

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	54	45	144	143	59	130	993	192	45	631	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	150		100	280		0	175		400	195		365
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.927			0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3123	0	1685	3221	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.599			0.471			0.278			0.123		
Satd. Flow (perm)	1062	3123	0	835	3221	0	528	3505	1615	225	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		69			28				278			144
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			376			533			433	
Travel Time (s)		16.2			8.5			12.1			9.8	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.81	0.75	0.65	0.82	0.78	0.92	0.93	0.84	0.69	0.80	0.90	0.64
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	36	72	69	176	183	64	140	1182	278	56	701	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	141	0	176	247	0	140	1182	278	56	701	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	9.2	25.0		9.5	25.0		9.6	24.5	24.5	9.6	24.5	24.5
Total Split (s)	30.0	35.0		20.0	25.0		25.0	65.0	65.0	25.0	65.0	65.0
Total Split (%)	20.7%	24.1%		13.8%	17.2%		17.2%	44.8%	44.8%	17.2%	44.8%	44.8%
Maximum Green (s)	24.8	29.2		14.5	19.2		19.4	59.5	59.5	19.6	59.5	59.5
Yellow Time (s)	3.2	3.2		3.2	3.2		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	2.0	2.6		2.3	2.6		2.4	2.3	2.3	2.2	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	5.8		5.5	5.8		5.6	5.5	5.5	5.4	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Walk Time (s)		8.0			8.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	18.8	10.7		29.0	21.6		51.4	44.4	44.4	47.6	39.6	39.6
Actuated g/C Ratio	0.20	0.11		0.30	0.23		0.54	0.47	0.47	0.50	0.42	0.42
v/c Ratio	0.14	0.34		0.48	0.33		0.34	0.72	0.31	0.24	0.49	0.16
Control Delay	30.7	27.5		34.9	34.7		11.3	23.8	2.8	11.0	20.7	2.0
Queue Delay	0.0	0.0		0.2	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	27.5		35.1	34.7		11.3	23.8	2.8	11.0	20.7	2.0
LOS	C	C		D	C		B	C	A	B	C	A
Approach Delay		28.1			34.9			19.0			17.6	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	16	22		87	65		36	311	0	14	157	0
Queue Length 95th (ft)	43	44		158	104		65	372	7	27	222	0
Internal Link Dist (ft)		634			296			453			353	
Turn Bay Length (ft)	150			280			175		400	195		365
Base Capacity (vph)	501	1050		390	796		575	2296	1154	455	2252	1097
Starvation Cap Reductn	0	0		26	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13		0.48	0.31		0.24	0.51	0.24	0.12	0.31	0.11

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 95.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 21.3

Intersection LOS: C

Intersection Capacity Utilization 65.6%

ICU Level of Service C

Analysis Period (min) 15

Description: Main & Washington

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	304	21	16	323	6	7	0	11	2	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.996			0.918			0.886	
Flt Protected				0.950				0.981			0.992	
Satd. Flow (prot)	0	3332	0	1685	3356	0	0	1597	0	0	1559	0
Flt Permitted		0.954		0.542				0.981			0.992	
Satd. Flow (perm)	0	3179	0	961	3356	0	0	1597	0	0	1559	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			3			59			59	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		376			240			190			179	
Travel Time (s)		8.5			5.5			4.3			4.1	
Peak Hour Factor	0.50	0.94	0.84	0.64	0.88	0.67	0.54	0.25	0.56	0.50	0.25	0.60
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	323	25	25	367	9	13	0	20	4	0	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	350	0	25	376	0	0	33	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			-40	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		6			2		4	4		8	8	
Permitted Phases	6			2								
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	47.0	47.0		47.0	47.0		23.0	23.0		23.0	23.0	
Total Split (%)	50.5%	50.5%		50.5%	50.5%		24.7%	24.7%		24.7%	24.7%	
Maximum Green (s)	43.0	43.0		43.0	43.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		24.8		24.8	24.8			5.7			5.6	

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.87		0.87	0.87			0.20			0.20	
v/c Ratio		0.13		0.03	0.13			0.09			0.07	
Control Delay		3.1		4.6	3.1			3.5			2.7	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		3.1		4.6	3.1			3.5			2.7	
LOS		A		A	A			A			A	
Approach Delay		3.1			3.2			3.5			2.7	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		0		0	0			0			0	
Queue Length 95th (ft)		44		9	46			0			0	
Internal Link Dist (ft)		296			160			110			99	
Turn Bay Length (ft)												
Base Capacity (vph)		3179		961	3356			1104			1078	
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		0.11		0.03	0.11			0.03			0.02	

Intersection Summary

Area Type: Other

Cycle Length: 93

Actuated Cycle Length: 28.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.13

Intersection Signal Delay: 3.2

Intersection LOS: A

Intersection Capacity Utilization 23.3%

ICU Level of Service A

Analysis Period (min) 15

Description: Anna & Washington

Splits and Phases: 2: Mall/Anna & Washington

 ø2	 ø4	 ø8
47 s	23 s	23 s
 ø6		
47 s		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	317	5	10	331	10	5	0	9	6	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.996			0.916			0.901	
Flt Protected					0.999			0.982			0.987	
Satd. Flow (prot)	0	3359	0	0	3353	0	0	1709	0	0	1577	0
Flt Permitted					0.999			0.982			0.987	
Satd. Flow (perm)	0	3359	0	0	3353	0	0	1709	0	0	1577	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			152			380			141	
Travel Time (s)		5.5			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	352	6	11	368	11	6	0	10	7	0	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	359	0	0	390	0	0	16	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 27.0%	ICU Level of Service A											
Analysis Period (min) 15												
Description: Almiron & Washington												

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	298	24	22	280	71	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Storage Length (ft)		0	650		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt	0.987				0.918	
Flt Protected				0.996	0.981	
Satd. Flow (prot)	3326	0	0	3356	1711	0
Flt Permitted				0.908	0.981	
Satd. Flow (perm)	3326	0	0	3059	1709	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17				89	
Link Speed (mph)	30			30	30	
Link Distance (ft)	152			948	295	
Travel Time (s)	3.5			21.5	6.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.71	0.61	0.79	0.89	0.85	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	420	39	28	315	84	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	459	0	0	343	213	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA		Perm	NA	Prot	
Protected Phases	6			2	8	
Permitted Phases			2	2		
Detector Phase	6		2	2	8	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	28.0		28.0	28.0	28.0	
Total Split (s)	58.0		58.0	58.0	37.0	
Total Split (%)	61.1%		61.1%	61.1%	38.9%	
Maximum Green (s)	54.0		54.0	54.0	33.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)	8.0		8.0	8.0	8.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effect Green (s)	14.3			14.3	7.8	
Actuated g/C Ratio	0.47			0.47	0.26	
v/c Ratio	0.29			0.24	0.42	
Control Delay	5.7			5.8	7.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	5.7			5.8	7.7	
LOS	A			A	A	
Approach Delay	5.7			5.8	7.7	
Approach LOS	A			A	A	
Queue Length 50th (ft)	17			13	13	
Queue Length 95th (ft)	28			30	35	
Internal Link Dist (ft)	72			868	215	
Turn Bay Length (ft)						
Base Capacity (vph)	3326			3059	1688	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.14			0.11	0.13	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 30.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 6.1

Intersection LOS: A

Intersection Capacity Utilization 36.3%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

← ø2	
58 s	
→ ø6	↖ ø8
58 s	37 s

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	12	285	42	1	85	199	6	80	76	232	10	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	12	12	12	10	10
Storage Length (ft)	105		70		0		70	0		200	0	
Storage Lanes	1		1		1		1	0		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950				0.973			0.980
Satd. Flow (prot)	1685	3369	1507	0	1685	1773	1507	0	1849	1615	0	1738
Flt Permitted	0.616				0.352				0.973			0.980
Satd. Flow (perm)	1092	3369	1507	0	624	1773	1507	0	1849	1615	0	1738
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			123				68			362		
Link Speed (mph)		30				30			30			30
Link Distance (ft)		948				484			495			273
Travel Time (s)		21.5				11.0			11.3			6.2
Peak Hour Factor	0.60	0.65	0.70	0.25	0.82	0.87	0.56	0.77	0.95	0.64	0.50	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	20	438	60	4	104	229	11	104	80	362	20	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	438	60	0	108	229	11	0	184	362	0	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		10				10			0			0
Link Offset(ft)		0				0			-10			0
Crosswalk Width(ft)		10				10			10			10
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type	Perm	NA	Perm	custom	pm+pt	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases		4			3	8		2	2		6	6
Permitted Phases	4		4	3	8		8			2		
Detector Phase	4	4	4	3	3	8	8	2	2	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	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	8.0	8.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	24.0	8.0	8.0	32.0	32.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	30.0%	30.0%	30.0%	10.0%	10.0%	40.0%	40.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	20.0	20.0	20.0	4.0	4.0	28.0	28.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0
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	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	Min	Min	None	None	Min	Min	None	None	None	None	None

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

Lane Group	SBR
Lane Configurations	↗
Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Storage Length (ft)	125
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1507
Flt Permitted	
Satd. Flow (perm)	1507
Right Turn on Red	Yes
Satd. Flow (RTOR)	123
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.66
Heavy Vehicles (%)	0%
Adj. Flow (vph)	47
Shared Lane Traffic (%)	
Lane Group Flow (vph)	47
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.09
Turning Speed (mph)	9
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	30.0%
Maximum Green (s)	20.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Walk Time (s)	8.0	8.0	8.0			8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0			0	0	0	0	0	0	0
Act Effct Green (s)	13.5	13.5	13.5		19.5	19.5	19.5		12.1	12.1		7.9
Actuated g/C Ratio	0.29	0.29	0.29		0.42	0.42	0.42		0.26	0.26		0.17
v/c Ratio	0.06	0.45	0.12		0.29	0.31	0.02		0.39	0.53		0.16
Control Delay	17.2	17.7	1.0		13.2	12.4	0.0		20.4	5.8		24.7
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	17.2	17.7	1.0		13.2	12.4	0.0		20.4	5.8		24.7
LOS	B	B	A		B	B	A		C	A		C
Approach Delay		15.8				12.3			10.8			12.9
Approach LOS		B				B			B			B
Queue Length 50th (ft)	5	59	0		20	45	0		48	0		13
Queue Length 95th (ft)	13	79	0		51	106	0		113	5		46
Internal Link Dist (ft)		868				404			415			193
Turn Bay Length (ft)	105		70				70			200		
Base Capacity (vph)	555	1712	826		367	1147	999		939	998		883
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	0.04	0.26	0.07		0.29	0.20	0.01		0.20	0.36		0.05

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 46.8

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 43.7%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 p2	 p6	 p3	 p4
24 s	24 s	8 s	24 s
		 p8	
		32 s	

Lanes, Volumes, Timings 5: Springfield & Washington

4/7/2017



Lane Group	SBR
Walk Time (s)	8.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	7.9
Actuated g/C Ratio	0.17
v/c Ratio	0.13
Control Delay	0.8
Queue Delay	0.0
Total Delay	0.8
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0
Internal Link Dist (ft)	
Turn Bay Length (ft)	125
Base Capacity (vph)	826
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.06
Intersection Summary	

Lanes, Volumes, Timings
106: Railroad & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		
Volume (vph)	128	0	0	348	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3336	0	0	3336	0	0
Flt Permitted						
Satd. Flow (perm)	3336	0	0	3336	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	229			714	331	
Travel Time (s)	5.2			16.2	7.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	142	0	0	387	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	0	387	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			10	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.0%			ICU Level of Service A		
Analysis Period (min)	15					

Arterial Level of Service
Existing

4/7/2017

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	106	0.1	5.0	0.0	32
S. Main	1	35.2	51.1	0.1	10
Mall	2	2.4	9.5	0.1	27
Almiron	3	0.6	6.0	0.0	27
Cole	4	2.6	6.1	0.0	17
Springfield	5	9.8	30.2	0.2	21
Total		50.6	107.9	0.5	17

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	8.4	19.3	0.1	17
Cole	4	4.2	24.5	0.2	26
Entrance	3	0.9	5.0	0.0	21
Anna	2	1.2	6.1	0.0	27
N. Main	1	30.3	39.2	0.1	7
	106	2.2	18.8	0.1	26
Total		47.2	112.9	0.6	18

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	342	220	174	154	75	135	824	259	126	922	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	150		100	280		0	175		400	195		365
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.939			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3164	0	1685	3183	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.534			0.157			0.128			0.149		
Satd. Flow (perm)	947	3164	0	278	3183	0	243	3505	1615	272	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			48				320			144
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			376			533			433	
Travel Time (s)		16.2			8.5			12.1			9.8	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.86	0.85	0.81	0.84	0.79	0.78	0.84	0.90	0.81	0.88	0.97	0.88
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	176	402	272	207	195	96	161	916	320	143	951	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	674	0	207	291	0	161	916	320	143	951	109
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	9.2	25.0		9.5	25.0		9.6	24.5	24.5	9.6	24.5	24.5
Total Split (s)	30.0	35.0		20.0	25.0		25.0	65.0	65.0	25.0	65.0	65.0
Total Split (%)	20.7%	24.1%		13.8%	17.2%		17.2%	44.8%	44.8%	17.2%	44.8%	44.8%
Maximum Green (s)	24.8	29.2		14.5	19.2		19.4	59.5	59.5	19.6	59.5	59.5
Yellow Time (s)	3.2	3.2		3.2	3.2		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	2.0	2.6		2.3	2.6		2.4	2.3	2.3	2.2	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	5.8		5.5	5.8		5.6	5.5	5.5	5.4	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Walk Time (s)		8.0			8.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	41.9	27.3		42.7	27.8		53.1	41.8	41.8	52.6	41.4	41.4
Actuated g/C Ratio	0.36	0.23		0.36	0.24		0.45	0.36	0.36	0.45	0.35	0.35
v/c Ratio	0.41	0.83		0.75	0.37		0.62	0.73	0.41	0.55	0.78	0.17
Control Delay	28.5	47.0		47.6	35.6		28.5	36.8	4.3	24.5	39.2	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	47.0		47.6	35.6		28.5	36.8	4.3	24.5	39.2	2.1
LOS	C	D		D	D		C	D	A	C	D	A
Approach Delay		43.2			40.5			28.4			34.1	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	86	218		103	79		67	322	0	59	343	0
Queue Length 95th (ft)	164	#323		#259	131		98	409	33	93	437	15
Internal Link Dist (ft)		634			296			453			353	
Turn Bay Length (ft)	150			280			175		400	195		365
Base Capacity (vph)	546	875		277	791		382	1805	986	383	1770	893
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	0.32	0.77		0.75	0.37		0.42	0.51	0.32	0.37	0.54	0.12

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 117.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 34.8

Intersection LOS: C

Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	632	83	59	355	4	25	0	56	7	4	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.997			0.903			0.896	
Flt Protected				0.950				0.986			0.994	
Satd. Flow (prot)	0	3312	0	1685	3359	0	0	1579	0	0	1579	0
Flt Permitted		0.953		0.326				0.986			0.994	
Satd. Flow (perm)	0	3156	0	578	3359	0	0	1579	0	0	1579	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			3			82			79	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		376			240			190			179	
Travel Time (s)		8.5			5.5			4.3			4.1	
Peak Hour Factor	0.25	0.96	0.96	0.74	0.95	0.50	0.78	0.25	0.68	0.58	0.33	0.61
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	658	86	80	374	8	32	0	82	12	12	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	748	0	80	382	0	0	114	0	0	103	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			-40	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		6			2		4	4		8	8	
Permitted Phases	6			2								
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	47.0	47.0		47.0	47.0		23.0	23.0		23.0	23.0	
Total Split (%)	50.5%	50.5%		50.5%	50.5%		24.7%	24.7%		24.7%	24.7%	
Maximum Green (s)	43.0	43.0		43.0	43.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		22.4		22.4	22.4			7.2			7.0	

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.53		0.53	0.53			0.17			0.17	
v/c Ratio		0.44		0.26	0.21			0.34			0.31	
Control Delay		10.3		12.7	8.8			11.4			11.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		10.3		12.7	8.8			11.4			11.0	
LOS		B		B	A			B			B	
Approach Delay		10.3			9.5			11.4			11.0	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)		64		12	28			6			5	
Queue Length 95th (ft)		135		35	65			0			0	
Internal Link Dist (ft)		296			160			110			99	
Turn Bay Length (ft)												
Base Capacity (vph)		2941		538	3129			801			799	
Starvation Cap Reductn		7		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.25		0.15	0.12			0.14			0.13	

Intersection Summary

Area Type: Other

Cycle Length: 93

Actuated Cycle Length: 42.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 50.0%

ICU Level of Service A

Analysis Period (min) 15

Description: Anna & Washington

Splits and Phases: 2: Mall/Anna & Washington

 ø2	 ø4	 ø8
47 s	23 s	23 s
 ø6		
47 s		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	695	17	12	424	23	5	0	18	20	2	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.992			0.896			0.929	
Flt Protected		0.999			0.999			0.989			0.979	
Satd. Flow (prot)	0	3353	0	0	3339	0	0	1684	0	0	1613	0
Flt Permitted		0.999			0.999			0.989			0.979	
Satd. Flow (perm)	0	3353	0	0	3339	0	0	1684	0	0	1613	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			152			380			141	
Travel Time (s)		5.5			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	19	772	19	13	471	26	6	0	20	22	2	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	810	0	0	510	0	0	26	0	0	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	44.0%											
Analysis Period (min)	15											
Description:	Almiron & Washington											

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	 			 	 	
Volume (vph)	601	101	44	352	72	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Storage Length (ft)		0	650		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt	0.969				0.941	
Flt Protected				0.993	0.973	
Satd. Flow (prot)	3265	0	0	3346	1740	0
Flt Permitted				0.827	0.973	
Satd. Flow (perm)	3265	0	0	2786	1737	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	57				46	
Link Speed (mph)	30			30	30	
Link Distance (ft)	152			948	295	
Travel Time (s)	3.5			21.5	6.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.98	0.63	0.73	0.91	0.82	0.72
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	613	160	60	387	88	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	773	0	0	447	157	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA		Perm	NA	Prot	
Protected Phases	6			2	8	
Permitted Phases			2	2		
Detector Phase	6		2	2	8	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	28.0		28.0	28.0	28.0	
Total Split (s)	58.0		58.0	58.0	37.0	
Total Split (%)	61.1%		61.1%	61.1%	38.9%	
Maximum Green (s)	54.0		54.0	54.0	33.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)	8.0		8.0	8.0	8.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effect Green (s)	23.7			23.7	8.2	
Actuated g/C Ratio	0.65			0.65	0.22	
v/c Ratio	0.36			0.25	0.37	
Control Delay	4.9			4.8	11.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	4.9			4.8	11.7	
LOS	A			A	B	
Approach Delay	4.9			4.8	11.7	
Approach LOS	A			A	B	
Queue Length 50th (ft)	33			19	19	
Queue Length 95th (ft)	71			44	45	
Internal Link Dist (ft)	72			868	215	
Turn Bay Length (ft)						
Base Capacity (vph)	3265			2786	1549	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.24			0.16	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 36.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 5.6

Intersection LOS: A

Intersection Capacity Utilization 47.9%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

← ø2	
58 s	
→ ø6	↖ ø8
58 s	37 s

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	546	179	170	274	15	80	57	139	12	111	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Storage Length (ft)	105		70	0		70	0		200	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.990	
Satd. Flow (prot)	1685	3369	1507	1685	1773	1507	0	1843	1615	0	1756	1507
Flt Permitted	0.575			0.261				0.970			0.990	
Satd. Flow (perm)	1020	3369	1507	463	1773	1507	0	1843	1615	0	1756	1507
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			167			68			176			123
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		948			484			495			273	
Travel Time (s)		21.5			11.0			11.3			6.2	
Peak Hour Factor	0.64	0.92	0.78	0.85	0.90	0.51	0.83	0.95	0.79	0.38	0.90	0.52
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	28	593	229	200	304	29	96	60	176	32	123	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	593	229	200	304	29	0	156	176	0	155	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			-10			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	4	4	4	3	8	8	2	2	2	6	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	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	8.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	24.0	8.0	32.0	32.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	30.0%	30.0%	30.0%	10.0%	40.0%	40.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	20.0	20.0	20.0	4.0	28.0	28.0	20.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	Min	Min	None	Min	Min	None	None	None	None	None	None

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	8.0	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0	0	0	0	0	0	0
Act Effect Green (s)	17.0	17.0	17.0	25.6	25.6	25.6		10.8	10.8		10.9	10.9
Actuated g/C Ratio	0.30	0.30	0.30	0.45	0.45	0.45		0.19	0.19		0.19	0.19
v/c Ratio	0.09	0.59	0.40	0.66	0.38	0.04		0.44	0.39		0.46	0.10
Control Delay	18.4	21.2	8.9	28.3	14.6	0.9		27.3	7.3		27.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	18.4	21.2	8.9	28.3	14.6	0.9		27.3	7.3		27.9	0.5
LOS	B	C	A	C	B	A		C	A		C	A
Approach Delay		17.8			19.0			16.7			22.5	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	7	92	16	43	69	0		51	0		50	0
Queue Length 95th (ft)	19	173	53	#133	163	0		110	31		111	0
Internal Link Dist (ft)		868			404			415			193	
Turn Bay Length (ft)	105		70			70			200			125
Base Capacity (vph)	386	1277	674	302	940	831		698	721		665	647
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.07	0.46	0.34	0.66	0.32	0.03		0.22	0.24		0.23	0.06

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 56.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 48.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: Springfield & Washington

 $\phi 2$	 $\phi 6$	 $\phi 3$	 $\phi 4$
24 s	24 s	8 s	24 s
		 $\phi 8$	
		32 s	

Lanes, Volumes, Timings
106: Railroad & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		
Volume (vph)	713	0	0	385	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3336	0	0	3336	0	0
Flt Permitted						
Satd. Flow (perm)	3336	0	0	3336	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	226			714	331	
Travel Time (s)	5.1			16.2	7.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	792	0	0	428	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	792	0	0	428	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			10	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.0%			ICU Level of Service A		
Analysis Period (min)	15					

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	106	7.7	16.7	0.1	17
S. Main	1	86.2	102.1	0.1	5
Mall	2	5.4	14.0	0.1	18
Almiron	3	1.6	6.8	0.0	24
Cole	4	2.6	6.2	0.0	17
Springfield	5	15.6	35.2	0.2	18
Total		119.0	181.0	0.5	11

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	10.1	21.1	0.1	16
Cole	4	4.8	24.7	0.2	26
Entrance	3	1.0	4.8	0.0	22
Anna	2	2.0	6.8	0.0	24
N. Main	1	35.8	44.2	0.1	6
	106	2.2	18.7	0.1	26
Total		55.9	120.3	0.6	17

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	54	45	144	143	59	130	993	192	45	631	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	150		100	280		0	175		400	195		365
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.926			0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3120	0	1685	3221	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.584			0.465			0.254			0.099		
Satd. Flow (perm)	1036	3120	0	825	3221	0	483	3505	1615	181	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		76			28				306			144
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			376			533			433	
Travel Time (s)		16.2			8.5			12.1			9.8	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.81	0.75	0.65	0.82	0.78	0.92	0.93	0.84	0.69	0.80	0.90	0.64
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	39	79	76	193	202	71	154	1300	306	62	771	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	155	0	193	273	0	154	1300	306	62	771	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	9.2	25.0		9.5	25.0		9.6	24.5	24.5	9.6	24.5	24.5
Total Split (s)	30.0	35.0		20.0	25.0		25.0	65.0	65.0	25.0	65.0	65.0
Total Split (%)	20.7%	24.1%		13.8%	17.2%		17.2%	44.8%	44.8%	17.2%	44.8%	44.8%
Maximum Green (s)	24.8	29.2		14.5	19.2		19.4	59.5	59.5	19.6	59.5	59.5
Yellow Time (s)	3.2	3.2		3.2	3.2		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	2.0	2.6		2.3	2.6		2.4	2.3	2.3	2.2	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	5.8		5.5	5.8		5.6	5.5	5.5	5.4	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Walk Time (s)		8.0			8.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	19.2	11.0		29.9	22.3		57.6	50.3	50.3	53.6	45.3	45.3
Actuated g/C Ratio	0.19	0.11		0.29	0.22		0.56	0.49	0.49	0.52	0.44	0.44
v/c Ratio	0.16	0.38		0.55	0.38		0.39	0.75	0.32	0.28	0.51	0.16
Control Delay	33.0	28.9		39.3	37.7		11.8	24.8	2.8	11.9	20.9	2.7
Queue Delay	0.0	0.0		0.4	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	28.9		39.7	37.7		11.8	24.8	2.8	11.9	20.9	2.7
LOS	C	C		D	D		B	C	A	B	C	A
Approach Delay		29.7			38.6			19.8			17.9	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	20	27		111	83		41	368	0	16	182	0
Queue Length 95th (ft)	45	47		172	116		74	443	5	30	258	2
Internal Link Dist (ft)		634			296			453			353	
Turn Bay Length (ft)	150			280			175		400	195		365
Base Capacity (vph)	472	985		368	756		548	2133	1102	419	2093	1029
Starvation Cap Reductn	0	0		26	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.16		0.56	0.36		0.28	0.61	0.28	0.15	0.37	0.13

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 102.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 22.4

Intersection LOS: C

Intersection Capacity Utilization 69.1%

ICU Level of Service C

Analysis Period (min) 15

Description: Main & Washington

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	304	21	16	323	6	7	0	11	2	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.996			0.917			0.884	
Flt Protected				0.950				0.981			0.993	
Satd. Flow (prot)	0	3332	0	1685	3356	0	0	1595	0	0	1557	0
Flt Permitted		0.954		0.523				0.981			0.993	
Satd. Flow (perm)	0	3179	0	927	3356	0	0	1595	0	0	1557	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			3			59			59	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		376			240			190			179	
Travel Time (s)		8.5			5.5			4.3			4.1	
Peak Hour Factor	0.50	0.94	0.84	0.64	0.88	0.67	0.54	0.25	0.56	0.50	0.25	0.60
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	356	28	28	404	10	14	0	22	4	0	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	386	0	28	414	0	0	36	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			-40	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		6			2		4	4		8	8	
Permitted Phases	6			2								
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	47.0	47.0		47.0	47.0		23.0	23.0		23.0	23.0	
Total Split (%)	50.5%	50.5%		50.5%	50.5%		24.7%	24.7%		24.7%	24.7%	
Maximum Green (s)	43.0	43.0		43.0	43.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)		25.1		25.1	25.1			5.7			5.6	
Actuated g/C Ratio		0.87		0.87	0.87			0.20			0.19	
v/c Ratio		0.14		0.03	0.14			0.10			0.08	
Control Delay		3.1		4.4	3.1			4.0			3.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		3.1		4.4	3.1			4.0			3.0	
LOS		A		A	A			A			A	
Approach Delay		3.1			3.2			4.0			3.0	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		0		0	0			0			0	
Queue Length 95th (ft)		49		10	51			0			0	
Internal Link Dist (ft)		296			160			110			99	
Turn Bay Length (ft)												
Base Capacity (vph)		3179		927	3356			1093			1067	
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		0.12		0.03	0.12			0.03			0.03	

Intersection Summary

Area Type: Other

Cycle Length: 93

Actuated Cycle Length: 28.8

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.14

Intersection Signal Delay: 3.2

Intersection LOS: A

Intersection Capacity Utilization 24.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Anna & Washington

Splits and Phases: 2: Mall/Anna & Washington

 ø2	 ø4	 ø8
47 s	23 s	23 s
 ø6		
47 s		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	317	5	10	331	10	5	0	9	6	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.996			0.913			0.899	
Flt Protected					0.999			0.983			0.988	
Satd. Flow (prot)	0	3363	0	0	3353	0	0	1705	0	0	1575	0
Flt Permitted					0.999			0.983			0.988	
Satd. Flow (perm)	0	3363	0	0	3353	0	0	1705	0	0	1575	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			152			380			141	
Travel Time (s)		5.5			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	387	6	12	405	12	6	0	11	7	0	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	394	0	0	429	0	0	17	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.7%

ICU Level of Service A

Analysis Period (min) 15

Description: Almiron & Washington

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	298	24	22	280	71	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Storage Length (ft)		0	650		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt	0.987				0.918	
Flt Protected				0.996	0.981	
Satd. Flow (prot)	3326	0	0	3356	1711	0
Flt Permitted				0.902	0.981	
Satd. Flow (perm)	3326	0	0	3039	1709	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17				89	
Link Speed (mph)	30			30	30	
Link Distance (ft)	152			948	295	
Travel Time (s)	3.5			21.5	6.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.71	0.61	0.79	0.89	0.85	0.63
Growth Factor	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	462	43	31	346	92	141
Shared Lane Traffic (%)						
Lane Group Flow (vph)	505	0	0	377	233	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA		Perm	NA	Prot	
Protected Phases	6			2	8	
Permitted Phases			2	2		
Detector Phase	6		2	2	8	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	28.0		28.0	28.0	28.0	
Total Split (s)	58.0		58.0	58.0	37.0	
Total Split (%)	61.1%		61.1%	61.1%	38.9%	
Maximum Green (s)	54.0		54.0	54.0	33.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)	8.0		8.0	8.0	8.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effect Green (s)	14.4			14.4	8.3	
Actuated g/C Ratio	0.47			0.47	0.27	
v/c Ratio	0.32			0.26	0.44	
Control Delay	6.1			6.1	8.4	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.1			6.1	8.4	
LOS	A			A	A	
Approach Delay	6.1			6.1	8.4	
Approach LOS	A			A	A	
Queue Length 50th (ft)	21			15	16	
Queue Length 95th (ft)	34			36	44	
Internal Link Dist (ft)	72			868	215	
Turn Bay Length (ft)						
Base Capacity (vph)	3326			3039	1689	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.15			0.12	0.14	

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 30.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay: 6.5
 Intersection Capacity Utilization 38.9%
 Analysis Period (min) 15
 Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

← ø2	
58 s	
→ ø6	↖ ø8
58 s	37 s

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	12	285	42	1	85	199	6	80	76	232	10	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	10	12	12	12	10	10
Storage Length (ft)	105		70		0		70	0		200	0	
Storage Lanes	1		1		1		1	0		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950				0.973			0.980
Satd. Flow (prot)	1685	3369	1507	0	1685	1773	1507	0	1849	1615	0	1738
Flt Permitted	0.603				0.315				0.973			0.980
Satd. Flow (perm)	1069	3369	1507	0	559	1773	1507	0	1849	1615	0	1738
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			123				68			399		
Link Speed (mph)		30				30			30			30
Link Distance (ft)		948				484			495			273
Travel Time (s)		21.5				11.0			11.3			6.2
Peak Hour Factor	0.60	0.65	0.70	0.25	0.82	0.87	0.56	0.77	0.95	0.64	0.50	0.93
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	482	66	4	114	252	12	114	88	399	22	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	482	66	0	118	252	12	0	202	399	0	53
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		10				10			0			0
Link Offset(ft)		0				0			-10			0
Crosswalk Width(ft)		10				10			10			10
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type	Perm	NA	Perm	custom	pm+pt	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases		4			3	8		2	2		6	6
Permitted Phases	4		4	3	8		8			2		
Detector Phase	4	4	4	3	3	8	8	2	2	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	4.0	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	8.0	8.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	24.0	8.0	8.0	32.0	32.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	30.0%	30.0%	30.0%	10.0%	10.0%	40.0%	40.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	20.0	20.0	20.0	4.0	4.0	28.0	28.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0
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	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

Lane Group	SBR
Lane Configurations	7
Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Storage Length (ft)	125
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1507
Flt Permitted	
Satd. Flow (perm)	1507
Right Turn on Red	Yes
Satd. Flow (RTOR)	123
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.66
Growth Factor	110%
Heavy Vehicles (%)	0%
Adj. Flow (vph)	52
Shared Lane Traffic (%)	
Lane Group Flow (vph)	52
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.09
Turning Speed (mph)	9
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	30.0%
Maximum Green (s)	20.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Recall Mode	Min	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)	8.0	8.0	8.0			8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0			0	0	0	0	0	0	0
Act Effct Green (s)	14.1	14.1	14.1		19.8	19.8	19.8		13.0	13.0		8.1
Actuated g/C Ratio	0.28	0.28	0.28		0.39	0.39	0.39		0.26	0.26		0.16
v/c Ratio	0.07	0.51	0.13		0.37	0.36	0.02		0.43	0.56		0.19
Control Delay	17.8	19.8	1.5		15.5	14.1	0.0		21.7	5.9		25.9
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	17.8	19.8	1.5		15.5	14.1	0.0		21.7	5.9		25.9
LOS	B	B	A		B	B	A		C	A		C
Approach Delay		17.6				14.1			11.3			13.6
Approach LOS		B				B			B			B
Queue Length 50th (ft)	5	68	0		22	52	0		55	0		15
Queue Length 95th (ft)	15	90	0		57	122	0		124	2		51
Internal Link Dist (ft)		868				404			415			193
Turn Bay Length (ft)	105		70				70			200		
Base Capacity (vph)	499	1575	770		323	1056	925		865	967		812
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	0.04	0.31	0.09		0.37	0.24	0.01		0.23	0.41		0.07

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 50.6

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 46.4%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 24 s	 24 s	 8 s	 24 s
		 32 s	



Lane Group	SBR
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effect Green (s)	8.1
Actuated g/C Ratio	0.16
v/c Ratio	0.15
Control Delay	0.9
Queue Delay	0.0
Total Delay	0.9
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0
Internal Link Dist (ft)	
Turn Bay Length (ft)	125
Base Capacity (vph)	770
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.07
Intersection Summary	

Lanes, Volumes, Timings
106: Railroad & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		
Volume (vph)	128	0	0	348	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3336	0	0	3336	0	0
Flt Permitted						
Satd. Flow (perm)	3336	0	0	3336	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	216			714	331	
Travel Time (s)	4.9			16.2	7.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	156	0	0	425	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	0	0	425	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			10	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.9%			ICU Level of Service A		
Analysis Period (min)	15					

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	106	0.1	4.7	0.0	32
S. Main	1	40.1	56.2	0.1	9
Mall	2	2.6	9.6	0.1	27
Almiron	3	0.6	6.1	0.0	27
Cole	4	3.0	6.5	0.0	16
Springfield	5	11.7	32.2	0.2	20
Total		58.2	115.3	0.5	16

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	9.3	20.2	0.1	17
Cole	4	5.1	25.6	0.2	25
Entrance	3	0.9	5.0	0.0	21
Anna	2	1.2	6.1	0.0	27
N. Main	1	29.5	38.3	0.1	7
	106	2.2	18.6	0.1	26
Total		48.2	113.8	0.6	18

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	342	220	174	154	75	135	824	259	126	922	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	150		100	280		0	175		400	195		365
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.940			0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3167	0	1685	3180	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.460			0.140			0.100			0.122		
Satd. Flow (perm)	816	3167	0	248	3180	0	190	3505	1615	223	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		101			49				352			144
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			376			533			541	
Travel Time (s)		16.2			8.5			12.1			12.3	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.86	0.85	0.81	0.84	0.79	0.78	0.84	0.90	0.81	0.88	0.97	0.88
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	193	443	299	228	214	106	177	1007	352	158	1046	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	742	0	228	320	0	177	1007	352	158	1046	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	9.2	25.0		9.5	25.0		9.6	24.5	24.5	9.6	24.5	24.5
Total Split (s)	30.0	35.0		20.0	25.0		25.0	65.0	65.0	25.0	65.0	65.0
Total Split (%)	20.7%	24.1%		13.8%	17.2%		17.2%	44.8%	44.8%	17.2%	44.8%	44.8%
Maximum Green (s)	24.8	29.2		14.5	19.2		19.4	59.5	59.5	19.6	59.5	59.5
Yellow Time (s)	3.2	3.2		3.2	3.2		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	2.0	2.6		2.3	2.6		2.4	2.3	2.3	2.2	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	5.8		5.5	5.8		5.6	5.5	5.5	5.4	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Walk Time (s)		8.0			8.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	45.3	29.5		43.4	28.5		59.3	47.1	47.1	58.4	46.5	46.5
Actuated g/C Ratio	0.36	0.24		0.35	0.23		0.47	0.38	0.38	0.47	0.37	0.37
v/c Ratio	0.48	0.90		0.90	0.42		0.71	0.77	0.43	0.64	0.82	0.18
Control Delay	32.6	56.6		72.2	40.5		39.6	38.5	4.1	31.2	41.8	2.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	56.6		72.2	40.5		39.6	38.5	4.1	31.2	41.8	2.8
LOS	C	E		E	D		D	D	A	C	D	A
Approach Delay		51.6			53.7			30.7			37.0	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	104	271		133	98		77	370	0	66	396	0
Queue Length 95th (ft)	191	#426		#344	154		138	470	32	118	511	23
Internal Link Dist (ft)		634			296			453			461	
Turn Bay Length (ft)	150			280			175		400	195		365
Base Capacity (vph)	500	821		253	759		348	1686	959	352	1645	840
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	0.39	0.90		0.90	0.42		0.51	0.60	0.37	0.45	0.64	0.14

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 125.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 40.0

Intersection LOS: D

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	632	83	59	355	4	25	0	56	7	4	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.997			0.902			0.896	
Flt Protected				0.950				0.986			0.994	
Satd. Flow (prot)	0	3312	0	1685	3359	0	0	1577	0	0	1579	0
Flt Permitted		0.953		0.292				0.986			0.994	
Satd. Flow (perm)	0	3156	0	518	3359	0	0	1577	0	0	1579	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			3			91			87	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		376			240			190			179	
Travel Time (s)		8.5			5.5			4.3			4.1	
Peak Hour Factor	0.25	0.96	0.96	0.74	0.95	0.50	0.78	0.25	0.68	0.58	0.33	0.61
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	724	95	88	411	9	35	0	91	13	13	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	823	0	88	420	0	0	126	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			-40	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		6			2		4	4		8	8	
Permitted Phases	6			2								
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	47.0	47.0		47.0	47.0		23.0	23.0		23.0	23.0	
Total Split (%)	50.5%	50.5%		50.5%	50.5%		24.7%	24.7%		24.7%	24.7%	
Maximum Green (s)	43.0	43.0		43.0	43.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	

Lanes, Volumes, Timings

2: Mall/Anna & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)		24.6		24.6	24.6			7.4			7.2	
Actuated g/C Ratio		0.55		0.55	0.55			0.16			0.16	
v/c Ratio		0.47		0.31	0.23			0.38			0.35	
Control Delay		10.5		14.0	8.8			12.4			11.9	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		10.5		14.0	8.8			12.4			11.9	
LOS		B		B	A			B			B	
Approach Delay		10.5			9.7			12.4			11.9	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)		74		14	33			8			6	
Queue Length 95th (ft)		160		41	75			0			0	
Internal Link Dist (ft)		296			160			110			99	
Turn Bay Length (ft)												
Base Capacity (vph)		2852		467	3034			765			763	
Starvation Cap Reductn		55		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.29		0.19	0.14			0.16			0.15	

Intersection Summary

Area Type: Other

Cycle Length: 93

Actuated Cycle Length: 45

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 10.5

Intersection LOS: B

Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15

Description: Anna & Washington

Splits and Phases: 2: Mall/Anna & Washington

 ø2	 ø4	 ø8
47 s	23 s	23 s
 ø6		
47 s		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	695	17	12	424	23	5	0	18	20	2	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.993			0.894			0.929	
Flt Protected		0.999			0.999			0.989			0.979	
Satd. Flow (prot)	0	3353	0	0	3342	0	0	1680	0	0	1613	0
Flt Permitted		0.999			0.999			0.989			0.979	
Satd. Flow (perm)	0	3353	0	0	3342	0	0	1680	0	0	1613	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			152			380			141	
Travel Time (s)		5.5			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	21	849	21	15	518	28	6	0	22	24	2	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	891	0	0	561	0	0	28	0	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Almiron & Washington

Lanes, Volumes, Timings

4: Cole & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	 			 	 	
Volume (vph)	601	101	44	352	72	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Storage Length (ft)		0	650		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor					1.00	
Frt	0.969				0.941	
Flt Protected				0.993	0.973	
Satd. Flow (prot)	3265	0	0	3346	1740	0
Flt Permitted				0.807	0.973	
Satd. Flow (perm)	3265	0	0	2719	1737	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	57				45	
Link Speed (mph)	30			30	30	
Link Distance (ft)	152			948	295	
Travel Time (s)	3.5			21.5	6.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.98	0.63	0.73	0.91	0.82	0.72
Growth Factor	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	675	176	66	425	97	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	851	0	0	491	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA		Perm	NA	Prot	
Protected Phases	6			2	8	
Permitted Phases			2	2		
Detector Phase	6		2	2	8	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	28.0		28.0	28.0	28.0	
Total Split (s)	58.0		58.0	58.0	37.0	
Total Split (%)	61.1%		61.1%	61.1%	38.9%	
Maximum Green (s)	54.0		54.0	54.0	33.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						

Lanes, Volumes, Timings

4: Cole & Washington

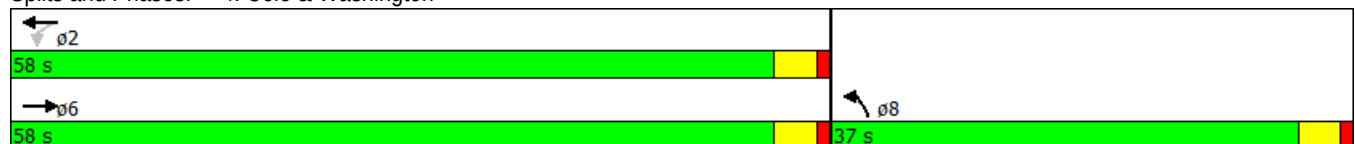
4/7/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)	8.0		8.0	8.0	8.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effect Green (s)	22.9			22.9	8.8	
Actuated g/C Ratio	0.58			0.58	0.22	
v/c Ratio	0.45			0.31	0.41	
Control Delay	5.8			5.5	12.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	5.8			5.5	12.9	
LOS	A			A	B	
Approach Delay	5.8			5.5	12.9	
Approach LOS	A			A	B	
Queue Length 50th (ft)	41			23	22	
Queue Length 95th (ft)	86			52	53	
Internal Link Dist (ft)	72			868	215	
Turn Bay Length (ft)						
Base Capacity (vph)	3265			2719	1457	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.26			0.18	0.12	

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 39.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.45
 Intersection Signal Delay: 6.5
 Intersection Capacity Utilization 51.7%
 Analysis Period (min) 15
 Description: Cole & Washington

Splits and Phases: 4: Cole & Washington



Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	546	179	170	274	15	80	57	139	12	111	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Storage Length (ft)	105		70	0		70	0		200	0		125
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.990	
Satd. Flow (prot)	1685	3369	1507	1685	1773	1507	0	1843	1615	0	1756	1507
Flt Permitted	0.559			0.217				0.970			0.990	
Satd. Flow (perm)	991	3369	1507	385	1773	1507	0	1843	1615	0	1756	1507
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			167			68			194			123
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		948			484			495			273	
Travel Time (s)		21.5			11.0			11.3			6.2	
Peak Hour Factor	0.64	0.92	0.78	0.85	0.90	0.51	0.83	0.95	0.79	0.38	0.90	0.52
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	653	252	220	335	32	106	66	194	35	136	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	653	252	220	335	32	0	172	194	0	171	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			-10			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	4	4	4	3	8	8	2	2	2	6	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	4.0	4.0
Minimum Split (s)	24.0	24.0	24.0	8.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	24.0	8.0	32.0	32.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	30.0%	30.0%	30.0%	10.0%	40.0%	40.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	20.0	20.0	20.0	4.0	28.0	28.0	20.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/7/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)	8.0	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	17.6	17.6	17.6	25.9	25.9	25.9		11.3	11.3		11.4	11.4
Actuated g/C Ratio	0.29	0.29	0.29	0.43	0.43	0.43		0.19	0.19		0.19	0.19
v/c Ratio	0.11	0.67	0.45	0.88	0.45	0.05		0.50	0.42		0.52	0.11
Control Delay	19.5	24.0	10.6	53.9	16.3	1.3		29.1	7.3		29.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	19.5	24.0	10.6	53.9	16.3	1.3		29.1	7.3		29.8	0.6
LOS	B	C	B	D	B	A		C	A		C	A
Approach Delay		20.3			29.6			17.6			24.0	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	8	107	23	50	82	0		60	0		60	0
Queue Length 95th (ft)	22	202	66	#182	190	0		122	32		124	0
Internal Link Dist (ft)		868			404			415			193	
Turn Bay Length (ft)	105		70			70			200			125
Base Capacity (vph)	334	1136	619	251	837	747		621	673		592	589
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	0.09	0.57	0.41	0.88	0.40	0.04		0.28	0.29		0.29	0.07

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 60.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 22.8

Intersection LOS: C

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Description: Springfield & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: Springfield & Washington

 $\phi 2$	 $\phi 6$	 $\phi 3$	 $\phi 4$
24 s	24 s	8 s	24 s
		 $\phi 8$	
		32 s	

Lanes, Volumes, Timings
106: Railroad & Washington

4/7/2017

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		
Volume (vph)	713	0	0	385	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3336	0	0	3336	0	0
Flt Permitted						
Satd. Flow (perm)	3336	0	0	3336	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	209			714	331	
Travel Time (s)	4.8			16.2	7.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	871	0	0	471	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	871	0	0	471	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			10	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	25.0%			ICU Level of Service A		
Analysis Period (min)	15					

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	106	17.5	26.6	0.1	10
S. Main	1	121.9	137.8	0.1	4
Mall	2	5.6	14.3	0.1	18
Almiron	3	1.6	6.9	0.0	24
Cole	4	3.0	6.6	0.0	16
Springfield	5	17.3	37.1	0.2	17
Total		166.9	229.2	0.5	8

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	10.2	21.2	0.1	16
Cole	4	4.9	24.8	0.2	26
Entrance	3	1.1	5.0	0.0	21
Anna	2	2.8	7.5	0.0	22
N. Main	1	39.4	47.8	0.1	5
	106	2.2	18.7	0.1	26
Total		60.5	125.0	0.6	16

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/10/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	54	45	144	143	59	130	993	192	45	631	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	300		500	200		200	150		400	195		365
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1773	1507	1685	3221	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.584			0.472			0.249			0.101		
Satd. Flow (perm)	1036	1773	1507	837	3221	0	473	3505	1615	185	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76		28				306			129
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			433	
Travel Time (s)		16.2			14.0			12.1			9.8	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.81	0.75	0.65	0.82	0.78	0.92	0.93	0.84	0.69	0.80	0.90	0.64
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	39	79	76	193	202	71	154	1300	306	62	771	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	79	76	193	273	0	154	1300	306	62	771	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
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	4.0
Minimum Split (s)	8.0	25.0	8.0	8.0	20.0		8.0	20.0	8.0	8.0	20.0	8.0
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/10/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	15.7	10.3	20.4	27.7	15.7		51.8	44.8	67.1	48.7	40.4	52.3
Actuated g/C Ratio	0.17	0.11	0.23	0.31	0.17		0.57	0.50	0.74	0.54	0.45	0.58
v/c Ratio	0.17	0.39	0.19	0.47	0.47		0.38	0.75	0.24	0.26	0.50	0.13
Control Delay	29.6	49.5	9.2	32.7	36.0		10.7	22.4	1.2	10.4	18.5	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	49.5	9.2	32.7	36.0		10.7	22.4	1.2	10.4	18.5	2.0
LOS	C	D	A	C	D		B	C	A	B	B	A
Approach Delay		29.7			34.6			17.7			15.7	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	17	45	0	91	68		35	321	0	14	157	0
Queue Length 95th (ft)	44	87	14	167	111		70	416	3	29	239	5
Internal Link Dist (ft)		634			536			453			353	
Turn Bay Length (ft)	300		500	200			150		400	195		365
Base Capacity (vph)	555	658	610	425	831		618	2445	1298	500	2398	1313
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.12	0.12	0.45	0.33		0.25	0.53	0.24	0.12	0.32	0.10

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 90.4

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 20.2

Intersection LOS: C

Intersection Capacity Utilization 59.0%

ICU Level of Service B

Analysis Period (min) 15

Description: Main & Washington

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/10/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	298	26	26	309	16	12	0	20	8	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		185	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.987			0.991			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3557	0	1805	1880	0	1745	1536	0	1685	1473	0
Flt Permitted	0.063			0.525			0.721			0.732		
Satd. Flow (perm)	120	3557	0	998	1880	0	1324	1536	0	1298	1473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			10			620			559	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.50	0.94	0.84	0.64	0.88	0.67	0.54	0.25	0.56	0.50	0.25	0.60
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	349	34	45	386	26	24	0	39	18	0	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	383	0	45	412	0	24	39	0	18	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/10/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/10/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.0	64.0		82.4	82.4		7.3	7.3		7.3	7.3	
Actuated g/C Ratio	0.67	0.67		0.87	0.87		0.08	0.08		0.08	0.08	
v/c Ratio	0.05	0.16		0.05	0.25		0.24	0.06		0.18	0.09	
Control Delay	9.5	6.5		1.3	1.4		46.1	0.1		44.2	0.3	
Queue Delay	0.0	0.0		1.0	0.8		0.0	0.0		0.0	0.0	
Total Delay	9.5	6.5		2.2	2.1		46.1	0.1		44.2	0.3	
LOS	A	A		A	A		D	A		D	A	
Approach Delay		6.6			2.1			17.6			11.1	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	1	41		3	23		14	0		10	0	
Queue Length 95th (ft)	3	68		m5	41		23	0		18	0	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2400		853	1608		222	774		218	712	
Starvation Cap Reductn	0	0		673	858		0	0		0	0	
Spillback Cap Reductn	0	225		0	0		0	39		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.18		0.25	0.55		0.11	0.05		0.08	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.25

Intersection Signal Delay: 5.5

Intersection Capacity Utilization 37.8%

Analysis Period (min) 15

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

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings
3: Almiron/Entrance & Washington

4/10/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/10/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	298	24	22	280	71	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.918		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	1900	1615	1805	1900	1711	0	
Flt Permitted			0.464		0.981		
Satd. Flow (perm)	1900	1615	882	1900	1709	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		43			70		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.71	0.61	0.79	0.89	0.85	0.63	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	462	43	31	346	92	141	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	462	43	31	346	233	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/10/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	72.4	72.4	57.0	57.0	14.6		
Actuated g/C Ratio	0.76	0.76	0.60	0.60	0.15		
v/c Ratio	0.32	0.03	0.06	0.30	0.72		
Control Delay	6.1	2.2	9.8	11.0	38.8		
Queue Delay	0.6	0.4	0.0	0.0	0.0		
Total Delay	6.7	2.6	9.8	11.0	38.8		
LOS	A	A	A	B	D		
Approach Delay	6.3			10.9	38.8		
Approach LOS	A			B	D		
Queue Length 50th (ft)	123	0	8	100	94		
Queue Length 95th (ft)	157	11	19	161	148		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1540	1317	529	1140	368		
Starvation Cap Reductn	694	1051	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.55	0.16	0.06	0.30	0.63		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.7

Intersection Capacity Utilization 36.6%

Analysis Period (min) 15

Description: Cole & Washington

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 4: Cole & Washington

→ ø2 (R)	55 s		↖ ø9	20 s
← ø6 (R)	55 s		→ ø8	20 s

Lanes, Volumes, Timings

5: Springfield & Washington

4/10/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	12	285	42	1	85	199	6	80	76	232	10	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150		0		70	100		200	100	
Storage Lanes	1		1		1		1	1		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.906
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1805	1900	1615	0	1685	1773	1507	1685	1773	1507	1685	1607
Flt Permitted	0.603				0.284			0.703			0.700	
Satd. Flow (perm)	1146	1900	1615	0	504	1773	1507	1247	1773	1507	1241	1607
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			116				64			399		52
Link Speed (mph)		30				30			30			30
Link Distance (ft)		948				484			501			273
Travel Time (s)		21.5				11.0			11.4			6.2
Peak Hour Factor	0.60	0.65	0.70	0.25	0.82	0.87	0.56	0.77	0.95	0.64	0.50	0.93
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	482	66	4	114	252	12	114	88	399	22	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	482	66	0	118	252	12	114	88	399	22	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		12				10			10			10
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		10				10			10			10
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type	pm+pt	NA	Perm	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4			3	8			2			6
Permitted Phases	4		4	3	8		8	2		2	6	
Detector Phase	7	4	4	3	3	8	8	2	2	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	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	45.0	45.0	16.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	9.4%	52.9%	52.9%	18.8%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	4.0	41.0	41.0	12.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/10/2017

Lane Group	SBR
Lane Configurations	
Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Storage Length (ft)	100
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.66
Growth Factor	110%
Heavy Vehicles (%)	0%
Adj. Flow (vph)	52
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.09
Turning Speed (mph)	9
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	

Lanes, Volumes, Timings

5: Springfield & Washington

4/10/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0	11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0			0	0	0	0	0	0	0
Act Effct Green (s)	21.9	18.9	18.9		27.3	26.3	26.3	11.7	11.7	11.7	11.7	11.7
Actuated g/C Ratio	0.45	0.39	0.39		0.56	0.54	0.54	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.04	0.65	0.09		0.25	0.26	0.01	0.38	0.21	0.60	0.07	0.19
Control Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
LOS	A	B	A		A	A	A	C	B	A	B	B
Approach Delay		15.5				6.8			11.7			12.5
Approach LOS		B				A			B			B
Queue Length 50th (ft)	2	107	0		11	26	0	27	20	0	5	7
Queue Length 95th (ft)	7	157	0		34	100	0	70	64	1	13	42
Internal Link Dist (ft)		868				404			421			193
Turn Bay Length (ft)	150		150				70	100		200	100	
Base Capacity (vph)	581	1567	1352		641	1602	1368	601	855	933	598	802
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.05		0.18	0.16	0.01	0.19	0.10	0.43	0.04	0.10

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 48.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s



Lane Group	SBR
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	0.0	8.1	0.1	31
S. Main	1	36.8	52.9	0.1	9
Almiron	3	5.3	16.4	0.1	26
Cole	4	2.6	6.2	0.0	17
Springfield	5	8.4	28.5	0.2	23
Total		53.1	112.1	0.5	17

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	4.4	15.2	0.1	22
Cole	4	5.0	25.4	0.2	25
Entrance	3	1.6	5.5	0.0	19
N. Main	1	28.0	41.8	0.1	10
	16	2.2	18.6	0.1	26
Total		41.2	106.6	0.6	19

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	342	220	174	154	75	135	824	259	126	922	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	500		500	400		200	175		400	195		365
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1773	1507	1685	3180	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.485			0.124			0.094			0.113		
Satd. Flow (perm)	860	1773	1507	220	3180	0	179	3505	1615	206	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			50		50				203			120
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			672	
Travel Time (s)		16.2			14.0			12.1			15.3	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.86	0.85	0.81	0.84	0.79	0.78	0.84	0.90	0.81	0.88	0.97	0.88
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	193	443	299	228	214	106	177	1007	352	158	1046	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	443	299	228	320	0	177	1007	352	158	1046	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
Switch Phase												
Minimum Initial (s)	5.2	10.0	4.0	4.0	10.0		4.0	15.0	4.0	4.0	15.0	5.2
Minimum Split (s)	9.2	25.0	9.6	20.0	25.0		9.6	24.5	20.0	9.6	20.0	9.2
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	0.2	0.2	0.2	0.2	0.2		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	0.0	0.0	20.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.9	31.3	47.5	47.8	32.3		57.3	45.2	65.4	56.5	44.8	64.1
Actuated g/C Ratio	0.38	0.26	0.39	0.40	0.27		0.48	0.37	0.54	0.47	0.37	0.53
v/c Ratio	0.45	0.96	0.48	0.81	0.36		0.71	0.77	0.36	0.64	0.82	0.13
Control Delay	28.9	79.3	27.0	54.3	35.1		40.0	37.1	7.1	31.9	40.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	79.3	27.0	54.3	35.1		40.0	37.1	7.1	31.9	40.0	2.2
LOS	C	E	C	D	D		D	D	A	C	D	A
Approach Delay		52.2			43.1			30.6			35.6	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	94	337	141	121	87		76	355	56	64	378	0
Queue Length 95th (ft)	184	#629	231	#315	147		139	450	91	121	489	22
Internal Link Dist (ft)		634			536			453			592	
Turn Bay Length (ft)	500		500	400			175		400	195		365
Base Capacity (vph)	547	460	733	283	888		376	1799	969	373	1757	1041
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.96	0.41	0.81	0.36		0.47	0.56	0.36	0.42	0.60	0.12

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 120.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 38.3

Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	598	100	71	326	27	30	0	74	27	6	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		185	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.979			0.989			0.850			0.861	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3524	0	1805	1875	0	1745	1536	0	1685	1494	0
Flt Permitted	0.062			0.332			0.611			0.640		
Satd. Flow (perm)	118	3524	0	631	1875	0	1122	1536	0	1135	1494	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			12			400			88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	731	122	87	398	33	37	0	90	33	7	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	853	0	87	431	0	37	90	0	33	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.9	64.9		81.3	81.3		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.68	0.68		0.86	0.86		0.09	0.09		0.09	0.09	
v/c Ratio	0.28	0.35		0.16	0.27		0.38	0.18		0.33	0.45	
Control Delay	20.4	7.7		2.2	1.8		50.8	0.8		48.6	17.3	
Queue Delay	0.0	0.1		1.1	0.8		0.0	0.0		0.0	0.0	
Total Delay	20.4	7.7		3.3	2.5		50.8	0.8		48.6	17.3	
LOS	C	A		A	A		D	A		D	B	
Approach Delay		8.0			2.7			15.4			25.4	
Approach LOS		A			A			B			C	
Queue Length 50th (ft)	5	100		6	31		22	0		19	4	
Queue Length 95th (ft)	31	176		16	54		52	0		47	50	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2416		539	1604		188	591		191	324	
Starvation Cap Reductn	0	0		301	838		0	0		0	0	
Spillback Cap Reductn	0	324		0	0		0	36		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.28	0.41		0.37	0.56		0.20	0.16		0.17	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.3

Intersection Capacity Utilization 44.5%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings
3: Almiron/Entrance & Washington

4/11/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/11/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	601	101	44	352	72	50	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.941		
Flt Protected			0.950		0.973		
Satd. Flow (prot)	1900	1615	1805	1900	1740	0	
Flt Permitted			0.345		0.973		
Satd. Flow (perm)	1900	1615	656	1900	1736	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		176			36		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.98	0.63	0.73	0.91	0.82	0.72	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	675	176	66	425	97	76	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	675	176	66	425	173	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/11/2017

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	74.2	74.2	55.0	55.0	12.8		
Actuated g/C Ratio	0.78	0.78	0.58	0.58	0.13		
v/c Ratio	0.46	0.14	0.17	0.39	0.65		
Control Delay	11.2	3.8	12.0	12.8	41.5		
Queue Delay	0.7	0.9	0.0	0.0	0.0		
Total Delay	11.9	4.7	12.0	12.8	41.5		
LOS	B	A	B	B	D		
Approach Delay	10.4			12.7	41.5		
Approach LOS	B			B	D		
Queue Length 50th (ft)	265	17	18	131	79		
Queue Length 95th (ft)	443	31	35	223	121		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1496	1317	382	1106	331		
Starvation Cap Reductn	473	906	0	0	0		
Spillback Cap Reductn	0	0	0	6	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.66	0.43	0.17	0.39	0.52		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

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Lanes, Volumes, Timings
5: Springfield & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	546	179	170	274	15	80	57	139	12	111	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150	0		70	100		200	100		100
Storage Lanes	1		1	1		1	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1685	1773	1507	1685	1773	1507	1685	1711	0
Flt Permitted	0.559			0.189			0.558			0.714		
Satd. Flow (perm)	1062	1900	1615	335	1773	1507	990	1773	1507	1266	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			64			194		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		948			484			501			273	
Travel Time (s)		21.5			11.0			11.4			6.2	
Peak Hour Factor	0.64	0.92	0.78	0.85	0.90	0.51	0.83	0.95	0.79	0.38	0.90	0.52
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	653	252	220	335	32	106	66	194	35	136	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	653	252	220	335	32	106	66	194	35	178	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	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	4.0	4.0	
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	8.0	45.0	45.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0	
Total Split (%)	9.4%	52.9%	52.9%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%	
Maximum Green (s)	4.0	41.0	41.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	

Lanes, Volumes, Timings

5: Springfield & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	
Act Effct Green (s)	32.5	28.2	28.2	41.5	39.0	39.0	12.8	12.8	12.8	12.8	12.8	
Actuated g/C Ratio	0.52	0.45	0.45	0.66	0.62	0.62	0.20	0.20	0.20	0.20	0.20	
v/c Ratio	0.05	0.77	0.30	0.53	0.31	0.03	0.53	0.18	0.42	0.14	0.49	
Control Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
LOS	A	C	A	A	A	A	D	C	A	C	C	
Approach Delay		16.7			8.2			19.0			27.2	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	3	187	6	25	42	0	36	21	0	11	53	
Queue Length 95th (ft)	9	393	31	61	136	0	90	61	33	16	133	
Internal Link Dist (ft)		868			404			421			193	
Turn Bay Length (ft)	150		150			70	100		200	100		
Base Capacity (vph)	598	1326	1193	498	1409	1211	339	607	644	434	597	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.49	0.21	0.44	0.24	0.03	0.31	0.11	0.30	0.08	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 63

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	1.1	9.7	0.1	28
S. Main	1	100.8	116.6	0.1	4
Almiron	3	9.2	23.1	0.1	18
Cole	4	2.7	6.4	0.0	16
Springfield	5	14.5	34.2	0.2	19
Total		128.3	190.0	0.5	10

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	5.3	16.2	0.1	21
Cole	4	7.3	27.4	0.2	24
Entrance	3	2.6	6.5	0.0	16
N. Main	1	35.0	48.1	0.1	9
	16	2.0	18.5	0.1	26
Total		52.3	116.6	0.6	17

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	54	45	144	143	59	130	993	192	45	631	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	300		500	200		200	150		400	195		365
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1773	1507	1685	2867	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.584			0.472			0.250			0.101		
Satd. Flow (perm)	1036	1773	1507	837	2867	0	475	3505	1615	185	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76		28				306			129
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			433	
Travel Time (s)		16.2			14.0			12.1			9.8	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.81	0.75	0.65	0.82	0.78	0.92	0.93	0.84	0.69	0.80	0.90	0.64
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Parking (#/hr)					24							
Adj. Flow (vph)	39	79	76	193	202	71	154	1300	306	62	771	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	79	76	193	273	0	154	1300	306	62	771	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.09	1.09	1.09	1.27	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
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	4.0
Minimum Split (s)	8.0	25.0	8.0	8.0	20.0		8.0	20.0	8.0	8.0	20.0	8.0
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	15.7	10.3	20.4	27.8	15.8		51.8	44.8	67.2	48.7	40.4	52.4
Actuated g/C Ratio	0.17	0.11	0.23	0.31	0.17		0.57	0.50	0.74	0.54	0.45	0.58
v/c Ratio	0.17	0.39	0.19	0.47	0.52		0.38	0.75	0.24	0.26	0.50	0.13
Control Delay	29.6	49.5	9.2	32.7	37.4		10.7	22.5	1.2	10.4	18.5	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	49.5	9.2	32.7	37.4		10.7	22.5	1.2	10.4	18.5	2.0
LOS	C	D	A	C	D		B	C	A	B	B	A
Approach Delay		29.7			35.4			17.8			15.8	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	17	45	0	91	70		35	321	0	14	157	0
Queue Length 95th (ft)	44	87	14	167	113		70	416	3	29	239	5
Internal Link Dist (ft)		634			536			453			353	
Turn Bay Length (ft)	300		500	200			150		400	195		365
Base Capacity (vph)	554	656	609	427	740		617	2445	1298	499	2398	1311
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.12	0.12	0.45	0.37		0.25	0.53	0.24	0.12	0.32	0.10

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 90.5

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 59.0%

ICU Level of Service B

Analysis Period (min) 15

Description: Main & Washington

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	298	26	26	309	16	12	0	20	8	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		185	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.987			0.991			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3557	0	1805	1880	0	1745	1536	0	1685	1473	0
Flt Permitted	0.063			0.525			0.721			0.732		
Satd. Flow (perm)	120	3557	0	998	1880	0	1324	1536	0	1298	1473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			10			620			559	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.50	0.94	0.84	0.64	0.88	0.67	0.54	0.25	0.56	0.50	0.25	0.60
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	349	34	45	386	26	24	0	39	18	0	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	383	0	45	412	0	24	39	0	18	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.0	64.0		82.4	82.4		7.3	7.3		7.3	7.3	
Actuated g/C Ratio	0.67	0.67		0.87	0.87		0.08	0.08		0.08	0.08	
v/c Ratio	0.05	0.16		0.05	0.25		0.24	0.06		0.18	0.09	
Control Delay	9.5	6.5		1.3	1.4		46.1	0.1		44.2	0.3	
Queue Delay	0.0	0.0		1.0	0.8		0.0	0.0		0.0	0.0	
Total Delay	9.5	6.5		2.2	2.1		46.1	0.1		44.2	0.3	
LOS	A	A		A	A		D	A		D	A	
Approach Delay		6.6			2.1			17.6			11.1	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	1	41		3	23		14	0		10	0	
Queue Length 95th (ft)	3	68		m5	41		23	0		18	0	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2400		853	1608		222	774		218	712	
Starvation Cap Reductn	0	0		673	858		0	0		0	0	
Spillback Cap Reductn	0	225		0	0		0	39		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.18		0.25	0.55		0.11	0.05		0.08	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.25

Intersection Signal Delay: 5.5

Intersection Capacity Utilization 37.8%

Analysis Period (min) 15

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

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings
3: Almiron/Entrance & Washington

4/11/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/11/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	298	24	22	280	71	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.918		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	1900	1615	1805	1900	1711	0	
Flt Permitted			0.464		0.981		
Satd. Flow (perm)	1900	1615	882	1900	1709	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		43			70		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.71	0.61	0.79	0.89	0.85	0.63	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	462	43	31	346	92	141	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	462	43	31	346	233	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/11/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	72.4	72.4	57.0	57.0	14.6		
Actuated g/C Ratio	0.76	0.76	0.60	0.60	0.15		
v/c Ratio	0.32	0.03	0.06	0.30	0.72		
Control Delay	6.1	2.2	9.8	11.0	38.8		
Queue Delay	0.6	0.4	0.0	0.0	0.0		
Total Delay	6.7	2.6	9.8	11.0	38.8		
LOS	A	A	A	B	D		
Approach Delay	6.3			10.9	38.8		
Approach LOS	A			B	D		
Queue Length 50th (ft)	123	0	8	100	94		
Queue Length 95th (ft)	157	11	19	161	148		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1540	1317	529	1140	368		
Starvation Cap Reductn	694	1051	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.55	0.16	0.06	0.30	0.63		

Intersection Summary

Area Type: Other
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 2 (2%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 14.7
 Intersection Capacity Utilization 36.6%
 Analysis Period (min) 15
 Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

→ ø2 (R) 55 s		↖ ø9 20 s
← ø6 (R) 55 s	→ ø8 20 s	

Lanes, Volumes, Timings

5: Springfield & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	12	285	42	1	85	199	6	80	76	232	10	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150		0		70	100		200	100	
Storage Lanes	1		1		1		1	1		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.906
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1805	1900	1615	0	1685	1773	1507	1685	1773	1507	1685	1607
Flt Permitted	0.603				0.284			0.703			0.700	
Satd. Flow (perm)	1146	1900	1615	0	504	1773	1507	1247	1773	1507	1241	1607
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			116				64			399		52
Link Speed (mph)		30				30			30			30
Link Distance (ft)		948				484			501			273
Travel Time (s)		21.5				11.0			11.4			6.2
Peak Hour Factor	0.60	0.65	0.70	0.25	0.82	0.87	0.56	0.77	0.95	0.64	0.50	0.93
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	482	66	4	114	252	12	114	88	399	22	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	482	66	0	118	252	12	114	88	399	22	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		12				10			10			10
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		10				10			10			10
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type	pm+pt	NA	Perm	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4			3	8			2			6
Permitted Phases	4		4	3	8		8	2		2	6	
Detector Phase	7	4	4	3	3	8	8	2	2	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	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	45.0	45.0	16.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	9.4%	52.9%	52.9%	18.8%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	4.0	41.0	41.0	12.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/11/2017

Lane Group	SBR
Lane Configurations	
Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Storage Length (ft)	100
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.66
Growth Factor	110%
Heavy Vehicles (%)	0%
Adj. Flow (vph)	52
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.09
Turning Speed (mph)	9
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	

Lanes, Volumes, Timings

5: Springfield & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0	11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0			0	0	0	0	0	0	0
Act Effct Green (s)	21.9	18.9	18.9		27.3	26.3	26.3	11.7	11.7	11.7	11.7	11.7
Actuated g/C Ratio	0.45	0.39	0.39		0.56	0.54	0.54	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.04	0.65	0.09		0.25	0.26	0.01	0.38	0.21	0.60	0.07	0.19
Control Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
LOS	A	B	A		A	A	A	C	B	A	B	B
Approach Delay		15.5				6.8			11.7			12.5
Approach LOS		B				A			B			B
Queue Length 50th (ft)	2	107	0		11	26	0	27	20	0	5	7
Queue Length 95th (ft)	7	157	0		34	100	0	70	64	1	13	42
Internal Link Dist (ft)		868				404			421			193
Turn Bay Length (ft)	150		150				70	100		200	100	
Base Capacity (vph)	581	1567	1352		641	1602	1368	601	855	933	598	802
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.05		0.18	0.16	0.01	0.19	0.10	0.43	0.04	0.10

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 48.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s



Lane Group	SBR
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	0.0	8.2	0.1	31
S. Main	1	38.4	54.6	0.1	9
Almiron	3	5.8	17.3	0.1	25
Cole	4	2.9	6.6	0.0	16
Springfield	5	7.8	27.9	0.2	23
Total		54.9	114.6	0.5	17

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	4.8	15.6	0.1	22
Cole	4	5.2	25.6	0.2	25
Entrance	3	2.0	5.8	0.0	18
N. Main	1	25.7	39.6	0.1	11
	16	2.1	18.7	0.1	26
Total		39.7	105.2	0.6	19

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	342	220	174	154	75	135	824	259	126	922	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	500		500	400		200	175		400	195		365
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1773	1507	1685	2830	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.485			0.124			0.094			0.113		
Satd. Flow (perm)	860	1773	1507	220	2830	0	179	3505	1615	206	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			50		50				203			120
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			672	
Travel Time (s)		16.2			14.0			12.1			15.3	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.86	0.85	0.81	0.84	0.79	0.78	0.84	0.90	0.81	0.88	0.97	0.88
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Parking (#/hr)					24							
Adj. Flow (vph)	193	443	299	228	214	106	177	1007	352	158	1046	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	443	299	228	320	0	177	1007	352	158	1046	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.09	1.09	1.09	1.27	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
Switch Phase												
Minimum Initial (s)	5.2	10.0	4.0	4.0	10.0		4.0	15.0	4.0	4.0	15.0	5.2
Minimum Split (s)	9.2	25.0	9.6	20.0	25.0		9.6	24.5	20.0	9.6	20.0	9.2
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	0.2	0.2	0.2	0.2	0.2		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	0.0	0.0	20.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.9	31.3	47.5	47.8	32.3		57.3	45.2	65.4	56.5	44.8	64.1
Actuated g/C Ratio	0.38	0.26	0.39	0.40	0.27		0.48	0.37	0.54	0.47	0.37	0.53
v/c Ratio	0.45	0.96	0.48	0.81	0.40		0.71	0.77	0.36	0.64	0.82	0.13
Control Delay	28.9	79.3	27.0	54.3	35.9		40.0	37.1	7.1	31.9	40.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	79.3	27.0	54.3	35.9		40.0	37.1	7.1	31.9	40.0	2.2
LOS	C	E	C	D	D		D	D	A	C	D	A
Approach Delay		52.2			43.6			30.6			35.6	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	94	337	141	121	88		76	355	56	64	378	0
Queue Length 95th (ft)	184	#629	231	#315	149		139	450	91	121	489	22
Internal Link Dist (ft)		634			536			453			592	
Turn Bay Length (ft)	500		500	400			175		400	195		365
Base Capacity (vph)	547	460	733	283	794		376	1799	969	373	1757	1041
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.96	0.41	0.81	0.40		0.47	0.56	0.36	0.42	0.60	0.12

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 120.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 38.4

Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	598	100	71	326	27	30	0	74	27	6	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		185	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.979			0.989			0.850			0.861	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3524	0	1805	1875	0	1745	1536	0	1685	1494	0
Flt Permitted	0.062			0.332			0.611			0.640		
Satd. Flow (perm)	118	3524	0	631	1875	0	1122	1536	0	1135	1494	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			12			400			88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	731	122	87	398	33	37	0	90	33	7	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	853	0	87	431	0	37	90	0	33	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.9	64.9		81.3	81.3		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.68	0.68		0.86	0.86		0.09	0.09		0.09	0.09	
v/c Ratio	0.28	0.35		0.16	0.27		0.38	0.18		0.33	0.45	
Control Delay	20.4	7.7		2.2	1.8		50.8	0.8		48.6	17.3	
Queue Delay	0.0	0.1		1.1	0.8		0.0	0.0		0.0	0.0	
Total Delay	20.4	7.7		3.3	2.5		50.8	0.8		48.6	17.3	
LOS	C	A		A	A		D	A		D	B	
Approach Delay		8.0			2.7			15.4			25.4	
Approach LOS		A			A			B			C	
Queue Length 50th (ft)	5	100		6	31		22	0		19	4	
Queue Length 95th (ft)	31	176		16	54		52	0		47	50	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2416		539	1604		188	591		191	324	
Starvation Cap Reductn	0	0		301	838		0	0		0	0	
Spillback Cap Reductn	0	324		0	0		0	36		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.28	0.41		0.37	0.56		0.20	0.16		0.17	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.3

Intersection Capacity Utilization 44.5%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings
3: Almiron/Entrance & Washington

4/11/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/11/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	601	101	44	352	72	50	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.941		
Flt Protected			0.950		0.973		
Satd. Flow (prot)	1900	1615	1805	1900	1740	0	
Flt Permitted			0.345		0.973		
Satd. Flow (perm)	1900	1615	656	1900	1736	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		176			36		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.98	0.63	0.73	0.91	0.82	0.72	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	675	176	66	425	97	76	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	675	176	66	425	173	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/11/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	74.2	74.2	55.0	55.0	12.8		
Actuated g/C Ratio	0.78	0.78	0.58	0.58	0.13		
v/c Ratio	0.46	0.14	0.17	0.39	0.65		
Control Delay	11.2	3.8	12.0	12.8	41.5		
Queue Delay	0.7	0.9	0.0	0.0	0.0		
Total Delay	11.9	4.7	12.0	12.8	41.5		
LOS	B	A	B	B	D		
Approach Delay	10.4			12.7	41.5		
Approach LOS	B			B	D		
Queue Length 50th (ft)	265	17	18	131	79		
Queue Length 95th (ft)	443	31	35	223	121		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1496	1317	382	1106	331		
Starvation Cap Reductn	473	906	0	0	0		
Spillback Cap Reductn	0	0	0	6	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.66	0.43	0.17	0.39	0.52		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

→ ø2 (R)		↖ ø9
55 s		20 s
← ø6 (R)	→ ø8	
55 s	20 s	

Lanes, Volumes, Timings

5: Springfield & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	546	179	170	274	15	80	57	139	12	111	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150	0		70	100		200	100		100
Storage Lanes	1		1	1		1	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1685	1773	1507	1685	1773	1507	1685	1711	0
Flt Permitted	0.559			0.189			0.558			0.714		
Satd. Flow (perm)	1062	1900	1615	335	1773	1507	990	1773	1507	1266	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			64			194		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		948			484			501			273	
Travel Time (s)		21.5			11.0			11.4			6.2	
Peak Hour Factor	0.64	0.92	0.78	0.85	0.90	0.51	0.83	0.95	0.79	0.38	0.90	0.52
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	653	252	220	335	32	106	66	194	35	136	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	653	252	220	335	32	106	66	194	35	178	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	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	4.0	4.0	
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	8.0	45.0	45.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0	
Total Split (%)	9.4%	52.9%	52.9%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%	
Maximum Green (s)	4.0	41.0	41.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	

Lanes, Volumes, Timings

5: Springfield & Washington

4/11/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	
Act Effct Green (s)	32.5	28.2	28.2	41.5	39.0	39.0	12.8	12.8	12.8	12.8	12.8	
Actuated g/C Ratio	0.52	0.45	0.45	0.66	0.62	0.62	0.20	0.20	0.20	0.20	0.20	
v/c Ratio	0.05	0.77	0.30	0.53	0.31	0.03	0.53	0.18	0.42	0.14	0.49	
Control Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
LOS	A	C	A	A	A	A	D	C	A	C	C	
Approach Delay		16.7			8.2			19.0			27.2	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	3	187	6	25	42	0	36	21	0	11	53	
Queue Length 95th (ft)	9	393	31	61	136	0	90	61	33	16	133	
Internal Link Dist (ft)		868			404			421			193	
Turn Bay Length (ft)	150		150			70	100		200	100		
Base Capacity (vph)	598	1326	1193	498	1409	1211	339	607	644	434	597	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.49	0.21	0.44	0.24	0.03	0.31	0.11	0.30	0.08	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 63

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	0.5	9.0	0.1	30
S. Main	1	96.2	112.1	0.1	4
Almiron	3	8.1	22.0	0.1	19
Cole	4	2.6	6.3	0.0	16
Springfield	5	14.8	34.8	0.2	19
Total		122.2	184.2	0.5	10

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	5.7	16.7	0.1	20
Cole	4	6.8	27.0	0.2	24
Entrance	3	2.5	6.4	0.0	16
N. Main	1	35.9	49.2	0.1	9
	16	2.0	18.4	0.1	26
Total		52.9	117.7	0.6	17

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	54	45	144	143	59	130	993	192	45	631	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	300		500	200		200	150		400	195		365
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1773	1507	1685	1695	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.591			0.515			0.241			0.093		
Satd. Flow (perm)	1048	1773	1507	913	1695	0	458	3505	1615	170	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76		10				306			129
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			433	
Travel Time (s)		16.2			14.0			12.1			9.8	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.81	0.75	0.65	0.82	0.78	0.92	0.93	0.84	0.69	0.80	0.90	0.64
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	39	79	76	193	202	71	154	1300	306	62	771	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	79	76	193	273	0	154	1300	306	62	771	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
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	4.0
Minimum Split (s)	8.0	25.0	8.0	8.0	20.0		8.0	20.0	8.0	8.0	20.0	8.0
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.4	12.8	23.3	33.4	21.8		53.1	45.8	70.5	50.0	41.8	53.4
Actuated g/C Ratio	0.19	0.13	0.24	0.34	0.22		0.55	0.47	0.73	0.52	0.43	0.55
v/c Ratio	0.16	0.34	0.18	0.41	0.70		0.41	0.79	0.24	0.28	0.52	0.14
Control Delay	29.1	47.2	9.0	30.9	48.7		12.3	25.6	1.2	11.8	20.7	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	47.2	9.0	30.9	48.7		12.3	25.6	1.2	11.8	20.7	2.0
LOS	C	D	A	C	D		B	C	A	B	C	A
Approach Delay		28.6			41.3			20.2			17.6	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	17	45	0	92	157		40	353	0	15	173	0
Queue Length 95th (ft)	44	87	14	167	#272		70	419	3	29	241	5
Internal Link Dist (ft)		634			536			453			353	
Turn Bay Length (ft)	300		500	200			150		400	195		365
Base Capacity (vph)	523	587	602	479	388		563	2284	1275	448	2240	1234
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13	0.13	0.40	0.70		0.27	0.57	0.24	0.14	0.34	0.10

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 97

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 22.8

Intersection LOS: C

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	298	26	26	309	16	12	0	20	8	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		185	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.987			0.991			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3557	0	1805	1880	0	1745	1536	0	1685	1473	0
Flt Permitted	0.063			0.525			0.721			0.732		
Satd. Flow (perm)	120	3557	0	998	1880	0	1324	1536	0	1298	1473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			10			620			559	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.50	0.94	0.84	0.64	0.88	0.67	0.54	0.25	0.56	0.50	0.25	0.60
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	349	34	45	386	26	24	0	39	18	0	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	383	0	45	412	0	24	39	0	18	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.0	64.0		82.4	82.4		7.3	7.3		7.3	7.3	
Actuated g/C Ratio	0.67	0.67		0.87	0.87		0.08	0.08		0.08	0.08	
v/c Ratio	0.05	0.16		0.05	0.25		0.24	0.06		0.18	0.09	
Control Delay	9.5	6.5		1.3	1.4		46.1	0.1		44.2	0.3	
Queue Delay	0.0	0.0		1.0	0.8		0.0	0.0		0.0	0.0	
Total Delay	9.5	6.5		2.2	2.1		46.1	0.1		44.2	0.3	
LOS	A	A		A	A		D	A		D	A	
Approach Delay		6.6			2.1			17.6			11.1	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	1	41		3	23		14	0		10	0	
Queue Length 95th (ft)	3	68		m5	41		23	0		18	0	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2400		853	1608		222	774		218	712	
Starvation Cap Reductn	0	0		673	858		0	0		0	0	
Spillback Cap Reductn	0	225		0	0		0	39		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.18		0.25	0.55		0.11	0.05		0.08	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.25

Intersection Signal Delay: 5.5

Intersection Capacity Utilization 37.8%

Analysis Period (min) 15

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

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/17/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	298	24	22	280	71	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.918		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	1900	1615	1805	1900	1711	0	
Flt Permitted			0.464		0.981		
Satd. Flow (perm)	1900	1615	882	1900	1709	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		43			70		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.71	0.61	0.79	0.89	0.85	0.63	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	462	43	31	346	92	141	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	462	43	31	346	233	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/17/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	72.4	72.4	57.0	57.0	14.6		
Actuated g/C Ratio	0.76	0.76	0.60	0.60	0.15		
v/c Ratio	0.32	0.03	0.06	0.30	0.72		
Control Delay	6.1	2.2	9.8	11.0	38.8		
Queue Delay	0.6	0.4	0.0	0.0	0.0		
Total Delay	6.7	2.6	9.8	11.0	38.8		
LOS	A	A	A	B	D		
Approach Delay	6.3			10.9	38.8		
Approach LOS	A			B	D		
Queue Length 50th (ft)	123	0	8	100	94		
Queue Length 95th (ft)	157	11	19	161	148		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1540	1317	529	1140	368		
Starvation Cap Reductn	694	1051	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.55	0.16	0.06	0.30	0.63		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 36.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

→ ø2 (R)		↖ ø9
55 s		20 s
← ø6 (R)	→ ø8	
55 s	20 s	

Lanes, Volumes, Timings
5: Springfield & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	12	285	42	1	85	199	6	80	76	232	10	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150		0		70	100		200	100	
Storage Lanes	1		1		1		1	1		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.906
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1805	1900	1615	0	1685	1773	1507	1685	1773	1507	1685	1607
Flt Permitted	0.603				0.284			0.703			0.700	
Satd. Flow (perm)	1146	1900	1615	0	504	1773	1507	1247	1773	1507	1241	1607
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			116				64			399		52
Link Speed (mph)		30				30			30			30
Link Distance (ft)		948				484			501			273
Travel Time (s)		21.5				11.0			11.4			6.2
Peak Hour Factor	0.60	0.65	0.70	0.25	0.82	0.87	0.56	0.77	0.95	0.64	0.50	0.93
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	482	66	4	114	252	12	114	88	399	22	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	482	66	0	118	252	12	114	88	399	22	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		12				10			10			10
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		10				10			10			10
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type	pm+pt	NA	Perm	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4			3	8			2			6
Permitted Phases	4		4	3	8		8	2		2	6	
Detector Phase	7	4	4	3	3	8	8	2	2	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	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	45.0	45.0	16.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	9.4%	52.9%	52.9%	18.8%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	4.0	41.0	41.0	12.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/17/2017

Lane Group	SBR
Lane Configurations	
Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Storage Length (ft)	100
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.66
Growth Factor	110%
Heavy Vehicles (%)	0%
Adj. Flow (vph)	52
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.09
Turning Speed (mph)	9
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	

Lanes, Volumes, Timings

5: Springfield & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0	11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0			0	0	0	0	0	0	0
Act Effct Green (s)	21.9	18.9	18.9		27.3	26.3	26.3	11.7	11.7	11.7	11.7	11.7
Actuated g/C Ratio	0.45	0.39	0.39		0.56	0.54	0.54	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.04	0.65	0.09		0.25	0.26	0.01	0.38	0.21	0.60	0.07	0.19
Control Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
LOS	A	B	A		A	A	A	C	B	A	B	B
Approach Delay		15.5				6.8			11.7			12.5
Approach LOS		B				A			B			B
Queue Length 50th (ft)	2	107	0		11	26	0	27	20	0	5	7
Queue Length 95th (ft)	7	157	0		34	100	0	70	64	1	13	42
Internal Link Dist (ft)		868				404			421			193
Turn Bay Length (ft)	150		150				70	100		200	100	
Base Capacity (vph)	581	1567	1352		641	1602	1368	601	855	933	598	802
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.05		0.18	0.16	0.01	0.19	0.10	0.43	0.04	0.10

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 48.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s



Lane Group	SBR
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	0.0	8.1	0.1	32
S. Main	1	37.6	53.6	0.1	9
Almiron	3	4.1	15.1	0.1	28
Cole	4	2.5	6.1	0.0	17
Springfield	5	8.2	28.3	0.2	23
Total		52.4	111.2	0.5	17

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	4.9	15.7	0.1	21
Cole	4	4.6	25.1	0.2	26
Entrance	3	1.6	5.5	0.0	19
N. Main	1	33.2	47.0	0.1	9
	16	2.4	19.0	0.1	26
Total		46.7	112.1	0.6	18

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	342	220	174	154	75	135	824	259	126	922	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Storage Length (ft)	500		500	400		200	175		400	195		365
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1773	1507	1685	1674	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.312			0.124			0.094			0.113		
Satd. Flow (perm)	553	1773	1507	220	1674	0	179	3505	1615	206	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			50		14				203			120
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			672	
Travel Time (s)		16.2			14.0			12.1			15.3	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.86	0.85	0.81	0.84	0.79	0.78	0.84	0.90	0.81	0.88	0.97	0.88
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Adj. Flow (vph)	193	443	299	228	214	106	177	1007	352	158	1046	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	443	299	228	320	0	177	1007	352	158	1046	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
Switch Phase												
Minimum Initial (s)	5.2	10.0	4.0	4.0	10.0		4.0	15.0	4.0	4.0	15.0	5.2
Minimum Split (s)	9.2	25.0	9.6	20.0	25.0		9.6	24.5	20.0	9.6	20.0	9.2
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	0.2	0.2	0.2	0.2	0.2		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	0.0	0.0	20.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.9	31.3	47.5	47.8	32.3		57.3	45.2	65.4	56.5	44.8	64.1
Actuated g/C Ratio	0.38	0.26	0.39	0.40	0.27		0.48	0.37	0.54	0.47	0.37	0.53
v/c Ratio	0.55	0.96	0.48	0.81	0.70		0.71	0.77	0.36	0.64	0.82	0.13
Control Delay	31.6	79.3	27.0	54.3	50.3		40.0	37.1	7.1	31.9	40.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	79.3	27.0	54.3	50.3		40.0	37.1	7.1	31.9	40.0	2.2
LOS	C	E	C	D	D		D	D	A	C	D	A
Approach Delay		52.7			52.0			30.6			35.6	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	94	337	141	121	212		76	355	56	64	378	0
Queue Length 95th (ft)	184	#629	231	#315	#422		139	450	91	121	489	22
Internal Link Dist (ft)		634			536			453			592	
Turn Bay Length (ft)	500		500	400			175		400	195		365
Base Capacity (vph)	482	460	733	283	458		376	1799	969	373	1757	1041
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.96	0.41	0.81	0.70		0.47	0.56	0.36	0.42	0.60	0.12

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 120.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 39.6

Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	598	100	71	326	27	30	0	74	27	6	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		185	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.979			0.989			0.850			0.861	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3524	0	1805	1875	0	1745	1536	0	1685	1494	0
Flt Permitted	0.062			0.332			0.611			0.640		
Satd. Flow (perm)	118	3524	0	631	1875	0	1122	1536	0	1135	1494	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			12			400			88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	731	122	87	398	33	37	0	90	33	7	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	853	0	87	431	0	37	90	0	33	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.9	64.9		81.3	81.3		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.68	0.68		0.86	0.86		0.09	0.09		0.09	0.09	
v/c Ratio	0.28	0.35		0.16	0.27		0.38	0.18		0.33	0.45	
Control Delay	20.4	7.7		2.2	1.8		50.8	0.8		48.6	17.3	
Queue Delay	0.0	0.1		1.1	0.8		0.0	0.0		0.0	0.0	
Total Delay	20.4	7.7		3.3	2.5		50.8	0.8		48.6	17.3	
LOS	C	A		A	A		D	A		D	B	
Approach Delay		8.0			2.7			15.4			25.4	
Approach LOS		A			A			B			C	
Queue Length 50th (ft)	5	100		6	31		22	0		19	4	
Queue Length 95th (ft)	31	176		16	54		52	0		47	50	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2416		539	1604		188	591		191	324	
Starvation Cap Reductn	0	0		301	838		0	0		0	0	
Spillback Cap Reductn	0	324		0	0		0	36		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.28	0.41		0.37	0.56		0.20	0.16		0.17	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.3

Intersection Capacity Utilization 44.5%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/17/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/17/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	601	101	44	352	72	50	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.941		
Flt Protected			0.950		0.973		
Satd. Flow (prot)	1900	1615	1805	1900	1740	0	
Flt Permitted			0.345		0.973		
Satd. Flow (perm)	1900	1615	656	1900	1736	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		176			36		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.98	0.63	0.73	0.91	0.82	0.72	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	675	176	66	425	97	76	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	675	176	66	425	173	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/17/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	74.2	74.2	55.0	55.0	12.8		
Actuated g/C Ratio	0.78	0.78	0.58	0.58	0.13		
v/c Ratio	0.46	0.14	0.17	0.39	0.65		
Control Delay	11.2	3.8	12.0	12.8	41.5		
Queue Delay	0.7	0.9	0.0	0.0	0.0		
Total Delay	11.9	4.7	12.0	12.8	41.5		
LOS	B	A	B	B	D		
Approach Delay	10.4			12.7	41.5		
Approach LOS	B			B	D		
Queue Length 50th (ft)	265	17	18	131	79		
Queue Length 95th (ft)	443	31	35	223	121		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1496	1317	382	1106	331		
Starvation Cap Reductn	473	906	0	0	0		
Spillback Cap Reductn	0	0	0	6	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.66	0.43	0.17	0.39	0.52		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

→ ø2 (R)		↖ ø9
55 s		20 s
← ø6 (R)	→ ø8	
55 s	20 s	

Lanes, Volumes, Timings

5: Springfield & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	546	179	170	274	15	80	57	139	12	111	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150	0		70	100		200	100		100
Storage Lanes	1		1	1		1	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1685	1773	1507	1685	1773	1507	1685	1711	0
Flt Permitted	0.559			0.189			0.558			0.714		
Satd. Flow (perm)	1062	1900	1615	335	1773	1507	990	1773	1507	1266	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			64			194		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		948			484			501			273	
Travel Time (s)		21.5			11.0			11.4			6.2	
Peak Hour Factor	0.64	0.92	0.78	0.85	0.90	0.51	0.83	0.95	0.79	0.38	0.90	0.52
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	653	252	220	335	32	106	66	194	35	136	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	653	252	220	335	32	106	66	194	35	178	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	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	4.0	4.0	
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	8.0	45.0	45.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0	
Total Split (%)	9.4%	52.9%	52.9%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%	
Maximum Green (s)	4.0	41.0	41.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	

Lanes, Volumes, Timings

5: Springfield & Washington

4/17/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	
Act Effct Green (s)	32.5	28.2	28.2	41.5	39.0	39.0	12.8	12.8	12.8	12.8	12.8	
Actuated g/C Ratio	0.52	0.45	0.45	0.66	0.62	0.62	0.20	0.20	0.20	0.20	0.20	
v/c Ratio	0.05	0.77	0.30	0.53	0.31	0.03	0.53	0.18	0.42	0.14	0.49	
Control Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
LOS	A	C	A	A	A	A	D	C	A	C	C	
Approach Delay		16.7			8.2			19.0			27.2	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	3	187	6	25	42	0	36	21	0	11	53	
Queue Length 95th (ft)	9	393	31	61	136	0	90	61	33	16	133	
Internal Link Dist (ft)		868			404			421			193	
Turn Bay Length (ft)	150		150			70	100		200	100		
Base Capacity (vph)	598	1326	1193	498	1409	1211	339	607	644	434	597	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.49	0.21	0.44	0.24	0.03	0.31	0.11	0.30	0.08	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 63

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	1.2	9.8	0.1	27
S. Main	1	115.6	131.4	0.1	4
Almiron	3	8.8	22.9	0.1	18
Cole	4	2.7	6.5	0.0	16
Springfield	5	15.3	35.2	0.2	19
Total		143.6	205.7	0.5	9

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	5.1	15.9	0.1	21
Cole	4	6.9	27.1	0.2	24
Entrance	3	2.0	5.9	0.0	17
N. Main	1	56.7	69.9	0.1	6
	16	2.4	18.9	0.1	26
Total		73.1	137.8	0.6	14

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	54	45	144	143	59	130	993	192	45	631	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	10	10	10	12	12	12	12	12	12
Storage Length (ft)	500		500	400		200	175		400	195		365
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1837	1561	1685	1322	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.591			0.514			0.241			0.093		
Satd. Flow (perm)	1123	1837	1561	911	1322	0	458	3505	1615	170	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76		10				306			129
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			672	
Travel Time (s)		16.2			14.0			12.1			15.3	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.81	0.75	0.65	0.82	0.78	0.92	0.93	0.84	0.69	0.80	0.90	0.64
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Parking (#/hr)					24							
Adj. Flow (vph)	39	79	76	193	202	71	154	1300	306	62	771	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	79	76	193	273	0	154	1300	306	62	771	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.04	1.04	1.09	1.49	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
Switch Phase												
Minimum Initial (s)	5.2	10.0	4.0	4.0	10.0		4.0	15.0	4.0	4.0	15.0	5.2
Minimum Split (s)	9.2	25.0	9.6	20.0	25.0		9.6	24.5	20.0	9.6	20.0	9.2
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	0.2	0.2	0.2	0.2	0.2		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	0.0	0.0	20.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.2	13.7	23.2	33.3	21.8		53.0	45.7	70.5	50.0	41.8	53.3
Actuated g/C Ratio	0.19	0.14	0.24	0.34	0.23		0.55	0.47	0.73	0.52	0.43	0.55
v/c Ratio	0.15	0.31	0.18	0.41	0.90		0.41	0.79	0.24	0.28	0.52	0.14
Control Delay	28.9	46.2	8.9	30.9	71.2		12.2	25.5	1.2	11.8	20.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	46.2	8.9	30.9	71.2		12.2	25.5	1.2	11.8	20.6	2.0
LOS	C	D	A	C	E		B	C	A	B	C	A
Approach Delay		28.1			54.5			20.1			17.5	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	17	45	0	92	165		40	351	0	15	172	0
Queue Length 95th (ft)	44	87	14	167	#325		70	417	3	29	239	5
Internal Link Dist (ft)		634			536			453			592	
Turn Bay Length (ft)	500		500	400			175		400	195		365
Base Capacity (vph)	560	609	621	478	304		564	2288	1276	448	2245	1235
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13	0.12	0.40	0.90		0.27	0.57	0.24	0.14	0.34	0.10

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 96.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 64.0%

ICU Level of Service B

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	298	26	26	309	16	12	0	20	8	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		75	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.987			0.991			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3557	0	1805	1880	0	1745	1536	0	1685	1473	0
Flt Permitted	0.063			0.525			0.721			0.732		
Satd. Flow (perm)	120	3557	0	998	1880	0	1324	1536	0	1298	1473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			10			620			559	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.50	0.94	0.84	0.64	0.88	0.67	0.54	0.25	0.56	0.50	0.25	0.60
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	349	34	45	386	26	24	0	39	18	0	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	383	0	45	412	0	24	39	0	18	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.0	64.0		82.4	82.4		7.3	7.3		7.3	7.3	
Actuated g/C Ratio	0.67	0.67		0.87	0.87		0.08	0.08		0.08	0.08	
v/c Ratio	0.05	0.16		0.05	0.25		0.24	0.06		0.18	0.09	
Control Delay	9.5	6.5		1.3	1.4		46.1	0.1		44.2	0.3	
Queue Delay	0.0	0.0		1.0	0.8		0.0	0.0		0.0	0.0	
Total Delay	9.5	6.5		2.2	2.1		46.1	0.1		44.2	0.3	
LOS	A	A		A	A		D	A		D	A	
Approach Delay		6.6			2.1			17.6			11.1	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)	1	41		3	23		14	0		10	0	
Queue Length 95th (ft)	3	68		m5	41		23	0		18	0	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2400		853	1608		222	774		218	712	
Starvation Cap Reductn	0	0		673	858		0	0		0	0	
Spillback Cap Reductn	0	225		0	0		0	39		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.18		0.25	0.55		0.11	0.05		0.08	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.25

Intersection Signal Delay: 5.5

Intersection Capacity Utilization 37.8%

Analysis Period (min) 15

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

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/25/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	298	24	22	280	71	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.918		
Flt Protected			0.950		0.981		
Satd. Flow (prot)	1900	1615	1805	1900	1711	0	
Flt Permitted			0.464		0.981		
Satd. Flow (perm)	1900	1615	882	1900	1709	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		43			70		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.71	0.61	0.79	0.89	0.85	0.63	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	462	43	31	346	92	141	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	462	43	31	346	233	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/25/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	72.4	72.4	57.0	57.0	14.6		
Actuated g/C Ratio	0.76	0.76	0.60	0.60	0.15		
v/c Ratio	0.32	0.03	0.06	0.30	0.72		
Control Delay	6.1	2.2	9.8	11.0	38.8		
Queue Delay	0.6	0.4	0.0	0.0	0.0		
Total Delay	6.7	2.6	9.8	11.0	38.8		
LOS	A	A	A	B	D		
Approach Delay	6.3			10.9	38.8		
Approach LOS	A			B	D		
Queue Length 50th (ft)	123	0	8	100	94		
Queue Length 95th (ft)	157	11	19	161	148		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1540	1317	529	1140	368		
Starvation Cap Reductn	694	1051	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.55	0.16	0.06	0.30	0.63		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 36.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

→ ø2 (R)		↖ ø9
55 s		20 s
← ø6 (R)	→ ø8	
55 s	20 s	

Lanes, Volumes, Timings

5: Springfield & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	12	285	42	1	85	199	6	80	76	232	10	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150		0		70	100		200	100	
Storage Lanes	1		1		1		1	1		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.906
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1805	1900	1615	0	1685	1773	1507	1685	1773	1507	1685	1607
Flt Permitted	0.603				0.284			0.703			0.700	
Satd. Flow (perm)	1146	1900	1615	0	504	1773	1507	1247	1773	1507	1241	1607
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			116				64			399		52
Link Speed (mph)		30				30			30			30
Link Distance (ft)		948				484			501			273
Travel Time (s)		21.5				11.0			11.4			6.2
Peak Hour Factor	0.60	0.65	0.70	0.25	0.82	0.87	0.56	0.77	0.95	0.64	0.50	0.93
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	482	66	4	114	252	12	114	88	399	22	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	482	66	0	118	252	12	114	88	399	22	83
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		12				10			10			10
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		10				10			10			10
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Turn Type	pm+pt	NA	Perm	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4			3	8			2			6
Permitted Phases	4		4	3	8		8	2		2	6	
Detector Phase	7	4	4	3	3	8	8	2	2	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	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	45.0	45.0	16.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	9.4%	52.9%	52.9%	18.8%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	4.0	41.0	41.0	12.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lanes, Volumes, Timings

5: Springfield & Washington

4/25/2017

Lane Group	SBR
Lane Configurations	
Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Storage Length (ft)	100
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.66
Growth Factor	110%
Heavy Vehicles (%)	0%
Adj. Flow (vph)	52
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.09
Turning Speed (mph)	9
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	

Lanes, Volumes, Timings

5: Springfield & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0	11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0			0	0	0	0	0	0	0
Act Effect Green (s)	21.9	18.9	18.9		27.3	26.3	26.3	11.7	11.7	11.7	11.7	11.7
Actuated g/C Ratio	0.45	0.39	0.39		0.56	0.54	0.54	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.04	0.65	0.09		0.25	0.26	0.01	0.38	0.21	0.60	0.07	0.19
Control Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	17.9	1.1		6.2	7.4	0.0	22.9	19.3	6.9	18.8	10.8
LOS	A	B	A		A	A	A	C	B	A	B	B
Approach Delay		15.5				6.8			11.7			12.5
Approach LOS		B				A			B			B
Queue Length 50th (ft)	2	107	0		11	26	0	27	20	0	5	7
Queue Length 95th (ft)	7	157	0		34	100	0	70	64	1	13	42
Internal Link Dist (ft)		868				404			421			193
Turn Bay Length (ft)	150		150				70	100		200	100	
Base Capacity (vph)	581	1567	1352		641	1602	1368	601	855	933	598	802
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.05		0.18	0.16	0.01	0.19	0.10	0.43	0.04	0.10

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 48.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s



Lane Group	SBR
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

16: Washington

4/25/2017

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (vph)	128	0	0	348	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1773	0	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1773	0	0
Right Turn on Red	Yes			Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	706			714	208	
Travel Time (s)	16.0			16.2	4.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	156	0	0	425	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	0	0	425	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)		9	15		15	9
Turn Type	NA			NA		
Protected Phases	4			8		
Permitted Phases						
Detector Phase	4			8		
Switch Phase						
Minimum Initial (s)	4.0			4.0		
Minimum Split (s)	20.0			20.0		
Total Split (s)	20.0			20.0		
Total Split (%)	100.0%			100.0%		
Maximum Green (s)	16.0			16.0		
Yellow Time (s)	3.0			3.0		
All-Red Time (s)	1.0			1.0		
Lost Time Adjust (s)	0.0			0.0		
Total Lost Time (s)	4.0			4.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			None		
Walk Time (s)	5.0			5.0		
Flash Dont Walk (s)	11.0			11.0		
Pedestrian Calls (#/hr)	0			0		

Lanes, Volumes, Timings
16: Washington

4/25/2017

	→	↗	↖	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Act Effect Green (s)	10.5			11.0		
Actuated g/C Ratio	0.80			0.83		
v/c Ratio	0.11			0.29		
Control Delay	0.3			0.8		
Queue Delay	0.0			0.0		
Total Delay	0.3			0.8		
LOS	A			A		
Approach Delay	0.3			0.8		
Approach LOS	A			A		
Queue Length 50th (ft)	0			0		
Queue Length 95th (ft)	0			0		
Internal Link Dist (ft)	626			634	128	
Turn Bay Length (ft)						
Base Capacity (vph)	1771			1771		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.09			0.24		

Intersection Summary

Area Type: Other

Cycle Length: 20

Actuated Cycle Length: 13.2

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 0.6

Intersection LOS: A

Intersection Capacity Utilization 23.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 16: Washington

→ Ø4	
20 s	
← Ø8	
20 s	

Arterial Level of Service
2 Lane + TWLTL To Spinder 0.5% Growth

4/25/2017

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	0.9	7.1	0.1	27
S. Main	1	34.5	49.4	0.1	10
Almiron	3	4.2	15.3	0.1	28
Cole	4	3.1	6.6	0.0	16
Springfield	5	7.8	28.0	0.2	23
Total		50.5	106.4	0.5	17

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	4.5	15.2	0.1	22
Cole	4	4.6	24.9	0.2	26
Entrance	3	1.6	5.5	0.0	19
N. Main	1	33.9	47.5	0.1	9
	16	3.0	19.1	0.1	25
Total		47.7	112.3	0.6	18

Lanes, Volumes, Timings
1: S. Main/N. Main & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	342	220	174	154	75	135	824	259	126	922	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	10	10	10	12	12	12	12	12	12
Storage Length (ft)	500		500	400		200	175		400	195		365
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850		0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1837	1561	1685	1305	0	1805	3505	1615	1736	3438	1599
Flt Permitted	0.328			0.121			0.094			0.113		
Satd. Flow (perm)	623	1837	1561	215	1305	0	179	3505	1615	206	3438	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			50		14				203			120
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		714			616			533			672	
Travel Time (s)		16.2			14.0			12.1			15.3	
Confl. Bikes (#/hr)								2				
Peak Hour Factor	0.86	0.85	0.81	0.84	0.79	0.78	0.84	0.90	0.81	0.88	0.97	0.88
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	4%	5%	1%
Parking (#/hr)					24							
Adj. Flow (vph)	193	443	299	228	214	106	177	1007	352	158	1046	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	443	299	228	320	0	177	1007	352	158	1046	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.04	1.04	1.09	1.49	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	1	3	8		1	6	3	5	2	7
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	7	4	1	3	8		1	6	3	5	2	7
Switch Phase												
Minimum Initial (s)	5.2	10.0	4.0	4.0	10.0		4.0	15.0	4.0	4.0	15.0	5.2
Minimum Split (s)	9.2	25.0	9.6	20.0	25.0		9.6	24.5	20.0	9.6	20.0	9.2
Total Split (s)	30.0	35.0	25.0	20.0	25.0		25.0	65.0	20.0	25.0	65.0	30.0
Total Split (%)	20.7%	24.1%	17.2%	13.8%	17.2%		17.2%	44.8%	13.8%	17.2%	44.8%	20.7%
Maximum Green (s)	26.0	31.0	21.0	16.0	21.0		21.0	61.0	16.0	21.0	61.0	26.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings

1: S. Main/N. Main & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	0.2	0.2	0.2	0.2	0.2		0.2	3.0	0.2	0.2	3.0	0.2
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	0.0	0.0	20.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	15.0	0.0	0.0	15.0	0.0
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	None
Walk Time (s)		5.0			5.0			5.0			5.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.4	31.3	47.5	48.4	33.0		57.3	45.2	65.4	56.5	44.8	63.3
Actuated g/C Ratio	0.38	0.26	0.39	0.40	0.27		0.48	0.37	0.54	0.47	0.37	0.52
v/c Ratio	0.51	0.93	0.46	0.81	0.87		0.71	0.77	0.36	0.64	0.82	0.13
Control Delay	30.3	72.2	26.5	54.2	66.5		40.0	37.1	7.1	31.9	40.0	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	72.2	26.5	54.2	66.5		40.0	37.1	7.1	31.9	40.0	2.3
LOS	C	E	C	D	E		D	D	A	C	D	A
Approach Delay		48.9			61.4			30.6			35.6	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)	93	333	139	121	226		76	355	56	64	378	0
Queue Length 95th (ft)	182	#616	229	#313	#470		139	450	91	121	489	23
Internal Link Dist (ft)		634			536			453			592	
Turn Bay Length (ft)	500		500	400			175		400	195		365
Base Capacity (vph)	523	477	758	283	367		376	1799	969	373	1757	1041
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.93	0.39	0.81	0.87		0.47	0.56	0.36	0.42	0.60	0.12

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 120.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 39.9

Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

Description: Main & Washington

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S. Main/N. Main & Washington

 ø1	 ø2	 ø3	 ø4
25 s	65 s	20 s	35 s
 ø5	 ø6	 ø7	 ø8
25 s	65 s	30 s	25 s

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	598	100	71	326	27	30	0	74	27	6	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Storage Length (ft)	50		75	0		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.979			0.989			0.850			0.861	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3524	0	1805	1875	0	1745	1536	0	1685	1494	0
Flt Permitted	0.062			0.332			0.611			0.640		
Satd. Flow (perm)	118	3524	0	631	1875	0	1122	1536	0	1135	1494	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			12			400			88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		616			152			380			141	
Travel Time (s)		14.0			3.5			8.6			3.2	
Confl. Peds. (#/hr)	1					2						1
Confl. Bikes (#/hr)			1						3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	731	122	87	398	33	37	0	90	33	7	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	853	0	87	431	0	37	90	0	33	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			-10	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6 9			8			4	
Permitted Phases	2			6 9			8			4		
Detector Phase	2	2		6 9	6 9		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0					1.0	1.0		4.0	4.0	
Minimum Split (s)	29.0	29.0					20.0	20.0		20.0	20.0	
Total Split (s)	55.0	55.0					20.0	20.0		20.0	20.0	
Total Split (%)	57.9%	57.9%					21.1%	21.1%		21.1%	21.1%	
Maximum Green (s)	51.0	51.0					16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0					3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0					1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0					0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

Lane Group	ø6	ø9
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	6	9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	39.0	8.0
Total Split (s)	55.0	20.0
Total Split (%)	58%	21%
Maximum Green (s)	51.0	16.0
Yellow Time (s)	3.0	3.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		

Lanes, Volumes, Timings

3: Almiron/Entrance & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min					None	None		None	None	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)	64.9	64.9		81.3	81.3		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.68	0.68		0.86	0.86		0.09	0.09		0.09	0.09	
v/c Ratio	0.28	0.35		0.16	0.27		0.38	0.18		0.33	0.45	
Control Delay	20.4	7.7		2.2	1.8		50.8	0.8		48.6	17.3	
Queue Delay	0.0	0.1		1.1	0.8		0.0	0.0		0.0	0.0	
Total Delay	20.4	7.7		3.3	2.5		50.8	0.8		48.6	17.3	
LOS	C	A		A	A		D	A		D	B	
Approach Delay		8.0			2.7			15.4			25.4	
Approach LOS		A			A			B			C	
Queue Length 50th (ft)	5	100		6	31		22	0		19	4	
Queue Length 95th (ft)	31	176		16	54		52	0		47	50	
Internal Link Dist (ft)		536			72			300			61	
Turn Bay Length (ft)	50											
Base Capacity (vph)	80	2416		539	1604		188	591		191	324	
Starvation Cap Reductn	0	0		301	838		0	0		0	0	
Spillback Cap Reductn	0	324		0	0		0	36		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.28	0.41		0.37	0.56		0.20	0.16		0.17	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.3

Intersection Capacity Utilization 44.5%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 3: Almiron/Entrance & Washington

 ø2 (R)	 ø4	 ø9
55 s	20 s	20 s
 ø6 (R)	 ø8	
55 s	20 s	

Lanes, Volumes, Timings
3: Almiron/Entrance & Washington

4/25/2017

Lane Group	ø6	ø9
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Min	None
Walk Time (s)	5.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings

4: Cole & Washington

4/25/2017

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lane Configurations							
Volume (vph)	601	101	44	352	72	50	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Storage Length (ft)		0	100		0	0	
Storage Lanes		1	1		1	0	
Taper Length (ft)			100		100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor					1.00		
Frt		0.850			0.941		
Flt Protected			0.950		0.973		
Satd. Flow (prot)	1900	1615	1805	1900	1740	0	
Flt Permitted			0.345		0.973		
Satd. Flow (perm)	1900	1615	656	1900	1736	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		176			36		
Link Speed (mph)	30			30	30		
Link Distance (ft)	152			948	295		
Travel Time (s)	3.5			21.5	6.7		
Confl. Peds. (#/hr)					2		
Peak Hour Factor	0.98	0.63	0.73	0.91	0.82	0.72	
Growth Factor	110%	110%	110%	110%	110%	110%	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	675	176	66	425	97	76	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	675	176	66	425	173	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	10			10	10		
Two way Left Turn Lane				Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Turn Type	NA	custom	Perm	NA	Prot		
Protected Phases	2 8	8		6	9		2
Permitted Phases	2 8	2	6				
Detector Phase	2 8	8	6	6	9		
Switch Phase							
Minimum Initial (s)		4.0	4.0	4.0	4.0		4.0
Minimum Split (s)		20.0	22.0	22.0	20.0		22.0
Total Split (s)		20.0	55.0	55.0	20.0		55.0
Total Split (%)		21.1%	57.9%	57.9%	21.1%		58%
Maximum Green (s)		16.0	51.0	51.0	16.0		51.0
Yellow Time (s)		3.0	3.0	3.0	3.0		3.0
All-Red Time (s)		1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		
Total Lost Time (s)		4.0	4.0	4.0	4.0		
Lead/Lag							

Lanes, Volumes, Timings

4: Cole & Washington

4/25/2017

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2
Lead-Lag Optimize?							
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0
Recall Mode		None	C-Min	C-Min	None		C-Min
Walk Time (s)		5.0	5.0	5.0	5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0		0
Act Effect Green (s)	74.2	74.2	55.0	55.0	12.8		
Actuated g/C Ratio	0.78	0.78	0.58	0.58	0.13		
v/c Ratio	0.46	0.14	0.17	0.39	0.65		
Control Delay	11.2	3.8	12.0	12.8	41.5		
Queue Delay	0.7	0.9	0.0	0.0	0.0		
Total Delay	11.9	4.7	12.0	12.8	41.5		
LOS	B	A	B	B	D		
Approach Delay	10.4			12.7	41.5		
Approach LOS	B			B	D		
Queue Length 50th (ft)	265	17	18	131	79		
Queue Length 95th (ft)	443	31	35	223	121		
Internal Link Dist (ft)	72			868	215		
Turn Bay Length (ft)			100				
Base Capacity (vph)	1496	1317	382	1106	331		
Starvation Cap Reductn	473	906	0	0	0		
Spillback Cap Reductn	0	0	0	6	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.66	0.43	0.17	0.39	0.52		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Description: Cole & Washington

Splits and Phases: 4: Cole & Washington

→ ø2 (R)		↖ ø9
55 s		20 s
← ø6 (R)	→ ø8	
55 s	20 s	

Lanes, Volumes, Timings

5: Springfield & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	546	179	170	274	15	80	57	139	12	111	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	10	10	10	10	10	10
Storage Length (ft)	150		150	0		70	100		200	100		100
Storage Lanes	1		1	1		1	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1685	1773	1507	1685	1773	1507	1685	1711	0
Flt Permitted	0.559			0.189			0.558			0.714		
Satd. Flow (perm)	1062	1900	1615	335	1773	1507	990	1773	1507	1266	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221			64			194		17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		948			484			501			273	
Travel Time (s)		21.5			11.0			11.4			6.2	
Peak Hour Factor	0.64	0.92	0.78	0.85	0.90	0.51	0.83	0.95	0.79	0.38	0.90	0.52
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	653	252	220	335	32	106	66	194	35	136	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	653	252	220	335	32	106	66	194	35	178	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	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	4.0	4.0	
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	8.0	45.0	45.0	16.0	53.0	53.0	24.0	24.0	24.0	24.0	24.0	
Total Split (%)	9.4%	52.9%	52.9%	18.8%	62.4%	62.4%	28.2%	28.2%	28.2%	28.2%	28.2%	
Maximum Green (s)	4.0	41.0	41.0	12.0	49.0	49.0	20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	

Lanes, Volumes, Timings

5: Springfield & Washington

4/25/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	
Act Effct Green (s)	32.5	28.2	28.2	41.5	39.0	39.0	12.8	12.8	12.8	12.8	12.8	
Actuated g/C Ratio	0.52	0.45	0.45	0.66	0.62	0.62	0.20	0.20	0.20	0.20	0.20	
v/c Ratio	0.05	0.77	0.30	0.53	0.31	0.03	0.53	0.18	0.42	0.14	0.49	
Control Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.3	22.2	3.7	9.8	7.9	0.8	35.9	25.1	7.6	25.3	27.5	
LOS	A	C	A	A	A	A	D	C	A	C	C	
Approach Delay		16.7			8.2			19.0			27.2	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	3	187	6	25	42	0	36	21	0	11	53	
Queue Length 95th (ft)	9	393	31	61	136	0	90	61	33	16	133	
Internal Link Dist (ft)		868			404			421			193	
Turn Bay Length (ft)	150		150			70	100		200	100		
Base Capacity (vph)	598	1326	1193	498	1409	1211	339	607	644	434	597	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.49	0.21	0.44	0.24	0.03	0.31	0.11	0.30	0.08	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 63

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

Description: Springfield & Washington

Splits and Phases: 5: Springfield & Washington

 Ø2	 Ø3	 Ø4
24 s	16 s	45 s
 Ø6	 Ø7	 Ø8
24 s	8 s	53 s

Lanes, Volumes, Timings

16: Washington

4/25/2017

						
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (vph)	713	0	0	385	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1773	0	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1773	0	0
Right Turn on Red	Yes			Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	706			714	208	
Travel Time (s)	16.0			16.2	4.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	871	0	0	471	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	871	0	0	471	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)		9	15		15	9
Turn Type	NA			NA		
Protected Phases	4			8		
Permitted Phases						
Detector Phase	4			8		
Switch Phase						
Minimum Initial (s)	4.0			4.0		
Minimum Split (s)	20.0			20.0		
Total Split (s)	20.0			20.0		
Total Split (%)	100.0%			100.0%		
Maximum Green (s)	16.0			16.0		
Yellow Time (s)	3.0			3.0		
All-Red Time (s)	1.0			1.0		
Lost Time Adjust (s)	0.0			0.0		
Total Lost Time (s)	4.0			4.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			None		
Walk Time (s)	5.0			5.0		
Flash Dont Walk (s)	11.0			11.0		
Pedestrian Calls (#/hr)	0			0		

Lanes, Volumes, Timings

16: Washington

4/25/2017

	→	↗	↖	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Act Effect Green (s)	18.0			18.0		
Actuated g/C Ratio	1.00			1.00		
v/c Ratio	0.49			0.27		
Control Delay	1.0			0.4		
Queue Delay	0.0			0.0		
Total Delay	1.0			0.4		
LOS	A			A		
Approach Delay	1.0			0.4		
Approach LOS	A			A		
Queue Length 50th (ft)	0			0		
Queue Length 95th (ft)	0			0		
Internal Link Dist (ft)	626			634	128	
Turn Bay Length (ft)						
Base Capacity (vph)	1693			1693		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.51			0.28		

Intersection Summary

Area Type: Other

Cycle Length: 20

Actuated Cycle Length: 18

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 0.8

Intersection LOS: A

Intersection Capacity Utilization 44.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 16: Washington

→ Ø4	
20 s	
← Ø8	
20 s	

Arterial Level of Service
2 Lane + TWLTL To Spinder 0.5% Growth

4/25/2017

Arterial Level of Service: EB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	16	6.9	18.3	0.1	15
S. Main	1	105.4	121.0	0.1	4
Almiron	3	9.2	23.3	0.1	18
Cole	4	2.5	6.2	0.0	17
Springfield	5	15.4	35.2	0.2	18
Total		139.4	204.0	0.5	9

Arterial Level of Service: WB Washington

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Springfield	5	5.6	16.5	0.1	20
Cole	4	11.9	32.0	0.2	20
Entrance	3	4.5	8.4	0.0	12
N. Main	1	78.6	92.0	0.1	5
	16	2.9	19.2	0.1	25
Total		103.5	168.1	0.6	12

DEGREE OF SATURATION

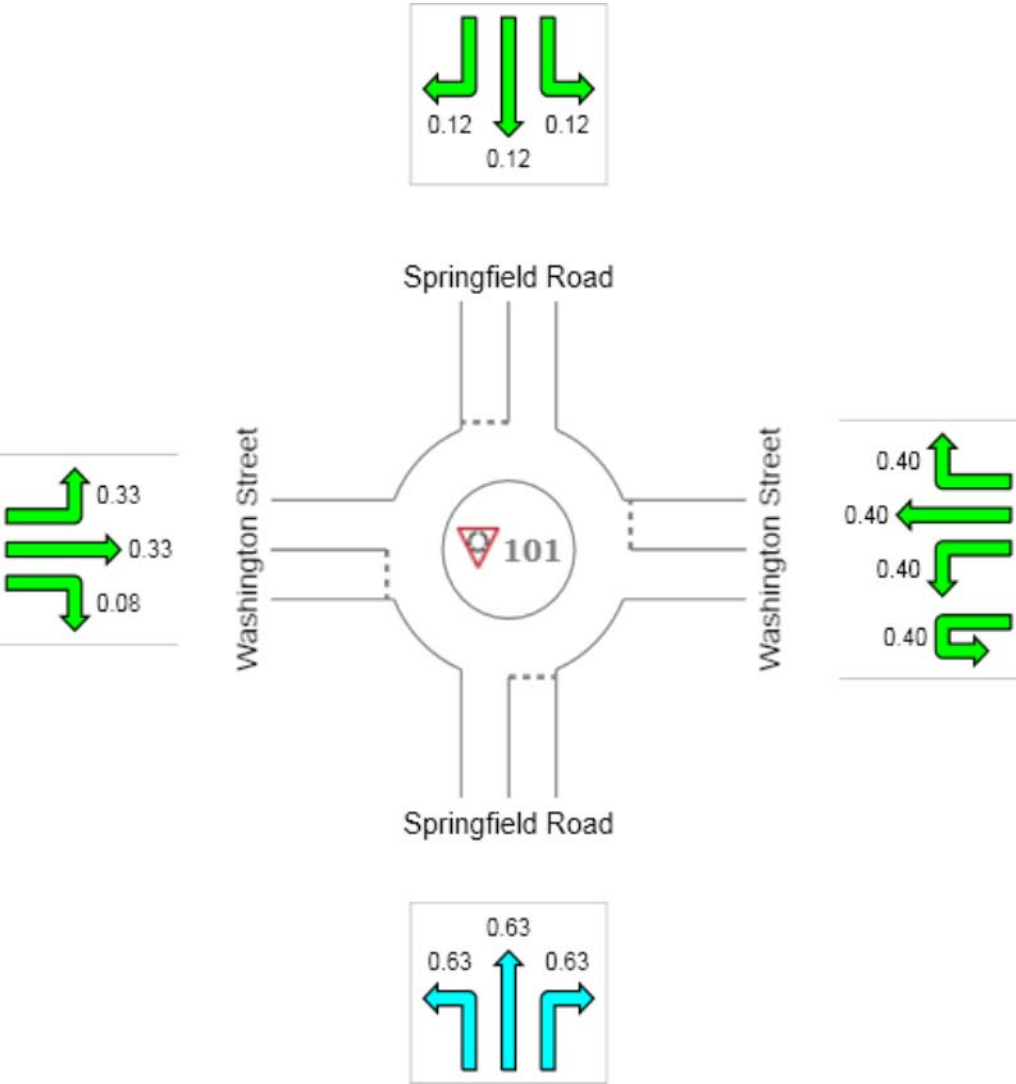
Ratio of Demand Volume to Capacity (v/c ratio)

 **Site: AM Peak**

New Site
Roundabout
Design Life Analysis (Practical Capacity): Results for 20 years

All Movement Classes

	South	East	North	West	Intersection
	0.63	0.40	0.12	0.33	0.63



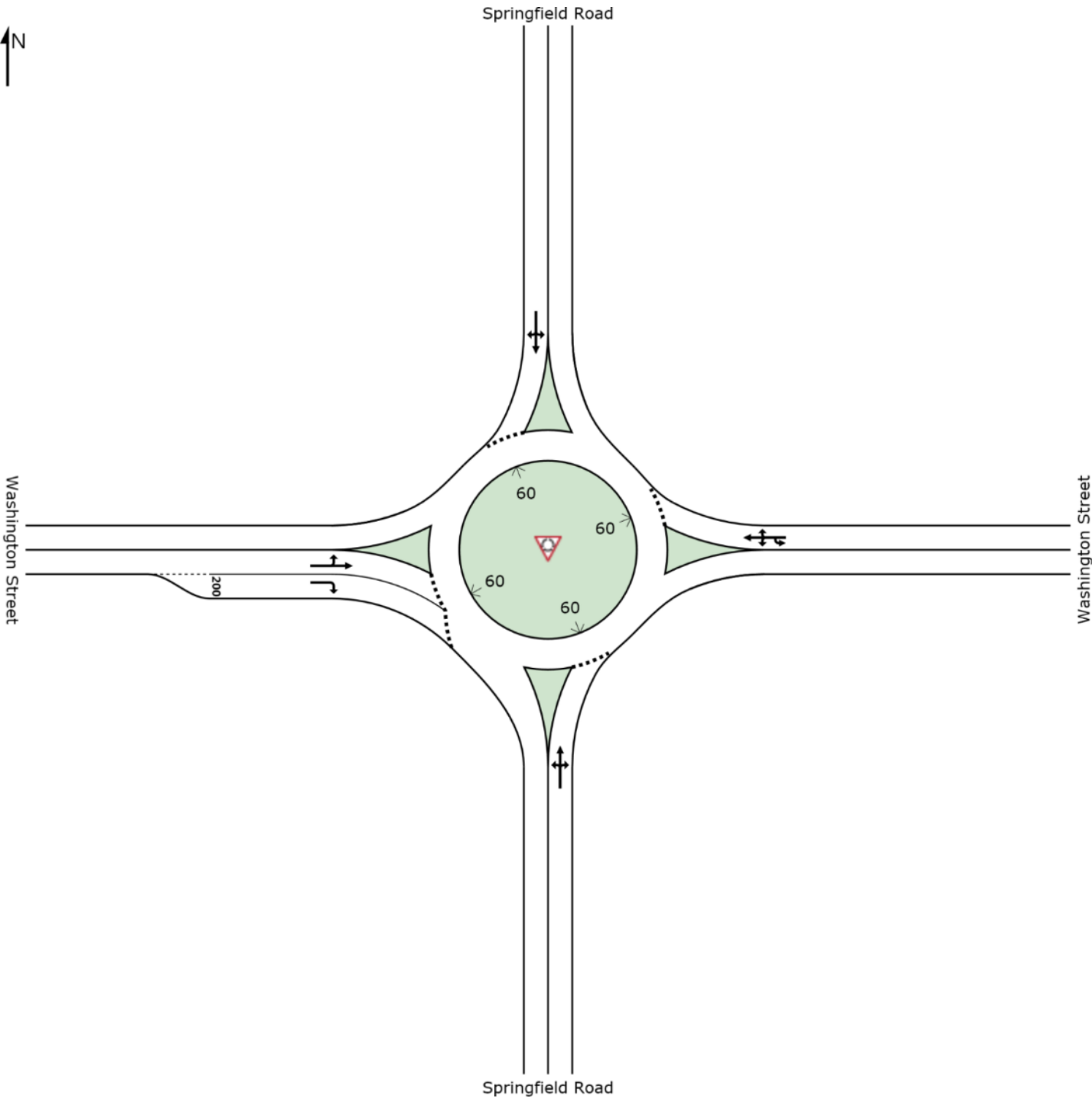
Colour code based on Degree of Saturation

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0] Continuous

SITE LAYOUT

 **Site: AM Peak**

New Site
Roundabout



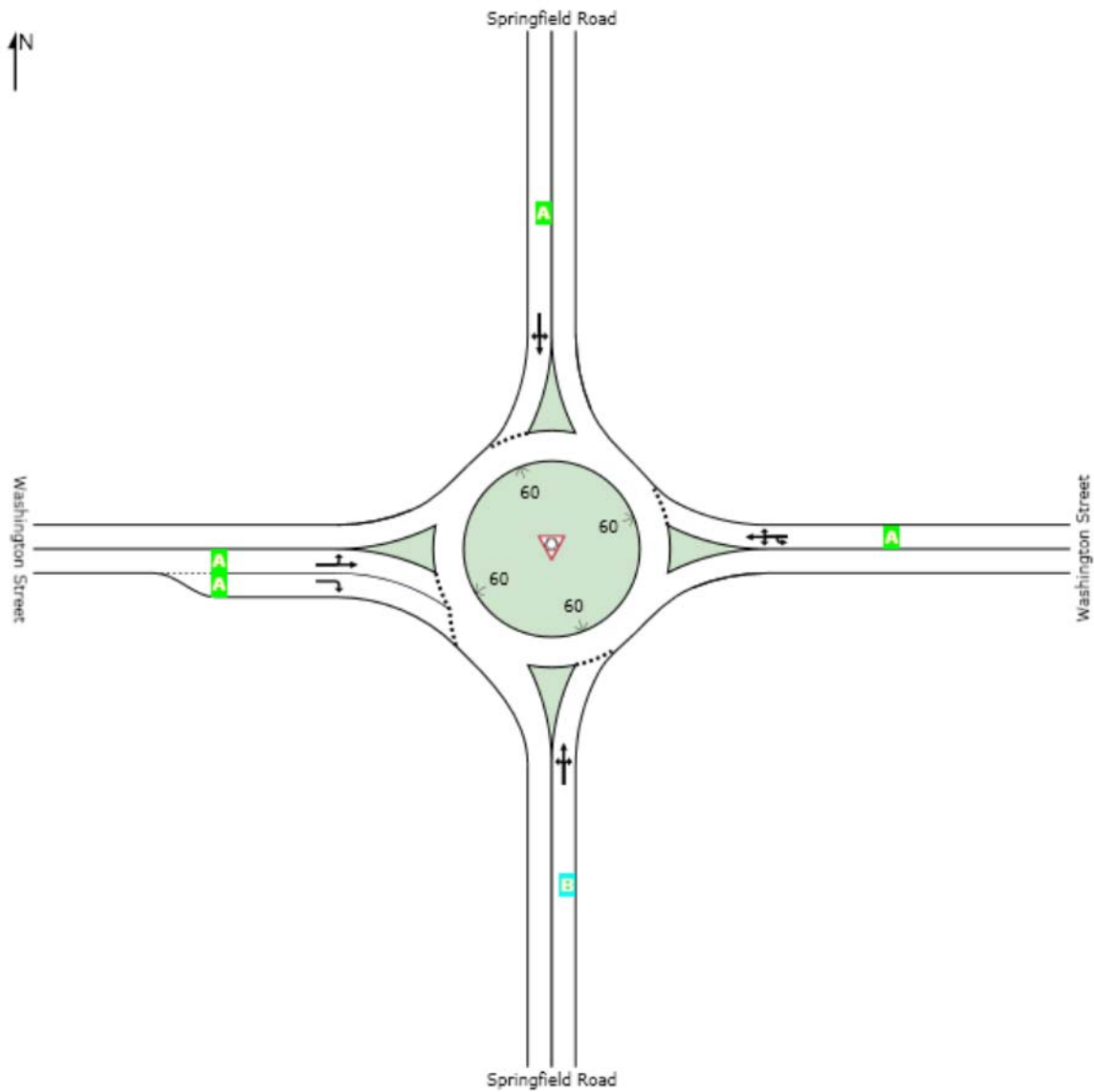
LEVEL OF SERVICE

 **Site: AM Peak**

New Site
Roundabout
Design Life Analysis (Practical Capacity): Results for 20 years

All Movement Classes

	South	East	North	West	Intersection
LOS	B	A	A	A	B



Level of Service (LOS) Method: Degree of Saturation (SIDRA METHOD).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on degree of saturation per lane.
Intersection and Approach LOS values are based on worst degree of saturation for any lane.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

QUEUE DISTANCE (%ILE)

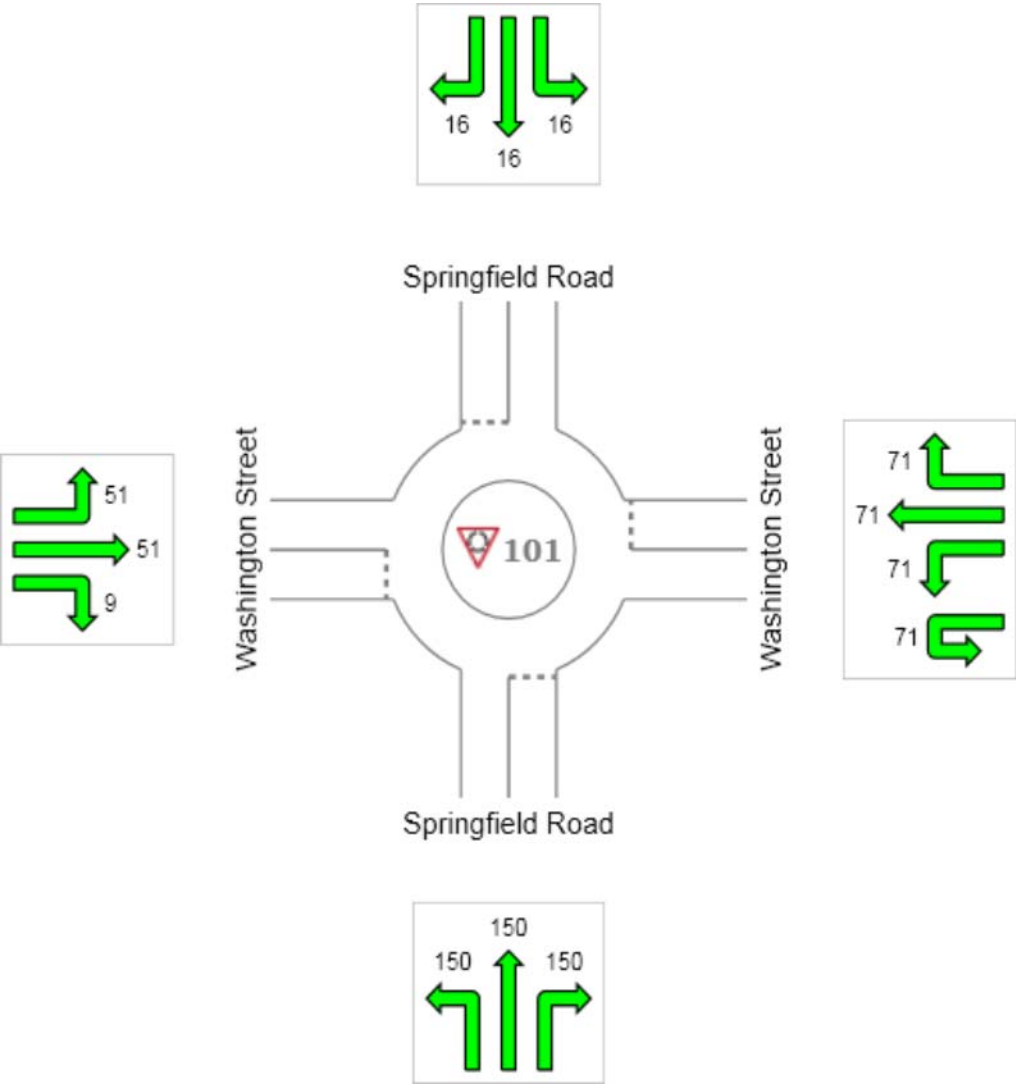
Largest 95% Back of Queue for any lane used by movement (feet)

 **Site: AM Peak**

New Site
Roundabout
Design Life Analysis (Practical Capacity): Results for 20 years

All Movement Classes

	South	East	North	West	Intersection
	150	71	16	51	150



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0] Continuous

DEGREE OF SATURATION

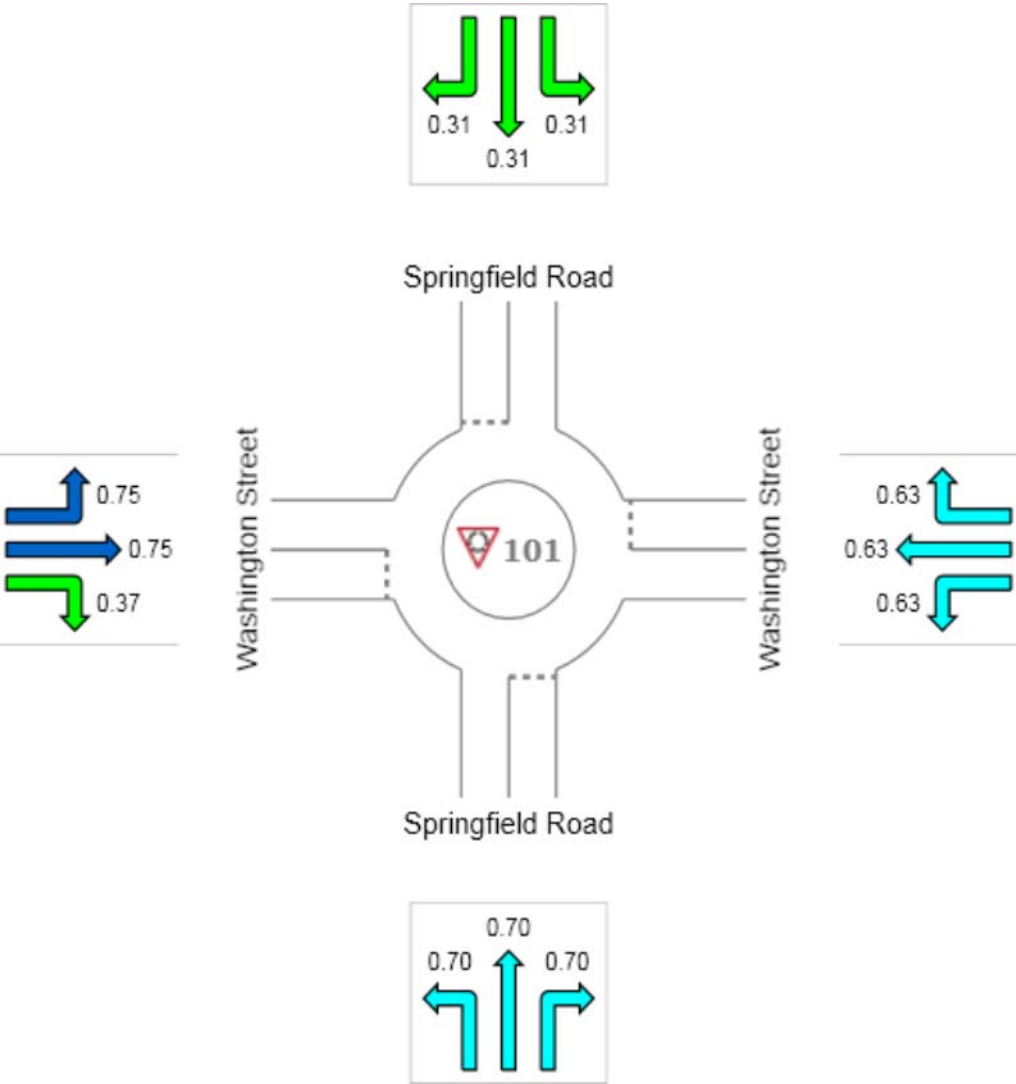
Ratio of Demand Volume to Capacity (v/c ratio)

 **Site: PM Peak**

New Site
Roundabout
Design Life Analysis (Practical Capacity): Results for 20 years

All Movement Classes

	South	East	North	West	Intersection
	0.70	0.63	0.31	0.75	0.75



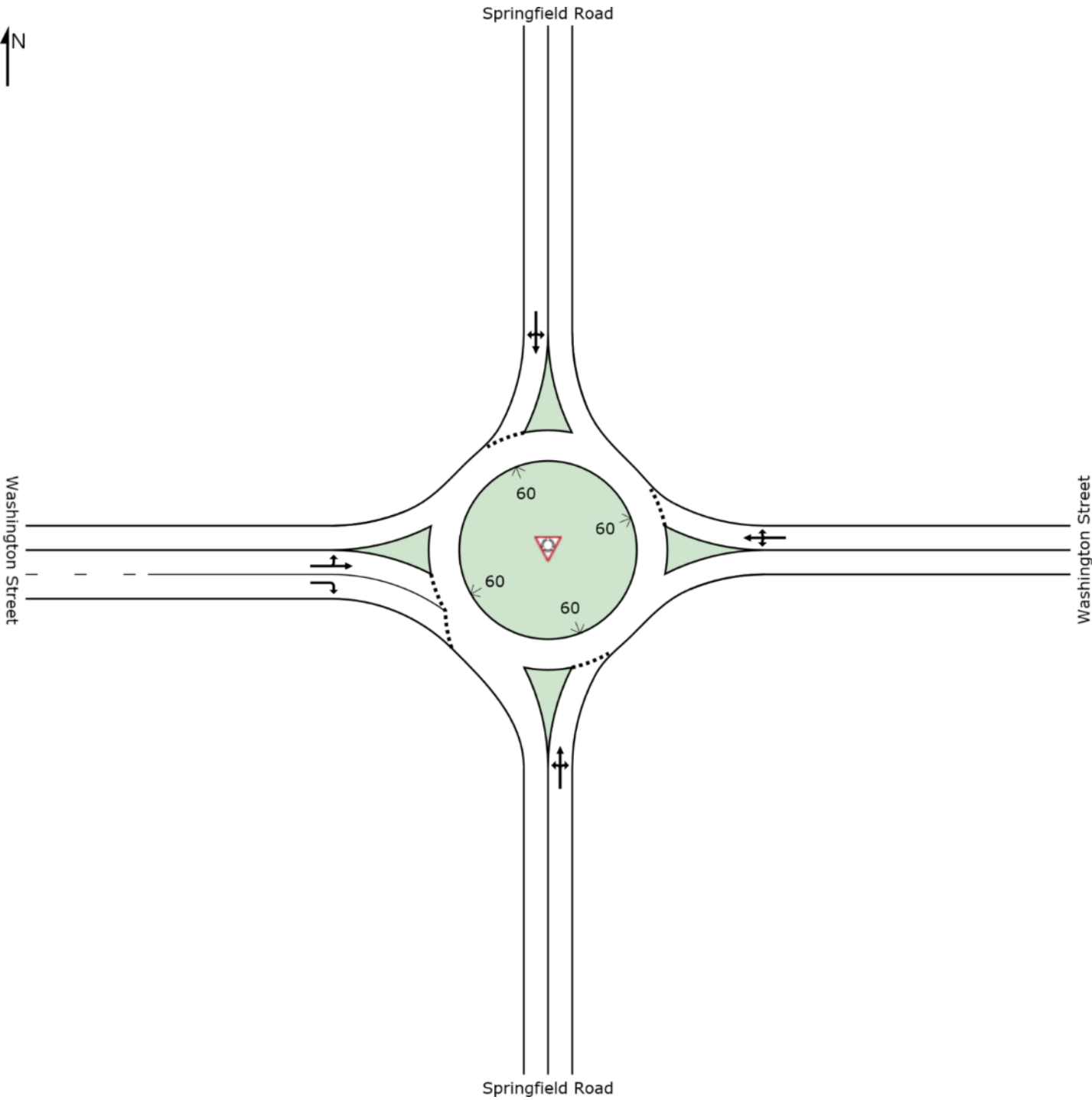
Colour code based on Degree of Saturation

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0] Continuous

SITE LAYOUT

 Site: PM Peak

New Site
Roundabout



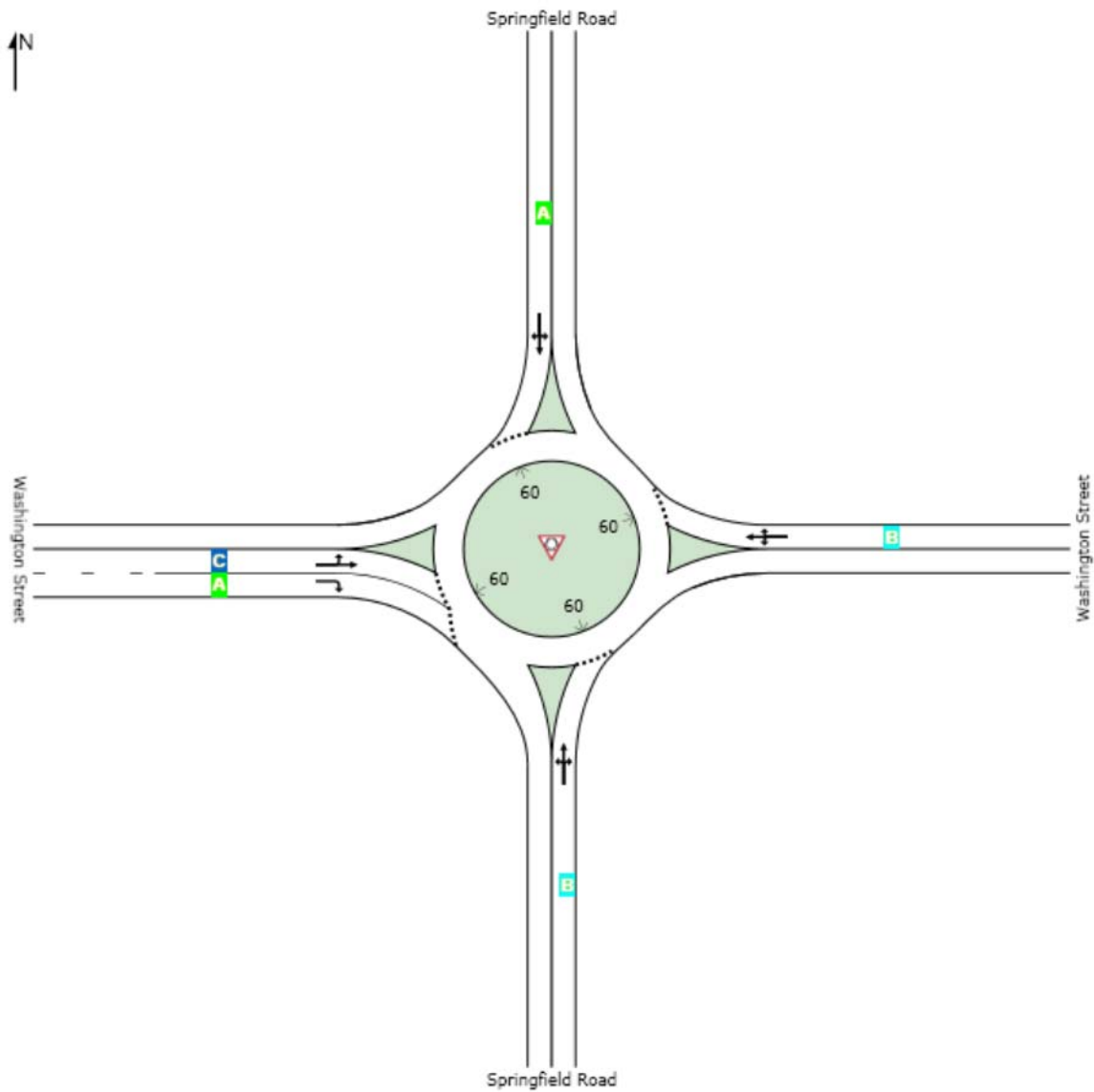
LEVEL OF SERVICE

 **Site: PM Peak**

New Site
Roundabout
Design Life Analysis (Practical Capacity): Results for 20 years

All Movement Classes

	South	East	North	West	Intersection
LOS	B	B	A	C	C



Level of Service (LOS) Method: Degree of Saturation (SIDRA METHOD).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on degree of saturation per lane.
Intersection and Approach LOS values are based on worst degree of saturation for any lane.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

QUEUE DISTANCE (%ILE)

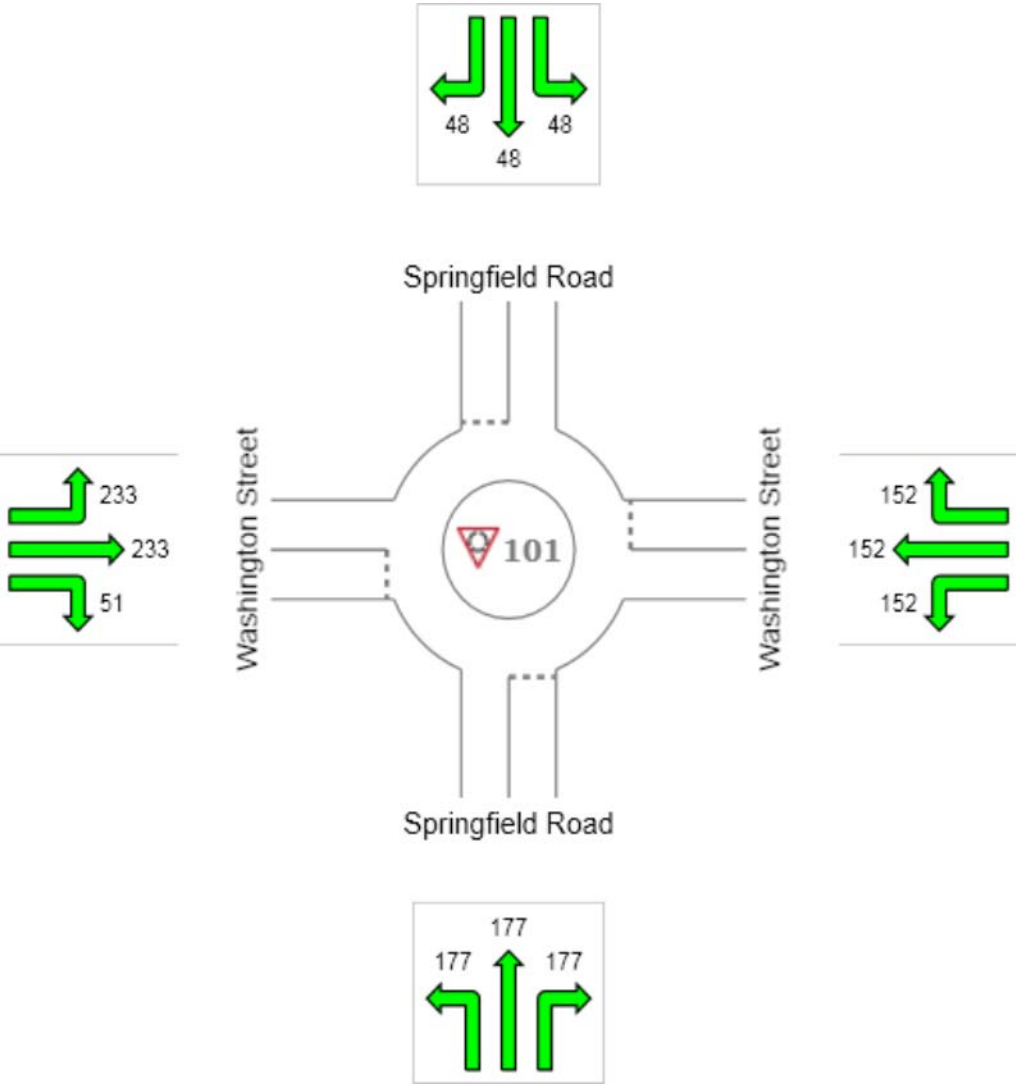
Largest 95% Back of Queue for any lane used by movement (feet)

 **Site: PM Peak**

New Site
Roundabout
Design Life Analysis (Practical Capacity): Results for 20 years

All Movement Classes

	South	East	North	West	Intersection
	177	152	48	233	233



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0] Continuous