Level Of Service Summary

116th Ave NE at NE 12th St

Condition	Without Proposal (Existing Geometry) LOS	Delay	With Proposal (Add Bike Lanes) LOS	Delay
Existing Conditions	[1] C	34.2	[2] C	33.3
Future 2024 Without 15th St Zone 1	[3] D	37.1	[4] D	36.6
Future 2024 With 15th St Zone 1	[5] D	52.9	[6] D	54.6

116th Ave NE at Northup Way

Condition	Without Proposal (Existing Geometry) LOS	Delay	With Proposal (Add Bike Lanes) LOS	Delay
Existing Conditions	[1] B	14.7	[2] B	14.2
Future 2024 Without 15th St Zone 1	[3] B	17.8	[4] B	18.8
Future 2024 With 15th St Zone 1	[5] B	15.3	[6] B	15.5

Notes: Year 2024 includes the adopted TFP network and land use. Traffic model updated October 2014.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	473	151	154	743	45	79	443	221	50	512	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.964			0.991			0.950				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3298	0	1711	3390	0	1711	3250	0	1711	3421	1531
Flt Permitted	0.950			0.950			0.243			0.148		
Satd. Flow (perm)	1711	3298	0	1711	3390	0	438	3250	0	266	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			6			78				125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	498	159	162	782	47	83	466	233	53	539	208
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	657	0	162	829	0	83	699	0	53	539	208
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4			8		8
Total Split (s)	27.0	45.0		21.0	39.0		11.0	33.0		11.0	33.0	27.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Act Effct Green (s)	24.0	49.6		15.5	41.1		33.5	27.1		33.5	27.1	51.7
Actuated g/C Ratio	0.22	0.45		0.14	0.37		0.30	0.25		0.30	0.25	0.47
v/c Ratio	0.61	0.43		0.68	0.65		0.37	0.81		0.29	0.64	0.26
Control Delay	46.6	22.0		58.7	32.7		28.9	42.8		27.1	40.6	5.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	46.6	22.0		58.7	32.7		28.9	42.8		27.1	40.6	5.1
LOS	D	C		E	C		C	D		C	D	A
Approach Delay		28.3			36.9			41.3			30.5	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	145	163		109	264		39	216		25	176	23
Queue Length 95th (ft)	227	227		178	345		73	282		52	230	53
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	373	1513		279	1271		225	943		185	933	785
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	0.61	0.43		0.58	0.65		0.37	0.74		0.29	0.58	0.26

Intersection Summary

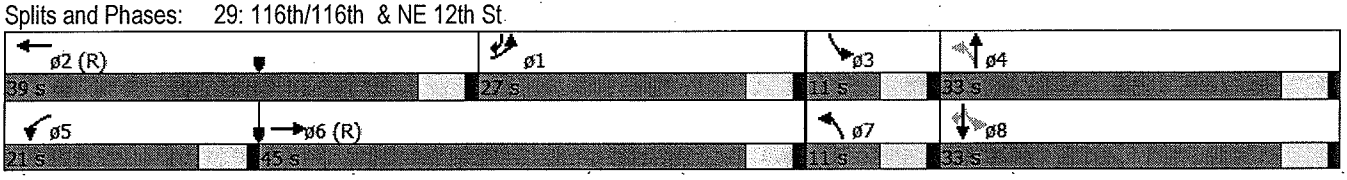
Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 34.2 Intersection LOS: C
Intersection Capacity Utilization 71.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 29: 116th/116th & NE 12th St



[2]

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10/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	481	151	159	756	23	80	413	221	51	495	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.964			0.996			0.948				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3298	0	1711	3408	0	1711	3243	0	1711	3421	1531
Flt Permitted	0.950			0.950			0.247			0.153		
Satd. Flow (perm)	1711	3298	0	1711	3408	0	445	3243	0	275	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			3			88				125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	200	506	159	167	796	24	84	435	233	54	521	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	665	0	167	820	0	84	668	0	54	521	203
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4			8		8
Total Split (s)	25.0	44.0		22.0	41.0		11.0	33.0		11.0	33.0	25.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Act Effct Green (s)	22.0	50.0		16.1	44.1		32.5	26.1		32.5	26.1	48.7
Actuated g/C Ratio	0.20	0.45		0.15	0.40		0.30	0.24		0.30	0.24	0.44
v/c Ratio	0.58	0.44		0.67	0.60		0.38	0.80		0.29	0.64	0.27
Control Delay	47.7	22.2		57.3	29.7		29.6	41.6		27.6	41.2	5.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	47.7	22.2		57.3	29.7		29.6	41.6		27.6	41.2	5.5
LOS	D	C		E	C		C	D		C	D	A
Approach Delay		28.1			34.4			40.2			30.9	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	129	164		112	248		40	202		25	172	23
Queue Length 95th (ft)	207	235		181	330		73	262		52	222	53
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	342	1521		296	1367		223	948		185	933	747
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	0.58	0.44		0.56	0.60		0.38	0.70		0.29	0.56	0.27

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Control Type: Actuated-Coordinated

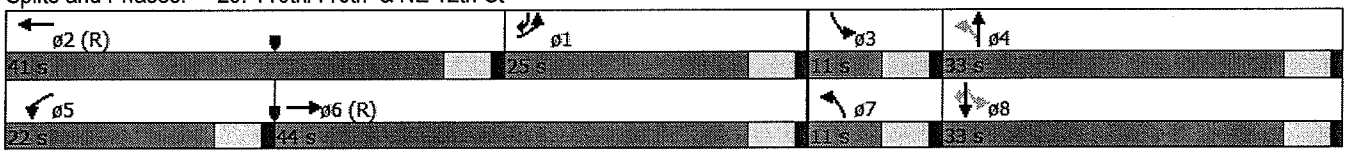
Maximum v/c Ratio: 0.80

Intersection Signal Delay: 33.3 Intersection LOS: C

Intersection Capacity Utilization 69.0% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 29: 116th/116th & NE 12th St



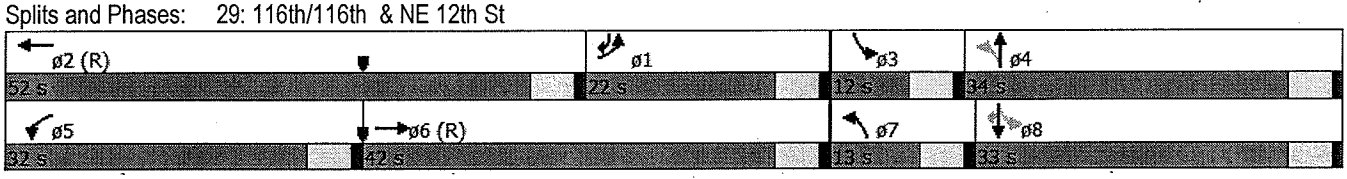
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	480	202	249	982	43	108	341	253	100	581	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.956			0.994			0.936				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3271	0	1711	3401	0	1711	3202	0	1711	3421	1531
Flt Permitted	0.950			0.950			0.148			0.160		
Satd. Flow (perm)	1711	3271	0	1711	3401	0	266	3202	0	288	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57			4			152				109
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	156	505	213	262	1034	45	114	359	266	105	612	315
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	718	0	262	1079	0	114	625	0	105	612	315
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4			8		8
Total Split (s)	22.0	42.0		32.0	52.0		13.0	34.0		12.0	33.0	22.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Act Effct Green (s)	19.0	47.3		23.9	52.2		37.6	27.9		35.9	27.1	46.1
Actuated g/C Ratio	0.16	0.39		0.20	0.44		0.31	0.23		0.30	0.23	0.38
v/c Ratio	0.58	0.54		0.77	0.73		0.57	0.73		0.55	0.79	0.48
Control Delay	56.2	29.0		60.3	32.1		39.4	36.7		39.0	51.9	14.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	56.2	29.0		60.3	32.1		39.4	36.7		39.0	51.9	14.0
LOS	E	C		E	C		D	D		D	D	B
Approach Delay		33.9			37.6			37.2			39.0	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	113	212		192	364		62	177		56	233	85
Queue Length 95th (ft)	186	298		276	461		105	240		97	295	145
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	270	1324		413	1482		204	939		193	855	654
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	0.58	0.54		0.63	0.73		0.56	0.67		0.54	0.72	0.48

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 37.1 Intersection LOS: D
Intersection Capacity Utilization 73.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 29: 116th/116th & NE 12th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	507	192	242	983	42	103	334	264	82	600	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.959			0.994			0.934				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3281	0	1711	3401	0	1711	3195	0	1711	3421	1531
Flt Permitted	0.950			0.950			0.150			0.199		
Satd. Flow (perm)	1711	3281	0	1711	3401	0	270	3195	0	358	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			4			162				109
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	149	534	202	255	1035	44	108	352	278	86	632	308
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	736	0	255	1079	0	108	630	0	86	632	308
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4			8		8
Total Split (s)	22.0	41.0		32.0	51.0		13.0	35.0		12.0	34.0	22.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Act Effct Green (s)	19.0	46.9		23.5	51.4		39.0	31.0		36.7	27.9	46.9
Actuated g/C Ratio	0.16	0.39		0.20	0.43		0.32	0.26		0.31	0.23	0.39
v/c Ratio	0.55	0.56		0.76	0.74		0.53	0.67		0.41	0.80	0.46
Control Delay	55.2	30.2		60.2	33.1		36.8	33.1		32.8	51.3	13.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	55.2	30.2		60.2	33.1		36.8	33.1		32.8	51.3	13.2
LOS	E	C		E	C		D	C		C	D	B
Approach Delay		34.4			38.2			33.7			38.3	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)	108	223		187	368		58	174		45	240	81
Queue Length 95th (ft)	178	315		268	467		99	235		82	303	136
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	270	1312		413	1460		207	979		211	883	664
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	0.55	0.56		0.62	0.74		0.52	0.64		0.41	0.72	0.46

Intersection Summary

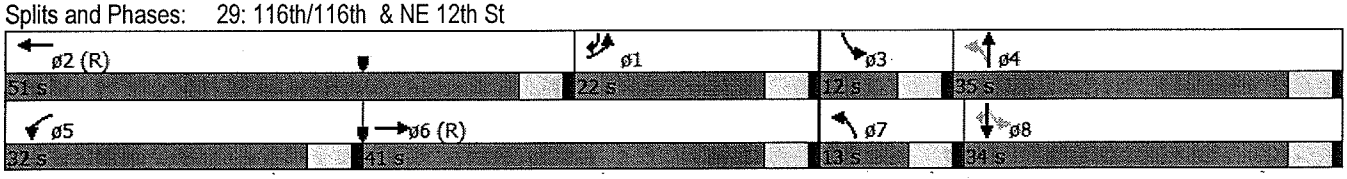
Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 36.6 Intersection LOS: D
Intersection Capacity Utilization 72.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 29: 116th/116th & NE 12th St



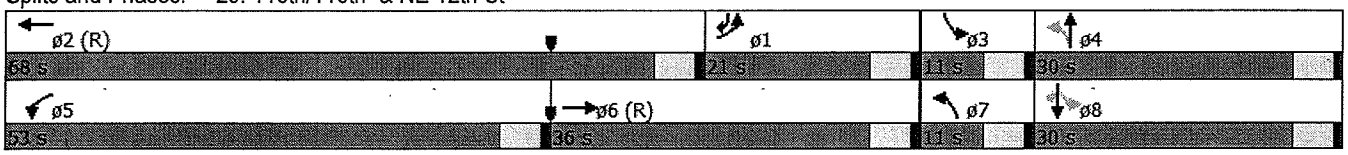
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	620	197	611	1202	52	104	350	317	127	536	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.964			0.994			0.929				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3298	0	1711	3401	0	1711	3178	0	1711	3421	1531
Flt Permitted	0.950			0.950			0.153			0.153		
Satd. Flow (perm)	1711	3298	0	1711	3401	0	275	3178	0	275	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			5			160				101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	653	207	643	1265	55	109	368	334	134	564	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	860	0	643	1320	0	109	702	0	134	564	191
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4			8		8
Total Split (s)	21.0	36.0		53.0	68.0		11.0	30.0		11.0	30.0	21.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Act Effct Green (s)	18.0	33.8		50.0	65.8		34.2	26.2		34.2	26.2	44.2
Actuated g/C Ratio	0.14	0.26		0.38	0.51		0.26	0.20		0.26	0.20	0.34
v/c Ratio	0.56	0.98		0.98	0.77		0.68	0.92		0.84	0.82	0.33
Control Delay	62.5	71.6		69.6	29.7		57.7	56.4		76.6	60.2	12.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	62.5	71.6		69.6	29.7		57.7	56.4		76.6	60.2	12.0
LOS	E	E		E	C		E	E		E	E	B
Approach Delay		70.3			42.8			56.6			52.3	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	106	372		529	463		70	242		87	239	43
Queue Length 95th (ft)	176	#518		#784	557		#120	#350		#176	307	94
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	236	880		658	1724		160	786		160	710	587
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	0.56	0.98		0.98	0.77		0.68	0.89		0.84	0.79	0.33

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 52.9 Intersection LOS: D
Intersection Capacity Utilization 97.5% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 29: 116th/116th & NE 12th St



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10/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	656	201	614	1199	52	107	350	307	119	533	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.965			0.994			0.930				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3301	0	1711	3401	0	1711	3182	0	1711	3421	1531
Flt Permitted	0.950			0.950			0.153			0.153		
Satd. Flow (perm)	1711	3301	0	1711	3401	0	275	3182	0	275	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			5			155				101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	691	212	646	1262	55	113	368	323	125	561	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	903	0	646	1317	0	113	691	0	125	561	192
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4			8		8
Total Split (s)	20.0	37.0		52.0	69.0		11.0	30.0		11.0	30.0	20.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Act Effct Green (s)	17.0	34.0		49.9	66.9		34.1	26.1		34.1	26.1	43.1
Actuated g/C Ratio	0.13	0.26		0.38	0.51		0.26	0.20		0.26	0.20	0.33
v/c Ratio	0.57	1.02		0.98	0.75		0.71	0.91		0.78	0.82	0.33
Control Delay	63.8	81.1		71.9	28.5		60.0	55.6		68.5	60.2	12.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	63.8	81.1		71.9	28.5		60.0	55.6		68.5	60.2	12.4
LOS	E	F		E	C		E	E		E	E	B
Approach Delay		79.0			42.8			56.2			50.9	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	101	~413		~543	453		72	238		81	237	44
Queue Length 95th (ft)	169	#548		#799	545		#130	#343		#157	305	96
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	223	885		656	1752		160	783		160	710	575
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	0.57	1.02		0.98	0.75		0.71	0.88		0.78	0.79	0.33

Intersection Summary

Area Type: Other

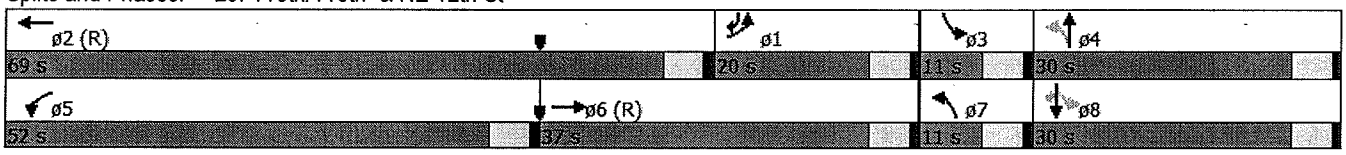
Cycle Length: 130

Actuated Cycle Length: 130

Fred

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 54.6 Intersection LOS: D
Intersection Capacity Utilization 98.0% ICU Level of Service F
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.

Splits and Phases: 29: 116th/116th & NE 12th St



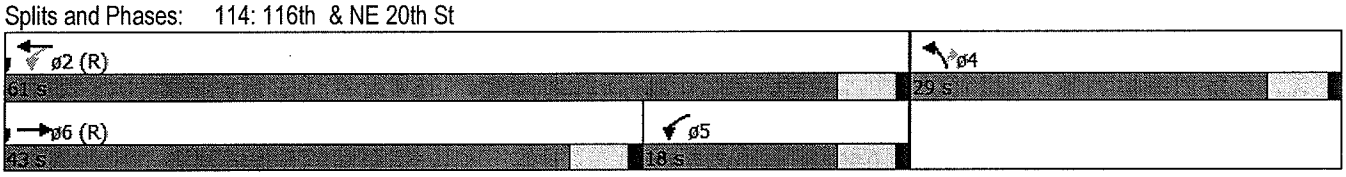
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	357	111	278	564	177	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	550
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1803	0	1770	1863	1770	1583
Flt Permitted			0.305		0.950	
Satd. Flow (perm)	1803	0	568	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	22					453
Link Speed (mph)	35			30	30	
Link Distance (ft)	933			919	3715	
Travel Time (s)	18.2			20.9	84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	376	117	293	594	186	453
Shared Lane Traffic (%)						
Lane Group Flow (vph)	493	0	293	594	186	453
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Total Split (s)	43.0		18.0	61.0	29.0	29.0
Total Lost Time (s)	3.0		3.0	3.0	3.0	3.0
Act Effct Green (s)	40.0		58.0	58.0	26.0	26.0
Actuated g/C Ratio	0.44		0.64	0.64	0.29	0.29
v/c Ratio	0.61		0.52	0.50	0.36	0.58
Control Delay	22.0		17.0	10.1	28.0	6.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.0		17.0	10.1	28.0	6.0
LOS	C		B	B	C	A
Approach Delay	22.0			12.4	12.4	
Approach LOS	C			B	B	
Queue Length 50th (ft)	197		63	157	84	0
Queue Length 95th (ft)	300		101	233	143	70
Internal Link Dist (ft)	853			839	3635	
Turn Bay Length (ft)			150			550
Base Capacity (vph)	813		566	1200	511	779
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	0.61		0.52	0.50	0.36	0.58

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 114: 116th & NE 20th St



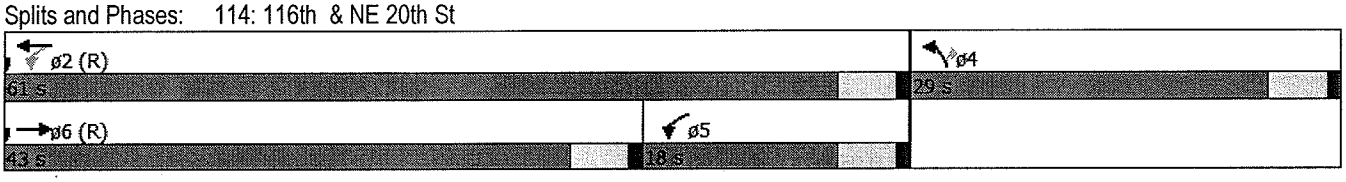
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	361	109	258	614	107	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	550
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1805	0	1770	1863	1770	1583
Flt Permitted			0.303		0.950	
Satd. Flow (perm)	1805	0	564	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	22					417
Link Speed (mph)	35			30	30	
Link Distance (ft)	933			919	3715	
Travel Time (s)	18.2			20.9	84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	380	115	272	646	113	417
Shared Lane Traffic (%)						
Lane Group Flow (vph)	495	0	272	646	113	417
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Total Split (s)	43.0		18.0	61.0	29.0	29.0
Total Lost Time (s)	3.0		3.0	3.0	3.0	3.0
Act Effct Green (s)	40.0		58.0	58.0	26.0	26.0
Actuated g/C Ratio	0.44		0.64	0.64	0.29	0.29
v/c Ratio	0.61		0.48	0.54	0.22	0.55
Control Delay	22.0		15.8	10.8	25.8	5.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.0		15.8	10.8	25.8	5.8
LOS	C		B	B	C	A
Approach Delay	22.0			12.3	10.1	
Approach LOS	C			B	B	
Queue Length 50th (ft)	198		58	179	49	0
Queue Length 95th (ft)	301		93	265	92	66
Internal Link Dist (ft)	853			839	3635	
Turn Bay Length (ft)			150			550
Base Capacity (vph)	814		564	1200	511	753
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	0.61		0.48	0.54	0.22	0.55

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 14.2	Intersection LOS: B
Intersection Capacity Utilization 56.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 114: 116th & NE 20th St



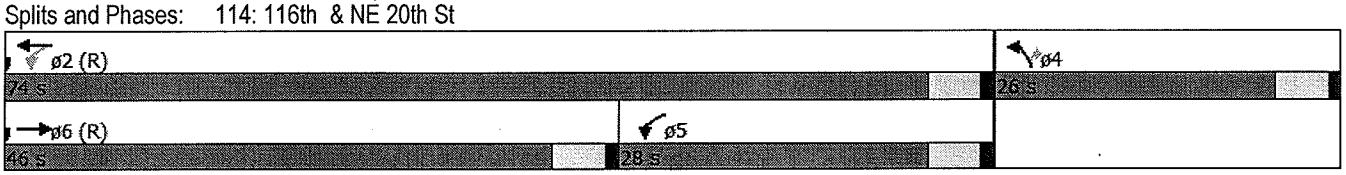
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	399	113	404	764	105	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	550
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.970					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1807	0	1770	1863	1770	1583
Flt Permitted			0.248		0.950	
Satd. Flow (perm)	1807	0	462	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18					286
Link Speed (mph)	35			30	30	
Link Distance (ft)	933			919	3715	
Travel Time (s)	18.2			20.9	84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	420	119	425	804	111	286
Shared Lane Traffic (%)						
Lane Group Flow (vph)	539	0	425	804	111	286
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Total Split (s)	46.0		28.0	74.0	26.0	26.0
Total Lost Time (s)	3.0		3.0	3.0	3.0	3.0
Act Effct Green (s)	43.0		71.0	71.0	23.0	23.0
Actuated g/C Ratio	0.43		0.71	0.71	0.23	0.23
v/c Ratio	0.68		0.65	0.61	0.27	0.49
Control Delay	27.7		23.3	9.8	33.8	7.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	27.7		23.3	9.8	33.8	7.1
LOS	C		C	A	C	A
Approach Delay	27.7			14.5	14.5	
Approach LOS	C			B	B	
Queue Length 50th (ft)	262		89	226	58	0
Queue Length 95th (ft)	385		181	328	107	65
Internal Link Dist (ft)	853			839	3635	
Turn Bay Length (ft)			150			550
Base Capacity (vph)	787		655	1322	407	584
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	0.68		0.65	0.61	0.27	0.49

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 17.8 | Intersection LOS: B
Intersection Capacity Utilization 66.1% | ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 114: 116th & NE 20th St



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	416	93	417	756	100	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	550
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.975					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1816	0	1770	1863	1770	1583
Flt Permitted			0.232		0.950	
Satd. Flow (perm)	1816	0	432	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	14					245
Link Speed (mph)	35			30	30	
Link Distance (ft)	933			919	3715	
Travel Time (s)	18.2			20.9	84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	438	98	439	796	105	245
Shared Lane Traffic (%)						
Lane Group Flow (vph)	536	0	439	796	105	245
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Total Split (s)	44.0		30.0	74.0	26.0	26.0
Total Lost Time (s)	3.0		3.0	3.0	3.0	3.0
Act Effct Green (s)	41.0		71.0	71.0	23.0	23.0
Actuated g/C Ratio	0.41		0.71	0.71	0.23	0.23
v/c Ratio	0.71		0.66	0.60	0.26	0.44
Control Delay	30.3		24.3	9.7	33.6	7.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	30.3		24.3	9.7	33.6	7.0
LOS	C		C	A	C	A
Approach Delay	30.3			14.9	15.0	
Approach LOS	C			B	B	
Queue Length 50th (ft)	272		96	223	55	0
Queue Length 95th (ft)	400		206	321	102	61
Internal Link Dist (ft)	853			839	3635	
Turn Bay Length (ft)			150			550
Base Capacity (vph)	752		667	1322	407	552
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	0.71		0.66	0.60	0.26	0.44

Intersection Summary

Area Type: Other

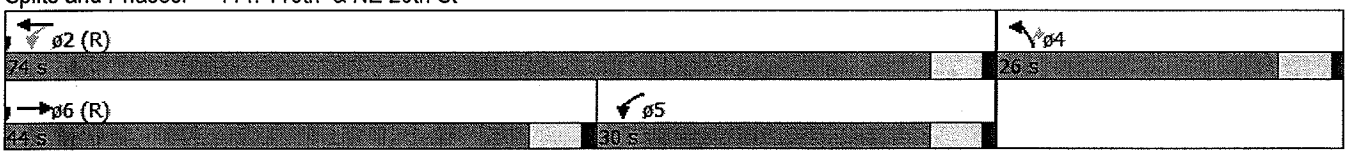
Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.8 | Intersection LOS: B
Intersection Capacity Utilization 66.5% | ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 114: 116th & NE 20th St



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	393	123	262	753	114	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	550
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1803	0	1770	1863	1770	1583
Flt Permitted			0.285		0.950	
Satd. Flow (perm)	1803	0	531	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	22					245
Link Speed (mph)	35			30	30	
Link Distance (ft)	933			919	3715	
Travel Time (s)	18.2			20.9	84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	414	129	276	793	120	245
Shared Lane Traffic (%)						
Lane Group Flow (vph)	543	0	276	793	120	245
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Total Split (s)	51.0		21.0	72.0	28.0	28.0
Total Lost Time (s)	3.0		3.0	3.0	3.0	3.0
Act Effct Green (s)	48.0		69.0	69.0	25.0	25.0
Actuated g/C Ratio	0.48		0.69	0.69	0.25	0.25
v/c Ratio	0.62		0.47	0.62	0.27	0.42
Control Delay	22.2		14.6	11.0	32.2	6.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.2		14.6	11.0	32.2	6.5
LOS	C		B	B	C	A
Approach Delay	22.2			11.9	14.9	
Approach LOS	C			B	B	
Queue Length 50th (ft)	237		57	240	62	0
Queue Length 95th (ft)	350		89	347	111	59
Internal Link Dist (ft)	853			839	3635	
Turn Bay Length (ft)			150			550
Base Capacity (vph)	876		589	1285	442	579
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	0.62		0.47	0.62	0.27	0.42

Intersection Summary

Area Type: Other

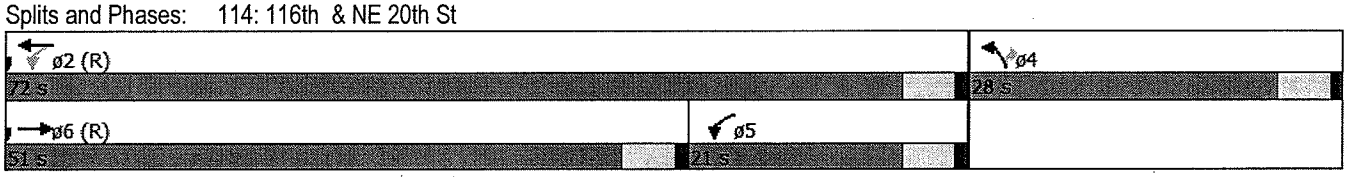
Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 114: 116th & NE 20th St



[6]

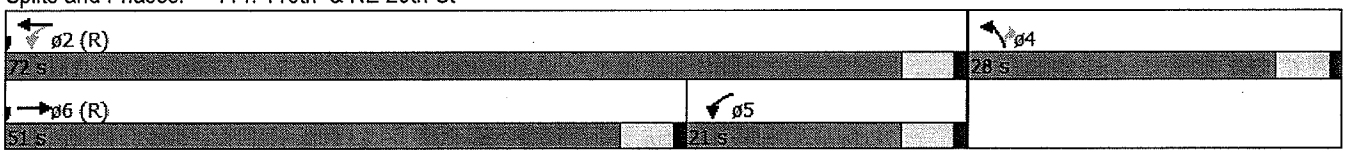
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	414	105	272	756	102	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	550
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1812	0	1770	1863	1770	1583
Flt Permitted			0.282		0.950	
Satd. Flow (perm)	1812	0	525	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18					223
Link Speed (mph)	35			30	30	
Link Distance (ft)	933			919	3715	
Travel Time (s)	18.2			20.9	84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	436	111	286	796	107	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	547	0	286	796	107	223
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Total Split (s)	51.0		21.0	72.0	28.0	28.0
Total Lost Time (s)	3.0		3.0	3.0	3.0	3.0
Act Effct Green (s)	48.0		69.0	69.0	25.0	25.0
Actuated g/C Ratio	0.48		0.69	0.69	0.25	0.25
v/c Ratio	0.62		0.49	0.62	0.24	0.40
Control Delay	22.4		15.5	11.0	31.8	6.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.4		15.5	11.0	31.8	6.5
LOS	C		B	B	C	A
Approach Delay	22.4			12.2	14.7	
Approach LOS	C			B	B	
Queue Length 50th (ft)	241		59	242	55	0
Queue Length 95th (ft)	354		92	350	101	57
Internal Link Dist (ft)	853			839	3635	
Turn Bay Length (ft)			150			550
Base Capacity (vph)	879		586	1285	442	563
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	0.62		0.49	0.62	0.24	0.40

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 15.5 | Intersection LOS: B
Intersection Capacity Utilization 59.1% | ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 114: 116th & NE 20th St



Level of Service Summary

ALTERNATIVE B - Northbound Right Only Lane South Leg

116th Ave NE at NE 12th St - Total Intersection

Condition	With Proposal [1] LOS	Delay	ALT "B" [2] Exclusive NB Right LOS	Delay
Existing Conditions	C	33.3 [2]	C	34.1 [7]
Future 2024 Without 15th St Zone 1	D	36.6 [4]	D	36.4 [8]
Future 2024 With 15th St Zone 1	D	54.6 [6]	D	54.9 [9]

1.) With Proposal condition removes the northbound through lane beginning around 600 feet north of the NE 12th St/116th Ave NE intersection

2.) Alternative "B" begins the bike lane immediately on the north leg of the 116th/12th intersection (no merge north of intersection and changes the south leg so that the curb lane is an exclusive right only lane rather than a right through lane.

116th Ave NE at NE 12th St - Northbound Approach

Condition	With Proposal NB Thru Delay	NB Total Delay	NB 95% Queue	ALT "B" NB Thru Delay	NB Total Delay	NB 95% Queue
Existing Conditions	[2] 41.6	40.2	262	[7] 64.2	42.2	>475*
Future 2024 Without 15th St Zone 1	[4] 33.1	33.7	235	[8] 52.7	33.1	361
Future 2024 With 15th St Zone 1	[6] 55.6	56.2	>343 *	[9] 94.0	54.7	>515*

* = overcapacity

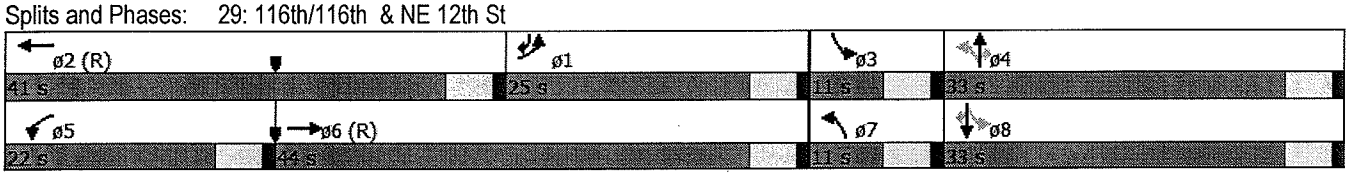
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	481	151	159	756	23	80	413	221	51	495	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.964			0.996				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3298	0	1711	3408	0	1711	1801	1531	1711	3421	1531
Flt Permitted	0.950			0.950			0.277			0.137		
Satd. Flow (perm)	1711	3298	0	1711	3408	0	499	1801	1531	247	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			3				233			128
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	200	506	159	167	796	24	84	435	233	54	521	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	665	0	167	820	0	84	435	233	54	521	203
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4		4	8		8
Total Split (s)	25.0	44.0		22.0	41.0		11.0	33.0	33.0	11.0	33.0	25.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	4.0	3.0	3.0	3.0
Act Effct Green (s)	22.0	47.0		16.1	41.1		35.5	29.1	28.1	35.5	29.1	51.7
Actuated g/C Ratio	0.20	0.43		0.15	0.37		0.32	0.26	0.26	0.32	0.26	0.47
v/c Ratio	0.58	0.46		0.67	0.64		0.34	0.91	0.41	0.29	0.58	0.26
Control Delay	47.7	23.7		57.6	32.2		27.2	64.2	6.6	26.7	37.8	5.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	23.7		57.6	32.2		27.2	64.2	6.6	26.7	37.8	5.0
LOS	D	C		E	C		C	E	A	C	D	A
Approach Delay		29.3			36.5			42.2			28.5	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	129	172		112	259		39	295	0	24	166	21
Queue Length 95th (ft)	207	235		181	330		73	#475	59	52	222	52
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	342	1434		295	1274		249	491	575	185	933	787
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.46		0.57	0.64		0.34	0.89	0.41	0.29	0.56	0.26

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 34.1 Intersection LOS: C
Intersection Capacity Utilization 72.2% 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.

Splits and Phases: 29: 116th/116th & NE 12th St



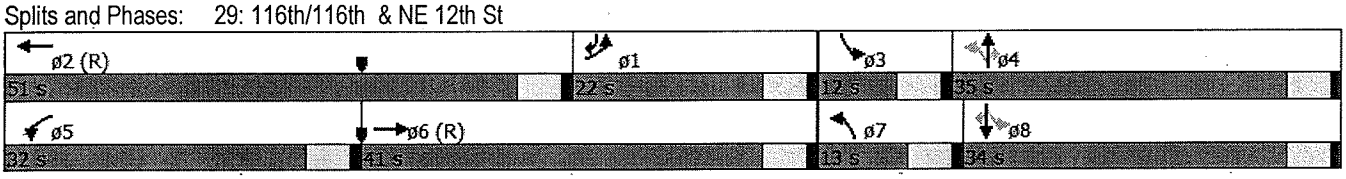
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	507	192	242	983	42	103	334	264	82	600	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.959			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3281	0	1711	3401	0	1711	1801	1531	1711	3421	1531
Flt Permitted	0.950			0.950			0.150			0.235		
Satd. Flow (perm)	1711	3281	0	1711	3401	0	270	1801	1531	423	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			4				278			109
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	149	534	202	255	1035	44	108	352	278	86	632	308
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	736	0	255	1079	0	108	352	278	86	632	308
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4		4	8		8
Total Split (s)	22.0	41.0		32.0	51.0		13.0	35.0	35.0	12.0	34.0	22.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	4.0	3.0	3.0	3.0
Act Effct Green (s)	19.0	46.9		23.5	51.4		39.0	31.0	30.0	36.7	27.9	46.9
Actuated g/C Ratio	0.16	0.39		0.20	0.43		0.32	0.26	0.25	0.31	0.23	0.39
v/c Ratio	0.55	0.56		0.76	0.74		0.53	0.76	0.47	0.39	0.79	0.46
Control Delay	55.2	30.2		60.2	33.1		36.8	52.7	6.9	31.8	51.2	13.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	30.2		60.2	33.1		36.8	52.7	6.9	31.8	51.2	13.2
LOS	E	C		E	C		D	D	A	C	D	B
Approach Delay		34.4			38.3			33.1			38.1	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)	108	224		187	370		57	254	0	45	240	80
Queue Length 95th (ft)	178	315		268	467		99	361	67	82	303	136
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	270	1310		413	1458		207	485	605	226	883	665
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.56		0.62	0.74		0.52	0.73	0.46	0.38	0.72	0.46

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 36.4 Intersection LOS: D
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

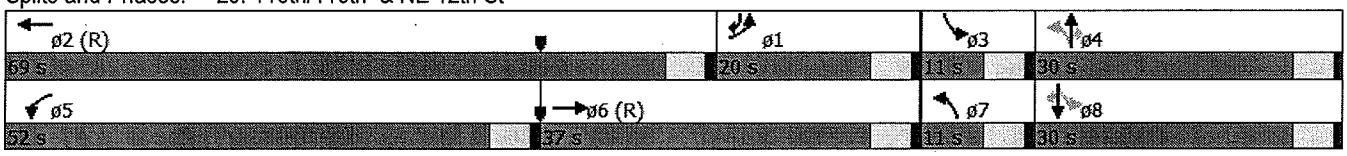
Splits and Phases: 29: 116th/116th & NE 12th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	656	201	614	1199	52	107	350	307	119	533	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	175		0	250		0	200		0	300		200
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.965			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3301	0	1711	3401	0	1711	1801	1531	1711	3421	1531
Flt Permitted	0.950			0.950			0.160			0.148		
Satd. Flow (perm)	1711	3301	0	1711	3401	0	288	1801	1531	266	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			5				323			101
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1450			1103			1019			3715	
Travel Time (s)		33.0			25.1			23.2			84.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	691	212	646	1262	55	113	368	323	125	561	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	903	0	646	1317	0	113	368	323	125	561	192
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases							4		4	8		8
Total Split (s)	20.0	37.0		52.0	69.0		11.0	30.0	30.0	11.0	30.0	20.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	4.0	3.0	3.0	3.0
Act Effct Green (s)	17.0	34.0		49.0	66.0		35.0	27.0	26.0	35.0	27.0	44.0
Actuated g/C Ratio	0.13	0.26		0.38	0.51		0.27	0.21	0.20	0.27	0.21	0.34
v/c Ratio	0.57	1.02		1.00	0.76		0.68	0.98	0.57	0.78	0.79	0.33
Control Delay	63.8	81.1		76.8	29.2		57.5	94.0	9.0	68.4	57.9	12.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	81.1		76.8	29.2		57.5	94.0	9.0	68.4	57.9	12.4
LOS	E	F		E	C		E	F	A	E	E	B
Approach Delay		79.0			44.9			54.7			49.5	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	101	~413		~543	453		72	312	0	81	237	44
Queue Length 95th (ft)	169	#548		#799	545		#126	#515	84	#160	305	96
Internal Link Dist (ft)		1370			1023			939			3635	
Turn Bay Length (ft)	175			250			200			300		200
Base Capacity (vph)	223	885		644	1729		165	374	564	160	710	585
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.57	1.02		1.00	0.76		0.68	0.98	0.57	0.78	0.79	0.33

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 54.9 Intersection LOS: D
Intersection Capacity Utilization 96.9% ICU Level of Service F
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.

Splits and Phases: 29: 116th/116th & NE 12th St