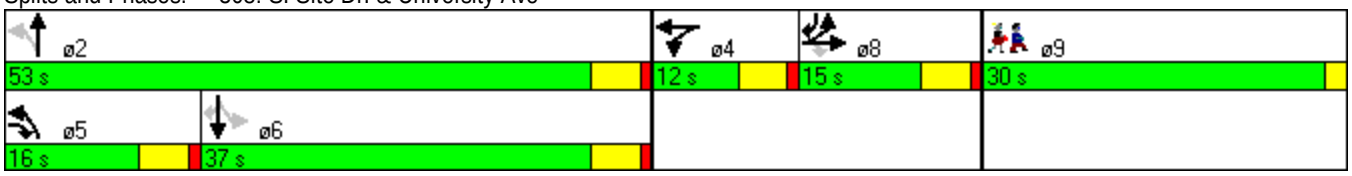
308: S. Site Dr. & University Ave

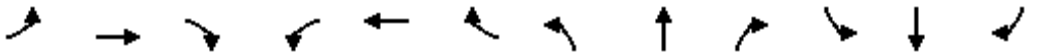
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	112	0	80	0	151	583	5	640	175	
Lane Group Flow (vph)	61	61	87	5	164	637	5	696	190	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	15.0	15.0	16.0	12.0	16.0	53.0	37.0	37.0	15.0	30.0
Total Split (%)	13.6%	13.6%	14.5%	10.9%	14.5%	48.2%	33.6%	33.6%	13.6%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	9.8	9.8	21.8	6.8	83.9	83.9	71.1	71.1	84.1	
Actuated g/C Ratio	0.09	0.09	0.20	0.06	0.76	0.76	0.65	0.65	0.76	
v/c Ratio	0.40	0.40	0.22	0.05	0.29	0.25	0.01	0.31	0.15	
Control Delay	54.9	54.9	6.4	37.6	8.7	7.3	3.8	2.9	0.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.9	54.9	6.4	37.6	8.7	7.3	3.8	2.9	0.3	
LOS	D	D	A	D	A	A	A	A	A	
Approach Delay		34.7		37.6		7.6		2.3		
Approach LOS		C		D		A		A		
Queue Length 50th (ft)	43	43	0	1	15	35	0	17	0	
Queue Length 95th (ft)	88	88	24	14	115	205	m1	34	0	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		200	
Base Capacity (vph)	173	173	431	126	594	2596	498	2243	1285	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.35	0.20	0.04	0.28	0.25	0.01	0.31	0.15	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 19 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 8.2 Intersection LOS: A
Intersection Capacity Utilization 42.7% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	80	2	0	3	151	583	3	5	640	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1695		1787	3404		1787	3471	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.32	1.00		0.41	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1695		609	3404		771	3471	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	0	87	2	0	3	164	634	3	5	696	190
RTOR Reduction (vph)	0	0	72	0	3	0	0	0	0	0	0	60
Lane Group Flow (vph)	61	61	15	0	2	0	164	637	0	5	696	130
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	4%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	8.8	8.8	16.6		1.3		77.3	77.3		64.5	64.5	73.3
Effective Green, g (s)	9.8	9.8	18.6		2.3		78.3	78.3		65.5	65.5	75.3
Actuated g/C Ratio	0.09	0.09	0.17		0.02		0.71	0.71		0.60	0.60	0.68
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	151	151	270		35		528	2423		459	2067	1095
v/s Ratio Prot	c0.04	0.04	0.00		c0.00		c0.02	0.19			c0.20	0.01
v/s Ratio Perm			0.00				0.20			0.01		0.07
v/c Ratio	0.40	0.40	0.05		0.06		0.31	0.26		0.01	0.34	0.12
Uniform Delay, d1	47.3	47.3	38.3		52.8		5.8	5.6		9.1	11.3	6.0
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.22	0.19	0.02
Incremental Delay, d2	1.8	1.8	0.1		0.7		0.3	0.3		0.0	0.4	0.0
Delay (s)	49.1	49.1	38.4		53.5		6.1	5.9		2.0	2.6	0.1
Level of Service	D	D	D		D		A	A		A	A	A
Approach Delay (s)		44.7			53.5			5.9			2.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.6
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

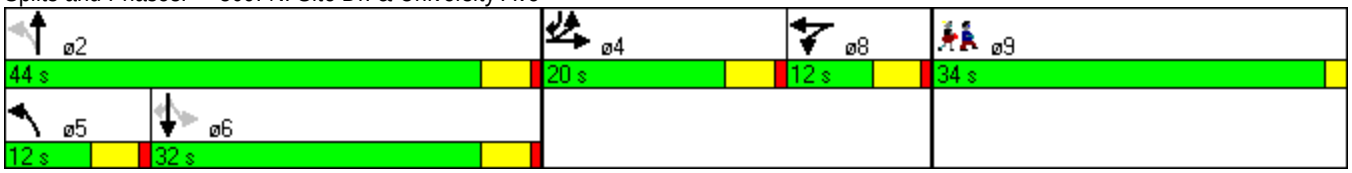
c Critical Lane Group

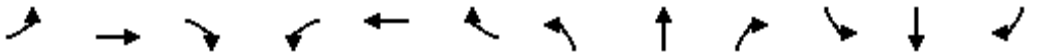
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	134	1	3	44	606	31	752	161	
Lane Group Flow (vph)	96	93	58	48	711	34	817	175	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	34.0
Total Split (s)	20.0	20.0	12.0	12.0	44.0	32.0	32.0	20.0	34.0
Total Split (%)	18.2%	18.2%	10.9%	10.9%	40.0%	29.1%	29.1%	18.2%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	12.3	12.3	8.0	73.0	73.0	63.8	63.8	80.9	
Actuated g/C Ratio	0.11	0.11	0.07	0.66	0.66	0.58	0.58	0.74	
v/c Ratio	0.51	0.44	0.39	0.12	0.32	0.08	0.40	0.14	
Control Delay	54.7	36.6	38.9	17.7	14.3	8.0	9.1	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.7	36.6	38.9	17.7	14.3	8.0	9.1	0.6	
LOS	D	D	D	B	B	A	A	A	
Approach Delay		45.8	38.9		14.5		7.6		
Approach LOS		D	D		B		A		
Queue Length 50th (ft)	68	42	22	8	70	3	87	0	
Queue Length 95th (ft)	121	94	65	57	254	12	#384	0	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	247	264	157	423	2210	420	2053	1262	
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	0.39	0.35	0.37	0.11	0.32	0.08	0.40	0.14	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 4 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 43.9%	ICU Level of Service A
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	1	39	28	3	23	44	606	48	31	752	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.93			0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1630			1744		1805	3324		1805	3539	1615
Flt Permitted	0.95	0.97			0.97		0.26	1.00		0.38	1.00	1.00
Satd. Flow (perm)	1698	1630			1744		494	3324		725	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	1	42	30	3	25	48	659	52	34	817	175
RTOR Reduction (vph)	0	28	0	0	23	0	0	3	0	0	0	60
Lane Group Flow (vph)	96	65	0	0	35	0	48	708	0	34	817	115
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	8%	0%	0%	2%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	11.3	11.3			5.9		69.4	69.4		59.2	59.2	70.5
Effective Green, g (s)	12.3	12.3			6.9		70.4	70.4		60.2	60.2	72.5
Actuated g/C Ratio	0.11	0.11			0.06		0.64	0.64		0.55	0.55	0.66
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	190	182			109		390	2127		397	1937	1123
v/s Ratio Prot	c0.06	0.04			c0.02		0.01	c0.21			c0.23	0.01
v/s Ratio Perm							0.07			0.05		0.06
v/c Ratio	0.51	0.35			0.32		0.12	0.33		0.09	0.42	0.10
Uniform Delay, d1	46.0	45.2			49.3		8.5	9.1		11.8	14.7	6.9
Progression Factor	1.00	1.00			1.00		1.34	1.19		0.38	0.41	0.17
Incremental Delay, d2	2.1	1.2			1.7		0.1	0.4		0.4	0.6	0.0
Delay (s)	48.1	46.4			51.0		11.6	11.2		4.8	6.7	1.2
Level of Service	D	D			D		B	B		A	A	A
Approach Delay (s)		47.2			51.0			11.2			5.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	24.4
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

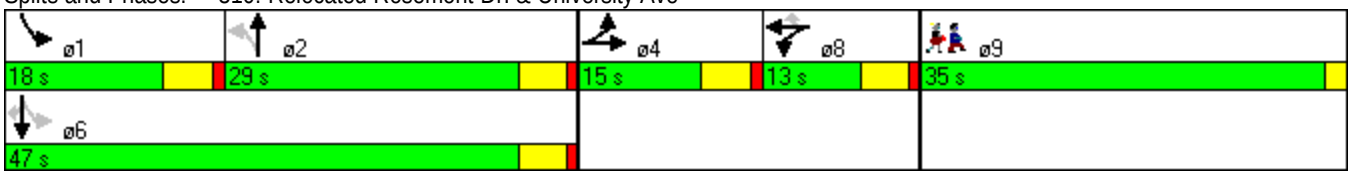
c Critical Lane Group

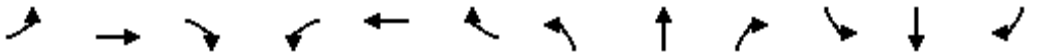
310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	73	2	1	90	7	701	159	893	479	
Lane Group Flow (vph)	50	47	40	98	8	822	173	971	521	
Turn Type	Split			Perm	Perm		pm+pt		Perm	
Protected Phases	4	4	8			2	1	6		9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	6	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	35.0
Total Split (s)	15.0	15.0	13.0	13.0	29.0	29.0	18.0	47.0	47.0	35.0
Total Split (%)	13.6%	13.6%	11.8%	11.8%	26.4%	26.4%	16.4%	42.7%	42.7%	32%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	None
Act Effct Green (s)	9.3	9.3	8.2	8.2	60.9	60.9	75.6	75.6	75.6	
Actuated g/C Ratio	0.08	0.08	0.07	0.07	0.55	0.55	0.69	0.69	0.69	
v/c Ratio	0.35	0.31	0.30	0.47	0.03	0.31	0.36	0.40	0.42	
Control Delay	53.8	39.2	53.8	17.4	23.7	15.5	9.3	5.2	1.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	53.8	39.2	53.8	17.4	23.7	15.5	9.3	5.2	1.6	
LOS	D	D	D	B	C	B	A	A	A	
Approach Delay		46.7	27.9			15.6		4.5		
Approach LOS		D	C			B		A		
Queue Length 50th (ft)	35	22	27	0	2	72	16	48	6	
Queue Length 95th (ft)	75	61	63	51	m10	152	63	118	30	
Internal Link Dist (ft)		158	215			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	170	179	147	221	308	2695	517	2433	1253	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.29	0.26	0.27	0.44	0.03	0.31	0.33	0.40	0.42	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 10.6	Intersection LOS: B
Intersection Capacity Utilization 47.2%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave

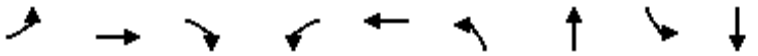




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	2	15	36	1	90	7	701	55	159	893	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.95			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1645			1794	1599	1787	4857		1787	3539	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.29	1.00		0.27	1.00	1.00
Satd. Flow (perm)	1698	1645			1794	1599	555	4857		517	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	2	16	39	1	98	8	762	60	173	971	521
RTOR Reduction (vph)	0	15	0	0	0	91	0	5	0	0	0	166
Lane Group Flow (vph)	50	32	0	0	40	7	8	817	0	173	971	355
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	6%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		Perm
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	7.2	7.2			7.2	7.2	57.3	57.3		72.0	72.0	72.0
Effective Green, g (s)	8.2	8.2			8.2	8.2	58.3	58.3		73.0	73.0	73.0
Actuated g/C Ratio	0.07	0.07			0.07	0.07	0.53	0.53		0.66	0.66	0.66
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	127	123			134	119	294	2574		467	2349	1061
v/s Ratio Prot	c0.03	0.02			c0.02			0.17		0.04	c0.27	
v/s Ratio Perm						0.00	0.01			0.21		0.22
v/c Ratio	0.39	0.26			0.30	0.06	0.03	0.32		0.37	0.41	0.33
Uniform Delay, d1	48.5	48.0			48.2	47.3	12.3	14.6		7.6	8.6	8.0
Progression Factor	1.00	1.00			1.00	1.00	0.99	0.87		0.71	0.42	0.30
Incremental Delay, d2	2.0	1.1			1.3	0.2	0.2	0.3		0.5	0.5	0.8
Delay (s)	50.5	49.2			49.4	47.5	12.4	13.0		5.8	4.1	3.2
Level of Service	D	D			D	D	B	B		A	A	A
Approach Delay (s)		49.9			48.1			13.0			4.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	107	0	391	8	0	190	1031	1	871
Lane Group Flow (vph)	0	116	425	0	27	0	1328	0	1038
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.0	19.0	12.0	19.0	19.0	12.0	19.0	19.0	19.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		10.7	20.5		10.6		37.0		25.5
Actuated g/C Ratio		0.20	0.39		0.20		0.70		0.48
v/c Ratio		0.41	0.65		0.09		0.82		0.65
Control Delay		23.6	16.4		11.4		13.1		14.3
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		23.6	16.4		11.4		13.1		14.3
LOS		C	B		B		B		B
Approach Delay		17.9			11.4		13.1		14.3
Approach LOS		B			B		B		B
Queue Length 50th (ft)		33	93		2		99		124
Queue Length 95th (ft)		72	159		19		#247		227
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		430	671		462		1621		1598
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.27	0.63		0.06		0.82		0.65

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.1	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 83.4%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 306: Harvard St. & University Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	391	8	0	17	190	1031	0	1	871	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.91			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1805	1615		1635			3512			3462	
Flt Permitted		0.74	1.00		0.88			0.57			0.95	
Satd. Flow (perm)		1405	1615		1471			2027			3303	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	0	425	9	0	18	207	1121	0	1	947	90
RTOR Reduction (vph)	0	0	30	0	15	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	116	395	0	12	0	0	1328	0	0	1027	0
Heavy Vehicles (%)	0%	0%	0%	12%	0%	0%	2%	2%	0%	98%	3%	1%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.2	15.6		8.2			36.0			24.6	
Effective Green, g (s)		9.2	17.6		9.2			37.0			25.6	
Actuated g/C Ratio		0.17	0.32		0.17			0.68			0.47	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		238	524		250			1614			1560	
v/s Ratio Prot			c0.12					c0.13				
v/s Ratio Perm		0.08	0.13		0.01			c0.43			0.31	
v/c Ratio		0.49	0.75		0.05			0.82			0.66	
Uniform Delay, d1		20.4	16.4		18.8			6.2			11.0	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.6	6.1		0.1			3.5			1.0	
Delay (s)		21.9	22.4		18.9			9.8			12.0	
Level of Service		C	C		B			A			B	
Approach Delay (s)		22.3			18.9			9.8			12.0	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	7.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

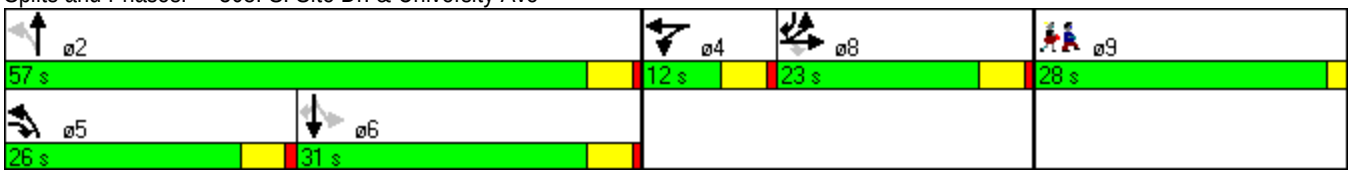
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	467	0	301	0	369	820	13	620	451	
Lane Group Flow (vph)	254	254	327	23	401	899	14	674	490	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	23.0	23.0	26.0	12.0	26.0	57.0	31.0	31.0	23.0	28.0
Total Split (%)	19.2%	19.2%	21.7%	10.0%	21.7%	47.5%	25.8%	25.8%	19.2%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	21.3	21.3	52.5	7.2	78.1	78.1	46.1	46.1	69.0	
Actuated g/C Ratio	0.18	0.18	0.44	0.06	0.65	0.65	0.38	0.38	0.58	
v/c Ratio	0.84	0.84	0.38	0.20	0.67	0.39	0.06	0.51	0.43	
Control Delay	73.0	73.0	4.1	34.3	19.8	12.7	22.1	18.6	3.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.0	73.0	4.1	34.3	19.8	12.7	22.1	18.6	3.1	
LOS	E	E	A	C	B	B	C	B	A	
Approach Delay		46.0		34.3		14.9		12.2		
Approach LOS		D		C		B		B		
Queue Length 50th (ft)	205	205	14	6	119	145	2	70	0	
Queue Length 95th (ft)	#378	#378	47	33	#395	333	m8	m#340	m140	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		200	
Base Capacity (vph)	301	301	864	126	601	2303	229	1321	1127	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.84	0.38	0.18	0.67	0.39	0.06	0.51	0.43	

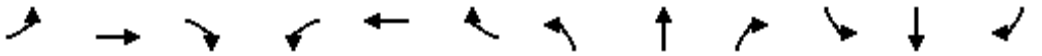
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 21.9	Intersection LOS: C
Intersection Capacity Utilization 67.2%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	467	0	301	7	0	14	369	820	7	13	620	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1686		1787	3535		1787	3438	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.23	1.00		0.32	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1686		440	3535		596	3438	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	0	327	8	0	15	401	891	8	14	674	490
RTOR Reduction (vph)	0	0	173	0	14	0	0	0	0	0	0	229
Lane Group Flow (vph)	254	254	154	0	9	0	401	899	0	14	674	261
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	5%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	20.3	20.3	47.3		4.0		73.5	73.5		41.5	41.5	61.8
Effective Green, g (s)	21.3	21.3	49.3		5.0		74.5	74.5		42.5	42.5	63.8
Actuated g/C Ratio	0.18	0.18	0.41		0.04		0.62	0.62		0.35	0.35	0.53
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	301	301	657		70		587	2195		211	1218	850
v/s Ratio Prot	c0.15	0.15	0.05		c0.01		c0.16	0.25			0.20	0.05
v/s Ratio Perm			0.04				c0.26			0.02		0.11
v/c Ratio	0.84	0.84	0.23		0.12		0.68	0.41		0.07	0.55	0.31
Uniform Delay, d1	47.7	47.7	23.1		55.4		14.4	11.6		25.6	31.1	15.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.70	0.54	1.60
Incremental Delay, d2	18.9	18.9	0.2		0.8		3.3	0.6		0.5	1.4	0.2
Delay (s)	66.7	66.7	23.2		56.2		17.7	12.1		18.4	18.3	25.4
Level of Service	E	E	C		E		B	B		B	B	C
Approach Delay (s)		49.7			56.2			13.8			21.2	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

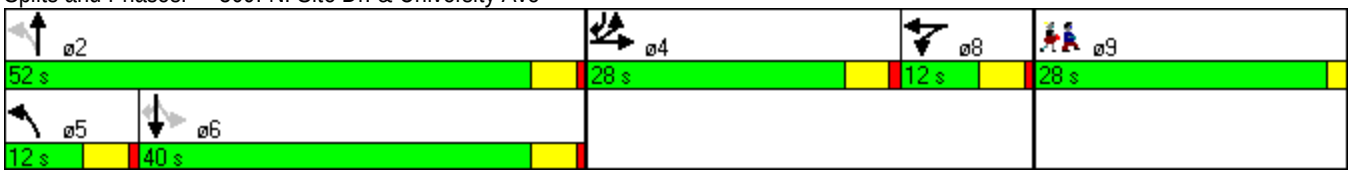
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	451	18	11	125	1145	23	935	428	
Lane Group Flow (vph)	318	303	100	136	1279	25	1016	465	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	28.0	28.0	12.0	12.0	52.0	40.0	40.0	28.0	28.0
Total Split (%)	23.3%	23.3%	10.0%	10.0%	43.3%	33.3%	33.3%	23.3%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	24.0	24.0	8.0	70.4	70.4	56.8	56.8	84.8	
Actuated g/C Ratio	0.20	0.20	0.07	0.59	0.59	0.47	0.47	0.71	
v/c Ratio	0.93	0.87	0.74	0.47	0.62	0.17	0.61	0.36	
Control Delay	81.0	68.3	75.5	20.7	15.9	12.7	13.9	1.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	81.0	68.3	75.5	20.7	15.9	12.7	13.9	1.7	
LOS	F	E	E	C	B	B	B	A	
Approach Delay		74.8	75.5		16.3		10.1		
Approach LOS		E	E		B		B		
Queue Length 50th (ft)	256	225	63	18	128	5	184	12	
Queue Length 95th (ft)	#440	#393	#153	m118	#406	m12	m#530	m37	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	343	348	135	291	2071	149	1658	1277	
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	0.93	0.87	0.74	0.47	0.62	0.17	0.61	0.36	

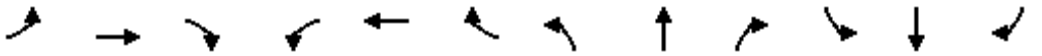
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 25.3	Intersection LOS: C
Intersection Capacity Utilization 68.7%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	18	102	47	11	34	125	1145	31	23	935	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.95		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1715	1653			1760		1805	3527		1805	3505	1615
Flt Permitted	0.95	0.97			0.98		0.15	1.00		0.17	1.00	1.00
Satd. Flow (perm)	1715	1653			1760		287	3527		316	3505	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	490	20	111	51	12	37	136	1245	34	25	1016	465
RTOR Reduction (vph)	0	18	0	0	18	0	0	1	0	0	0	158
Lane Group Flow (vph)	318	285	0	0	82	0	136	1278	0	25	1016	307
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	23.0	23.0			7.0		67.8	67.8		54.1	54.1	77.1
Effective Green, g (s)	24.0	24.0			8.0		68.8	68.8		55.1	55.1	79.1
Actuated g/C Ratio	0.20	0.20			0.07		0.57	0.57		0.46	0.46	0.66
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	343	331			117		287	2022		145	1609	1118
v/s Ratio Prot	c0.19	0.17			c0.05		0.04	c0.36			0.29	0.05
v/s Ratio Perm							0.23			0.08		0.13
v/c Ratio	0.93	0.86			0.70		0.47	0.63		0.17	0.63	0.27
Uniform Delay, d1	47.1	46.4			54.8		16.0	17.1		19.1	24.7	8.5
Progression Factor	1.00	1.00			1.00		1.11	0.78		0.43	0.44	1.00
Incremental Delay, d2	30.3	20.0			17.4		1.0	1.3		2.0	1.5	0.1
Delay (s)	77.4	66.4			72.2		18.9	14.7		10.3	12.4	8.6
Level of Service	E	E			E		B	B		B	B	A
Approach Delay (s)		72.0			72.2			15.1			11.2	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	400	6	3	193	18	1528	154	1278	81	
Lane Group Flow (vph)	235	232	95	210	20	1752	167	1389	88	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	31.0
Total Split (s)	20.0	20.0	12.0	12.0	45.0	45.0	12.0	57.0	20.0	31.0
Total Split (%)	16.7%	16.7%	10.0%	10.0%	37.5%	37.5%	10.0%	47.5%	16.7%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	16.0	16.0	8.0	8.0	61.3	61.3	77.8	77.8	97.8	
Actuated g/C Ratio	0.13	0.13	0.07	0.07	0.51	0.51	0.65	0.65	0.82	
v/c Ratio	1.04	1.02	0.79	0.69	0.13	0.67	0.67	0.61	0.07	
Control Delay	121.3	114.9	95.8	19.9	24.0	20.5	53.4	8.8	0.1	
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.3	0.0	
Total Delay	121.3	114.9	95.8	20.3	24.0	20.6	53.4	9.2	0.1	
LOS	F	F	F	C	C	C	D	A	A	
Approach Delay		118.1	43.8			20.6		13.2		
Approach LOS		F	D			C		B		
Queue Length 50th (ft)	~206	~192	74	0	6	206	71	59	0	
Queue Length 95th (ft)	#377	#369	#170	#82	m17	m#598	m#221	666	m1	
Internal Link Dist (ft)		158	215			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	226	228	120	303	157	2607	251	2294	1319	
Starvation Cap Reductn	0	0	0	0	0	0	0	337	0	
Spillback Cap Reductn	0	0	0	7	0	138	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.04	1.02	0.79	0.71	0.13	0.71	0.67	0.71	0.07	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 113 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 30.3 Intersection LOS: C
Intersection Capacity Utilization 68.5% ICU Level of Service C
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.

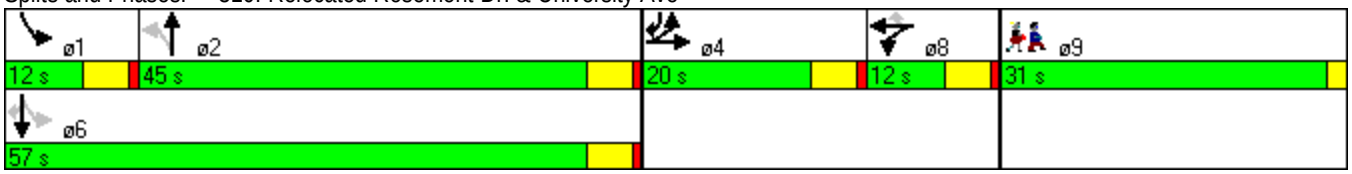
Queue shown is maximum after two cycles.

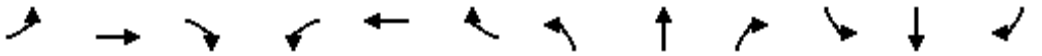
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave

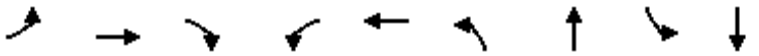




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	400	6	23	85	3	193	18	1528	84	154	1278	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.98			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1686			1794	1599	1787	5096		1787	3539	1599
Flt Permitted	0.95	0.96			0.95	1.00	0.16	1.00		0.06	1.00	1.00
Satd. Flow (perm)	1698	1686			1794	1599	307	5096		118	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	435	7	25	92	3	210	20	1661	91	167	1389	88
RTOR Reduction (vph)	0	3	0	0	0	196	0	4	0	0	0	19
Lane Group Flow (vph)	235	229	0	0	95	14	20	1748	0	167	1389	69
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	15.0	15.0			7.0	7.0	58.7	58.7		75.2	75.2	90.2
Effective Green, g (s)	16.0	16.0			8.0	8.0	59.7	59.7		76.2	76.2	92.2
Actuated g/C Ratio	0.13	0.13			0.07	0.07	0.50	0.50		0.64	0.64	0.77
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	226	225			120	107	153	2535		249	2247	1282
v/s Ratio Prot	c0.14	0.14			c0.05			0.34		0.07	c0.39	0.01
v/s Ratio Perm						0.01	0.07			c0.36		0.04
v/c Ratio	1.04	1.02			0.79	0.13	0.13	0.69		0.67	0.62	0.05
Uniform Delay, d1	52.0	52.0			55.2	52.7	16.2	23.1		27.7	13.2	3.4
Progression Factor	1.00	1.00			1.00	1.00	1.05	0.81		2.01	0.50	0.04
Incremental Delay, d2	70.7	64.1			29.0	0.6	1.2	1.1		5.9	1.1	0.0
Delay (s)	122.7	116.1			84.2	53.3	18.2	19.7		61.6	7.7	0.2
Level of Service	F	F			F	D	B	B		E	A	A
Approach Delay (s)		119.4			62.9			19.7			12.7	
Approach LOS		F			E			B			B	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.8
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

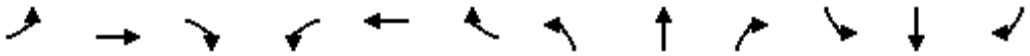


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	107	0	391	8	0	190	1031	1	871
Lane Group Flow (vph)	0	116	425	0	27	0	1328	0	1038
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm	
Protected Phases		4	5		8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	5	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	40.0	28.0	28.0
Total Split (%)	33.3%	33.3%	20.0%	33.3%	33.3%	20.0%	66.7%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	Min	Min
Act Effct Green (s)		10.8	20.6		10.7		37.0		25.5
Actuated g/C Ratio		0.20	0.39		0.20		0.70		0.48
v/c Ratio		0.41	0.65		0.09		0.82		0.65
Control Delay		23.5	16.3		11.4		13.3		14.5
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		23.5	16.3		11.4		13.3		14.5
LOS		C	B		B		B		B
Approach Delay		17.8			11.4		13.3		14.5
Approach LOS		B			B		B		B
Queue Length 50th (ft)		33	93		2		99		124
Queue Length 95th (ft)		72	159		18		#257		232
Internal Link Dist (ft)		673			220		177		692
Turn Bay Length (ft)									
Base Capacity (vph)		429	672		462		1616		1595
Starvation Cap Reductn		0	0		0		0		0
Spillback Cap Reductn		0	0		0		0		0
Storage Cap Reductn		0	0		0		0		0
Reduced v/c Ratio		0.27	0.63		0.06		0.82		0.65

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 83.4%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	391	8	0	17	190	1031	0	1	871	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.91			1.00			0.99	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1805	1615		1635			3512			3462	
Flt Permitted		0.74	1.00		0.89			0.57			0.95	
Satd. Flow (perm)		1405	1615		1472			2024			3303	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	0	425	9	0	18	207	1121	0	1	947	90
RTOR Reduction (vph)	0	0	30	0	15	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	116	395	0	12	0	0	1328	0	0	1027	0
Heavy Vehicles (%)	0%	0%	0%	12%	0%	0%	2%	2%	0%	98%	3%	1%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		8.3	15.7		8.3			36.0			24.6	
Effective Green, g (s)		9.3	17.7		9.3			37.0			25.6	
Actuated g/C Ratio		0.17	0.33		0.17			0.68			0.47	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		241	526		252			1609			1557	
v/s Ratio Prot			c0.12					c0.13				
v/s Ratio Perm		0.08	0.13		0.01			c0.43			0.31	
v/c Ratio		0.48	0.75		0.05			0.83			0.66	
Uniform Delay, d1		20.3	16.3		18.8			6.3			11.0	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.5	6.0		0.1			3.6			1.0	
Delay (s)		21.8	22.3		18.9			9.9			12.0	
Level of Service		C	C		B			A			B	
Approach Delay (s)		22.2			18.9			9.9			12.0	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	7.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

308: S. Site Dr. & University Ave

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	467	0	301	0	369	820	13	620	451	
Lane Group Flow (vph)	254	254	327	23	401	899	14	674	490	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	23.0	23.0	26.0	12.0	26.0	55.0	29.0	29.0	23.0	30.0
Total Split (%)	19.2%	19.2%	21.7%	10.0%	21.7%	45.8%	24.2%	24.2%	19.2%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	21.3	21.3	52.0	7.2	77.7	77.7	46.2	46.2	69.1	
Actuated g/C Ratio	0.18	0.18	0.43	0.06	0.65	0.65	0.38	0.38	0.58	
v/c Ratio	0.84	0.84	0.38	0.20	0.68	0.39	0.06	0.51	0.43	
Control Delay	73.0	73.0	4.2	34.3	20.5	13.1	22.8	19.7	4.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.0	73.0	4.2	34.3	20.5	13.1	22.8	19.7	4.0	
LOS	E	E	A	C	C	B	C	B	A	
Approach Delay		46.0		34.3		15.4		13.2		
Approach LOS		D		C		B		B		
Queue Length 50th (ft)	205	205	14	6	119	145	2	132	21	
Queue Length 95th (ft)	#378	#378	44	33	#407	344	m7	m#354	m167	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		200	
Base Capacity (vph)	301	301	858	126	594	2291	230	1325	1129	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.84	0.38	0.18	0.68	0.39	0.06	0.51	0.43	

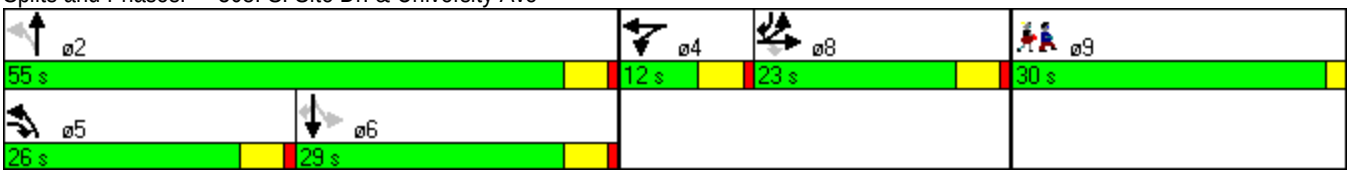
Intersection Summary

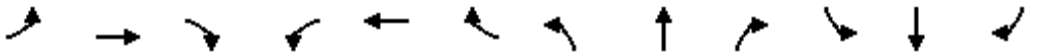
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 28 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.4 Intersection LOS: C
Intersection Capacity Utilization 67.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	467	0	301	7	0	14	369	820	7	13	620	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1686		1787	3535		1787	3438	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.23	1.00		0.32	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1686		441	3535		596	3438	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	0	327	8	0	15	401	891	8	14	674	490
RTOR Reduction (vph)	0	0	174	0	14	0	0	0	0	0	0	229
Lane Group Flow (vph)	254	254	153	0	9	0	401	899	0	14	674	261
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	5%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	20.3	20.3	46.8		4.0		73.1	73.1		41.6	41.6	61.9
Effective Green, g (s)	21.3	21.3	48.8		5.0		74.1	74.1		42.6	42.6	63.9
Actuated g/C Ratio	0.18	0.18	0.41		0.04		0.62	0.62		0.36	0.36	0.53
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	301	301	650		70		581	2183		212	1220	851
v/s Ratio Prot	c0.15	0.15	0.05		c0.01		c0.16	0.25			0.20	0.05
v/s Ratio Perm			0.04				c0.27			0.02		0.11
v/c Ratio	0.84	0.84	0.24		0.12		0.69	0.41		0.07	0.55	0.31
Uniform Delay, d1	47.7	47.7	23.4		55.4		14.6	11.8		25.6	31.1	15.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.71	0.56	2.18
Incremental Delay, d2	18.9	18.9	0.2		0.8		3.5	0.6		0.5	1.4	0.2
Delay (s)	66.7	66.7	23.5		56.2		18.1	12.3		18.5	18.8	34.4
Level of Service	E	E	C		E		B	B		B	B	C
Approach Delay (s)		49.8			56.2			14.1			25.3	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	451	18	11	125	1145	23	935	428	
Lane Group Flow (vph)	318	303	100	136	1279	25	1016	465	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	34.0
Total Split (s)	25.0	25.0	12.0	12.0	49.0	37.0	37.0	25.0	34.0
Total Split (%)	20.8%	20.8%	10.0%	10.0%	40.8%	30.8%	30.8%	20.8%	28%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	21.0	21.0	8.0	72.2	72.2	58.7	58.7	83.7	
Actuated g/C Ratio	0.18	0.18	0.07	0.60	0.60	0.49	0.49	0.70	
v/c Ratio	1.06	0.99	0.74	0.45	0.60	0.16	0.59	0.37	
Control Delay	116.2	95.5	75.5	20.5	15.9	12.3	13.1	2.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	116.2	95.5	75.5	20.5	15.9	12.3	13.1	2.0	
LOS	F	F	E	C	B	B	B	A	
Approach Delay		106.1	75.5		16.3		9.6		
Approach LOS		F	E		B		A		
Queue Length 50th (ft)	~285	233	63	19	93	5	118	11	
Queue Length 95th (ft)	#476	#430	#153	m122	#640	m12	m#565	m48	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	300	306	135	301	2124	159	1715	1264	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.99	0.74	0.45	0.60	0.16	0.59	0.37	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 10 (8%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 68.7%	ICU Level of Service C
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	

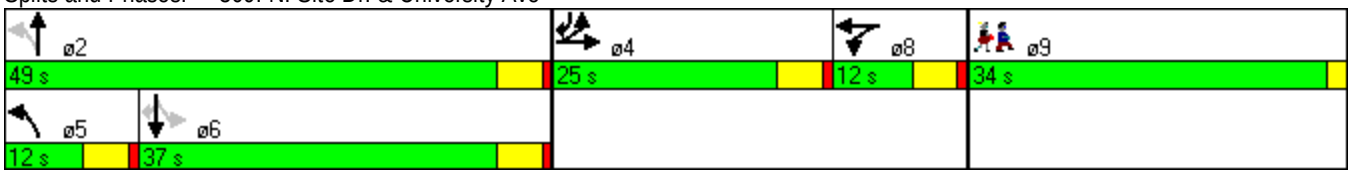
Queue shown is maximum after two cycles.

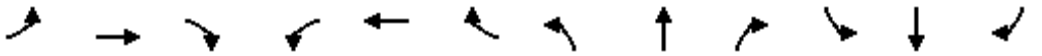
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	451	18	102	47	11	34	125	1145	31	23	935	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.95		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1715	1653			1760		1805	3527		1805	3505	1615
Flt Permitted	0.95	0.97			0.98		0.16	1.00		0.17	1.00	1.00
Satd. Flow (perm)	1715	1653			1760		303	3527		325	3505	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	490	20	111	51	12	37	136	1245	34	25	1016	465
RTOR Reduction (vph)	0	17	0	0	18	0	0	1	0	0	0	159
Lane Group Flow (vph)	318	286	0	0	82	0	136	1278	0	25	1016	306
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	20.0	20.0			7.0		69.6	69.6		56.1	56.1	76.1
Effective Green, g (s)	21.0	21.0			8.0		70.6	70.6		57.1	57.1	78.1
Actuated g/C Ratio	0.18	0.18			0.07		0.59	0.59		0.48	0.48	0.65
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	300	289			117		297	2075		155	1668	1105
v/s Ratio Prot	c0.19	0.17			c0.05		0.04	c0.36			0.29	0.05
v/s Ratio Perm							0.23			0.08		0.14
v/c Ratio	1.06	0.99			0.70		0.46	0.62		0.16	0.61	0.28
Uniform Delay, d1	49.5	49.4			54.8		14.9	15.9		17.9	23.2	8.9
Progression Factor	1.00	1.00			1.00		1.13	0.81		0.42	0.40	0.94
Incremental Delay, d2	68.7	49.3			17.4		0.9	1.2		1.7	1.3	0.1
Delay (s)	118.2	98.6			72.2		17.8	14.0		9.3	10.6	8.5
Level of Service	F	F			E		B	B		A	B	A
Approach Delay (s)		108.6			72.2			14.4			9.9	
Approach LOS		F			E			B			A	

Intersection Summary			
HCM Average Control Delay	30.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	400	6	3	193	18	1528	154	1278	81	
Lane Group Flow (vph)	235	232	95	210	20	1752	167	1389	88	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	35.0
Total Split (s)	20.0	20.0	12.0	12.0	41.0	41.0	12.0	53.0	20.0	35.0
Total Split (%)	16.7%	16.7%	10.0%	10.0%	34.2%	34.2%	10.0%	44.2%	16.7%	29%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	16.0	16.0	8.0	8.0	60.6	60.6	77.0	77.0	97.0	
Actuated g/C Ratio	0.13	0.13	0.07	0.07	0.50	0.50	0.64	0.64	0.81	
v/c Ratio	1.04	1.02	0.79	0.69	0.13	0.68	0.67	0.61	0.07	
Control Delay	121.3	114.9	95.8	19.9	27.0	21.9	52.6	9.8	0.2	
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.3	0.0	
Total Delay	121.3	114.9	95.8	20.4	27.0	22.0	52.6	10.1	0.2	
LOS	F	F	F	C	C	C	D	B	A	
Approach Delay		118.1	43.9			22.1		13.9		
Approach LOS		F	D			C		B		
Queue Length 50th (ft)	~206	~192	74	0	6	208	69	59	0	
Queue Length 95th (ft)	#377	#369	#170	#82	m17	m#613	m#227	#720	m1	
Internal Link Dist (ft)		158	215			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	226	228	120	303	153	2576	249	2271	1307	
Starvation Cap Reductn	0	0	0	0	0	0	0	293	0	
Spillback Cap Reductn	0	0	0	8	0	134	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.04	1.02	0.79	0.71	0.13	0.72	0.67	0.70	0.07	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 116 (97%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 31.2	Intersection LOS: C
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	

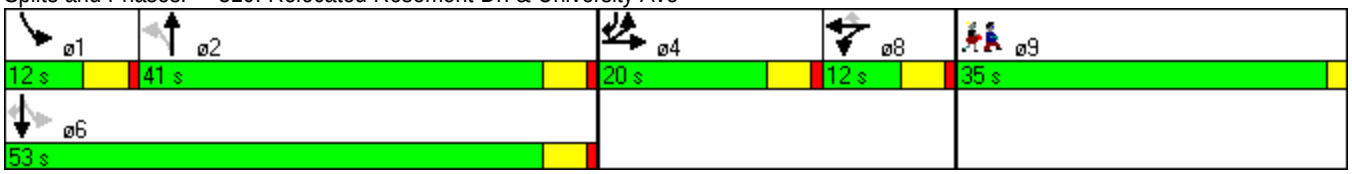
Queue shown is maximum after two cycles.

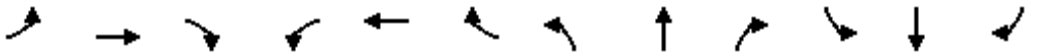
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	400	6	23	85	3	193	18	1528	84	154	1278	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.98			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1686			1794	1599	1787	5096		1787	3539	1599
Flt Permitted	0.95	0.96			0.95	1.00	0.16	1.00		0.06	1.00	1.00
Satd. Flow (perm)	1698	1686			1794	1599	303	5096		119	3539	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	435	7	25	92	3	210	20	1661	91	167	1389	88
RTOR Reduction (vph)	0	3	0	0	0	196	0	4	0	0	0	18
Lane Group Flow (vph)	235	229	0	0	95	14	20	1748	0	167	1389	70
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	15.0	15.0			7.0	7.0	58.0	58.0		74.4	74.4	89.4
Effective Green, g (s)	16.0	16.0			8.0	8.0	59.0	59.0		75.4	75.4	91.4
Actuated g/C Ratio	0.13	0.13			0.07	0.07	0.49	0.49		0.63	0.63	0.76
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	226	225			120	107	149	2506		247	2224	1271
v/s Ratio Prot	c0.14	0.14			c0.05			0.34		0.07	c0.39	0.01
v/s Ratio Perm						0.01	0.07			c0.35		0.04
v/c Ratio	1.04	1.02			0.79	0.13	0.13	0.70		0.68	0.62	0.05
Uniform Delay, d1	52.0	52.0			55.2	52.7	16.6	23.6		27.7	13.6	3.6
Progression Factor	1.00	1.00			1.00	1.00	1.11	0.83		1.92	0.50	0.05
Incremental Delay, d2	70.7	64.1			29.0	0.6	1.3	1.1		6.1	1.1	0.0
Delay (s)	122.7	116.1			84.2	53.3	19.6	20.8		59.3	7.9	0.2
Level of Service	F	F			F	D	B	C		E	A	A
Approach Delay (s)		119.4			62.9			20.8			12.8	
Approach LOS		F			E			C			B	

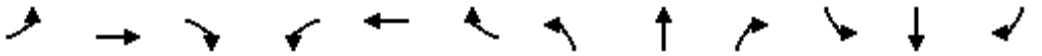
Intersection Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Configurations								
Volume (vph)	96	0	220	1	0	234	785	657
Lane Group Flow (vph)	0	104	239	0	2	0	1107	829
Turn Type	Perm		pm+ov	Perm		pm+pt		
Protected Phases		4	5		8	5	2	6
Permitted Phases	4		4	8		2		
Detector Phase	4	4	5	8	8	5	2	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.0	19.0	12.0	19.0	19.0	12.0	19.0	19.0
Total Split (s)	20.0	20.0	13.0	20.0	20.0	13.0	70.0	57.0
Total Split (%)	22.2%	22.2%	14.4%	22.2%	22.2%	14.4%	77.8%	63.3%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	Max	Min
Act Effct Green (s)		12.3	20.3		12.0		68.0	58.4
Actuated g/C Ratio		0.14	0.24		0.14		0.79	0.68
v/c Ratio		0.53	0.46		0.01		0.63	0.35
Control Delay		44.1	7.4		26.5		5.9	6.9
Queue Delay		0.0	0.0		0.0		0.0	0.0
Total Delay		44.1	7.4		26.5		5.9	6.9
LOS		D	A		C		A	A
Approach Delay		18.5			26.5		5.9	6.9
Approach LOS		B			C		A	A
Queue Length 50th (ft)		53	6		1		87	91
Queue Length 95th (ft)		104	59		7		136	139
Internal Link Dist (ft)		673			220		177	692
Turn Bay Length (ft)								
Base Capacity (vph)		259	576		294		1771	2398
Starvation Cap Reductn		0	0		0		0	0
Spillback Cap Reductn		0	0		0		0	0
Storage Cap Reductn		0	0		0		0	0
Reduced v/c Ratio		0.40	0.41		0.01		0.63	0.35

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 85.8	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	0	220	1	0	1	234	785	0	0	657	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.98	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1736	1495		1729			3526			3505	
Flt Permitted		0.76	1.00		0.89			0.59			1.00	
Satd. Flow (perm)		1382	1495		1571			2119			3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	0	239	1	0	1	254	853	0	0	714	115
RTOR Reduction (vph)	0	0	179	0	1	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	104	60	0	1	0	0	1107	0	0	818	0
Heavy Vehicles (%)	4%	0%	8%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		9.8	15.4		9.8			67.0			57.4	
Effective Green, g (s)		10.8	17.4		10.8			68.0			58.4	
Actuated g/C Ratio		0.12	0.20		0.12			0.78			0.67	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		172	300		195			1767			2358	
v/s Ratio Prot			0.02					c0.05			0.23	
v/s Ratio Perm		c0.08	0.02		0.00			c0.44				
v/c Ratio		0.60	0.20		0.01			0.63			0.35	
Uniform Delay, d1		36.0	28.9		33.3			4.0			6.1	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		5.9	0.3		0.0			0.7			0.1	
Delay (s)		41.9	29.2		33.3			4.7			6.1	
Level of Service		D	C		C			A			A	
Approach Delay (s)		33.1			33.3			4.7			6.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

308: S. Site Dr. & University Ave

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	551	0	342	0	424	433	18	401	560	
Lane Group Flow (vph)	299	300	372	27	461	481	20	436	609	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	25.0	25.0	26.0	12.0	26.0	43.0	17.0	17.0	25.0	30.0
Total Split (%)	22.7%	22.7%	23.6%	10.9%	23.6%	39.1%	15.5%	15.5%	22.7%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	23.2	23.2	56.7	7.2	66.2	66.2	31.9	31.9	56.7	
Actuated g/C Ratio	0.21	0.21	0.52	0.07	0.60	0.60	0.29	0.29	0.52	
v/c Ratio	0.83	0.84	0.38	0.21	0.67	0.23	0.08	0.42	0.54	
Control Delay	62.9	63.2	3.2	30.7	21.7	12.9	27.2	24.0	9.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.9	63.2	3.2	30.7	21.7	12.9	27.2	24.0	9.7	
LOS	E	E	A	C	C	B	C	C	A	
Approach Delay		40.2		30.7		17.2		15.9		
Approach LOS		D		C		B		B		
Queue Length 50th (ft)	217	217	13	6	151	71	3	46	305	
Queue Length 95th (ft)	#393	#395	35	34	#458	172	m12	m#252	m520	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	359	359	986	139	684	2123	260	1036	1120	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.83	0.84	0.38	0.19	0.67	0.23	0.08	0.42	0.54	

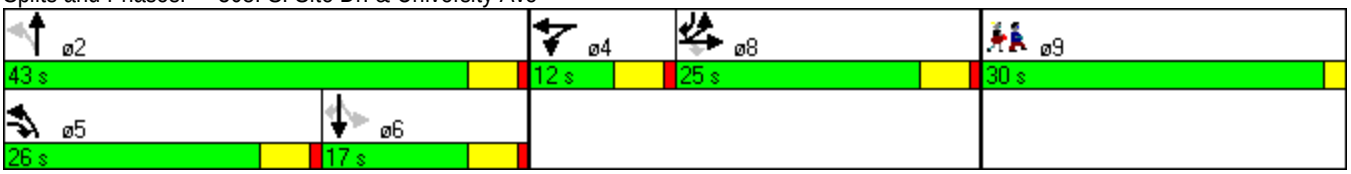
Intersection Summary

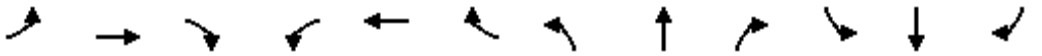
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 31 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 24.3 Intersection LOS: C
Intersection Capacity Utilization 71.5% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	551	0	342	8	0	17	424	433	9	18	401	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1684		1787	3529		1787	3574	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.31	1.00		0.48	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1684		591	3529		898	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	599	0	372	9	0	18	461	471	10	20	436	609
RTOR Reduction (vph)	0	0	171	0	17	0	0	1	0	0	0	324
Lane Group Flow (vph)	299	300	201	0	10	0	461	480	0	20	436	285
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	22.2	22.2	51.5		4.0		61.6	61.6		27.3	27.3	49.5
Effective Green, g (s)	23.2	23.2	53.5		5.0		62.6	62.6		28.3	28.3	51.5
Actuated g/C Ratio	0.21	0.21	0.49		0.05		0.57	0.57		0.26	0.26	0.47
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	358	358	778		77		666	2008		231	919	749
v/s Ratio Prot	0.18	c0.18	0.07		c0.01		c0.19	0.14			0.12	0.08
v/s Ratio Perm			0.05				c0.20			0.02		0.10
v/c Ratio	0.84	0.84	0.26		0.13		0.69	0.24		0.09	0.47	0.38
Uniform Delay, d1	41.6	41.6	16.6		50.4		15.0	11.8		31.0	34.6	18.9
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.75	0.62	5.41
Incremental Delay, d2	15.4	15.6	0.2		0.8		3.1	0.3		0.6	1.4	0.3
Delay (s)	56.9	57.2	16.8		51.2		18.2	12.1		24.0	22.7	102.6
Level of Service	E	E	B		D		B	B		C	C	F
Approach Delay (s)		41.6			51.2			15.1			68.4	
Approach LOS		D			D			B			E	

Intersection Summary			
HCM Average Control Delay	42.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

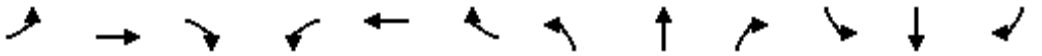
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	540	6	3	140	828	26	842	535	
Lane Group Flow (vph)	364	346	63	152	935	28	915	582	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	28.0
Total Split (s)	29.0	29.0	12.0	12.0	41.0	29.0	29.0	29.0	28.0
Total Split (%)	26.4%	26.4%	10.9%	10.9%	37.3%	26.4%	26.4%	26.4%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	25.0	25.0	7.6	61.9	61.9	47.9	47.9	76.9	
Actuated g/C Ratio	0.23	0.23	0.07	0.56	0.56	0.44	0.44	0.70	
v/c Ratio	0.94	0.88	0.44	0.49	0.46	0.11	0.58	0.46	
Control Delay	76.3	63.7	41.6	20.7	13.0	14.8	16.8	3.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	76.3	63.7	41.6	20.7	13.0	14.8	16.8	3.5	
LOS	E	E	D	C	B	B	B	A	
Approach Delay		70.2	41.6		14.1		11.7		
Approach LOS		E	D		B		B		
Queue Length 50th (ft)	267	235	25	15	48	5	149	0	
Queue Length 95th (ft)	#461	#412	69	m136	342	m20	#506	450	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	386	391	151	310	2022	247	1572	1271	
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	0.94	0.88	0.42	0.49	0.46	0.11	0.58	0.46	

Intersection Summary		
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 9 (8%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 25.3	Intersection LOS: C	
Intersection Capacity Utilization 66.1%	ICU Level of Service C	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	6	107	30	3	25	140	828	32	26	842	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1650			1744		1805	3590		1805	3610	1568
Flt Permitted	0.95	0.97			0.97		0.16	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1698	1650			1744		308	3590		567	3610	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	587	7	116	33	3	27	152	900	35	28	915	582
RTOR Reduction (vph)	0	16	0	0	24	0	0	2	0	0	0	210
Lane Group Flow (vph)	364	330	0	0	39	0	152	933	0	28	915	372
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	24.0	24.0			5.5		58.3	58.3		44.3	44.3	68.3
Effective Green, g (s)	25.0	25.0			6.5		59.3	59.3		45.3	45.3	70.3
Actuated g/C Ratio	0.23	0.23			0.06		0.54	0.54		0.41	0.41	0.64
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	386	375			103		302	1935		234	1487	1059
v/s Ratio Prot	c0.21	0.20			c0.02		0.05	c0.26			c0.25	0.08
v/s Ratio Perm							0.23			0.05		0.16
v/c Ratio	0.94	0.88			0.37		0.50	0.48		0.12	0.62	0.35
Uniform Delay, d1	41.8	41.0			49.8		16.2	15.8		20.0	25.5	9.2
Progression Factor	1.00	1.00			1.00		0.95	0.72		0.53	0.50	2.13
Incremental Delay, d2	31.4	20.2			2.3		1.1	0.7		0.9	1.6	0.2
Delay (s)	73.2	61.2			52.1		16.4	12.1		11.5	14.4	19.9
Level of Service	E	E			D		B	B		B	B	B
Approach Delay (s)		67.4			52.1			12.7			16.4	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	69	2	3	191	30	1263	211	1304	64	
Lane Group Flow (vph)	48	46	94	208	33	1481	229	1417	70	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	31.0
Total Split (s)	12.0	12.0	12.0	12.0	39.0	39.0	16.0	55.0	12.0	31.0
Total Split (%)	10.9%	10.9%	10.9%	10.9%	35.5%	35.5%	14.5%	50.0%	10.9%	28%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	7.7	7.7	8.1	8.1	60.1	60.1	78.1	78.1	89.8	
Actuated g/C Ratio	0.07	0.07	0.07	0.07	0.55	0.55	0.71	0.71	0.82	
v/c Ratio	0.41	0.35	0.71	0.67	0.18	0.53	0.67	0.55	0.05	
Control Delay	59.4	42.1	78.6	18.3	25.0	17.8	44.4	5.5	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	
Total Delay	59.4	42.1	78.6	18.3	25.0	17.8	44.4	5.6	0.1	
LOS	E	D	E	B	C	B	D	A	A	
Approach Delay		50.9	37.0			18.0		10.6		
Approach LOS		D	D			B		B		
Queue Length 50th (ft)	34	21	66	0	9	182	68	53	0	
Queue Length 95th (ft)	75	61	#150	#75	m33	m351	#249	618	0	
Internal Link Dist (ft)		158	215			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	123	135	132	310	186	2806	350	2564	1322	
Starvation Cap Reductn	0	0	0	0	0	0	0	181	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.34	0.71	0.67	0.18	0.53	0.65	0.59	0.05	

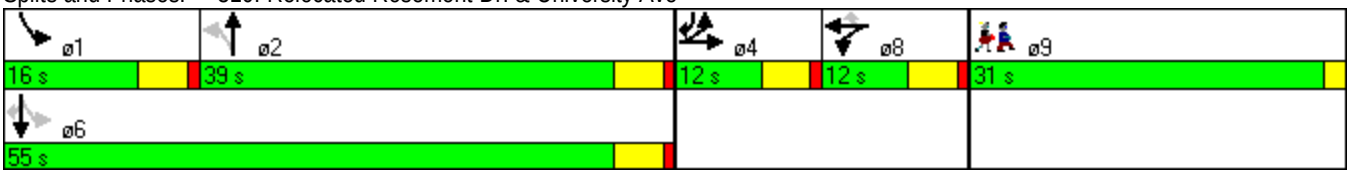
Intersection Summary

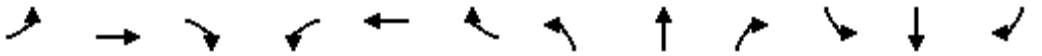
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 102 (93%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 16.9 Intersection LOS: B
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	2	16	84	3	191	30	1263	99	211	1304	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1640			1794	1599	1787	5127		1787	3610	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.18	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1698	1640			1794	1599	340	5127		197	3610	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	2	17	91	3	208	33	1373	108	229	1417	70
RTOR Reduction (vph)	0	16	0	0	0	193	0	6	0	0	0	16
Lane Group Flow (vph)	48	30	0	0	94	15	33	1475	0	229	1417	54
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	0%	1%	1%	0%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	5.6	5.6			7.1	7.1	56.5	56.5		74.5	74.5	80.1
Effective Green, g (s)	6.6	6.6			8.1	8.1	57.5	57.5		75.5	75.5	82.1
Actuated g/C Ratio	0.06	0.06			0.07	0.07	0.52	0.52		0.69	0.69	0.75
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	102	98			132	118	178	2680		338	2478	1252
v/s Ratio Prot	c0.03	0.02			c0.05			0.29		c0.09	0.39	0.00
v/s Ratio Perm						0.01	0.10			c0.38		0.03
v/c Ratio	0.47	0.31			0.71	0.13	0.19	0.55		0.68	0.57	0.04
Uniform Delay, d1	50.0	49.5			49.8	47.7	13.9	17.6		17.3	8.9	3.7
Progression Factor	1.00	1.00			1.00	1.00	1.11	0.91		2.55	0.43	0.00
Incremental Delay, d2	3.4	1.8			16.6	0.5	1.8	0.6		4.8	0.9	0.0
Delay (s)	53.4	51.3			66.4	48.2	17.1	16.6		48.7	4.7	0.0
Level of Service	D	D			E	D	B	B		D	A	A
Approach Delay (s)		52.4			53.8			16.6			10.4	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.8
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

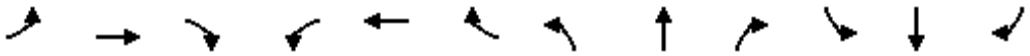
c Critical Lane Group

306: Harvard St. & University Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Configurations								
Volume (vph)	96	0	220	1	0	234	785	657
Lane Group Flow (vph)	0	104	239	0	2	0	1107	829
Turn Type	Perm		pm+ov	Perm		pm+pt		
Protected Phases		4	5		8	5	2	6
Permitted Phases	4		4	8		2		
Detector Phase	4	4	5	8	8	5	2	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	12.0	20.0	20.0	12.0	20.0	20.0
Total Split (s)	21.0	21.0	13.0	21.0	21.0	13.0	69.0	56.0
Total Split (%)	23.3%	23.3%	14.4%	23.3%	23.3%	14.4%	76.7%	62.2%
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag			Lead			Lead		Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	Max	Min
Act Effct Green (s)		12.4	20.5		12.2		67.1	57.5
Actuated g/C Ratio		0.15	0.24		0.14		0.79	0.68
v/c Ratio		0.51	0.46		0.01		0.63	0.35
Control Delay		42.9	7.7		26.0		6.0	7.0
Queue Delay		0.0	0.0		0.0		0.0	0.0
Total Delay		42.9	7.7		26.0		6.0	7.0
LOS		D	A		C		A	A
Approach Delay		18.4			26.0		6.0	7.0
Approach LOS		B			C		A	A
Queue Length 50th (ft)		52	9		1		86	91
Queue Length 95th (ft)		102	62		7		144	144
Internal Link Dist (ft)		673			220		177	692
Turn Bay Length (ft)								
Base Capacity (vph)		277	576		316		1765	2381
Starvation Cap Reductn		0	0		0		0	0
Spillback Cap Reductn		0	0		0		0	0
Storage Cap Reductn		0	0		0		0	0
Reduced v/c Ratio		0.38	0.41		0.01		0.63	0.35

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 85	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 306: Harvard St. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	0	220	1	0	1	234	785	0	0	657	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	3.0		4.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.93			1.00			0.98	
Flt Protected		0.95	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1736	1495		1729			3526			3505	
Flt Permitted		0.76	1.00		0.89			0.59			1.00	
Satd. Flow (perm)		1382	1495		1575			2117			3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	0	239	1	0	1	254	853	0	0	714	115
RTOR Reduction (vph)	0	0	173	0	1	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	104	66	0	1	0	0	1107	0	0	818	0
Heavy Vehicles (%)	4%	0%	8%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		10.0	15.6		10.0			66.1			56.5	
Effective Green, g (s)		11.0	17.6		11.0			67.1			57.5	
Actuated g/C Ratio		0.13	0.20		0.13			0.78			0.67	
Clearance Time (s)		5.0	4.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		177	306		201			1758			2341	
v/s Ratio Prot			0.02					c0.05			0.23	
v/s Ratio Perm		c0.08	0.03		0.00			c0.44				
v/c Ratio		0.59	0.22		0.01			0.63			0.35	
Uniform Delay, d1		35.4	28.5		32.8			4.1			6.2	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		4.9	0.4		0.0			0.7			0.1	
Delay (s)		40.3	28.9		32.8			4.8			6.3	
Level of Service		D	C		C			A			A	
Approach Delay (s)		32.3			32.8			4.8			6.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

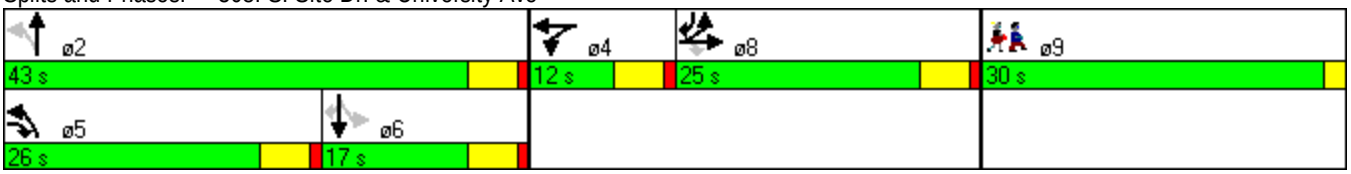
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	551	0	342	0	424	433	18	401	560	
Lane Group Flow (vph)	299	300	372	27	461	481	20	436	609	
Turn Type	Split		pm+ov		pm+pt		Perm		pm+ov	
Protected Phases	8	8	5	4	5	2		6	8	9
Permitted Phases			8		2		6		6	
Detector Phase	8	8	5	4	5	2	6	6	8	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	30.0
Total Split (s)	25.0	25.0	26.0	12.0	26.0	43.0	17.0	17.0	25.0	30.0
Total Split (%)	22.7%	22.7%	23.6%	10.9%	23.6%	39.1%	15.5%	15.5%	22.7%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lead		Lag	Lag		
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	23.2	23.2	56.5	7.2	66.0	66.0	31.9	31.9	56.7	
Actuated g/C Ratio	0.21	0.21	0.51	0.07	0.60	0.60	0.29	0.29	0.52	
v/c Ratio	0.83	0.84	0.38	0.21	0.68	0.23	0.08	0.42	0.54	
Control Delay	62.9	63.2	3.3	30.7	22.1	13.2	34.2	27.4	10.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.9	63.2	3.3	30.7	22.1	13.2	34.2	27.4	10.4	
LOS	E	E	A	C	C	B	C	C	B	
Approach Delay		40.2		30.7		17.5		17.8		
Approach LOS		D		C		B		B		
Queue Length 50th (ft)	217	217	13	6	151	71	3	64	288	
Queue Length 95th (ft)	#393	#395	35	34	#471	174	m17	m#243	m379	
Internal Link Dist (ft)		398		229		446		832		
Turn Bay Length (ft)			100		350		200		350	
Base Capacity (vph)	359	359	983	139	681	2117	260	1036	1120	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.83	0.84	0.38	0.19	0.68	0.23	0.08	0.42	0.54	

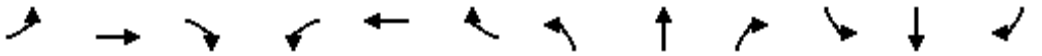
Intersection Summary		
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 30 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.84		
Intersection Signal Delay: 25.0	Intersection LOS: C	
Intersection Capacity Utilization 71.5%	ICU Level of Service C	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		

Queue shown is maximum after two cycles.

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

Splits and Phases: 308: S. Site Dr. & University Ave

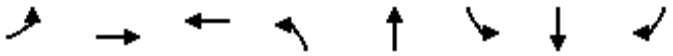




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	551	0	342	8	0	17	424	433	9	18	401	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1698	1599		1684		1787	3529		1787	3574	1599
Flt Permitted	0.95	0.95	1.00		0.98		0.31	1.00		0.48	1.00	1.00
Satd. Flow (perm)	1698	1698	1599		1684		591	3529		898	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	599	0	372	9	0	18	461	471	10	20	436	609
RTOR Reduction (vph)	0	0	172	0	17	0	0	1	0	0	0	324
Lane Group Flow (vph)	299	300	200	0	10	0	461	480	0	20	436	285
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%
Turn Type	Split		pm+ov	Split			pm+pt			Perm		pm+ov
Protected Phases	8	8	5	4	4		5	2			6	8
Permitted Phases			8				2			6		6
Actuated Green, G (s)	22.2	22.2	51.3		4.0		61.4	61.4		27.3	27.3	49.5
Effective Green, g (s)	23.2	23.2	53.3		5.0		62.4	62.4		28.3	28.3	51.5
Actuated g/C Ratio	0.21	0.21	0.48		0.05		0.57	0.57		0.26	0.26	0.47
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	358	358	775		77		663	2002		231	919	749
v/s Ratio Prot	0.18	c0.18	0.07		c0.01		c0.19	0.14			0.12	0.08
v/s Ratio Perm			0.05				c0.20			0.02		0.10
v/c Ratio	0.84	0.84	0.26		0.13		0.70	0.24		0.09	0.47	0.38
Uniform Delay, d1	41.6	41.6	16.7		50.4		15.2	11.9		31.0	34.6	18.9
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		0.95	0.73	5.87
Incremental Delay, d2	15.4	15.6	0.2		0.8		3.2	0.3		0.6	1.4	0.3
Delay (s)	56.9	57.2	16.9		51.2		18.3	12.2		30.1	26.5	111.3
Level of Service	E	E	B		D		B	B		C	C	F
Approach Delay (s)		41.7			51.2			15.2			75.1	
Approach LOS		D			D			B			E	

Intersection Summary			
HCM Average Control Delay	45.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations									
Volume (vph)	540	6	3	140	828	26	842	535	
Lane Group Flow (vph)	364	346	63	152	935	28	915	582	
Turn Type	Split			pm+pt		Perm		pm+ov	
Protected Phases	4	4	8	5	2		6	4	9
Permitted Phases				2		6		6	
Detector Phase	4	4	8	5	2	6	6	4	
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	34.0
Total Split (s)	24.0	24.0	12.0	12.0	40.0	28.0	28.0	24.0	34.0
Total Split (%)	21.8%	21.8%	10.9%	10.9%	36.4%	25.5%	25.5%	21.8%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag				Lead		Lag	Lag		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	20.0	20.0	7.6	65.7	65.7	52.0	52.0	76.0	
Actuated g/C Ratio	0.18	0.18	0.07	0.60	0.60	0.47	0.47	0.69	
v/c Ratio	1.18	1.09	0.44	0.45	0.44	0.10	0.54	0.46	
Control Delay	149.0	117.9	41.6	18.3	11.2	10.1	14.2	5.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	149.0	117.9	41.6	18.3	11.2	10.1	14.2	5.0	
LOS	F	F	D	B	B	B	B	A	
Approach Delay		133.8	41.6		12.2		10.6		
Approach LOS		F	D		B		B		
Queue Length 50th (ft)	~325	~278	25	13	42	5	96	0	
Queue Length 95th (ft)	#520	#472	69	m126	313	m20	#530	453	
Internal Link Dist (ft)		406	599		832		647		
Turn Bay Length (ft)				200		150		200	
Base Capacity (vph)	309	317	151	337	2146	275	1708	1264	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.18	1.09	0.42	0.45	0.44	0.10	0.54	0.46	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 13 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 37.6	Intersection LOS: D
Intersection Capacity Utilization 66.1%	ICU Level of Service C
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	

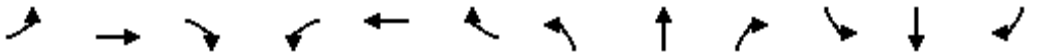
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 309: N. Site Dr. & University Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	6	107	30	3	25	140	828	32	26	842	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.95			0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1650			1744		1805	3590		1805	3610	1568
Flt Permitted	0.95	0.97			0.97		0.18	1.00		0.31	1.00	1.00
Satd. Flow (perm)	1698	1650			1744		347	3590		581	3610	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	587	7	116	33	3	27	152	900	35	28	915	582
RTOR Reduction (vph)	0	16	0	0	24	0	0	2	0	0	0	215
Lane Group Flow (vph)	364	330	0	0	39	0	152	933	0	28	915	367
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
Turn Type	Split			Split			pm+pt			Perm		pm+ov
Protected Phases	4	4		8	8		5	2			6	4
Permitted Phases							2			6		6
Actuated Green, G (s)	19.0	19.0			5.5		62.1	62.1		48.4	48.4	67.4
Effective Green, g (s)	20.0	20.0			6.5		63.1	63.1		49.4	49.4	69.4
Actuated g/C Ratio	0.18	0.18			0.06		0.57	0.57		0.45	0.45	0.63
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	309	300			103		328	2059		261	1621	1046
v/s Ratio Prot	c0.21	0.20			c0.02		0.04	c0.26			c0.25	0.06
v/s Ratio Perm							0.23			0.05		0.17
v/c Ratio	1.18	1.10			0.37		0.46	0.45		0.11	0.56	0.35
Uniform Delay, d1	45.0	45.0			49.8		13.9	13.5		17.5	22.4	9.6
Progression Factor	1.00	1.00			1.00		0.94	0.69		0.38	0.44	2.84
Incremental Delay, d2	108.5	81.1			2.3		0.9	0.6		0.7	1.2	0.2
Delay (s)	153.5	126.1			52.1		14.0	9.9		7.4	11.0	27.5
Level of Service	F	F			D		B	A		A	B	C
Approach Delay (s)		140.1			52.1			10.5			17.2	
Approach LOS		F			D			B			B	

Intersection Summary			
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	24.4
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

310: Relocated Rosemont Dr. & University Ave

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR	ø9
Lane Configurations										
Volume (vph)	69	2	3	191	30	1263	211	1304	64	
Lane Group Flow (vph)	48	46	94	208	33	1481	229	1417	70	
Turn Type	Split			Perm	Perm		pm+pt		pm+ov	
Protected Phases	4	4	8			2	1	6	4	9
Permitted Phases				8	2		6		6	
Detector Phase	4	4	8	8	2	2	1	6	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	35.0
Total Split (s)	12.0	12.0	12.0	12.0	35.0	35.0	16.0	51.0	12.0	35.0
Total Split (%)	10.9%	10.9%	10.9%	10.9%	31.8%	31.8%	14.5%	46.4%	10.9%	32%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag					Lag	Lag	Lead			
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	7.7	7.7	8.1	8.1	59.4	59.4	77.3	77.3	89.0	
Actuated g/C Ratio	0.07	0.07	0.07	0.07	0.54	0.54	0.70	0.70	0.81	
v/c Ratio	0.41	0.35	0.71	0.67	0.18	0.53	0.68	0.56	0.05	
Control Delay	59.4	42.1	78.6	18.3	29.7	19.0	44.5	7.1	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.4	42.1	78.6	18.3	29.7	19.0	44.5	7.2	0.1	
LOS	E	D	E	B	C	B	D	A	A	
Approach Delay		50.9	37.0			19.2		11.9		
Approach LOS		D	D			B		B		
Queue Length 50th (ft)	34	21	66	0	5	164	70	53	0	
Queue Length 95th (ft)	75	61	#150	#75	m42	m#429	#263	#241	1	
Internal Link Dist (ft)		158	215			647		613		
Turn Bay Length (ft)					50				200	
Base Capacity (vph)	123	135	132	310	181	2772	345	2537	1309	
Starvation Cap Reductn	0	0	0	0	0	0	0	34	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.34	0.71	0.67	0.18	0.53	0.66	0.57	0.05	

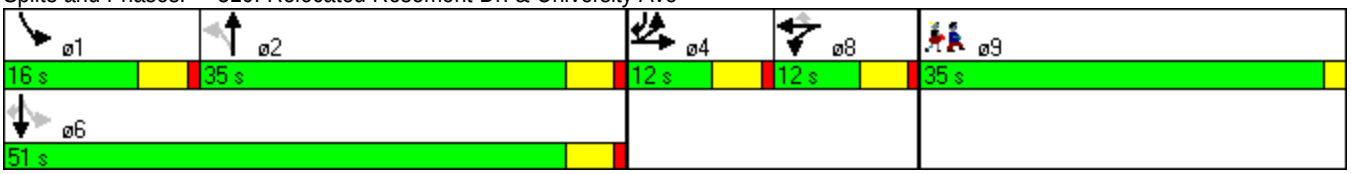
Intersection Summary

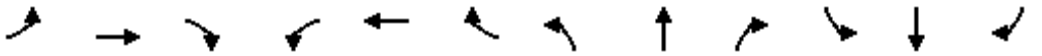
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 98 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.0 Intersection LOS: B
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 310: Relocated Rosemont Dr. & University Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	2	16	84	3	191	30	1263	99	211	1304	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1698	1640			1794	1599	1787	5127		1787	3610	1599
Flt Permitted	0.95	0.97			0.95	1.00	0.18	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1698	1640			1794	1599	336	5127		194	3610	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	2	17	91	3	208	33	1373	108	229	1417	70
RTOR Reduction (vph)	0	16	0	0	0	193	0	5	0	0	0	16
Lane Group Flow (vph)	48	30	0	0	94	15	33	1476	0	229	1417	54
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	0%	1%	1%	0%	1%
Turn Type	Split			Split		Perm	Perm			pm+pt		pm+ov
Protected Phases	4	4		8	8			2		1	6	4
Permitted Phases						8	2			6		6
Actuated Green, G (s)	5.6	5.6			7.1	7.1	55.8	55.8		73.7	73.7	79.3
Effective Green, g (s)	6.6	6.6			8.1	8.1	56.8	56.8		74.7	74.7	81.3
Actuated g/C Ratio	0.06	0.06			0.07	0.07	0.52	0.52		0.68	0.68	0.74
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	102	98			132	118	173	2647		333	2452	1240
v/s Ratio Prot	c0.03	0.02			c0.05			0.29		c0.09	0.39	0.00
v/s Ratio Perm						0.01	0.10			c0.38		0.03
v/c Ratio	0.47	0.31			0.71	0.13	0.19	0.56		0.69	0.58	0.04
Uniform Delay, d1	50.0	49.5			49.8	47.7	14.3	18.1		18.0	9.3	3.9
Progression Factor	1.00	1.00			1.00	1.00	1.24	0.92		2.39	0.48	0.00
Incremental Delay, d2	3.4	1.8			16.6	0.5	1.7	0.6		5.3	0.9	0.0
Delay (s)	53.4	51.3			66.4	48.2	19.4	17.2		48.2	5.3	0.0
Level of Service	D	D			E	D	B	B		D	A	A
Approach Delay (s)		52.4			53.8			17.2			10.8	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group