

**Traffic Impact and Access Study
Planned Residential Development
11 Cross Street
Methuen, MA**

Appendices

Appendix A

Traffic Volume Count Data

Appendix B

Seasonal Adjustment Worksheets

Appendix C

Crash Data

Appendix D

Transit Data

Appendix E

Background Growth/Background Project Data

Appendix F

Trip Generation Worksheets

Appendix G

Intersection Capacity Analysis Worksheets

Appendix H

Sight Distance Worksheets

Appendix A

Traffic Volume Count Data

SPEED
Cross St 200' N/O 11 Cross St Dwy

Day: Tuesday
Date: 5/21/2024

City: Methuen
Project #: MA24_430075_001

HOURLY BREAKDOWN	Time	NORTHBOUND														Total	SOUTHBOUND														Total			
		5	15	20	25	30	35	40	45	50	55	60	65	70	70		5	15	20	20	25	30	35	40	45	50	50	55	60	65		65	70	70
		15	20	25	30	35	40	45	50	55	60	65	70	99	15		20	20	25	30	35	40	45	50	55	60	65	70	99					
0:00	0	0	0	1	2	10	3	0	1	0	0	0	0	17	0	0	0	0	1	2	2	1	2	1	0	0	0	0	0	0	9			
1:00	0	0	0	3	3	2	0	0	0	0	0	0	0	8	0	0	0	0	2	3	1	1	0	0	0	0	0	0	0	7				
2:00	0	0	0	0	4	3	0	0	0	0	0	0	0	7	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	5				
3:00	0	0	0	0	2	2	2	0	0	0	0	0	0	6	0	0	0	2	7	3	1	1	0	1	0	0	0	0	0	15				
4:00	0	1	0	2	9	14	6	0	0	0	0	0	0	32	1	0	0	0	7	16	16	6	3	1	0	0	0	0	0	50				
5:00	0	0	0	0	11	38	19	3	0	0	0	0	0	71	1	1	1	2	4	59	50	14	4	1	0	0	0	0	0	137				
6:00	1	3	3	6	15	75	37	5	2	0	0	0	0	147	1	4	2	5	34	140	73	17	1	0	0	0	0	0	0	277				
7:00	1	2	6	7	26	85	31	6	1	0	0	0	0	165	1	3	2	3	48	193	96	22	4	1	0	0	0	0	0	373				
8:00	0	0	4	7	49	90	35	1	1	0	0	0	0	187	0	2	2	10	56	151	95	20	1	0	0	0	0	0	0	337				
9:00	2	2	4	12	48	101	33	4	0	0	0	0	0	206	1	1	1	7	24	109	66	18	1	0	0	0	0	0	0	228				
10:00	0	0	6	8	46	121	37	1	1	0	0	0	0	220	0	3	4	5	52	109	66	7	1	0	0	0	0	0	0	247				
11:00	2	4	5	12	48	140	40	6	1	0	0	0	0	258	0	0	0	2	41	98	67	21	1	0	0	0	0	0	0	230				
12:00	3	4	2	9	46	133	52	7	0	0	0	0	0	256	0	1	0	5	50	135	68	17	0	2	0	0	0	0	0	278				
13:00	1	2	2	5	39	139	51	9	1	0	0	0	0	249	0	0	2	8	44	124	67	16	3	1	0	0	0	0	0	265				
14:00	2	5	2	6	67	154	66	10	1	0	0	0	0	313	5	6	9	11	37	130	62	12	3	0	0	0	0	0	0	275				
15:00	2	6	3	15	51	189	92	14	1	0	0	0	0	373	1	1	9	20	63	171	70	12	0	0	0	0	0	0	0	347				
16:00	1	3	7	15	69	195	113	15	2	0	0	0	0	420	0	1	5	9	67	174	78	8	1	0	0	0	0	0	0	343				
17:00	0	1	2	10	46	184	90	10	2	0	0	0	0	345	0	0	1	1	40	138	94	18	3	0	0	0	0	0	0	295				
18:00	1	3	2	5	39	114	77	14	1	0	0	0	0	256	1	1	0	2	31	141	57	16	3	1	0	0	0	0	0	253				
19:00	0	0	3	6	50	85	34	8	1	0	0	0	0	187	5	0	1	7	48	72	28	8	0	0	0	0	0	0	0	169				
20:00	0	1	1	8	54	72	19	5	2	0	0	0	0	162	2	0	0	8	44	62	12	2	1	0	0	0	0	0	0	131				
21:00	0	1	0	5	23	44	15	1	0	0	0	0	0	89	0	0	0	7	19	38	20	2	0	0	0	0	0	0	0	86				
22:00	0	0	0	2	18	27	8	2	0	0	0	0	0	57	0	0	0	2	15	22	9	2	0	0	0	0	0	0	0	50				
23:00	0	0	0	0	13	17	4	2	0	0	0	0	0	36	0	0	0	1	5	7	4	0	0	0	0	0	0	0	0	17				
Totals	16	38	52	144	778	2,034	864	123	18	0	0	0	0	4,067	19	24	39	118	741	2,101	1,101	242	31	8	0	0	0	0	0	4,424				
% of Totals	0%	1%	1%	4%	19%	50%	21%	3%	0%					100%	0%	1%	1%	3%	17%	47%	25%	5%	1%	0%						100%				

STATISTICS	00:00 - 12:00	6	12	28	58	263	681	243	26	7	0	0	0	0	1324	5	14	12	37	278	887	532	129	17	4	0	0	0	0	1915
	%	0%	0%	1%	1%	6%	17%	6%	1%	0%	0%	0%	0%	0%	33%	0%	0%	0%	1%	7%	22%	13%	3%	0%	0%	0%	0%	0%	0%	47%
	Peak Hour	11:45	11:00	6:45	8:45	11:30	11:00	11:45	11:45	6:15	0:00	0:00	0:00	0:00	11:45	5:30	5:45	9:45	8:45	7:30	7:30	7:15	7:15	4:45	11:45	0:00	0:00	0:00	7:30	
	Peak Volume	3	4	7	13	58	140	52	9	3	0	0	0	0	273	2	4	5	11	61	200	113	27	6	2	0	0	0	0	399
	12:00 - 24:00	10	26	24	86	515	1353	621	97	11	0	0	0	0	2743	14	10	27	81	463	1214	569	113	14	4	0	0	0	0	2509
	%	0%	1%	1%	2%	13%	33%	15%	2%	0%	0%	0%	0%	0%	67%	0%	0%	1%	2%	11%	30%	14%	3%	0%	0%	0%	0%	0%	62%	
	Peak Hour	12:00	14:15	16:00	15:45	16:00	15:30	16:00	15:15	16:30	12:00	12:00	12:00	12:00	15:45	13:30	13:45	15:15	15:00	15:15	14:45	17:00	12:15	17:45	12:30	12:00	12:00	12:00	15:00	
	Peak Volume	3	7	7	19	69	209	113	19	3	0	0	0	0	431	5	6	10	20	69	180	94	21	5	3	0	0	0	0	347
	07:00 - 09:00	1	2	10	14	75	175	66	7	2	0	0	0	0	352	1	5	4	13	104	344	191	42	5	1	0	0	0	0	710
	%	0%	0%	0%	0%	2%	4%	2%	0%	0%	0%	0%	0%	0%	9%	0%	0%	0%	0%	3%	8%	5%	1%	0%	0%	0%	0%	0%	0%	17%
Peak Hour	7:00	7:00	7:15	7:00	8:00	7:15	8:00	7:00	7:00	7:00	7:00	7:00	7:00	8:00	7:00	7:00	7:45	8:00	7:30	7:30	7:15	7:15	7:15	7:15	7:00	7:00	7:00	7:00	7:30	
Peak Volume	1	2	7	7	49	91	35	6	1	0	0	0	0	187	1	3	3	10	61	200	113	27	5	1	0	0	0	0	399	
16:00 - 18:00	1	4	9	25	115	379	203	25	4	0	0	0	0	765	0	1	6	10	107	312	172	26	4	0	0	0	0	0	0	638
%	0%	0%	0%	1%	3%	9%	5%	1%	0%	0%	0%	0%	0%	19%	0%	0%	0%	0%	3%	8%	4%	1%	0%	0%	0%	0%	0%	0%	16%	
Peak Hour	16:00	16:45	16:00	16:00	16:00	16:15	16:00	16:00	16:30	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	17:00	17:00	17:00	17:00	16:00	16:00	16:00	16:00	16:00	
Peak Volume	1	4	7	15	69	201	113	15	3	0	0	0	0	420	0	1	5	9	67	174	94	18	3	0	0	0	0	0	343	

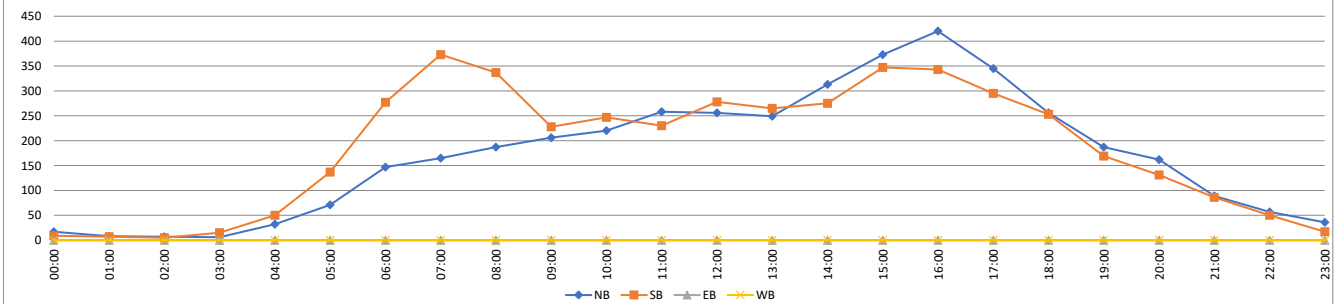
Direction	Percentiles					
	15th	50th	Average	85th	95th	ADT
NORTHBOUND	32	37	42	45	46	4067
SOUTHBOUND	33	38	38	43	46	4424
TOTALS	33	38	38	43	45	8491

TOTALS															Total
5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99			
0	0	0	2	4	12	4	2	2	0	0	0	0			26
0	0	0	3	5	5	1	1	0	0	0	0	0			15
0	0	0	0	5	7	0	0	0	0	0	0	0			12
0	0	0	2	9	5	3	1	0	1	0	0	0			21
1	1	0	2	16	30	22	6	3	1	0	0	0			82
1	1	1	2	15	97	69	17	4	1	0	0	0			208
2	7	5	11	49	215	110	22	3	0	0	0	0			424
2	5	8	10	74	278	127	28	5	1	0	0	0			538
0	2	6	17	105	241	130	21	2	0	0	0	0			524
3	3	5	19	72	210	99	22	1	0	0	0	0			434
0	3	10	13	98	230	103	8	2	0	0	0	0			467
2	4	5	14	89	238	107	27	2	0	0	0	0			488
3	5	2	14	96	268	120	24	0	2	0	0	0			534
1	2	4	13	83	263	118	25	4	1	0	0	0			514
7	11	11	17	104	284	128	22	4	0	0	0	0			588
3	7	12	35	114	360	162	26	1	0	0	0	0			720
1	4	12	24	136	369	191	23	3	0	0	0	0			763
0	1	3	11	86	322	184	28	5	0	0	0	0			640
2	4	2	7	70	255	134	30	4	1	0	0	0			509
5	0	4	13	98	157	62	16	1	0	0	0	0			356
2	1	1	16	98	134	31	7	3	0	0	0	0			293
0	1	0	12	42	82	35	3	0	0	0	0	0			175
0	0	0	4	33	49	17	4	0	0	0	0	0			107
0	0	0	1	18	24	8	2	0	0	0	0	0			53
35	62	91	262	1,519	4,135	1,965	365	49	8	0	0	0			8,491
0%	1%	1%	3%	18%	49%	23%	4%	1%	0%						100%

11	26	40	95	541	1568	775	155	24	4	0	0	0			3239
0%	1%	1%	2%	13%	39%	19%	4%	1%	0%	0%	0%	0%			80%
5:30	5:45	9:45	8:45	11:30	7:30	7:15	6:45	6:45	11:45	0:00	0:00	0:00			7:30
3	7	10	24	116	291	143	32	8	2	0	0	0			571
24	36	51	167	978	2567	1190	210	25	4	0	0	0			5252
1%	1%	1%	4%	24%	63%	29%	5%	1%	0%	0%	0%	0%			129%
13:30	13:45	13:45	15:15	16:00	15:45	16:30	17:15	17:45	12:30	12:00	12:00	12:00			15:30
7	12	13	38	136	374	195	32	6	3	0	0	0			764
2	7	14	27	179	519	257	49	7	1	0	0	0			1062
0%	0%	0%	1%	4%	13%	6%	1%	0%	0%	0%	0%	0%			26%
7:00	7:00	7:00	8:00	8:00	7:30	7:15	7:15	7:00	7:00	7:00	7:00	7:00			7:30
2	5	8	17	105	291	143	32	5	1	0	0	0			571
1	5	15	35	222	691	375	51	8	0	0	0	0			1403
0%	0%	0%	1%	5%	17%	9%	1%	0%	0%	0%	0%	0%			34%
16:00	16:45	16:00	16:00	16:00	16:00	16:30	16:45	16:30	16:00	16:00	16:00	16:00			16:00
1	5	12	24	136	369	195	28	5	0	0	0	0			763

VOLUME**Cross St 200' N/O 11 Cross St Dwy**Day: Tuesday
Date: 5/21/2024City: Methuen
Project #: MA24_430075_001

DAILY TOTALS						NB		SB		EB		WB		Total		DAILY TOTALS					
						4,067		4,424		0		0		8,491							
15-Minutes Interval												Hourly Intervals									
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL				
0:00	4	4			8	12:00	65	79			144	00:00	01:00	17	9		26				
0:15	3	1			4	12:15	71	69			140	01:00	02:00	8	7		15				
0:30	3	3			6	12:30	57	68			125	02:00	03:00	7	5		12				
0:45	7	1			8	12:45	63	62			125	03:00	04:00	6	15		21				
1:00	2	2			4	13:00	72	71			143	04:00	05:00	32	50		82				
1:15	2	1			3	13:15	64	74			138	05:00	06:00	71	137		208				
1:30	0	1			1	13:30	55	64			119	06:00	07:00	147	277		424				
1:45	4	3			7	13:45	58	56			114	07:00	08:00	165	373		538				
2:00	2	4			6	14:00	74	64			138	08:00	09:00	187	337		524				
2:15	1	1			2	14:15	70	74			144	09:00	10:00	206	228		434				
2:30	2	0			2	14:30	67	64			131	10:00	11:00	220	247		467				
2:45	2	0			2	14:45	102	73			175	11:00	12:00	258	230		488				
3:00	1	4			5	15:00	67	95			162	12:00	13:00	256	278		534				
3:15	0	2			2	15:15	92	84			176	13:00	14:00	249	265		514				
3:30	1	7			8	15:30	97	94			191	14:00	15:00	313	275		588				
3:45	4	2			6	15:45	117	74			191	15:00	16:00	373	347		720				
4:00	1	11			12	16:00	110	95			205	16:00	17:00	420	343		763				
4:15	2	10			12	16:15	99	78			177	17:00	18:00	345	295		640				
4:30	9	11			20	16:30	105	83			188	18:00	19:00	256	253		509				
4:45	20	18			38	16:45	106	87			193	19:00	20:00	187	169		356				
5:00	11	23			34	17:00	96	83			179	20:00	21:00	162	131		293				
5:15	11	40			51	17:15	92	79			171	21:00	22:00	89	86		175				
5:30	15	35			50	17:30	90	68			158	22:00	23:00	57	50		107				
5:45	34	39			73	17:45	67	65			132	23:00	00:00	36	17		53				
6:00	28	46			74	18:00	65	63			128	STATISTICS									
6:15	27	75			102	18:15	59	66			125		NB	SB	EB	WB	TOTAL				
6:30	39	75			114	18:30	72	58			130	Peak Period	00:00	to	12:00						
6:45	53	81			134	18:45	60	66			126	Volume	1324	1915			3239				
7:00	30	77			107	19:00	48	55			103	Peak Hour	11:00	7:30			7:30				
7:15	40	86			126	19:15	54	45			99	Peak Volume	258	399			571				
7:30	52	106			158	19:30	55	36			91	Peak Hour Factor	0.806	0.941			0.903				
7:45	43	104			147	19:45	30	33			63										
8:00	33	95			128	20:00	49	35			84	Peak Period	12:00	to	00:00						
8:15	44	94			138	20:15	40	36			76	Volume	2743	2509			5252				
8:30	46	70			116	20:30	41	35			76	Peak Hour	15:45	15:00			15:30				
8:45	64	78			142	20:45	32	25			57	Peak Volume	431	347			764				
9:00	46	57			103	21:00	20	19			39	Peak Hour Factor	0.921	0.913			0.932				
9:15	53	70			123	21:15	27	22			49										
9:30	56	46			102	21:30	24	23			47	Peak Period	07:00	to	09:00						
9:45	51	55			106	21:45	18	22			40	Volume	352	710			1062				
10:00	41	55			96	22:00	16	17			33	Peak Hour	8:00	7:30			7:30				
10:15	56	62			118	22:15	11	14			25	Peak Volume	187	399			571				
10:30	64	68			132	22:30	11	9			20	Peak Hour Factor	0.730	0.941			0.903				
10:45	59	62			121	22:45	19	10			29										
11:00	67	64			131	23:00	6	8			14	Peak Period	16:00	to	18:00						
11:15	56	54			110	23:15	13	2			15	Volume	765	638			1403				
11:30	55	65			120	23:30	9	4			13	Peak Hour	16:00	16:00			16:00				
11:45	80	47			127	23:45	8	3			11	Peak Volume	420	343			763				
TOTALS	1324	1915	0	0	3239	TOTALS	2743	2509	0	0	5252	Peak Hour Factor	0.955	0.903			0.930				
SPLIT %	41%	59%	0%	0%	38%	SPLIT %	52%	48%	0%	0%	62%										



SPEED

Cross St 200' N/O 11 Cross St Dwy

Day: Wednesday

Date: 5/22/2024

City: Methuen

Project #: MA24_430075_001

HOURLY BREAKDOWN	Time	NORTHBOUND													Total	SOUTHBOUND													Total
		5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99		5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	
	0:00	0	0	0	4	6	11	2	1	0	0	0	0	0	24	0	0	0	1	1	5	1	1	1	0	0	0	0	10
	1:00	0	0	0	0	6	8	0	0	0	0	0	0	0	14	0	0	1	1	0	4	2	0	1	0	0	0	0	9
	2:00	0	0	0	0	1	3	1	0	0	0	0	0	0	5	0	0	0	1	0	3	2	1	1	0	0	0	0	8
	3:00	0	0	0	0	2	4	0	0	0	0	0	0	0	6	0	0	0	0	2	3	2	0	0	0	0	0	0	7
	4:00	0	0	0	0	10	14	3	0	0	0	0	0	0	27	0	0	0	3	5	16	14	10	0	0	0	0	0	48
	5:00	0	1	1	1	13	32	20	2	1	0	0	0	0	71	1	0	1	6	21	40	43	15	2	3	0	0	0	132
	6:00	0	2	3	5	16	61	26	9	1	0	0	0	0	123	2	3	7	12	56	117	50	13	1	1	0	0	0	262
	7:00	1	4	2	6	31	85	25	5	0	0	0	0	0	159	3	1	3	6	53	160	106	24	0	0	0	0	0	356
	8:00	0	2	7	8	46	82	18	4	0	0	0	0	0	167	35	16	13	42	84	183	46	13	0	0	0	0	0	432
	9:00	1	4	4	12	61	97	30	6	0	0	0	0	0	215	4	2	0	5	52	140	64	14	1	0	0	0	0	282
	10:00	0	1	3	15	67	114	28	2	0	0	0	0	0	230	2	3	1	10	57	102	38	14	2	0	0	0	0	229
	11:00	0	1	3	4	74	118	34	2	0	0	0	0	0	236	0	0	1	7	44	111	61	16	2	0	0	0	0	242
	12:00	1	3	3	6	45	160	45	5	1	0	0	0	0	269	0	3	1	9	55	121	55	11	2	0	0	0	0	257
	13:00	0	2	2	12	42	145	53	7	0	0	0	0	0	263	0	3	7	6	54	130	55	10	1	0	0	0	0	266
	14:00	1	2	4	8	42	162	76	12	0	0	0	0	0	307	5	4	3	9	47	120	65	8	0	2	0	0	0	263
	15:00	2	9	8	8	62	182	86	6	1	0	0	0	0	364	1	1	0	7	64	139	85	14	0	0	0	0	0	311
	16:00	0	3	4	10	65	195	92	15	1	0	0	0	0	385	1	0	2	5	60	143	70	9	2	0	0	0	0	292
	17:00	1	6	3	13	63	207	81	3	0	0	0	0	0	377	2	0	2	7	47	154	72	12	0	0	0	0	0	296
	18:00	1	3	5	9	40	173	61	11	3	0	0	0	0	306	0	1	2	8	41	132	50	15	2	0	0	0	0	251
	19:00	0	1	0	10	42	97	43	3	1	0	0	0	0	197	2	0	2	1	38	120	50	12	1	0	0	0	0	226
	20:00	0	0	1	6	45	86	30	4	0	0	0	0	0	172	2	0	1	13	56	75	27	5	0	1	0	0	0	180
	21:00	0	1	1	8	31	44	5	4	0	0	0	0	0	94	0	0	0	13	32	39	14	2	0	1	0	0	0	101
	22:00	0	1	0	3	32	31	2	1	0	0	0	0	0	70	0	0	0	5	19	22	8	1	2	0	0	0	0	57
	23:00	0	0	1	2	20	14	7	1	0	0	0	0	0	45	0	0	0	4	11	13	5	2	1	0	0	0	0	36
	Totals	8	46	55	150	862	2,125	768	103	9	0	0	0	0	4,126	60	37	47	181	899	2,092	985	222	22	8	0	0	0	4,553
	% of Totals	0%	1%	1%	4%	21%	52%	19%	2%	0%					100%	1%	1%	1%	4%	20%	46%	22%	5%	0%	0%				100%

STATISTICS	00:00 - 12:00	2	15	23	55	333	629	187	31	2	0	0	0	0	1277	47	25	27	94	375	884	429	121	11	4	0	0	0	2017
	%	0%	0%	1%	1%	8%	15%	5%	1%	0%	0%	0%	0%	0%	31%	1%	1%	1%	2%	9%	21%	10%	3%	0%	0%	0%	0%	0%	49%
	Peak Hour	7:00	9:30	7:45	10:00	10:30	11:45	11:30	6:00	4:45	0:00	0:00	0:00	0:00	11:45	8:15	7:45	7:45	8:00	7:45	7:30	7:00	7:15	5:30	4:30	0:00	0:00	0:00	7:45
	Peak Volume	1	5	8	15	79	156	42	9	1	0	0	0	0	266	36	17	13	42	86	200	106	26	3	3	0	0	0	449
	12:00 - 24:00	6	31	32	95	529	1496	581	72	7	0	0	0	0	2849	13	12	20	87	524	1208	556	101	11	4	0	0	0	2536
	%	0%	1%	1%	2%	13%	36%	14%	2%	0%	0%	0%	0%	0%	69%	0%	0%	0%	2%	13%	29%	13%	2%	0%	0%	0%	0%	0%	61%
	Peak Hour	14:15	14:45	15:00	16:30	15:45	17:30	16:30	15:45	17:45	12:00	12:00	12:00	12:00	15:30	13:45	12:45	12:30	20:15	15:15	16:45	15:00	14:45	12:00	13:30	12:00	12:00	12:00	14:45
	Peak Volume	3	11	8	15	70	224	99	16	3	0	0	0	0	393	5	5	8	22	73	160	85	18	2	2	0	0	0	318
	07:00 - 09:00	1	6	9	14	77	167	43	9	0	0	0	0	0	326	38	17	16	48	137	343	152	37	0	0	0	0	0	788
	%	0%	0%	0%	0%	2%	4%	1%	0%	0%	0%	0%	0%	0%	8%	1%	0%	0%	1%	3%	8%	4%	1%	0%	0%	0%	0%	0%	19%
	Peak Hour	7:00	7:00	7:45	7:45	8:00	7:00	7:30	7:00	7:00	7:00	7:00	7:00	7:00	8:00	7:45	7:45	7:45	8:00	7:45	7:30	7:00	7:15	7:00	7:00	7:00	7:00	7:00	7:45
	Peak Volume	1	4	8	8	46	85	27	5	0	0	0	0	0	167	35	17	13	42	86	200	106	26	0	0	0	0	0	449
	16:00 - 18:00	1	9	7	23	128	402	173	18	1	0	0	0	0	762	3	0	4	12	107	297	142	21	2	0	0	0	0	588
	%	0%	0%	0%	1%	3%	10%	4%	0%	0%	0%	0%	0%	0%	18%	0%	0%	0%	0%	3%	7%	3%	1%	0%	0%	0%	0%	0%	14%
	Peak Hour	16:30	16:45	16:00	16:30	16:00	16:45	16:30	16:00	16:00	16:00	16:00	16:00	16:00	16:00	17:00	16:00	16:30	17:00	16:00	16:45	16:30	17:00	16:00	16:00	16:00	16:00	16:00	16:30
	Peak Volume	1	6	4	15	65	208	99	15	1	0	0	0	0	385	2	0	4	7	60	160	79	12	2	0	0	0	0	304

Direction	Percentiles					
	15th	50th	Average	85th	95th	ADT
NORTHBOUND	32	37	37	42	44	4126
SOUTHBOUND	32	38	37	43	46	4553
TOTALS	32	37	37	42	45	8679

TOTALS														Total
5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99		
0	0	0	5	7	16	3	2	1	0	0	0	0	34	
0	0	1	1	6	12	2	0	1	0	0	0	0	23	
0	0	0	1	1	6	3	1	1	0	0	0	0	13	
0	0	0	0	4	7	2	0	0	0	0	0	0	13	
0	0	0	3	15	30	17	10	0	0	0	0	0	75	
1	1	2	7	34	72	63	17	3	3	0	0	0	203	
2	5	10	17	72	178	76	22	2	1	0	0	0	385	
4	5	5	12	84	245	131	29	0	0	0	0	0	515	
35	18	20	50	130	265	64	17	0	0	0	0	0	599	
5	6	4	17	113	237	94	20	1	0	0	0	0	497	
2	4	4	25	124	216	66	16	2	0	0	0	0	459	
0	1	4	11	118	229	95	18	2	0	0	0	0	478	
1	6	4	15	100	281	100	16	3	0	0	0	0	526	
0	5	9	18	96	275	108	17	1	0	0	0	0	529	
6	6	7	17	89	282	141	20	0	2	0	0	0	570	
3	10	8	15	126	321	171	20	1	0	0	0	0	675	
1	3	6	15	125	338	162	24	3	0	0	0	0	677	
3	6	5	20	110	361	153	15	0	0	0	0	0	673	
1	4	7	17	81	305	111	26	5	0	0	0	0	557	
2	1	2	11	80	217	93	15	2	0	0	0	0	423	
2	0	2	19	101	161	57	9	0	1	0	0	0	352	
0	1	1	21	63	83	19	6	0	1	0	0	0	195	
0	1	0	8	51	53	10	2	2	0	0	0	0	127	
0	0	1	6	31	27	12	3	1	0	0	0	0	81	
68	83	102	331	1,761	4,217	1,753	325	31	8	0	0	0	8,679	
1%	1%	1%	4%	20%	49%	20%	4%	0%	0%				100%	

49 1%	40 1%	50 1%	149 4%	708 17%	1513 37%	616 15%	152 4%	13 0%	4 0%	0 0%	0 0%	0 0%	3294 80%
7:45 36	7:45 21	7:45 21	8:00 50	9:15 134	7:30 277	7:00 131	6:45 31	5:30 4	4:30 3	0:00 0	0:00 0	0:00 0	7:45 608
19 0%	43 1%	52 1%	182 4%	1053 26%	2704 66%	1137 28%	173 4%	18 0%	4 0%	0 0%	0 0%	0 0%	5385 131%
14:15 7	14:15 14	12:30 11	20:15 31	15:15 140	16:45 368	16:30 178	18:15 28	17:45 5	13:30 2	12:00 0	12:00 0	12:00 0	15:30 707
39 1%	23 1%	25 1%	62 2%	214 5%	510 12%	195 5%	46 1%	0 0%	0 0%	0 0%	0 0%	0 0%	1114 27%
7:45 36	7:45 21	7:45 21	8:00 50	8:00 130	7:30 277	7:00 131	7:15 31	7:00 0	7:00 0	7:00 0	7:00 0	7:00 0	7:45 608
4 0%	9 0%	11 0%	35 1%	235 6%	699 17%	315 8%	39 1%	3 0%	0 0%	0 0%	0 0%	0 0%	1350 33%
17:00 3	16:45 6	16:00 6	16:30 20	16:00 125	16:45 368	16:30 178	16:15 26	16:00 3	16:00 0	16:00 0	16:00 0	16:00 0	16:45 680

VOLUME**Cross St 200' N/O 11 Cross St Dwy**

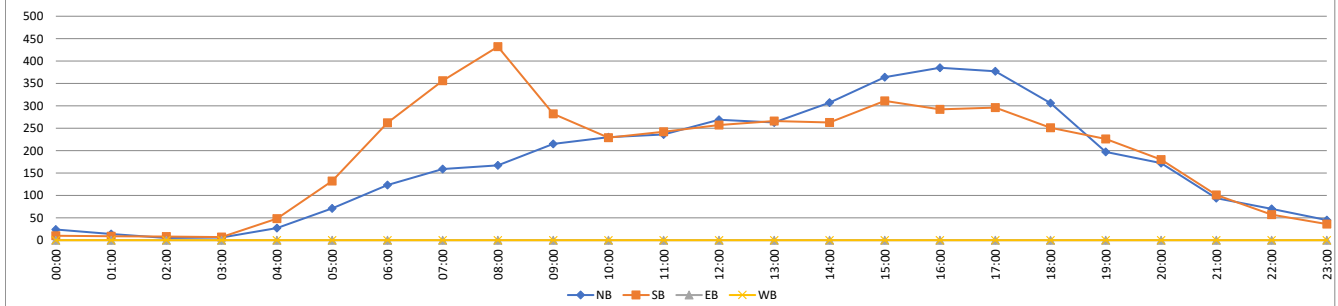
Day: Wednesday

Date: 5/22/2024

City: Methuen

Project #: MA24_430075_001

DAILY TOTALS						NB				SB				EB				WB				Total		DAILY TOTALS					
						4,126		4,553		0		0		8,679															
15-Minutes Interval												Hourly Intervals																	
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL												
0:00	9	4			13	12:00	70	62			132	00:00	01:00	24	10		34												
0:15	9	4			13	12:15	67	74			141	01:00	02:00	14	9		23												
0:30	2	1			3	12:30	71	62			133	02:00	03:00	5	8		13												
0:45	4	1			5	12:45	61	59			120	03:00	04:00	6	7		13												
1:00	5	3			8	13:00	71	69			140	04:00	05:00	27	48		75												
1:15	1	1			2	13:15	63	79			142	05:00	06:00	71	132		203												
1:30	4	2			6	13:30	55	58			113	06:00	07:00	123	262		385												
1:45	4	3			7	13:45	74	60			134	07:00	08:00	159	356		515												
2:00	1	2			3	14:00	75	71			146	08:00	09:00	167	432		599												
2:15	2	3			5	14:15	71	55			126	09:00	10:00	215	282		497												
2:30	1	3			4	14:30	82	56			138	10:00	11:00	230	229		459												
2:45	1	0			1	14:45	79	81			160	11:00	12:00	236	242		478												
3:00	1	2			3	15:00	89	71			160	12:00	13:00	269	257		526												
3:15	2	4			6	15:15	85	76			161	13:00	14:00	263	266		529												
3:30	1	0			1	15:30	101	90			191	14:00	15:00	307	263		570												
3:45	2	1			3	15:45	89	74			163	15:00	16:00	364	311		675												
4:00	2	9			11	16:00	100	75			175	16:00	17:00	385	292		677												
4:15	1	13			14	16:15	103	75			178	17:00	18:00	377	296		673												
4:30	9	8			17	16:30	96	68			164	18:00	19:00	306	251		557												
4:45	15	18			33	16:45	86	74			160	19:00	20:00	197	226		423												
5:00	5	21			26	17:00	94	83			177	20:00	21:00	172	180		352												
5:15	12	34			46	17:15	88	79			167	21:00	22:00	94	101		195												
5:30	21	36			57	17:30	109	67			176	22:00	23:00	70	57		127												
5:45	33	41			74	17:45	86	67			153	23:00	00:00	45	36		81												
6:00	13	45			58	18:00	107	73			180	STATISTICS																	
6:15	31	59			90	18:15	89	66			155		NB	SB	EB	WB	TOTAL												
6:30	32	70			102	18:30	48	68			116	Peak Period	00:00	to	12:00														
6:45	47	88			135	18:45	62	44			106	Volume	1277	2017			3294												
7:00	33	68			101	19:00	41	59			100	Peak Hour	10:45	7:45			7:45												
7:15	44	84			128	19:15	50	38			88	Peak Volume	242	449			608												
7:30	42	107			149	19:30	51	82			133	Peak Hour Factor	0.877	0.877			0.921												
7:45	40	97			137	19:45	55	47			102	Peak Period																	
8:00	37	111			148	20:00	58	39			97	Volume	12:00	to	00:00														
8:15	45	113			158	20:15	49	65			114	Peak Hour	2849	2536			5385												
8:30	37	128			165	20:30	39	41			80	Peak Hour	15:30	14:45			15:30												
8:45	48	80			128	20:45	26	35			61	Peak Volume	393	318			707												
9:00	44	78			122	21:00	27	41			68	Peak Hour Factor	0.954	0.883			0.925												
9:15	48	72			120	21:15	28	22			50	Peak Period																	
9:30	58	70			128	21:30	18	19			37	Volume	07:00	to	09:00														
9:45	65	62			127	21:45	21	19			40	Peak Hour	326	788			1114												
10:00	47	75			122	22:00	25	20			45	Peak Hour	8:00	7:45			7:45												
10:15	52	46			98	22:15	13	14			27	Peak Volume	167	449			608												
10:30	67	58			125	22:30	17	13			30	Peak Hour Factor	0.870	0.877			0.921												
10:45	64	50			114	22:45	15	10			25	Peak Period																	
11:00	55	52			107	23:00	15	12			27	Volume	16:00	to	18:00														
11:15	54	69			123	23:15	12	4			16	Peak Hour	762	588			1350												
11:30	69	67			136	23:30	14	15			29	Peak Volume	16:00	16:30			16:45												
11:45	58	54			112	23:45	4	5			9	Peak Hour Factor	385	304			680												
TOTALS	1277	2017	0	0	3294	TOTALS	2849	2536	0	0	5385	Peak Hour Factor																	
SPLIT %	39%	61%	0%	0%	38%	SPLIT %	53%	47%	0%	0%	62%	0.934																	
												0.916						0.960											



SPEED

Pelham St Bet I-93 SB On/Off Ramp/Cross St & I-93 NB On/Off Ramps/Ranger Plaza Dwy

Day: Tuesday

City: Methuen

Date: 5/21/2024

Project #: MA24_430075_002

HOURLY BREAKDOWN	Time	EASTBOUND														Total	WESTBOUND														Total
		5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	5 15		15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99			
	0:00	0	4	5	18	14	12	3	1	0	0	0	0	0	57	0	1	3	22	30	12	3	2	0	0	0	0	0	73		
	1:00	1	2	4	11	20	5	2	0	0	0	0	0	0	45	0	1	3	12	17	7	0	0	0	0	0	0	40			
	2:00	1	1	8	7	13	8	1	0	0	0	0	0	0	39	1	2	11	18	14	4	4	1	0	0	0	0	55			
	3:00	1	4	8	14	15	5	1	1	0	0	0	0	0	49	0	0	9	29	25	7	2	0	0	0	0	0	72			
	4:00	1	12	22	46	36	10	3	0	0	0	0	0	0	130	1	6	36	69	78	23	2	0	0	0	0	0	215			
	5:00	0	7	34	118	88	15	5	1	0	0	0	0	0	268	0	2	38	166	130	30	6	0	0	0	0	0	372			
	6:00	23	55	119	213	97	18	1	0	0	0	0	0	0	526	1	5	66	228	155	27	4	0	0	0	0	0	486			
	7:00	48	66	182	312	109	7	0	0	0	0	0	0	0	724	9	9	59	317	181	20	0	1	0	0	0	0	596			
	8:00	45	66	191	337	85	6	1	0	0	0	0	0	0	731	10	11	71	309	190	15	0	0	0	0	0	0	606			
	9:00	40	64	137	235	53	6	1	0	0	0	0	0	0	536	0	2	84	224	148	23	0	0	0	0	0	0	481			
	10:00	26	57	131	197	67	4	0	0	0	0	0	0	0	482	0	6	77	231	150	19	2	0	0	0	0	0	485			
	11:00	19	44	156	227	66	5	0	0	0	0	0	0	0	517	0	6	78	294	167	20	1	0	0	0	0	0	566			
	12:00	47	51	143	211	60	7	0	0	0	0	0	0	0	519	1	7	74	274	196	26	2	0	0	0	0	0	580			
	13:00	86	105	189	188	54	9	0	0	0	0	0	0	0	631	0	7	59	290	235	29	0	0	0	0	0	0	620			
	14:00	57	85	162	253	93	9	1	0	0	0	0	0	0	660	14	22	95	386	244	33	2	0	0	0	0	0	796			
	15:00	74	104	211	265	75	7	0	0	0	0	0	0	0	736	0	14	82	337	261	37	4	0	0	0	0	0	735			
	16:00	59	79	223	270	80	10	3	0	0	0	0	0	0	724	1	8	89	370	243	37	3	0	0	0	0	0	751			
	17:00	117	119	190	205	59	1	3	0	0	0	0	0	0	694	7	14	88	318	213	18	0	0	1	0	0	0	659			
	18:00	32	53	124	213	88	6	1	0	0	0	0	0	0	517	1	9	42	298	173	33	1	0	0	0	0	0	557			
	19:00	4	15	61	174	96	19	2	0	0	0	0	0	0	371	0	1	32	155	224	61	4	0	1	0	0	0	478			
	20:00	0	5	31	107	120	26	2	0	0	0	0	0	0	291	0	0	7	73	162	61	9	0	0	0	0	0	312			
	21:00	0	2	17	70	91	27	5	3	0	0	0	0	0	215	0	3	16	60	113	44	8	2	0	0	0	0	246			
	22:00	0	6	17	62	56	19	4	0	0	0	0	0	0	164	0	0	8	38	108	47	6	0	0	0	0	0	207			
	23:00	0	7	13	29	34	19	4	1	0	0	0	0	0	107	0	0	5	28	51	27	9	3	0	0	0	0	123			
Totals	681	1,013	2,378	3,782	1,569	260	43	7	0	0	0	0	0	9,733	46	136	1,132	4,546	3,508	660	72	9	2	0	0	0	0	10,111			
% of Totals	7%	10%	24%	39%	16%	3%	0%	0%						100%	0%	1%	11%	45%	35%	7%	1%	0%	0%				100%				

STATISTICS	00:00 - 12:00	205	382	997	1735	663	101	18	3	0	0	0	0	0	0	4104	22	51	535	1919	1285	207	24	4	0	0	0	0	0	4047
	%	2%	4%	10%	18%	7%	1%	0%	0%	0%	0%	0%	0%	0%	0%	42%	0%	1%	5%	20%	13%	2%	0%	0%	0%	0%	0%	0%	0%	42%
	Peak Hour	6:45	6:45	7:45	7:30	7:15	6:00	5:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:30	7:15	7:15	10:15	7:30	7:30	4:45	4:45	0:00	0:00	0:00	0:00	0:00	0:00	7:30
	Peak Volume	50	75	203	352	112	18	5	1	0	0	0	0	0	0	764	14	11	98	337	199	34	6	2	0	0	0	0	0	632
	12:00 - 24:00	476	631	1381	2047	906	159	25	4	0	0	0	0	0	0	5629	24	85	597	2627	2223	453	48	5	2	0	0	0	0	6064
	%	5%	6%	14%	21%	9%	2%	0%	0%	0%	0%	0%	0%	0%	0%	58%	0%	1%	6%	27%	23%	5%	0%	0%	0%	0%	0%	0%	0%	62%
	Peak Hour	16:30	17:00	16:00	15:45	20:00	19:15	20:45	20:45	12:00	12:00	12:00	12:00	12:00	12:00	16:30	13:45	14:30	16:30	15:45	15:15	19:15	20:00	23:00	16:30	12:00	12:00	12:00	12:00	14:00
	Peak Volume	121	119	223	273	120	27	5	3	0	0	0	0	0	0	759	14	27	121	389	283	70	9	3	1	0	0	0	0	796
	07:00 - 09:00	93	132	373	649	194	13	1	0	0	0	0	0	0	0	1455	19	20	130	626	371	35	0	1	0	0	0	0	0	1202
	%	1%	1%	4%	7%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	1%	6%	4%	0%	0%	0%	0%	0%	0%	0%	0%	12%
Peak Hour	7:30	7:15	7:45	7:30	7:15	7:45	7:15	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:30	7:15	7:15	8:00	7:30	7:30	7:15	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:30	
Peak Volume	49	67	203	352	112	8	1	0	0	0	0	0	0	0	764	14	11	71	337	199	22	0	1	0	0	0	0	0	632	
16:00 - 18:00	176	198	413	475	139	11	6	0	0	0	0	0	0	0	1418	8	22	177	688	456	55	3	0	1	0	0	0	0	1410	
%	2%	2%	4%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	2%	7%	5%	1%	0%	0%	0%	0%	0%	0%	0%	14%	
Peak Hour	16:30	17:00	16:00	16:00	16:00	16:15	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:30	16:30	17:00	16:30	16:15	16:00	16:15	16:00	16:00	16:30	16:00	16:00	16:00	16:00	16:15	
Peak Volume	121	119	223	270	80	11	3	0	0	0	0	0	0	0	759	7	14	121	382	243	40	3	0	1	0	0	0	0	752	

Direction	Percentiles					
	15th	50th	Average	85th	95th	ADT
EASTBOUND	19	26	25	31	34	9733
WESTBOUND	25	29	29	34	37	10111
TOTALS	22	28	27	33	35	19844

TOTALS														Total
5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99		
0	5	8	40	44	24	6	3	0	0	0	0	0	130	
1	3	7	23	37	12	2	0	0	0	0	0	0	85	
2	3	19	25	27	12	5	1	0	0	0	0	0	94	
1	4	17	43	40	12	3	1	0	0	0	0	0	121	
2	18	58	115	114	33	5	0	0	0	0	0	0	345	
0	9	72	284	218	45	11	1	0	0	0	0	0	640	
24	60	185	441	252	45	5	0	0	0	0	0	0	1012	
57	75	241	629	290	27	0	1	0	0	0	0	0	1320	
55	77	262	646	275	21	1	0	0	0	0	0	0	1337	
40	66	221	459	201	29	1	0	0	0	0	0	0	1017	
26	63	208	428	217	23	2	0	0	0	0	0	0	967	
19	50	234	521	233	25	1	0	0	0	0	0	0	1083	
48	58	217	485	256	33	2	0	0	0	0	0	0	1099	
86	112	248	478	289	38	0	0	0	0	0	0	0	1251	
71	107	257	639	337	42	3	0	0	0	0	0	0	1456	
74	118	293	602	336	44	4	0	0	0	0	0	0	1471	
60	87	312	640	323	47	6	0	0	0	0	0	0	1475	
124	133	278	523	272	19	3	0	1	0	0	0	0	1353	
33	62	166	511	261	39	2	0	0	0	0	0	0	1074	
4	16	93	329	320	80	6	0	1	0	0	0	0	849	
0	5	38	180	282	87	11	0	0	0	0	0	0	603	
0	5	33	130	204	71	13	5	0	0	0	0	0	461	
0	6	25	100	164	66	10	0	0	0	0	0	0	371	
0	7	18	57	85	46	13	4	0	0	0	0	0	230	
727	1,149	3,510	8,328	5,077	920	115	16	2	0	0	0	0	19,844	
4%	6%	18%	42%	26%	5%	1%	0%	0%					100%	

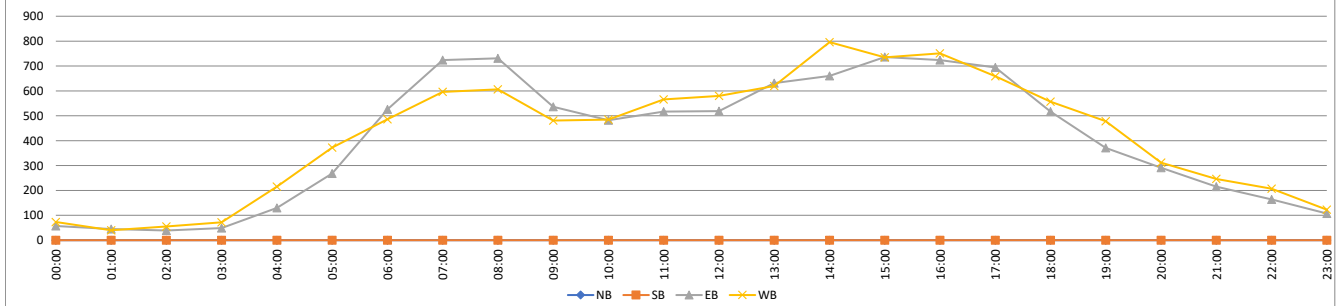
227	433	1532	3654	1948	308	42	7	0	0	0	0	0	8151
2%	4%	16%	38%	20%	3%	0%	0%	0%	0%	0%	0%	0%	84%
6:45	6:45	8:15	7:30	7:30	4:45	5:00	0:00	0:00	0:00	0:00	0:00	0:00	7:30
59	83	271	689	303	50	11	3	0	0	0	0	0	1396
500	716	1978	4674	3129	612	73	9	2	0	0	0	0	11693
5%	7%	20%	48%	32%	6%	1%	0%	0%	0%	0%	0%	0%	120%
16:30	14:30	16:30	15:45	14:45	19:15	20:45	21:00	16:30	12:00	12:00	12:00	12:00	14:30
128	141	334	662	350	97	13	5	1	0	0	0	0	1524
112	152	503	1275	565	48	1	1	0	0	0	0	0	2657
1%	2%	5%	13%	6%	0%	0%	0%	0%	0%	0%	0%	0%	27%
7:15	7:15	8:00	7:30	7:30	7:15	7:15	7:00	7:00	7:00	7:00	7:00	7:00	7:30
58	78	262	689	303	29	1	1	0	0	0	0	0	1396
184	220	590	1163	595	66	9	0	1	0	0	0	0	2828
2%	2%	6%	12%	6%	1%	0%	0%	0%	0%	0%	0%	0%	29%
16:30	17:00	16:30	16:00	16:00	16:15	16:00	16:00	16:30	16:00	16:00	16:00	16:00	16:15
128	133	334	640	323	51	6	0	1	0	0	0	0	1494

VOLUME**Pelham St Bet I-93 SB On/Off Ramp/Cross St & I-93 NB On/Off Ramps/Ranger Plaza Dwy**

Day: Tuesday
Date: 5/21/2024

City: Methuen
Project #: MA24_430075_002

DAILY TOTALS						NB	SB	EB	WB	Total	DAILY TOTALS							
						0	0	9,733	10,111	19,844								
15-Minutes Interval												Hourly Intervals						
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	
0:00			15	17	32	12:00			145	153	298	00:00	01:00		57	73	130	
0:15			17	23	40	12:15			131	141	272	01:00	02:00		45	40	85	
0:30			10	19	29	12:30			114	154	268	02:00	03:00		39	55	94	
0:45			15	14	29	12:45			129	132	261	03:00	04:00		49	72	121	
1:00			7	11	18	13:00			158	155	313	04:00	05:00		130	215	345	
1:15			7	7	14	13:15			125	160	285	05:00	06:00		268	372	640	
1:30			13	7	20	13:30			181	160	341	06:00	07:00		526	486	1012	
1:45			18	15	33	13:45			167	145	312	07:00	08:00		724	596	1320	
2:00			12	10	22	14:00			150	178	328	08:00	09:00		731	606	1337	
2:15			8	12	20	14:15			159	185	344	09:00	10:00		536	481	1017	
2:30			6	13	19	14:30			181	200	381	10:00	11:00		482	485	967	
2:45			13	20	33	14:45			170	233	403	11:00	12:00		517	566	1083	
3:00			12	13	25	15:00			200	165	365	12:00	13:00		519	580	1099	
3:15			10	21	31	15:15			189	186	375	13:00	14:00		631	620	1251	
3:30			15	13	28	15:30			197	176	373	14:00	15:00		660	796	1456	
3:45			12	25	37	15:45			150	208	358	15:00	16:00		736	735	1471	
4:00			16	25	41	16:00			188	178	366	16:00	17:00		724	751	1475	
4:15			23	54	77	16:15			172	192	364	17:00	18:00		694	659	1353	
4:30			44	66	110	16:30			183	187	370	18:00	19:00		517	557	1074	
4:45			47	70	117	16:45			181	194	375	19:00	20:00		371	478	849	
5:00			54	76	130	17:00			206	179	385	20:00	21:00		291	312	603	
5:15			53	85	138	17:15			189	169	358	21:00	22:00		215	246	461	
5:30			70	88	158	17:30			146	156	302	22:00	23:00		164	207	371	
5:45			91	123	214	17:45			153	155	308	23:00	00:00		107	123	230	
6:00			81	109	190	18:00			139	125	264	STATISTICS						
6:15			105	117	222	18:15			130	135	265		NB	SB	EB	WB	TOTAL	
6:30			146	128	274	18:30			131	161	292	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	00:00	to	12:00	4104	4047	8151
6:45			194	132	326	18:45			117	136	253							
7:00			175	135	310	19:00			125	117	242							
7:15			158	148	306	19:15			88	149	237							
7:30			196	163	359	19:30			82	115	197					7:30	7:30	7:30
7:45			195	150	345	19:45			76	97	173					764	632	1396
8:00			192	154	346	20:00			75	77	152					0.974	0.958	0.972
8:15			181	165	346	20:15			84	83	167	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	12:00	to	00:00	5629	6064	11693
8:30			166	148	314	20:30			65	88	153							
8:45			192	139	331	20:45			67	64	131							
9:00			141	127	268	21:00			61	58	119							
9:15			142	118	260	21:15			62	72	134					16:30	14:00	14:30
9:30			127	118	245	21:30			45	55	100					759	796	1524
9:45			126	118	244	21:45			47	61	108					0.921	0.854	0.945
10:00			123	98	221	22:00			44	63	107	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	07:00	to	09:00	1455	1202	2657
10:15			115	124	239	22:15			36	44	80							
10:30			123	124	247	22:30			46	47	93							
10:45			121	139	260	22:45			38	53	91							
11:00			131	135	266	23:00			53	32	85					7:30	7:30	7:30
11:15			112	152	264	23:15			23	32	55					764	632	1396
11:30			145	134	279	23:30			16	30	46					0.974	0.958	0.972
11:45			129	145	274	23:45			15	29	44							
TOTALS	0	0	4104	4047	8151	TOTALS	0	0	5629	6064	11693							
SPLIT %	0%	0%	50%	50%	41%	SPLIT %	0%	0%	48%	52%	59%							



SPEED

Pelham St Bet I-93 SB On/Off Ramp/Cross St & I-93 NB On/Off Ramps/Ranger Plaza Dwy

Day: Wednesday

City: Methuen

Date: 5/22/2024

Project #: MA24_430075_002

HOURLY BREAKDOWN	Time	EASTBOUND														Total	WESTBOUND														Total
		5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	5 15		15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99			
	0:00	1	1	6	14	27	11	1	0	0	0	0	0	0	61	0	0	5	10	40	17	5	2	0	0	0	0	0	79		
	1:00	1	1	0	11	17	8	4	2	0	0	0	0	0	44	0	1	3	17	23	12	4	2	0	0	0	0	0	62		
	2:00	1	2	1	12	18	12	4	0	0	0	0	0	0	50	0	0	5	12	11	16	2	1	0	0	0	0	0	47		
	3:00	0	1	4	26	20	9	6	0	1	0	0	0	0	67	0	0	4	16	21	11	4	0	0	0	0	0	0	56		
	4:00	1	1	6	27	61	26	9	2	0	0	0	0	0	133	0	0	13	43	86	62	9	4	0	0	0	0	0	217		
	5:00	1	4	14	60	103	53	8	1	0	0	0	0	0	244	0	1	16	67	210	77	9	2	0	0	0	0	0	382		
	6:00	18	18	88	207	155	43	6	0	0	0	0	0	0	535	4	5	11	151	217	77	20	1	0	0	0	0	0	486		
	7:00	56	66	175	241	177	49	3	0	0	0	0	0	0	767	7	11	27	142	248	94	10	1	1	0	0	0	0	541		
	8:00	80	83	203	323	144	29	3	0	0	0	0	0	0	865	2	11	24	157	290	81	11	1	0	0	0	0	0	577		
	9:00	29	59	141	277	137	23	1	0	0	0	0	0	0	667	0	2	31	162	266	65	5	1	0	0	0	0	0	532		
	10:00	37	61	120	189	115	18	1	1	0	0	0	0	0	542	2	9	31	174	241	40	5	0	0	0	0	0	0	502		
	11:00	28	40	116	205	116	24	1	0	1	0	0	0	0	531	8	9	28	141	241	78	9	1	0	0	0	0	0	515		
	12:00	38	52	101	197	122	21	1	0	0	0	0	0	0	532	3	2	29	167	300	83	11	1	0	0	0	0	0	596		
	13:00	49	69	158	200	114	19	4	1	0	0	0	0	0	614	0	9	42	192	266	74	6	1	1	0	0	0	0	591		
	14:00	46	73	168	226	98	13	1	0	0	0	0	0	0	625	1	0	50	357	275	37	2	1	0	0	0	0	0	723		
	15:00	137	157	263	168	58	6	1	0	0	0	0	0	0	790	0	5	94	367	268	35	5	2	0	0	0	0	0	776		
	16:00	110	137	173	200	75	9	1	0	0	0	0	0	0	705	7	13	87	342	243	34	2	1	0	0	0	0	0	729		
	17:00	81	81	156	222	87	21	2	0	0	0	0	0	0	650	0	14	96	341	247	27	4	1	0	0	0	0	0	730		
	18:00	37	43	141	194	133	8	0	1	0	0	0	0	0	557	5	1	42	254	264	44	8	2	0	0	0	0	0	620		
	19:00	11	23	99	184	123	14	5	0	0	0	0	0	0	459	0	3	42	217	156	34	0	0	0	0	0	0	0	452		
	20:00	5	12	80	179	73	16	0	1	0	0	0	0	0	366	0	3	30	185	162	27	1	0	1	0	0	0	0	409		
	21:00	5	10	48	119	66	9	2	0	0	0	0	0	0	259	0	6	25	126	109	21	5	1	1	0	0	0	0	294		
	22:00	0	7	39	88	65	10	2	0	1	0	0	0	0	212	0	6	15	89	89	26	2	0	0	0	0	0	0	227		
	23:00	0	6	20	45	44	13	1	0	0	0	0	0	0	129	1	3	8	49	42	17	1	0	0	0	0	0	0	121		
Totals	772	1,007	2,320	3,614	2,148	464	67	9	3	0	0	0	0	10,404	40	114	758	3,778	4,315	1,089	140	26	4	0	0	0	0	10,264			
% of Totals	7%	10%	22%	35%	21%	4%	1%	0%	0%					100%	0%	1%	7%	37%	42%	11%	1%	0%	0%					100%			

STATISTICS	00:00 - 12:00 % Peak Hour Peak Volume	253 2% 8:00 80	337 3% 7:45 87	874 8% 7:30 226	1592 15% 8:15 345	1090 10% 6:30 178	305 3% 4:45 53	47 0% 4:15 12	6 0% 0:30 2	2 0% 3:00 1	0 0% 0:00 0	0 0% 0:00 0	0 0% 0:00 0	0 0% 0:00 0	4506 43% 7:45 875	23 0% 11:30 11	49 0% 7:15 14	198 2% 9:45 41	1092 10% 7:30 176	1894 18% 7:45 296	630 6% 6:45 94	93 1% 6:00 20	16 0% 4:00 4	1 0% 6:15 1	0 0% 0:00 0	0 0% 0:00 0	0 0% 0:00 0	0 0% 0:00 0	3996 38% 7:45 605
		519 5% 14:45 141	670 6% 15:15 165	1446 14% 15:15 266	2022 19% 16:30 259	1058 10% 18:45 135	159 2% 12:15 22	20 0% 19:00 5	3 0% 13:00 1	1 0% 21:45 1	0 0% 12:00 0	0 0% 12:00 0	0 0% 12:00 0	0 0% 12:00 0	5898 57% 15:00 790	17 0% 15:45 7	65 1% 17:00 14	560 5% 16:45 102	2686 26% 15:30 403	2421 23% 12:45 308	459 4% 12:45 84	47 0% 12:00 11	10 0% 17:45 3	3 0% 12:15 1	0 0% 12:00 0	0 0% 12:00 0	0 0% 12:00 0	0 0% 12:00 0	6268 60% 15:30 789
	07:00 - 09:00 % Peak Hour Peak Volume	136 1% 8:00 80	149 1% 7:45 87	378 4% 7:30 226	564 5% 8:00 323	321 3% 7:00 177	78 1% 7:00 49	6 0% 7:30 4	0 0% 7:00 0	0 0% 7:00 0	0 0% 7:00 0	0 0% 7:00 0	0 0% 7:00 0	0 0% 7:00 0	1632 16% 7:45 875	9 0% 7:00 7	22 0% 7:15 14	51 0% 7:15 14	299 3% 7:30 176	538 5% 7:45 296	175 2% 7:00 94	21 0% 8:00 11	2 0% 7:00 1	1 0% 7:00 1	0 0% 7:00 0	0 0% 7:00 0	0 0% 7:00 0	0 0% 7:00 0	1118 11% 7:45 605
		191 2% 16:00 110	218 2% 16:00 137	329 3% 16:00 173	422 4% 16:30 259	162 2% 16:30 92	30 0% 17:00 21	3 0% 16:45 2	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	1355 13% 16:00 705	7 0% 16:00 7	27 0% 17:00 14	183 2% 16:45 102	683 7% 16:00 342	490 5% 17:00 247	61 1% 16:00 34	6 0% 16:15 4	2 0% 16:00 1	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	0 0% 16:00 0	1459 14% 17:00 730

Direction	Percentiles					
	15th	50th	Average	85th	95th	ADT
EASTBOUND	19	27	26	33	35	10404
WESTBOUND	26	31	30	35	38	10264
TOTALS	22	29	28	34	37	20668

TOTALS														Total
5	15	20	25	30	35	40	45	50	55	60	65	70	70	
15	20	25	30	35	40	45	50	55	60	65	70	99		
1	1	11	24	67	28	6	2	0	0	0	0	0	0	140
1	2	3	28	40	20	8	4	0	0	0	0	0	0	106
1	2	6	24	29	28	6	1	0	0	0	0	0	0	97
0	1	8	42	41	20	10	0	1	0	0	0	0	0	123
1	1	19	70	147	88	18	6	0	0	0	0	0	0	350
1	5	30	127	313	130	17	3	0	0	0	0	0	0	626
22	23	99	358	372	120	26	1	0	0	0	0	0	0	1021
63	77	202	383	425	143	13	1	1	0	0	0	0	0	1308
82	94	227	480	434	110	14	1	0	0	0	0	0	0	1442
29	61	172	439	403	88	6	1	0	0	0	0	0	0	1199
39	70	151	363	356	58	6	1	0	0	0	0	0	0	1044
36	49	144	346	357	102	10	1	1	0	0	0	0	0	1046
41	54	130	364	422	104	12	1	0	0	0	0	0	0	1128
49	78	200	392	380	93	10	2	1	0	0	0	0	0	1205
47	73	218	583	373	50	3	1	0	0	0	0	0	0	1348
137	162	357	535	326	41	6	2	0	0	0	0	0	0	1566
117	150	260	542	318	43	3	1	0	0	0	0	0	0	1434
81	95	252	563	334	48	6	1	0	0	0	0	0	0	1380
42	44	183	448	397	52	8	3	0	0	0	0	0	0	1177
11	26	141	401	279	48	5	0	0	0	0	0	0	0	911
5	15	110	364	235	43	1	1	1	0	0	0	0	0	775
5	16	73	245	175	30	7	1	1	0	0	0	0	0	553
0	13	54	177	154	36	4	0	1	0	0	0	0	0	439
1	9	28	94	86	30	2	0	0	0	0	0	0	0	250
812	1,121	3,078	7,392	6,463	1,553	207	35	7	0	0	0	0	0	20,668
4%	5%	15%	36%	31%	8%	1%	0%	0%						100%

276	386	1072	2684	2984	935	140	22	3	0	0	0	0	0	8502
3%	4%	10%	26%	29%	9%	1%	0%	0%	0%	0%	0%	0%	0%	82%
8:00	7:45	7:30	8:15	7:45	7:00	6:00	4:00	3:00	0:00	0:00	0:00	0:00	0:00	7:45
82	97	253	501	448	143	26	6	1	0	0	0	0	0	1480
536	735	2006	4708	3479	618	67	13	4	0	0	0	0	0	12166
5%	7%	19%	45%	33%	6%	1%	0%	0%	0%	0%	0%	0%	0%	117%
14:45	15:15	15:00	16:45	12:45	12:45	12:00	17:45	12:15	12:00	12:00	12:00	12:00	12:00	15:15
141	172	357	593	428	105	12	4	1	0	0	0	0	0	1568
145	171	429	863	859	253	27	2	1	0	0	0	0	0	2750
1%	2%	4%	8%	8%	2%	0%	0%	0%	0%	0%	0%	0%	0%	26%
8:00	7:45	7:30	7:45	7:45	7:00	8:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:45
82	97	253	484	448	143	14	1	1	0	0	0	0	0	1480
198	245	512	1105	652	91	9	2	0	0	0	0	0	0	2814
2%	2%	5%	11%	6%	1%	0%	0%	0%	0%	0%	0%	0%	0%	27%
16:00	16:00	16:00	16:45	16:30	17:00	16:45	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00
117	150	260	593	334	48	6	1	0	0	0	0	0	0	1434

VOLUME**Pelham St Bet I-93 SB On/Off Ramp/Cross St & I-93 NB On/Off Ramps/Ranger Plaza Dwy**

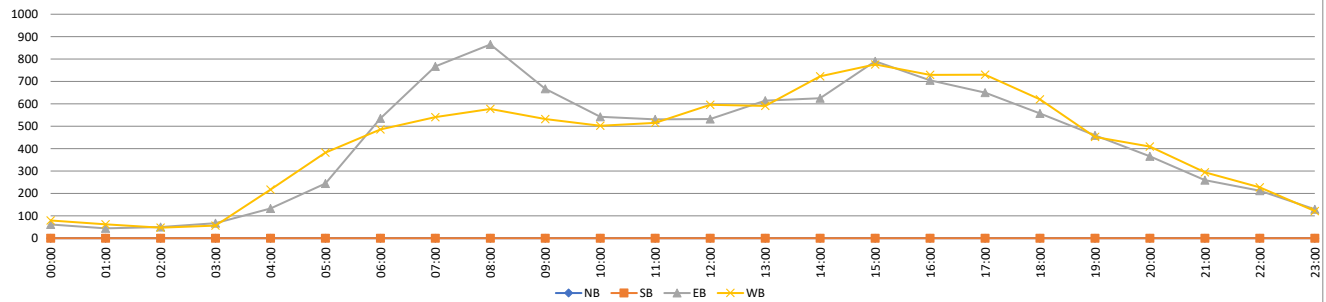
Day: Wednesday

City: Methuen

Date: 5/22/2024

Project #: MA24_430075_002

DAILY TOTALS						NB				SB				EB				WB				Total		DAILY TOTALS					
						0		0		10,404		10,264		20,668															
15-Minutes Interval												Hourly Intervals																	
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL												
0:00			15	21	36	12:00			125	143	268	00:00	01:00		61	79	140												
0:15			15	26	41	12:15			119	163	282	01:00	02:00		44	62	106												
0:30			16	16	32	12:30			141	138	279	02:00	03:00		50	47	97												
0:45			15	16	31	12:45			147	152	299	03:00	04:00		67	56	123												
1:00			17	20	37	13:00			135	138	273	04:00	05:00		133	217	350												
1:15			15	15	30	13:15			144	159	303	05:00	06:00		244	382	626												
1:30			7	17	24	13:30			169	145	314	06:00	07:00		535	486	1021												
1:45			5	10	15	13:45			166	149	315	07:00	08:00		767	541	1308												
2:00			7	14	21	14:00			140	166	306	08:00	09:00		865	577	1442												
2:15			10	9	19	14:15			146	182	328	09:00	10:00		667	532	1199												
2:30			12	17	29	14:30			152	180	332	10:00	11:00		542	502	1044												
2:45			21	7	28	14:45			187	195	382	11:00	12:00		531	515	1046												
3:00			25	6	31	15:00			200	193	393	12:00	13:00		532	596	1128												
3:15			16	9	25	15:15			206	176	382	13:00	14:00		614	591	1205												
3:30			9	14	23	15:30			193	210	403	14:00	15:00		625	723	1348												
3:45			17	27	44	15:45			191	197	388	15:00	16:00		790	776	1566												
4:00			15	28	43	16:00			198	197	395	16:00	17:00		705	729	1434												
4:15			42	42	84	16:15			185	185	370	17:00	18:00		650	730	1380												
4:30			27	73	100	16:30			167	182	349	18:00	19:00		557	620	1177												
4:45			49	74	123	16:45			155	165	320	19:00	20:00		459	452	911												
5:00			45	74	119	17:00			182	180	362	20:00	21:00		366	409	775												
5:15			69	100	169	17:15			185	163	348	21:00	22:00		259	294	553												
5:30			56	82	138	17:30			139	212	351	22:00	23:00		212	227	439												
5:45			74	126	200	17:45			144	175	319	23:00	00:00		129	121	250												
6:00			97	98	195	18:00			147	175	322	STATISTICS																	
6:15			92	122	214	18:15			135	179	314																		
6:30			125	126	251	18:30			153	131	284	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	00:00	to	12:00	4506	3996	8502											
6:45			221	140	361	18:45			122	135	257																		
7:00			165	122	287	19:00			120	113	233																		
7:15			145	130	275	19:15			111	118	229																		
7:30			215	128	343	19:30			127	113	240	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	12:00	to	00:00	5898	6268	12166											
7:45			242	161	403	19:45			101	108	209																		
8:00			215	135	350	20:00			98	120	218																		
8:15			198	167	365	20:15			118	116	234																		
8:30			220	142	362	20:30			84	92	176	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	07:00	to	09:00	15:00	15:30	15:15											
8:45			232	133	365	20:45			66	81	147																		
9:00			195	121	316	21:00			76	78	154																		
9:15			167	136	303	21:15			81	81	162																		
9:30			171	133	304	21:30			53	74	127	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	16:00	to	18:00	790	789	1568											
9:45			134	142	276	21:45			49	61	110																		
10:00			153	113	266	22:00			83	65	148																		
10:15			113	126	239	22:15			54	53	107																		
10:30			124	145	269	22:30			35	64	99	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	16:00	to	18:00	0.959	0.939	0.973											
10:45			152	118	270	22:45			40	45	85																		
11:00			135	108	243	23:00			47	35	82																		
11:15			130	126	256	23:15			29	31	60																		
11:30			143	138	281	23:30			31	29	60	Peak Period Volume Peak Hour Peak Volume Peak Hour Factor	16:00	to	18:00	705	730	1434											
11:45			123	143	266	23:45			22	26	48																		
TOTALS	0	0	4506	3996	8502	TOTALS	0	0	5898	6268	12166																		
SPLIT %	0%	0%	53%	47%	41%	SPLIT %	0%	0%	48%	52%	59%																		

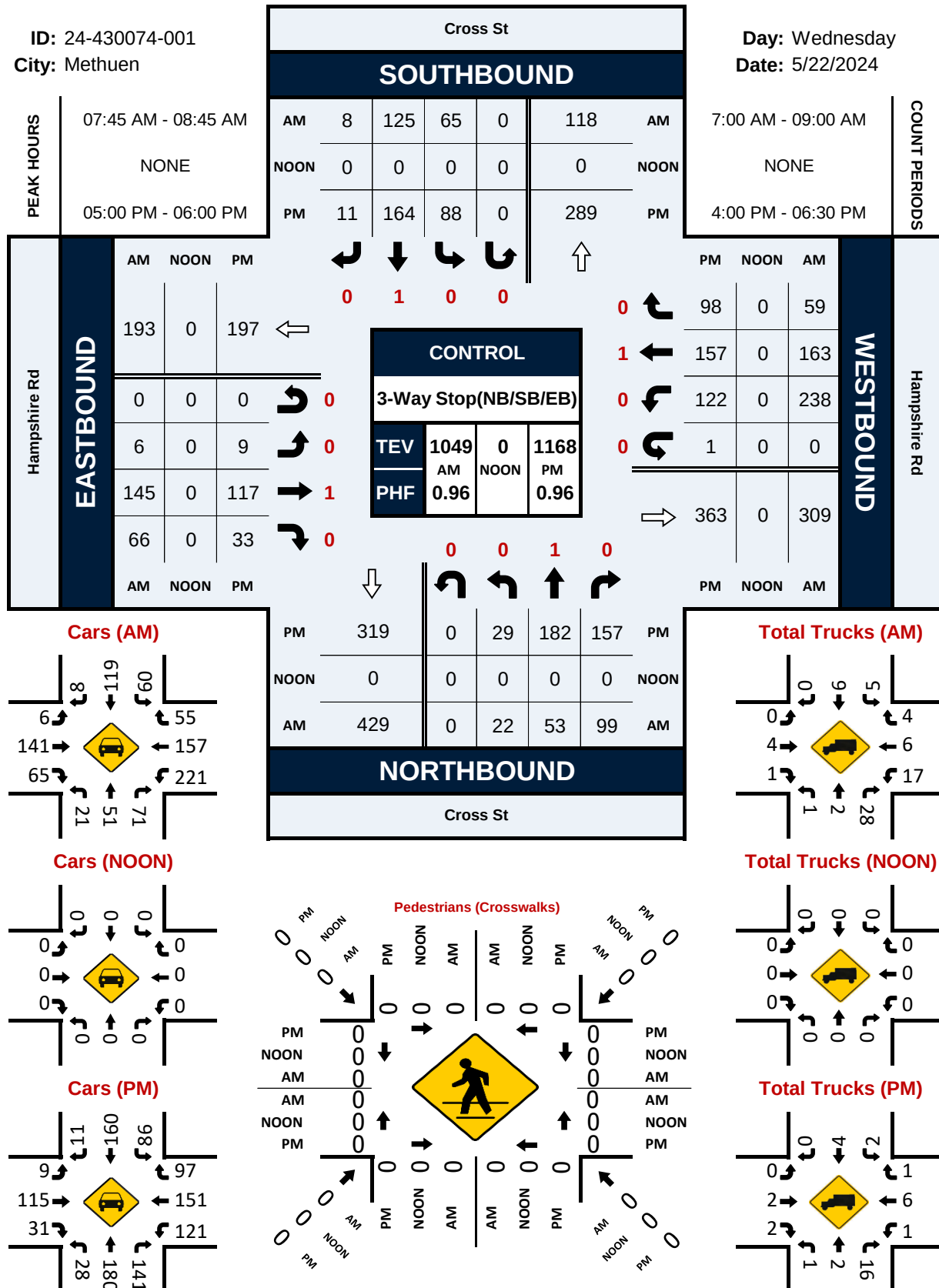


Cross St & Hampshire Rd

Peak Hour Turning Movement Count

ID: 24-430074-001
City: Methuen

Day: Wednesday
Date: 5/22/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & Hampshire Rd
City: Methuen
Control: 3-Way Stop(NB/SB/EB)

Project ID: 24-430074-001
Date: 5/22/2024

Data - Total

NS/EW Streets:	Cross St				Cross St				Hampshire Rd				Hampshire Rd								
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				SOUTHBOUND2	TOTAL			
	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR		WU	WR2	S2U2
7:00 AM	0	15	14	0	8	24	2	0	0	0	29	13	0	0	19	10	4	1	0	0	
7:15 AM	3	14	15	0	9	34	5	0	0	0	22	17	0	0	34	21	1	0	0	0	
7:30 AM	15	16	22	0	6	41	4	0	0	3	35	13	0	0	32	34	8	0	0	0	
7:45 AM	12	12	15	0	16	35	5	0	0	2	52	17	0	0	42	47	12	0	0	0	
8:00 AM	5	19	22	0	19	31	2	0	0	1	29	24	0	0	57	46	17	0	0	0	
8:15 AM	3	11	35	0	13	32	0	0	0	0	36	9	0	0	82	38	13	0	1	0	
8:30 AM	2	11	27	0	17	27	1	0	0	3	28	16	0	0	57	32	17	0	0	0	
8:45 AM	3	17	28	0	17	37	0	0	0	0	18	7	0	0	42	41	19	0	0	0	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U2	TOTAL
APPROACH %'s :	12.80%	34.23%	52.98%	0.00%	27.27%	67.79%	4.94%	0.00%	0.00%	2.41%	66.58%	31.02%	0.00%	0.00%	50.21%	37.00%	12.52%	0.14%	0.14%	0	1822
PEAK HR :	07:45 AM - 08:45 AM																				TOTAL
PEAK HR VOL :	22	53	99	0	65	125	8	0	0	6	145	66	0	0	238	163	59	0	1	0	1050
PEAK HR FACTOR :	0.458	0.697	0.707	0.000	0.855	0.893	0.400	0.000	0.000	0.500	0.697	0.688	0.000	0.000	0.726	0.867	0.868	0.000	1	0.000	0.962
	0.888				0.884				0.764				0.860								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				SOUTHBOUND2	TOTAL			
	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR		WU	WR2	S2U2
4:00 PM	7	40	45	0	13	35	2	0	0	4	42	10	0	0	28	48	29	0	0	0	303
4:15 PM	9	53	55	0	15	32	7	0	0	0	28	7	0	0	35	40	19	0	0	0	300
4:30 PM	11	35	37	0	28	26	5	0	0	2	23	6	0	0	31	38	20	0	1	1	264
4:45 PM	11	37	35	0	16	42	3	0	0	4	25	9	0	0	24	36	28	0	0	0	270
5:00 PM	4	37	32	0	25	44	3	0	0	0	28	8	0	0	36	42	25	0	0	0	284
5:15 PM	9	47	44	0	18	54	2	0	0	4	25	6	0	0	28	31	30	0	0	0	298
5:30 PM	10	53	38	0	29	35	1	0	0	2	27	10	0	1	28	44	27	0	0	0	305
5:45 PM	6	45	43	0	16	31	5	0	0	3	37	9	0	0	30	40	16	1	0	0	282
6:00 PM	8	38	51	0	10	50	4	0	1	3	17	7	0	0	33	29	27	0	1	1	280
6:15 PM	22	39	34	0	15	35	2	0	0	2	12	4	0	0	14	27	15	0	0	1	222
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U2	TOTAL
APPROACH %'s :	9.7%	45.35%	44.28%	0.00%	30.63%	63.58%	5.63%	0.00%	0.17%	6.58%	72.33%	20.82%	0.00%	0.27%	31.85%	41.62%	26.19%	0.11%	0.22%	3	2808
PEAK HR :	05:00 PM - 06:00 PM																				TOTAL
PEAK HR VOL :	29	182	157	0	88	164	11	0	0	9	117	33	0	1	122	157	98	1	0	0	1169
PEAK HR FACTOR :	0.725	0.858	0.892	0.000	0.759	0.759	0.550	0.000	0.000	0.563	0.791	0.825	0.000	0.250	0.847	0.892	0.817	0.250	0.000	0.000	0.958
	0.911				0.889				0.816				0.917								

Explanation on extra leg movements

Movements entering the extra leg

SU2 Movements coming from SB on Cross St entering into the extra leg.
EL2 Movements coming from EB on Hampshire Rd entering into the extra leg.
WR2 Movements coming from WB on Hampshire Rd entering into the extra leg.

Movements exiting the extra leg

S2U2 Movements exiting from the extra leg entering into Cross St NB.



National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & Hampshire Rd
City: Methuen
Control: 3-Way Stop(NB/SB/EB)

Project ID: 24-430074-001
Date: 5/22/2024

Data - Cars

NS/EW Streets:	Cross St					Cross St					Hampshire Rd					Hampshire Rd							
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2	TOTAL	
	0 NL	1 NT	0 NR	0 NU		0 SL	1 ST	0 SR	0 SU	0 SU2	0 EL	1 ET	0 ER	0 EU	0 EL2	0 WL	1 WT	0 WR	0 WU	0 WR2	0 SZU2		
7:00 AM	0	14	12	0		8	22	2	0	0	0	28	13	0	0	16	9	4	1	0	0	0	129
7:15 AM	3	13	13	0		9	33	5	0	0	0	21	16	0	0	30	20	1	0	0	0	0	164
7:30 AM	15	16	20	0		6	41	4	0	0	3	34	13	0	0	29	34	7	0	0	0	0	222
7:45 AM	11	12	13	0		16	35	5	0	0	2	52	17	0	0	41	47	11	0	0	0	0	262
8:00 AM	5	17	14	0		18	29	2	0	0	1	28	24	0	0	53	44	16	0	0	0	0	251
8:15 AM	3	11	22	0		12	31	0	0	0	0	36	9	0	0	76	37	11	0	1	0	0	249
8:30 AM	2	11	22	0		14	24	1	0	0	3	25	15	0	0	51	29	17	0	0	0	0	214
8:45 AM	3	17	26	0		17	36	0	0	0	0	17	7	0	0	40	36	18	0	0	0	0	217
TOTAL VOLUMES :	NL	NT	NR	NU		SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	SZU2	TOTAL	
APPROACH %'s :	14.24%	37.63%	48.14%	0.00%		27.03%	67.84%	5.14%	0.00%	0.00%	2.47%	66.21%	31.32%	0.00%	0.00%	49.48%	37.70%	12.52%	0.15%	0.15%		1708	
PEAK HR :	07:45 AM - 08:45 AM																						
PEAK HR VOL :	21	51	71	0		60	119	8	0	0	6	141	65	0	0	221	157	55	0	1	0	0	976
PEAK HR FACTOR :	0.477	0.750	0.807	0.000		0.833	0.850	0.400	0.000	0.000	0.500	0.678	0.677	0.000	0.000	0.727	0.835	0.809	0.000	0.250	0.000	0.931	
	0.993					0.835					0.746					0.868							
PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2	TOTAL	
	0 NL	1 NT	0 NR	0 NU		0 SL	1 ST	0 SR	0 SU	0 SU2	0 EL	1 ET	0 ER	0 EU	0 EL2	0 WL	1 WT	0 WR	0 WU	0 WR2	0 SZU2		
4:00 PM	7	40	38	0		13	34	2	0	0	4	42	10	0	0	27	47	28	0	0	0	0	292
4:15 PM	9	53	50	0		15	32	7	0	0	0	27	7	0	0	35	40	19	0	0	0	0	294
4:30 PM	11	35	36	0		28	26	5	0	0	2	23	6	0	0	31	36	20	0	1	1	0	261
4:45 PM	11	37	34	0		15	39	3	0	0	4	24	9	0	0	23	36	28	0	0	0	0	263
5:00 PM	4	36	27	0		24	44	3	0	0	0	28	7	0	0	36	40	25	0	0	0	0	274
5:15 PM	8	47	41	0		18	53	2	0	0	4	25	6	0	0	27	30	30	0	0	0	0	291
5:30 PM	10	52	32	0		28	33	1	0	0	2	26	9	0	1	28	43	26	0	0	0	0	291
5:45 PM	6	45	41	0		16	30	5	0	0	3	36	9	0	0	30	38	16	1	0	0	0	276
6:00 PM	8	37	50	0		10	50	4	0	1	3	17	7	0	0	32	28	27	0	1	1	0	276
6:15 PM	22	39	32	0		14	35	2	0	0	2	12	4	0	0	14	27	15	0	0	1	0	219
TOTAL VOLUMES :	NL	NT	NR	NU		SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	SZU2	TOTAL	
APPROACH %'s :	10.69%	46.88%	42.43%	0.00%		30.57%	63.51%	5.74%	0.00%	0.17%	6.69%	72.42%	20.61%	0.00%	0.28%	31.98%	41.24%	26.44%	0.11%	0.23%		100.00%	2737
PEAK HR :	05:00 PM - 06:00 PM																						
PEAK HR VOL :	28	180	141	0		86	160	11	0	0	9	115	31	0	1	121	151	97	1	0	0	0	1132
PEAK HR FACTOR :	0.700	0.865	0.860	0.000		0.768	0.755	0.550	0.000	0.000	0.563	0.799	0.861	0.000	0.250	0.840	0.878	0.808	0.250	0.000	0.000	0.973	
	0.909					0.880					0.813					0.916							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & Hampshire Rd
City: Methuen
Control: 3-Way Stop(NB/SB/EB)

Project ID: 24-430074-001
Date: 5/22/2024

Data - HT

NS/EW Streets:	Cross St					Cross St					Hampshire Rd					Hampshire Rd																					
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2	TOTAL															
	0	1	NT	NR	0	0	NU	0	SL	1	ST	0	SR	SU	0	SU2	0	EL	1	ET	0		ER	EU	0	EL2	0	WL	1	WT	0	WR	0	WU	0	WR2	0
7:00 AM	0	0	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	4	1	0	0	0	0	0	0	0	0	10
7:15 AM	0	0	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	4	4	1	0	0	0	0	0	0	0	11	
7:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	7	
7:45 AM	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	5	
8:00 AM	0	0	2	8	0	0	0	0	0	1	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	4	2	1	0	0	0	0	0	0	0	21	
8:15 AM	0	0	0	13	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1	2	0	0	0	0	0	0	0	24	
8:30 AM	0	0	0	5	0	0	0	0	0	3	3	0	0	0	0	0	0	0	3	1	0	0	0	0	0	6	3	0	0	0	0	0	0	0	0	24	
8:45 AM	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	5	1	0	0	0	0	0	0	0	12	
TOTAL VOLUMES :	NL	NT	NR	NU		SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2		SZU2	0	TOTAL													
APPROACH %'s :	2.44%	9.76%	87.80%	0.00%		33.33%	66.67%	0.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	0.00%	60.42%	27.08%	12.50%	0.00%	0.00%		0	114														
PEAK HR :	07:45 AM - 08:45 AM																									0	TOTAL										
PEAK HR VOL :	1	2	28	0		5	6	0	0	0	0	4	1	0	0	17	6	4	0	0	0	0	74														
PEAK HR FACTOR :	0.250	0.250	0.538	0.000		0.417	0.500	0.000	0.000	0.000	0.000	0.333	0.250	0.000	0.000	0.708	0.500	0.500	0.000	0.000	0.000	0.000	0.771														
	0.596					0.458					0.313					0.750																					
PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2	TOTAL															
	0	1	NT	NR	0	0	NU	0	SL <td>1</td> <td>ST</td> <td>0</td> <td>SR</td> <td>SU</td> <td>0</td> <td>SU2</td> <td>0</td> <td>EL</td> <td>1</td> <td>ET</td> <td>0</td> <td>ER</td> <td>EU</td> <td>0</td> <td>EL2</td> <td>0</td> <td>WL</td> <td>1</td> <td>WT</td> <td>0</td> <td>WR</td> <td>0</td> <td>WU</td> <td>0</td> <td>WR2</td> <td>0</td> <td>SZU2</td>	1	ST	0	SR	SU	0	SU2	0	EL	1	ET	0		ER	EU	0	EL2	0	WL	1	WT	0	WR	0	WU	0	WR2	0
4:00 PM	0	0	0	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	11	
4:15 PM	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6		
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3		
4:45 PM	0	0	0	1	0	0	0	0	0	1	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	7		
5:00 PM	0	0	1	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	10		
5:15 PM	1	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	7		
5:30 PM	0	0	1	6	0	0	0	0	0	1	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	14		
5:45 PM	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	6		
6:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	4		
6:15 PM	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3		
TOTAL VOLUMES :	NL	NT	NR	NU		SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2		SZU2	0	TOTAL													
APPROACH %'s :	1	3	33	0		4	8	0	0	0	0	4	2	0	0	4	10	2	0	0	0	0	71														
PEAK HR :	05:00 PM - 06:10 PM																									0	TOTAL										
PEAK HR VOL :	1	2	16	0		2	4	0	0	0	0	2	2	0	0	1	6	1	0	0	0	0	37														
PEAK HR FACTOR :	0.250	0.500	0.667	0.000		0.500	0.500	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.250	0.750	0.250	0.000	0.000	0.000	0.000	0.661														
	0.679					0.500					0.500					1.000																					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & Hampshire Rd
City: Methuen
Control: 3-Way Stop(NB/SB/EB)

Project ID: 24-430074-001
Date: 5/22/2024

Data - Bikes

NS/EW Streets:	Cross St				Cross St				Hampshire Rd					Hampshire Rd					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND					WESTBOUND					SOUTHBOUND2
	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2
APPROACH %'s :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR :	07:45 AM - 08:45 AM				0.00% 100.00% 0.00% 0.00% 0.00%				0 0 0 0 0					0 0 0 0 0					0
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
					0.250														0.250
																			1
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND					WESTBOUND					SOUTHBOUND2
	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2
APPROACH %'s :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR :	05:00 PM - 06:00 PM				100.00% 0.00% 0.00% 0.00% 0.00%				0 0 0 0 0					0 0 0 0 0					0
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
																			0
																			1

National Data & Surveying Services

Location: Cross St & Hampshire Rd
City: Methuen

Project ID: 24-430074-001
Date: 5/22/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Cross St		Cross St		Hampshire Rd		Hampshire Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :	EB 0	WB 0	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 0
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0 0		0 0		0 0		0 0		0

Project ID: 24-430074-001
Location: Cross St & Hampshire Rd
City: Methuen

Day: Wednesday
Date: 5/22/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Cross St Northbound						Cross St Southbound						Hampshire Rd Eastbound						Hampshire Rd Westbound						Int. Total
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	0	15	14	0	0	29	8	24	2	0	0	34	0	29	13	0	0	42	19	10	4	1	0	34	139
7:15 AM	3	14	15	0	0	32	9	34	5	0	0	48	0	22	17	0	0	39	34	21	1	0	0	56	175
7:30 AM	15	16	22	0	0	53	6	41	4	0	0	51	3	35	13	0	0	51	32	34	8	0	0	74	229
7:45 AM	12	12	15	0	0	39	16	35	5	0	0	56	2	52	17	0	0	71	42	47	12	0	0	101	267
Total	30	57	66	0	0	153	39	134	16	0	0	189	5	138	60	0	0	203	127	112	25	1	0	265	810
8:00 AM	5	19	22	0	0	46	19	31	2	0	0	52	1	29	24	0	0	54	57	46	17	0	0	120	272
8:15 AM	3	11	35	0	0	49	13	32	0	0	0	45	0	36	9	0	0	45	82	38	13	0	0	133	272
8:30 AM	2	11	27	0	0	40	17	27	1	0	0	45	3	28	16	0	0	47	57	32	17	0	0	106	238
8:45 AM	3	17	28	0	0	48	17	37	0	0	0	54	0	18	7	0	0	25	42	41	19	0	0	102	229
Total	13	58	112	0	0	183	66	127	3	0	0	196	4	111	56	0	0	171	238	157	66	0	0	461	1011
BREAK																									
4:00 PM	7	40	45	0	0	92	13	35	2	0	0	50	4	42	10	0	0	56	28	48	29	0	0	105	303
4:15 PM	9	53	55	0	0	117	15	32	7	0	0	54	0	28	7	0	0	35	35	40	19	0	0	94	300
4:30 PM	11	35	37	0	0	83	28	26	5	0	0	59	2	23	6	0	0	31	31	38	20	0	0	89	262
4:45 PM	11	37	35	0	0	83	16	42	3	0	0	61	4	25	9	0	0	38	24	36	28	0	0	88	270
Total	38	165	172	0	0	375	72	135	17	0	0	224	10	118	32	0	0	160	118	162	96	0	0	376	1135
5:00 PM	4	37	32	0	0	73	25	44	3	0	0	72	0	28	8	0	0	36	36	42	25	0	0	103	284
5:15 PM	9	47	44	0	0	100	18	54	2	0	0	74	4	25	6	0	0	35	28	31	30	0	0	89	298
5:30 PM	10	53	38	0	0	101	29	35	1	0	0	65	2	27	10	0	0	39	28	44	27	0	0	99	304
5:45 PM	6	45	43	0	0	94	16	31	5	0	0	52	3	37	9	0	0	49	30	40	16	1	0	87	282
Total	29	182	157	0	0	368	88	164	11	0	0	263	9	117	33	0	0	159	122	157	98	1	0	378	1168
6:00 PM	8	38	51	0	0	97	10	50	4	0	0	64	3	17	7	0	0	27	33	29	27	0	0	89	277
6:15 PM	22	39	34	0	0	95	15	35	2	0	0	52	2	12	4	0	0	18	14	27	15	0	0	56	221
Total	30	77	85	0	0	192	25	85	6	0	0	116	5	29	11	0	0	45	47	56	42	0	0	145	498
Grand Total	140	539	592	0	0	1271	290	645	53	0	0	988	33	513	192	0	0	738	652	644	327	2	0	1625	4622
Apprch %	11.0	42.4	46.6	0.0	0.0		29.4	65.3	5.4	0.0	0.0		4.5	69.5	26.0	0.0	0.0		40.1	39.6	20.1	0.1	0.0		
Total %	3.0	11.7	12.8	0.0	0.0	27.5	6.3	14.0	1.1	0.0	0.0	21.4	0.7	11.1	4.2	0.0	0.0	16.0	14.1	13.9	7.1	0.0	0.0	35.2	
Cars, PU, Vans	138	532	523	0		1193	281	627	53	0		961	33	501	188	0		722	619	621	319	2		1561	4437
% Cars, PU, Vans	98.6	98.7	88.3	0.0		93.9	96.9	97.2	100.0	0.0		97.3	100.0	97.7	97.9	0.0		97.8	94.9	96.4	97.6	100.0		96.1	96.0
Heavy trucks	2	7	69	0		78	9	18	0	0		27	0	12	4	0		16	33	23	8	0		64	185
%Heavy trucks	1.4	1.3	11.7	0.0		6.1	3.1	2.8	0.0	0.0		2.7	0.0	2.3	2.1	0.0		2.2	5.1	3.6	2.4	0.0		3.9	4.0

Project ID: 24-430074-001
Location: Cross St & Hampshire Rd
City: Methuen

PEAK HOURS

Day: Wednesday
Date: 5/22/2024

AM

	Cross St Northbound					Cross St Southbound					Hampshire Rd Eastbound					Hampshire Rd Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
7:45 AM	12	12	15	0	39	16	35	5	0	56	2	52	17	0	71	42	47	12	0	101	267
8:00 AM	5	19	22	0	46	19	31	2	0	52	1	29	24	0	54	57	46	17	0	120	272
8:15 AM	3	11	35	0	49	13	32	0	0	45	0	36	9	0	45	82	38	13	0	133	272
8:30 AM	2	11	27	0	40	17	27	1	0	45	3	28	16	0	47	57	32	17	0	106	238
Total Volume	22	53	99	0	174	65	125	8	0	198	6	145	66	0	217	238	163	59	0	460	1049
% App. Total	12.6	30.5	56.9	0.0	100	32.8	63.1	4.0	0.0	100	2.8	66.8	30.4	0.0	100	51.7	35.4	12.8	0.0	100	
PHF	0.888					0.884					0.764					0.860					0.962
Cars, PU, Vans	21	51	71	0	143	60	119	8	0	187	6	141	65	0	212	221	157	55	0	433	975
% Cars, PU, Vans	95.5	96.2	71.7	0.0	82.2	92.3	95.2	100.0	0.0	94.4	100.0	97.2	98.5	0.0	97.7	92.9	96.3	93.2	0.0	94.1	92.9
Heavy trucks	1	2	28	0	31	5	6	0	0	11	0	4	1	0	5	17	6	4	0	27	74
%Heavy trucks	4.5	3.8	28.3	0.0	17.8	7.7	4.8	0.0	0.0	5.6	0.0	2.8	1.5	0.0	2.3	7.1	3.7	6.8	0.0	5.9	7.1

PM

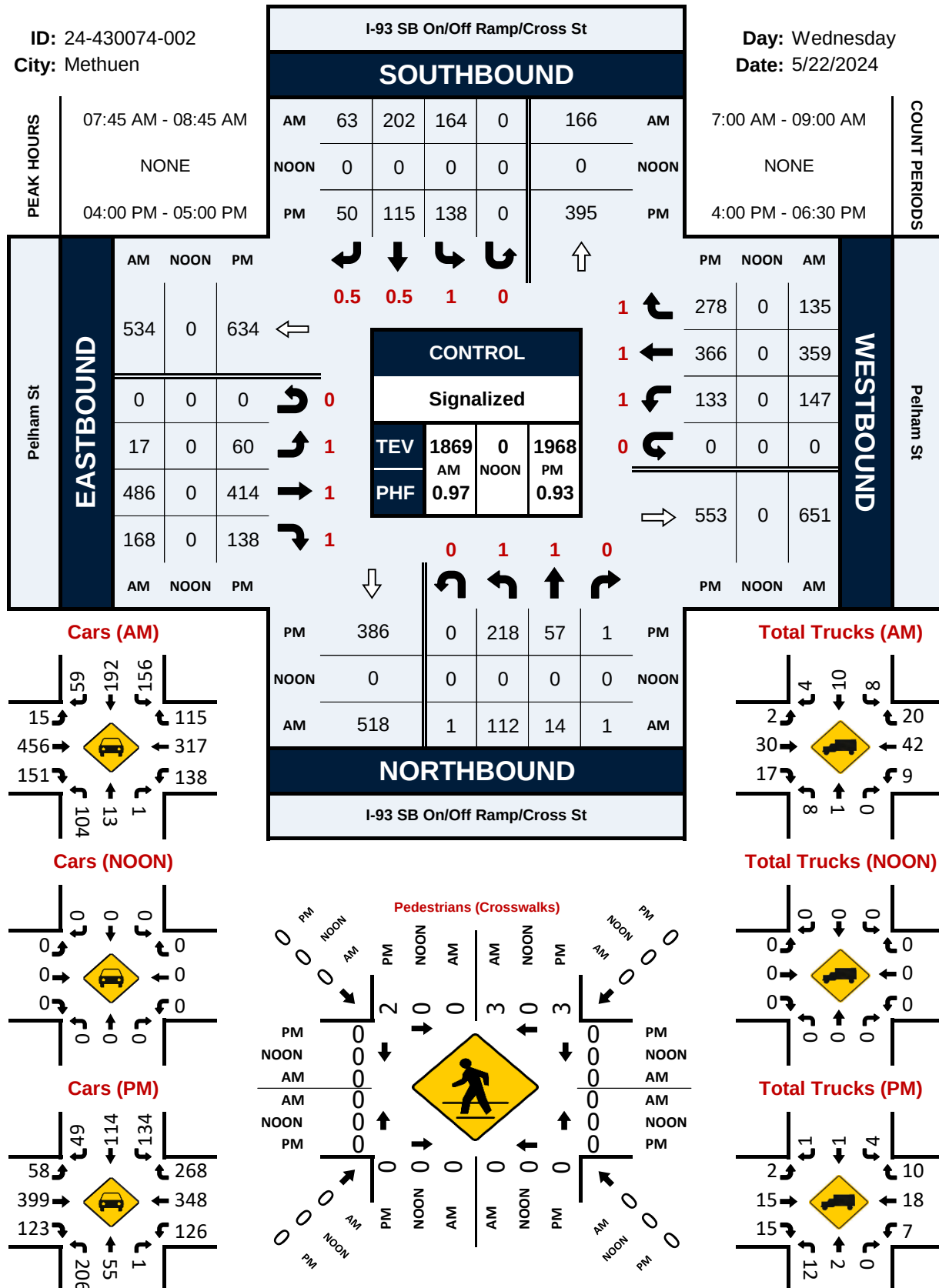
	Cross St Northbound					Cross St Southbound					Hampshire Rd Eastbound					Hampshire Rd Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:30 PM																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
5:00 PM	4	37	32	0	73	25	44	3	0	72	0	28	8	0	36	36	42	25	0	103	284
5:15 PM	9	47	44	0	100	18	54	2	0	74	4	25	6	0	35	28	31	30	0	89	298
5:30 PM	10	53	38	0	101	29	35	1	0	65	2	27	10	0	39	28	44	27	0	99	304
5:45 PM	6	45	43	0	94	16	31	5	0	52	3	37	9	0	49	30	40	16	1	87	282
Total Volume	29	182	157	0	368	88	164	11	0	263	9	117	33	0	159	122	157	98	1	378	1168
% App. Total	7.9	49.5	42.7	0.0	100	33.5	62.4	4.2	0.0	100	5.7	73.6	20.8	0.0	100	32.3	41.5	25.9	0.3	100	
PHF	0.911					0.889					0.816					0.917					0.958
Cars, PU, Vans	28	180	141	0	349	86	160	11	0	257	9	115	31	0	155	121	151	97	1	370	1131
% Cars, PU, Vans	96.6	98.9	89.8	0.0	94.8	97.7	97.6	100.0	0.0	97.7	100.0	98.3	93.9	0.0	97.5	99.2	96.2	99.0	100.0	97.9	96.8
Heavy trucks	1	2	16	0	19	2	4	0	0	6	0	2	2	0	4	1	6	1	0	8	37
%Heavy trucks	3.4	1.1	10.2	0.0	5.2	2.3	2.4	0.0	0.0	2.3	0.0	1.7	6.1	0.0	2.5	0.8	3.8	1.0	0.0	2.1	3.2

I-93 SB On/Off Ramp/Cross St & Pelham St

Peak Hour Turning Movement Count

ID: 24-430074-002
City: Methuen

Day: Wednesday
Date: 5/22/2024



Location: I-93 SB On/Off Ramp/Cross St & Pelham St
City: Methuen
Control: Signalized

Data - Total

NS/EW Streets:		I-93 SB On/Off Ramp/Cross St				I-93 SB On/Off Ramp/Cross St				Pelham St				Pelham St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	TOTAL
	7:00 AM	19	6	0	0	30	36	4	0	7	103	85	0	57	49	22	0	418
	7:15 AM	36	10	0	0	27	45	11	0	5	94	70	0	44	66	30	0	438
	7:30 AM	32	6	0	0	44	55	8	0	3	127	67	0	28	73	33	0	476
	7:45 AM	18	6	0	0	43	33	18	0	4	136	45	0	38	105	36	0	482
	8:00 AM	36	5	0	0	42	44	16	0	5	120	31	0	33	81	28	0	441
	8:15 AM	30	2	0	1	33	66	8	0	4	104	52	0	35	90	43	0	468
	8:30 AM	28	1	1	0	46	59	21	0	4	126	40	0	41	83	28	0	478
	8:45 AM	15	3	0	0	43	34	10	0	8	132	46	0	29	68	40	0	428
TOTAL VOLUMES:		NL 214	NT 39	NR 1	NU 1	SL 308	ST 372	SR 96	SU 0	EL 40	ET 942	ER 436	EU 0	WL 305	WT 615	WR 260	WU 0	TOTAL 3629
APPROACH %'s:		83.92%	15.29%	0.39%	0.39%	39.69%	47.94%	12.37%	0.00%	2.82%	66.43%	30.75%	0.00%	25.85%	52.12%	22.03%	0.00%	
PEAK HR :		07:45 AM - 08:45 AM																
PEAK HR VOL :		112	14	1	1	164	202	63	0	17	486	168	0	147	359	135	0	1869
PEAK HR FACTOR :		0.778	0.583	0.250	0.250	0.891	0.765	0.750	0.000	0.850	0.893	0.808	0.000	0.896	0.855	0.785	0.000	0.969
		0.780				0.851				0.907				0.895				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	TOTAL
	4:00 PM	63	9	0	0	46	22	16	0	24	106	30	0	39	104	68	0	527
	4:15 PM	59	20	0	0	29	31	12	0	14	110	37	0	34	85	75	0	506
	4:30 PM	50	18	1	0	32	31	9	0	9	105	44	0	23	100	76	0	498
	4:45 PM	46	10	0	0	31	31	13	0	13	93	27	0	37	77	59	0	437
	5:00 PM	67	19	0	0	44	31	13	0	10	89	32	0	39	88	67	0	499
	5:15 PM	49	19	1	0	46	30	8	0	11	104	34	0	27	84	68	0	481
	5:30 PM	60	16	0	0	31	29	10	0	9	73	34	0	24	103	90	0	479
	5:45 PM	62	10	0	0	29	28	10	0	9	86	38	0	18	83	73	0	446
	6:00 PM	53	11	0	0	33	33	12	0	10	78	31	0	21	79	88	0	449
	6:15 PM	44	9	0	0	37	20	12	0	9	64	18	0	23	96	70	0	402
TOTAL VOLUMES:		NL 553	NT 141	NR 2	NU 0	SL 358	ST 286	SR 115	SU 0	EL 118	ET 908	ER 325	EU 0	WL 285	WT 899	WR 734	WU 0	TOTAL 4724
APPROACH %'s:		79.45%	20.26%	0.29%	0.00%	47.17%	37.68%	15.15%	0.00%	8.73%	67.21%	24.06%	0.00%	14.86%	46.87%	38.27%	0.00%	
PEAK HR :		04:00 PM - 05:00 PM																
PEAK HR VOL :		218	57	1	0	138	115	50	0	60	414	138	0	133	366	278	0	1968
PEAK HR FACTOR :		0.865	0.713	0.250	0.000	0.750	0.927	0.781	0.000	0.625	0.941	0.784	0.000	0.853	0.880	0.914	0.000	0.934
		0.873				0.902				0.950				0.921				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB On/Off Ramp/Cross St & Pelham St
City: Methuen
Control: Signalized

Project ID: 24-430074-002
Date: 5/22/2024

Data - Cars

NS/EW Streets:	I-93 SB On/Off Ramp/Cross St				I-93 SB On/Off Ramp/Cross St				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	18	6	0	0	29	33	3	0	6	94	77	0	54	43	20	0	383
7:15 AM	33	9	0	0	26	43	8	0	5	87	64	0	41	57	28	0	401
7:30 AM	30	6	0	0	41	54	8	0	3	116	58	0	26	65	32	0	439
7:45 AM	17	6	0	0	43	33	18	0	3	128	39	0	35	100	31	0	453
8:00 AM	34	5	0	0	41	40	16	0	4	114	29	0	31	71	22	0	407
8:15 AM	27	2	0	1	29	64	5	0	4	97	47	0	34	74	37	0	421
8:30 AM	26	0	1	0	43	55	20	0	4	117	36	0	38	72	25	0	437
8:45 AM	11	3	0	0	41	33	9	0	7	127	39	0	29	62	39	0	400
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	196	37	1	1	293	355	87	0	36	880	389	0	288	544	234	0	3341
	83.40%	15.74%	0.43%	0.43%	39.86%	48.30%	11.84%	0.00%	2.76%	67.43%	29.81%	0.00%	27.02%	51.03%	21.95%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	104	13	1	1	156	192	59	0	15	456	151	0	138	317	115	0	1718
PEAK HR FACTOR :	0.765	0.542	0.250	0.250	0.907	0.750	0.738	0.000	0.938	0.891	0.803	0.000	0.908	0.793	0.777	0.000	0.948
	0.763				0.862				0.915				0.858				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	57	9	0	0	44	22	15	0	23	99	25	0	38	95	61	0	488
4:15 PM	57	20	0	0	29	31	12	0	13	108	31	0	30	82	73	0	486
4:30 PM	46	17	1	0	32	31	9	0	9	103	41	0	23	95	75	0	482
4:45 PM	46	9	0	0	29	30	13	0	13	89	26	0	35	76	59	0	425
5:00 PM	66	16	0	0	43	31	13	0	10	86	30	0	38	83	63	0	479
5:15 PM	46	18	1	0	46	27	8	0	10	102	34	0	26	81	68	0	467
5:30 PM	56	15	0	0	30	29	9	0	9	69	33	0	22	99	84	0	455
5:45 PM	60	9	0	0	29	28	10	0	9	81	35	0	17	78	71	0	427
6:00 PM	51	11	0	0	32	32	12	0	8	77	27	0	21	77	86	0	434
6:15 PM	39	8	0	0	37	20	12	0	8	63	17	0	23	94	70	0	391
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	524	132	2	0	351	281	113	0	112	877	299	0	273	860	710	0	4534
	79.64%	20.06%	0.30%	0.00%	47.11%	37.72%	15.17%	0.00%	8.70%	68.09%	23.21%	0.00%	14.81%	46.66%	38.52%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	206	55	1	0	134	114	49	0	58	399	123	0	126	348	268	0	1881
PEAK HR FACTOR :	0.904	0.688	0.250	0.000	0.761	0.919	0.817	0.000	0.630	0.924	0.750	0.000	0.829	0.916	0.893	0.000	0.964
	0.851				0.917				0.948				0.956				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB On/Off Ramp/Cross St & Pelham St
City: Methuen
Control: Signalized

Project ID: 24-430074-002
Date: 5/22/2024

Data - HT

NS/EW Streets:	I-93 SB On/Off Ramp/Cross St				I-93 SB On/Off Ramp/Cross St				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	1	0	0	0	1	3	1	0	1	9	8	0	3	6	2	0	35
7:15 AM	3	1	0	0	1	2	3	0	0	7	6	0	3	9	2	0	37
7:30 AM	2	0	0	0	3	1	0	0	0	11	9	0	2	8	1	0	37
7:45 AM	1	0	0	0	0	0	0	0	1	8	6	0	3	5	5	0	29
8:00 AM	2	0	0	0	1	4	0	0	1	6	2	0	2	10	6	0	34
8:15 AM	3	0	0	0	4	2	3	0	0	7	5	0	1	16	6	0	47
8:30 AM	2	1	0	0	3	4	1	0	0	9	4	0	3	11	3	0	41
8:45 AM	4	0	0	0	2	1	1	0	1	5	7	0	0	6	1	0	28
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	18	2	0	0	15	17	9	0	4	62	47	0	17	71	26	0	288
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	8	1	0	0	8	10	4	0	2	30	17	0	9	42	20	0	151
PEAK HR FACTOR :	0.667	0.250	0.000	0.000	0.500	0.625	0.333	0.000	0.500	0.833	0.708	0.000	0.750	0.656	0.833	0.000	0.803
	0.750				0.611				0.817				0.772				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	6	0	0	0	2	0	1	0	1	7	5	0	1	9	7	0	39
4:15 PM	2	0	0	0	0	0	0	0	1	2	6	0	4	3	2	0	20
4:30 PM	4	1	0	0	0	0	0	0	0	2	3	0	0	5	1	0	16
4:45 PM	0	1	0	0	2	1	0	0	0	4	1	0	2	1	0	0	12
5:00 PM	1	3	0	0	1	0	0	0	0	3	2	0	1	5	4	0	20
5:15 PM	3	1	0	0	0	3	0	0	1	2	0	0	1	3	0	0	14
5:30 PM	4	1	0	0	1	0	1	0	0	4	1	0	2	4	6	0	24
5:45 PM	2	1	0	0	0	0	0	0	0	5	3	0	1	5	2	0	19
6:00 PM	2	0	0	0	1	1	0	0	2	1	4	0	0	2	2	0	15
6:15 PM	5	1	0	0	0	0	0	0	1	1	1	0	0	2	0	0	11
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	29	9	0	0	7	5	2	0	6	31	26	0	12	39	24	0	190
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	12	2	0	0	4	1	1	0	2	15	15	0	7	18	10	0	87
PEAK HR FACTOR :	0.500	0.500	0.000	0.000	0.500	0.250	0.250	0.000	0.500	0.536	0.625	0.000	0.438	0.500	0.357	0.000	0.558
	0.583				0.500				0.615				0.515				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB On/Off Ramp/Cross St & Pelham St
City: Methuen
Control: Signalized

Project ID: 24-430074-002
Date: 5/22/2024

Data - Bikes

NS/EW Streets:	I-93 SB On/Off Ramp/Cross St				I-93 SB On/Off Ramp/Cross St				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	3
PEAK HR :	07:45 AM - 08:45 AM				100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.750
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.750
								0.250									0.500
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	0 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
5:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	3	0	0	0	0	3	0	0	0	0	6	0	12
PEAK HR :	04:00 PM - 05:00 PM				100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.500
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.500
								0.250				0.375					0.500

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB On/Off Ramp/Cross St & Pelham St
City: Methuen

Project ID: 24-430074-002
Date: 5/22/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	I-93 SB On/Off Ramp/Cross St		I-93 SB On/Off Ramp/Cross St		Pelham St		Pelham St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	2	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB 0	WB 3	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 3
APPROACH %'s :	0.00% 100.00%								
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	0	3	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.375								0.375

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	2	0	0	0	0	0	0	2
4:15 PM	0	1	0	0	0	0	0	0	1
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	1	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB 2	WB 3	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 5
APPROACH %'s :	40.00% 60.00%								
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	2	3	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.625								0.625

Project ID: 24-430074-002
Location: I-93 SB On/Off Ramp/Cross St & Pelham St
City: Methuen

Day: Wednesday
Date: 5/22/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	I-93 SB On/Off Ramp/Cross St Northbound						I-93 SB On/Off Ramp/Cross St Southbound						Pelham St Eastbound						Pelham St Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	19	6	0	0	0	25	30	36	4	0	0	70	7	103	85	0	0	195	57	49	22	0	0	128	418
7:15 AM	36	10	0	0	0	46	27	45	11	0	0	83	5	94	70	0	0	169	44	66	30	0	0	140	438
7:30 AM	32	6	0	0	0	38	44	55	8	0	0	107	3	127	67	0	0	197	28	73	33	0	0	134	476
7:45 AM	18	6	0	0	0	24	43	33	18	0	1	94	4	136	45	0	0	185	38	105	36	0	0	179	482
Total	105	28	0	0	0	133	144	169	41	0	1	354	19	460	267	0	0	746	167	293	121	0	0	581	1814
8:00 AM	36	5	0	0	0	41	42	44	16	0	0	102	5	120	31	0	0	156	33	81	28	0	0	142	441
8:15 AM	30	2	0	1	0	33	33	66	8	0	0	107	4	104	52	0	0	160	35	90	43	0	0	168	468
8:30 AM	28	1	1	0	0	30	46	59	21	0	2	126	4	126	40	0	0	170	41	83	28	0	0	152	478
8:45 AM	15	3	0	0	0	18	43	34	10	0	0	87	8	132	46	0	0	186	29	68	40	0	0	137	428
Total	109	11	1	1	0	122	164	203	55	0	2	422	21	482	169	0	0	672	138	322	139	0	0	599	1815
BREAK																									
4:00 PM	63	9	0	0	0	72	46	22	16	0	2	84	24	106	30	0	0	160	39	104	68	0	0	211	527
4:15 PM	59	20	0	0	0	79	29	31	12	0	1	72	14	110	37	0	0	161	34	85	75	0	0	194	506
4:30 PM	50	18	1	0	0	69	32	31	9	0	1	72	9	105	44	0	0	158	23	100	76	0	0	199	498
4:45 PM	46	10	0	0	0	56	31	31	13	0	1	75	13	93	27	0	0	133	37	77	59	0	0	173	437
Total	218	57	1	0	0	276	138	115	50	0	5	303	60	414	138	0	0	612	133	366	278	0	0	777	1968
5:00 PM	67	19	0	0	0	86	44	31	13	0	0	88	10	89	32	0	0	131	39	88	67	0	0	194	499
5:15 PM	49	19	1	0	0	69	46	30	8	0	0	84	11	104	34	0	0	149	27	84	68	0	0	179	481
5:30 PM	60	16	0	0	0	76	31	29	10	0	0	70	9	73	34	0	0	116	24	103	90	0	0	217	479
5:45 PM	62	10	0	0	0	72	29	28	10	0	0	67	9	86	38	0	0	133	18	83	73	0	0	174	446
Total	238	64	1	0	0	303	150	118	41	0	0	309	39	352	138	0	0	529	108	358	298	0	0	764	1905
6:00 PM	53	11	0	0	0	64	33	33	12	0	0	78	10	78	31	0	0	119	21	79	88	0	0	188	449
6:15 PM	44	9	0	0	0	53	37	20	12	0	0	69	9	64	18	0	0	91	23	96	70	0	0	189	402
Total	97	20	0	0	0	117	70	53	24	0	0	147	19	142	49	0	0	210	44	175	158	0	0	377	851
Grand Total	767	180	3	1	0	951	666	658	211	0	8	1535	158	1850	761	0	0	2769	590	1514	994	0	0	3098	8353
Apprch %	80.7	18.9	0.3	0.1	0.0		43.4	42.9	13.7	0.0	0.5		5.7	66.8	27.5	0.0	0.0		19.0	48.9	32.1	0.0	0.0		
Total %	9.2	2.2	0.0	0.0	0.0	11.4	8.0	7.9	2.5	0.0	0.1	18.4	1.9	22.1	9.1	0.0	0.0	33.1	7.1	18.1	11.9	0.0	0.0	37.1	
Cars, PU, Vans	720	169	3	1		893	644	636	200	0		1480	148	1757	688	0		2593	561	1404	944	0		2909	7875
% Cars, PU, Vans	93.9	93.9	100.0	100.0		93.9	96.7	96.7	94.8	0.0		96.4	93.7	95.0	90.4	0.0		93.6	95.1	92.7	95.0	0.0		93.9	94.3
Heavy trucks	47	11	0	0		58	22	22	11	0		55	10	93	73	0		176	29	110	50	0		189	478
%Heavy trucks	6.1	6.1	0.0	0.0		6.1	3.3	3.3	5.2	0.0		3.6	6.3	5.0	9.6	0.0		6.4	4.9	7.3	5.0	0.0		6.1	5.7

Project ID: 24-430074-002

Location: I-93 SB On/Off Ramp/Cross St & Pelham St

City: Methuen

PEAK HOURS

Day: Wednesday

Date: 5/22/2024

AM

	I-93 SB On/Off Ramp/Cross St Northbound					I-93 SB On/Off Ramp/Cross St Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
7:45 AM	18	6	0	0	24	43	33	18	0	94	4	136	45	0	185	38	105	36	0	179	482
8:00 AM	36	5	0	0	41	42	44	16	0	102	5	120	31	0	156	33	81	28	0	142	441
8:15 AM	30	2	0	1	33	33	66	8	0	107	4	104	52	0	160	35	90	43	0	168	468
8:30 AM	28	1	1	0	30	46	59	21	0	126	4	126	40	0	170	41	83	28	0	152	478
Total Volume	112	14	1	1	128	164	202	63	0	429	17	486	168	0	671	147	359	135	0	641	1869
% App. Total	87.5	10.9	0.8	0.8	100	38.2	47.1	14.7	0.0	100	2.5	72.4	25.0	0.0	100	22.9	56.0	21.1	0.0	100	
PHF	0.780					0.851					0.907					0.895					0.969
Cars, PU, Vans	104	13	1	1	119	156	192	59	0	407	15	456	151	0	622	138	317	115	0	570	1718
% Cars, PU, Vans	92.9	92.9	100.0	100.0	93.0	95.1	95.0	93.7	0.0	94.9	88.2	93.8	89.9	0.0	92.7	93.9	88.3	85.2	0.0	88.9	91.9
Heavy trucks	8	1	0	0	9	8	10	4	0	22	2	30	17	0	49	9	42	20	0	71	151
%Heavy trucks	7.1	7.1	0.0	0.0	7.0	4.9	5.0	6.3	0.0	5.1	11.8	6.2	10.1	0.0	7.3	6.1	11.7	14.8	0.0	11.1	8.1

PM

	I-93 SB On/Off Ramp/Cross St Northbound					I-93 SB On/Off Ramp/Cross St Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:30 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	63	9	0	0	72	46	22	16	0	84	24	106	30	0	160	39	104	68	0	211	527
4:15 PM	59	20	0	0	79	29	31	12	0	72	14	110	37	0	161	34	85	75	0	194	506
4:30 PM	50	18	1	0	69	32	31	9	0	72	9	105	44	0	158	23	100	76	0	199	498
4:45 PM	46	10	0	0	56	31	31	13	0	75	13	93	27	0	133	37	77	59	0	173	437
Total Volume	218	57	1	0	276	138	115	50	0	303	60	414	138	0	612	133	366	278	0	777	1968
% App. Total	79.0	20.7	0.4	0.0	100	45.5	38.0	16.5	0.0	100	9.8	67.6	22.5	0.0	100	17.1	47.1	35.8	0.0	100	
PHF	0.873					0.902					0.950					0.921					0.934
Cars, PU, Vans	206	55	1	0	262	134	114	49	0	297	58	399	123	0	580	126	348	268	0	742	1881
% Cars, PU, Vans	94.5	96.5	100.0	0.0	94.9	97.1	99.1	98.0	0.0	98.0	96.7	96.4	89.1	0.0	94.8	94.7	95.1	96.4	0.0	95.5	95.6
Heavy trucks	12	2	0	0	14	4	1	1	0	6	2	15	15	0	32	7	18	10	0	35	87
%Heavy trucks	5.5	3.5	0.0	0.0	5.1	2.9	0.9	2.0	0.0	2.0	3.3	3.6	10.9	0.0	5.2	5.3	4.9	3.6	0.0	4.5	4.4

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB Off Ramp/Baldwin St & Pelham St
City: Methuen
Control: 2-Way Stop(NB/SB)

Project ID: 24-430074-003
Date: 5/22/2024

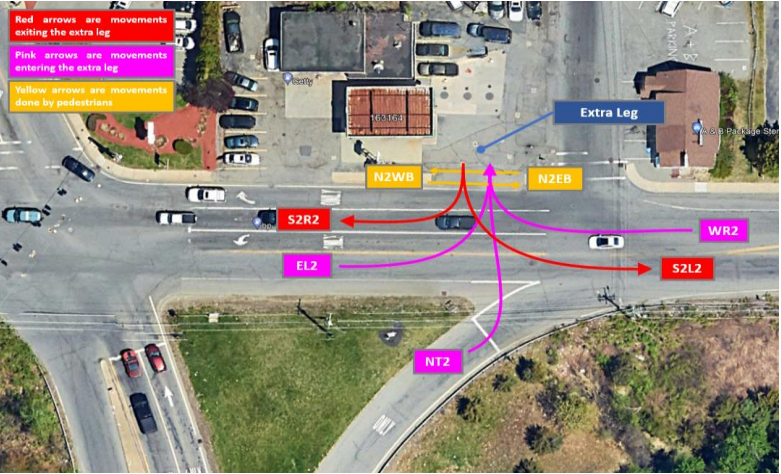
Data - Total

NS/EW Streets:		I-93 SB Off Ramp/Baldwin St					I-93 SB Off Ramp/Baldwin St					Pelham St					Pelham St							
AM		NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2		TOTAL
		0 NL	0 NT	1 NR	0 NU	0 NT2	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 EL2	0 WL	1 WT	0 WR	0 WU	0 WR2	0 S2L2	0 S2R2		
	7:00 AM	0	1	30	0	0	0	0	3	0	2	131	0	0	0	0	122	3	0	0	0	0	292	
	7:15 AM	0	1	20	0	0	5	0	8	0	0	121	0	0	0	0	132	6	0	1	0	0	294	
	7:30 AM	0	1	41	0	0	6	0	2	0	0	171	0	0	0	0	135	6	0	1	0	0	363	
	7:45 AM	1	0	56	0	0	6	0	2	0	0	179	0	0	0	0	173	3	0	0	0	0	420	
	8:00 AM	0	1	59	0	0	2	0	0	0	3	159	0	0	0	0	142	1	0	0	0	0	367	
	8:15 AM	0	1	51	0	1	1	0	4	0	1	135	0	0	0	0	165	3	0	1	0	0	363	
	8:30 AM	0	0	46	0	0	5	0	4	0	2	172	0	0	0	0	147	2	0	1	1	0	380	
	8:45 AM	0	2	52	0	0	2	0	3	0	3	172	0	0	0	0	136	7	0	0	1	0	378	
TOTAL VOLUMES:		NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL	
APPROACH %'s:		0.27%	1.92%	97.53%	0.00%	0.27%	50.94%	0.00%	49.06%	0.00%	0.88%	99.12%	0.00%	0.00%	0.00%	0.00%	97.05%	2.61%	0.00%	0.34%	100.00%	0.00%	2857	
PEAK HR:		07:45 AM - 08:45 AM																						TOTAL
PEAK HR VOL:		1	2	212	0	1	14	0	10	0	6	645	0	0	0	0	627	9	0	2	1	0	1530	
PEAK HR FACTOR:		0.250	0.500	0.898	0.000	0.250	0.583	0.000	0.625	0.000	0.500	0.901	0.000	0.000	0.000	0.000	0.906	0.750	0.000	0.500	0.250	0.000	0.911	
		0.900					0.667					0.909					0.906							
PM		NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2		TOTAL
		0 NL	0 NT	1 NR	0 NU	0 NT2	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 EL2	0 WL	1 WT	0 WR	0 WU	0 WR2	0 S2L2	0 S2R2		
	4:00 PM	0	4	36	0	0	3	0	9	0	1	151	0	0	0	0	193	7	0	0	0	1	405	
	4:15 PM	0	1	44	0	0	4	0	8	0	5	134	0	0	0	0	183	4	0	0	1	0	384	
	4:30 PM	0	1	28	0	0	2	0	3	0	6	130	0	0	1	0	188	2	0	0	1	2	364	
	4:45 PM	0	1	25	0	0	5	0	9	0	3	122	0	0	0	0	163	7	0	2	0	0	337	
	5:00 PM	0	2	43	0	0	4	0	5	0	0	133	0	0	0	0	186	6	0	0	0	1	380	
	5:15 PM	0	2	29	0	0	3	0	7	0	2	149	0	0	0	0	163	2	0	0	0	1	358	
	5:30 PM	0	1	29	0	0	7	0	4	0	3	101	0	0	0	0	215	7	0	0	0	0	367	
	5:45 PM	1	0	22	0	0	6	0	4	0	4	111	0	0	0	0	167	5	0	0	0	0	320	
	6:00 PM	0	1	35	0	0	3	0	9	0	0	111	0	0	0	0	181	6	0	1	0	0	347	
	6:15 PM	0	0	36	0	0	9	0	7	0	3	97	0	0	0	0	181	7	0	0	0	0	340	
TOTAL VOLUMES:		NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL	
APPROACH %'s:		0.29%	1.31%	95.89%	0.00%	0.00%	41.44%	0.00%	58.56%	0.00%	2.13%	97.79%	0.00%	0.00%	0.08%	0.00%	97.01%	2.83%	0.00%	0.16%	28.57%	71.43%	3602	
PEAK HR:		04:00 PM - 05:00 PM																						TOTAL
PEAK HR VOL:		0	7	133	0	0	14	0	29	0	15	537	0	0	1	0	727	20	0	2	2	3	1490	
PEAK HR FACTOR:		0.000	0.438	0.756	0.000	0.000	0.700	0.000	0.806	0.000	0.625	0.889	0.000	0.000	0.250	0.000	0.942	0.714	0.000	0.250	0.500	0.375	0.920	
		0.778					0.768					0.910					0.936							

Explanation on extra leg movements

Movements entering the extra leg
NT2 Movements coming from NB on I-93 SB Off Ramp entering into the extra leg.
EL2 Movements coming from EB on Pelham St entering into the extra leg.
WR2 Movements coming from WB on Pelham St entering into the extra leg.

Movements exiting from the extra leg
S2L2 Movements exiting from the extra leg entering into Pelham St EB.
S2R2 Movements exiting from the extra leg entering into Pelham St WB.



National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB Off Ramp/Baldwin St & Pelham St
City: Methuen
Control: 2-Way Stop(NB/SB)

Project ID: 24-430074-003
Date: 5/22/2024

Data - Cars

NS/EW Streets:		I-93 SB Off Ramp/Baldwin St					I-93 SB Off Ramp/Baldwin St					Pelham St					Pelham St							
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2		TOTAL	
	0 NL	0 NT	0 NR	0 NU	0 NT2	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 EL2	0 WL	1 WT	0 WR	0 WU	0 WR2	0 S2L2	0 S2R2			
7:00 AM	0	1	28	0	0	0	0	3	0	2	120	0	0	0	0	111	3	0	0	0	0	0	268	
7:15 AM	0	1	20	0	0	2	0	8	0	0	113	0	0	0	0	118	6	0	0	0	0	0	268	
7:30 AM	0	1	41	0	0	5	0	2	0	0	157	0	0	0	0	123	5	0	1	0	0	335		
7:45 AM	1	0	55	0	0	6	0	2	0	0	171	0	0	0	0	161	3	0	0	0	0	399		
8:00 AM	0	1	56	0	0	1	0	0	0	2	153	0	0	0	0	124	1	0	0	0	0	338		
8:15 AM	0	1	48	0	1	1	0	3	0	2	124	0	0	0	0	142	3	0	1	0	0	325		
8:30 AM	0	0	42	0	0	5	0	4	0	2	160	0	0	0	0	131	2	0	1	1	0	348		
8:45 AM	0	2	51	0	0	2	0	3	0	3	165	0	0	0	0	128	7	0	0	1	0	362		
TOTAL VOLUMES:	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL		
APPROACH %'s:	0.29%	2.00%	97.43%	0.00%	0.29%	46.81%	0.00%	53.19%	0.00%	0.85%	99.15%	0.00%	0.00%	0.00%	0.00%	96.92%	2.80%	0.00%	0.28%	100.00%	0.00%	2643		
PEAK HR:	07:45 AM - 08:45 AM					13	0	9	0	5	608	0	0	0	0	558	9	0	2	1	0	1410		
PEAK HR FACTOR:	0.250	0.500	0.897	0.000	0.250	0.542	0.000	0.563	0.000	0.625	0.889	0.000	0.000	0.000	0.000	0.866	0.750	0.000	0.500	0.250	0.000	0.883		
PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2		TOTAL	
	0 NL	0 NT	0 NR	0 NU	0 NT2	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 EL2	0 WL	1 WT	0 WR	0 WU	0 WR2	0 S2L2	0 S2R2			
4:00 PM	0	4	35	0	0	3	0	9	0	1	142	0	0	0	0	176	7	0	0	0	1	378		
4:15 PM	0	1	43	0	0	4	0	7	0	4	133	0	0	0	0	175	4	0	0	1	0	372		
4:30 PM	0	1	28	0	0	2	0	3	0	6	128	0	0	1	0	182	1	0	0	1	2	355		
4:45 PM	0	1	25	0	0	5	0	8	0	3	116	0	0	0	0	161	7	0	2	0	0	328		
5:00 PM	0	2	42	0	0	4	0	5	0	0	129	0	0	0	0	176	6	0	0	0	1	365		
5:15 PM	0	2	28	0	0	3	0	7	0	2	147	0	0	0	0	159	2	0	0	0	1	351		
5:30 PM	0	1	29	0	0	7	0	4	0	3	96	0	0	0	0	203	7	0	0	0	0	350		
5:45 PM	1	0	21	0	0	6	0	3	0	4	106	0	0	0	0	160	5	0	0	0	0	306		
6:00 PM	0	1	35	0	0	3	0	9	0	0	109	0	0	0	0	177	6	0	1	0	0	341		
6:15 PM	0	0	36	0	0	9	0	7	0	3	96	0	0	0	0	178	7	0	0	0	0	336		
TOTAL VOLUMES:	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL		
APPROACH %'s:	0.30%	3.87%	95.83%	0.00%	0.00%	42.59%	0.00%	57.41%	0.00%	2.12%	97.80%	0.00%	0.00%	0.08%	0.00%	96.95%	2.89%	0.00%	0.17%	28.57%	71.43%	3482		
PEAK HR:	04:00 PM - 05:00 PM					14	0	27	0	14	519	0	0	1	0	694	19	0	2	2	3	1433		
PEAK HR VOL:	0.000	0.438	0.762	0.000	0.000	0.700	0.000	0.750	0.000	0.583	0.914	0.000	0.000	0.250	0.000	0.953	0.679	0.000	0.250	0.500	0.375	0.948		
PEAK HR FACTOR:																								

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB Off Ramp/Baldwin St & Pelham St
City: Methuen
Control: 2-Way Stop(NB/SB)

Project ID: 24-430074-003
Date: 5/22/2024

Data - HT

NS/EW Streets:	I-93 SB Off Ramp/Baldwin St					I-93 SB Off Ramp/Baldwin St					Pelham St					Pelham St						
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2	
	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL
7:00 AM	0	0	2	0	0	0	0	0	0	0	11	0	0	0	0	11	0	0	0	0	0	24
7:15 AM	0	0	0	0	0	3	0	0	0	0	8	0	0	0	0	14	0	0	1	0	0	26
7:30 AM	0	0	0	0	0	1	0	0	0	0	14	0	0	0	0	12	1	0	0	0	28	
7:45 AM	0	0	1	0	0	0	0	0	0	0	8	0	0	0	0	12	0	0	0	0	21	
8:00 AM	0	0	3	0	0	1	0	0	0	0	1	6	0	0	0	18	0	0	0	0	29	
8:15 AM	0	0	3	0	0	0	0	1	0	0	11	0	0	0	0	23	0	0	0	0	38	
8:30 AM	0	0	4	0	0	0	0	0	0	0	12	0	0	0	0	16	0	0	0	0	32	
8:45 AM	0	0	1	0	0	0	0	0	0	0	7	0	0	0	0	8	0	0	0	0	16	
TOTAL VOLUMES:	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL
APPROACH %'s:	0.00%	0.00%	100.00%	0.00%	0.00%	83.33%	0.00%	16.67%	0.00%	1.28%	98.72%	0.00%	0.00%	0.00%	0.00%	98.28%	0.86%	0.00%	0.86%	0	0	214
PEAK HR:	07:45 AM - 08:45 AM																					
PEAK HR VOL:	0	0	11	0	0	1	0	1	0	1	37	0	0	0	0	69	0	0	0	0	0	120
PEAK HR FACTOR:	0.000	0.000	0.688	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.771	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.789
	0.688					0.500					0.792					0.750						
PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2	
	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL
	0	0	1	0	0	0	0	0	0	0	9	0	0	0	0	17	0	0	0	0	0	27
	4:00 PM	0	0	1	0	0	0	0	1	0	1	1	0	0	0	8	0	0	0	0	0	12
	4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	6	1	0	0	0	0	9
	4:30 PM	0	0	0	0	0	0	0	1	0	0	6	0	0	0	2	0	0	0	0	0	9
	4:45 PM	0	0	0	0	0	0	0	1	0	0	6	0	0	0	2	0	0	0	0	0	9
	5:00 PM	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	10	0	0	0	0	15
	5:15 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	4	0	0	0	0	7
	5:30 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	12	0	0	0	0	17
	5:45 PM	0	0	1	0	0	0	0	1	0	0	5	0	0	0	0	7	0	0	0	0	14
	6:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4	0	0	0	0	6
	6:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	4
TOTAL VOLUMES:	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL
APPROACH %'s:	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	2.63%	97.37%	0.00%	0.00%	0.00%	0.00%	98.65%	1.35%	0.00%	0.00%	0	0	120
PEAK HR:	04:00 PM - 05:00 PM																					
PEAK HR VOL:	0	0	2	0	0	0	0	2	0	1	18	0	0	0	0	33	1	0	0	0	0	57
PEAK HR FACTOR:	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.500	0.000	0.000	0.000	0.000	0.485	0.250	0.000	0.000	0.000	0.000	0.528
	0.500					0.500					0.528					0.500						

Location: I-93 SB Off Ramp/Baldwin St & Pelham St
City: Methuen
Control: 2-Way Stop(NB/SB)

Data - Bikes

NS/EW Streets:		I-93 SB Off Ramp/Baldwin St					I-93 SB Off Ramp/Baldwin St					Pelham St					Pelham St						
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2		TOTAL
	0	0	1	0	0	0	1	0	SU	0	1	0	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TOTAL VOLUMES : APPROACH % :		NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL
		0	0	0	0	0	1	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0	0	4
PEAK HR VOL :		07:45 AM - 08:45 AM					100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%		TOTAL	
PEAK HR FACTOR :		0	0	0	0	0	1	0	0.000	0.000	0.000	0.000	0.000	0.000	1	0	2	0	0	0	0	0	4
		0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
							0.250																
							0.250																
PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2		TOTAL
	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1		
	4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2		
	4:45 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1		
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0		
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0			
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TOTAL VOLUMES : APPROACH % :		NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2R2	TOTAL
		0	0	0	0	0	0	0	0	0	0	6	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0	0	13
PEAK HR VOL :		04:00 PM - 05:00 PM					0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 SB Off Ramp/Baldwin St & Pelham St
City: Methuen

Project ID: 24-430074-003
Date: 5/22/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	I-93 SB Off Ramp/Baldwin St		I-93 SB Off Ramp/Baldwin St		Pelham St		Pelham St				
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		NORTH LEG 2		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	EB	WB	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	1	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	1	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	3	0	0	0	0	0	0	0	2	0	5
8:30 AM	0	1	0	0	0	0	0	0	0	1	2
8:45 AM	2	1	0	0	0	0	0	0	0	0	3
TOTAL VOLUMES :	EB 5	WB 4	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	EB 2	WB 3	TOTAL 14
APPROACH %'s :	55.56%	44.44%							40.00%	60.00%	
PEAK HR :	07:45 AM - 08:45 AM										TOTAL 9
PEAK HR VOL :	3	2	0	0	0	0	0	0	2	2	
PEAK HR FACTOR :	0.250	0.500							0.250	0.500	0.450
	0.417								0.500		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		NORTH LEG 2		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	EB	WB	
4:00 PM	0	2	0	0	0	0	0	0	0	2	4
4:15 PM	1	1	0	0	0	0	0	0	1	1	4
4:30 PM	2	0	0	0	0	0	0	0	2	0	4
4:45 PM	3	0	0	0	0	0	0	0	3	0	6
5:00 PM	0	0	0	0	0	0	0	0	1	0	1
5:15 PM	0	1	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	0	0	0	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB 6	WB 5	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	EB 7	WB 4	TOTAL 22
APPROACH %'s :	54.55%	45.45%							63.64%	36.36%	
PEAK HR :	04:00 PM - 05:00 PM										TOTAL 18
PEAK HR VOL :	6	3	0	0	0	0	0	0	6	3	
PEAK HR FACTOR :	0.500	0.375							0.500	0.375	0.750
	0.750								0.750		

Project ID: 24-430074-003

Location: I-93 SB Off Ramp/Baldwin St & Pelham St

City: Methuen

Day: Wednesday

Date: 5/22/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

	I-93 SB Off Ramp/Baldwin St Northbound						I-93 SB Off Ramp/Baldwin St Southbound						Pelham St Eastbound						Pelham St Westbound						Int. Total
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	0	1	30	0	0	31	0	0	3	0	0	3	2	131	0	0	0	133	0	122	3	0	0	125	292
7:15 AM	0	1	20	0	0	21	5	0	8	0	1	13	0	121	0	0	0	121	0	132	6	0	0	138	293
7:30 AM	0	1	41	0	0	42	6	0	2	0	0	8	0	171	0	0	0	171	0	135	6	0	0	141	362
7:45 AM	1	0	56	0	0	57	6	0	2	0	1	8	0	179	0	0	0	179	0	173	3	0	0	176	420
Total	1	3	147	0	0	151	17	0	15	0	2	32	2	602	0	0	0	604	0	562	18	0	0	580	1367
8:00 AM	0	1	59	0	0	60	2	0	0	0	0	2	3	159	0	0	0	162	0	142	1	0	0	143	367
8:15 AM	0	1	51	0	0	52	1	0	4	0	3	5	1	135	0	0	0	136	0	165	3	0	0	168	361
8:30 AM	0	0	46	0	0	46	5	0	4	0	1	9	2	172	0	0	0	174	0	147	2	0	0	149	378
8:45 AM	0	2	52	0	0	54	2	0	3	0	3	5	3	172	0	0	0	175	0	136	7	0	0	143	377
Total	0	4	208	0	0	212	10	0	11	0	7	21	9	638	0	0	0	647	0	590	13	0	0	603	1483
BREAK																									
4:00 PM	0	4	36	0	0	40	3	0	9	0	2	12	1	151	0	0	0	152	0	193	7	0	0	200	404
4:15 PM	0	1	44	0	0	45	4	0	8	0	2	12	5	134	0	0	0	139	0	183	4	0	0	187	383
4:30 PM	0	1	28	0	0	29	2	0	3	0	2	5	6	130	0	0	0	136	0	188	2	0	0	190	360
4:45 PM	0	1	25	0	0	26	5	0	9	0	3	14	3	122	0	0	0	125	0	163	7	0	0	170	335
Total	0	7	133	0	0	140	14	0	29	0	9	43	15	537	0	0	0	552	0	727	20	0	0	747	1482
5:00 PM	0	2	43	0	0	45	4	0	5	0	0	9	0	133	0	0	0	133	0	186	6	0	0	192	379
5:15 PM	0	2	29	0	0	31	3	0	7	0	1	10	2	149	0	0	0	151	0	163	2	0	0	165	357
5:30 PM	0	1	29	0	0	30	7	0	4	0	1	11	3	101	0	0	0	104	0	215	7	0	0	222	367
5:45 PM	1	0	22	0	0	23	6	0	4	0	0	10	4	111	0	0	0	115	0	167	5	0	0	172	320
Total	1	5	123	0	0	129	20	0	20	0	2	40	9	494	0	0	0	503	0	731	20	0	0	751	1423
6:00 PM	0	1	35	0	0	36	3	0	9	0	0	12	0	111	0	0	0	111	0	181	6	0	0	187	346
6:15 PM	0	0	36	0	0	36	9	0	7	0	0	16	3	97	0	0	0	100	0	181	7	0	0	188	340
Total	0	1	71	0	0	72	12	0	16	0	0	28	3	208	0	0	0	211	0	362	13	0	0	375	686
Grand Total	2	20	682	0	0	704	73	0	91	0	20	164	38	2479	0	0	0	2517	0	2972	84	0	0	3056	6441
Apprch %	0.3	2.8	96.9	0.0	0.0		44.5	0.0	55.5	0.0	12.2		1.5	98.5	0.0	0.0	0.0		0.0	97.3	2.7	0.0	0.0		
Total %	0.0	0.3	10.6	0.0	0.0	10.9	1.1	0.0	1.4	0.0	0.3	2.5	0.6	38.5	0.0	0.0	0.0	39.1	0.0	46.1	1.3	0.0	0.0	47.4	
Cars, PU, Vans	2	20	663	0		685	68	0	87	0		155	36	2365	0	0		2401	0	2785	82	0		2867	6108
% Cars, PU, Vans	100.0	100.0	97.2	0.0		97.3	93.2	0.0	95.6	0.0		94.5	94.7	95.4	0.0	0.0		95.4	0.0	93.7	97.6	0.0		93.8	94.8
Heavy trucks	0	0	19	0		19	5	0	4	0		9	2	114	0	0		116	0	187	2	0		189	333
%Heavy trucks	0.0	0.0	2.8	0.0		2.7	6.8	0.0	4.4	0.0		5.5	5.3	4.6	0.0	0.0		4.6	0.0	6.3	2.4	0.0		6.2	5.2

Project ID: 24-430074-003

Location: I-93 SB Off Ramp/Baldwin St & Pelham St

City: Methuen

PEAK HOURS

Day: Wednesday

Date: 5/22/2024

AM

	I-93 SB Off Ramp/Baldwin St Northbound					I-93 SB Off Ramp/Baldwin St Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
7:45 AM	1	0	56	0	57	6	0	2	0	8	0	179	0	0	179	0	173	3	0	176	420
8:00 AM	0	1	59	0	60	2	0	0	0	2	3	159	0	0	162	0	142	1	0	143	367
8:15 AM	0	1	51	0	52	1	0	4	0	5	1	135	0	0	136	0	165	3	0	168	361
8:30 AM	0	0	46	0	46	5	0	4	0	9	2	172	0	0	174	0	147	2	0	149	378
Total Volume	1	2	212	0	215	14	0	10	0	24	6	645	0	0	651	0	627	9	0	636	1526
% App. Total	0.5	0.9	98.6	0.0	100	58.3	0.0	41.7	0.0	100	0.9	99.1	0.0	0.0	100	0.0	98.6	1.4	0.0	100	
PHF	0.900					0.667					0.909					0.906					0.911
Cars, PU, Vans	1	2	201	0	204	13	0	9	0	22	5	608	0	0	613	0	558	9	0	567	1406
% Cars, PU, Vans	100.0	100.0	94.8	0.0	94.9	92.9	0.0	90.0	0.0	91.7	83.3	94.3	0.0	0.0	94.2	0.0	89.0	100.0	0.0	89.2	92.1
Heavy trucks	0	0	11	0	11	1	0	1	0	2	1	37	0	0	38	0	69	0	0	69	120
%Heavy trucks	0.0	0.0	5.2	0.0	5.1	7.1	0.0	10.0	0.0	8.3	16.7	5.7	0.0	0.0	5.8	0.0	11.0	0.0	0.0	10.8	7.9

PM

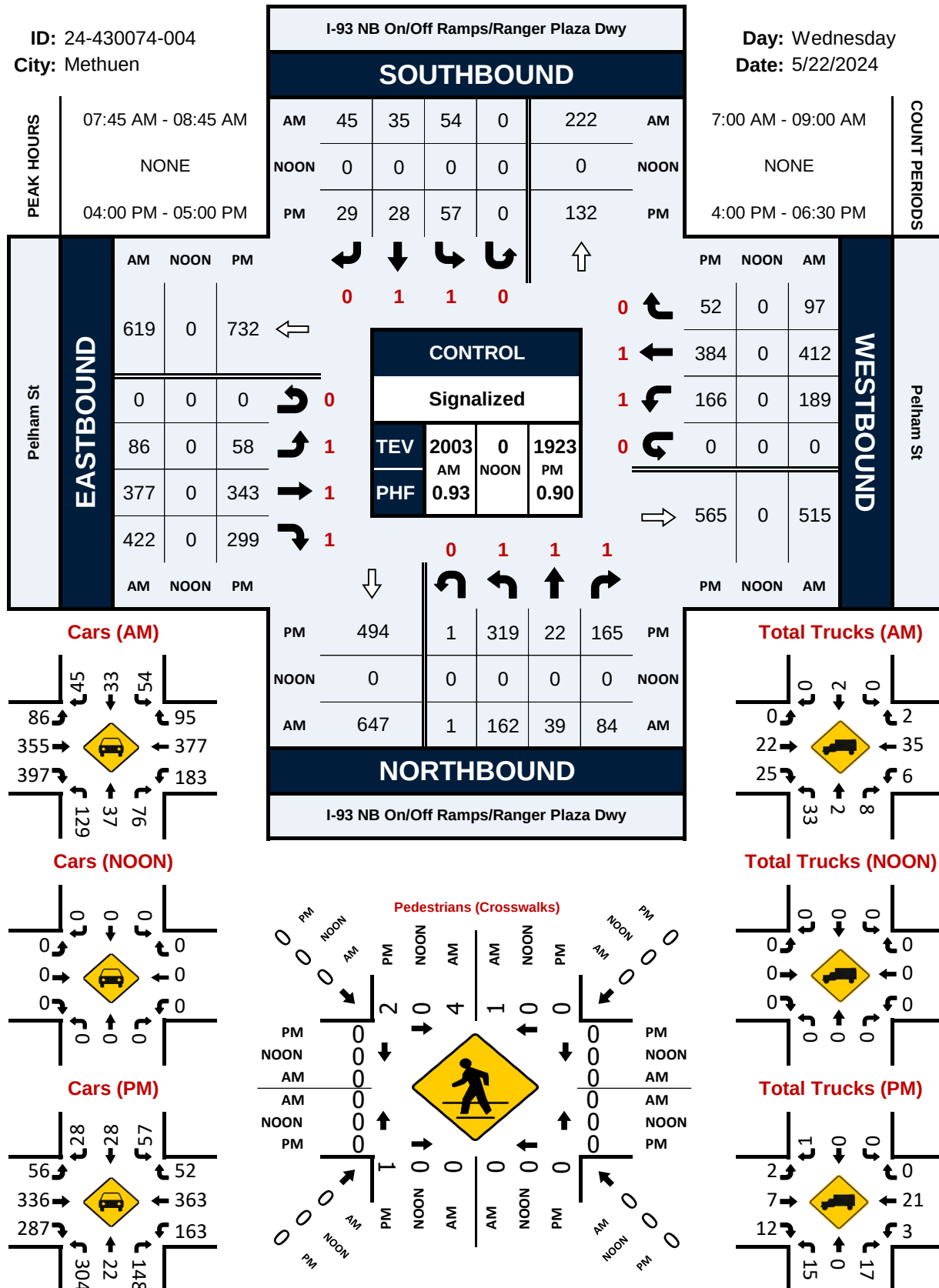
	I-93 SB Off Ramp/Baldwin St Northbound					I-93 SB Off Ramp/Baldwin St Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:30 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	4	36	0	40	3	0	9	0	12	1	151	0	0	152	0	193	7	0	200	404
4:15 PM	0	1	44	0	45	4	0	8	0	12	5	134	0	0	139	0	183	4	0	187	383
4:30 PM	0	1	28	0	29	2	0	3	0	5	6	130	0	0	136	0	188	2	0	190	360
4:45 PM	0	1	25	0	26	5	0	9	0	14	3	122	0	0	125	0	163	7	0	170	335
Total Volume	0	7	133	0	140	14	0	29	0	43	15	537	0	0	552	0	727	20	0	747	1482
% App. Total	0.0	5.0	95.0	0.0	100	32.6	0.0	67.4	0.0	100	2.7	97.3	0.0	0.0	100	0.0	97.3	2.7	0.0	100	
PHF	0.778					0.768					0.910					0.936					0.920
Cars, PU, Vans	0	7	131	0	138	14	0	27	0	41	14	519	0	0	533	0	694	19	0	713	1425
% Cars, PU, Vans	0.0	100.0	98.5	0.0	98.6	100.0	0.0	93.1	0.0	95.3	93.3	96.6	0.0	0.0	96.6	0.0	95.5	95.0	0.0	95.4	96.2
Heavy trucks	0	0	2	0	2	0	0	2	0	2	1	18	0	0	19	0	33	1	0	34	57
%Heavy trucks	0.0	0.0	1.5	0.0	1.4	0.0	0.0	6.9	0.0	4.7	6.7	3.4	0.0	0.0	3.4	0.0	4.5	5.0	0.0	4.6	3.8

I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St

Peak Hour Turning Movement Count

ID: 24-430074-004
City: Methuen

Day: Wednesday
Date: 5/22/2024



Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St
City: Methuen
Control: Signalized

Data - Total

NS/EW Streets:		I-93 NB On/Off Ramps/Ranger Plaza Dwy				I-93 NB On/Off Ramps/Ranger Plaza Dwy				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU		
7:00 AM	32	9	23	0	15	15	8	0	19	63	85	0	48	82	27	0	426	
7:15 AM	34	11	16	0	11	8	11	0	13	63	69	0	35	88	22	0	381	
7:30 AM	34	9	19	0	18	17	4	0	20	88	107	0	36	96	26	0	474	
7:45 AM	41	11	24	0	9	6	13	0	27	96	121	0	56	110	26	0	540	
8:00 AM	43	11	22	1	18	13	16	0	22	91	96	0	45	77	19	0	474	
8:15 AM	44	7	19	0	15	4	10	0	12	85	108	0	45	115	27	0	491	
8:30 AM	34	10	19	0	12	12	6	0	25	105	97	0	43	110	25	0	498	
8:45 AM	45	14	25	0	16	10	9	0	18	84	131	0	35	77	25	0	489	
TOTAL VOLUMES: APPROACH %'s:	NL 307 55.12%	NT 82 14.72%	NR 167 29.98%	NU 1 0.18%	SL 114 41.30%	ST 85 30.80%	SR 77 27.90%	SU 0 0.00%	EL 156 9.48%	ET 675 41.03%	ER 814 49.48%	EU 0 0.00%	WL 343 26.49%	WT 755 58.30%	WR 197 15.21%	WU 0 0.00%	TOTAL 3773	
	PEAK HR VOL : 07:45 AM - 08:45 AM																TOTAL 2003	
PEAK HR VOL :		162	39	84	1	54	35	45	0	86	377	422	0	189	412	97	0	0.927
PEAK HR FACTOR :		0.920	0.886	0.875	0.250													
		0.929				0.713				0.907				0.909				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU		
4:00 PM	78	4	52	1	15	8	9	0	25	100	76	0	43	111	12	0	534	
4:15 PM	68	5	44	0	20	9	8	0	12	96	74	0	41	110	17	0	504	
4:30 PM	93	5	40	0	13	4	6	0	11	82	72	0	41	82	11	0	460	
4:45 PM	80	8	29	0	9	7	6	0	10	65	77	0	41	81	12	0	425	
5:00 PM	65	12	34	0	9	15	6	0	6	99	74	0	59	109	13	0	501	
5:15 PM	67	12	35	0	14	6	10	0	19	91	79	0	39	85	13	0	470	
5:30 PM	112	8	33	0	14	7	2	0	4	73	61	0	31	96	14	0	455	
5:45 PM	83	7	33	0	9	6	4	0	10	73	61	0	34	89	14	0	423	
6:00 PM	84	7	31	0	9	3	11	0	9	66	67	0	25	79	12	0	403	
6:15 PM	95	12	37	0	12	5	5	0	12	71	55	0	40	86	7	0	437	
TOTAL VOLUMES: APPROACH %'s:	NL 825 64.76%	NT 80 6.28%	NR 368 28.89%	NU 1 0.08%	SL 124 47.51%	ST 70 26.82%	SR 67 25.67%	SU 0 0.00%	EL 118 7.24%	ET 816 50.06%	ER 696 42.70%	EU 0 0.00%	WL 394 27.23%	WT 928 64.13%	WR 125 8.64%	WU 0 0.00%	TOTAL 4612	
	PEAK HR VOL : 04:00 PM - 05:00 PM																TOTAL 1923	
PEAK HR VOL :		319	22	165	1	57	28	29	0	58	343	299	0	166	384	52	0	0.900
PEAK HR FACTOR :		0.858	0.688	0.793	0.250													
		0.918				0.770				0.871				0.896				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St
City: Methuen
Control: Signalized

Project ID: 24-430074-004
Date: 5/22/2024

Data - Cars

NS/EW Streets:	I-93 NB On/Off Ramps/Ranger Plaza Dwy				I-93 NB On/Off Ramps/Ranger Plaza Dwy				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	27	9	21	0	15	14	8	0	18	60	77	0	47	72	27	0	395
7:15 AM	28	11	15	0	11	8	10	0	13	52	67	0	33	79	20	0	347
7:30 AM	30	9	19	0	17	15	4	0	20	78	101	0	31	88	24	0	436
7:45 AM	36	11	20	0	9	6	13	0	27	94	116	0	55	105	24	0	516
8:00 AM	35	10	21	1	18	11	16	0	22	88	92	0	44	66	19	0	443
8:15 AM	32	7	17	0	15	4	10	0	12	78	96	0	43	104	27	0	445
8:30 AM	26	9	18	0	12	12	6	0	25	95	93	0	41	102	25	0	464
8:45 AM	39	14	23	0	16	9	9	0	18	80	125	0	34	76	24	0	467
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	253	80	154	1	113	79	76	0	155	625	767	0	328	692	190	0	3513
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	129	37	76	1	54	33	45	0	86	355	397	0	183	377	95	0	1868
PEAK HR FACTOR :	0.896	0.841	0.905	0.250	0.750	0.688	0.703	0.000	0.796	0.934	0.856	0.000	0.832	0.898	0.880	0.000	0.905
	0.907				0.733				0.884				0.890				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	72	4	45	1	15	8	8	0	23	96	71	0	42	102	12	0	499
4:15 PM	63	5	42	0	20	9	8	0	12	95	73	0	40	105	17	0	489
4:30 PM	90	5	36	0	13	4	6	0	11	82	70	0	40	78	11	0	446
4:45 PM	79	8	25	0	9	7	6	0	10	63	73	0	41	78	12	0	411
5:00 PM	60	12	29	0	9	15	6	0	6	95	72	0	58	106	13	0	481
5:15 PM	66	12	34	0	14	6	10	0	19	88	79	0	39	83	12	0	462
5:30 PM	103	8	30	0	14	7	1	0	4	71	59	0	31	93	14	0	435
5:45 PM	81	7	31	0	9	6	4	0	9	70	59	0	33	86	13	0	408
6:00 PM	80	7	28	0	9	2	11	0	9	65	65	0	24	79	12	0	391
6:15 PM	94	12	36	0	12	5	5	0	12	71	54	0	39	85	7	0	432
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	788	80	336	1	124	69	65	0	115	796	675	0	387	895	123	0	4454
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	304	22	148	1	57	28	28	0	56	336	287	0	163	363	52	0	1845
PEAK HR FACTOR :	0.844	0.688	0.822	0.250	0.713	0.778	0.875	0.000	0.609	0.875	0.983	0.000	0.970	0.864	0.765	0.000	0.924
	0.906				0.764				0.893				0.892				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St
City: Methuen
Control: Signalized

Project ID: 24-430074-004
Date: 5/22/2024

Data - HT

NS/EW Streets:	I-93 NB On/Off Ramps/Ranger Plaza Dwy				I-93 NB On/Off Ramps/Ranger Plaza Dwy				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	5	0	2	0	0	1	0	0	1	3	8	0	1	10	0	0	31
7:15 AM	6	0	1	0	0	0	1	0	0	11	2	0	2	9	2	0	34
7:30 AM	4	0	0	0	1	2	0	0	0	10	6	0	5	8	2	0	38
7:45 AM	5	0	4	0	0	0	0	0	0	2	5	0	1	5	2	0	24
8:00 AM	8	1	1	0	0	2	0	0	0	3	4	0	1	11	0	0	31
8:15 AM	12	0	2	0	0	0	0	0	0	7	12	0	2	11	0	0	46
8:30 AM	8	1	1	0	0	0	0	0	0	10	4	0	2	8	0	0	34
8:45 AM	6	0	2	0	0	1	0	0	0	4	6	0	1	1	1	0	22
TOTAL VOLUMES :	NL 54	NT 2	NR 13	NU 0	SL 1	ST 6	SR 1	SU 0	EL 1	ET 50	ER 47	EU 0	WL 15	WT 63	WR 7	WU 0	TOTAL 260
APPROACH %'s :	78.26%	2.90%	18.84%	0.00%	12.50%	75.00%	12.50%	0.00%	1.02%	51.02%	47.96%	0.00%	17.65%	74.12%	8.24%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	33	2	8	0	0	2	0	0	0	22	25	0	6	35	2	0	135
PEAK HR FACTOR :	0.688	0.500	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.550	0.521	0.000	0.750	0.795	0.250	0.000	0.734
	0.768				0.250				0.618				0.827				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	6	0	7	0	0	0	1	0	2	4	5	0	1	9	0	0	35
4:15 PM	5	0	2	0	0	0	0	0	1	1	1	0	1	5	0	0	15
4:30 PM	3	0	4	0	0	0	0	0	0	0	2	0	1	4	0	0	14
4:45 PM	1	0	4	0	0	0	0	0	0	2	4	0	0	3	0	0	14
5:00 PM	5	0	5	0	0	0	0	0	0	4	2	0	1	3	0	0	20
5:15 PM	1	0	1	0	0	0	0	0	0	3	0	0	0	2	1	0	8
5:30 PM	9	0	3	0	0	0	1	0	0	2	2	0	0	3	0	0	20
5:45 PM	2	0	2	0	0	0	0	0	1	3	2	0	1	3	1	0	15
6:00 PM	4	0	3	0	0	1	0	0	0	1	2	0	1	0	0	0	12
6:15 PM	1	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	5
TOTAL VOLUMES :	NL 37	NT 0	NR 32	NU 0	SL 0	ST 1	SR 2	SU 0	EL 3	ET 20	ER 21	EU 0	WL 7	WT 33	WR 2	WU 0	TOTAL 158
APPROACH %'s :	53.62%	0.00%	46.38%	0.00%	0.00%	33.33%	66.67%	0.00%	6.82%	45.45%	47.73%	0.00%	16.67%	78.57%	4.76%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	15	0	17	0	0	0	1	0	2	7	12	0	3	21	0	0	78
PEAK HR FACTOR :	0.625	0.000	0.607	0.000	0.000	0.000	0.250	0.000	0.250	0.438	0.600	0.000	0.750	0.583	0.000	0.000	0.557
	0.615				0.250				0.477				0.600				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St
City: Methuen
Control: Signalized

Project ID: 24-430074-004
Date: 5/22/2024

Data - Bikes

NS/EW Streets:	I-93 NB On/Off Ramps/Ranger Plaza Dwy				I-93 NB On/Off Ramps/Ranger Plaza Dwy				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
PEAK HR :	07:45 AM - 08:45 AM								0.00% 100.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.500
										0.250				0.375			
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5:30 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	3
6:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	6	0	0	0	0	3	0	0	0	1	5	0	15
PEAK HR :	04:00 PM - 05:00 PM				100.00% 0.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				0.00% 16.67% 83.33% 0.00%				
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.750	0.000	0.500
										0.500					0.750		

National Data & Surveying Services

Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St
City: Methuen

Project ID: 24-430074-004
Date: 5/22/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	I-93 NB On/Off Ramps/Ranger Plaza Dwy		I-93 NB On/Off Ramps/Ranger Plaza Dwy		Pelham St		Pelham St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
	7:00 AM	0	0	0	0	0	0	0	
	7:15 AM	0	1	0	0	0	0	0	
	7:30 AM	0	0	0	0	0	0	0	
	7:45 AM	0	0	0	0	0	0	0	
	8:00 AM	1	0	0	0	0	0	0	
	8:15 AM	1	1	0	0	0	0	0	
	8:30 AM	2	0	0	0	0	0	0	
8:45 AM	1	0	0	0	0	0	0		
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	5	2	0	0	0	0	0	0	7
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	4	1	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.500	0.250							0.625

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	1	0	1	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	0	1
5:30 PM	0	2	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :	EB 2	WB 2	EB 1	WB 0	NB 0	SB 1	NB 0	SB 0	TOTAL 6
	50.00%	50.00%	100.00%	0.00%	0.00%	100.00%			
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	20		10		00		00		3
PEAK HR FACTOR :	0.500		0.250						0.375

Project ID: 24-430074-004

Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham St

City: Methuen

Day: Wednesday

Date: 5/22/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

	I-93 NB On/Off Ramps/Ranger Plaza Dwy Northbound						I-93 NB On/Off Ramps/Ranger Plaza Dwy Southbound						Pelham St Eastbound						Pelham St Westbound						Int. Total
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	32	9	23	0	0	64	15	15	8	0	0	38	19	63	85	0	0	167	48	82	27	0	0	157	426
7:15 AM	34	11	16	0	0	61	11	8	11	0	1	30	13	63	69	0	0	145	35	88	22	0	0	145	381
7:30 AM	34	9	19	0	0	62	18	17	4	0	0	39	20	88	107	0	0	215	36	96	26	0	0	158	474
7:45 AM	41	11	24	0	0	76	9	6	13	0	0	28	27	96	121	0	0	244	56	110	26	0	0	192	540
Total	141	40	82	0	0	263	53	46	36	0	1	135	79	310	382	0	0	771	175	376	101	0	0	652	1821
8:00 AM	43	11	22	1	0	77	18	13	16	0	1	47	22	91	96	0	0	209	45	77	19	0	0	141	474
8:15 AM	44	7	19	0	0	70	15	4	10	0	2	29	12	85	108	0	0	205	45	115	27	0	0	187	491
8:30 AM	34	10	19	0	0	63	12	12	6	0	2	30	25	105	97	0	0	227	43	110	25	0	0	178	498
8:45 AM	45	14	25	0	0	84	16	10	9	0	1	35	18	84	131	0	0	233	35	77	25	0	0	137	489
Total	166	42	85	1	0	294	61	39	41	0	6	141	77	365	432	0	0	874	168	379	96	0	0	643	1952
BREAK																									
4:00 PM	78	4	52	1	0	135	15	8	9	0	0	32	25	100	76	0	0	201	43	111	12	0	0	166	534
4:15 PM	68	5	44	0	0	117	20	9	8	0	0	37	12	96	74	0	0	182	41	110	17	0	0	168	504
4:30 PM	93	5	40	0	0	138	13	4	6	0	1	23	11	82	72	0	0	165	41	82	11	0	0	134	460
4:45 PM	80	8	29	0	1	117	9	7	6	0	1	22	10	65	77	0	0	152	41	81	12	0	0	134	425
Total	319	22	165	1	1	507	57	28	29	0	2	114	58	343	299	0	0	700	166	384	52	0	0	602	1923
5:00 PM	65	12	34	0	0	111	9	15	6	0	0	30	6	99	74	0	0	179	59	109	13	0	0	181	501
5:15 PM	67	12	35	0	0	114	14	6	10	0	0	30	19	91	79	0	0	189	39	85	13	0	1	137	470
5:30 PM	112	8	33	0	0	153	14	7	2	0	2	23	4	73	61	0	0	138	31	96	14	0	0	141	455
5:45 PM	83	7	33	0	0	123	9	6	4	0	0	19	10	73	61	0	0	144	34	89	14	0	0	137	423
Total	327	39	135	0	0	501	46	34	22	0	2	102	39	336	275	0	0	650	163	379	54	0	1	596	1849
6:00 PM	84	7	31	0	0	122	9	3	11	0	0	23	9	66	67	0	0	142	25	79	12	0	0	116	403
6:15 PM	95	12	37	0	0	144	12	5	5	0	0	22	12	71	55	0	0	138	40	86	7	0	0	133	437
Total	179	19	68	0	0	266	21	8	16	0	0	45	21	137	122	0	0	280	65	165	19	0	0	249	840
Grand Total	1132	162	535	2	1	1831	238	155	144	0	11	537	274	1491	1510	0	0	3275	737	1683	322	0	1	2742	8385
Apprch %	61.8	8.8	29.2	0.1	0.1		44.3	28.9	26.8	0.0	2.0		8.4	45.5	46.1	0.0	0.0		26.9	61.4	11.7	0.0	0.0		
Total %	13.5	1.9	6.4	0.0	0.0	21.8	2.8	1.8	1.7	0.0	0.1	6.4	3.3	17.8	18.0	0.0	0.0	39.1	8.8	20.1	3.8	0.0	0.0	32.7	
Cars, PU, Vans	1041	160	490	2		1693	237	148	141	0		526	270	1421	1442	0		3133	715	1587	313	0		2615	7967
% Cars, PU, Vans	92.0	98.8	91.6	100.0		92.5	99.6	95.5	97.9	0.0		98.0	98.5	95.3	95.5	0.0		95.7	97.0	94.3	97.2	0.0		95.4	95.0
Heavy trucks	91	2	45	0		138	1	7	3	0		11	4	70	68	0		142	22	96	9	0		127	418
%Heavy trucks	8.0	1.2	8.4	0.0		7.5	0.4	4.5	2.1	0.0		2.0	1.5	4.7	4.5	0.0		4.3	3.0	5.7	2.8	0.0		4.6	5.0

Project ID: 24-430074-004

Location: I-93 NB On/Off Ramps/Ranger Plaza Dwy & Pelham

City: Methuen

PEAK HOURS

Day: Wednesday

Date: 5/22/2024

AM

	I-93 NB On/Off Ramps/Ranger Plaza Dwy Northbound					I-93 NB On/Off Ramps/Ranger Plaza Dwy Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
7:45 AM	41	11	24	0	76	9	6	13	0	28	27	96	121	0	244	56	110	26	0	192	540
8:00 AM	43	11	22	1	77	18	13	16	0	47	22	91	96	0	209	45	77	19	0	141	474
8:15 AM	44	7	19	0	70	15	4	10	0	29	12	85	108	0	205	45	115	27	0	187	491
8:30 AM	34	10	19	0	63	12	12	6	0	30	25	105	97	0	227	43	110	25	0	178	498
Total Volume	162	39	84	1	286	54	35	45	0	134	86	377	422	0	885	189	412	97	0	698	2003
% App. Total	56.6	13.6	29.4	0.3	100	40.3	26.1	33.6	0.0	100	9.7	42.6	47.7	0.0	100	27.1	59.0	13.9	0.0	100	
PHF	0.929					0.713					0.907					0.909					0.927
Cars, PU, Vans	129	37	76	1	243	54	33	45	0	132	86	355	397	0	838	183	377	95	0	655	1868
% Cars, PU, Vans	79.6	94.9	90.5	100.0	85.0	100.0	94.3	100.0	0.0	98.5	100.0	94.2	94.1	0.0	94.7	96.8	91.5	97.9	0.0	93.8	93.3
Heavy trucks	33	2	8	0	43	0	2	0	0	2	0	22	25	0	47	6	35	2	0	43	135
%Heavy trucks	20.4	5.1	9.5	0.0	15.0	0.0	5.7	0.0	0.0	1.5	0.0	5.8	5.9	0.0	5.3	3.2	8.5	2.1	0.0	6.2	6.7

PM

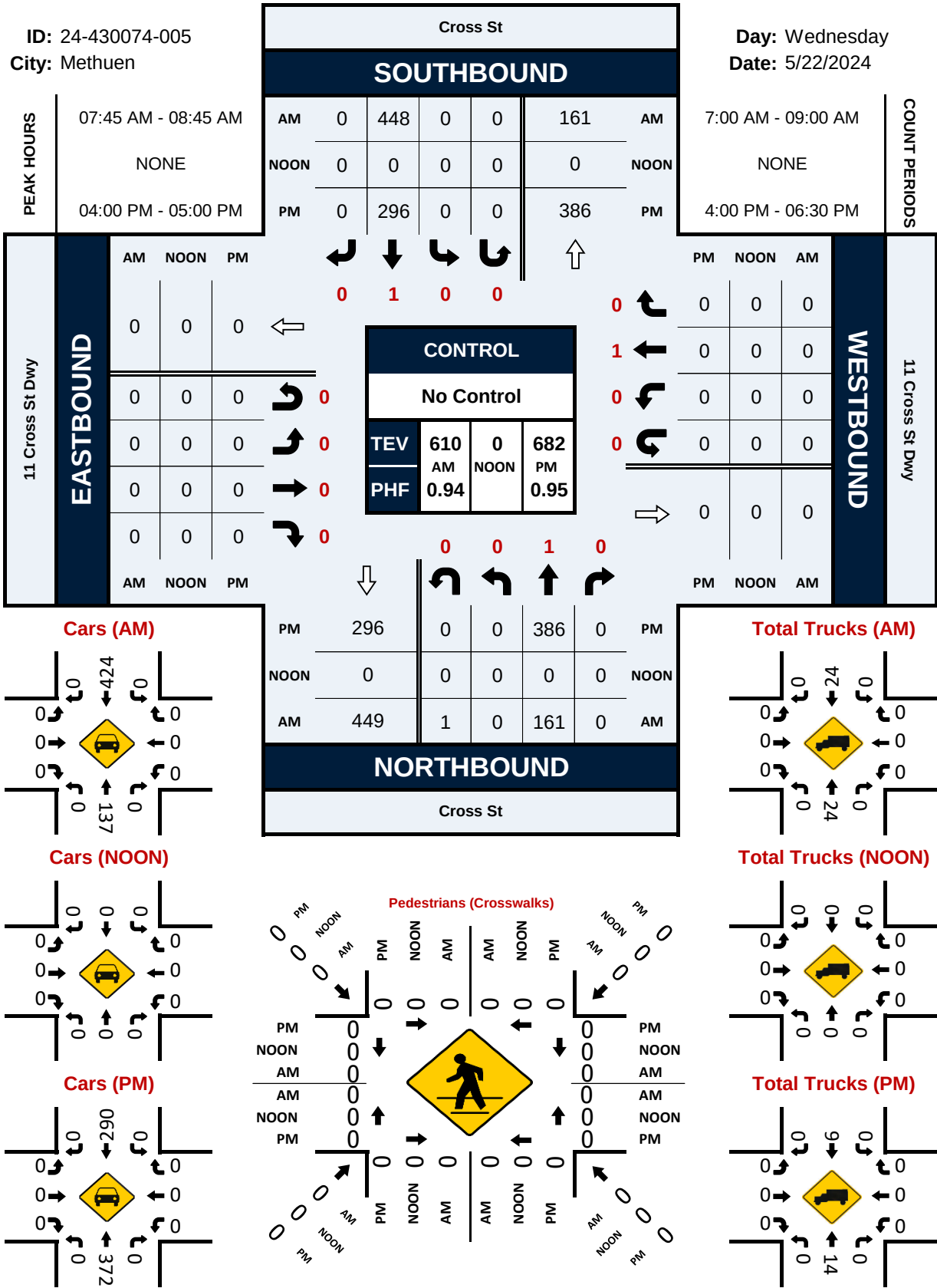
	I-93 NB On/Off Ramps/Ranger Plaza Dwy Northbound					I-93 NB On/Off Ramps/Ranger Plaza Dwy Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:30 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	78	4	52	1	135	15	8	9	0	32	25	100	76	0	201	43	111	12	0	166	534
4:15 PM	68	5	44	0	117	20	9	8	0	37	12	96	74	0	182	41	110	17	0	168	504
4:30 PM	93	5	40	0	138	13	4	6	0	23	11	82	72	0	165	41	82	11	0	134	460
4:45 PM	80	8	29	0	117	9	7	6	0	22	10	65	77	0	152	41	81	12	0	134	425
Total Volume	319	22	165	1	507	57	28	29	0	114	58	343	299	0	700	166	384	52	0	602	1923
% App. Total	62.9	4.3	32.5	0.2	100	50.0	24.6	25.4	0.0	100	8.3	49.0	42.7	0.0	100	27.6	63.8	8.6	0.0	100	
PHF	0.918					0.770					0.871					0.896					0.900
Cars, PU, Vans	304	22	148	1	475	57	28	28	0	113	56	336	287	0	679	163	363	52	0	578	1845
% Cars, PU, Vans	95.3	100.0	89.7	100.0	93.7	100.0	100.0	96.6	0.0	99.1	96.6	98.0	96.0	0.0	97.0	98.2	94.5	100.0	0.0	96.0	95.9
Heavy trucks	15	0	17	0	32	0	0	1	0	1	2	7	12	0	21	3	21	0	0	24	78
%Heavy trucks	4.7	0.0	10.3	0.0	6.3	0.0	0.0	3.4	0.0	0.9	3.4	2.0	4.0	0.0	3.0	1.8	5.5	0.0	0.0	4.0	4.1

Cross St & 11 Cross St Dwy

Peak Hour Turning Movement Count

ID: 24-430074-005
City: Methuen

Day: Wednesday
Date: 5/22/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & 11 Cross St Dwy
City: Methuen
Control: No Control

Project ID: 24-430074-005
Date: 5/22/2024

Data - Total

NS/EW Streets:	Cross St				Cross St				11 Cross St Dwy				11 Cross St Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	0	34	0	0	0	71	0	0	0	0	0	0	0	0	0	0	105
7:15 AM	0	43	0	0	0	85	0	0	0	0	0	0	0	0	0	0	128
7:30 AM	0	41	0	0	0	104	0	0	0	0	0	0	0	0	0	0	145
7:45 AM	0	41	0	0	0	98	0	0	0	0	0	0	0	0	0	0	139
8:00 AM	0	38	0	1	0	111	0	0	0	0	0	0	0	0	0	0	150
8:15 AM	0	47	0	0	0	111	0	0	0	0	0	0	0	0	0	0	158
8:30 AM	0	35	0	0	0	128	0	0	0	0	0	0	0	0	0	0	163
8:45 AM	0	48	0	0	0	82	0	0	0	0	0	0	0	0	0	0	130
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	327	0	1	0	790	0	0	0	0	0	0	0	0	0	0	1118
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	161	0	1	0	448	0	0	0	0	0	0	0	0	0	0	610
PEAK HR FACTOR :	0.000	0.856	0.000	0.250	0.000	0.875	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.936
	0.862				0.875												
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	0	100	0	0	0	78	0	0	0	0	0	0	0	0	0	0	178
4:15 PM	0	104	0	0	0	75	0	0	0	0	0	0	0	0	0	0	179
4:30 PM	0	98	0	0	0	68	0	0	0	0	0	0	0	0	0	0	166
4:45 PM	0	84	0	0	0	75	0	0	0	0	0	0	0	0	0	0	159
5:00 PM	0	94	0	0	0	83	0	0	0	0	0	0	0	0	0	0	177
5:15 PM	0	88	0	0	0	81	0	0	0	0	0	0	0	0	0	0	169
5:30 PM	0	108	0	0	0	67	0	0	0	0	0	0	0	0	0	0	175
5:45 PM	0	89	0	0	0	66	0	0	0	0	0	0	0	0	0	0	155
6:00 PM	0	106	0	0	0	74	0	0	0	0	0	0	0	0	0	0	180
6:15 PM	0	85	0	0	0	68	0	0	0	0	0	0	0	0	0	0	153
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	956	0	0	0	735	0	0	0	0	0	0	0	0	0	0	1691
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	386	0	0	0	296	0	0	0	0	0	0	0	0	0	0	682
PEAK HR FACTOR :	0.000	0.928	0.000	0.000	0.000	0.949	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.953
	0.928				0.949												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & 11 Cross St Dwy
City: Methuen
Control: No Control

Project ID: 24-430074-005
Date: 5/22/2024

Data - Cars

NS/EW Streets:	Cross St				Cross St				11 Cross St Dwy				11 Cross St Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	0	31	0	0	0	66	0	0	0	0	0	0	0	0	0	0	97
7:15 AM	0	40	0	0	0	79	0	0	0	0	0	0	0	0	0	0	119
7:30 AM	0	40	0	0	0	100	0	0	0	0	0	0	0	0	0	0	140
7:45 AM	0	36	0	0	0	98	0	0	0	0	0	0	0	0	0	0	134
8:00 AM	0	30	0	1	0	104	0	0	0	0	0	0	0	0	0	0	135
8:15 AM	0	41	0	0	0	104	0	0	0	0	0	0	0	0	0	0	145
8:30 AM	0	30	0	0	0	118	0	0	0	0	0	0	0	0	0	0	148
8:45 AM	0	46	0	0	0	79	0	0	0	0	0	0	0	0	0	0	125
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	294	0	1	0	748	0	0	0	0	0	0	0	0	0	0	1043
PEAK HR :	07:45 AM - 08:45 AM				0	424	0	0	0	0	0	0	0	0	0	0	562
PEAK HR VOL :	0	137	0	1	0	0.898	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.949
PEAK HR FACTOR :	0.000	0.835	0.000	0.250	0.000	0.898	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.841				0.898												
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	0	92	0	0	0	75	0	0	0	0	0	0	0	0	0	0	167
4:15 PM	0	101	0	0	0	75	0	0	0	0	0	0	0	0	0	0	176
4:30 PM	0	96	0	0	0	68	0	0	0	0	0	0	0	0	0	0	164
4:45 PM	0	83	0	0	0	72	0	0	0	0	0	0	0	0	0	0	155
5:00 PM	0	87	0	0	0	82	0	0	0	0	0	0	0	0	0	0	169
5:15 PM	0	86	0	0	0	78	0	0	0	0	0	0	0	0	0	0	164
5:30 PM	0	102	0	0	0	65	0	0	0	0	0	0	0	0	0	0	167
5:45 PM	0	87	0	0	0	65	0	0	0	0	0	0	0	0	0	0	152
6:00 PM	0	102	0	0	0	73	0	0	0	0	0	0	0	0	0	0	175
6:15 PM	0	83	0	0	0	68	0	0	0	0	0	0	0	0	0	0	151
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	919	0	0	0	721	0	0	0	0	0	0	0	0	0	0	1640
PEAK HR :	04:00 PM - 05:00 PM				0	290	0	0	0	0	0	0	0	0	0	0	662
PEAK HR VOL :	0	372	0	0	0	0.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.940
PEAK HR FACTOR :	0.000	0.921	0.000	0.000	0.000	0.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.921				0.967												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cross St & 11 Cross St Dwy
City: Methuen
Control: No Control

Project ID: 24-430074-005
Date: 5/22/2024

Data - HT

NS/EW Streets:	Cross St				Cross St				11 Cross St Dwy				11 Cross St Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	0	8
7:15 AM	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	9
7:30 AM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
7:45 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:00 AM	0	8	0	0	0	7	0	0	0	0	0	0	0	0	0	0	15
8:15 AM	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0	0	13
8:30 AM	0	5	0	0	0	10	0	0	0	0	0	0	0	0	0	0	15
8:45 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	33	0	0	0	42	0	0	0	0	0	0	0	0	0	0	75
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	24	0	0	0	24	0	0	0	0	0	0	0	0	0	0	48
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.800
	0.750				0.600												
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	0	8	0	0	0	3	0	0	0	0	0	0	0	0	0	0	11
4:15 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8
5:15 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	0	6	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8
5:45 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
6:00 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
6:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	37	0	0	0	14	0	0	0	0	0	0	0	0	0	0	51
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	14	0	0	0	6	0	0	0	0	0	0	0	0	0	0	20
PEAK HR FACTOR :	0.000	0.438	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.455
	0.438				0.500												

Location: Cross St & 11 Cross St Dwy
City: Methuen
Control: No Control

[illegible]

National Data & Surveying Services

Location: Cross St & 11 Cross St Dwy
City: Methuen

Project ID: 24-430074-005
Date: 5/22/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Cross St		Cross St		11 Cross St Dwy		11 Cross St Dwy		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :	EB 0	WB 0	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 0
PEAK HR :	04:00 PM - 05:00 PM		0	0	0	0	0	0	TOTAL 0
PEAK HR VOL :	0	0							
PEAK HR FACTOR :									

Project ID: 24-430074-005
Location: Cross St & 11 Cross St Dwy
City: Methuen

Day: Wednesday
Date: 5/22/2024

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Cross St Northbound						Cross St Southbound						11 Cross St Dwy Eastbound						11 Cross St Dwy Westbound							
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total	
7:00 AM	0	34	0	0	0	34	0	71	0	0	0	71	0	0	0	0	0	0	0	0	0	0	0	0	105	
7:15 AM	0	43	0	0	0	43	0	85	0	0	0	85	0	0	0	0	0	0	0	0	0	0	0	0	128	
7:30 AM	0	41	0	0	0	41	0	104	0	0	0	104	0	0	0	0	0	0	0	0	0	0	0	0	145	
7:45 AM	0	41	0	0	0	41	0	98	0	0	0	98	0	0	0	0	0	0	0	0	0	0	0	0	139	
Total	0	159	0	0	0	159	0	358	0	0	0	358	0	0	0	0	0	0	0	0	0	0	0	0	517	
8:00 AM	0	38	0	1	0	39	0	111	0	0	0	111	0	0	0	0	0	0	0	0	0	0	0	0	150	
8:15 AM	0	47	0	0	0	47	0	111	0	0	0	111	0	0	0	0	0	0	0	0	0	0	0	0	158	
8:30 AM	0	35	0	0	0	35	0	128	0	0	0	128	0	0	0	0	0	0	0	0	0	0	0	0	163	
8:45 AM	0	48	0	0	0	48	0	82	0	0	0	82	0	0	0	0	0	0	0	0	0	0	0	0	130	
Total	0	168	0	1	0	169	0	432	0	0	0	432	0	0	0	0	0	0	0	0	0	0	0	0	601	
BREAK																										
4:00 PM	0	100	0	0	0	100	0	78	0	0	0	78	0	0	0	0	0	0	0	0	0	0	0	0	178	
4:15 PM	0	104	0	0	0	104	0	75	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	179	
4:30 PM	0	98	0	0	0	98	0	68	0	0	0	68	0	0	0	0	0	0	0	0	0	0	0	0	166	
4:45 PM	0	84	0	0	0	84	0	75	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	159	
Total	0	386	0	0	0	386	0	296	0	0	0	296	0	0	0	0	0	0	0	0	0	0	0	0	682	
5:00 PM	0	94	0	0	0	94	0	83	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	177	
5:15 PM	0	88	0	0	0	88	0	81	0	0	0	81	0	0	0	0	0	0	0	0	0	0	0	0	169	
5:30 PM	0	108	0	0	0	108	0	67	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	175	
5:45 PM	0	89	0	0	0	89	0	66	0	0	0	66	0	0	0	0	0	0	0	0	0	0	0	0	155	
Total	0	379	0	0	0	379	0	297	0	0	0	297	0	0	0	0	0	0	0	0	0	0	0	0	676	
6:00 PM	0	106	0	0	0	106	0	74	0	0	0	74	0	0	0	0	0	0	0	0	0	0	0	0	180	
6:15 PM	0	85	0	0	0	85	0	68	0	0	0	68	0	0	0	0	0	0	0	0	0	0	0	0	153	
Total	0	191	0	0	0	191	0	142	0	0	0	142	0	0	0	0	0	0	0	0	0	0	0	0	333	
Grand Total	0	1283	0	1	0	1284	0	1525	0	0	0	1525	0	0	0	0	0	0	0	0	0	0	0	0	2809	
Apprch %	0.0	99.9	0.0	0.1	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total %	0.0	45.7	0.0	0.0	0.0	45.7	0.0	54.3	0.0	0.0	0.0	54.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Cars, PU, Vans	0	1213	0	1		1214	0	1469	0	0		1469	0	0	0	0		0	0	0	0	0		0	2683	
% Cars, PU, Vans	0.0	94.5	0.0	100.0		94.5	0.0	96.3	0.0	0.0		96.3	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	95.5	
Heavy trucks	0	70	0	0		70	0	56	0	0		56	0	0	0	0		0	0	0	0	0		0	126	
%Heavy trucks	0.0	5.5	0.0	0.0		5.5	0.0	3.7	0.0	0.0		3.7	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	4.5	

Day: Wednesday
Date: 5/22/2024

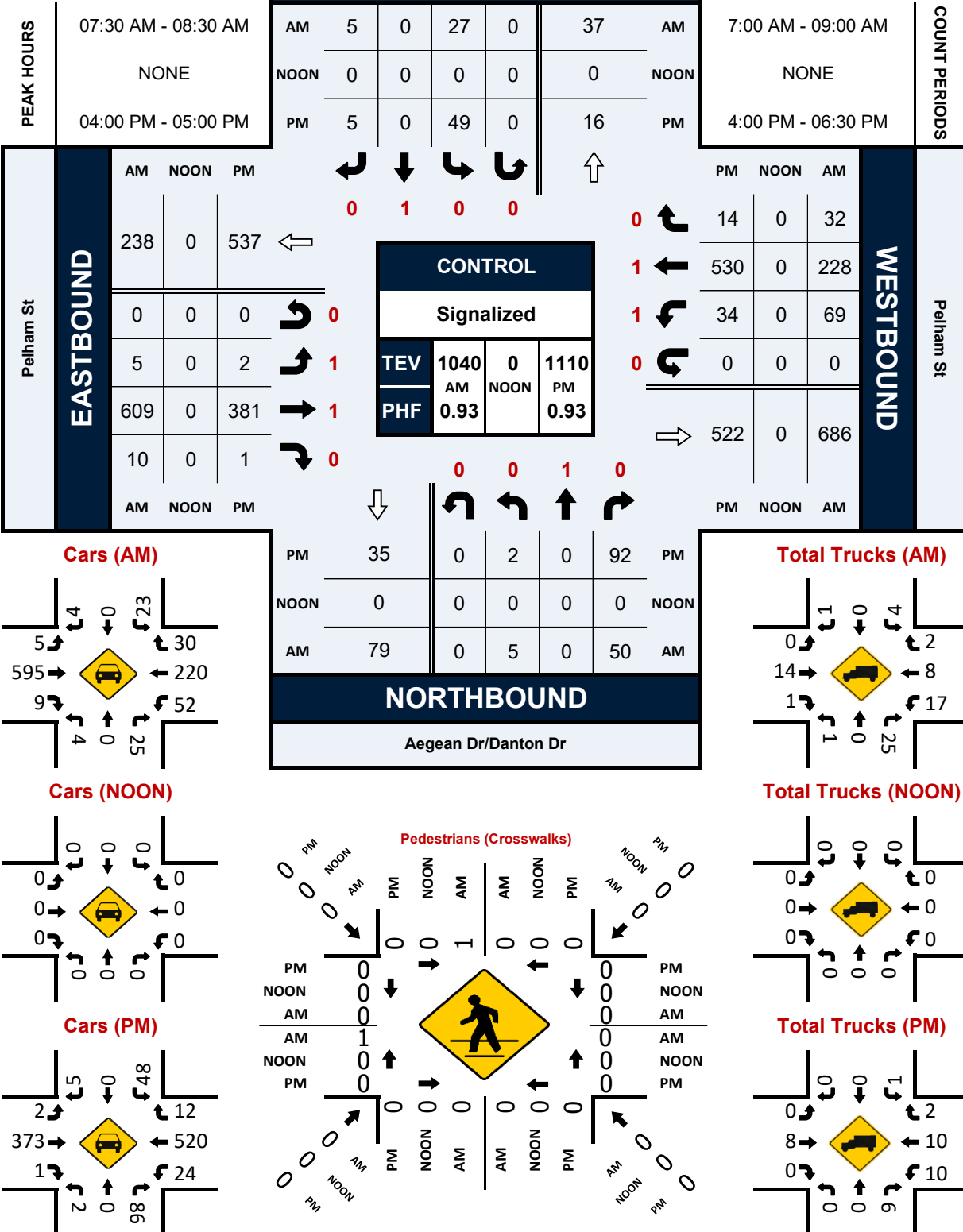
[illegible][illegible]

Aegean Dr/Danton Dr & Pelham St

Peak Hour Turning Movement Count

ID: 25-430104-001
City: Methuen

Day: Tuesday
Date: 7/22/2025



National Data & Surveying Services

Intersection Turning Movement Count

Location: Aegean Dr/Danton Dr & Pelham St
City: Methuen
Control: Signalized

Project ID: 25-430104-001
Date: 7/22/2025

Data - Total

NS/EW Streets:	Aegean Dr/Danton Dr				Aegean Dr/Danton Dr				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	1	0	13	0	7	0	0	0	3	146	4	0	25	23	10	0	232
7:15 AM	0	0	13	0	15	1	0	0	2	146	1	0	32	33	11	0	254
7:30 AM	2	0	18	0	13	0	1	0	0	165	5	0	14	55	7	0	280
7:45 AM	1	0	9	0	7	0	2	0	2	137	3	0	17	72	6	0	256
8:00 AM	0	0	12	0	3	0	0	0	2	143	1	0	23	47	13	0	244
8:15 AM	2	0	11	0	4	0	2	0	1	164	1	0	15	54	6	0	260
8:30 AM	0	0	6	0	9	0	3	0	4	143	2	0	16	54	7	0	244
8:45 AM	2	0	14	0	4	0	0	0	0	129	2	0	18	65	8	0	242
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	8	0	96	0	62	1	8	0	14	1173	19	0	160	403	68	0	2012
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	5	0	50	0	27	0	5	0	5	609	10	0	69	228	32	0	1040
PEAK HR FACTOR :	0.625	0.000	0.694	0.000	0.519	0.000	0.625	0.000	0.625	0.923	0.500	0.000	0.750	0.792	0.615	0.000	0.929
	0.688				0.571				0.918				0.866				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	32	0	17	0	2	0	0	97	1	0	10	136	4	0	299
4:15 PM	1	0	21	0	15	0	1	0	1	98	0	0	6	117	5	0	265
4:30 PM	1	0	24	0	13	0	1	0	0	89	0	0	9	142	2	0	281
4:45 PM	0	0	15	0	4	0	1	0	1	97	0	0	9	135	3	0	265
5:00 PM	1	0	14	0	11	0	2	0	1	106	0	0	7	128	5	0	275
5:15 PM	0	0	12	0	10	0	0	0	0	101	0	0	12	120	2	0	257
5:30 PM	2	0	22	0	4	0	0	0	0	101	0	0	6	122	0	0	257
5:45 PM	1	0	6	0	4	0	0	0	1	92	1	0	4	131	1	0	241
6:00 PM	2	0	8	0	2	0	2	0	1	75	0	0	10	131	1	0	232
6:15 PM	1	0	6	0	4	0	0	0	1	91	0	0	3	121	1	0	228
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	9	0	160	0	84	0	9	0	6	947	2	0	76	1283	24	0	2600
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	0	92	0	49	0	5	0	2	381	1	0	34	530	14	0	1110
PEAK HR FACTOR :	0.500	0.000	0.719	0.000	0.721	0.000	0.625	0.000	0.500	0.972	0.250	0.000	0.850	0.933	0.700	0.000	0.928
	0.734				0.711				0.970				0.944				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Aegean Dr/Danton Dr & Pelham St
City: Methuen
Control: Signalized

Project ID: 25-430104-001
Date: 7/22/2025

Data - Cars

NS/EW Streets:	Aegean Dr/Danton Dr				Aegean Dr/Danton Dr				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	1	0	8	0	6	0	0	0	2	139	4	0	22	22	9	0	213
7:15 AM	0	0	5	0	11	1	0	0	2	142	1	0	25	32	10	0	229
7:30 AM	2	0	8	0	11	0	1	0	0	159	5	0	9	53	7	0	255
7:45 AM	1	0	5	0	6	0	1	0	2	136	2	0	12	69	6	0	240
8:00 AM	0	0	7	0	3	0	0	0	2	140	1	0	20	44	12	0	229
8:15 AM	1	0	5	0	3	0	2	0	1	160	1	0	11	54	5	0	243
8:30 AM	0	0	3	0	8	0	3	0	4	141	1	0	13	49	7	0	229
8:45 AM	2	0	9	0	2	0	0	0	0	124	2	0	16	62	5	0	222
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	7	0	50	0	50	1	7	0	13	1141	17	0	128	385	61	0	1860
PEAK HR :	07:30 AM - 08:30 AM				23	0	4	0	5	595	9	0	52	220	30	0	967
PEAK HR VOL :	4	0	25	0	0.523	0.000	0.500	0.000	0.625	0.930	0.450	0.000	0.650	0.797	0.625	0.000	0.948
PEAK HR FACTOR :	0.500	0.000	0.781	0.000	0.523	0.000	0.500	0.000	0.625	0.930	0.450	0.000	0.650	0.797	0.625	0.000	0.948
	0.725				0.563				0.928				0.868				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	32	0	17	0	2	0	0	94	1	0	7	134	4	0	291
4:15 PM	1	0	17	0	14	0	1	0	1	95	0	0	2	115	3	0	249
4:30 PM	1	0	23	0	13	0	1	0	0	89	0	0	7	139	2	0	275
4:45 PM	0	0	14	0	4	0	1	0	1	95	0	0	8	132	3	0	258
5:00 PM	1	0	12	0	11	0	2	0	1	103	0	0	6	126	4	0	266
5:15 PM	0	0	10	0	9	0	0	0	0	94	0	0	10	119	2	0	244
5:30 PM	2	0	20	0	4	0	0	0	0	100	0	0	5	121	0	0	252
5:45 PM	1	0	6	0	4	0	0	0	1	92	1	0	3	131	1	0	240
6:00 PM	2	0	6	0	2	0	2	0	1	74	0	0	6	131	1	0	225
6:15 PM	1	0	6	0	4	0	0	0	1	88	0	0	3	119	1	0	223
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	9	0	146	0	82	0	9	0	6	924	2	0	57	1267	21	0	2523
PEAK HR :	04:00 PM - 05:00 PM				48	0	5	0	2	373	1	0	24	520	12	0	1073
PEAK HR VOL :	2	0	86	0	0.706	0.000	0.625	0.000	0.500	0.982	0.250	0.000	0.750	0.935	0.750	0.000	0.922
PEAK HR FACTOR :	0.500	0.000	0.672	0.000	0.706	0.000	0.625	0.000	0.500	0.982	0.250	0.000	0.750	0.935	0.750	0.000	0.922
	0.688				0.697				0.979				0.939				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Aegean Dr/Danton Dr & Pelham St
City: Methuen
Control: Signalized

Project ID: 25-430104-001
Date: 7/22/2025

Data - Buses

NS/EW Streets:	Aegean Dr/Danton Dr				Aegean Dr/Danton Dr				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	6	0	0	0	3	0	0	9
PEAK HR :	07:30 AM - 08:30 AM								0.00% 100.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500
									1.000				0.250				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	5
PEAK HR :	04:00 PM - 05:00 PM								0.00% 100.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.250	0.000	0.000	0.500
									0.375				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Aegean Dr/Danton Dr & Pelham St
City: Methuen
Control: Signalized

Project ID: 25-430104-001
Date: 7/22/2025

Data - HT

NS/EW Streets:	Aegean Dr/Danton Dr				Aegean Dr/Danton Dr				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	5	0	1	0	0	0	1	5	0	0	3	1	1	0	17
7:15 AM	0	0	8	0	4	0	0	0	0	4	0	0	7	1	1	0	25
7:30 AM	0	0	10	0	2	0	0	0	0	5	0	0	5	0	0	0	22
7:45 AM	0	0	4	0	1	0	1	0	0	0	1	0	5	3	0	0	15
8:00 AM	0	0	5	0	0	0	0	0	0	2	0	0	3	3	1	0	14
8:15 AM	1	0	6	0	1	0	0	0	0	3	0	0	4	0	1	0	16
8:30 AM	0	0	3	0	1	0	0	0	0	2	1	0	3	4	0	0	14
8:45 AM	0	0	5	0	2	0	0	0	0	5	0	0	2	3	3	0	20
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	1	0	46	0	12	0	1	0	1	26	2	0	32	15	7	0	143
	2.13%	0.00%	97.87%	0.00%	92.31%	0.00%	7.69%	0.00%	3.45%	89.66%	6.90%	0.00%	59.26%	27.78%	12.96%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	25	0	4	0	1	0	0	10	1	0	17	6	2	0	67
PEAK HR FACTOR :	0.250	0.000	0.625	0.000	0.500	0.000	0.250	0.000	0.000	0.500	0.250	0.000	0.850	0.500	0.500	0.000	0.761
	0.650				0.625				0.550				0.781				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	3	2	0	0	6
4:15 PM	0	0	4	0	1	0	0	0	0	2	0	0	4	1	2	0	14
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	2	3	0	0	6
4:45 PM	0	0	1	0	0	0	0	0	0	2	0	0	1	3	0	0	7
5:00 PM	0	0	2	0	0	0	0	0	0	2	0	0	1	2	1	0	8
5:15 PM	0	0	2	0	1	0	0	0	0	7	0	0	2	1	0	0	13
5:30 PM	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
6:00 PM	0	0	2	0	0	0	0	0	0	1	0	0	4	0	0	0	7
6:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	14	0	2	0	0	0	0	19	0	0	19	15	3	0	72
	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	51.35%	40.54%	8.11%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	6	0	1	0	0	0	0	5	0	0	10	9	2	0	33
PEAK HR FACTOR :	0.000	0.000	0.375	0.000	0.250	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.750	0.250	0.000	0.589
	0.375				0.250				0.625				0.750				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Aegean Dr/Danton Dr & Pelham St
City: Methuen
Control: Signalized

Project ID: 25-430104-001
Date: 7/22/2025

Data - Bikes

NS/EW Streets:	Aegean Dr/Danton Dr				Aegean Dr/Danton Dr				Pelham St				Pelham St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
PEAK HR :	07:30 AM - 08:30 AM												0.00% 100.00% 0.00% 0.00%				TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	4
PEAK HR :	04:00 PM - 05:00 PM								0.00% 100.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.500

Location: Aegean Dr/Danton Dr & Pelham St
City: Methuen

Data - Pedestrians (Crosswalks)

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	0	0	0	0	2
5:15 PM	2	1	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	2	1	0	0	0	0	0	0	3
TOTAL VOLUMES : APPROACH %'s :	EB 4 50.00%	WB 4 50.00%	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 8
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0 0		0 0		0 0		0 0		0

Project ID: 25-430104-001

Location: Aegean Dr/Danton Dr & Pelham St

City: Methuen

Day: Tuesday

Date: 7/22/2025

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Aegean Dr/Danton Dr Northbound						Aegean Dr/Danton Dr Southbound						Pelham St Eastbound						Pelham St Westbound						Int. Total
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	1	0	13	0	0	14	7	0	0	0	4	7	3	146	4	0	0	153	25	23	10	0	0	58	232
7:15 AM	0	0	13	0	0	13	15	1	0	0	0	16	2	146	1	0	0	149	32	33	11	0	0	76	254
7:30 AM	2	0	18	0	0	20	13	0	1	0	0	14	0	165	5	0	0	170	14	55	7	0	0	76	280
7:45 AM	1	0	9	0	0	10	7	0	2	0	0	9	2	137	3	0	0	142	17	72	6	0	0	95	256
Total	4	0	53	0	0	57	42	1	3	0	4	46	7	594	13	0	0	614	88	183	34	0	0	305	1022
8:00 AM	0	0	12	0	0	12	3	0	0	0	0	3	2	143	1	0	0	146	23	47	13	0	0	83	244
8:15 AM	2	0	11	0	0	13	4	0	2	0	1	6	1	164	1	0	1	166	15	54	6	0	0	75	260
8:30 AM	0	0	6	0	0	6	9	0	3	0	0	12	4	143	2	0	0	149	16	54	7	0	1	77	244
8:45 AM	2	0	14	0	0	16	4	0	0	0	0	4	0	129	2	0	0	131	18	65	8	0	0	91	242
Total	4	0	43	0	0	47	20	0	5	0	1	25	7	579	6	0	1	592	72	220	34	0	1	326	990
BREAK																									
4:00 PM	0	0	32	0	0	32	17	0	2	0	0	19	0	97	1	0	0	98	10	136	4	0	0	150	299
4:15 PM	1	0	21	0	0	22	15	0	1	0	0	16	1	98	0	0	0	99	6	117	5	0	0	128	265
4:30 PM	1	0	24	0	0	25	13	0	1	0	0	14	0	89	0	0	0	89	9	142	2	0	0	153	281
4:45 PM	0	0	15	0	0	15	4	0	1	0	0	5	1	97	0	0	0	98	9	135	3	0	0	147	265
Total	2	0	92	0	0	94	49	0	5	0	0	54	2	381	1	0	0	384	34	530	14	0	0	578	1110
5:00 PM	1	0	14	0	0	15	11	0	2	0	2	13	1	106	0	0	0	107	7	128	5	0	0	140	275
5:15 PM	0	0	12	0	0	12	10	0	0	0	3	10	0	101	0	0	0	101	12	120	2	0	0	134	257
5:30 PM	2	0	22	0	0	24	4	0	0	0	0	4	0	101	0	0	0	101	6	122	0	0	0	128	257
5:45 PM	1	0	6	0	0	7	4	0	0	0	0	4	1	92	1	0	0	94	4	131	1	0	0	136	241
Total	4	0	54	0	0	58	29	0	2	0	5	31	2	400	1	0	0	403	29	501	8	0	0	538	1030
6:00 PM	2	0	8	0	0	10	2	0	2	0	0	4	1	75	0	0	0	76	10	131	1	0	0	142	232
6:15 PM	1	0	6	0	0	7	4	0	0	0	3	4	1	91	0	0	0	92	3	121	1	0	0	125	228
Total	3	0	14	0	0	17	6	0	2	0	3	8	2	166	0	0	0	168	13	252	2	0	0	267	460
Grand Total	17	0	256	0	0	273	146	1	17	0	13	164	20	2120	21	0	1	2161	236	1686	92	0	1	2014	4612
Apprch %	6.2	0.0	93.8	0.0	0.0		89.0	0.6	10.4	0.0	7.9		0.9	98.1	1.0	0.0	0.0		11.7	83.7	4.6	0.0	0.0		
Total %	0.4	0.0	5.6	0.0	0.0	5.9	3.2	0.0	0.4	0.0	0.3	3.6	0.4	46.0	0.5	0.0	0.0	46.9	5.1	36.6	2.0	0.0	0.0	43.7	
Cars, PU, Vans	16	0	196	0		212	132	1	16	0	149		19	2065	19	0		2103	185	1652	82	0		1919	4383
% Cars, PU, Vans	94.1	0.0	76.6	0.0		77.7	90.4	100.0	94.1	0.0	90.9		95.0	97.4	90.5	0.0		97.3	78.4	98.0	89.1	0.0		95.3	95.0
Buses	0	0	0	0		0	0	0	0	0	0		0	10	0	0		10	0	4	0	0		4	14
%Buses	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.5	0.0	0.0		0.5	0.0	0.2	0.0	0.0		0.2	0.3
HT	1	0	60	0		61	14	0	1	0	15		1	45	2	0		48	51	30	10	0		91	215
%HT	5.9	0.0	23.4	0.0		22.3	9.6	0.0	5.9	0.0	9.1		5.0	2.1	9.5	0.0		2.2	21.6	1.8	10.9	0.0		4.5	4.7

Project ID: 25-430104-001

Location: Aegean Dr/Danton Dr & Pelham St

City: Methuen

PEAK HOURS

Day: Tuesday

Date: 7/22/2025

AM

	Aegean Dr/Danton Dr Northbound					Aegean Dr/Danton Dr Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
7:30 AM	2	0	18	0	20	13	0	1	0	14	0	165	5	0	170	14	55	7	0	76	280
7:45 AM	1	0	9	0	10	7	0	2	0	9	2	137	3	0	142	17	72	6	0	95	256
8:00 AM	0	0	12	0	12	3	0	0	0	3	2	143	1	0	146	23	47	13	0	83	244
8:15 AM	2	0	11	0	13	4	0	2	0	6	1	164	1	0	166	15	54	6	0	75	260
Total Volume	5	0	50	0	55	27	0	5	0	32	5	609	10	0	624	69	228	32	0	329	1040
% App. Total	9.1	0.0	90.9	0.0	100	84.4	0.0	15.6	0.0	100	0.8	97.6	1.6	0.0	100	21.0	69.3	9.7	0.0	100	
PHF	0.688					0.571					0.918					0.866					0.929
Cars, PU, Vans	4	0	25	0	29	23	0	4	0	27	5	595	9	0	609	52	220	30	0	302	967
% Cars, PU, Vans	80.0	0.0	50.0	0.0	52.7	85.2	0.0	80.0	0.0	84.4	100.0	97.7	90.0	0.0	97.6	75.4	96.5	93.8	0.0	91.8	93.0
Buses	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
%Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.6	0.0	0.9	0.0	0.0	0.6	0.6
HT	1	0	25	0	26	4	0	1	0	5	0	10	1	0	11	17	6	2	0	25	67
%HT	20.0	0.0	50.0	0.0	47.3	14.8	0.0	20.0	0.0	15.6	0.0	1.6	10.0	0.0	1.8	24.6	2.6	6.3	0.0	7.6	6.4

PM

	Aegean Dr/Danton Dr Northbound					Aegean Dr/Danton Dr Southbound					Pelham St Eastbound					Pelham St Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:30 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	0	32	0	32	17	0	2	0	19	0	97	1	0	98	10	136	4	0	150	299
4:15 PM	1	0	21	0	22	15	0	1	0	16	1	98	0	0	99	6	117	5	0	128	265
4:30 PM	1	0	24	0	25	13	0	1	0	14	0	89	0	0	89	9	142	2	0	153	281
4:45 PM	0	0	15	0	15	4	0	1	0	5	1	97	0	0	98	9	135	3	0	147	265
Total Volume	2	0	92	0	94	49	0	5	0	54	2	381	1	0	384	34	530	14	0	578	1110
% App. Total	2.1	0.0	97.9	0.0	100	90.7	0.0	9.3	0.0	100	0.5	99.2	0.3	0.0	100	5.9	91.7	2.4	0.0	100	
PHF	0.734					0.711					0.970					0.944					0.928
Cars, PU, Vans	2	0	86	0	88	48	0	5	0	53	2	373	1	0	376	24	520	12	0	556	1073
% Cars, PU, Vans	100.0	0.0	93.5	0.0	93.6	98.0	0.0	100.0	0.0	98.1	100.0	97.9	100.0	0.0	97.9	70.6	98.1	85.7	0.0	96.2	96.7
Buses	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
%Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.2	0.0	0.0	0.2	0.4
HT	0	0	6	0	6	1	0	0	0	1	0	5	0	0	5	10	9	2	0	21	33
%HT	0.0	0.0	6.5	0.0	6.4	2.0	0.0	0.0	0.0	1.9	0.0	1.3	0.0	0.0	1.3	29.4	1.7	14.3	0.0	3.6	3.0

Appendix B

Seasonal Adjustment Worksheets

Massachusetts Highway Department
Statewide Traffic Data Collection
2024 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.17	1.12	1.11	1.06	1.00	0.96	0.94	0.92	1.00	0.98	1.06	1.07	0.78
R3	1.10	1.04	1.04	1.02	0.91	0.88	0.88	0.87	0.92	0.92	0.99	1.01	0.98
R4-R7	1.16	1.12	1.08	1.03	0.92	0.89	0.88	0.89	0.92	0.94	1.04	1.10	0.98
U1-Boston	1.07	1.03	0.98	0.97	0.94	0.91	0.94	0.91	0.94	0.94	0.98	1.02	0.94
U1-Essex	1.13	1.09	1.06	1.04	0.95	0.89	0.88	0.87	0.95	0.95	1.03	1.05	0.96
U1-Southeast	1.14	1.10	1.04	0.99	0.93	0.86	0.87	0.85	0.91	0.93	0.99	1.02	0.96
U1-West	1.10	1.02	0.98	0.96	0.95	0.92	0.94	0.91	0.91	0.91	0.96	1.00	0.83
U1-Worcester	1.08	1.03	0.99	0.98	0.94	0.91	0.93	0.91	0.92	0.91	0.95	1.00	0.93
U3	1.06	1.02	0.98	0.96	0.93	0.91	0.95	0.94	0.93	0.93	0.96	1.00	0.98
U4-U7	1.04	1.02	0.96	0.95	0.91	0.90	0.94	0.94	0.93	0.94	0.98	1.02	0.99
UR2	1.08	1.02	0.98	0.97	0.93	0.90	0.93	0.90	0.92	0.92	0.97	1.01	0.98
Rec - East	1.21	1.20	1.09	1.01	0.91	0.81	0.77	0.79	0.91	0.95	1.05	1.13	0.99
Rec - West	1.46	1.38	1.32	1.06	0.94	0.79	0.59	0.69	0.97	0.99	1.18	1.28	0.99

Disclaimer: MassDOT has a wide range of traffic volume data. What is displayed here is data that has been captured within the past 10 years. [... more](#)

List ViewAll DIRsReport Center

Record

1

of 1

Goto Record

go

Location ID	5030	MPO ID	
Type	SPOT	HPMS ID	181033802930
On NHS		On HPMS	Yes
LRS ID	NA248 EB	LRS Loc Pt.	0.199432
SF Group	U4-7 (2025)	Route Type	N
AF Group	U4-7 (2025)	Route	4248
GF Group	U4-7 (2025)	Active	Yes
Class Dist Grp	U4-7 (2025)	Category	HPMS
Seas Clss Grp	MHD Statewide (2025)		
WIM Group			
QC Group	Default		
Funct'l Class	(4) Minor Arterial	Milepost	
Located On	PELHAM STREET		
Loc On Alias			
EAST OF	RTE.I-93		
More Detail			

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

UR2 Group - Combination of Urban Freeways and Expressways and Rural Freeways and Expressways.
Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.
Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.

Appendix C
Crash Data

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Methuen COUNT DATE : May-25

DISTRICT : 4 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Pelham Street

MINOR STREET(S) : Aegean Drive

Danton Drive

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	384	578	94	54		1,110

" K " FACTOR :

0.079

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

14,051

TOTAL # OF CRASHES :

9

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

1.80

CRASH RATE CALCULATION :

0.35

RATE =

$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : _____

Project Title & Date: _____

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Methuen COUNT DATE : May-25

DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : Pelham Street

MINOR STREET(S) : Ranger Plaza Driveway

I-93 Northbound Ramps

INTERSECTION
 DIAGRAM
 (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	700	602	506	114		1,922

" K " FACTOR :

0.079

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

24,329

TOTAL # OF CRASHES :

22

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

4.40

CRASH RATE CALCULATION :

0.50

RATE =

$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : _____

Project Title & Date: _____

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Methuen COUNT DATE : May-25

DISTRICT : 4 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Pelham Street

MINOR STREET(S) : Baldwin Street

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	552	747	133	43		1,475

" K " FACTOR :

0.079

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

18,671

TOTAL # OF CRASHES :

14

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

2.80

CRASH RATE CALCULATION :

0.41

RATE =

$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : _____

Project Title & Date: _____

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Methuen COUNT DATE : May-25

DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : Pelham Street

MINOR STREET(S) : Cross Street

I-93 Southbound Ramps

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	612	777	275	303		1,967

" K " FACTOR :

0.079

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

24,899

TOTAL # OF CRASHES :

25

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

5.00

CRASH RATE CALCULATION :

0.55

RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : _____

Project Title & Date: _____

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Methuen COUNT DATE : May-25

DISTRICT : 4 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Cross Street

MINOR STREET(S) : Hampshire Road

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	159	378	368	263		1,168

" K " FACTOR :

0.079

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

14,785

TOTAL # OF CRASHES :

8

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

1.60

CRASH RATE CALCULATION :

0.30

RATE =

$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : _____

Project Title & Date: _____

[illegible]

Crash Number	Crash Date	Crash Severity	Crash Status	Crash Time	Crash Year	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Driver Distracted By (All Vehicles)	First Harmful Event	Is Geocoded	Light Conditions	Manner of Collision	Road Surface Condition	Roadway Junction Type	Total Fatalities	Total Non-Fatal Injuries	Traffic Control Device Type	Trafficway Description	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Emergency Use (All Vehicles)	Vehicle Towed From Scene (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Hit and Run	Most Harmful Event (All Vehicles)	Road Contributing Circumstance	School Bus Related	Speed Limit	Traffic Control Device Function	Vehicle Sequence of Events (All Vehicles)	Work Zone Related	Latitude	Longitude	Street Number	Roadway
4355271	04/21/2017	Non-fatal injury	Closed	11:20 AM	2017	Non-fatal injury - Possible	2	D1: (No improper driving),(No improper driving) / D2: (Other improper action)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Wet	T- intersection	0	1	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(No)	V1: N / V2: W	Rain/Rain	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	Traffic congestion related	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		PELHAM ST / BALDWIN ST
4394337	07/16/2017	Property damage only (none injured)	Closed	11:22 PM	2017	No injury	2	D1: (Followed too closely) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	Dry	Off-ramp	0	0	Stop signs	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: E / V2: E	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	20	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.72864	-71.2066		RAMP-RT 93 SB TO PELHAM ST / PELHAM STREET /
4449846	11/04/2017	Property damage only (none injured)	Closed	4:55 PM	2017	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	T- intersection	0	0	Stop signs	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: S / V2: W	Cloudy/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		PELHAM ST / BALDWIN ST
4575655	06/04/2018	Property damage only (none injured)	Closed	4:00 PM	2018	No injury	2	D1: (Visibility obstructed) / D2: (Visibility obstructed)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Wet	T- intersection	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: N / V2: E	Rain/Rain	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	Traffic congestion related	No, school bus not involved	30	Not reported	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		PELHAM ST / BALDWIN ST
4584838	08/22/2018	Property damage only (none injured)	Closed	9:00 PM	2018	No injury	2	D1: (No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	T- intersection	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: N / V2: N	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		PELHAM ST / BALDWIN ST
4615504	10/29/2018	Property damage only (none injured)	Closed	2:47 PM	2018	No injury	2	D1: (Inattention) / D2: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Not at junction	0	0	No controls	Two-way, not divided	V1: Backing / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: W / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	20	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.72874	-71.20686		BALDWIN STREET
4618656	11/04/2018	Property damage only (none injured)	Closed	12:15 PM	2018	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Disregarded traffic signs, signals, road markings)(Failed to yield right of way)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	T- intersection	0	0	Stop signs	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(Yes, vehicle or trailer disabled)	V1: W / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	Traffic congestion related	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		PELHAM ST / BALDWIN
4620971	11/11/2018	Property damage only (none injured)	Closed	1:47 PM	2018	No injury	2	D1: (Failed to yield right of way)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Off-ramp	0	0	Stop signs	Two-way, not divided	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(No)	V1: N / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Not reported	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.72865	-71.20667	161	PELHAM ST
4749409	09/13/2019	Property damage only (none injured)	Closed	3:52 PM	2019	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Unknown	Dry	T- intersection	0	0	Stop signs	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(Yes, vehicle or trailer disabled)	V1: S / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		163 PELHAM ST / BALDWIN ST
4792623	12/21/2019	Property damage only (none injured)	Closed	11:11 AM	2019	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	T- intersection	0	0	Stop signs	Two-way, not divided	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: W / V2: E	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		161 PELHAM ST / BALDWIN ST
4800025	09/27/2019	Property damage only (none injured)	Closed	6:04 PM	2019	No injury	2	D1: (No improper driving) / D2: (Unknown)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	T- intersection	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No)	V1: S / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	25	No, device not functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		BALDWIN ST / PELHAM ST
4870612	08/19/2020	Non-fatal injury	Closed	5:03 PM	2020	Possible Injury (C)	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Wet	T- intersection	0	2	No controls	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: N / V2: W	Rain/Rain	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved		No, device not functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		PELHAM ST / BALDWIN ST
5005969	09/09/2021	Property damage only (none injured)	Closed	5:16 PM	2021	No Apparent Injury (O)	2	D1: (Unknown) / D2: (Failed to yield right of way),(Inattention)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, opposite direction	Wet	T- intersection	0	0	Stop signs	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(Yes, vehicle or trailer disabled)	V1: W / V2: S	Rain/Rain	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		161 PELHAM ST / PELHAM STREET / BALDWIN STREET
5010250	09/21/2021	Property damage only (none injured)	Closed	4:02 PM	2021	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention),(Failed to yield right of way)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	T- intersection	0	0	No controls	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Backing	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: S / V2: Not Reported	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved		Yes, device functioning	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	No	42.7287	-71.2069		BALDWIN ST / PELHAM ST

Crash Number	Crash Date	Crash Severity	Status	Crash Time	Crash Severity Reported	Number of Vehicles	Driver Contributing	Driver Distracted	First Harmful Event	Is Geocoded	Light Conditions	Manner of Collision	Road Surface	Roadway Junction Type	Total Fatal Injuries	Total Fatal Injuries	Vehicle Toward	Vehicle Actions	Trafficway Description	Traffic Control Device Type	Weather Conditions	Hit and Run	Most Harmful Event	Road Contributing Circumstance	School Bus Related	Speed Limit	Traffic Control Device Function	Vehicle Sequence of Events (All Vehicles)	Zone of Work	Latitude	Longitude	Street Number		
440402	08/04/2017	Property damage only	Closed	4:21 PM	No Injury	2	D1: (No improper driving) / D2: (obstructed) / D2: (visibility)	D1: External distraction (outside the vehicle) / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Intersection	0	0	Vehicle towing	Vehicle towing	Two-way, not divided	No controls	Rain/Rain	No hit and run	None	No, school bus not involved	35	Not reported	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21225	14	DRIVE	AEGEAN DRIVE	DANTON DRIVE / PELHAM STREET
444959	10/26/2017	Property damage only	Closed	3:28 AM	No Injury	2	D1: (No improper driving) / D2: (failed to yield right of way)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted	Angle	Wet	T-intersection	0	0	Vehicle towing	Vehicle towing	Two-way, not divided	No controls		No hit and run	None	No, school bus not involved	35	Not reported	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21225	14	DRIVE	AEGEAN DRIVE	PELHAM STREET / AEGEAN DRIVE
4479485	01/03/2018	Property damage only	Closed	6:06 PM	No Injury	2	D1: (No improper driving) / D2: (followed too closely)	D1: Not Distracted / D2: (No improper driving)	Collision with motor vehicle in traffic	Yes	Dark - lighted	Rear-end	Dry	Intersection	0	0	Vehicle towing	Vehicle towing	Two-way, not divided	Traffic control signal	Clear/Clear	No hit and run	None	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	PELHAM ST / DANTON DR	DRIVE	AEGEAN DRIVE	PELHAM ST / DANTON DR
4556759	06/20/2018	Non-fatal injury	Closed	4:10 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (followed too closely)/(inattention)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Intersection	0	1	Vehicle towing	Vehicle towing	Two-way, not divided	Traffic control signal	Clear/Cloudy	No hit and run	None	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	PELHAM ST / DANTON DR	DRIVE	AEGEAN DRIVE	PELHAM STREET / AEGEAN DRIVE
4618641	10/26/2018	Property damage only	Closed	6:18 AM	No Injury	2	D1: (No improper driving) / D2: (No improper driving) / D2: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Intersection	0	0	Vehicle towing	Vehicle towing	Two-way, not divided	Traffic control signal	Clear/Clear	No hit and run	None	No, school bus not involved	30	Yes, device functioning	V2: (Collision with motor vehicle in traffic) / V1: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	AEGEAN DRIVE	PELHAM STREET	PELHAM STREET	PELHAM STREET / AEGEAN DRIVE
4741668	08/26/2019	Property damage only	Closed	5:47 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving) / D2: (No improper driving)	D2: Not Distracted / D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Front to Rear	Dry	Intersection	0	0	Vehicle towing	Vehicle towing	Not reported	Traffic control signal	Clear	No hit and run	None	No, school bus not involved	Yes, device functioning	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	PELHAM STREET	PELHAM STREET	PELHAM STREET	PELHAM STREET / AEGEAN DRIVE	
4886935	10/15/2020	Non-fatal injury	Closed	1:13 PM	Suspected Minor Injury (B)	1	D1: (No improper driving)	D1: Not Distracted	Collision with curb	Yes	Daylight	Single vehicle crash	Dry	Intersection	0	1	Vehicle towing	Vehicle towing	Two-way, not divided	Traffic control signal	Clear/Clear	No hit and run	None	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	AEGEAN DR	PELHAM ST	PELHAM ST	PELHAM ST / AEGEAN DR
4982662	07/07/2021	Property damage only	Closed	10:17 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (followed too closely)/(inattention)	D2: Not Distracted / D1: Not Distracted	Collision with parked motor vehicle	Yes	Daylight	Front to Rear	Dry	Intersection	0	0	Vehicle towing	Vehicle towing	Two-way, not divided	Traffic control signal	Clear/Clear	No hit and run	None	No, school bus not involved	35	Yes, device functioning	V2: (Collision with motor vehicle in traffic) / V1: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	PELHAM ST	PELHAM ST	PELHAM ST	PELHAM ST / AEGEAN DR
4994329	08/10/2021	Non-fatal injury	Closed	12:48 PM	Suspected Minor Injury (B)	2	D1: (No improper driving) / D2: (Distracted)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted	Rear-end	Dry	Intersection	0	3	Vehicle towing	Vehicle towing	Two-way, not divided	Traffic control signal	Cloudy/Cloudy	No hit and run	None	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No	42.72928	-71.21226	181 PELHAM ST	PELHAM ST	PELHAM ST	PELHAM ST / AEGEAN DR

Crash Number	Crash Date	Crash Severity	Crash Status	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Driver Distracted By (All Vehicles)	First Harmful Event	Is Geocoded	Light Conditions	Manner of Collision	Road Surface Condition	Roadway Junction Type	Total Fatalities	Total Non-Fatal Injuries	Traffic Control Device Type	Trafficway Description	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Emergency Use (All Vehicles)	Vehicle Towed From Scene (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Hit and Run	Most Harmful Event	Road Contributing Circumstance	School Bus Related	Speed Limit	Traffic Control Device Function	Vehicle Sequence of Events (All Vehicles)	Work Zone Related	Latitude	Longitude	Roadway
4320691	01/21/2017	Non-fatal injury	Closed	12:24 PM	Non-fatal injury - Possible	2	D1: (Failed to yield right of way) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Four-way intersection	0	1	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: E / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20771	PELHAM STREET / CROSS STREET
4320878	01/30/2017	Property damage only (none injured)	Closed	7:07 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Off-ramp	0	0	Yield signs	One-way, not divided	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: N / V2: N	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	25	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72879	-71.20738	RAMP-RT 93 SB TO PELHAM ST / PELHAM STREET
4371754	05/30/2017	Property damage only (none injured)	Closed	3:30 PM	No injury	2	D1: (Followed too closely),(Distracted) / D2: (No improper driving)		Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Not at junction	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: E / V2: E	Cloudy/Cloudy	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20771	PELHAM STREET / CROSS STREET
4389175	07/07/2017	Property damage only (none injured)	Closed	1:28 PM	No injury	2	D2: (Failed to yield right of way)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Wet	Four-way intersection	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: N / V2: S	Cloudy/Rain	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20771	PELHAM ST / CROSS ST
4419325	08/25/2017	Property damage only (none injured)	Closed	4:55 PM	No injury	2	D1: (Followed too closely) / D2: (No improper driving)		Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Off-ramp	0	0	Traffic control signal	Two-way, divided, positive median barrier	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: N / V2: N	Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.73174	-71.20379	RAMP-PELHAM ST TO RT 93 SB / RAMP-RT 93 SB TO PELHAM ST / PELHAM STREET
4442428	10/17/2017	Property damage only (none injured)	Closed	6:14 PM	No injury	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Off-ramp	0	0	Stop signs	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: N / V2: E	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72879	-71.20738	PELHAM STREET / RAMP-RT 93 SB TO PELHAM ST
4443621	10/20/2017	Property damage only (none injured)	Closed	7:33 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way),(Inattention)		Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Off-ramp	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: N / V2: E	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20771	PELHAM ST / CROSS ST / 93S OFF RAMP Rte 93 S
4457458	11/21/2017	Property damage only (none injured)	Closed	1:02 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Single vehicle crash	Dry	Not at junction	0	0	No controls	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: E / V2: E	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	No, device not functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72906	-71.21493	PELHAM STREET
4479480	01/02/2017	Non-fatal injury	Closed	12:53 PM	Non-fatal injury - Non-incapacitating	2	D1: (Followed too closely) / D2: (No improper driving)		Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Four-way intersection	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Not reported	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(Yes, other reason not disabled)	V1: E / V2: E	Clear/Clear	No hit and run	V2:(Collision with motor vehicle in traffic)		No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20771	PELHAM ST / CROSS ST
4513069	03/09/2018	Property damage only (none injured)	Closed	1:16 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way),(No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Four-way intersection	0	0	Flashing traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: W / V2: N	Cloudy/Cloudy	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	Traffic control device inoperative, missing, or obscured	No, school bus not involved	30	No, device not functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM ST / CROSS ST / RTE 93 OFF RAMP EXIT 46 SB
4516028	03/19/2018	Property damage only (none injured)	Closed	6:00 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Four-way intersection	0	0	Flashing traffic control signal	Two-way, divided, unprotected median	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: S / V2: E	Cloudy/Cloudy	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	No, device not functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20772	CROSS STREET / PELHAM STREET
4532559	04/30/2018	Property damage only (none injured)	Closed	3:08 PM	No injury	2	D1: (Inattention) / D2: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(No)	V1: W / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	Traffic congestion related	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM ST / CROSS ST
4575656	06/15/2018	Property damage only (none injured)	Closed	2:22 PM	No injury	2	D1: (Visibility obstructed) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Not at junction	0	0	No controls	Two-way, not divided	V1: Backing / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No)	V1:(No) / V2:(No)	V1: E / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	10	Not reported	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72879	-71.20738	PELHAM ST
4601431	09/26/2018	Property damage only (none injured)	Closed	9:00 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: S / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM ST / CROSS ST
4618652	11/03/2018	Property damage only (none injured)	Closed	6:05 PM	No injury	2	D1: (Disregarded traffic signs, signals, road markings),(Failed to yield right of way) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: E / V2: N	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	35	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM STREET / CROSS STREET
4620974	11/12/2018	Property damage only (none injured)	Closed	4:00 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Inattention)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: S / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM ST / CROSS ST
4631321	11/30/2018	Property damage only (none injured)	Closed	8:30 AM	No injury	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No)	V1:(No) / V2:(No)	V1: W / V2: E	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	30	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72886	-71.20772	PELHAM STREET / RAMP-RT 93 SB TO PELHAM ST / CROSS STREET

Crash Number	Crash Date	Crash Severity	Status	Crash Time	Crash Report	Max Injury	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Driver Distracted	First Harmful Event	Is	Light Conditions	Manner of Collision	Road Surface	Roadway Junction	Total Fatalities	Total Non-Fatal Injuries	Traffic Control Device Type	Trafficway Description	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration	Emergency Use Vehicle Towed From Direction (All Vehicles)	Weather Conditions	Hit and Run	Most Harmful Event	Road Contributing	School Bus Related	Speed Limit	Traffic Control Device Function	Vehicle Sequence of Events (All Vehicles)	Related	Latitude	Longitude	Roadway
4640884	12/21/2018	Property damage only	Closed	10:58 PM	No Injury		2	D1: (Inattention) / D2: (No improper driving)	(No improper driving)	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Rear-end	Water (standing, moving)	Intersection	Four-way	0	0	signal	divided, not ahead / V2: slowing or stopped in traffic	V2: (Passenger car) / V1: (Single-unit truck)	V1: (No) / V2: (No)	No hit and run	V1: (Collision with motor vehicle in condition wet, icy, snow, slush, etc.)	Contributing	No, school bus not involved	30	Yes, device functioning	V2: (Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM ST / CROSS ST	
4729050	07/25/2019	Property damage only	Closed	8:40 PM	No Injury		2	D1: (Unknown) / D2: (Unknown)	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Sideswipe, same direction		Intersection	Four-way	0	0	signal	divided, not ahead / V1: slowing or stopped in traffic	V2: (Light truck/van, mini-van, pickup, sport utility) / V1: (Single-unit truck)	V2: (No) / V1: (No)	No hit and run	V2: (Collision with motor vehicle in traffic) / V1: (Collision with motor vehicle in traffic)	No, school bus not involved	35	Yes, device functioning	V2: (Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM STREET / CROSS STREET			
4760569	10/12/2019	Property damage only	Closed	12:17 PM	No Injury		2	D1: (Failed to yield right of way) / D2: (No improper driving)	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Intersection	Four-way	0	0	signal	divided, not ahead	V1: (Passenger car) / V2: (Single-unit truck)	V1: (No) / V2: (No)	No hit and run	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No, school bus not involved	35	Yes, device functioning	V1: (Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM STREET / CROSS STREET			
4775714	11/15/2019	Property damage only	Closed	1:35 PM	Injury (O)		2	D1: (Failure to keep in proper lane or running off road) / D2: (No improper driving)	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	Dry	Intersection	Four-way	0	0	signal	divided, not ahead	V1: (Single-unit truck) / V2: (Light truck/van, mini-van, pickup, sport utility) / V3: (No)	V1: (No) / V2: (No)	No hit and run	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM STREET / CROSS STREET			
4779074	11/22/2019	Non-fatal injury	Closed	12:48 PM	Possible Injury		3	D1: (No improper driving) / D2: (No improper driving) / D3: (Followed too closely),(inattention)	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Wet	Intersection	Four-way	0	3	signal	divided, not ahead	V1: (Slowin or stopped in traffic / V2: (Passenger car) / V3: (No)	V1: (No) / V2: (No)	No hit and run	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM ST / CROSS ST			
4824145	03/02/2020	Property damage only	Closed	5:34 PM	No Apparent Injury (O)		2	D1: (No improper driving) / D2: (No improper driving)	Collision with motor vehicle in traffic	Yes	Dusk	Front to Rear	Dry	Intersection	Four-way	0	0	signal	Not reported	V1: (Slowin or stopped in traffic / V2: (Passenger car) / V3: (No)	V1: (No) / V2: (No)	No hit and run	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No, school bus not involved	30	Yes, device functioning	V1: (Collision with motor vehicle in traffic)	No	42.72885	-71.20772	CROSS ST / PELHAM ST			
4873388	08/21/2020	Non-fatal injury	Closed	3:20 PM	Suspected Minor Injury		2	D1: (No improper driving) / D2: (Distracted)	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Intersection	Four-way	0	1	signal	divided, not ahead	V1: (Slowin or stopped in traffic / V2: (Single-unit truck) / V3: (No)	V1: (No) / V2: (No)	No hit and run	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No, school bus not involved		Yes, device functioning	motor vehicle in traffic)	No	42.72885	-71.20772	PELHAM STREET / CROSS STREET			
4936400	03/01/2021	Non-fatal injury	Closed	10:35 AM	Suspected Serious Injury (A)		1	D1: (Other improper action)	Collision with bridge	Yes	Daylight	Single vehicle crash	Dry	Not at junction	Not at junction	0	1	No controls	Two-way, not divided, ahead	V1: (Single-unit truck) / V2: (Single-unit truck)	V1: (No)	No hit and run	V1: (Collision with motor vehicle in traffic) / V2: (Collision with motor vehicle in traffic)	No, school bus not involved		Not reported	V1: (Collision with motor vehicle in traffic)	No	42.72879	-71.20738	PELHAM ST / RAMP-PELHAM ST TO RT 93 SB			

Road Traffic Collision Data - 2017																																				
Crash Details																	Contributing Factors										Vehicle Details									
Crash Number	Crash Date	Crash Severity	Crash Status	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Driver Distracted By (All Vehicles)	First Harmful Event	Is Geocoded	Light Conditions	Manner of Collision	Road Surface Condition	Roadway Junction Type	Total Fatalities	Total Non-Fatal Injuries	Traffic Control Device Type	Trafficway Description	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Emergency Use (All Vehicles)	Vehicle Towed From Scene (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Hit and Run	Most Harmful Event (All Vehicles)	Contributing Circumstance	School Bus Related	Traffic Device Function	Vehicle Sequence of Events (All Vehicles)	Work Zone Related	Latitude	Longitude	Street Number	Roadway	
4308455	01/06/2017	Non-fatal injury	Closed	11:38 PM	Non-fatal injury - Possible	2	D1: (Failed to yield right of way) / D2: (No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Four-way intersection	0	1	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: E / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72784	-71.2029	145	PELHAM STREET / PELHAM STREET	
4314037	01/12/2017	Property damage only (none injured)	Closed	7:07 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dawn	Angle	Wet	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: E / V2: W	Cloudy/Cloudy	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028		PELHAM STREET / RAMP- PELHAM ST TO RT 93 NB	
4364559	05/16/2017	Non-fatal injury	Closed	8:15 PM	Non-fatal injury - Possible	2	D1: (Other improper action),(Illness) / D2: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Dawn	Angle	Dry	Off-ramp	0	1	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: E / V2: N	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028		PELHAM STREET / RAMP- PELHAM ST TO RT 93 NB	
4366645	05/20/2017	Property damage only (none injured)	Closed	9:13 AM	No injury	1	D1: (No improper driving),(No improper driving)	D1: Not Distracted	Collision with animal - deer	Yes	Daylight	Single vehicle crash	Dry	Not at junction	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1:(No)	V1:(No)	V1: E	Clear/Clear	No hit and run	V1:(Collision with animal - deer)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with animal - deer)	No	42.72781	-71.2028	145	PELHAM ST	
4391744	07/07/2017	Non-fatal injury	Closed	3:30 PM	Non-fatal injury - Non-incapacitating	3	D1: (Failed to yield right of way) / D2: (No improper driving) / D3: (No improper driving)	D2: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Wet	Off-ramp	0	1	Traffic control signal	One-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car) / V3:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No) / V3:(No)		V1: N / V2: N / V3: N	Rain	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	Traffic congestion related	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028		RAMP-PELHAM ST TO RT 93 NB / RAMP-RT 93 NB TO PELHAM ST / PELHAM STREET	
4396527	07/21/2017	Property damage only (none injured)	Closed	10:16 AM	No injury	2	D1: (No improper driving)	D1: Not Distracted	Collision with parked motor vehicle	Yes	Daylight	Angle	Dry	Not at junction	0	0	No controls	Two-way, not divided	V1: Backing / V2: Parked	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No)	V1:(No) / V2:(No)	V1: N / V2: Not Reported	Clear/Clear	No hit and run	V1:(Collision with parked motor vehicle) / V2:(Collision with parked motor vehicle)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with parked motor vehicle) / V2:(Collision with parked motor vehicle)	No	42.72781	-71.2028	145	PELHAM ST	
4440522	10/17/2017	Property damage only (none injured)	Closed	5:49 AM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: E / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028		PELHAM STREET / RAMP- PELHAM ST TO RT 93 NB	
4443541	10/23/2017	Property damage only (none injured)	Closed	7:52 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely),(Driving too fast for conditions)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Rear-end	Dry	Not at junction	0	0	No controls	Two-way, not divided	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(Yes, vehicle or trailer disabled)	V1: W / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Not reported	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028	145	PELHAM ST	
4486289	01/17/2018	Property damage only (none injured)	Closed	2:45 PM	No injury	2	D1: (Failure to keep in proper lane or running off road) / D2: (No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Wet	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V2: Slowing or stopped in traffic / V1: Turning left	V2:(Single-unit truck (2-axle, 6-tires)) / V1:(Tractor/semi-trailer)		V2:(No) / V1:(No)	V2: E / V1: W	Snow/Snow	No hit and run	V2:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic)		No, school bus not involved	Yes, device functioning	V2:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028		PELHAM STREET / RAMP-RT 93 NB TO PELHAM ST	
4512431	03/08/2018	Property damage only (none injured)	Closed	8:32 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (No improper driving),(No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Wet	Driveway	0	0	No controls	Two-way, not divided	V1: Backing / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: E / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	No, device not functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028	145	PELHAM ST	
4515772	03/18/2018	Property damage only (none injured)	Closed	8:34 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Failed to yield right of way),(Other improper action)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprotected median	V2: Turning left / V1: Travelling straight ahead	V2:(Light truck(van, mini-van, pickup, sport utility)) / V1:(Unknown heavy truck, cannot classify)	V2:(No) / V1:(No)	V2:(Yes, other reason not disabled) / V1:(Yes, other reason not disabled)	V2: E / V1: W	Clear/Clear	No hit and run	V2:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V2:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic)	No	42.72782	-71.2028	145	/ RAMP-RT 93 NB TO PELHAM ST / PELHAM STREET	
4525864	03/19/2018	Property damage only (none injured)	Closed	12:11 PM	No injury	2	D1: (No improper driving) / D2: (Other improper action)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Sideswipe, same direction	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Single-unit truck (2-axle, 6-tires))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: N / V2: N	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028		/ RAMP-RT 93 NB TO PELHAM ST	
4554143	06/15/2018	Property damage only (none injured)	Closed	6:30 AM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Disregarded traffic signs, signals, road markings),(No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Not at junction	0	0	No controls	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(Yes, vehicle or trailer disabled) / V2:(Yes, vehicle or trailer disabled)	V1: S / V2: E	Cloudy/Cloudy	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72781	-71.2028	145	PELHAM ST	
4580956	08/13/2018	Property damage only (none injured)	Closed	1:42 PM	No injury	1	D1: (No improper driving)	D1: Not Distracted	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead	V1:(Passenger car)	V1:(No)	V1:(No)	V1: N	Clear/Clear	No hit and run	V1:(Collision with cyclist (bicycle, tricycle, unicycle, pedal car))	None	No, school bus not involved	Yes, device functioning	V1:(Collision with cyclist)	No	42.72783	-71.2029	145	PELHAM STREET	
4642233	12/27/2018	Non-fatal injury	Closed	11:01 AM	Non-fatal injury - Possible	2	D1: (Glare) / D2: (No improper driving)	D1: Manually operating an electronic device / D2: Manually operating an electronic device	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Not at junction	0	1	Traffic control signal	Two-way, not divided	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: S / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72783	-71.2029	145	PELHAM ST	
4652201	01/17/2019	Property damage only (none injured)	Closed	10:11 PM	No injury	2	D1: (Unknown) / D2: (Unknown)	D1: Manually operating an electronic device / D2: Manually operating an electronic device	Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: E / V2: S	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)		No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	Yes	42.72781	-71.2028		RAMP-RT 93 NB TO PELHAM ST / PELHAM STREET	
4656033	01/27/2019	Property damage only (none injured)	Closed	12:06 PM	No injury	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	D1: Manually operating an electronic device / D2: Manually operating an electronic device	Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	V1: W / V2: W	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)		No, school bus not involved	Yes, device functioning	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	No	42.72782	-71.2028		PELHAM STREET / RAMP-RT 93 NB TO PELHAM ST / RAMP- PELHAM ST TO RT 93 NB	

Crash Number	Crash Date	Crash Severity	Status	Crash Time	Crash Severity Reported	Number of Vehicles Involved	Driver Contributing	First Harmful Event (All Circumstances)	Is Geocoded	Light Conditions	Manner of Collision	Road Surface Condition	Roadway Junction Type	Total Fatalities	Total Non-Fatal Injuries	Traffic Control Device Type	Trafficway Description	Vehicle Actions Prior to Crash		Configuration (All Vehicles)	Vehicle Toward From	Directions (All Vehicles)	Weather Conditions	Hit and Run	Most Harmful Event (All Circumstances)	Contributing Road									
																		Vehicle Sequence of Events (All Vehicles)	Vehicle Sequence of Events (All Vehicles)																
4737391	08/15/2019	Non-Fatal Injury	Closed	12:51 PM	Possible Non-Fatal Injury	2	D1: (Physical Impairment) / D2: (No improper driving)	D2: Not Distracted Collision with motor vehicle in traffic	Yes	Daylight	Angle	Dry	Not at Junction	0	1	No controls	divided	ahead / V2: Travelling straight ahead	V1:(Light truck/van, sport utility) / V2:(Passenger car) / mini-van, pickup, sport utility))	V1:(No) / V2:(No)	V1:(No) / V2:(No)	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	Vehicle Control	Device Function	Not reported	bus not involved	motor vehicle in traffic	No	42.72783	-71.2029	145	PELHAM ST Roadway
4788336	12/13/2019	Property damage only (none injured)	Closed	9:27 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Front to Front	Water (standing, moving)	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Yes, vehicle or trailer disabled) / V2:(Collision with motor vehicle in traffic)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	Vehicle Control	Device Function	Yes, device functioning	bus not involved	motor vehicle in traffic	No	42.72782	-71.2028		RAMP-PELHAM ST TO RT 93 NB / PELHAM STREET
4819407	02/17/2020	Non-Fatal Injury	Closed	6:55 PM	Possible Injury (C)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Angle	Dry	Four-way intersection	0	1	Traffic control signal	Two-way, not ahead / V2: Travelling straight ahead	V1: Travelling straight ahead / V2: Turning left	V1:(Yes, vehicle or trailer disabled) / V2:(Collision with motor vehicle in traffic)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	Vehicle Control	Device Function	Yes, device functioning	bus not involved	motor vehicle in traffic	No	42.72782	-71.2028		PELHAM STREET / RAMP-PELHAM ST TO RT 93 NB
482868	03/13/2020	Property damage only (none injured)	Closed	10:30 PM	No Apparent Injury (C)	2	D1: (No improper driving) / D2: (Unknown)	D1: Not Distracted Collision with motor vehicle in traffic	Yes	Dark - lighted roadway	Head-on	Dry	Four-way intersection	0	4	Traffic control signal	Two-way, divided, unprotected median	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Yes, vehicle or trailer disabled) / V2:(Collision with motor vehicle in traffic)	V1:(No) / V2:(No)	V1:(No) / V2:(No)	Clear/Clear	No hit and run	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	None	Vehicle Control	Device Function	Yes, device functioning	bus not involved	motor vehicle in traffic	No	42.72781	-71.2028		PELHAM STREET / RAMP-RT 93 NB TO PELHAM ST

Appendix D
Transit Data

ROUTE 10 OUTBOUND

BROADWAY/VILLAGE MALL

WEEKDAYS

1	2	3	4	5
Bus starts at McGovern	Bus leaves from Essex Street (MeVa Hub)	Bus leaves from Methuen Square	Bus leaves from Mystic Street	Bus ends at Village Mall
5:15	5:20	5:30	5:35	5:50
5:45	5:50	6:00	6:05	6:20
6:15	6:20	6:30	6:35	6:50
6:45	6:50	7:00	7:05	7:20
7:15	7:20	7:30	7:35	7:50
7:45	7:50	8:00	8:05	8:20
8:15	8:20	8:30	8:35	8:50
8:45	8:50	9:00	9:05	9:20
9:15	9:20	9:30	9:35	9:50
9:45	9:50	10:00	10:05	10:20
10:15	10:20	10:30	10:35	10:50
10:45	10:50	11:00	11:05	11:20
11:15	11:20	11:30	11:35	11:50
11:45	11:50	12:00	12:05	12:20
12:15	12:20	12:30	12:35	12:50
12:45	12:50	1:00	1:05	1:20
1:15	1:20	1:30	1:35	1:50
1:45	1:50	2:00	2:05	2:20
2:15	2:20	2:30	2:35	2:50
2:45	2:50	3:00	3:05	3:20
3:15	3:20	3:30	3:35	3:50
3:45	3:50	4:00	4:05	4:20
4:15	4:20	4:30	4:35	4:50
4:45	4:50	5:00	5:05	5:20
5:15	5:20	5:30	5:35	5:50
5:45	5:50	6:00	6:05	6:20
6:15	6:20	6:30	6:35	6:50
7:00	7:05	7:15	7:20	7:35
8:00	8:05	8:15	8:20	8:35
9:00	9:05	9:15	9:20	9:35

SATURDAYS

6:45	6:50	7:00	7:05	7:20
7:45	7:50	8:00	8:05	8:20
8:45	8:50	9:00	9:05	9:20
9:45	9:50	10:00	10:05	10:20
10:45	10:50	11:00	11:05	11:20
11:45	11:50	12:00	12:05	12:20
12:45	12:50	1:00	1:05	1:20
1:45	1:50	2:00	2:05	2:20
2:45	2:50	3:00	3:05	3:20
3:45	3:50	4:00	4:05	4:20
4:45	4:50	5:00	5:05	5:20
5:45	5:50	6:00	6:05	6:20

SUNDAYS

9:00	9:05	9:15	9:20	9:35
10:00	10:05	10:15	10:20	10:35
11:00	11:05	11:15	11:20	11:35
12:00	12:05	12:15	12:20	12:35
1:00	1:05	1:15	1:20	1:35
2:00	2:05	2:15	2:20	2:35
3:00	3:05	3:15	3:20	3:35
4:00	4:05	4:15	4:20	4:35
5:00	5:05	5:15	5:20	5:35

Updated 02/13/25

ROUTE 10 INBOUND

BROADWAY/MCGOVERN

WEEKDAYS

5	6	7	8	Bus continues on as Route
Bus starts at Village Mall	Bus leaves from Methuen Square	Bus leaves from NECC (MeVa Hub)	Bus ends at McGovern	
5:50	5:53	6:05	6:15	8
6:20	6:23	6:35	6:45	8
6:50	6:53	7:05	7:15	8
7:20	7:23	7:35	7:45	8
7:50	7:53	8:05	8:15	8
8:20	8:23	8:35	8:45	8
8:50	8:53	9:05	9:15	8
9:20	9:23	9:35	9:45	8
9:50	9:53	10:05	10:15	8
10:20	10:23	10:35	10:45	8
10:50	10:53	11:05	11:15	8
11:20	11:23	11:35	11:45	8
11:50	11:53	12:05	12:15	8
12:20	12:23	12:35	12:45	8
12:50	12:53	1:05	1:15	8
1:20	1:23	1:35	1:45	8
1:50	1:53	2:05	2:15	8
2:20	2:23	2:35	2:45	8
2:50	2:53	3:05	3:15	8
3:20	3:23	3:35	3:45	8
3:50	3:53	4:05	4:15	8
4:20	4:23	4:35	4:45	8
4:50	4:53	5:05	5:15	8
5:20	5:23	5:35	5:45	8
5:50	5:53	6:05	6:15	8
6:20	6:23	6:35	6:45	8
6:50	6:53	7:05	7:15	-
7:35	7:38	7:50	8:00	10
8:35	8:38	8:50	9:00	10
9:35	9:38	9:50	10:00	-

SATURDAYS

7:20	7:23	7:35	7:45	8
8:20	8:23	8:35	8:45	8
9:20	9:23	9:35	9:45	8
10:20	10:23	10:35	10:45	8
11:20	11:23	11:35	11:45	8
12:20	12:23	12:35	12:45	8
1:20	1:23	1:35	1:45	8
2:20	2:23	2:35	2:45	8
3:20	3:23	3:35	3:45	8
4:20	4:23	4:35	4:45	8
5:20	5:23	5:35	5:45	8
6:20	6:23	6:35	6:45	-

SUNDAYS

9:35	9:38	9:50	10:00	9
10:35	10:38	10:50	11:00	9
11:35	11:38	11:50	12:00	9
12:35	12:38	12:50	1:00	9
1:35	1:38	1:50	2:00	9
2:35	2:38	2:50	3:00	9
3:35	3:38	3:50	4:00	9
4:35	4:38	4:50	5:00	9
5:35	5:38	5:50	6:00	-

Updated 02/13/25

Appendix E

Background Growth/Background Project Data

From: [Sophie Fox](#)
To: [Kenneth Cram](#)
Cc: [Steven Andrews](#)
Subject: Methuen Growth Rate
Date: Monday, August 11, 2025 11:18:05 AM
Attachments: [GrowthRate_ExampleCalcs_tdm23.2.0.pdf](#)

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Hello,

Please see the municipality-level growth rates for **Methuen and the Merrimack Valley Planning Commission** below:

Compound Average Annual Growth Rate (CAGR) from 2019 to 2050:

Roadway Type	Methuen CAGR	MVPC CAGR
Highway	0.175%	0.155%
Major Arterial	0.264%	0.236%
Minor Arterial and Collector	0.322%	0.336%
All Facilities (including local roads)	0.230%	0.228%

These growth rates are based on socioeconomic forecasts developed by MassDOT and the UMass Donahue Institute, processed by MAPC, and incorporated into the CTPS TDM23 travel demand model (version 2.0). Growth rates represent the projected change of VMT within a given geography between the base scenario (2019) and the LRTP plan scenario (2050).

Please be cautious when the table shows a negative growth rate. It may be more conservative to swap in a zero- or low-growth rate instead. To aid in your decision making, we have also included the growth rate for the entire MPO.

You may also access historic traffic data using MassDOT's MS2 platform (<https://mhd.public.ms2soft.com/tcds/tsearch.asp?loc=Mhd&mod=TCDS>).

Example calculations are in the attached PDF.

Let us know if you have any questions.

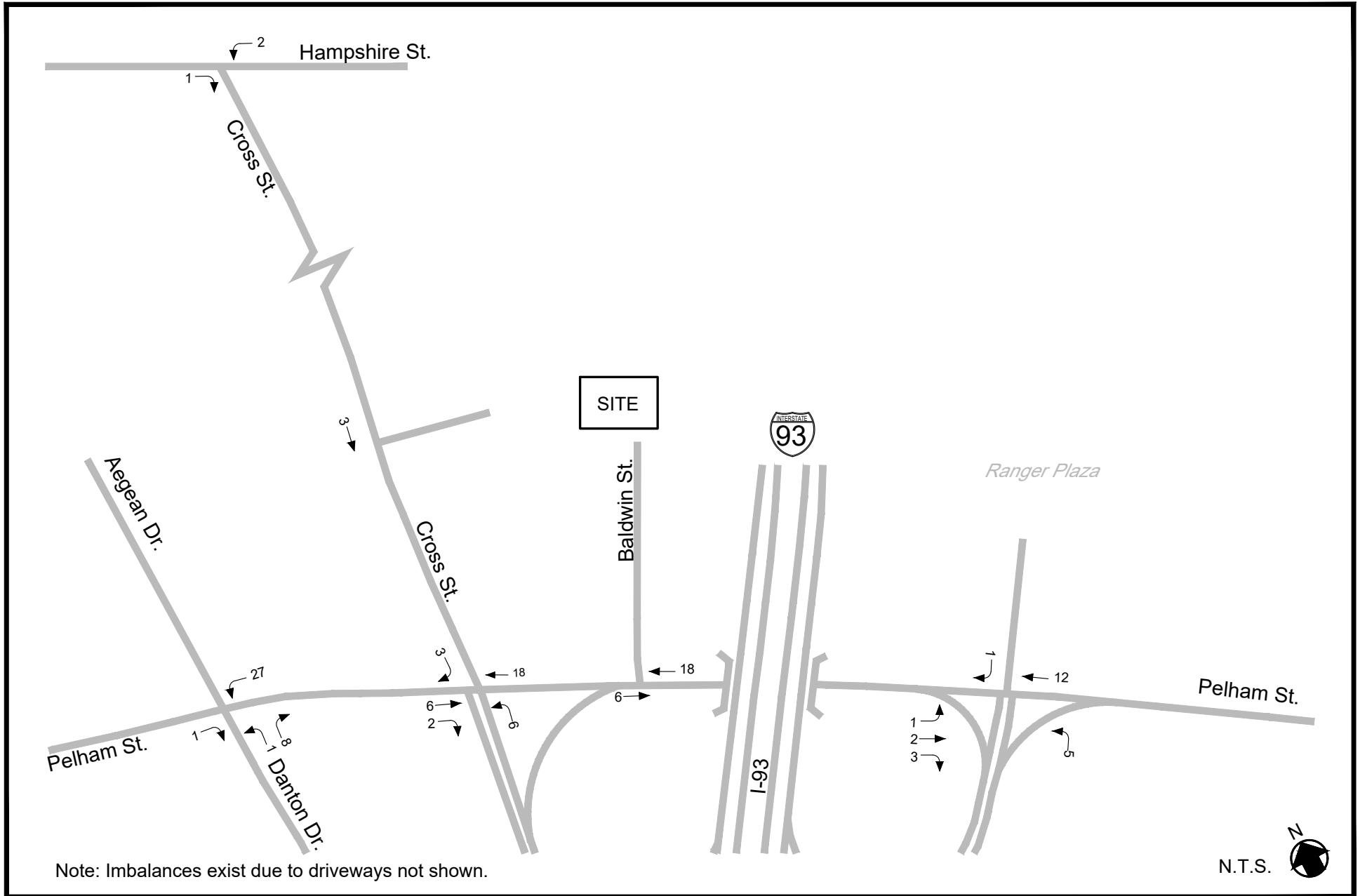
Best,
Sophie

Sophie Fox | she, her, hers

Data Analyst

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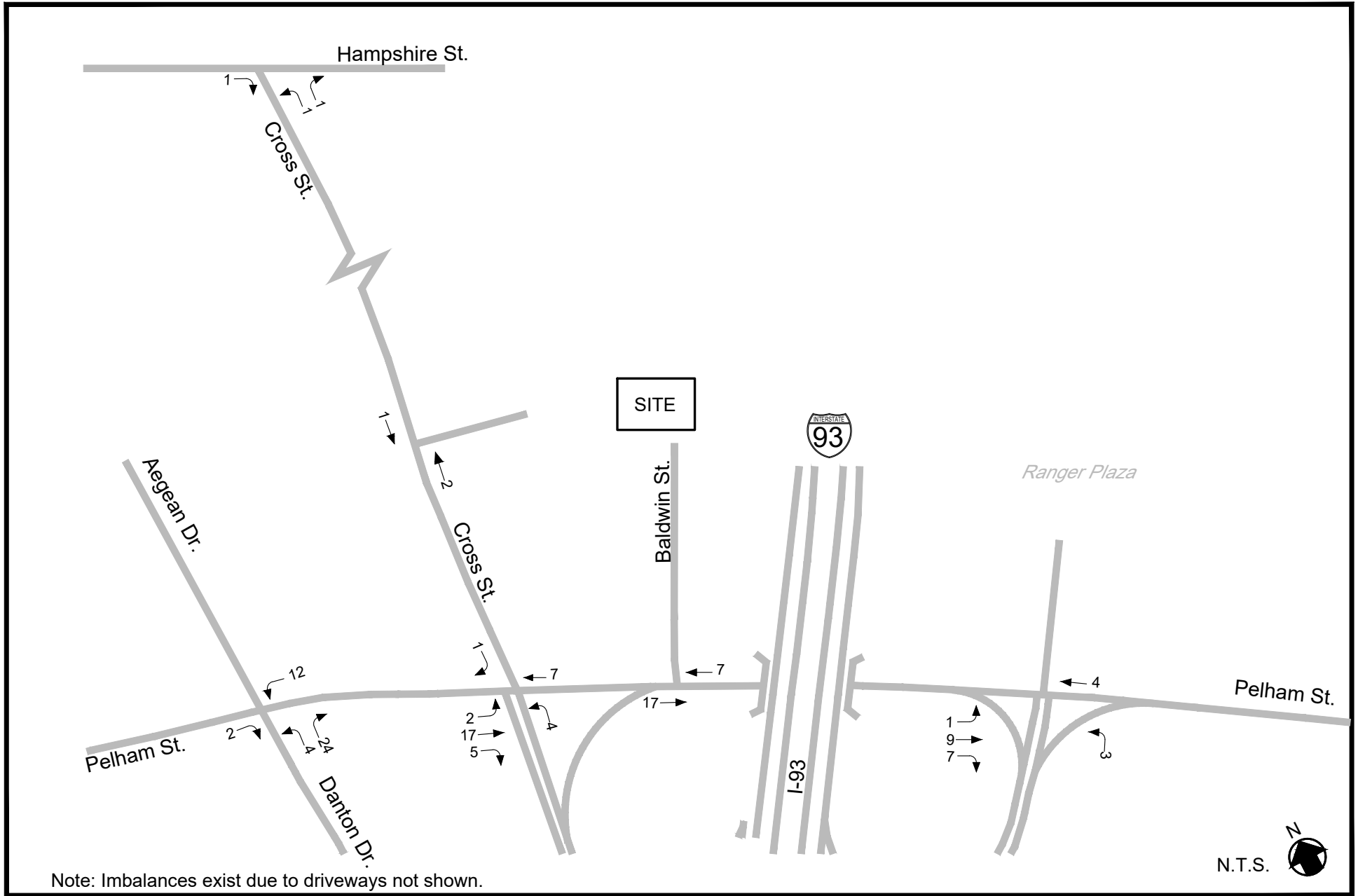
Methuen

Proposed Residential
 Background Generator - Danton Drive Project
 Weekday Morning
 Peak Hour Traffic Volumes

MA

PROJ. No.: 20240957

Figure BG-1



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Methuen

Proposed Residential
 Background Generator - Danton Drive Project
 Weekday Evening
 Peak Hour Traffic Volumes

MA

PROJ. No.: 20240957

Figure BG-2

Appendix F

Trip Generation Worksheets

Cross Street, Methuen, MA

Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)_

Source: Institute of Transportation Engineers (ITE) - 12th Edition

Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 195

AVERAGE WEEKDAY DAILY

$T = 4.55 * (X) - 17.52$ 7 Studies, Avg size = 192 units
 $T = 4.55 * (195) - 17.52$ $R^2 = 0.90$, AR = 4.46
 $T = 869.73$
 $T = 870$ vehicle trips
with 50% (435 vpd) entering and 50% (435 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$T = 0.42 * (X) - 7.77$ 20 Studies, Avg size = 184 units
 $T = 0.42 * (195) - 7.77$ $R^2 = 0.87$, AR = 0.38
 $T = 74.13$
 $T = 74$ vehicle trips
with 23% (17 vph) entering and 77% (57 vph) exiting.

WEEKDAY MORNING PEAK HOUR OF GENERATOR

$\ln T = 0.99 \ln (X) - 1.11$ 11 Studies, Avg size = 194 units
 $\ln T = 0.99 \ln (195) - 1.11$ $R^2 = 0.80$, AR = 0.34
 $\ln T = 4.11$
 $T = 60.96$
 $T = 61$ vehicle trips
with 20% (12 vph) entering and 80% (49 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$T = 0.36 * (X) + 0.34$ 21 Studies, Avg size = 179 units
 $T = 0.36 * (195) + 0.34$ $R^2 = 0.92$, AR = 0.38
 $T = 73.27$
 $T = 73$ vehicle trips
with 64% (47 vph) entering and 36% (26 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF GENERATOR

$\ln T = 0.85 \ln (X) - 0.09$ 11 Studies, Avg size = 205 units
 $\ln T = 0.85 \ln (195) - 0.09$ $R^2 = 0.95$, AR = 0.39
 $\ln T = 4.39$
 $T = 80.81$
 $T = 81$ vehicle trips
with 63% (51 vph) entering and 37% (30 vph) exiting.

Cross Street, Methuen, MA

Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)_

Source: Institute of Transportation Engineers (ITE) - 12th Edition

Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 195

SATURDAY DAILY ONLY 2 DATA Points. Used 11th Edition Data

$\ln T = 0.94 \ln (X) + 1.84$ 5 Studies, Avg size = 250 units
 $\ln T = 0.94 \ln (195) + 1.84$ $R^2 = 0.91$, AR = 4.57
 $\ln T = 6.80$
 $T = 895$
 $T = 894$ vehicle trips
with 50% (447 vph) entering and 50% (447 vph) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

ONLY 2 DATA Points. Used 11th Edition Data

$\ln T = 1.00 \ln (X) - 0.91$ 5 Studies, Avg size = 250 units
 $\ln T = 1.00 \ln (195) - 0.91$ $R^2 = 0.92$, AR = 0.39
 $\ln T = 4.36$
 $T = 78$
 $T = 78$ vehicle trips
with 51% (40 vph) entering and 49% (38 vph) exiting.

Appendix G

Intersection Capacity Analysis Worksheets

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	686	268	147	359	135	112	14	212	164	202	63
Future Volume (vph)	17	686	268	147	359	135	112	14	212	164	202	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.859			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1625	0	1662	1682	0
Flt Permitted	0.950			0.950			0.261			0.582		
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	494	1625	0	1018	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			219			160		272			18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.78	0.78	0.78	0.85	0.85	0.85
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Adj. Flow (vph)	19	754	295	163	399	150	144	18	272	193	238	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	754	295	163	399	150	144	290	0	193	312	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	14.0	34.0	34.0	12.0	32.0	32.0	12.0	29.0		17.0	17.0	
Total Split (%)	18.7%	45.3%	45.3%	16.0%	42.7%	42.7%	16.0%	38.7%		22.7%	22.7%	
Maximum Green (s)	10.0	28.0	28.0	8.0	26.0	26.0	8.0	23.0		11.0	11.0	
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)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					3	3						
Act Effct Green (s)	7.6	30.1	30.1	9.9	39.7	39.7	27.0	25.0		13.3	13.3	
Actuated g/C Ratio	0.10	0.40	0.40	0.13	0.53	0.53	0.36	0.33		0.18	0.18	
v/c Ratio	0.12	1.08	0.42	0.75	0.46	0.19	0.42	0.40		1.07	1.00	
Control Delay	31.8	84.3	6.7	49.6	9.3	1.8	20.7	5.1		122.7	83.8	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.8	84.3	6.7	49.6	9.3	1.8	20.7	5.1		122.7	83.8	
LOS	C	F	A	D	A	A	C	A		F	F	
Approach Delay		61.9			16.9			10.3			98.7	
Approach LOS		E			B			B			F	
Queue Length 50th (ft)	8	~402	22	63	82	6	46	6		~103	~143	
Queue Length 95th (ft)	27	#605	74	m#135	m216	m21	73	35		#207	#275	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	249	695	701	219	869	794	351	723		180	312	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	1.08	0.42	0.74	0.46	0.19	0.41	0.40		1.07	1.00	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 48.7

Intersection LOS: D

Intersection Capacity Utilization 80.5%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	32 s	12 s	17 s
 Ø5	 Ø6 (R)	 Ø8	
12 s	34 s	29 s	

HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

Existing Conditions Increased

Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	686	268	147	359	135	112	14	212	164	202	63
Future Volume (vph)	17	686	268	147	359	135	112	14	212	164	202	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1626		1662	1683	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.26	1.00		0.58	1.00	
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	495	1626		1019	1683	
Peak-hour factor, PHF	0.91	0.91	0.91	0.90	0.90	0.90	0.78	0.78	0.78	0.85	0.85	0.85
Adj. Flow (vph)	19	754	295	163	399	150	144	18	272	193	238	74
RTOR Reduction (vph)	0	0	131	0	0	77	0	181	0	0	15	0
Lane Group Flow (vph)	19	754	164	163	399	73	144	109	0	193	297	0
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	1.5	28.1	28.1	7.9	34.5	34.5	23.0	23.0		11.3	11.3	
Effective Green, g (s)	3.5	30.1	30.1	9.9	36.5	36.5	25.0	25.0		13.3	13.3	
Actuated g/C Ratio	0.05	0.40	0.40	0.13	0.49	0.49	0.33	0.33		0.18	0.18	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	72	695	569	217	798	660	333	542		180	298	
v/s Ratio Prot	0.01	c0.44		c0.10	0.24		c0.06	0.07			0.18	
v/s Ratio Perm			0.12			0.05	0.09			c0.19		
v/c Ratio	0.26	1.08	0.29	0.75	0.50	0.11	0.43	0.20		1.07	1.00	
Uniform Delay, d1	34.5	22.4	15.2	31.4	13.1	10.4	19.0	17.9		30.9	30.8	
Progression Factor	1.00	1.00	1.00	0.96	0.63	0.63	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	59.5	1.3	9.8	1.8	0.3	0.9	0.2		87.6	51.0	
Delay (s)	35.2	81.9	16.5	39.9	10.0	6.9	19.9	18.0		118.4	81.8	
Level of Service	D	F	B	D	A	A	B	B		F	F	
Approach Delay (s)		63.0			16.2			18.7			95.8	
Approach LOS		E			B			B			F	
Intersection Summary												
HCM 2000 Control Delay			49.8									
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			75.0									
Intersection Capacity Utilization			80.5%									
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	477	522	189	412	97	162	39	84	54	35	45
Future Volume (vph)	86	477	522	189	412	97	162	39	84	54	35	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.922			0.971			0.898			0.916	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1653	0	1752	1727	0	1504	1784	0	1805	1696	0
Flt Permitted	0.302			0.116			0.950			0.950		
Satd. Flow (perm)	574	1653	0	214	1727	0	1504	1784	0	1805	1696	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			18			90			63	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93	0.71	0.71	0.71
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Adj. Flow (vph)	95	524	574	208	453	107	174	42	90	76	49	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1098	0	208	560	0	174	132	0	76	112	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	28.9		10.0	10.0		10.0	8.2	
Total Split (s)	14.0	31.0		14.0	31.0		16.0	16.0		14.0	14.0	
Total Split (%)	18.7%	41.3%		18.7%	41.3%		21.3%	21.3%		18.7%	18.7%	
Maximum Green (s)	10.0	25.1		10.0	25.1		12.0	10.0		10.0	9.8	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	0.2	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	2.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					7							
Act Effct Green (s)	40.9	34.5		45.4	38.1		12.9	10.3		9.5	8.9	
Actuated g/C Ratio	0.55	0.46		0.61	0.51		0.17	0.14		0.13	0.12	
v/c Ratio	0.23	1.37		0.70	0.63		0.68	0.41		0.33	0.44	
Control Delay	7.2	187.4		25.3	21.0		43.0	15.5		33.2	20.6	

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.2	187.4		25.3	21.0		43.0	15.5		33.2	20.6	
LOS	A	F		C	C		D	B		C	C	
Approach Delay		173.0			22.2			31.1			25.7	
Approach LOS		F			C			C			C	
Queue Length 50th (ft)	13	~682		42	195		75	17		33	21	
Queue Length 95th (ft)	m20	m#717		#133	#403		#150	63		53	43	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	503	804		337	887		280	361		288	319	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.19	1.37		0.62	0.63		0.62	0.37		0.26	0.35	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 96.9

Intersection LOS: F

Intersection Capacity Utilization 94.4%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	31 s	16 s	14 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	31 s	14 s	16 s

HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

Existing Conditions Increased

Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	477	522	189	412	97	162	39	84	54	35	45
Future Volume (vph)	86	477	522	189	412	97	162	39	84	54	35	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	2.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.97		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1652		1752	1727		1504	1783		1805	1695	
Flt Permitted	0.30	1.00		0.12	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	574	1652		214	1727		1504	1783		1805	1695	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.93	0.93	0.93	0.71	0.71	0.71
Adj. Flow (vph)	95	524	574	208	453	107	174	42	90	76	49	63
RTOR Reduction (vph)	0	45	0	0	9	0	0	77	0	0	56	0
Lane Group Flow (vph)	95	1053	0	208	551	0	174	55	0	76	56	0
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Actuated Green, G (s)	37.2	31.7		42.8	34.5		10.9	8.5		6.6	6.0	
Effective Green, g (s)	37.2	33.6		42.8	36.4		12.9	10.5		8.6	8.0	
Actuated g/C Ratio	0.50	0.45		0.57	0.49		0.17	0.14		0.11	0.11	
Clearance Time (s)	4.0	5.9		4.0	5.9		4.0	6.0		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	374	740		292	838		258	249		206	180	
v/s Ratio Prot	0.02	c0.64		c0.08	0.32		c0.12	0.03		0.04	c0.03	
v/s Ratio Perm	0.11			0.33								
v/c Ratio	0.25	1.42		0.71	0.66		0.67	0.22		0.37	0.31	
Uniform Delay, d1	10.9	20.7		14.8	14.6		29.1	28.6		30.7	30.9	
Progression Factor	0.87	0.66		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	193.1		6.7	4.0		5.4	0.2		0.4	0.4	
Delay (s)	9.6	206.8		21.5	18.6		34.5	28.8		31.1	31.3	
Level of Service	A	F		C	B		C	C		C	C	
Approach Delay (s)		191.1			19.4			32.0			31.2	
Approach LOS		F			B			C			C	

Intersection Summary

HCM 2000 Control Delay	105.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	909	10	69	228	32	5	0	50	27	0	5
Future Volume (vph)	5	909	10	69	228	32	5	0	50	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.998			0.981			0.877			0.978	
Flt Protected	0.950			0.950				0.996			0.960	
Satd. Flow (prot)	1771	1822	0	1382	1726	0	0	1078	0	0	1512	0
Flt Permitted	0.578			0.082				0.974			0.729	
Satd. Flow (perm)	1078	1822	0	119	1726	0	0	1054	0	0	1148	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			10			30			30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.69	0.69	0.69	0.57	0.57	0.57
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Adj. Flow (vph)	5	988	11	79	262	37	7	0	72	47	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	999	0	79	299	0	0	79	0	0	56	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	47.8	47.8		56.6	56.6			11.8			11.4	
Actuated g/C Ratio	0.63	0.63		0.74	0.74			0.16			0.15	
v/c Ratio	0.01	0.87		0.36	0.23			0.48			0.33	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	14.4	29.4		13.1	6.8			42.5			36.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	14.4	29.4		13.1	6.8			42.5			36.7	
LOS	B	C		B	A			D			D	
Approach Delay		29.4			8.1			42.5			36.7	
Approach LOS		C			A			D			D	
Queue Length 50th (ft)	1	361		7	32			32			22	
Queue Length 95th (ft)	10	#1179		56	157			71			43	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	677	1145		355	1413			294			320	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.01	0.87		0.22	0.21			0.27			0.17	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 76.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 25.0

Intersection LOS: C

Intersection Capacity Utilization 71.9%

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: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions Increased
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	909	10	69	228	32	5	0	50	27	0	5
Future Volume (vph)	5	909	10	69	228	32	5	0	50	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.88			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1823		1382	1726			1077			1512	
Flt Permitted	0.58	1.00		0.08	1.00			0.97			0.73	
Satd. Flow (perm)	1077	1823		119	1726			1054			1148	
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.69	0.69	0.69	0.57	0.57	0.57
Adj. Flow (vph)	5	988	11	79	262	37	7	0	72	47	0	9
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	999	0	79	296	0	0	79	0	0	56	0
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	45.3	45.3		54.9	54.9			9.7			9.7	
Effective Green, g (s)	46.8	46.8		55.4	56.4			10.2			10.2	
Actuated g/C Ratio	0.58	0.58		0.68	0.69			0.13			0.13	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	620	1050		183	1198			132			144	
v/s Ratio Prot		c0.55		c0.03	0.17							
v/s Ratio Perm	0.00			0.26				c0.07			0.05	
v/c Ratio	0.01	0.95		0.43	0.25			0.60			0.39	
Uniform Delay, d1	7.3	16.1		16.3	4.6			33.6			32.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	17.1		1.6	0.0			7.1			1.7	
Delay (s)	7.3	33.2		17.9	4.6			40.7			34.4	
Level of Service	A	C		B	A			D			C	
Approach Delay (s)		33.1			7.4			40.7			34.4	
Approach LOS		C			A			D			C	
Intersection Summary												
HCM 2000 Control Delay			27.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			81.2			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			71.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
4: Pelham St & Baldwin St

Existing Conditions Increased
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	845	627	9	14	10
Future Vol, veh/h	6	845	627	9	14	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	918	682	10	15	11
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	692	0	-	0	1619	687
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	932	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	903	-	-	-	114	447
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	903	-	-	-	112	447
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	383	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		31.2		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	903	-	-	-	163	
HCM Lane V/C Ratio	0.007	-	-	-	0.16	
HCM Control Delay (s)	9	0	-	-	31.2	
HCM Lane LOS	A	A	-	-	D	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	

HCM 6th TWSC
5: Cross St & Proposed Site Driveway

Existing Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	161	0	0	448
Future Vol, veh/h	0	0	161	0	0	448
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	86	86	88	88
Heavy Vehicles, %	2	2	15	0	0	5
Mvmt Flow	0	0	187	0	0	509
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	696	187	0	0	187	0
Stage 1	187	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	408	855	-	-	1399	-
Stage 1	845	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	408	855	-	-	1399	-
Mov Cap-2 Maneuver	408	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1399	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: Cross St & Hampshire Rd

Existing Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	7.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	210	181	238	222	75	99
Future Vol, veh/h	210	181	238	222	75	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	228	197	259	241	82	108
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	425	0	1086	327
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	759	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1134	-	239	714
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	462	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1134	-	176	714
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	340	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.7		33.6	
HCM LOS					D	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	308	-	-	1134	-	
HCM Lane V/C Ratio	0.614	-	-	0.228	-	
HCM Control Delay (s)	33.6	-	-	9.1	0	
HCM Lane LOS	D	-	-	A	A	
HCM 95th %tile Q(veh)	3.8	-	-	0.9	-	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 No-Build Conditions Increased

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	732	284	159	407	146	127	15	230	178	219	71
Future Volume (vph)	19	732	284	159	407	146	127	15	230	178	219	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.859			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1625	0	1662	1681	0
Flt Permitted	0.950			0.950			0.233			0.595		
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	441	1625	0	1041	1681	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			217			160		250			19	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Adj. Flow (vph)	21	796	309	173	442	159	138	16	250	193	238	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	796	309	173	442	159	138	266	0	193	315	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	14.0	34.0	34.0	12.0	32.0	32.0	12.0	29.0		17.0	17.0	
Total Split (%)	18.7%	45.3%	45.3%	16.0%	42.7%	42.7%	16.0%	38.7%		22.7%	22.7%	
Maximum Green (s)	10.0	28.0	28.0	8.0	26.0	26.0	8.0	23.0		11.0	11.0	
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)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					3	3						
Act Effct Green (s)	7.7	30.2	30.2	10.0	37.8	37.8	26.8	24.8		15.2	15.2	
Actuated g/C Ratio	0.10	0.40	0.40	0.13	0.50	0.50	0.36	0.33		0.20	0.20	
v/c Ratio	0.13	1.14	0.44	0.79	0.53	0.21	0.42	0.38		0.91	0.88	
Control Delay	31.8	105.1	7.4	51.9	11.6	2.5	20.8	5.0		79.7	58.5	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 No-Build Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.8	105.1	7.4	51.9	11.6	2.5	20.8	5.0		79.7	58.5	
LOS	C	F	A	D	B	A	C	A		E	E	
Approach Delay		77.0			18.7			10.4			66.6	
Approach LOS		E			B			B			E	
Queue Length 50th (ft)	9	~443	27	67	92	6	44	5		~101	~146	
Queue Length 95th (ft)	28	#651	83	m#131	m228	m21	83	53		#223	#304	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	249	697	700	219	827	764	338	708		211	356	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	1.14	0.44	0.79	0.53	0.21	0.41	0.38		0.91	0.88	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 49.5

Intersection LOS: D

Intersection Capacity Utilization 85.5%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

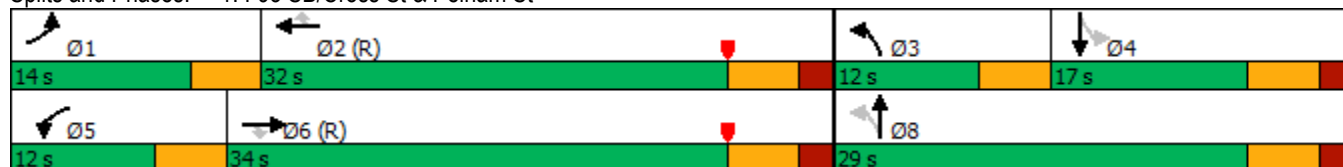
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St



HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

2032 No-Build Conditions Increased

Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	732	284	159	407	146	127	15	230	178	219	71
Future Volume (vph)	19	732	284	159	407	146	127	15	230	178	219	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1625		1662	1681	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.23	1.00		0.60	1.00	
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	440	1625		1041	1681	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	796	309	173	442	159	138	16	250	193	238	77
RTOR Reduction (vph)	0	0	132	0	0	86	0	165	0	0	15	0
Lane Group Flow (vph)	21	796	177	173	442	73	138	101	0	193	300	0
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	2.8	27.4	27.4	8.0	32.6	32.6	23.6	23.6		13.2	13.2	
Effective Green, g (s)	4.8	29.4	29.4	10.0	34.6	34.6	25.6	25.6		15.2	15.2	
Actuated g/C Ratio	0.06	0.39	0.39	0.13	0.46	0.46	0.34	0.34		0.20	0.20	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	99	679	556	219	756	626	302	554		210	340	
v/s Ratio Prot	0.01	c0.46		c0.11	0.27		c0.05	0.06			0.18	
v/s Ratio Perm			0.12			0.05	0.10			c0.19		
v/c Ratio	0.21	1.17	0.32	0.79	0.58	0.12	0.46	0.18		0.92	0.88	
Uniform Delay, d1	33.3	22.8	15.8	31.5	14.9	11.5	18.5	17.4		29.3	29.0	
Progression Factor	1.00	1.00	1.00	0.96	0.66	0.73	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	92.6	1.5	12.1	2.4	0.3	1.1	0.2		39.3	21.9	
Delay (s)	33.7	115.4	17.3	42.4	12.3	8.6	19.6	17.5		68.5	51.0	
Level of Service	C	F	B	D	B	A	B	B		E	D	
Approach Delay (s)		87.0			18.3			18.2			57.6	
Approach LOS		F			B			B			E	
Intersection Summary												
HCM 2000 Control Delay			52.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			85.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 No-Build Conditions Increased

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	511	560	205	458	97	180	39	91	54	35	46
Future Volume (vph)	87	511	560	205	458	97	180	39	91	54	35	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.922			0.974			0.895			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1653	0	1752	1730	0	1504	1776	0	1805	1695	0
Flt Permitted	0.258			0.118			0.950			0.950		
Satd. Flow (perm)	490	1653	0	218	1730	0	1504	1776	0	1805	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			16			98			50	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Adj. Flow (vph)	95	555	609	223	498	105	194	42	98	59	38	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1164	0	223	603	0	194	140	0	59	88	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	28.9		10.0	10.0		10.0	8.2	
Total Split (s)	14.0	31.0		14.0	31.0		16.0	16.0		14.0	14.0	
Total Split (%)	18.7%	41.3%		18.7%	41.3%		21.3%	21.3%		18.7%	18.7%	
Maximum Green (s)	10.0	25.1		10.0	25.1		12.0	10.0		10.0	9.8	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	0.2	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	2.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					7							
Act Effct Green (s)	40.3	34.0		45.6	38.1		13.3	13.0		9.0	8.6	
Actuated g/C Ratio	0.54	0.45		0.61	0.51		0.18	0.17		0.12	0.11	
v/c Ratio	0.25	1.47		0.72	0.68		0.73	0.36		0.27	0.37	
Control Delay	7.3	232.4		27.0	22.6		46.7	13.7		32.5	20.0	

FO

Synchro 11 Report

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 No-Build Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.3	232.4		27.0	22.6		46.7	13.7		32.5	20.0	
LOS	A	F		C	C		D	B		C	C	
Approach Delay		215.4			23.8			32.8			25.0	
Approach LOS		F			C			C			C	
Queue Length 50th (ft)	12	~748		47	216		85	17		25	16	
Queue Length 95th (ft)	m20	m#770		#151	#452		#175	65		57	54	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	462	794		341	885		280	407		288	308	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	1.47		0.65	0.68		0.69	0.34		0.20	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.47

Intersection Signal Delay: 119.1

Intersection LOS: F

Intersection Capacity Utilization 100.5%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	31 s	16 s	14 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	31 s	14 s	16 s

HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

2032 No-Build Conditions Increased
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	511	560	205	458	97	180	39	91	54	35	46
Future Volume (vph)	87	511	560	205	458	97	180	39	91	54	35	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	2.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.97		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1652		1752	1730		1504	1776		1805	1694	
Flt Permitted	0.26	1.00		0.12	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	490	1652		218	1730		1504	1776		1805	1694	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	95	555	609	223	498	105	194	42	98	59	38	50
RTOR Reduction (vph)	0	47	0	0	8	0	0	81	0	0	44	0
Lane Group Flow (vph)	95	1117	0	223	595	0	194	59	0	59	44	0
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Actuated Green, G (s)	35.9	30.5		42.5	33.8		11.3	11.0		4.9	6.4	
Effective Green, g (s)	35.9	32.4		42.5	35.7		13.3	13.0		6.9	8.4	
Actuated g/C Ratio	0.48	0.43		0.57	0.48		0.18	0.17		0.09	0.11	
Clearance Time (s)	4.0	5.9		4.0	5.9		4.0	6.0		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	329	713		301	823		266	307		166	189	
v/s Ratio Prot	0.02	c0.68		c0.09	0.34		c0.13	0.03		0.03	c0.03	
v/s Ratio Perm	0.12			0.33								
v/c Ratio	0.29	1.57		0.74	0.72		0.73	0.19		0.36	0.23	
Uniform Delay, d1	11.9	21.3		15.2	15.7		29.1	26.5		32.0	30.4	
Progression Factor	0.87	0.70		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	257.7		8.3	5.5		8.2	0.1		0.5	0.2	
Delay (s)	10.4	272.5		23.5	21.1		37.3	26.6		32.4	30.6	
Level of Service	B	F		C	C		D	C		C	C	
Approach Delay (s)		252.7			21.8			32.9			31.3	
Approach LOS		F			C			C			C	

Intersection Summary

HCM 2000 Control Delay	137.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 No-Build Conditions Increased

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	953	12	101	244	32	6	0	62	27	0	5
Future Volume (vph)	5	953	12	101	244	32	6	0	62	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.998			0.982			0.878			0.980	
Flt Protected	0.950			0.950				0.995			0.959	
Satd. Flow (prot)	1771	1822	0	1382	1728	0	0	1079	0	0	1511	0
Flt Permitted	0.577			0.082				0.974			0.815	
Satd. Flow (perm)	1076	1822	0	119	1728	0	0	1057	0	0	1284	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			9			30			30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Adj. Flow (vph)	5	1036	13	110	265	35	7	0	67	29	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1049	0	110	300	0	0	74	0	0	34	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	48.0	48.0		57.7	57.7			11.6			10.4	
Actuated g/C Ratio	0.62	0.62		0.75	0.75			0.15			0.14	
v/c Ratio	0.01	0.92		0.47	0.23			0.47			0.20	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 No-Build Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.0	35.0		18.6	6.6			42.8			35.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.0	35.0		18.6	6.6			42.8			35.1	
LOS	B	C		B	A			D			D	
Approach Delay		34.9			9.8			42.8			35.1	
Approach LOS		C			A			D			D	
Queue Length 50th (ft)	1	410		10	32			30			14	
Queue Length 95th (ft)	10	#1300		90	163			94			50	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	671	1138		354	1404			293			356	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.01	0.92		0.31	0.21			0.25			0.10	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 76.9

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 28.7

Intersection LOS: C

Intersection Capacity Utilization 74.9%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

2032 No-Build Conditions Increased
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	953	12	101	244	32	6	0	62	27	0	5
Future Volume (vph)	5	953	12	101	244	32	6	0	62	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.88			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1822		1382	1729			1079			1511	
Flt Permitted	0.58	1.00		0.08	1.00			0.97			0.82	
Satd. Flow (perm)	1076	1822		119	1729			1056			1285	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1036	13	110	265	35	7	0	67	29	0	5
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	1049	0	110	297	0	0	74	0	0	34	0
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	45.5	45.5		55.9	55.9			9.5			9.5	
Effective Green, g (s)	47.0	47.0		56.4	57.4			10.0			10.0	
Actuated g/C Ratio	0.57	0.57		0.69	0.70			0.12			0.12	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	617	1045		196	1211			128			156	
v/s Ratio Prot		c0.58		c0.05	0.17							
v/s Ratio Perm	0.00			0.34				c0.07			0.03	
v/c Ratio	0.01	1.00		0.56	0.25			0.58			0.22	
Uniform Delay, d1	7.5	17.5		17.7	4.4			34.0			32.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	28.7		3.6	0.0			6.2			0.7	
Delay (s)	7.5	46.1		21.3	4.5			40.2			33.1	
Level of Service	A	D		C	A			D			C	
Approach Delay (s)		45.9			9.0			40.2			33.1	
Approach LOS		D			A			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.8			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			81.9			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			74.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	904	697	9	14	10
Future Vol, veh/h	6	904	697	9	14	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	983	758	10	15	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	768	0	-	0	1760	763
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	997	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	846	-	-	-	93	404
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	357	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	846	-	-	-	91	404
Mov Cap-2 Maneuver	-	-	-	-	91	-
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	357	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		38.2		
HCM LOS				E		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	846	-	-	-	134	
HCM Lane V/C Ratio	0.008	-	-	-	0.195	
HCM Control Delay (s)	9.3	0	-	-	38.2	
HCM Lane LOS	A	A	-	-	E	
HCM 95th %tile Q(veh)	0	-	-	-	0.7	

HCM 6th TWSC
5: Cross St & Proposed Site Driveway

2032 No-Build Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	174	0	0	488
Future Vol, veh/h	0	0	174	0	0	488
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	15	0	0	5
Mvmt Flow	0	0	189	0	0	530
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	719	189	0	0	189	0
Stage 1	189	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	395	853	-	-	1397	-
Stage 1	843	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	395	853	-	-	1397	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	843	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1397	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: Cross St & Hampshire Rd

2032 No-Build Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	9.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	222	197	260	236	77	107
Future Vol, veh/h	222	197	260	236	77	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	241	214	283	257	84	116
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	455	0	1171	348
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	823	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1106	-	213	695
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1106	-	150	695
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	303	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.9		46	
HCM LOS	E					
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	276		-	-	1106	-
HCM Lane V/C Ratio	0.725		-	-	0.256	-
HCM Control Delay (s)	46		-	-	9.4	0
HCM Lane LOS	E		-	-	A	A
HCM 95th %tile Q(veh)	5.1		-	-	1	-

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Increased

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Future Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.862			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1629	0	1662	1686	0
Flt Permitted	0.950			0.950			0.230			0.592		
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	436	1629	0	1036	1686	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			217			170		250			17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Adj. Flow (vph)	22	796	309	173	442	170	138	22	250	220	270	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	796	309	173	442	170	138	272	0	220	349	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	14.0	34.0	34.0	12.0	32.0	32.0	12.0	29.0		17.0	17.0	
Total Split (%)	18.7%	45.3%	45.3%	16.0%	42.7%	42.7%	16.0%	38.7%		22.7%	22.7%	
Maximum Green (s)	10.0	28.0	28.0	8.0	26.0	26.0	8.0	23.0		11.0	11.0	
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)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					3	3						
Act Effct Green (s)	7.8	30.0	30.0	10.0	37.6	37.6	27.0	25.0		15.4	15.4	
Actuated g/C Ratio	0.10	0.40	0.40	0.13	0.50	0.50	0.36	0.33		0.21	0.21	
v/c Ratio	0.14	1.15	0.44	0.79	0.54	0.22	0.41	0.38		1.04	0.97	
Control Delay	31.9	107.7	7.5	52.6	11.3	2.5	20.8	5.3		108.4	74.9	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.9	107.7	7.5	52.6	11.3	2.5	20.8	5.3		108.4	74.9	
LOS	C	F	A	D	B	A	C	A		F	E	
Approach Delay		78.7			18.5			10.5			87.9	
Approach LOS		E			B			B			F	
Queue Length 50th (ft)	10	~443	27	67	90	6	44	7		~129	~187	
Queue Length 95th (ft)	29	#651	83	m#139	233	m24	83	56		#257	#346	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	249	693	697	219	822	765	338	709		212	359	
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	1.15	0.44	0.79	0.54	0.22	0.41	0.38		1.04	0.97	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 54.5

Intersection LOS: D

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

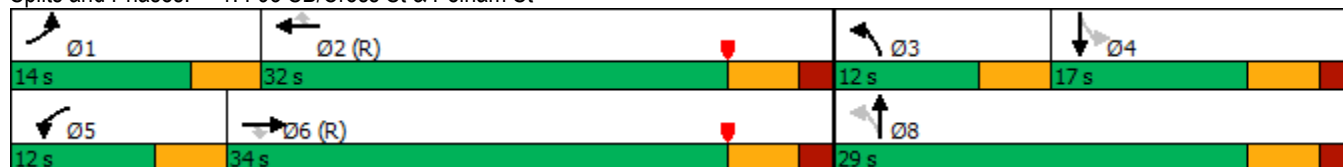
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St



HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Increased

Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Future Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1629		1662	1686	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.23	1.00		0.59	1.00	
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	435	1629		1036	1686	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	796	309	173	442	170	138	22	250	220	270	79
RTOR Reduction (vph)	0	0	133	0	0	92	0	164	0	0	14	0
Lane Group Flow (vph)	22	796	176	173	442	78	138	108	0	220	335	0
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	2.8	27.2	27.2	8.0	32.4	32.4	23.8	23.8		13.4	13.4	
Effective Green, g (s)	4.8	29.2	29.2	10.0	34.4	34.4	25.8	25.8		15.4	15.4	
Actuated g/C Ratio	0.06	0.39	0.39	0.13	0.46	0.46	0.34	0.34		0.21	0.21	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	99	674	552	219	752	622	302	560		212	346	
v/s Ratio Prot	0.01	c0.46		c0.11	0.27		c0.05	0.07			0.20	
v/s Ratio Perm			0.12			0.06	0.11			c0.21		
v/c Ratio	0.22	1.18	0.32	0.79	0.59	0.13	0.46	0.19		1.04	0.97	
Uniform Delay, d1	33.3	22.9	16.0	31.5	15.0	11.7	18.6	17.3		29.8	29.6	
Progression Factor	1.00	1.00	1.00	0.96	0.63	0.74	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	96.2	1.5	12.5	2.6	0.3	1.1	0.2		72.0	39.6	
Delay (s)	33.7	119.1	17.5	42.9	12.0	9.0	19.7	17.5		101.8	69.1	
Level of Service	C	F	B	D	B	A	B	B		F	E	
Approach Delay (s)		89.6			18.2			18.2			81.8	
Approach LOS		F			B			B			F	
Intersection Summary												
HCM 2000 Control Delay			58.5									
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			75.0									
Intersection Capacity Utilization			87.1%									
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Increased

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Future Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.921			0.974			0.895			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1651	0	1752	1730	0	1504	1776	0	1805	1695	0
Flt Permitted	0.254			0.119			0.950			0.950		
Satd. Flow (perm)	483	1651	0	220	1730	0	1504	1776	0	1805	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			16			98			50	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Adj. Flow (vph)	95	566	624	223	501	105	201	42	98	59	38	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1190	0	223	606	0	201	140	0	59	88	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	28.9		10.0	10.0		10.0	8.2	
Total Split (s)	14.0	31.0		14.0	31.0		16.0	16.0		14.0	14.0	
Total Split (%)	18.7%	41.3%		18.7%	41.3%		21.3%	21.3%		18.7%	18.7%	
Maximum Green (s)	10.0	25.1		10.0	25.1		12.0	10.0		10.0	9.8	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	0.2	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	2.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					7							
Act Effct Green (s)	40.2	33.9		45.5	38.0		13.4	13.1		9.0	8.6	
Actuated g/C Ratio	0.54	0.45		0.61	0.51		0.18	0.17		0.12	0.11	
v/c Ratio	0.26	1.50		0.72	0.69		0.75	0.36		0.27	0.37	
Control Delay	7.2	248.8		26.6	22.8		48.4	13.7		32.5	20.0	

FO

Synchro 11 Report

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.2	248.8		26.6	22.8		48.4	13.7		32.5	20.0	
LOS	A	F		C	C		D	B		C	C	
Approach Delay		231.0			23.8			34.1			25.0	
Approach LOS		F			C			C			C	
Queue Length 50th (ft)	12	~775		46	218		89	17		25	16	
Queue Length 95th (ft)	m19	m#770		#150	#455		#184	65		57	54	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	458	791		342	884		280	407		288	308	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	1.50		0.65	0.69		0.72	0.34		0.20	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.50

Intersection Signal Delay: 127.5

Intersection LOS: F

Intersection Capacity Utilization 102.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St

			
14 s	31 s	16 s	14 s
			
14 s	31 s	14 s	16 s

HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Increased

Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Future Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	2.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.97		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1651		1752	1730		1504	1776		1805	1694	
Flt Permitted	0.25	1.00		0.12	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	482	1651		219	1730		1504	1776		1805	1694	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	95	566	624	223	501	105	201	42	98	59	38	50
RTOR Reduction (vph)	0	47	0	0	8	0	0	81	0	0	44	0
Lane Group Flow (vph)	95	1143	0	223	598	0	201	59	0	59	44	0
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Actuated Green, G (s)	35.8	30.4		42.4	33.7		11.4	11.1		4.9	6.4	
Effective Green, g (s)	35.8	32.3		42.4	35.6		13.4	13.1		6.9	8.4	
Actuated g/C Ratio	0.48	0.43		0.57	0.47		0.18	0.17		0.09	0.11	
Clearance Time (s)	4.0	5.9		4.0	5.9		4.0	6.0		4.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	325	711		301	821		268	310		166	189	
v/s Ratio Prot	0.02	c0.69		c0.09	0.35		c0.13	0.03		0.03	c0.03	
v/s Ratio Perm	0.12			0.33								
v/c Ratio	0.29	1.61		0.74	0.73		0.75	0.19		0.36	0.23	
Uniform Delay, d1	12.0	21.4		15.1	15.8		29.2	26.4		32.0	30.4	
Progression Factor	0.86	0.73		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	275.2		8.3	5.6		10.0	0.1		0.5	0.2	
Delay (s)	10.5	290.7		23.4	21.4		39.2	26.5		32.4	30.6	
Level of Service	B	F		C	C		D	C		C	C	
Approach Delay (s)		270.0			22.0			34.0			31.3	
Approach LOS		F			C			C			C	

Intersection Summary

HCM 2000 Control Delay	146.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Increased

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Future Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.998			0.983			0.878			0.980	
Flt Protected	0.950			0.950				0.995			0.959	
Satd. Flow (prot)	1771	1822	0	1382	1729	0	0	1079	0	0	1511	0
Flt Permitted	0.576			0.082				0.974			0.815	
Satd. Flow (perm)	1074	1822	0	119	1729	0	0	1057	0	0	1284	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			9			30			30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Adj. Flow (vph)	5	1037	13	110	267	35	7	0	67	29	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1050	0	110	302	0	0	74	0	0	34	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	48.0	48.0		57.7	57.7			11.6			10.4	
Actuated g/C Ratio	0.62	0.62		0.75	0.75			0.15			0.14	
v/c Ratio	0.01	0.92		0.47	0.23			0.47			0.20	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Increased
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.0	35.1		18.6	6.6			42.8			35.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.0	35.1		18.6	6.6			42.8			35.1	
LOS	B	D		B	A			D			D	
Approach Delay		35.0			9.8			42.8			35.1	
Approach LOS		C			A			D			D	
Queue Length 50th (ft)	1	410		10	32			30			14	
Queue Length 95th (ft)	10	#1301		90	164			94			50	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	670	1138		354	1405			293			356	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.01	0.92		0.31	0.21			0.25			0.10	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 76.9

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 28.8

Intersection LOS: C

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Increased
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Future Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.88			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1822		1382	1729			1079			1511	
Flt Permitted	0.58	1.00		0.08	1.00			0.97			0.82	
Satd. Flow (perm)	1074	1822		119	1729			1056			1285	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1037	13	110	267	35	7	0	67	29	0	5
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	1050	0	110	299	0	0	74	0	0	34	0
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	45.5	45.5		55.9	55.9			9.5			9.5	
Effective Green, g (s)	47.0	47.0		56.4	57.4			10.0			10.0	
Actuated g/C Ratio	0.57	0.57		0.69	0.70			0.12			0.12	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	616	1045		196	1211			128			156	
v/s Ratio Prot		c0.58		c0.05	0.17							
v/s Ratio Perm	0.00			0.34				c0.07			0.03	
v/c Ratio	0.01	1.00		0.56	0.25			0.58			0.22	
Uniform Delay, d1	7.5	17.5		17.7	4.4			34.0			32.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	28.9		3.6	0.0			6.2			0.7	
Delay (s)	7.5	46.4		21.3	4.5			40.2			33.1	
Level of Service	A	D		C	A			D			C	
Approach Delay (s)		46.2			9.0			40.2			33.1	
Approach LOS		D			A			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			81.9			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			75.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
4: Pelham St & Baldwin St

Build Conditions Increased
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	923	706	9	14	10
Future Vol, veh/h	6	923	706	9	14	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	1003	767	10	15	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	777	0	-	0	1789	772
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	1017	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	839	-	-	-	89	400
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	349	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	839	-	-	-	87	400
Mov Cap-2 Maneuver	-	-	-	-	87	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	349	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		39.8		
HCM LOS	E					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	839	-	-	-	129	
HCM Lane V/C Ratio	0.008	-	-	-	0.202	
HCM Control Delay (s)	9.3	0	-	-	39.8	
HCM Lane LOS	A	A	-	-	E	
HCM 95th %tile Q(veh)	0	-	-	-	0.7	

HCM 6th TWSC
11: Cross St & Proposed Site Driveway

2032 Build Conditions Increased
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	3	174	16	1	488
Future Vol, veh/h	54	3	174	16	1	488
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	15	0	0	5
Mvmt Flow	59	3	189	17	1	530
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	730	198	0	0	206	0
Stage 1	198	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	389	843	-	-	1377	-
Stage 1	835	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	389	843	-	-	1377	-
Mov Cap-2 Maneuver	389	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	400	1377	-	
HCM Lane V/C Ratio	-	-	0.155	0.001	-	
HCM Control Delay (s)	-	-	15.6	7.6	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	

Intersection						
Int Delay, s/veh	10.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	222	198	260	236	79	109
Future Vol, veh/h	222	198	260	236	79	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	241	215	283	257	86	118
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	456	0	1172	349
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	823	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1105	-	213	694
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1105	-	149	694
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	302	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.9		48.6	
HCM LOS	E					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	274	-	-	1105	-	
HCM Lane V/C Ratio	0.746	-	-	0.256	-	
HCM Control Delay (s)	48.6	-	-	9.4	0	
HCM Lane LOS	E	-	-	A	A	
HCM 95th %tile Q(veh)	5.4	-	-	1	-	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Future Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.862			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1629	0	1662	1686	0
Flt Permitted	0.950			0.950			0.172			0.592		
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	326	1629	0	1036	1686	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			188			170		234			13	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Adj. Flow (vph)	22	796	309	173	442	170	138	22	250	220	270	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	796	309	173	442	170	138	272	0	220	349	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	52.0	52.0	13.0	55.0	55.0	10.0	35.0		25.0	25.0	
Total Split (%)	10.0%	52.0%	52.0%	13.0%	55.0%	55.0%	10.0%	35.0%		25.0%	25.0%	
Maximum Green (s)	6.0	46.0	46.0	9.0	49.0	49.0	6.0	29.0		19.0	19.0	
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)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					3	3						
Act Effct Green (s)	7.5	47.6	47.6	11.0	56.6	56.6	33.4	31.4		21.3	21.3	
Actuated g/C Ratio	0.08	0.48	0.48	0.11	0.57	0.57	0.33	0.31		0.21	0.21	
v/c Ratio	0.19	0.97	0.40	0.96	0.48	0.20	0.60	0.40		1.00	0.95	
Control Delay	47.1	50.9	7.9	97.8	16.0	3.9	36.4	7.4		102.7	74.3	

FO

Synchro 11 Report

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.1	50.9	7.9	97.8	16.0	3.9	36.4	7.4		102.7	74.3	
LOS	D	D	A	F	B	A	D	A		F	E	
Approach Delay		39.1			31.4			17.2			85.3	
Approach LOS		D			C			B			F	
Queue Length 50th (ft)	13	471	42	114	129	3	63	17		~144	214	
Queue Length 95th (ft)	38	#735	102	m#207	m210	m18	#114	78		#294	#393	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	124	831	778	181	927	841	229	672		220	368	
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	0.18	0.96	0.40	0.96	0.48	0.20	0.60	0.40		1.00	0.95	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 71 (71%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 43.0

Intersection LOS: D

Intersection Capacity Utilization 87.1%

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.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St



HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Future Volume (vph)	20	732	284	159	407	156	127	20	230	202	248	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1558	1733	1419	1646	1640	1358	1799	1629		1662	1686	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.17	1.00		0.59	1.00	
Satd. Flow (perm)	1558	1733	1419	1646	1640	1358	325	1629		1036	1686	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	796	309	173	442	170	138	22	250	220	270	79
RTOR Reduction (vph)	0	0	99	0	0	78	0	160	0	0	10	0
Lane Group Flow (vph)	22	796	210	173	442	92	138	112	0	220	339	0
Heavy Vehicles (%)	12%	6%	10%	6%	12%	15%	7%	7%	0%	5%	5%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	2.4	45.5	45.5	9.0	52.1	52.1	29.5	29.5		19.3	19.3	
Effective Green, g (s)	4.4	47.5	47.5	11.0	54.1	54.1	31.5	31.5		21.3	21.3	
Actuated g/C Ratio	0.04	0.48	0.48	0.11	0.54	0.54	0.32	0.32		0.21	0.21	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	68	823	674	181	887	734	223	513		220	359	
v/s Ratio Prot	0.01	c0.46		c0.11	0.27		c0.05	0.07			0.20	
v/s Ratio Perm			0.15			0.07	0.14			c0.21		
v/c Ratio	0.32	0.97	0.31	0.96	0.50	0.13	0.62	0.22		1.00	0.94	
Uniform Delay, d1	46.4	25.5	16.2	44.3	14.4	11.3	27.0	25.2		39.4	38.8	
Progression Factor	1.00	1.00	1.00	1.08	1.03	1.62	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	24.3	1.2	46.0	1.6	0.3	5.0	0.2		60.7	32.7	
Delay (s)	47.4	49.8	17.4	93.8	16.3	18.6	32.1	25.4		100.0	71.5	
Level of Service	D	D	B	F	B	B	C	C		F	E	
Approach Delay (s)		40.9			33.9			27.6			82.5	
Approach LOS		D			C			C			F	

Intersection Summary

HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Increased Optimized

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Future Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.921			0.974			0.895			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1651	0	1752	1730	0	1504	1776	0	1805	1695	0
Flt Permitted	0.396			0.061			0.606			0.769		
Satd. Flow (perm)	752	1651	0	113	1730	0	960	1776	0	1461	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		110			24			89			50	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Adj. Flow (vph)	95	566	624	223	501	105	201	42	98	59	38	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1190	0	223	606	0	201	140	0	59	88	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	28.9		10.0	10.0		10.0	10.0	
Total Split (s)	8.0	68.0		12.0	72.0		10.0	10.0		10.0	10.0	
Total Split (%)	8.0%	68.0%		12.0%	72.0%		10.0%	10.0%		10.0%	10.0%	
Maximum Green (s)	4.0	62.1		8.0	66.1		6.0	4.0		6.0	4.0	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					7							
Act Effct Green (s)	68.7	64.6		77.8	71.4		14.6	6.2		14.1	6.0	
Actuated g/C Ratio	0.69	0.65		0.78	0.71		0.15	0.06		0.14	0.06	
v/c Ratio	0.17	1.08		0.93	0.49		1.09	0.72		0.25	0.59	
Control Delay	2.7	55.7		70.2	8.5		131.3	41.2		37.9	40.3	

FO

Synchro 11 Report

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	2.7	55.7		70.2	8.5		131.3	41.2		37.9	40.3	
LOS	A	E		E	A		F	D		D	D	
Approach Delay		51.8			25.1			94.3			39.3	
Approach LOS		D			C			F			D	
Queue Length 50th (ft)	6	~826		~100	160		~125	32		32	24	
Queue Length 95th (ft)	m11	m#916		#249	238		#226	#124		69	#86	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	560	1105		239	1242		185	194		238	148	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	1.08		0.93	0.49		1.09	0.72		0.25	0.59	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 48.1

Intersection LOS: D

Intersection Capacity Utilization 102.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St

 Ø1	 Ø2 (R)		 Ø3	 Ø4
8 s	72 s		10 s	10 s
 Ø5	 Ø6 (R)		 Ø7	 Ø8
12 s	68 s		10 s	10 s

HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Future Volume (vph)	87	521	574	205	461	97	187	39	91	54	35	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.97		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1651		1752	1730		1504	1776		1805	1694	
Flt Permitted	0.40	1.00		0.06	1.00		0.61	1.00		0.77	1.00	
Satd. Flow (perm)	753	1651		113	1730		960	1776		1462	1694	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	95	566	624	223	501	105	201	42	98	59	38	50
RTOR Reduction (vph)	0	40	0	0	7	0	0	83	0	0	47	0
Lane Group Flow (vph)	95	1150	0	223	599	0	201	57	0	59	41	0
Heavy Vehicles (%)	0%	6%	6%	3%	8%	2%	20%	5%	10%	0%	6%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	64.7	61.5		74.7	67.5		10.8	4.6		8.0	3.2	
Effective Green, g (s)	64.7	63.4		74.7	69.4		14.8	6.6		12.0	5.2	
Actuated g/C Ratio	0.65	0.63		0.75	0.69		0.15	0.07		0.12	0.05	
Clearance Time (s)	4.0	5.9		4.0	5.9		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	520	1046		235	1200		186	117		198	88	
v/s Ratio Prot	0.01	c0.70		c0.09	0.35		c0.09	0.03		0.02	0.02	
v/s Ratio Perm	0.11			0.62			0.07			0.02		
v/c Ratio	0.18	1.10		0.95	0.50		1.08	0.49		0.30	0.46	
Uniform Delay, d1	6.7	18.3		34.6	7.2		42.2	45.1		40.0	46.0	
Progression Factor	0.68	0.46		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	52.8		43.7	1.5		89.1	1.2		0.3	1.4	
Delay (s)	4.6	61.2		78.4	8.6		131.3	46.2		40.3	47.4	
Level of Service	A	E		E	A		F	D		D	D	
Approach Delay (s)		57.0			27.4			96.4			44.6	
Approach LOS		E			C			F			D	
Intersection Summary												
HCM 2000 Control Delay		52.0			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		1.07										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		102.3%			ICU Level of Service			G				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Increased Optimized

Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Future Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.998			0.983			0.878			0.980	
Flt Protected	0.950			0.950				0.995			0.959	
Satd. Flow (prot)	1771	1822	0	1382	1729	0	0	1079	0	0	1511	0
Flt Permitted	0.576			0.082				0.974			0.815	
Satd. Flow (perm)	1074	1822	0	119	1729	0	0	1057	0	0	1284	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			9			30			30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Adj. Flow (vph)	5	1037	13	110	267	35	7	0	67	29	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1050	0	110	302	0	0	74	0	0	34	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	48.0	48.0		57.7	57.7			11.6			10.4	
Actuated g/C Ratio	0.62	0.62		0.75	0.75			0.15			0.14	
v/c Ratio	0.01	0.92		0.47	0.23			0.47			0.20	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.0	35.1		18.6	6.6			42.8			35.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.0	35.1		18.6	6.6			42.8			35.1	
LOS	B	D		B	A			D			D	
Approach Delay		35.0			9.8			42.8			35.1	
Approach LOS		C			A			D			D	
Queue Length 50th (ft)	1	410		10	32			30			14	
Queue Length 95th (ft)	10	#1301		90	164			94			50	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	670	1138		354	1405			293			356	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.01	0.92		0.31	0.21			0.25			0.10	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 76.9

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 28.8

Intersection LOS: C

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Increased Optimized
Weekday Morning Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Future Volume (vph)	5	954	12	101	246	32	6	0	62	27	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.88			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1822		1382	1729			1079			1511	
Flt Permitted	0.58	1.00		0.08	1.00			0.97			0.82	
Satd. Flow (perm)	1074	1822		119	1729			1056			1285	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1037	13	110	267	35	7	0	67	29	0	5
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	1050	0	110	299	0	0	74	0	0	34	0
Heavy Vehicles (%)	0%	2%	10%	25%	3%	6%	20%	0%	50%	15%	20%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	45.5	45.5		55.9	55.9			9.5			9.5	
Effective Green, g (s)	47.0	47.0		56.4	57.4			10.0			10.0	
Actuated g/C Ratio	0.57	0.57		0.69	0.70			0.12			0.12	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	616	1045		196	1211			128			156	
v/s Ratio Prot		c0.58		c0.05	0.17							
v/s Ratio Perm	0.00			0.34				c0.07			0.03	
v/c Ratio	0.01	1.00		0.56	0.25			0.58			0.22	
Uniform Delay, d1	7.5	17.5		17.7	4.4			34.0			32.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	28.9		3.6	0.0			6.2			0.7	
Delay (s)	7.5	46.4		21.3	4.5			40.2			33.1	
Level of Service	A	D		C	A			D			C	
Approach Delay (s)		46.2			9.0			40.2			33.1	
Approach LOS		D			A			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			81.9			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			75.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	414	138	133	366	278	218	57	133	138	115	50
Future Volume (vph)	60	414	138	133	366	278	218	57	133	138	115	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.895			0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1670	0	1694	1691	0
Flt Permitted	0.950			0.950			0.401			0.621		
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	767	1670	0	1107	1691	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			302		153			27	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.87	0.87	0.87	0.90	0.90	0.90
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Adj. Flow (vph)	63	436	145	145	398	302	251	66	153	153	128	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	436	145	145	398	302	251	219	0	153	184	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0	30.0	12.0	30.0	30.0	13.0	33.0		20.0	20.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%	40.0%	17.3%	44.0%		26.7%	26.7%	
Maximum Green (s)	6.0	24.0	24.0	6.0	24.0	24.0	7.0	27.0		14.0	14.0	
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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
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	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					5	5						
Act Effct Green (s)	7.7	25.6	25.6	8.8	31.2	31.2	28.6	28.6		14.4	14.4	
Actuated g/C Ratio	0.10	0.34	0.34	0.12	0.42	0.42	0.38	0.38		0.19	0.19	
v/c Ratio	0.37	0.73	0.23	0.74	0.56	0.38	0.58	0.30		0.72	0.53	
Control Delay	38.0	30.5	1.6	53.3	14.1	3.4	22.6	6.6		48.4	28.7	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	38.0	30.5	1.6	53.3	14.1	3.4	22.6	6.6		48.4	28.7	
LOS	D	C	A	D	B	A	C	A		D	C	
Approach Delay		24.7			17.0			15.1			37.6	
Approach LOS		C			B			B			D	
Queue Length 50th (ft)	28	178	0	59	121	26	79	19		65	64	
Queue Length 95th (ft)	64	#278	11	m#114	m177	m37	132	58		#145	124	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	175	619	643	195	718	797	435	749		236	381	
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	0.36	0.70	0.23	0.74	0.55	0.38	0.58	0.29		0.65	0.48	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 63.7%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	30 s	13 s	20 s
 Ø5	 Ø6 (R)	 Ø8	
12 s	30 s	33 s	

HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

Existing Conditions

Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	414	138	133	366	278	218	57	133	138	115	50
Future Volume (vph)	60	414	138	133	366	278	218	57	133	138	115	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1671		1694	1692	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.40	1.00		0.62	1.00	
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	767	1671		1108	1692	
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.87	0.87	0.87	0.90	0.90	0.90
Adj. Flow (vph)	63	436	145	145	398	302	251	66	153	153	128	56
RTOR Reduction (vph)	0	0	96	0	0	186	0	95	0	0	22	0
Lane Group Flow (vph)	63	436	49	145	398	116	251	124	0	153	162	0
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	3.6	23.6	23.6	6.8	26.8	26.8	26.6	26.6		12.4	12.4	
Effective Green, g (s)	5.6	25.6	25.6	8.8	28.8	28.8	28.6	28.6		14.4	14.4	
Actuated g/C Ratio	0.07	0.34	0.34	0.12	0.38	0.38	0.38	0.38		0.19	0.19	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	122	596	484	195	659	571	435	637		212	324	
v/s Ratio Prot	0.04	c0.25		c0.09	c0.23		c0.08	0.07			0.10	
v/s Ratio Perm			0.03			0.08	0.14			c0.14		
v/c Ratio	0.52	0.73	0.10	0.74	0.60	0.20	0.58	0.20		0.72	0.50	
Uniform Delay, d1	33.4	21.7	16.9	32.0	18.5	15.4	17.1	15.5		28.4	27.1	
Progression Factor	1.00	1.00	1.00	1.02	0.61	0.91	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	7.7	0.4	9.4	3.0	0.6	1.9	0.2		9.8	0.4	
Delay (s)	34.9	29.4	17.3	42.1	14.3	14.7	18.9	15.7		38.2	27.5	
Level of Service	C	C	B	D	B	B	B	B		D	C	
Approach Delay (s)		27.2			19.2			17.4			32.4	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			75.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			63.7%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	343	299	166	384	52	319	22	165	57	28	29
Future Volume (vph)	58	343	299	166	384	52	319	22	165	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.930			0.982			0.868			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1717	0	1770	1772	0	1719	1718	0	1805	1727	0
Flt Permitted	0.305			0.142			0.950			0.950		
Satd. Flow (perm)	563	1717	0	265	1772	0	1719	1718	0	1805	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			9			179			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.92	0.92	0.92	0.77	0.77	0.77
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Adj. Flow (vph)	67	394	344	184	427	58	347	24	179	74	36	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	738	0	184	485	0	347	203	0	74	74	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	15.9		10.0	10.0		10.0	8.2	
Total Split (s)	14.0	25.0		14.0	25.0		22.0	22.0		14.0	14.0	
Total Split (%)	18.7%	33.3%		18.7%	33.3%		29.3%	29.3%		18.7%	18.7%	
Maximum Green (s)	10.0	19.1		10.0	19.1		16.0	16.0		8.0	9.8	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	0.2	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	2.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					6							
Act Effct Green (s)	34.2	28.1		39.5	32.1		17.6	15.7		8.9	8.5	
Actuated g/C Ratio	0.46	0.37		0.53	0.43		0.23	0.21		0.12	0.11	
v/c Ratio	0.19	1.09		0.60	0.63		0.86	0.41		0.35	0.32	
Control Delay	9.4	79.4		20.0	25.2		50.5	8.5		34.7	21.2	

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	79.4		20.0	25.2		50.5	8.5		34.7	21.2	
LOS	A	E		B	C		D	A		C	C	
Approach Delay		73.5			23.8			35.0			27.9	
Approach LOS		E			C			C			C	
Queue Length 50th (ft)	11	~399		43	183		154	9		32	16	
Queue Length 95th (ft)	m26	#613		98	#377		#293	59		58	40	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	443	679		344	764		412	548		240	303	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	1.09		0.53	0.63		0.84	0.37		0.31	0.24	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

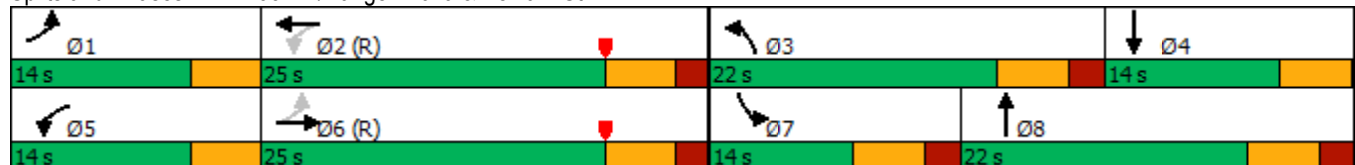
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St



HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

Existing Conditions

Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	343	299	166	384	52	319	22	165	57	28	29
Future Volume (vph)	58	343	299	166	384	52	319	22	165	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	2.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.98		1.00	0.87		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1717		1770	1772		1719	1717		1805	1727	
Flt Permitted	0.30	1.00		0.14	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	562	1717		264	1772		1719	1717		1805	1727	
Peak-hour factor, PHF	0.87	0.87	0.87	0.90	0.90	0.90	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	67	394	344	184	427	58	347	24	179	74	36	38
RTOR Reduction (vph)	0	37	0	0	5	0	0	142	0	0	34	0
Lane Group Flow (vph)	67	701	0	184	480	0	347	61	0	74	40	0
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Actuated Green, G (s)	30.2	25.0		36.6	28.2		15.6	13.7		6.0	5.9	
Effective Green, g (s)	30.2	26.9		36.6	30.1		17.6	15.7		8.0	7.9	
Actuated g/C Ratio	0.40	0.36		0.49	0.40		0.23	0.21		0.11	0.11	
Clearance Time (s)	4.0	5.9		4.0	5.9		6.0	6.0		6.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	308	615		297	711		403	359		192	181	
v/s Ratio Prot	0.02	c0.41		c0.07	0.27		c0.20	0.04		0.04	c0.02	
v/s Ratio Perm	0.07			0.23								
v/c Ratio	0.22	1.14		0.62	0.67		0.86	0.17		0.39	0.22	
Uniform Delay, d1	14.5	24.1		15.3	18.4		27.5	24.3		31.2	30.7	
Progression Factor	0.79	0.64		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	78.7		2.7	5.1		16.4	0.1		0.5	0.2	
Delay (s)	11.6	94.0		18.0	23.5		43.9	24.4		31.7	31.0	
Level of Service	B	F		B	C		D	C		C	C	
Approach Delay (s)		87.2			22.0			36.7			31.3	
Approach LOS		F			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			50.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			79.9%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	381	1	34	530	14	2	0	92	49	0	5
Future Volume (vph)	2	381	1	34	530	14	2	0	92	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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					0.996			0.868			0.988	
Flt Protected	0.950			0.950				0.999			0.957	
Satd. Flow (prot)	1771	1846	0	1339	1770	0	0	1489	0	0	1689	0
Flt Permitted	0.418			0.389				0.994			0.684	
Satd. Flow (perm)	779	1846	0	548	1770	0	0	1482	0	0	1207	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)					2							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.73	0.73	0.73	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Adj. Flow (vph)	2	393	1	36	564	15	3	0	126	69	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	394	0	36	579	0	0	129	0	0	76	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	27.1	27.1		30.2	30.3			12.3			11.8	
Actuated g/C Ratio	0.55	0.55		0.61	0.61			0.25			0.24	
v/c Ratio	0.00	0.39		0.08	0.53			0.35			0.26	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions
Weekday Evening Peak Hour

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.0	14.7		8.4	12.1			23.8			23.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.0	14.7		8.4	12.1			23.8			23.6	
LOS	B	B		A	B			C			C	
Approach Delay		14.7			11.9			23.8			23.6	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	0	44		3	74			21			12	
Queue Length 95th (ft)	6	292		27	383			98			63	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	664	1575		629	1637			728			593	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.00	0.25		0.06	0.35			0.18			0.13	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 49.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 45.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

Existing Conditions
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	381	1	34	530	14	2	0	92	49	0	5
Future Volume (vph)	2	381	1	34	530	14	2	0	92	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1845		1339	1770			1489			1687	
Flt Permitted	0.42	1.00		0.39	1.00			0.99			0.68	
Satd. Flow (perm)	779	1845		548	1770			1482			1206	
Peak-hour factor, PHF	0.97	0.97	0.97	0.94	0.94	0.94	0.73	0.73	0.73	0.71	0.71	0.71
Adj. Flow (vph)	2	393	1	36	564	15	3	0	126	69	0	7
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	394	0	36	578	0	0	129	0	0	76	0
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	24.0	24.0		29.7	29.7			9.5			9.5	
Effective Green, g (s)	25.5	25.5		30.2	31.2			10.0			10.0	
Actuated g/C Ratio	0.46	0.46		0.55	0.57			0.18			0.18	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	360	853		339	1002			268			218	
v/s Ratio Prot		0.21		0.01	c0.33							
v/s Ratio Perm	0.00			0.05				c0.09			0.06	
v/c Ratio	0.01	0.46		0.11	0.58			0.48			0.35	
Uniform Delay, d1	8.0	10.1		6.3	7.7			20.2			19.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.1		0.1	0.5			1.4			1.0	
Delay (s)	8.0	10.3		6.4	8.2			21.6			20.7	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		10.2			8.1			21.6			20.7	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			11.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			55.1			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			45.1%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
4: Pelham St & Baldwin St

Existing Conditions
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	537	727	20	14	29
Future Vol, veh/h	15	537	727	20	14	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	584	790	22	15	32
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	812	0	-	0	1417	801
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	616	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	814	-	-	-	151	384
Stage 1	-	-	-	-	442	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	814	-	-	-	147	384
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	539	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		22.5		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	814	-	-	-	252	
HCM Lane V/C Ratio	0.02	-	-	-	0.185	
HCM Control Delay (s)	9.5	0	-	-	22.5	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

HCM 6th TWSC
5: Cross St & Proposed Site Driveway

Existing Conditions
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	386	0	0	296
Future Vol, veh/h	0	0	386	0	0	296
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	97	97
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	0	0	420	0	0	305
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	725	420	0	0	420	0
Stage 1	420	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	392	633	-	-	1139	-
Stage 1	663	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	392	633	-	-	1139	-
Mov Cap-2 Maneuver	392	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1139	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: Cross St & Hampshire Rd

Existing Conditions
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	33					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	205	197	122	255	211	157
Future Vol, veh/h	205	197	122	255	211	157
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	223	214	133	277	229	171
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	437	0	873	330
Stage 1	-	-	-	-	330	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1123	-	321	712
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	582	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1123	-	276	712
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	501	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.8		100.1	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	374	-	-	1123	-	
HCM Lane V/C Ratio	1.07	-	-	0.118	-	
HCM Control Delay (s)	100.1	-	-	8.6	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	14	-	-	0.4	-	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 No-Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	465	155	144	403	301	240	62	144	149	125	55
Future Volume (vph)	67	465	155	144	403	301	240	62	144	149	125	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.895			0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1671	0	1694	1691	0
Flt Permitted	0.950			0.950			0.384			0.619		
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	734	1671	0	1104	1691	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			327		157			27	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Adj. Flow (vph)	71	489	163	157	438	327	261	67	157	162	136	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	489	163	157	438	327	261	224	0	162	196	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0	30.0	12.0	30.0	30.0	13.0	33.0		20.0	20.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%	40.0%	17.3%	44.0%		26.7%	26.7%	
Maximum Green (s)	6.0	24.0	24.0	6.0	24.0	24.0	7.0	27.0		14.0	14.0	
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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
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	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					5	5						
Act Effct Green (s)	7.8	25.9	25.9	8.8	29.0	29.0	28.4	28.4		14.7	14.7	
Actuated g/C Ratio	0.10	0.35	0.35	0.12	0.39	0.39	0.38	0.38		0.20	0.20	
v/c Ratio	0.42	0.81	0.26	0.81	0.66	0.42	0.63	0.31		0.75	0.56	
Control Delay	39.3	35.2	2.2	60.6	18.1	3.5	24.5	6.7		51.1	29.5	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 No-Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	39.3	35.2	2.2	60.6	18.1	3.5	24.5	6.7		51.1	29.5	
LOS	D	D	A	E	B	A	C	A		D	C	
Approach Delay		28.2			20.1			16.3			39.3	
Approach LOS		C			C			B			D	
Queue Length 50th (ft)	31	203	0	66	135	27	85	19		70	69	
Queue Length 95th (ft)	70	#359	19	m#132	m187	m36	143	63		#156	132	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	176	609	636	194	666	777	417	743		235	381	
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	0.40	0.80	0.26	0.81	0.66	0.42	0.63	0.30		0.69	0.51	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 24.5

Intersection LOS: C

Intersection Capacity Utilization 69.0%

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.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St

			
Ø1	Ø2 (R)	Ø3	Ø4
12 s	30 s	13 s	20 s
			
Ø5	Ø6 (R)	Ø7	Ø8
12 s	30 s	33 s	

HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

2032 No-Build Conditions

Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	465	155	144	403	301	240	62	144	149	125	55
Future Volume (vph)	67	465	155	144	403	301	240	62	144	149	125	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1670		1694	1691	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.38	1.00		0.62	1.00	
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	735	1670		1103	1691	
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	489	163	157	438	327	261	67	157	162	136	60
RTOR Reduction (vph)	0	0	107	0	0	206	0	98	0	0	22	0
Lane Group Flow (vph)	71	489	56	157	438	121	261	126	0	162	174	0
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	4.9	23.8	23.8	6.8	25.7	25.7	26.4	26.4		12.7	12.7	
Effective Green, g (s)	6.9	25.8	25.8	8.8	27.7	27.7	28.4	28.4		14.7	14.7	
Actuated g/C Ratio	0.09	0.34	0.34	0.12	0.37	0.37	0.38	0.38		0.20	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	151	601	488	195	634	549	418	632		216	331	
v/s Ratio Prot	0.04	c0.28		c0.09	0.26		c0.08	0.08			0.10	
v/s Ratio Perm			0.04			0.08	0.16			c0.15		
v/c Ratio	0.47	0.81	0.11	0.81	0.69	0.22	0.62	0.20		0.75	0.53	
Uniform Delay, d1	32.3	22.4	16.8	32.3	20.0	16.2	17.4	15.7		28.4	27.0	
Progression Factor	1.00	1.00	1.00	1.05	0.65	0.91	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	11.5	0.5	15.1	4.4	0.7	2.9	0.2		12.2	0.7	
Delay (s)	33.2	33.9	17.3	49.0	17.5	15.4	20.3	15.8		40.6	27.7	
Level of Service	C	C	B	D	B	B	C	B		D	C	
Approach Delay (s)		30.1			22.1			18.2			33.6	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay	25.3			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.77											
Actuated Cycle Length (s)	75.0			Sum of lost time (s)			16.0					
Intersection Capacity Utilization	69.0%			ICU Level of Service			C					
Analysis Period (min)	15											

c Critical Lane Group

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 No-Build Conditions

Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	380	331	180	419	52	348	22	179	57	28	29
Future Volume (vph)	59	380	331	180	419	52	348	22	179	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.930			0.983			0.866			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1717	0	1770	1773	0	1719	1712	0	1805	1727	0
Flt Permitted	0.310			0.137			0.950			0.950		
Satd. Flow (perm)	572	1717	0	255	1773	0	1719	1712	0	1805	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			8			195			32	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Adj. Flow (vph)	64	413	360	196	455	57	378	24	195	62	30	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	773	0	196	512	0	378	219	0	62	62	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	15.9		10.0	10.0		10.0	8.2	
Total Split (s)	14.0	25.0		14.0	25.0		22.0	22.0		14.0	14.0	
Total Split (%)	18.7%	33.3%		18.7%	33.3%		29.3%	29.3%		18.7%	18.7%	
Maximum Green (s)	10.0	19.1		10.0	19.1		16.0	16.0		8.0	9.8	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	0.2	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	2.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					6							
Act Effct Green (s)	35.5	29.5		41.8	35.7		18.0	16.7		8.7	8.2	
Actuated g/C Ratio	0.47	0.39		0.56	0.48		0.24	0.22		0.12	0.11	
v/c Ratio	0.18	1.09		0.62	0.60		0.92	0.41		0.30	0.29	
Control Delay	9.1	78.1		20.2	22.8		58.3	8.2		33.7	21.0	

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 No-Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.1	78.1		20.2	22.8		58.3	8.2		33.7	21.0	
LOS	A	E		C	C		E	A		C	C	
Approach Delay		72.8			22.1			39.9			27.3	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	10	~415		46	196		172	9		27	13	
Queue Length 95th (ft)	m22	m#672		106	#401		#329	61		61	45	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	458	710		350	847		412	559		240	298	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.14	1.09		0.56	0.60		0.92	0.39		0.26	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 45.8

Intersection LOS: D

Intersection Capacity Utilization 86.1%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

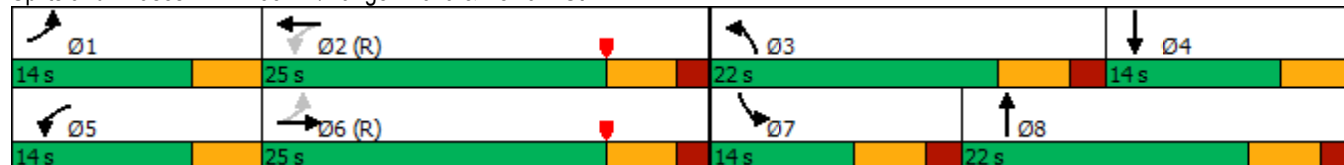
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St



HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

2032 No-Build Conditions
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	380	331	180	419	52	348	22	179	57	28	29
Future Volume (vph)	59	380	331	180	419	52	348	22	179	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	2.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.98		1.00	0.87		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1717		1770	1774		1719	1713		1805	1726	
Flt Permitted	0.31	1.00		0.14	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	572	1717		255	1774		1719	1713		1805	1726	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	413	360	196	455	57	378	24	195	62	30	32
RTOR Reduction (vph)	0	37	0	0	5	0	0	152	0	0	29	0
Lane Group Flow (vph)	64	736	0	196	507	0	378	67	0	62	33	0
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Actuated Green, G (s)	29.3	25.2		37.8	29.7		16.0	14.7		4.6	5.1	
Effective Green, g (s)	29.3	27.1		37.8	31.6		18.0	16.7		6.6	7.1	
Actuated g/C Ratio	0.39	0.36		0.50	0.42		0.24	0.22		0.09	0.09	
Clearance Time (s)	4.0	5.9		4.0	5.9		6.0	6.0		6.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	287	620		302	747		412	381		158	163	
v/s Ratio Prot	0.01	c0.43		c0.07	0.29		c0.22	c0.04		0.03	0.02	
v/s Ratio Perm	0.07			0.25								
v/c Ratio	0.22	1.19		0.65	0.68		0.92	0.18		0.39	0.20	
Uniform Delay, d1	15.0	23.9		15.1	17.6		27.8	23.6		32.3	31.3	
Progression Factor	0.83	0.64		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	96.2		3.6	4.9		24.5	0.1		0.6	0.2	
Delay (s)	12.6	111.6		18.7	22.5		52.3	23.7		32.9	31.6	
Level of Service	B	F		B	C		D	C		C	C	
Approach Delay (s)		104.0			21.5			41.8			32.2	
Approach LOS		F			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			57.9			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			86.1%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 No-Build Conditions

Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	408	3	48	568	14	6	0	123	49	0	5
Future Volume (vph)	2	408	3	48	568	14	6	0	123	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.999			0.996			0.872			0.988	
Flt Protected	0.950			0.950				0.998			0.956	
Satd. Flow (prot)	1771	1844	0	1339	1770	0	0	1497	0	0	1687	0
Flt Permitted	0.389			0.335				0.988			0.755	
Satd. Flow (perm)	725	1844	0	472	1770	0	0	1482	0	0	1332	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)					2							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Adj. Flow (vph)	2	421	3	51	604	15	7	0	134	53	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	424	0	51	619	0	0	141	0	0	58	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	25.6	25.6		32.8	31.6			12.9			11.9	
Actuated g/C Ratio	0.46	0.46		0.58	0.56			0.23			0.21	
v/c Ratio	0.01	0.50		0.13	0.62			0.41			0.20	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 No-Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.5	17.5		8.4	13.6			26.9			24.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.5	17.5		8.4	13.6			26.9			24.8	
LOS	B	B		A	B			C			C	
Approach Delay		17.5			13.2			26.9			24.8	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	0	89		5	88			32			12	
Queue Length 95th (ft)	6	325		36	428			143			69	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	582	1480		548	1625			617			554	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.00	0.29		0.09	0.38			0.23			0.10	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 56.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

2032 No-Build Conditions
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	408	3	48	568	14	6	0	123	49	0	5
Future Volume (vph)	2	408	3	48	568	14	6	0	123	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1844		1339	1771			1496			1688	
Flt Permitted	0.39	1.00		0.33	1.00			0.99			0.76	
Satd. Flow (perm)	725	1844		472	1771			1481			1333	
Peak-hour factor, PHF	0.97	0.97	0.97	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	421	3	51	604	15	7	0	134	53	0	5
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	424	0	51	618	0	0	141	0	0	58	0
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	23.9	23.9		31.5	31.5			12.3			12.3	
Effective Green, g (s)	25.4	25.4		32.0	33.0			12.8			12.8	
Actuated g/C Ratio	0.42	0.42		0.54	0.55			0.21			0.21	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	307	783		319	977			317			285	
v/s Ratio Prot		0.23		0.01	c0.35							
v/s Ratio Perm	0.00			0.07				c0.10			0.04	
v/c Ratio	0.01	0.54		0.16	0.63			0.44			0.20	
Uniform Delay, d1	9.9	12.8		7.5	9.2			20.4			19.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4		0.2	1.0			1.0			0.4	
Delay (s)	9.9	13.3		7.8	10.2			21.4			19.7	
Level of Service	A	B		A	B			C			B	
Approach Delay (s)		13.2			10.0			21.4			19.7	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			59.8			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			62.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	598	794	20	14	29
Future Vol, veh/h	15	598	794	20	14	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	650	863	22	15	32
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	885	0	-	0	1556	874
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	765	-	-	-	124	349
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	502	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	765	-	-	-	120	349
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	502	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		26.3		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	765	-	-	-	215	
HCM Lane V/C Ratio	0.021	-	-	-	0.217	
HCM Control Delay (s)	9.8	0	-	-	26.3	
HCM Lane LOS	A	A	-	-	D	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	

HCM 6th TWSC
5: Cross St & Proposed Site Driveway

2032 No-Build Conditions
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	420	0	0	321
Future Vol, veh/h	0	0	420	0	0	321
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	97	97
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	0	0	457	0	0	331
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	788	457	0	0	457	0
Stage 1	457	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	360	604	-	-	1104	-
Stage 1	638	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	360	604	-	-	1104	-
Mov Cap-2 Maneuver	360	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1104	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection						
Int Delay, s/veh	45.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	215	201	132	268	214	171
Future Vol, veh/h	215	201	132	268	214	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	218	143	291	233	186
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	452	0	920	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	577	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1109	-	301	700
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	562	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1109	-	255	700
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	475	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.9		139	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	355	-	-	1109	-	
HCM Lane V/C Ratio	1.179	-	-	0.129	-	
HCM Control Delay (s)	139	-	-	8.7	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	17.1	-	-	0.4	-	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Future Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.902			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1679	0	1694	1697	0
Flt Permitted	0.950			0.950			0.365			0.610		
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	698	1679	0	1088	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			360		148			25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Adj. Flow (vph)	72	489	163	157	438	360	261	83	157	174	150	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	489	163	157	438	360	261	240	0	174	211	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0	30.0	12.0	30.0	30.0	13.0	33.0		20.0	20.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%	40.0%	17.3%	44.0%		26.7%	26.7%	
Maximum Green (s)	6.0	24.0	24.0	6.0	24.0	24.0	7.0	27.0		14.0	14.0	
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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
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	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					5	5						
Act Effct Green (s)	7.7	25.7	25.7	8.6	28.6	28.6	28.8	28.8		15.1	15.1	
Actuated g/C Ratio	0.10	0.34	0.34	0.11	0.38	0.38	0.38	0.38		0.20	0.20	
v/c Ratio	0.43	0.82	0.26	0.83	0.67	0.46	0.63	0.33		0.79	0.58	
Control Delay	39.7	35.8	2.2	62.5	18.3	3.5	24.7	7.8		55.6	30.7	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	39.7	35.8	2.2	62.5	18.3	3.5	24.7	7.8		55.6	30.7	
LOS	D	D	A	E	B	A	C	A		E	C	
Approach Delay		28.6			20.0			16.6			42.0	
Approach LOS		C			B			B			D	
Queue Length 50th (ft)	32	203	0	66	139	29	85	27		76	77	
Queue Length 95th (ft)	71	#359	19	m#125	m179	m35	143	73		#174	143	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	175	606	634	189	661	794	412	745		232	381	
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	0.41	0.81	0.26	0.83	0.66	0.45	0.63	0.32		0.75	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 25.1

Intersection LOS: C

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	30 s	13 s	20 s
 Ø5	 Ø6 (R)	 Ø8	
12 s	30 s	33 s	

HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

2032 Build Conditions

Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Future Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1679		1694	1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.37	1.00		0.61	1.00	
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	698	1679		1087	1696	
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	489	163	157	438	360	261	83	157	174	150	61
RTOR Reduction (vph)	0	0	107	0	0	228	0	91	0	0	20	0
Lane Group Flow (vph)	72	489	56	157	438	132	261	149	0	174	191	0
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	4.8	23.6	23.6	6.6	25.4	25.4	26.8	26.8		13.1	13.1	
Effective Green, g (s)	6.8	25.6	25.6	8.6	27.4	27.4	28.8	28.8		15.1	15.1	
Actuated g/C Ratio	0.09	0.34	0.34	0.11	0.37	0.37	0.38	0.38		0.20	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	149	596	484	190	627	543	412	644		218	341	
v/s Ratio Prot	0.04	c0.28		c0.09	0.26		c0.08	0.09			0.11	
v/s Ratio Perm			0.04			0.09	0.16			c0.16		
v/c Ratio	0.48	0.82	0.11	0.83	0.70	0.24	0.63	0.23		0.80	0.56	
Uniform Delay, d1	32.4	22.6	16.9	32.5	20.3	16.6	17.2	15.6		28.5	27.0	
Progression Factor	1.00	1.00	1.00	1.06	0.66	0.91	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	12.0	0.5	17.1	4.4	0.7	3.2	0.2		17.0	1.3	
Delay (s)	33.3	34.6	17.4	51.5	17.8	15.7	20.3	15.8		45.5	28.2	
Level of Service	C	C	B	D	B	B	C	B		D	C	
Approach Delay (s)		30.6			22.6			18.2			36.0	
Approach LOS		C			C			B			D	
Intersection Summary												
HCM 2000 Control Delay			26.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			69.8%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Future Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.930			0.984			0.866			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1717	0	1770	1775	0	1719	1712	0	1805	1727	0
Flt Permitted	0.301			0.137			0.950			0.950		
Satd. Flow (perm)	555	1717	0	255	1775	0	1719	1712	0	1805	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			8			195			32	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Adj. Flow (vph)	64	417	367	196	463	57	403	24	195	62	30	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	784	0	196	520	0	403	219	0	62	62	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	15.9		10.0	10.0		10.0	8.2	
Total Split (s)	14.0	25.0		14.0	25.0		22.0	22.0		14.0	14.0	
Total Split (%)	18.7%	33.3%		18.7%	33.3%		29.3%	29.3%		18.7%	18.7%	
Maximum Green (s)	10.0	19.1		10.0	19.1		16.0	16.0		8.0	9.8	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	0.2	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	2.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					6							
Act Effct Green (s)	35.5	29.5		41.8	35.7		18.0	16.7		8.7	8.2	
Actuated g/C Ratio	0.47	0.39		0.56	0.48		0.24	0.22		0.12	0.11	
v/c Ratio	0.18	1.10		0.62	0.61		0.98	0.41		0.30	0.29	
Control Delay	9.2	83.2		20.2	23.1		70.6	8.2		33.7	21.0	

FO

F:\P2024\0957\B10\Traffic\CA\195 units\AM Increased Volume Files\11 Cross Street Increased Volumes.syn

Synchro 11 Report

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Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.2	83.2		20.2	23.1		70.6	8.2		33.7	21.0	
LOS	A	F		C	C		E	A		C	C	
Approach Delay		77.6			22.3			48.6			27.3	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	10	~426		46	201		187	9		27	13	
Queue Length 95th (ft)	m22	m#682		106	#409		#358	61		61	45	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	451	711		350	848		412	559		240	298	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.14	1.10		0.56	0.61		0.98	0.39		0.26	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 50.0

Intersection LOS: D

Intersection Capacity Utilization 88.1%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

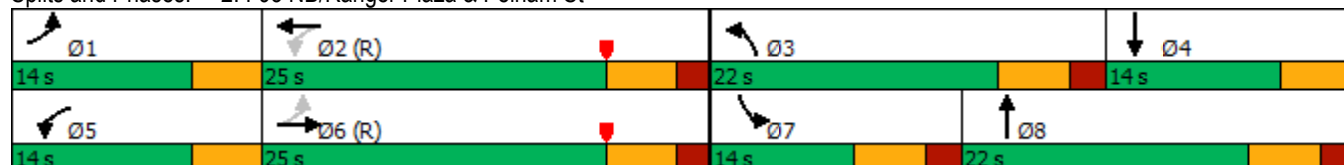
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St



HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions

Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Future Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	2.2	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.98		1.00	0.87		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1716		1770	1774		1719	1713		1805	1726	
Flt Permitted	0.30	1.00		0.14	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	554	1716		255	1774		1719	1713		1805	1726	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	417	367	196	463	57	403	24	195	62	30	32
RTOR Reduction (vph)	0	38	0	0	5	0	0	152	0	0	29	0
Lane Group Flow (vph)	64	746	0	196	515	0	403	67	0	62	33	0
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2								
Actuated Green, G (s)	29.3	25.2		37.8	29.7		16.0	14.7		4.6	5.1	
Effective Green, g (s)	29.3	27.1		37.8	31.6		18.0	16.7		6.6	7.1	
Actuated g/C Ratio	0.39	0.36		0.50	0.42		0.24	0.22		0.09	0.09	
Clearance Time (s)	4.0	5.9		4.0	5.9		6.0	6.0		6.0	4.2	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	281	620		302	747		412	381		158	163	
v/s Ratio Prot	0.01	c0.43		c0.07	0.29		c0.23	c0.04		0.03	0.02	
v/s Ratio Perm	0.08			0.25								
v/c Ratio	0.23	1.20		0.65	0.69		0.98	0.18		0.39	0.20	
Uniform Delay, d1	15.1	23.9		15.1	17.7		28.3	23.6		32.3	31.3	
Progression Factor	0.84	0.66		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	102.8		3.6	5.2		38.0	0.1		0.6	0.2	
Delay (s)	12.7	118.5		18.7	22.9		66.3	23.7		32.9	31.6	
Level of Service	B	F		B	C		E	C		C	C	
Approach Delay (s)		110.5			21.7			51.3			32.2	
Approach LOS		F			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			62.9			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			88.1%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Future Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.999			0.996			0.872			0.988	
Flt Protected	0.950			0.950				0.998			0.956	
Satd. Flow (prot)	1771	1844	0	1339	1770	0	0	1497	0	0	1687	0
Flt Permitted	0.388			0.335				0.988			0.753	
Satd. Flow (perm)	723	1844	0	472	1770	0	0	1482	0	0	1328	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)					2							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Adj. Flow (vph)	2	422	3	51	605	15	7	0	134	53	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	425	0	51	620	0	0	141	0	0	58	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	25.8	25.8		33.0	31.8			12.9			11.9	
Actuated g/C Ratio	0.46	0.46		0.59	0.56			0.23			0.21	
v/c Ratio	0.01	0.50		0.13	0.62			0.41			0.21	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.5	17.4		8.4	13.5			27.1			25.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.5	17.4		8.4	13.5			27.1			25.0	
LOS	B	B		A	B			C			C	
Approach Delay		17.4			13.1			27.1			25.0	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	0	89		5	88			32			13	
Queue Length 95th (ft)	6	325		36	428			145			69	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	579	1478		548	1623			615			551	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.00	0.29		0.09	0.38			0.23			0.11	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 56.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Future Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1844		1339	1771			1496			1688	
Flt Permitted	0.39	1.00		0.33	1.00			0.99			0.75	
Satd. Flow (perm)	723	1844		472	1771			1481			1330	
Peak-hour factor, PHF	0.97	0.97	0.97	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	422	3	51	605	15	7	0	134	53	0	5
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	425	0	51	619	0	0	141	0	0	58	0
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	24.1	24.1		31.7	31.7			12.3			12.3	
Effective Green, g (s)	25.6	25.6		32.2	33.2			12.8			12.8	
Actuated g/C Ratio	0.43	0.43		0.54	0.55			0.21			0.21	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	308	786		319	979			315			283	
v/s Ratio Prot		0.23		0.01	c0.35							
v/s Ratio Perm	0.00			0.07				c0.10			0.04	
v/c Ratio	0.01	0.54		0.16	0.63			0.45			0.20	
Uniform Delay, d1	9.9	12.8		7.5	9.2			20.5			19.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4		0.2	1.0			1.0			0.4	
Delay (s)	9.9	13.2		7.8	10.2			21.5			19.8	
Level of Service	A	B		A	B			C			B	
Approach Delay (s)		13.2			10.0			21.5			19.8	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			62.8%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
4: Pelham St & Baldwin St

10/13/2025

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	607	824	20	14	29
Future Vol, veh/h	15	607	824	20	14	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	660	896	22	15	32

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	918	0	0 1599 907
Stage 1	-	-	- 907 -
Stage 2	-	-	- 692 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	743	-	- 117 334
Stage 1	-	-	- 394 -
Stage 2	-	-	- 497 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	743	-	- 113 334
Mov Cap-2 Maneuver	-	-	- 113 -
Stage 1	-	-	- 381 -
Stage 2	-	-	- 497 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	27.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	743	-	-	-	204
HCM Lane V/C Ratio	0.022	-	-	-	0.229
HCM Control Delay (s)	10	0	-	-	27.8
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

HCM 6th TWSC
11: Cross St & Proposed Site Driveway

2032 Build Conditions
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	1	420	45	2	321
Future Vol, veh/h	25	1	420	45	2	321
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	97	97
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	27	1	457	49	2	331
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	817	482	0	0	506	0
Stage 1	482	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	346	584	-	-	1059	-
Stage 1	621	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	345	584	-	-	1059	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	16.2		0		0.1	
HCM LOS	C					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)		-	-	351	1059	-
HCM Lane V/C Ratio		-	-	0.081	0.002	-
HCM Control Delay (s)		-	-	16.2	8.4	0
HCM Lane LOS		-	-	C	A	A
HCM 95th %tile Q(veh)		-	-	0.3	0	-

Intersection						
Int Delay, s/veh	47.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	215	202	133	268	215	171
Future Vol, veh/h	215	202	133	268	215	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	220	145	291	234	186
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	454	0	925	344
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	581	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1107	-	299	699
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	559	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1107	-	252	699
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	472	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.9		144.2		
HCM LOS				F		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	352	-	-	1107	-	
HCM Lane V/C Ratio	1.192	-	-	0.131	-	
HCM Control Delay (s)	144.2	-	-	8.7	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	17.5	-	-	0.4	-	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Future Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	14	12	16	11	11	11
Storage Length (ft)	150		150	150		150	165		0	100		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			125			75			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		0.902			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1679	0	1694	1697	0
Flt Permitted	0.950			0.950			0.365			0.610		
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	698	1679	0	1088	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			360		148			25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1253			1372			728			489	
Travel Time (s)		28.5			31.2			16.5			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Adj. Flow (vph)	72	489	163	157	438	360	261	83	157	174	150	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	489	163	157	438	360	261	240	0	174	211	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	12.0	12.0	4.0	12.0	12.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	18.0	18.0	10.0	30.0	30.0	10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0	30.0	12.0	30.0	30.0	13.0	33.0		20.0	20.0	
Total Split (%)	16.0%	40.0%	40.0%	16.0%	40.0%	40.0%	17.3%	44.0%		26.7%	26.7%	
Maximum Green (s)	6.0	24.0	24.0	6.0	24.0	24.0	7.0	27.0		14.0	14.0	
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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
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	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					17.0	17.0						
Pedestrian Calls (#/hr)					5	5						
Act Effct Green (s)	7.7	25.7	25.7	8.6	28.6	28.6	28.8	28.8		15.1	15.1	
Actuated g/C Ratio	0.10	0.34	0.34	0.11	0.38	0.38	0.38	0.38		0.20	0.20	
v/c Ratio	0.43	0.82	0.26	0.83	0.67	0.46	0.63	0.33		0.79	0.58	
Control Delay	39.7	35.8	2.2	62.9	23.2	4.6	24.7	7.8		55.6	30.7	

Lanes, Volumes, Timings
1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	39.7	35.8	2.2	62.9	23.2	4.6	24.7	7.8		55.6	30.7	
LOS	D	D	A	E	C	A	C	A		E	C	
Approach Delay		28.6			22.7			16.6			42.0	
Approach LOS		C			C			B			D	
Queue Length 50th (ft)	32	203	0	77	143	20	85	27		76	77	
Queue Length 95th (ft)	71	#359	19	m#141	m195	m35	143	73		#174	143	
Internal Link Dist (ft)		1173			1292			648			409	
Turn Bay Length (ft)	150		150	150		150	165			100		
Base Capacity (vph)	175	606	634	189	661	794	412	745		232	381	
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	0.41	0.81	0.26	0.83	0.66	0.45	0.63	0.32		0.75	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: I-93 SB/Cross St & Pelham St

			
Ø1	Ø2 (R)	Ø3	Ø4
12 s	30 s	13 s	20 s
			
Ø5	Ø6 (R)	Ø8	
12 s	30 s	33 s	

HCM Signalized Intersection Capacity Analysis

1: I-93 SB/Cross St & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Future Volume (vph)	68	465	155	144	403	331	240	76	144	160	138	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	14	12	16	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	1749	1419	1662	1717	1487	1816	1679		1694	1696	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.37	1.00		0.61	1.00	
Satd. Flow (perm)	1646	1749	1419	1662	1717	1487	698	1679		1087	1696	
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	489	163	157	438	360	261	83	157	174	150	61
RTOR Reduction (vph)	0	0	107	0	0	228	0	91	0	0	20	0
Lane Group Flow (vph)	72	489	56	157	438	132	261	149	0	174	191	0
Heavy Vehicles (%)	6%	5%	10%	5%	7%	5%	6%	6%	0%	3%	3%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	4.8	23.6	23.6	6.6	25.4	25.4	26.8	26.8		13.1	13.1	
Effective Green, g (s)	6.8	25.6	25.6	8.6	27.4	27.4	28.8	28.8		15.1	15.1	
Actuated g/C Ratio	0.09	0.34	0.34	0.11	0.37	0.37	0.38	0.38		0.20	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0		2.0	2.0	
Lane Grp Cap (vph)	149	596	484	190	627	543	412	644		218	341	
v/s Ratio Prot	0.04	c0.28		c0.09	0.26		c0.08	0.09			0.11	
v/s Ratio Perm			0.04			0.09	0.16			c0.16		
v/c Ratio	0.48	0.82	0.11	0.83	0.70	0.24	0.63	0.23		0.80	0.56	
Uniform Delay, d1	32.4	22.6	16.9	32.5	20.3	16.6	17.2	15.6		28.5	27.0	
Progression Factor	1.00	1.00	1.00	1.01	0.88	1.30	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	12.0	0.5	18.5	4.8	0.8	3.2	0.2		17.0	1.3	
Delay (s)	33.3	34.6	17.4	51.2	22.6	22.3	20.3	15.8		45.5	28.2	
Level of Service	C	C	B	D	C	C	C	B		D	C	
Approach Delay (s)		30.6			27.2			18.2			36.0	
Approach LOS		C			C			B			D	
Intersection Summary												
HCM 2000 Control Delay			27.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			69.8%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Future Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	12	12	12	12	16	16	12	12	12
Storage Length (ft)	115		0	150		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			100			100			50		
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		0.930			0.984			0.866			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1717	0	1770	1775	0	1719	1712	0	1805	1727	0
Flt Permitted	0.355			0.111			0.625			0.909		
Satd. Flow (perm)	655	1717	0	207	1775	0	1131	1712	0	1727	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		83			12			195			32	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1372			1365			536			234	
Travel Time (s)		31.2			31.0			12.2			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Adj. Flow (vph)	64	417	367	196	463	57	403	24	195	62	30	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	784	0	196	520	0	403	219	0	62	62	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		5	2		3	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	15.9		8.0	15.9		10.0	10.0		10.0	10.0	
Total Split (s)	8.0	41.0		9.0	42.0		15.0	15.0		10.0	10.0	
Total Split (%)	10.7%	54.7%		12.0%	56.0%		20.0%	20.0%		13.3%	13.3%	
Maximum Green (s)	4.0	35.1		5.0	36.1		11.0	9.0		6.0	4.0	
Yellow Time (s)	4.0	3.9		4.0	3.9		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.9		0.0	-1.9		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Walk Time (s)					5.0							
Flash Dont Walk (s)					18.0							
Pedestrian Calls (#/hr)					6							
Act Effct Green (s)	41.7	37.4		45.9	41.1		21.3	13.3		12.5	6.1	
Actuated g/C Ratio	0.56	0.50		0.61	0.55		0.28	0.18		0.17	0.08	
v/c Ratio	0.15	0.87		0.76	0.53		0.91	0.47		0.21	0.36	
Control Delay	5.8	20.4		33.9	14.0		53.7	10.4		22.2	25.8	

Lanes, Volumes, Timings
2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.8	20.4		33.9	14.0		53.7	10.4		22.2	25.8	
LOS	A	C		C	B		D	B		C	C	
Approach Delay		19.3			19.5			38.4			24.0	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	5	147		36	154		168	10		21	13	
Queue Length 95th (ft)	m13	m#491		#154	245		#340	68		47	49	
Internal Link Dist (ft)		1292			1285			456			154	
Turn Bay Length (ft)	115			150			100			100		
Base Capacity (vph)	427	897		258	978		441	463		302	170	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.87		0.76	0.53		0.91	0.47		0.21	0.36	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 24.8

Intersection LOS: C

Intersection Capacity Utilization 88.1%

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.

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

Splits and Phases: 2: I-93 NB/Ranger Plaza & Pelham St



HCM Signalized Intersection Capacity Analysis

2: I-93 NB/Ranger Plaza & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Future Volume (vph)	59	384	338	180	426	52	371	22	179	57	28	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	12	16	16	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		2.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.98		1.00	0.87		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1716		1770	1774		1719	1713		1805	1726	
Flt Permitted	0.36	1.00		0.11	1.00		0.62	1.00		0.91	1.00	
Satd. Flow (perm)	655	1716		207	1774		1131	1713		1727	1726	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	417	367	196	463	57	403	24	195	62	30	32
RTOR Reduction (vph)	0	44	0	0	6	0	0	158	0	0	30	0
Lane Group Flow (vph)	64	740	0	196	514	0	403	61	0	62	32	0
Heavy Vehicles (%)	3%	2%	4%	2%	6%	0%	5%	0%	10%	0%	0%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	36.5	33.1		42.3	36.0		19.7	12.1		6.0	2.4	
Effective Green, g (s)	36.5	35.0		42.3	37.9		21.7	14.1		10.0	4.4	
Actuated g/C Ratio	0.49	0.47		0.56	0.51		0.29	0.19		0.13	0.06	
Clearance Time (s)	4.0	5.9		4.0	5.9		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	368	800		248	896		447	322		236	101	
v/s Ratio Prot	0.01	c0.43		c0.07	0.29		c0.18	0.04		0.02	0.02	
v/s Ratio Perm	0.08			0.38			0.08			0.02		
v/c Ratio	0.17	0.92		0.79	0.57		0.90	0.19		0.26	0.32	
Uniform Delay, d1	10.7	18.8		15.1	12.9		24.9	25.6		29.2	33.9	
Progression Factor	0.88	0.65		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	14.1		14.7	2.7		20.6	0.1		0.2	0.7	
Delay (s)	9.5	26.4		29.8	15.6		45.5	25.7		29.4	34.5	
Level of Service	A	C		C	B		D	C		C	C	
Approach Delay (s)		25.1			19.5			38.6			31.9	
Approach LOS		C			B			D			C	
Intersection Summary												
HCM 2000 Control Delay			27.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)				14.0		
Intersection Capacity Utilization			88.1%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Future Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Storage Length (ft)	100		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			75			25			25		
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		0.999			0.996			0.872			0.988	
Flt Protected	0.950			0.950				0.998			0.956	
Satd. Flow (prot)	1771	1844	0	1339	1770	0	0	1497	0	0	1687	0
Flt Permitted	0.388			0.335				0.988			0.753	
Satd. Flow (perm)	723	1844	0	472	1770	0	0	1482	0	0	1328	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)					2							
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		262			1253			689			840	
Travel Time (s)		6.0			28.5			15.7			19.1	
Peak Hour Factor	0.97	0.97	0.97	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Adj. Flow (vph)	2	422	3	51	605	15	7	0	134	53	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	425	0	51	620	0	0	141	0	0	58	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	15.5	15.5		9.5	15.5		10.5	10.5		10.5	10.5	
Total Split (s)	45.5	45.5		18.5	64.0		24.5	24.5		24.5	24.5	
Total Split (%)	41.2%	41.2%		16.7%	57.9%		22.2%	22.2%		22.2%	22.2%	
Maximum Green (s)	40.0	40.0		15.0	58.5		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		0.0	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-0.5	-1.5			-0.5			-0.5	
Total Lost Time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	25.8	25.8		33.0	31.8			12.9			11.9	
Actuated g/C Ratio	0.46	0.46		0.59	0.56			0.23			0.21	
v/c Ratio	0.01	0.50		0.13	0.62			0.41			0.21	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. 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)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	20%
Maximum Green (s)	18.0
Yellow Time (s)	3.0
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)	11.0
Pedestrian Calls (#/hr)	8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.5	17.4		8.4	13.5			27.1			25.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.5	17.4		8.4	13.5			27.1			25.0	
LOS	B	B		A	B			C			C	
Approach Delay		17.4			13.1			27.1			25.0	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	0	89		5	88			32			13	
Queue Length 95th (ft)	6	325		36	428			145			69	
Internal Link Dist (ft)		182			1173			609			760	
Turn Bay Length (ft)	100			225								
Base Capacity (vph)	579	1478		548	1623			615			551	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.00	0.29		0.09	0.38			0.23			0.11	

Intersection Summary

Area Type: Other

Cycle Length: 110.5

Actuated Cycle Length: 56.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Danton Dr/Aegean Dr & Pelham St

 Ø1	 Ø2	 Ø4	 Ø9
18.5 s	45.5 s	24.5 s	22 s
 Ø6		 Ø8	
64 s		24.5 s	

Lane Group	Ø9
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	

HCM Signalized Intersection Capacity Analysis

3: Danton Dr/Aegean Dr & Pelham St

2032 Build Conditions Optimized
Weekday Evening Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Future Volume (vph)	2	409	3	48	569	14	6	0	123	49	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		-3%			2%			2%			2%	
Total Lost time (s)	4.0	4.0		3.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.87			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.96	
Satd. Flow (prot)	1771	1844		1339	1771			1496			1688	
Flt Permitted	0.39	1.00		0.33	1.00			0.99			0.75	
Satd. Flow (perm)	723	1844		472	1771			1481			1330	
Peak-hour factor, PHF	0.97	0.97	0.97	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	422	3	51	605	15	7	0	134	53	0	5
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	425	0	51	619	0	0	141	0	0	58	0
Heavy Vehicles (%)	0%	1%	0%	29%	2%	14%	0%	0%	6%	2%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	24.1	24.1		31.7	31.7			12.3			12.3	
Effective Green, g (s)	25.6	25.6		32.2	33.2			12.8			12.8	
Actuated g/C Ratio	0.43	0.43		0.54	0.55			0.21			0.21	
Clearance Time (s)	5.5	5.5		3.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.0	2.0		3.0	2.0			3.0			3.0	
Lane Grp Cap (vph)	308	786		319	979			315			283	
v/s Ratio Prot		0.23		0.01	c0.35							
v/s Ratio Perm	0.00			0.07				c0.10			0.04	
v/c Ratio	0.01	0.54		0.16	0.63			0.45			0.20	
Uniform Delay, d1	9.9	12.8		7.5	9.2			20.5			19.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4		0.2	1.0			1.0			0.4	
Delay (s)	9.9	13.2		7.8	10.2			21.5			19.8	
Level of Service	A	B		A	B			C			B	
Approach Delay (s)		13.2			10.0			21.5			19.8	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			62.8%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Appendix H

Sight Distance Worksheets

Sight Distance Calculations

Cross Street, Methuen, MA

Inputs

Posted Speed Limit = 40 mph

Direction 1 = Cross Street NB 85% Speed = 42 mph Grade = -2 t = 2.5 s a = 11.2 ft/s²

Direction 2 = Cross Street SB 85% Speed = 43 mph Grade = 2 t = 2.5 s a = 11.2 ft/s²

Left: t_g = 7.5 s

Right: t_g = 6.5 s

SSD = Reaction Distance + Braking Distance

Reaction Distance = 1.47 x V x t

Braking Distance = V² / (30 x ((a/32.2) + G))

ISD = 1.47 x V x t_g

Where t = reaction time (sec)

t_g = time gap for minor road vehicle to enter the major road

V = travel speed (mph)

G = roadway grade

a = deceleration rate (ft/s²)

Calculations

	Reaction Distance (ft)	Brake Distance (ft)	SSD (ft)
Cross Street NB	154.4	179.4	335
Cross Street SB	158.0	167.6	325

For 42 mph:

Left Turn ISD = 463 ft
Right Turn ISD = 401 ft

For 43 mph:

Left Turn ISD = 474 ft
Right Turn ISD = 411 ft