

MEMORANDUM

TO: Arthur G. Martineau III, P.E.
Town Engineer of Andover
5 Campanelli Drive
Andover, MA 01810

FROM: Scott W. Thornton, P.E., Principal *and*
Thomas Hannon, E.I.T.
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Andover, MA 01810-1066

DATE: January 24, 2024

RE: 8975

SUBJECT: Proposed Andover Town Yard Redevelopment Supplemental Traffic Analysis
Andover, Massachusetts

Vanasse & Associates, Inc. (VAI) has prepared this Supplemental Traffic Analysis Memorandum to identify traffic impacts associated with the proposed Andover Town Yard Redevelopment to be located at the former Andover Town Yard off of Pearson Street in Andover, Massachusetts (the “Project”). This memorandum provides a supplemental traffic analysis of the intersection of North Main Street (Route 38) and Main Street (Route 38) at Central Street and Elm Street, also referred to as Elm Square, as requested by Town staff at the December 12th Inter-Departmental Review (IDR) Meeting.

SUPPLEMENTAL TRAFFIC ANALYSIS

The traffic volume counts from The Engineering Corp (TEC) technical memo¹ were used as 2023 existing traffic volumes for the 2023 Existing condition. The 2023 existing traffic signal timings were also derived from the same technical memo. The future condition, 2030 No-Build, utilizes the 2023 existing traffic volumes grown for seven years by 1 percent and incorporates the new traffic signal timings and new lane configurations. The new traffic signal timings were known as Alternative 2 in TEC’s memo. The future condition, 2030 Build, was defined as the No-Build condition with the addition of the trips generated from the proposed Andover Town Yard Redevelopment.

Analysis Results

Level-of-service analyses were conducted for 2023 Existing, 2030 No-Build, and 2030 Build conditions for the Elm Square intersection. As shown in Table 1, operations are relatively unchanged and there is no change in the level-of-service with the addition of proposed Project generated traffic volumes. In the No-Build condition, 2,179 vehicles travel through the intersection during the weekday morning peak hour and 2,301 vehicles during the weekday evening peak hour. The addition of the proposed Project generated traffic only increases the volumes during the weekday morning and evening peak hours by 0.8 percent and 0.9 percent, respectively, over the No-Build volumes.

¹*Elm Square Safety Improvements – Andover, Massachusetts Traffic Operations Analysis, Findings, & Recommendations*, TEC; August 2023.



Table 1
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Signalized Intersection/ Peak Hour/Movement	2023 Existing				2030 No-Build				2030 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d Avg/95 th	V/C	Delay	LOS	Queue Avg/95 th	V/C	Delay	LOS	Queue Avg/95 th
Route 38 at Central Street and Elm Street												
<i>Weekday Morning:</i>												
Central Street EB LT	0.35	25.6	C	2/3	0.73	59.5	E	2/4	0.75	62.1	E	2/5
Central Street EB TH	0.49	40.5	D	4/7	0.70	53.3	D	4/9	0.70	53.3	D	4/9
Central Street EB RT	0.05	0.1	A	0/0	0.06	0.1	A	0/0	0.06	0.1	A	0/0
Elm Street WB LT	0.38	26.2	C	2/4	0.66	49.6	D	2/7	0.66	49.6	D	2/7
Elm Street WB TH	0.70	45.9	D	7/16	1.07	111.4	F	7/20	1.07	111.4	F	7/20
Elm Street WB RT	0.09	0.2	A	0/0	0.12	0.8	A	0/1	0.12	1.0	A	0/1
Route 38 NB LT/TH/RT	0.40	15.8	B	3/6	0.93	35.9	D	6/12	0.93	36.6	D	5/12
Route 38 SB LT/TH/RT	0.59	17.1	B	7/10	--	--	--	--	--	--	--	--
Route 38 SB LT	--	--	--	--	0.16	16.5	B	1/2	0.16	16.6	B	1/2
Route 38 SB TH/RT	--	--	--	--	1.09	83.8	F	18/40	1.10	87.9	F	18/41
Overall	--	22.6	C	--	--	65.2	E	--	--	67.0	E	--
<i>Weekday Evening:</i>												
Central Street EB LT	0.48	23.9	C	3/6	1.13	130.0	F	3/15	1.15	138.6	F	3/16
Central Street EB TH	0.97	86.8	F	9/16	0.87	59.7	E	6/22	0.88	60.3	E	6/22
Central Street EB RT	0.05	0.1	A	0/0	0.04	0.1	A	0/0	0.04	0.1	A	0/0
Elm Street WB LT	0.58	37.1	D	2/4	0.82	72.3	E	1/8	0.83	72.6	E	2/8
Elm Street WB TH	0.48	35.8	D	5/14	0.94	74.5	E	5/20	0.94	75.3	E	5/20
Elm Street WB RT	0.16	1.3	A	0/1	0.19	3.2	A	0/1	0.20	3.6	A	0/1
Route 38 NB LT/TH/RT	0.61	25.6	C	6/8	0.79	34.8	C	5/11	0.79	34.8	C	5/11
Route 38 SB LT/TH/RT	0.67	27.7	C	6/8	--	--	--	--	--	--	--	--
Route 38 SB LT	--	--	--	--	0.42	21.9	C	1/3	0.43	22.1	C	1/4
Route 38 SB TH/RT	--	--	--	--	0.70	26.3	C	7/18	0.70	26.4	C	7/18
Overall	--	34.8	C	--	--	50.2	D	--	--	51.3	D	--

^aVolume-to-capacity ratio.

^bControl (signal) delay per vehicle in seconds.

^cLevel of service.

^dQueue length in vehicles.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.



CONCLUSIONS

VAI has prepared this Supplemental Traffic Analysis Memorandum to identify the effects of the Andover Town Yard Development on the Elm Square intersection in Andover, Massachusetts. We have concluded the following:

- The proposed Project increases the overall delay of the Elm Square intersection by less than 2 seconds over the No-Build condition with no change in the level-of-service; and
- The proposed Project generated traffic increases the total volumes traveling through the Elm Square intersection by less than 1 percent over the No-Build condition.

If you have any questions about the results contained herein, please feel free to contact either of us at sthornton@rdva.com or thannon@rdva.com.

Attachments: Technical Appendix

cc: File



APPENDIX

CAPACITY ANALYSIS

CAPACITY ANALYSIS

2023 Existing Weekday Morning Peak Hour
2023 Existing Weekday Evening Peak Hour
2030 No-Build Weekday Morning Peak Hour
2030 No-Build Weekday Evening Peak Hour
2030 Build Weekday Morning Peak Hour
2030 Build Weekday Evening Peak Hour

2023 Existing Weekday Morning Peak Hour

2023 Existing Weekday Morning - Elm Square

1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	155	39	119	298	86	58	295	80	50	476	257
Future Volume (vph)	80	155	39	119	298	86	58	295	80	50	476	257
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.972			0.951	
Flt Protected	0.950			0.950				0.993			0.997	
Satd. Flow (prot)	1752	1845	1615	1547	1801	1742	0	3252	0	0	3254	0
Flt Permitted	0.358			0.464				0.700			0.882	
Satd. Flow (perm)	660	1845	1615	756	1801	1742	0	2292	0	0	2878	0
Satd. Flow (RTOR)			120			175		32			120	
Adj. Flow (vph)	100	194	49	124	310	90	64	328	89	58	553	299
Lane Group Flow (vph)	100	194	49	124	310	90	0	481	0	0	910	0
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		2	4		6	6			2		
Detector Phase	3	8	2	7	4	6	6	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	18.0	23.0	9.0	18.0	18.0	18.0	18.0		9.0	23.0	
Total Split (s)	15.0	20.0	55.0	15.0	20.0	44.0	44.0	44.0		11.0	55.0	
Total Split (%)	15.0%	20.0%	55.0%	15.0%	20.0%	44.0%	44.0%	44.0%		11.0%	55.0%	
Maximum Green (s)	10.0	15.0	50.0	10.0	15.0	39.0	39.0	39.0		6.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0			5.0	
Lead/Lag	Lag		Lag	Lag						Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Recall Mode	None	None	C-Min	None	None	C-Min	C-Min	C-Min		None	C-Min	
Walk Time (s)		2.0	2.0		2.0	2.0	2.0	2.0			2.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)		10	10		10	10	10	10			10	
Act Effct Green (s)	29.6	21.4	51.6	33.0	24.7	51.6		51.6			51.6	
Actuated g/C Ratio	0.30	0.21	0.52	0.33	0.25	0.52		0.52			0.52	
v/c Ratio	0.35	0.49	0.05	0.38	0.70	0.09		0.40			0.59	
Control Delay	25.6	40.5	0.1	26.2	45.9	0.2		15.8			17.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	25.6	40.5	0.1	26.2	45.9	0.2		15.8			17.1	
LOS	C	D	A	C	D	A		B			B	
Approach Delay		30.4			33.4			15.8			17.1	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	41	106	0	52	178	0		87			176	
Queue Length 95th (ft)	75	170	0	105	#401	0		144			251	
Internal Link Dist (ft)		370			601			254			176	
Turn Bay Length (ft)	100		50	100		50						
Base Capacity (vph)	323	393	905	336	445	983		1198			1569	
Starvation Cap Reductn	0	0	0	0	0	0		0			0	
Spillback Cap Reductn	0	0	0	0	0	0		0			0	

2023 Existing Weekday Morning - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

Lane Group	Ø10	Ø11	Ø12	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Adj. Flow (vph)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	10	11	12	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	3.0	3.0	3.0	3.0
Minimum Split (s)	5.0	5.0	5.0	5.0
Total Split (s)	5.0	5.0	5.0	5.0
Total Split (%)	5%	5%	5%	5%
Maximum Green (s)	3.0	3.0	3.0	3.0
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None
Walk Time (s)	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	10	10	10	10
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				

2023 Existing Weekday Morning - Elm Square

1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0		0			0	
Reduced v/c Ratio	0.31	0.49	0.05	0.37	0.70	0.09		0.40			0.58	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 16 (16%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 22.6

Intersection LOS: C

Intersection Capacity Utilization 72.0%

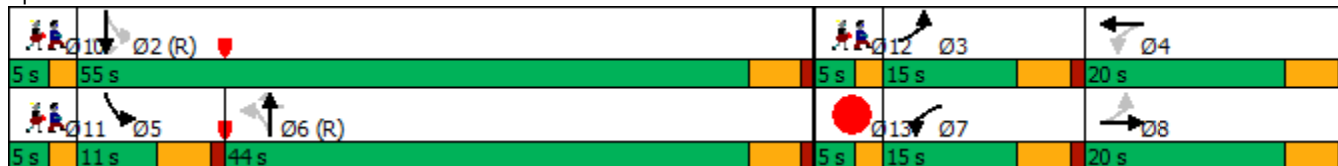
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street/North Main Street & Central Street/Elm Street



Lane Group	Ø10	Ø11	Ø12	Ø13
Storage Cap Reductn				
Reduced v/c Ratio				
Intersection Summary				

2023 Existing Weekday Evening Peak Hour

2023 Existing Weekday Evening - Elm Square

1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	282	28	109	243	110	65	369	125	98	317	104
Future Volume (vph)	174	282	28	109	243	110	65	369	125	98	317	104
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.966			0.970	
Flt Protected	0.950			0.950				0.994			0.991	
Satd. Flow (prot)	1805	1900	1599	1624	1766	1777	0	3246	0	0	3401	0
Flt Permitted	0.593			0.169				0.758			0.645	
Satd. Flow (perm)	1127	1900	1599	289	1766	1777	0	2476	0	0	2214	0
Satd. Flow (RTOR)			120			175		44			44	
Adj. Flow (vph)	191	310	31	121	270	122	68	384	130	109	352	116
Lane Group Flow (vph)	191	310	31	121	270	122	0	582	0	0	577	0
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		2	4		6	6			2		
Detector Phase	3	8	2	7	4	6	6	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	18.0	23.0	9.0	18.0	18.0	18.0	18.0		9.0	23.0	
Total Split (s)	15.0	20.0	55.0	15.0	20.0	44.0	44.0	44.0		11.0	55.0	
Total Split (%)	15.0%	20.0%	55.0%	15.0%	20.0%	44.0%	44.0%	44.0%		11.0%	55.0%	
Maximum Green (s)	10.0	15.0	50.0	10.0	15.0	39.0	39.0	39.0		6.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0			5.0	
Lead/Lag	Lag		Lag	Lag						Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Recall Mode	None	None	C-Min	None	None	C-Min	C-Min	C-Min		None	C-Min	
Walk Time (s)		2.0	2.0		2.0	2.0	2.0	2.0			2.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)		10	10		10	10	10	10			10	
Act Effct Green (s)	28.3	16.9	37.7	35.3	31.8	37.7		37.7			37.7	
Actuated g/C Ratio	0.28	0.17	0.38	0.35	0.32	0.38		0.38			0.38	
v/c Ratio	0.48	0.97	0.05	0.58	0.48	0.16		0.61			0.67	
Control Delay	23.9	86.8	0.1	37.1	35.8	1.3		25.6			27.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	23.9	86.8	0.1	37.1	35.8	1.3		25.6			27.7	
LOS	C	F	A	D	D	A		C			C	
Approach Delay		59.2			27.9			25.6			27.7	
Approach LOS		E			C			C			C	
Queue Length 50th (ft)	63	~218	0	53	129	0		142			145	
Queue Length 95th (ft)	141	#392	0	#106	#342	12		188			196	
Internal Link Dist (ft)		370			601			247			232	
Turn Bay Length (ft)	100		50	100		50						
Base Capacity (vph)	410	320	859	235	561	814		1014			1129	
Starvation Cap Reductn	0	0	0	0	0	0		0			0	
Spillback Cap Reductn	0	0	0	0	0	0		0			0	

2023 Existing Weekday Evening - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

Lane Group	Ø10	Ø11	Ø12	Ø13
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Adj. Flow (vph)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	10	11	12	13
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	3.0	3.0	3.0	3.0
Minimum Split (s)	5.0	5.0	5.0	5.0
Total Split (s)	5.0	5.0	5.0	5.0
Total Split (%)	5%	5%	5%	5%
Maximum Green (s)	3.0	3.0	3.0	3.0
Yellow Time (s)	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max
Walk Time (s)	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	10	10	15	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				

2023 Existing Weekday Evening - Elm Square

1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

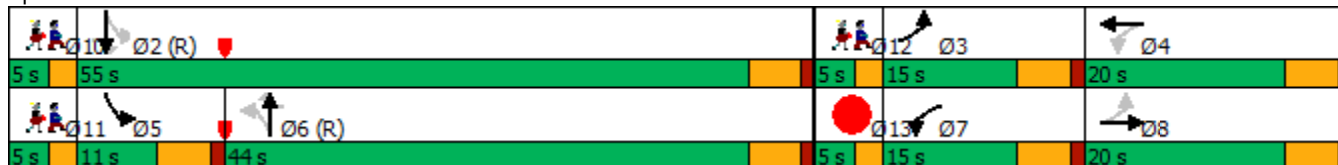


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0		0			0	
Reduced v/c Ratio	0.47	0.97	0.04	0.51	0.48	0.15		0.57			0.51	

Intersection Summary

- Cycle Length: 100
- Actuated Cycle Length: 100
- Offset: 16 (16%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
- Natural Cycle: 65
- Control Type: Actuated-Coordinated
- Maximum v/c Ratio: 0.97
- Intersection Signal Delay: 34.8
- Intersection LOS: C
- Intersection Capacity Utilization 70.1%
- ICU Level of Service C
- Analysis Period (min) 15
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street/North Main Street & Central Street/Elm Street



Lane Group	Ø10	Ø11	Ø12	Ø13
Storage Cap Reductn				
Reduced v/c Ratio				
Intersection Summary				

2030 No-Build Weekday Morning Peak Hour

2030 No-Build Weekday Morning - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	173	42	128	330	92	62	316	86	54	510	291
Future Volume (vph)	95	173	42	128	330	92	62	316	86	54	510	291
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.972			0.946	
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1752	1845	1615	1547	1801	1742	0	3252	0	1752	1706	0
Flt Permitted	0.253			0.378				0.517		0.357		
Satd. Flow (perm)	467	1845	1615	616	1801	1742	0	1693	0	659	1706	0
Satd. Flow (RTOR)			109			159						
Adj. Flow (vph)	119	216	53	133	344	96	69	351	96	63	593	338
Lane Group Flow (vph)	119	216	53	133	344	96	0	516	0	63	931	0
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		2	4		6	6			2		
Detector Phase	3	8	2	7	4	6	6	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		11.0	11.5	
Total Split (s)	10.0	21.0	52.0	11.0	22.0	41.0	41.0	41.0		11.0	52.0	
Total Split (%)	9.1%	19.1%	47.3%	10.0%	20.0%	37.3%	37.3%	37.3%		10.0%	47.3%	
Maximum Green (s)	4.5	15.5	46.5	5.5	16.5	35.5	35.5	35.5		6.0	46.5	
Yellow Time (s)	3.0	4.0	3.5	3.0	4.0	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	2.5	1.5	2.0	2.5	1.5	2.0	2.0	2.0		1.5	2.0	
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)	5.5	5.5	5.5	5.5	5.5	5.5		5.5		5.0	5.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes				
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Recall Mode	None	None	Min	None	None	Min	Min	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.4	15.8	47.3	22.4	16.8	38.6		38.6		47.8	47.3	
Actuated g/C Ratio	0.22	0.17	0.50	0.24	0.18	0.41		0.41		0.51	0.50	
v/c Ratio	0.73	0.70	0.06	0.66	1.07	0.12		0.93dl		0.16	1.09	
Control Delay	59.5	53.3	0.1	49.6	111.4	0.8		35.9		16.5	83.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	59.5	53.3	0.1	49.6	111.4	0.8		35.9		16.5	83.8	
LOS	E	D	A	D	F	A		D		B	F	
Approach Delay		47.9			78.5			35.9			79.5	
Approach LOS		D			E			D			E	
Queue Length 50th (ft)	46	106	0	52	182	0		115		14	449	
Queue Length 95th (ft)	#111	#225	0	#176	#489	5		#297		51	#1011	
Internal Link Dist (ft)		370			601			174			229	
Turn Bay Length (ft)	100		50	100		50				200		
Base Capacity (vph)	163	308	863	201	320	806		692		404	855	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	

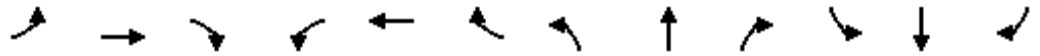
2030 No-Build Weekday Morning - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	20
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	

2030 No-Build Weekday Morning - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

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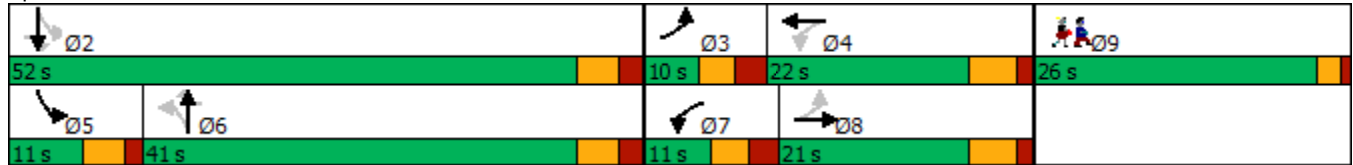


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	0.73	0.70	0.06	0.66	1.07	0.12		0.75		0.16	1.09	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 94.4
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 65.2
 Intersection LOS: E
 Intersection Capacity Utilization 97.2%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 1: Main Street/North Main Street & Central Street/Elm Street



Lane Group	Ø9
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2030 No-Build Weekday Evening Peak Hour

2030 No-Build Weekday Evening - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	330	30	117	288	118	70	396	134	105	340	148
Future Volume (vph)	225	330	30	117	288	118	70	396	134	105	340	148
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Fr _t			0.850			0.850		0.966			0.955	
Fl _t Protected	0.950			0.950				0.994		0.950		
Satd. Flow (prot)	1805	1900	1599	1624	1766	1777	0	3246	0	1805	1768	0
Fl _t Permitted	0.243			0.240				0.761		0.251		
Satd. Flow (perm)	462	1900	1599	410	1766	1777	0	2485	0	477	1768	0
Satd. Flow (RTOR)			105			155						
Adj. Flow (vph)	247	363	33	130	320	131	73	413	140	117	378	164
Lane Group Flow (vph)	247	363	33	130	320	131	0	626	0	117	542	0
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		2	4		6	6			2		
Detector Phase	3	8	2	7	4	6	6	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	8.5	9.5	10.0	9.5	9.5	9.5	9.5		9.5	9.5	
Total Split (s)	11.0	22.0	62.0	10.0	21.0	52.5	52.5	52.5		9.5	62.0	
Total Split (%)	9.2%	18.3%	51.7%	8.3%	17.5%	43.8%	43.8%	43.8%		7.9%	51.7%	
Maximum Green (s)	5.5	17.5	56.5	4.0	15.5	47.0	47.0	47.0		4.0	56.5	
Yellow Time (s)	3.0	3.0	3.5	3.5	4.0	3.5	3.5	3.5		4.0	3.5	
All-Red Time (s)	2.5	1.5	2.0	2.5	1.5	2.0	2.0	2.0		1.5	2.0	
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)	5.5	4.5	5.5	6.0	5.5	5.5		5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?		Yes			Yes	Yes	Yes	Yes				
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Recall Mode	None	None	Min	None	None	Min	Min	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.6	18.8	37.7	20.4	16.6	27.5		27.5		37.7	37.7	
Actuated g/C Ratio	0.28	0.22	0.44	0.24	0.19	0.32		0.32		0.44	0.44	
v/c Ratio	1.13	0.87	0.04	0.82	0.94	0.19		0.79		0.42	0.70	
Control Delay	130.0	59.7	0.1	72.3	74.5	3.2		34.8		21.9	26.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	130.0	59.7	0.1	72.3	74.5	3.2		34.8		21.9	26.3	
LOS	F	E	A	E	E	A		C		C	C	
Approach Delay		83.6			57.9			34.8			25.5	
Approach LOS		F			E			C			C	
Queue Length 50th (ft)	74	145	0	37	131	0		125		27	171	
Queue Length 95th (ft)	#386	#542	0	#206	#506	27		272		87	439	
Internal Link Dist (ft)		370			601			236			220	
Turn Bay Length (ft)	100		50	100		50				200		
Base Capacity (vph)	219	416	1161	158	342	1108		1461		276	1250	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	

2030 No-Build Weekday Evening - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	20
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	

2030 No-Build Weekday Evening - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	1.13	0.87	0.03	0.82	0.94	0.12		0.43		0.42	0.43	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 85.8	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 50.2	Intersection LOS: D
Intersection Capacity Utilization 90.1%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Main Street/North Main Street & Central Street/Elm Street

Ø2	Ø3	Ø4	Ø9
62 s	11 s	21 s	26 s
Ø5	Ø6	Ø7	Ø8
9.5 s	52.5 s	10 s	22 s

Lane Group	Ø9
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2030 Build Weekday Morning Peak Hour

2030 Build Weekday Morning - Elm Square
 1: Main Street/North Main Street & Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖		↕		↖	↗	
Traffic Volume (vph)	98	173	42	128	330	95	62	319	86	57	514	294
Future Volume (vph)	98	173	42	128	330	95	62	319	86	57	514	294
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Fr _t			0.850			0.850		0.972			0.945	
Fl _t Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1752	1845	1615	1547	1801	1742	0	3252	0	1752	1704	0
Fl _t Permitted	0.253			0.378				0.512		0.355		
Satd. Flow (perm)	467	1845	1615	616	1801	1742	0	1677	0	655	1704	0
Satd. Flow (RTOR)			109			159						
Adj. Flow (vph)	123	216	53	133	344	99	69	354	96	66	598	342
Lane Group Flow (vph)	123	216	53	133	344	99	0	519	0	66	940	0
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		2	4		6	6			2		
Detector Phase	3	8	2	7	4	6	6	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5		11.0	11.5	
Total Split (s)	10.0	21.0	52.0	11.0	22.0	41.0	41.0	41.0		11.0	52.0	
Total Split (%)	9.1%	19.1%	47.3%	10.0%	20.0%	37.3%	37.3%	37.3%		10.0%	47.3%	
Maximum Green (s)	4.5	15.5	46.5	5.5	16.5	35.5	35.5	35.5		6.0	46.5	
Yellow Time (s)	3.0	4.0	3.5	3.0	4.0	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	2.5	1.5	2.0	2.5	1.5	2.0	2.0	2.0		1.5	2.0	
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)	5.5	5.5	5.5	5.5	5.5	5.5		5.5		5.0	5.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes				
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Recall Mode	None	None	Min	None	None	Min	Min	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.4	15.8	47.3	22.4	16.8	38.6		38.6		47.8	47.3	
Actuated g/C Ratio	0.22	0.17	0.50	0.24	0.18	0.41		0.41		0.51	0.50	
v/c Ratio	0.75	0.70	0.06	0.66	1.07	0.12		0.93dl		0.16	1.10	
Control Delay	62.1	53.3	0.1	49.6	111.4	1.0		36.6		16.6	87.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	62.1	53.3	0.1	49.6	111.4	1.0		36.6		16.6	87.9	
LOS	E	D	A	D	F	A		D		B	F	
Approach Delay		48.9			78.2			36.6			83.3	
Approach LOS		D			E			D			F	
Queue Length 50th (ft)	47	106	0	52	182	0		116		15	459	
Queue Length 95th (ft)	#117	#225	0	#176	#489	7		#302		52	#1026	
Internal Link Dist (ft)		370			601			289			238	
Turn Bay Length (ft)	100		50	100		50				200		
Base Capacity (vph)	163	308	863	201	320	806		685		402	854	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	

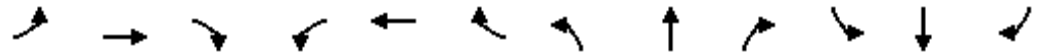
2030 Build Weekday Morning - Elm Square
 1: Main Street/North Main Street & Elm Street

01/09/2024

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	20
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	

2030 Build Weekday Morning - Elm Square
 1: Main Street/North Main Street & Elm Street

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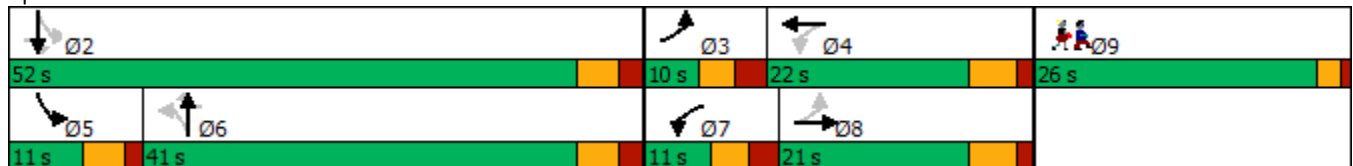


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	0.75	0.70	0.06	0.66	1.07	0.12		0.76		0.16	1.10	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 94.4
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay: 67.0
 Intersection LOS: E
 Intersection Capacity Utilization 97.5%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 1: Main Street/North Main Street & Elm Street



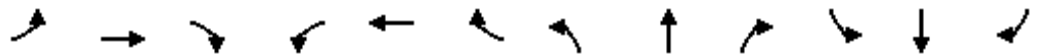
Lane Group	Ø9
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2030 Build Weekday Evening Peak Hour

2030 Build Weekday Evening - Elm Square

1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗		↕		↖	↗	
Traffic Volume (vph)	228	330	30	117	288	122	70	400	134	108	343	150
Future Volume (vph)	228	330	30	117	288	122	70	400	134	108	343	150
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.967			0.954	
Flt Protected	0.950			0.950				0.994		0.950		
Satd. Flow (prot)	1805	1900	1599	1624	1766	1777	0	3250	0	1805	1767	0
Flt Permitted	0.241			0.240				0.758		0.250		
Satd. Flow (perm)	458	1900	1599	410	1766	1777	0	2478	0	475	1767	0
Satd. Flow (RTOR)			105			155						
Adj. Flow (vph)	251	363	33	130	320	136	73	417	140	120	381	167
Lane Group Flow (vph)	251	363	33	130	320	136	0	630	0	120	548	0
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		2	4		6	6			2		
Detector Phase	3	8	2	7	4	6	6	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.5	8.5	9.5	10.0	9.5	9.5	9.5	9.5		9.5	9.5	
Total Split (s)	11.0	22.0	62.0	10.0	21.0	52.5	52.5	52.5		9.5	62.0	
Total Split (%)	9.2%	18.3%	51.7%	8.3%	17.5%	43.8%	43.8%	43.8%		7.9%	51.7%	
Maximum Green (s)	5.5	17.5	56.5	4.0	15.5	47.0	47.0	47.0		4.0	56.5	
Yellow Time (s)	3.0	3.0	3.5	3.5	4.0	3.5	3.5	3.5		4.0	3.5	
All-Red Time (s)	2.5	1.5	2.0	2.5	1.5	2.0	2.0	2.0		1.5	2.0	
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)	5.5	4.5	5.5	6.0	5.5	5.5		5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?		Yes			Yes	Yes	Yes	Yes				
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Recall Mode	None	None	Min	None	None	Min	Min	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.6	18.8	38.0	20.4	16.6	27.8		27.8		38.0	38.0	
Actuated g/C Ratio	0.27	0.22	0.44	0.24	0.19	0.32		0.32		0.44	0.44	
v/c Ratio	1.15	0.88	0.04	0.83	0.94	0.20		0.79		0.43	0.70	
Control Delay	138.6	60.3	0.1	72.6	75.3	3.6		34.8		22.1	26.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	138.6	60.3	0.1	72.6	75.3	3.6		34.8		22.1	26.4	
LOS	F	E	A	E	E	A		C		C	C	
Approach Delay		87.6			58.1			34.8			25.6	
Approach LOS		F			E			C			C	
Queue Length 50th (ft)	~77	146	0	38	132	0		126		28	174	
Queue Length 95th (ft)	#396	#546	0	#208	#509	30		274		88	446	
Internal Link Dist (ft)		370			601			236			220	
Turn Bay Length (ft)	100		50	100		50				200		
Base Capacity (vph)	218	414	1157	157	341	1105		1452		276	1245	
Starvation Cap Reductn	0	0	0	0	0	0		0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0		0	0	

2030 Build Weekday Evening - Elm Square
 1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	20
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	

2030 Build Weekday Evening - Elm Square

1: Main Street/North Main Street & Central Street/Elm Street

01/09/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0	0		0		0	0	
Reduced v/c Ratio	1.15	0.88	0.03	0.83	0.94	0.12		0.43		0.43	0.44	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 86.1

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 51.3

Intersection LOS: D

Intersection Capacity Utilization 90.7%

ICU Level of Service E

Analysis Period (min) 15

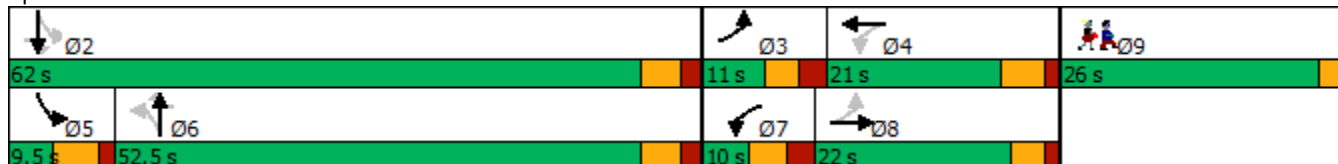
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street/North Main Street & Central Street/Elm Street



Lane Group	Ø9
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	