

APPENDIX A

Intersection Crash Rate Calculation

APPENDIX B

Intersection Turning Movement Counts

June 7, 2012

Accurate Counts

978-664-2565

N/S Street : South Main Street
 E/W Street: Cape Road / Plaza Drive
 City/State : Milford, MA
 Weather : Cloudy

File Name : 07300001
 Site Code : 07300001
 Start Date : 6/7/2012
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	So Main St From North			So Main St From South			Plaza Dr From West			Cape Rd From Northwest			Int. Total
	Thru	Right	HdRt	Left	BrLt	Thru	HdLt	Left	Right	HdLt	BrRt	HdRt	
07:00 AM	59	1	6	3	72	82	1	1	0	21	93	1	340
07:15 AM	63	1	8	4	85	97	1	1	2	24	91	3	380
07:30 AM	51	1	10	7	79	98	4	3	1	35	112	3	404
07:45 AM	81	4	10	12	82	125	3	7	7	45	101	2	479
Total	254	7	34	26	318	402	9	12	10	125	397	9	1603
08:00 AM	77	5	14	5	80	107	5	4	4	32	118	4	455
08:15 AM	63	6	9	8	102	87	2	4	8	26	115	8	438
08:30 AM	95	6	15	9	69	93	6	7	6	21	92	3	422
08:45 AM	108	9	5	4	104	92	4	0	2	7	111	2	448
Total	343	26	43	26	355	379	17	15	20	86	436	17	1763
Grand Total	597	33	77	52	673	781	26	27	30	211	833	26	3366
Apprch %	84.4	4.7	10.9	3.5	44.7	51.9	31.3	32.5	36.1	19.7	77.9	2.4	
Total %	17.7	1	2.3	1.5	20	23.2	0.8	0.8	0.9	6.3	24.7	0.8	
Cars	579	32	72	51	653	756	25	25	26	204	803	25	3251
% Cars	97	97	93.5	98.1	97	96.8	96.2	92.6	86.7	96.7	96.4	96.2	96.6
Trucks	18	1	5	1	20	25	1	2	4	7	30	1	115
% Trucks	3	3	6.5	1.9	3	3.2	3.8	7.4	13.3	3.3	3.6	3.8	3.4

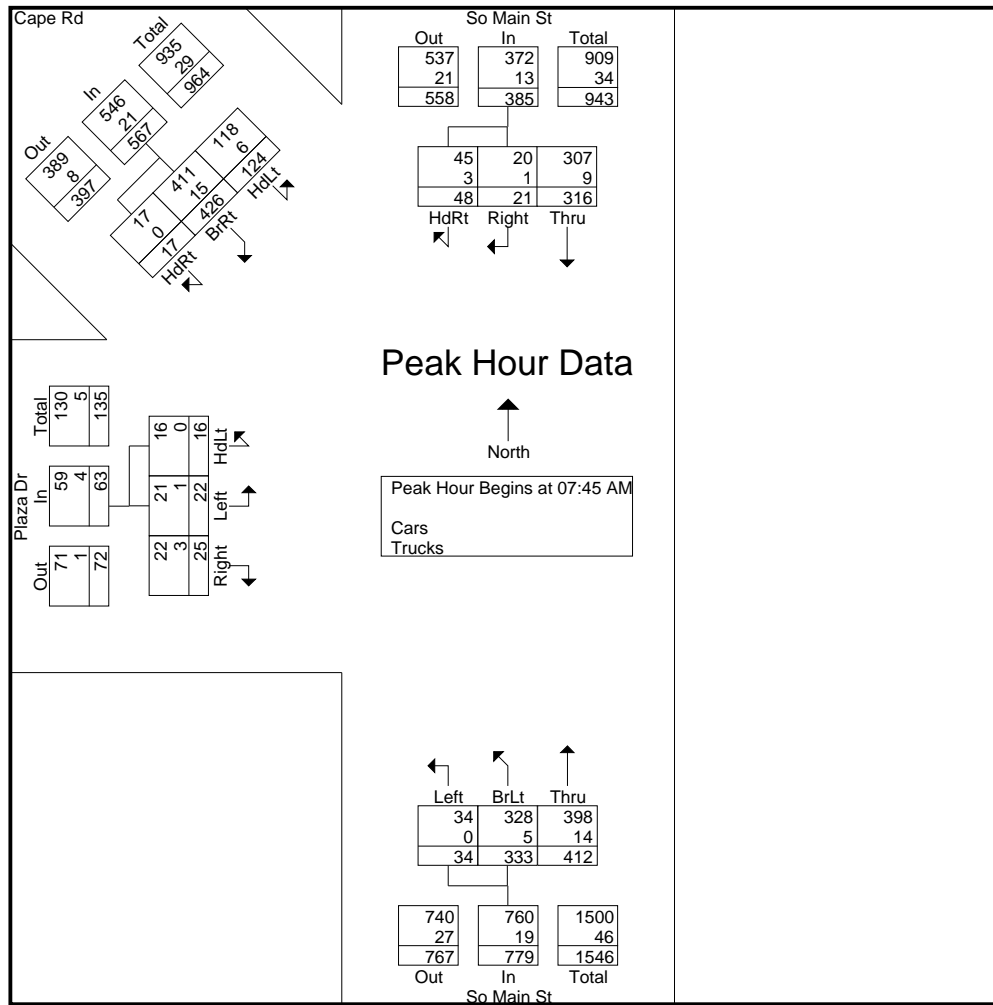
Start Time	So Main St From North				So Main St From South				Plaza Dr From West				Cape Rd From Northwest				Int. Total
	Thru	Right	HdRt	App. Total	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	81	4	10	95	12	82	125	219	3	7	7	17	45	101	2	148	479
08:00 AM	77	5	14	96	5	80	107	192	5	4	4	13	32	118	4	154	455
08:15 AM	63	6	9	78	8	102	87	197	2	4	8	14	26	115	8	149	438
08:30 AM	95	6	15	116	9	69	93	171	6	7	6	19	21	92	3	116	422
Total Volume	316	21	48	385	34	333	412	779	16	22	25	63	124	426	17	567	1794
% App. Total	82.1	5.5	12.5		4.4	42.7	52.9		25.4	34.9	39.7		21.9	75.1	3		
PHF	.832	.875	.800	.830	.708	.816	.824	.889	.667	.786	.781	.829	.689	.903	.531	.920	.936
Cars	307	20	45	372	34	328	398	760	16	21	22	59	118	411	17	546	1737
% Cars	97.2	95.2	93.8	96.6	100	98.5	96.6	97.6	100	95.5	88.0	93.7	95.2	96.5	100	96.3	96.8
Trucks	9	1	3	13	0	5	14	19	0	1	3	4	6	15	0	21	57
% Trucks	2.8	4.8	6.3	3.4	0	1.5	3.4	2.4	0	4.5	12.0	6.3	4.8	3.5	0	3.7	3.2

Accurate Counts

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File Name : 07300001
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 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:45 AM				07:30 AM			
+0 mins.	77	5	14	96	7	79	98	184	3	7	7	17	35	112	3	150
+15 mins.	63	6	9	78	12	82	125	219	5	4	4	13	45	101	2	148
+30 mins.	95	6	15	116	5	80	107	192	2	4	8	14	32	118	4	154
+45 mins.	108	9	5	122	8	102	87	197	6	7	6	19	26	115	8	149
Total Volume	343	26	43	412	32	343	417	792	16	22	25	63	138	446	17	601
% App. Total	83.3	6.3	10.4		4	43.3	52.7		25.4	34.9	39.7		23	74.2	2.8	
PHF	.794	.722	.717	.844	.667	.841	.834	.904	.667	.786	.781	.829	.767	.945	.531	.976
Cars	330	25	41	396	32	334	402	768	16	21	22	59	133	429	17	579
% Cars	96.2	96.2	95.3	96.1	100	97.4	96.4	97	100	95.5	88	93.7	96.4	96.2	100	96.3
Trucks	13	1	2	16	0	9	15	24	0	1	3	4	5	17	0	22
% Trucks	3.8	3.8	4.7	3.9	0	2.6	3.6	3	0	4.5	12	6.3	3.6	3.8	0	3.7

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Groups Printed- Bikes Peds

Start Time	So Main St From North				So Main St From South				Plaza Dr From West				Cape Rd From Northwest				Exclu. Total	Inclu. Total	Int. Total
	Thru	Right	HdRt	Peds	Left	BrLt	Thru	Peds	HdLt	Left	Right	Peds	HdLt	BrRt	HdRt	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	3	0	3
08:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	2
08:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	2	1	3
Grand Total	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	2	5	1	6
Apprch %	0	0	0		0	0	100		0	0	0		0	0	0				
Total %	0	0	0		0	0	100		0	0	0		0	0	0		83.3	16.7	

Start Time	So Main St From North				So Main St From South				Plaza Dr From West				Cape Rd From Northwest				Int. Total
	Thru	Right	HdRt	App. Total	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0		0	0	100		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

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Groups Printed- Cars - Trucks

Start Time	So Main St From North			So Main St From South			Plaza Dr From West			Cape Rd From Northwest			Int. Total
	Thru	Right	HdRt	Left	BrLt	Thru	HdLt	Left	Right	HdLt	BrRt	HdRt	
04:00 PM	121	6	20	7	114	79	5	8	7	19	96	1	483
04:15 PM	115	5	26	14	90	87	10	13	4	19	117	3	503
04:30 PM	106	10	24	5	104	91	4	8	5	18	120	4	499
04:45 PM	123	5	29	10	97	77	5	17	12	15	95	6	491
Total	465	26	99	36	405	334	24	46	28	71	428	14	1976
05:00 PM	116	8	27	17	116	94	7	8	10	21	133	9	566
05:15 PM	124	13	19	7	104	93	6	9	13	23	116	2	529
05:30 PM	120	17	33	10	105	103	12	7	8	22	81	3	521
05:45 PM	97	9	30	9	122	67	7	9	8	11	118	5	492
Total	457	47	109	43	447	357	32	33	39	77	448	19	2108
Grand Total	922	73	208	79	852	691	56	79	67	148	876	33	4084
Apprch %	76.6	6.1	17.3	4.9	52.5	42.6	27.7	39.1	33.2	14	82.9	3.1	
Total %	22.6	1.8	5.1	1.9	20.9	16.9	1.4	1.9	1.6	3.6	21.4	0.8	
Cars	902	71	207	79	851	685	55	79	66	147	864	33	4039
% Cars	97.8	97.3	99.5	100	99.9	99.1	98.2	100	98.5	99.3	98.6	100	98.9
Trucks	20	2	1	0	1	6	1	0	1	1	12	0	45
% Trucks	2.2	2.7	0.5	0	0.1	0.9	1.8	0	1.5	0.7	1.4	0	1.1

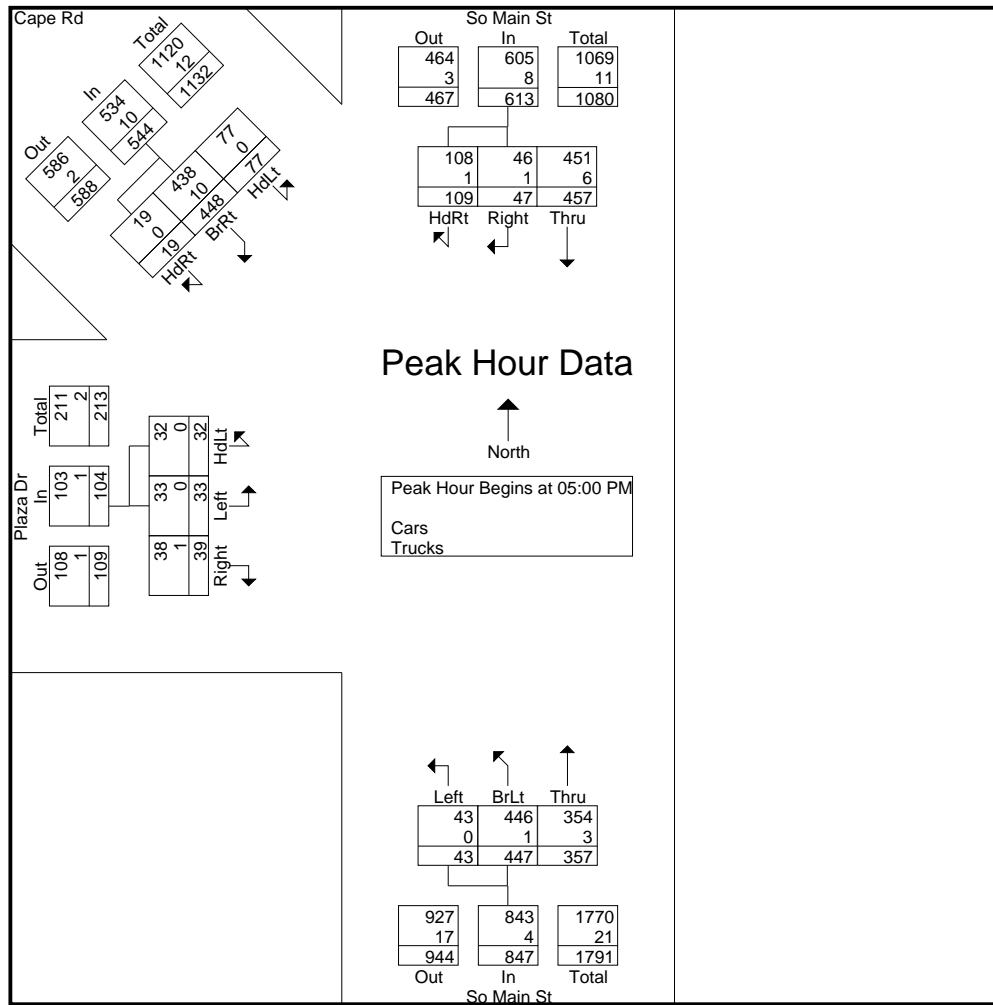
Start Time	So Main St From North				So Main St From South				Plaza Dr From West				Cape Rd From Northwest				Int. Total
	Thru	Right	HdRt	App. Total	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	116	8	27	151	17	116	94	227	7	8	10	25	21	133	9	163	566
05:15 PM	124	13	19	156	7	104	93	204	6	9	13	28	23	116	2	141	529
05:30 PM	120	17	33	170	10	105	103	218	12	7	8	27	22	81	3	106	521
05:45 PM	97	9	30	136	9	122	67	198	7	9	8	24	11	118	5	134	492
Total Volume	457	47	109	613	43	447	357	847	32	33	39	104	77	448	19	544	2108
% App. Total	74.6	7.7	17.8		5.1	52.8	42.1		30.8	31.7	37.5		14.2	82.4	3.5		
PHF	.921	.691	.826	.901	.632	.916	.867	.933	.667	.917	.750	.929	.837	.842	.528	.834	.931
Cars	451	46	108	605	43	446	354	843	32	33	38	103	77	438	19	534	2085
% Cars	98.7	97.9	99.1	98.7	100	99.8	99.2	99.5	100	100	97.4	99.0	100	97.8	100	98.2	98.9
Trucks	6	1	1	8	0	1	3	4	0	0	1	1	0	10	0	10	23
% Trucks	1.3	2.1	0.9	1.3	0	0.2	0.8	0.5	0	0	2.6	1.0	0	2.2	0	1.8	1.1

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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:45 PM				04:30 PM			
+0 mins.	123	5	29	157	17	116	94	227	5	17	12	34	18	120	4	142
+15 mins.	116	8	27	151	7	104	93	204	7	8	10	25	15	95	6	116
+30 mins.	124	13	19	156	10	105	103	218	6	9	13	28	21	133	9	163
+45 mins.	120	17	33	170	9	122	67	198	12	7	8	27	23	116	2	141
Total Volume	483	43	108	634	43	447	357	847	30	41	43	114	77	464	21	562
% App. Total	76.2	6.8	17		5.1	52.8	42.1		26.3	36	37.7		13.7	82.6	3.7	
PHF	.974	.632	.818	.932	.632	.916	.867	.933	.625	.603	.827	.838	.837	.872	.583	.862
Cars	475	42	107	624	43	446	354	843	30	41	43	114	76	459	21	556
% Cars	98.3	97.7	99.1	98.4	100	99.8	99.2	99.5	100	100	100	100	98.7	98.9	100	98.9
Trucks	8	1	1	10	0	1	3	4	0	0	0	0	1	5	0	6
% Trucks	1.7	2.3	0.9	1.6	0	0.2	0.8	0.5	0	0	0	0	1.3	1.1	0	1.1

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Groups Printed- Bikes Peds

Start Time	So Main St From North				So Main St From South				Plaza Dr From West				Cape Rd From Northwest				Exclu. Total	Inclu. Total	Int. Total
	Thru	Right	HdRt	Peds	Left	BrLt	Thru	Peds	HdLt	Left	Right	Peds	HdLt	BrRt	HdRt	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:45 PM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	2	3
Total	0	0	0	2	0	0	0	0	0	1	1	0	0	0	0	0	2	2	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Grand Total	1	0	0	2	0	0	0	0	0	1	1	0	0	0	0	0	2	3	5
Apprch %	100	0	0		0	0	0		0	50	50		0	0	0				
Total %	33.3	0	0		0	0	0		0	33.3	33.3		0	0	0		40	60	

Start Time	So Main St From North				So Main St From South				Plaza Dr From West				Cape Rd From Northwest				Int. Total
	Thru	Right	HdRt	App. Total	Left	BrLt	Thru	App. Total	HdLt	Left	Right	App. Total	HdLt	BrRt	HdRt	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	
Total Volume	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	
% App. Total	0	0	0	0	0	0	0	0	0	50	50	250	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250	.000	.000	.000	.000	





















Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:00 PM

APPENDIX C

AM/PM Peak-Hour Intersection Capacity Analysis Existing Conditions

Intersection Capacity Analysis
Route 140 at S. Main St., Milford

8/5/2013

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	16	22	25	316	21	48	124	426	17	34	333	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	30	0	406	58	135	481	0	38	374	0
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	1	1	6		5	2	
Permitted Phases	4		4	8		8	6			2	2	
Detector Phase	4	4	4	8	8	1	1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	10.0		6.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	10.0	10.0	15.0		10.0	15.0	
Total Split (s)	14.0	14.0	14.0	40.0	40.0	14.0	14.0	35.0		14.0	35.0	
Total Split (%)	13.6%	13.6%	13.6%	38.8%	38.8%	13.6%	13.6%	34.0%		13.6%	34.0%	
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0	4.0		5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Act Effect Green (s)		10.2	10.2		32.2	46.5	37.1	30.5		31.7	23.7	
Actuated g/C Ratio		0.11	0.11		0.34	0.50	0.40	0.33		0.34	0.25	
v/c Ratio		0.87	0.11		0.91	0.07	0.46	0.81		0.16	0.79	
Control Delay		136.2	0.8		56.3	3.5	23.5	42.9		18.8	46.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		136.2	0.8		56.3	3.5	23.5	42.9		18.8	46.3	
LOS		F	A		E	A	C	D		B	D	
Approach Delay		82.8			49.7			38.7			43.7	
Approach LOS		F			D			D			D	
Queue Length 50th (ft)		29	0		241	0	53	289		14	218	
Queue Length 95th (ft)		#95	0		#384	16	92	#477		33	318	
Internal Link Dist (ft)		20			492			2811			150	
Turn Bay Length (ft)						50						
Base Capacity (vph)		53	269		495	827	306	617		305	607	
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		0.87	0.11		0.82	0.07	0.44	0.78		0.12	0.62	
Intersection Summary												
Cycle Length: 103												

Intersection Capacity Analysis

Route 140 at S. Main St., Milford

8/5/2013

Actuated Cycle Length: 93.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 45.4

Intersection LOS: D

Intersection Capacity Utilization 65.4%







ICU Level of Service C

Analysis Period (min) 15

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





















Queue shown is maximum after two cycles.

Splits and Phases: 10: CVS Driveway/South Main Street & Cape Road (Route 140)

 ø1	 ø2	 ø4	 ø8
14 s	35 s	14 s	40 s
 ø5	 ø6		
14 s	35 s		

Intersection Capacity Analysis
Route 140 at S. Main St., Milford

8/5/2013

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	32	33	39	457	47	109	77	448	19	43	447	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.83	0.83	0.83	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	42	0	560	121	93	563	0	46	481	0
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	1	1	6		5	2	
Permitted Phases	4		4	8		8	6			2	2	
Detector Phase	4	4	4	8	8	1	1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	10.0		6.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	10.0	10.0	15.0		10.0	15.0	
Total Split (s)	14.0	14.0	14.0	40.0	40.0	14.0	14.0	35.0		14.0	35.0	
Total Split (%)	13.6%	13.6%	13.6%	38.8%	38.8%	13.6%	13.6%	34.0%		13.6%	34.0%	
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0	4.0		5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes				Yes	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Act Effct Green (s)		10.0	10.0		35.1	48.5	40.0	33.5		36.1	28.0	
Actuated g/C Ratio		0.10	0.10		0.35	0.49	0.40	0.34		0.36	0.28	
v/c Ratio		1.23	0.16		1.21	0.15	0.42	0.90		0.23	0.91	
Control Delay		237.1	1.3		146.8	8.0	23.4	52.3		19.9	57.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		237.1	1.3		146.8	8.0	23.4	52.3		19.9	57.8	
LOS		F	A		F	A	C	D		B	E	
Approach Delay		147.9			122.2			48.2			54.5	
Approach LOS		F			F			D			D	
Queue Length 50th (ft)		-56	0		-455	19	35	358		17	295	
Queue Length 95th (ft)		#148	0		#672	50	61	#521		39	#483	
Internal Link Dist (ft)		35			434			2814			146	
Turn Bay Length (ft)						50						
Base Capacity (vph)		56	266		461	836	249	625		253	567	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		1.23	0.16		1.21	0.14	0.37	0.90		0.18	0.85	
Intersection Summary												
Cycle Length: 103												

Intersection Capacity Analysis

Route 140 at S. Main St., Milford

8/5/2013

Actuated Cycle Length: 99.5

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 81.0

Intersection LOS: F

Intersection Capacity Utilization 75.8%

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.

Splits and Phases: 10: CVS Driveway/South Main St & Cape Rd (Route 140)





















 $\phi 1$	 $\phi 2$	 $\phi 4$	 $\phi 8$
14 s	35 s	14 s	40 s
 $\phi 5$	 $\phi 6$		
14 s	35 s		

APPENDIX D

AM/PM Peak-Hour Intersection Capacity Analysis Proposed Improvements

Intersection Capacity Analysis
Route 140 at S. Main St., Milford

8/6/2013

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	16	22	25	316	21	48	124	426	17	34	333	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	57	0	0	406	58	135	481	0	38	374	0
Turn Type	Perm	NA		Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	1	1	6		5	2	
Permitted Phases	4			8		8	6			2	2	
Detector Phase	4	4		8	8	1	1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	10.0		6.0	10.0	
Minimum Split (s)	10.0	10.0		11.0	11.0	10.0	10.0	15.0		10.0	15.0	
Total Split (s)	14.0	14.0		40.0	40.0	10.0	10.0	35.0		10.0	35.0	
Total Split (%)	14.1%	14.1%		40.4%	40.4%	10.1%	10.1%	35.4%		10.1%	35.4%	
Yellow Time (s)	3.0	3.0		4.0	4.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0			5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effect Green (s)	8.3	8.3			30.9	43.1	31.4	27.3		30.6	25.1	
Actuated g/C Ratio	0.10	0.10			0.37	0.52	0.38	0.33		0.37	0.30	
v/c Ratio	0.16	0.30			0.85	0.07	0.44	0.81		0.15	0.67	
Control Delay	44.2	28.1			46.0	3.5	23.8	41.0		18.6	34.9	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	44.2	28.1			46.0	3.5	23.8	41.0		18.6	34.9	
LOS	D	C			D	A	C	D		B	C	
Approach Delay		32.1			40.7			37.3			33.4	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	11	16			230	0	51	276		14	198	
Queue Length 95th (ft)	31	49			#364	15	93	#467		33	302	
Internal Link Dist (ft)		20			492			2811			150	
Turn Bay Length (ft)						50						
Base Capacity (vph)	158	244			597	843	304	723		253	740	
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	0.12	0.23			0.68	0.07	0.44	0.67		0.15	0.51	
Intersection Summary												
Cycle Length: 99												

Intersection Capacity Analysis

Route 140 at S. Main St., Milford

8/6/2013

Actuated Cycle Length: 83.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 37.0

Intersection LOS: D

Intersection Capacity Utilization 65.4%







ICU Level of Service C

Analysis Period (min) 15

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





















Queue shown is maximum after two cycles.

Splits and Phases: 10: CVS Driveway/South Main Street & Cape Road (Route 140)

 ϕ1	 ϕ2	 ϕ4	 ϕ8
10 s	35 s	14 s	40 s
 ϕ5	 ϕ6		
10 s	35 s		

Intersection Capacity Analysis
Route 140 at S. Main St., Milford

8/6/2013

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	32	33	39	457	47	109	77	448	19	43	447	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.83	0.83	0.83	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	77	0	0	560	121	93	563	0	46	481	0
Turn Type	Perm	NA		Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	1	1	6		5	2	
Permitted Phases	4			8		8	6			2	2	
Detector Phase	4	4		8	8	1	1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	10.0		6.0	10.0	
Minimum Split (s)	10.0	10.0		11.0	11.0	10.0	10.0	15.0		10.0	15.0	
Total Split (s)	14.0	14.0		45.0	45.0	10.0	10.0	35.0		10.0	35.0	
Total Split (%)	13.5%	13.5%		43.3%	43.3%	9.6%	9.6%	33.7%		9.6%	33.7%	
Yellow Time (s)	3.0	3.0		4.0	4.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0			5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes				Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effect Green (s)	8.7	8.7			40.4	51.5	36.6	32.2		34.9	27.8	
Actuated g/C Ratio	0.09	0.09			0.41	0.52	0.37	0.33		0.35	0.28	
v/c Ratio	0.37	0.41			1.05	0.14	0.51	0.93		0.25	0.91	
Control Delay	56.2	30.6			85.5	8.0	30.7	58.4		23.1	57.8	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	56.2	30.6			85.5	8.0	30.7	58.4		23.1	57.8	
LOS	E	C			F	A	C	E		C	E	
Approach Delay		38.4			71.7			54.5			54.7	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	22	22			-431	20	39	-410		19	305	
Queue Length 95th (ft)	54	68			#639	51	67	#545		42	#490	
Internal Link Dist (ft)		35			434			2814			146	
Turn Bay Length (ft)						50						
Base Capacity (vph)	106	214			532	865	182	605		184	577	
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	0.32	0.36			1.05	0.14	0.51	0.93		0.25	0.83	
Intersection Summary												
Cycle Length: 104												

Intersection Capacity Analysis

Route 140 at S. Main St., Milford

8/6/2013

Actuated Cycle Length: 98.7

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 59.6

Intersection LOS: E

Intersection Capacity Utilization 75.8%

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.

Splits and Phases: 10: CVS Driveway/South Main St & Cape Rd (Route 140)

 $\phi 1$	 $\phi 2$	 $\phi 4$	 $\phi 8$
10 s	35 s	14 s	45 s
 $\phi 5$	 $\phi 6$		
10 s	35 s		