WEST KENNEBUNK VILLAGE TRAFFIC STUDY

POTENTIAL GROWTH AREAS

January 2011

APPENDIX

Turning Movement Counts

Existing Capacity Analyses

Accident Data

Projected Unsignalized Capacity Analysis
(Alfred, Thompson and Mill)

Signal Warrant
(Alfred, Thompson and Mill)

Projected Signalized Capacity Analysis
(Alfred, Thompson and Mill)

Queue Analysis
(Alfred, Thompson and Mill)

Roundabout Analysis
(Alfred, Thompson and Mill)

Projected Signalized Capacity Analysis
(Alfred, Alewive and Fletcher)

Queue Analysis
(Alfred, Alewive and Fletcher)

Maine Traffic Resources
25 Vine St, Gardiner, ME 04345
(207) 582-5252
mainetrafficresources.com

Location: Alfred Rd & Thompson/Mill
Town/City: Kennebunk (West)
Counter: SK
Weather: Clear

File Name : KennAlfred_Mill
Site Code : 00000009
Start Date : 09/21/2010
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Thompson Rd From North					Alfred Rd From East					Mill St From South					Alfred Rd From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
06:00 AM	0	1	1	1	2	0	4	9	1	13	19	1	0	1	20	2	30	1	0	33	3	68	71
06:15 AM	3	6	2	0	11	0	1	9	0	10	27	1	1	0	29	6	29	4	0	39	0	89	89
06:30 AM	0	5	3	0	8	4	9	11	0	24	35	5	3	4	43	5	41	2	0	48	4	123	127
06:45 AM	0	4	2	0	6	11	13	10	5	34	61	8	1	1	70	8	53	1	0	62	6	172	178
Total	3	16	8	1	27	15	27	39	6	81	142	15	5	6	162	21	153	8	0	182	13	452	465
07:00 AM	3	5	10	0	18	42	19	15	8	76	59	18	3	3	80	4	50	8	0	62	11	236	247
07:15 AM	7	11	62	0	80	46	15	22	4	83	70	30	5	2	105	11	69	18	0	98	6	366	372
07:30 AM	3	6	15	0	24	14	31	22	0	67	62	11	7	0	80	4	74	4	0	82	0	253	253
07:45 AM	0	5	15	0	20	11	19	27	0	57	43	8	1	1	52	6	75	6	0	87	1	216	217
Total	13	27	102	0	142	113	84	86	12	283	234	67	16	6	317	25	268	36	0	329	18	1071	1089
08:00 AM	1	5	10	0	16	5	33	32	0	70	31	15	1	1	47	5	52	6	0	63	1	196	197
08:15 AM	1	18	10	0	29	5	21	26	0	52	35	2	2	0	39	2	46	6	0	54	0	174	174
08:30 AM	4	6	6	0	16	2	26	24	0	52	32	4	5	0	41	4	43	4	0	51	0	160	160
08:45 AM	3	4	8	0	15	4	24	22	0	50	28	7	6	0	41	9	42	1	0	52	0	158	158
Total	9	33	34	0	76	16	104	104	0	224	126	28	14	1	168	20	183	17	0	220	1	688	689
Grand Total	25	76	144	1	245	144	215	229	18	588	502	110	35	13	647	66	604	61	0	731	32	2211	2243
Apprch %	10.2	31.0	58.8			24.5	36.6	38.9			77.6	17.0	5.4			9.0	82.6	8.3					
Total %	1.1	3.4	6.5		11.1	6.5	9.7	10.4		26.6	22.7	5.0	1.6		29.3	3.0	27.3	2.8		33.1	1.4	98.6	

	Thompson Rd From North				Alfred Rd From East				Mill St From South				Alfred Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 06:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:00 AM																
Volume	13	27	102	142	113	84	86	283	234	67	16	317	25	268	36	329	1071
Percent	9.2	19.0	71.8		39.9	29.7	30.4		73.8	21.1	5.0		7.6	81.5	10.9		
07:15 Volume	7	11	62	80	46	15	22	83	70	30	5	105	11	69	18	98	366
Peak Factor																	0.732
High Int.	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
Volume	7	11	62	80	46	15	22	83	70	30	5	105	11	69	18	98	
Peak Factor				0.444				0.852				0.755				0.839	

GROUP I (Thompson) = 0.93/0.86 = 1.081
GROUP II = 0.92/0.82 = 1.122

14 110 122 96 263 18 28 39
29 94 72 301

Maine Traffic Resources
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(207) 582-5252
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Location: Alfred Rd _Alewive Rd
Town/City: Kennebunk
Counter: SK
Weather: Clear, Sunny

File Name : KennAlfred_AlewiveAM
Site Code : 00000002
Start Date : 09/22/2010
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Alewive Rd From North					Alfred Rd From East					Corning Enter Only From South		Alfred Rd From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0				
06:00 AM	5	8	33	0	46	28	12	2	0	42	0	0	5	47	9	0	61	0	149	149
06:15 AM	7	10	34	0	51	33	10	3	0	46	0	0	3	50	11	0	64	0	161	161
06:30 AM	11	13	51	0	75	20	22	1	0	43	4	0	15	82	6	4	103	8	221	229
06:45 AM	9	9	49	1	67	37	29	3	0	69	0	0	14	79	29	0	122	1	258	259
Total	32	40	167	1	239	118	73	9	0	200	4	0	37	258	55	4	350	9	789	798
07:00 AM	17	8	69	0	94	43	48	3	0	94	0	0	3	112	23	0	138	0	326	326
07:15 AM	14	10	70	0	94	43	35	6	0	84	0	0	7	115	24	0	146	0	324	324
07:30 AM	13	8	85	1	106	60	34	4	0	98	0	0	8	114	21	0	143	1	347	348
07:45 AM	18	8	99	0	125	74	28	5	0	107	0	0	5	107	21	0	133	0	365	365
Total	62	34	323	1	419	220	145	18	0	383	0	0	23	448	89	0	560	1	1362	1363
08:00 AM	20	2	104	0	126	75	31	4	0	110	3	0	3	95	22	3	120	6	356	362
08:15 AM	17	4	103	0	124	59	49	2	0	110	0	0	0	87	14	0	101	0	335	335
08:30 AM	16	2	80	0	98	48	65	2	0	116	1	0	0	134	10	1	144	2	358	360
08:45 AM	10	0	91	0	101	36	83	1	0	120	0	0	0	114	15	0	129	0	350	350
Total	63	8	378	0	449	218	229	9	0	456	4	0	3	430	61	4	494	8	1399	1407
Grand Total	157	82	868	2	1107	556	447	36	0	1039	8	0	63	1136	205	8	1404	18	3550	3568
Apprch %	14.2	7.4	78.4			53.5	43.0	3.5					4.5	80.9	14.6					
Total %	4.4	2.3	24.5		31.2	15.7	12.6	1.0		29.3		0.0	1.8	32.0	5.8		39.5	0.5	99.5	

	Alewive Rd From North				Alfred Rd From East					Alfred Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 06:00 AM to 08:45 AM - Peak 1 of 1														
Intersection	07:45 AM													
Volume	71	16	386	473	256	174	13	443	0	8	423	67	498	1414
Percent	15.0	3.4	81.6		57.8	39.3	2.9			1.6	84.9	13.5		
07:45 Volume	18	8	99	125	74	28	5	107	0	5	107	21	133	365
Peak Factor													0.968	
High Int.	08:00 AM				08:30 AM				5:45:00 AM	08:30 AM				
Volume	20	2	104	126	48	66	2	116	0	0	134	10	144	
Peak Factor				0.938				0.955					0.865	

Group I = 0.92/0.82 = 1.122

80 433 287 13 8 75

16 195 475

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(207) 582-5252
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Location: Alfred & Alewive
Town/City: Kennebunk
Counter: SK
Weather: Clear, Sunny

File Name : KennAlfred_AlewivePM
Site Code : 00000005
Start Date : 09/22/2010
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Alewive Rd From North					Alfred Rd From East					Corning Enter Only From South		Alfred Rd From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0		1.0	1.0	1.0	1.0				
03:00 PM	21	0	106	0	127	69	72	1	0	142	20	0	1	77	13	0	91	20	360	380
03:15 PM	22	1	95	2	118	62	65	5	0	132	3	0	6	64	13	1	83	6	333	339
03:30 PM	36	2	79	0	117	86	85	5	0	176	18	0	6	81	10	3	97	21	390	411
03:45 PM	23	3	76	0	102	82	101	1	0	184	0	0	4	63	18	0	85	0	371	371
Total	102	6	356	2	464	299	323	12	0	634	41	0	17	285	54	4	356	47	1454	1501
04:00 PM	31	1	88	0	120	74	88	1	0	163	0	0	2	94	17	0	113	0	396	396
04:15 PM	18	0	47	0	65	38	47	1	0	86	1	0	0	37	4	0	41	1	192	193
04:30 PM	38	0	97	0	135	73	88	1	0	162	1	0	1	69	12	1	82	2	379	381
04:45 PM	47	2	92	0	141	73	77	1	0	151	1	0	1	73	14	1	88	2	380	382
Total	134	3	324	0	461	258	300	4	0	562	3	0	4	273	47	2	324	5	1347	1352
05:00 PM	41	2	87	0	130	81	99	0	0	180	0	0	3	55	11	0	69	0	379	379
05:15 PM	35	0	97	0	132	78	90	0	0	168	0	0	0	49	10	0	59	0	359	359
05:30 PM	25	0	85	0	110	70	78	0	0	148	1	0	0	60	6	0	66	1	324	325
05:45 PM	21	0	74	0	95	66	68	1	0	135	0	0	0	44	7	0	51	0	281	281
Total	122	2	343	0	467	295	335	1	0	631	1	0	3	208	34	0	245	1	1343	1344
Grand Total	358	11	1023	2	1392	852	958	17	0	1827	45	0	24	766	135	6	925	53	4144	4197
Apprch %	25.7	0.8	73.5			46.6	52.4	0.9					2.6	82.8	14.6					
Total %	8.6	0.3	24.7		33.6	20.6	23.1	0.4		44.1		0.0	0.6	18.5	3.3		22.3	1.3	98.7	

	Alewive Rd From North				Alfred Rd From East					Alfred Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1														
Intersection	04:30 PM													
Volume	161	4	373	538	305	354	2	661	0	5	246	47	298	1497
Percent	29.9	0.7	69.3		46.1	53.6	0.3			1.7	82.6	15.8		
04:45 Volume	47	2	92	141	73	77	1	151	0	1	73	14	88	380
Peak Factor														0.985
High Int.	04:45 PM				05:00 PM				2:45:00 PM	04:45 PM				
Volume	47	2	92	141	81	99	0	180	0	1	73	14	88	
Peak Factor				0.954				0.918					0.847	

Group II = 0.95/0.82 = 1.02

181 419 302 2 5 53

4 397 276

Maine Traffic Resources
25 Vine St, Gardiner, ME 04345
(207) 582-5252
mainetrafficresources.com

Location: Alfred & Mill/Thompson
Town/City: Kennebunk
Counter: SK
Weather: Clear, Sunny

File Name : KennAlfred_MillPM
Site Code : 00000005
Start Date : 09/23/2010
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Thompson Rd From North					Alfred Rd From East					Mill St From South					Alfred Rd From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
03:00 PM	8	14	12	0	34	6	49	50	0	105	21	7	3	0	31	4	31	3	0	38	0	208	208
03:15 PM	4	13	10	0	27	8	62	47	0	117	29	11	11	1	51	9	36	3	0	48	1	243	244
03:30 PM	1	10	9	0	20	3	62	41	0	106	36	8	7	1	51	9	30	0	0	39	1	216	217
03:45 PM	4	10	2	0	16	3	64	46	0	113	28	17	8	0	53	4	43	3	0	50	0	232	232
Total	17	47	33	0	97	20	237	184	0	441	114	43	29	2	186	26	140	9	0	175	2	899	901
04:00 PM	4	19	14	0	37	7	51	54	0	112	38	17	6	0	61	3	36	8	0	47	0	257	257
04:15 PM	0	7	7	0	14	10	51	58	0	119	37	15	4	0	56	7	35	5	0	47	0	236	236
04:30 PM	2	10	11	0	23	10	55	53	0	118	42	22	10	0	74	4	28	5	0	37	0	252	252
04:45 PM	1	10	2	0	13	6	72	62	0	140	45	20	15	0	80	3	24	8	0	35	0	268	268
Total	7	46	34	0	87	33	229	227	0	489	162	74	35	0	271	17	123	26	0	166	0	1013	1013
05:00 PM	7	14	3	0	24	5	53	56	0	114	39	16	8	1	63	1	18	7	0	26	1	227	228
05:15 PM	3	11	6	0	20	9	61	58	0	128	29	9	8	0	46	6	25	8	0	39	0	233	233
05:30 PM	6	11	2	0	19	10	55	60	0	125	23	7	7	0	37	4	22	5	0	31	0	212	212
05:45 PM	10	14	4	0	28	4	43	42	0	89	22	8	7	2	37	9	28	4	0	41	2	195	197
Total	26	50	15	0	91	28	212	216	0	456	113	40	30	3	183	20	93	24	0	137	3	867	870
Grand Total	50	143	82	0	275	81	678	627	0	1386	389	157	94	5	640	63	356	59	0	478	5	2779	2784
Apprch %	18.2	52.0	29.8			5.8	48.9	45.2			60.8	24.5	14.7			13.2	74.5	12.3					
Total %	1.8	5.1	3.0		9.9	2.9	24.4	22.6		49.9	14.0	5.6	3.4		23.0	2.3	12.8	2.1		17.2	0.2	99.8	

	Thompson Rd From North				Alfred Rd From East				Mill St From South				Alfred Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 04:00 PM																	
Volume	7	46	34	87	33	229	227	489	162	74	35	271	17	123	26	166	1013
Percent	8.0	52.9	39.1		6.7	46.8	46.4		59.8	27.3	12.9		10.2	74.1	15.7		
04:45 Volume	1	10	2	13	6	72	62	140	45	20	15	80	3	24	8	35	268
Peak Factor																	0.945
High Int.	04:00 PM				04:45 PM				04:45 PM				04:00 PM				
Volume	4	19	14	37	6	72	62	140	45	20	15	80	3	36	8	47	
Peak Factor				0.588				0.873				0.847				0.883	

Group I (Thompson) = 0.93/0.86 = 1.081
Group II = 692/622 = 1.122

8 37 36 255 182 39 19 28
50 257 80 138

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	9/24/2010
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2010

Project ID 2010 AM Peak Hour

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	39	301	28	96	94	122
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	18	72	263	110	29	14
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.85		0.85	0.85	0.80		0.75	
Flow Rate (veh/h)	431		222	143	439		202	
% Heavy Vehicles	4		12	12	2		16	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.5	0.0	0.1		0.7	
Prop. Right-Turns	0.1		0.0	1.0	0.7		0.1	
Prop. Heavy Vehicle	0.0		0.1	0.1	0.0		0.2	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.5	-0.5	-0.4		0.4	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.38		0.20	0.13	0.39		0.18	
hd, final value (s)	7.75		8.90	7.91	7.24		8.88	
x, final value	0.93		0.55	0.31	0.88		0.50	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	5.7		6.6	5.6	5.2		6.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	458		380	393	484		377	
Delay (s/veh)	53.58		21.91	14.20	43.71		20.39	
LOS	F		C	B	E		C	
Approach: Delay (s/veh)	53.58		18.89		43.71		20.39	
LOS	F		C		E		C	
Intersection Delay (s/veh)	37.09							

Intersection LOS	*E*

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	9/24/2010
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2010

Project ID 2010 PM Peak Hour

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	28	138	19	255	257	36
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	39	80	182	37	50	8
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.90		0.90	0.90	0.85		0.75	
Flow Rate (veh/h)	205		568	40	353		125	
% Heavy Vehicles	4		2	2	3		9	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.5	0.0	0.1		0.4	
Prop. Right-Turns	0.1		0.0	1.0	0.6		0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.1	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.3	-0.7	-0.3		0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.18		0.50	0.04	0.31		0.11	
hd, final value (s)	7.08		6.94	5.97	6.51		7.68	
x, final value	0.40		1.09	0.07	0.64		0.27	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	5.1		4.6	3.7	4.5		5.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	455		568	290	541		375	
Delay (s/veh)	14.78		93.11	9.09	20.26		13.45	
LOS	B		F	A	C		B	
Approach: Delay (s/veh)	14.78		87.59		20.26		13.45	
LOS	B		F		C		B	
Intersection Delay (s/veh)	50.44							

Intersection LOS	F

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HCM Signalized Intersection Capacity Analysis
3: Alfred Rd & Alewife Rd

10/8/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	276	5	2	397	0	0	0	0	419	4	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	16	16	16	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0						5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00						1.00	1.00
Frt	1.00	1.00		1.00	1.00						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)	1736	1822		1752	1845						1792	1599
Flt Permitted	0.36	1.00		0.55	1.00						0.95	1.00
Satd. Flow (perm)	653	1822		1014	1845						1792	1599
Peak-hour factor, PHF	0.85	0.85	0.85	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	62	325	6	2	432	0	0	0	0	441	4	191
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	114
Lane Group Flow (vph)	62	330	0	2	432	0	0	0	0	0	445	77
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt			pm+pt						Split		Perm
Protected Phases	5	2		1	6					4	4	
Permitted Phases	2			6								4
Actuated Green, G (s)	39.6	35.9		33.8	33.0						22.2	22.2
Effective Green, g (s)	39.6	35.9		33.8	33.0						22.2	22.2
Actuated g/C Ratio	0.54	0.49		0.46	0.45						0.30	0.30
Clearance Time (s)	5.0	5.0		5.0	5.0						5.0	5.0
Vehicle Extension (s)	2.0	3.0		2.0	3.0						2.0	2.0
Lane Grp Cap (vph)	404	885		472	824						538	480
v/s Ratio Prot	c0.01	c0.18		0.00	c0.23						c0.25	
v/s Ratio Perm	0.07			0.00								0.05
v/c Ratio	0.15	0.37		0.00	0.52						0.83	0.16
Uniform Delay, d1	9.1	11.9		10.9	14.8						24.1	19.0
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	0.1	1.2		0.0	2.4						9.6	0.1
Delay (s)	9.2	13.1		10.9	17.2						33.7	19.1
Level of Service	A	B		B	B						C	B
Approach Delay (s)		12.5			17.1			0.0			29.3	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Alfred Rd & Alewife Rd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	TR	L	T	LT	R
Maximum Queue (ft)	89	207	18	298	363	150
Average Queue (ft)	25	83	1	139	177	80
95th Queue (ft)	62	170	7	242	293	164
Link Distance (ft)		402		487	552	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175		100			125
Storage Blk Time (%)		1		14	12	0
Queuing Penalty (veh)		0		0	22	1

Network Summary

Network wide Queuing Penalty: 23

HCM Signalized Intersection Capacity Analysis
3: Alfred Rd & Alewife Rd

10/8/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	475	8	13	195	0	0	0	0	433	16	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	16	16	16	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0						5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00						1.00	1.00
Frt	1.00	1.00		1.00	1.00						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)	1736	1822		1641	1727						1710	1524
Flt Permitted	0.54	1.00		0.36	1.00						0.95	1.00
Satd. Flow (perm)	980	1822		618	1727						1710	1524
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	83	528	9	14	205	0	0	0	0	461	17	85
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	46
Lane Group Flow (vph)	83	536	0	14	205	0	0	0	0	0	478	39
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	2%	2%	2%	6%	6%	6%
Turn Type	pm+pt			pm+pt						Split		Perm
Protected Phases	5	2		1	6					4	4	
Permitted Phases	2			6								4
Actuated Green, G (s)	44.4	38.7		34.8	33.9						25.4	25.4
Effective Green, g (s)	44.4	38.7		34.8	33.9						25.4	25.4
Actuated g/C Ratio	0.55	0.48		0.43	0.42						0.32	0.32
Clearance Time (s)	5.0	5.0		5.0	5.0						5.0	5.0
Vehicle Extension (s)	2.0	3.0		2.0	3.0						2.0	2.0
Lane Grp Cap (vph)	598	881		280	732						543	484
v/s Ratio Prot	c0.01	c0.29		0.00	0.12						c0.28	
v/s Ratio Perm	0.07			0.02								0.03
v/c Ratio	0.14	0.61		0.05	0.28						0.88	0.08
Uniform Delay, d1	8.5	15.1		13.3	15.1						25.9	19.1
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	0.0	3.1		0.0	1.0						15.0	0.0
Delay (s)	8.6	18.2		13.3	16.0						40.8	19.2
Level of Service	A	B		B	B						D	B
Approach Delay (s)		16.9			15.8			0.0			37.5	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Alfred Rd & Alewife Rd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	TR	L	T	LT	R
Maximum Queue (ft)	146	402	34	195	402	150
Average Queue (ft)	32	171	8	74	211	51
95th Queue (ft)	86	309	29	144	333	137
Link Distance (ft)		402		487	552	
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)	175		100			125
Storage Blk Time (%)	0	6		4	18	0
Queuing Penalty (veh)	0	5		0	15	0

Network Summary

Network wide Queuing Penalty: 20

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☑ Section Detail ☑ Crash Summary II ☐ 1320 Included ☐ 1320 & Driver Report Included

REPORT DESCRIPTION

Alfred Rd from Mill St to Alewive Rd in Kennebunk

REPORT PARAMETERS

Year 2007, Start Month 1 through Year 2009 End Month: 12

Route: 3120754	Start Node: 53252	Start Offset: 0	☐ Exclude First Node
	End Node: 58372	End Offset: 0	☐ Exclude Last Node

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Maine Department Of Transportation - Traffic Engineering, Crash Records Section

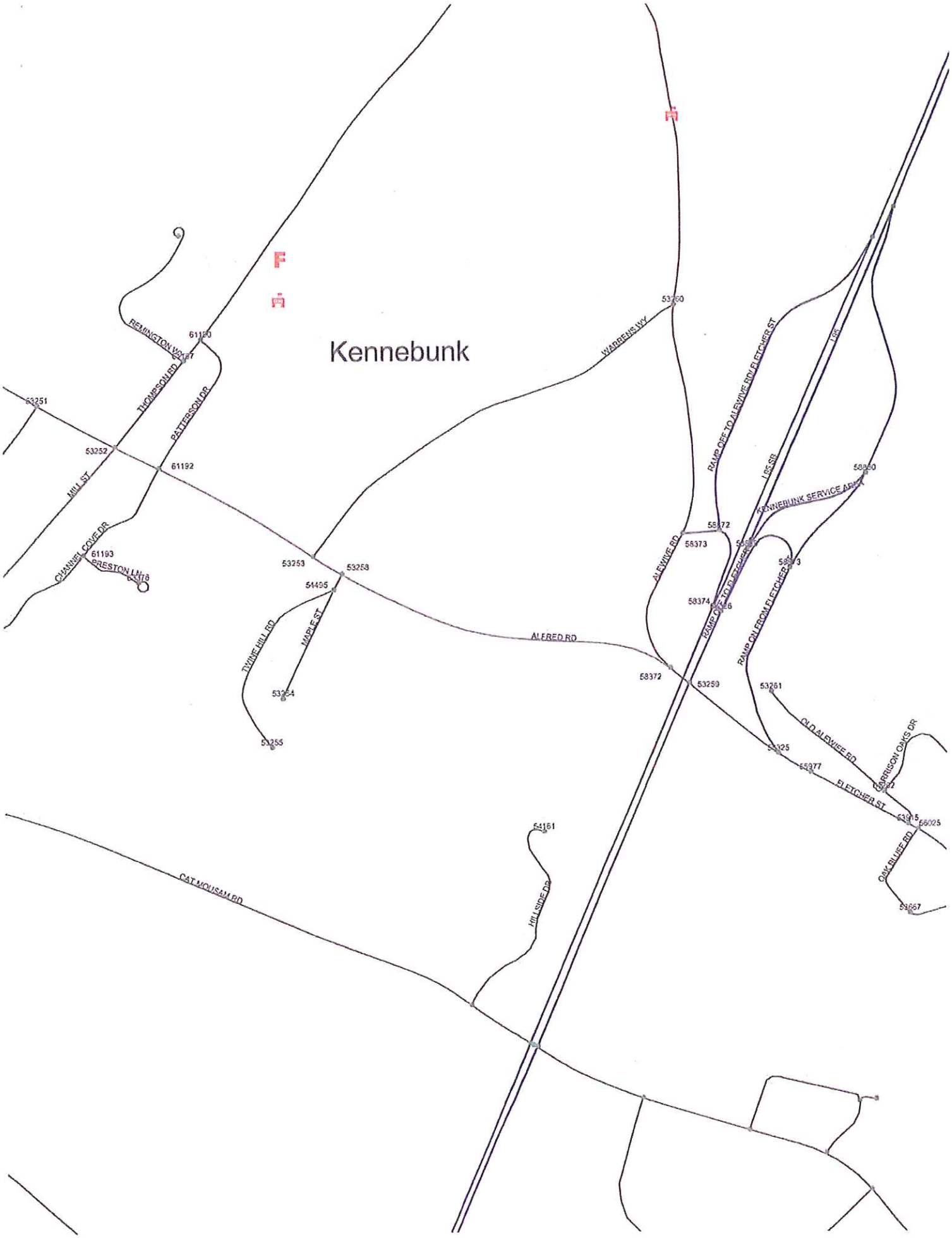
Crash Summary I

Nodes															
Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF	
53252	3120754 - 0.77	Int of MAIN ST 2, MILL ST, THOMPSON RD	2	4	0	0	0	0	4	0.0	1.837	0.73	0.41	1.77	
											Statewide Crash Rate:	0.12			
61192	3120754 - 0.84	Int of CHANNEL COVE DR, MAIN ST 2, PATTERSON DR	2	0	0	0	0	0	0	0.0	0.018	0.00	-5.42	0.00	
											Statewide Crash Rate:	0.12			
53253	3120754 - 1.11	Int of MAIN ST 2, WARRENS WY	2	0	0	0	0	0	0	0.0	1.012	0.00	0.47	0.00	
											Statewide Crash Rate:	0.12			
A53258	3120754 - 1.16	Int of ALFRED RD, MAIN ST 2, TWINE HILL RD	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00	
											Statewide Crash Rate:	0.12			
58372	3120754 - 1.63	Int of ALEWIVE RD, ALFRED RD, FLETCHER ST	2	1	0	0	0	1	0	100.0	4.691	0.07	0.32	0.00	.22
											Statewide Crash Rate:	0.12			
Study Years: 3.00		NODE TOTALS:		5	0	0	0	1	4	20.0	7.558	0.22	0.29	0.77	

Crash Summary I

Sections																		
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
53258	58372	241205	0 - 0.47	3120754 - 0.69	0.47	2	6	0	0	1	0	5	16.7	0.00935	213.92	314.17	0.00
Int of ALFRED RD, MAIN ST 2, TWINE HILL RD				RD INV 31 20754										Statewide Crash Rate:	146.09		
53252	61192	2672038	0 - 0.07	3120754 - 0.77	0.07	2	0	0	0	0	0	0	0.0	0.00000	0.00	0.00	0.00
Int of MAIN ST 2, MILL ST, THOMPSON RD				RD INV 31 20754										Statewide Crash Rate:	146.09		
61192	53253	2672037	0 - 0.27	3120754 - 0.84	0.27	2	0	0	0	0	0	0	0.0	0.00000	0.00	0.00	0.00
Int of CHANNEL COVE DR, MAIN ST 2, PATTERSON DR				RD INV 31 20754										Statewide Crash Rate:	146.09		
53253	53258	241197	0 - 0.05	3120754 - 1.11	0.05	2	4	0	0	0	0	4	0.0	0.00095	1408.51	554.29	2.54
Int of MAIN ST 2, WARRENS WY				RD INV 31 20754										Statewide Crash Rate:	146.09		
Study Years: 3.00				Section Totals:	0.86		10	0	0	1	0	9	10.0	0.01030	323.75	307.06	1.05
				Grand Totals:	0.86		15	0	0	1	1	13	13.3	0.01030	485.62	392.32	1.24

.68


Kennebunk
REMINGTON WAY
61190
THOMPSON RD
PATTERSON DR
53251
53252
61192
MILL ST
CHANNEL COVE DR
61193
PRESTON LN
53253
53258
54495
MAPLE ST
TWINE HILL RD
53254
53255
ALFRED RD
WARREN WY
53260
ALEWIVE RD
58372
58373
58374
58372
53259
RAMP OFF TO ALEWIVE RD/FLETCHER ST
RAMP ON FROM FLETCHER
KENNEBUNK SERVICE AREA
I95
I95 SB
53261
OLD ALEWIVE RD
FLETCHER ST
GARRISON OAKS DR
56025
OAK BLUFF RD
54161
HILLSIDE DR
CAT MOUSAM RD

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☑ Section Detail ☑ Crash Summary II ☐ 1320 Included ☐ 1320 & Driver Report Included

REPORT DESCRIPTION

Thompson Rd area in Kennebunk

REPORT PARAMETERS

Year 2007, Start Month 1 through Year 2009 End Month: 12

Route: 3100988	Start Node: 53252	Start Offset: 0	☐ Exclude First Node
	End Node: 53334	End Offset: 0	☐ Exclude Last Node
Route: 3120754	Start Node: 57512	Start Offset: 0	☐ Exclude First Node
	End Node: 53252	End Offset: 0	☑ Exclude Last Node
Route: 3100754	Start Node: 57512	Start Offset: 0	☑ Exclude First Node
	End Node: 53330	End Offset: 0	☐ Exclude Last Node
Route: 3100821	Start Node: 53330	Start Offset: 0	☑ Exclude First Node
	End Node: 51714	End Offset: 0	☐ Exclude Last Node
Route: 3100493	Start Node: 51714	Start Offset: 0	☑ Exclude First Node
	End Node: 53331	End Offset: 0	☐ Exclude Last Node
Route: 3120831	Start Node: 53252	Start Offset: 0	☑ Exclude First Node
	End Node: 53688	End Offset: 0	☐ Exclude Last Node
Route: 3100831	Start Node: 53246	Start Offset: 0	☐ Exclude First Node
	End Node: 53688	End Offset: 0	☑ Exclude Last Node
Route: 3100817	Start Node: 53245	Start Offset: 0	☐ Exclude First Node
	End Node: 53250	End Offset: 0	☑ Exclude Last Node

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
53252	3100988 - 0	Int of MAIN ST 2, MILL ST, THOMPSON RD	2	4	0	0	0	0	4	0.0	1.837	0.73	0.41	1.77
										Statewide Crash Rate:		0.12		
61187	3100988 - 0.17	Int of REMINGTON WY, THOMPSON RD	1	0	0	0	0	0	0	0.0	0.386	0.00	0.56	0.00
										Statewide Crash Rate:		0.13		
61190	3100988 - 0.20	Int of PATTERSON DR, THOMPSON RD	1	0	0	0	0	0	0	0.0	0.418	0.00	0.56	0.00
										Statewide Crash Rate:		0.13		
53334	3100988 - 1.12	Int of ALEWIVE RD, THOMPSON RD	2	0	0	0	0	0	0	0.0	1.575	0.00	0.42	0.00
										Statewide Crash Rate:		0.12		
57512	3120754 - 0	Int of COLE RD, MAIN ST 2, STONINGHAM PL	2	0	0	0	0	0	0	0.0	1.619	0.00	0.47	0.00
										Statewide Crash Rate:		0.14		
57932	3120754 - 0.18	3108469 KEN,COYNE MCKAY LA,MAIN ST #2	2	0	0	0	0	0	0	0.0	1.671	0.00	0.47	0.00
										Statewide Crash Rate:		0.14		
53251	3120754 - 0.63	3102843 KEN,MAIN ST #2,HOLLAND RD	2	0	0	0	0	0	0	0.0	1.736	0.00	0.47	0.00
										Statewide Crash Rate:		0.14		
61184	3100754 - 0.21	Int of COLE RD, WESTWOODS RD	1	0	0	0	0	0	0	0.0	0.805	0.00	0.52	0.00
										Statewide Crash Rate:		0.13		
57929	3100754 - 0.96	Int of COLE RD, LITTLEFIELD DR	1	0	0	0	0	0	0	0.0	1.484	0.00	0.46	0.00
										Statewide Crash Rate:		0.13		
57926	3100754 - 1.30	Int of BLUEBERRY PINES, COLE RD	1	0	0	0	0	0	0	0.0	1.253	0.00	0.48	0.00
										Statewide Crash Rate:		0.13		
53330	3100754 - 1.35	Int of COLE RD, OLD FALLS RD	1	0	0	0	0	0	0	0.0	1.179	0.00	0.48	0.00
										Statewide Crash Rate:		0.13		
51714	3100821 - 0.02	Int of MIDDLE RD, OLD FALLS RD	1	1	0	0	1	0	0	100.0	0.945	0.35	0.51	0.00 .69
										Statewide Crash Rate:		0.13		
53331	3100493 - 1.01	TL - Kennebunk, Lyman	1	0	0	0	0	0	0	0.0	0.207	0.00	0.50	0.00
										Statewide Crash Rate:		0.13		
53688	3120831 - 0.32	Int of CHANNEL COVE DR, MILL ST	2	0	0	0	0	0	0	0.0	1.540	0.00	0.43	0.00
										Statewide Crash Rate:		0.12		
53246	3100831 - 0	3102838 KEN,RTE 99,MILL ST	2	2	0	0	1	0	1	50.0	1.302	0.51	0.44	1.15
										Statewide Crash Rate:		0.12		
53250	3100831 - 0.06	3102842 KEN,WHITTEN RD,MILL ST	1	1	0	1	0	0	0	100.0	1.501	0.22	0.53	0.00 .42
										Statewide Crash Rate:		0.16		
53247	3100831 - 0.11	3102839 KEN,MILL ST,HAMMOND RD	1	0	0	0	0	0	0	0.0	1.501	0.00	0.53	0.00
										Statewide Crash Rate:		0.16		
53248	3100831 - 0.26	3102840 KEN,MILL ST,BRDGE.47S/O MAIN#2	1	0	0	0	0	0	0	0.0	1.474	0.00	0.54	0.00
										Statewide Crash Rate:		0.16		
53245	3100817 - 1.60	3102837 KEN,RTE 99,WHITTEN RD	1	7	0	1	1	3	2	71.4	1.753	1.33	0.39	3.43
										Statewide Crash Rate:		0.11		
		NODE TOTALS:		15	0	2	3	3	7	53.3	24.186	0.21	0.24	0.87

Study Years: 3.00

Crash Summary I

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF	
					Sections			Injury Crashes										
61190	53334	2188343	0 - 0.92	3100988 - -0.72	0.92	1	1	0	0	0	0	1	0.0	0.00378	88.24	576.90	0.00	.15
Int of PATTERSON DR, THOMPSON RD				RD INV 31 00988									Statewide Crash Rate:		243.46			
53252	61187	2188324	0 - 0.17	3100988 - 0	0.17	1	0	0	0	0	0	0	0.0	0.00064	0.00	901.00	0.00	
Int of MAIN ST 2, MILL ST, THOMPSON RD				RD INV 31 00988									Statewide Crash Rate:		243.46			
61187	61190	2188342	0 - 0.03	3100988 - 0.17	0.03	1	0	0	0	0	0	0	0.0	0.00012	0.00	963.86	0.00	
Int of REMINGTON WY, THOMPSON RD				RD INV 31 00988									Statewide Crash Rate:		243.46			
57512	57932	239081	0 - 0.18	3120754 - 0	0.18	2	2	0	0	0	0	2	0.0	0.00293	227.46	892.87	0.00	.25
Int of COLE RD, MAIN ST 2, STONINGHAM PL				RD INV 31 20754									Statewide Crash Rate:		400.18			
53251	57932	241193	0 - 0.45	3120754 - 0.18	0.45	2	0	0	0	0	0	0	0.0	0.00765	0.00	718.63	0.00	
3102843 KEN,MAIN ST #2,HOLLAND RD				RD INV 31 20754									Statewide Crash Rate:		400.18			
53251	53252	241192	0 - 0.14	3120754 - 0.49	0.14	2	2	0	0	0	0	2	0.0	0.00244	272.88	933.89	0.00	.29
3102843 KEN,MAIN ST #2,HOLLAND RD				RD INV 31 20754									Statewide Crash Rate:		400.18			
57512	61184	2188306	0 - 0.21	3100754 - 0	0.21	1	3	0	0	1	0	2	33.3	0.00337	297.05	593.91	0.00	.50
Int of COLE RD, MAIN ST 2, STONINGHAM PL				RD INV 31 00754									Statewide Crash Rate:		243.46			
61184	57929	2188307	0 - 0.75	3100754 - 0.21	0.75	1	3	0	0	1	0	2	33.3	0.01202	83.17	441.23	0.00	.19
Int of COLE RD, WESTWOODS RD				RD INV 31 00754									Statewide Crash Rate:		243.46			
57926	57929	239399	0 - 0.34	3100754 - 0.96	0.34	1	1	0	0	0	0	1	0.0	0.00431	77.38	558.35	0.00	.14
Int of BLUEBERRY PINES, COLE RD				RD INV 31 00754									Statewide Crash Rate:		243.46			
53330	57926	241325	0 - 0.05	3100754 - 1.25	0.05	1	0	0	0	0	0	0	0.0	0.00059	0.00	916.58	0.00	
Int of COLE RD, OLD FALLS RD				RD INV 31 00754									Statewide Crash Rate:		243.46			
51714	53330	233903	0 - 0.02	3100821 - 0	0.02	1	0	0	0	0	0	0	0.0	0.00019	0.00	1049.15	0.00	
Int of MIDDLE RD, OLD FALLS RD				RD INV 31 00821									Statewide Crash Rate:		243.46			
51714	53331	233904	0 - 1.01	3100493 - 0	1.01	1	1	0	0	0	0	1	0.0	0.00233	143.30	652.96	0.00	.22
Int of MIDDLE RD, OLD FALLS RD				RD INV 31 00493									Statewide Crash Rate:		243.46			
53252	53688	241196	0 - 0.32	3120831 - 0	0.32	2	1	0	0	0	0	1	0.0	0.00497	67.04	367.54	0.00	.18
Int of MAIN ST 2, MILL ST, THOMPSON RD				RD INV 31 20831									Statewide Crash Rate:		146.11			
53246	53250	241186	0 - 0.06	3100831 - 0	0.06	1	0	0	0	0	0	0	0.0	0.00034	0.00	854.45	0.00	
3102838 KEN,RTE 99,MILL ST				RD INV 31 00831									Statewide Crash Rate:		200.89			
53247	53250	241189	0 - 0.05	3100831 - 0.06	0.05	1	0	0	0	0	0	0	0.0	0.00076	0.00	746.40	0.00	
3102839 KEN,MILL ST,HAMMOND RD				RD INV 31 00831									Statewide Crash Rate:		200.89			
53247	53248	241188	0 - 0.15	3100831 - 0.11	0.15	1	7	0	0	1	1	5	28.6	0.00220	1061.47	574.67	1.85	
3102839 KEN,MILL ST,HAMMOND RD				RD INV 31 00831									Statewide Crash Rate:		200.89			
53248	53688	241190	0 - 0.15	3100831 - 0.11	0.15	1	0	0	0	0	0	0	0.0	0.00222	0.00	572.91	0.00	
3102840 KEN,MILL ST,BRDGE 47S/O MAIN#2				RD INV 31 00831									Statewide Crash Rate:		200.89			
53245	53250	241185	0 - 0.05	3100817 - 1.60	0.05	1	0	0	0	0	0	0	0.0	0.00046	0.00	963.09	0.00	
3102837 KEN,RTE 99,WHITTEN RD				RD INV 31 00817									Statewide Crash Rate:		243.46			
Study Years: 3.00				Section Totals:	5.05		21	0	0	3	1	17	19.0	0.05130	136.44	373.71	0.37	
				Grand Totals:	5.05		36	0	2	6	4	24	33.3	0.05130	233.90	430.38	0.54	

Lyman
Kennebunk
OLD KENNEBUNK
53331
MIDDLE RD
COLE RD
RD 1001
BLUEBERRY PINES
LITTLEFIELD DR
OLD FALLS 53256
OLD FALLS RD
53330
57926
57929
SETTLERS WY
DEER RUN
POSTAGE WY
WESTWOODS RD
STONINGHAM PL
61184
57512
MAIN ST 2
57932
RUSSELL FARM RD
53337
DOWNING RD
58980
53334
ALEWIVE RD
REMINGTON WY
61190
61187
53251
53252
HOLLAND RD
MILL ST
WARRENS WY
ALFRED RD
53688
53248
53247
53250
53246
53245
CAT MOUSAM RD
HILLSIDE DR
54160
I-95 SB
SPILLER DR
WHITTEN RD
WEBBER HILL RD
53240
54150
MAGUIRE RD
53241
BRANCH RD
LAKEFIELD RD
53242

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

Project ID 2020 AM Peak Hour Base

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	39	361	39	134	113	146
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	25	101	368	132	41	14
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.85		0.85	0.85	0.80		0.75	
Flow Rate (veh/h)	514		289	171	616		248	
% Heavy Vehicles	4		12	12	2		16	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.5	0.0	0.1		0.7	
Prop. Right-Turns	0.1		0.0	1.0	0.7		0.1	
Prop. Heavy Vehicle	0.0		0.1	0.1	0.0		0.2	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.5	-0.5	-0.4		0.4	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.46		0.26	0.15	0.55		0.22	
hd, final value (s)	8.82		9.73	8.71	8.21		9.83	
x, final value	1.26		0.78	0.41	1.40		0.68	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.8		7.4	6.4	6.2		7.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	514		368	411	616		363	
Delay (s/veh)	161.72		39.65	17.43	218.08		31.16	
LOS	F		E	C	F		D	
Approach: Delay (s/veh)	161.72		31.39		218.08		31.16	
LOS	F		D		F		D	
Intersection Delay (s/veh)	130.38							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

Project ID 2020 PM Peak Hour Base

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	28	152	27	357	283	40
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	55	112	255	41	70	8
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.90		0.90	0.90	0.85		0.75	
Flow Rate (veh/h)	229		710	44	494		157	
% Heavy Vehicles	4		2	2	3		9	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.6	0.0	0.1		0.3	
Prop. Right-Turns	0.1		0.0	1.0	0.6		0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.1	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.3	-0.7	-0.3		0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.20		0.63	0.04	0.44		0.14	
hd, final value (s)	8.13		7.98	6.98	6.91		8.57	
x, final value	0.52		1.57	0.09	0.95		0.37	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.1		5.7	4.7	4.9		6.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	428		710	294	519		401	
Delay (s/veh)	19.51		289.57	10.32	53.93		16.59	
LOS	C		F	B	F		C	
Approach: Delay (s/veh)	19.51		273.27		53.93		16.59	
LOS	C		F		F		C	
Intersection Delay (s/veh)	146.73							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	AM Peak Hour
Project ID	
East/West Street: Alfred Rd	

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020
North/South Street: Mill/Thompson	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	39	361	39	140	113	146
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	26	107	390	132	43	14
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.85		0.85	0.85	0.80		0.75	
Flow Rate (veh/h)	514		296	171	652		251	
% Heavy Vehicles	4		12	12	2		16	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.6	0.0	0.0		0.7	
Prop. Right-Turns	0.1		0.0	1.0	0.7		0.1	
Prop. Heavy Vehicle	0.0		0.1	0.1	0.0		0.2	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.5	-0.5	-0.4		0.4	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.46		0.26	0.15	0.58		0.22	
hd, final value (s)	8.87		9.76	8.74	8.26		9.87	
x, final value	1.27		0.80	0.41	1.50		0.69	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.9		7.5	6.4	6.3		7.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	514		368	410	652		362	
Delay (s/veh)	165.06		42.18	17.49	257.03		32.00	
LOS	F		E	C	F		D	
Approach: Delay (s/veh)	165.06		33.14		257.03		32.00	
LOS	F		D		F		D	
Intersection Delay (s/veh)	146.46							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	PM Peak Hour
Project ID	A-1
East/West Street: Alfred Rd	

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020
North/South Street: Mill/Thompson	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	28	152	29	382	283	40
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	58	117	266	41	75	8
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.90		0.90	0.90	0.85		0.75	
Flow Rate (veh/h)	231		738	44	517		164	
% Heavy Vehicles	4		2	2	3		9	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.6	0.0	0.1		0.3	
Prop. Right-Turns	0.1		0.0	1.0	0.6		0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.1	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.3	-0.7	-0.3		0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.21		0.66	0.04	0.46		0.15	
hd, final value (s)	8.32		8.17	7.15	7.00		8.72	
x, final value	0.53		1.68	0.09	1.00		0.40	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.3		5.9	4.9	5.0		6.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	425		738	294	517		400	
Delay (s/veh)	20.45		333.96	10.54	67.27		17.34	
LOS	C		F	B	F		C	
Approach: Delay (s/veh)	20.45		315.76		67.27		17.34	
LOS	C		F		F		C	
Intersection Delay (s/veh)	170.76							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

Project ID

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	40	361	39	134	113	151
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	25	104	368	153	46	17
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.85		0.85	0.85	0.80		0.75	
Flow Rate (veh/h)	516		289	177	619		287	
% Heavy Vehicles	4		12	12	2		16	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.5	0.0	0.1		0.7	
Prop. Right-Turns	0.1		0.0	1.0	0.7		0.1	
Prop. Heavy Vehicle	0.0		0.1	0.1	0.0		0.2	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.5	-0.5	-0.4		0.4	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.46		0.26	0.16	0.55		0.26	
hd, final value (s)	9.14		9.97	8.95	8.52		9.88	
x, final value	1.31		0.80	0.44	1.47		0.79	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	7.1		7.7	6.7	6.5		7.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	516		359	400	619		363	
Delay (s/veh)	183.10		42.70	18.51	245.20		41.11	
LOS	F		E	C	F		E	
Approach: Delay (s/veh)	183.10		33.51		245.20		41.11	
LOS	F		D		F		E	
Intersection Delay (s/veh)	144.95							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	PM Peak Hour
Project ID	"B"

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	34	152	27	357	283	48
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	55	130	255	48	80	10
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.90		0.90	0.90	0.85		0.75	
Flow Rate (veh/h)	235		710	53	515		183	
% Heavy Vehicles	4		2	2	3		9	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.6	0.0	0.1		0.3	
Prop. Right-Turns	0.1		0.0	1.0	0.6		0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.1	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.3	-0.7	-0.3		0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.21		0.63	0.05	0.46		0.16	
hd, final value (s)	8.46		8.28	7.27	7.14		8.77	
x, final value	0.55		1.63	0.11	1.02		0.45	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.5		6.0	5.0	5.1		6.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	418		710	303	515		399	
Delay (s/veh)	21.43		316.12	10.84	72.59		18.62	
LOS	C		F	B	F		C	
Approach: Delay (s/veh)	21.43		294.92		72.59		18.62	
LOS	C		F		F		C	
Intersection Delay (s/veh)	159.70							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	AM Peak Hour
Project ID	
East/West Street: Alfred Rd	

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020
North/South Street: Mill/Thompson	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	42	389	42	134	121	146
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	27	101	368	132	41	15
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.85		0.85	0.85	0.80		0.75	
Flow Rate (veh/h)	555		299	171	618		250	
% Heavy Vehicles	4		12	12	2		16	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.5	0.0	0.1		0.7	
Prop. Right-Turns	0.1		0.0	1.0	0.7		0.1	
Prop. Heavy Vehicle	0.0		0.1	0.1	0.0		0.2	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.5	-0.5	-0.4		0.4	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.49		0.27	0.15	0.55		0.22	
hd, final value (s)	8.88		9.74	8.73	8.27		9.87	
x, final value	1.37		0.81	0.41	1.42		0.69	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.9		7.4	6.4	6.3		7.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	555		368	411	618		361	
Delay (s/veh)	205.84		42.89	17.48	224.52		31.85	
LOS	F		E	C	F		D	
Approach: Delay (s/veh)	205.84		33.65		224.52		31.85	
LOS	F		D		F		D	
Intersection Delay (s/veh)	146.20							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

Project ID

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	31	169	30	357	315	40
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	60	112	255	41	70	9
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.90		0.90	0.90	0.85		0.75	
Flow Rate (veh/h)	254		746	44	500		159	
% Heavy Vehicles	4		2	2	3		9	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.5	0.0	0.1		0.3	
Prop. Right-Turns	0.1		0.0	1.0	0.6		0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.1	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.3	-0.7	-0.3		0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.23		0.66	0.04	0.44		0.14	
hd, final value (s)	8.25		8.17	7.18	7.07		8.80	
x, final value	0.58		1.69	0.09	0.98		0.39	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.3		5.9	4.9	5.1		6.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	427		746	294	509		393	
Delay (s/veh)	22.14		341.96	10.57	62.09		17.29	
LOS	C		F	B	F		C	
Approach: Delay (s/veh)	22.14		323.50		62.09		17.29	
LOS	C		F		F		C	
Intersection Delay (s/veh)	173.21							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

Project ID 2020 AM Peak Hour All Growth Areas

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	43	389	43	140	121	151
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	28	110	390	153	48	18
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.85		0.85	0.85	0.80		0.75	
Flow Rate (veh/h)	557		306	177	658		292	
% Heavy Vehicles	4		12	12	2		16	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.5	0.0	0.1		0.7	
Prop. Right-Turns	0.1		0.0	1.0	0.7		0.1	
Prop. Heavy Vehicle	0.0		0.1	0.1	0.0		0.2	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.5	-0.5	-0.4		0.4	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.50		0.27	0.16	0.58		0.26	
hd, final value (s)	9.26		10.01	9.00	8.65		9.95	
x, final value	1.43		0.85	0.44	1.58		0.81	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	7.3		7.7	6.7	6.6		7.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	557		359	399	658		360	
Delay (s/veh)	233.73		49.64	18.64	294.49		43.66	
LOS	F		E	C	F		E	
Approach: Delay (s/veh)	233.73		38.28		294.49		43.66	
LOS	F		E		F		E	
Intersection Delay (s/veh)	178.49							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SK
Agency/Co.	MTR
Date Performed	12/6/2010
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alfred & Mill/Thompson
Jurisdiction	Kennebunk
Analysis Year	2020

Project ID 2020 PM Peak Hour All Growth Areas

East/West Street: Alfred Rd

North/South Street: Mill/Thompson

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	37	169	32	382	315	48
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	65	135	266	48	85	11
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LT	R	LTR		LTR	
PHF	0.90		0.90	0.90	0.85		0.75	
Flow Rate (veh/h)	263		774	53	546		191	
% Heavy Vehicles	4		2	2	3		9	
No. Lanes	1		2		1		1	
Geometry Group	4a		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.5	0.0	0.1		0.3	
Prop. Right-Turns	0.1		0.0	1.0	0.6		0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0		0.1	
hLT-adj	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.3	-0.7	-0.3		0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20	3.20	3.20		3.20	
x, initial	0.23		0.69	0.05	0.49		0.17	
hd, final value (s)	8.54		8.46	7.45	7.35		8.95	
x, final value	0.62		1.82	0.11	1.12		0.48	
Move-up time, m (s)	2.0		2.3		2.0		2.0	
Service Time, t_s (s)	6.5		6.2	5.1	5.4		7.0	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	415		774	303	546		390	
Delay (s/veh)	24.69		397.13	11.06	102.32		19.80	
LOS	C		F	B	F		C	
Approach: Delay (s/veh)	24.69		372.39		102.32		19.80	
LOS	C		F		F		C	
Intersection Delay (s/veh)	204.77							
Intersection LOS	F							

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SK	Intersection	Alfred & Mill/Thompson
Agency/Co.	MTR	Jurisdiction	Kennebunk
Date Performed	12/6/2010	Analysis Year	2020
Analysis Time Period	AM Peak Hour		

Project Description 2020 AM Peak Hour All Build

East/West Street: Alfred Road | North/South Street: Mill/Thompson

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	28	110	390	153	48	18
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	32	129	458	179	56	21
Percent Heavy Vehicles	2	--	--	16	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	43	389	43	140	121	151
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	50	457	50	164	142	177
Percent Heavy Vehicles	4	4	4	12	12	12
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR	LT		R		LTR	
v (veh/h)	32	179	306		177		557	
C (m) (veh/h)	1522	923	0		664		157	
v/c	0.02	0.19			0.27		3.55	
95% queue length	0.06	0.72			1.07		53.88	
Control Delay (s/veh)	7.4	9.8			12.4		1206	
LOS	A	A	F		B		F	
Approach Delay (s/veh)	--	--	1206					
Approach LOS	--	--	F					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SK	Intersection	Alfred & Mill/Thompson
Agency/Co.	MTR	Jurisdiction	Kennebunk
Date Performed	12/6/2010	Analysis Year	2020
Analysis Time Period	PM Peak Hour		

Project Description 2020 PM Peak Hour All Build

East/West Street: Alfred Road | North/South Street: Mill/Thompson

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	63	135	266	48	85	11
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	74	158	312	56	99	12
Percent Heavy Vehicles	2	--	--	9	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	37	169	32	382	315	48
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	43	198	37	449	370	56
Percent Heavy Vehicles	4	4	4	3	3	
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR	LT		R		LTR	
v (veh/h)	74	56	819		56		278	
C (m) (veh/h)	1479	1056	150		731		0	
v/c	0.05	0.05	5.46		0.08			
95% queue length	0.16	0.17	87.15		0.25			
Control Delay (s/veh)	7.6	8.6	2065		10.3			
LOS	A	A	F		B		F	
Approach Delay (s/veh)	--	--	1933					
Approach LOS	--	--	F					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SK	Intersection	Alfred & Mill/Thompson
Agency/Co.	MTR	Jurisdiction	Kennebunk
Date Performed	12/6/2010	Analysis Year	2020
Analysis Time Period	AM Peak Hour		

Project Description 2020 AM Peak Hour All Build

East/West Street: Alfred Road | North/South Street: Mill/Thompson

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	43	389	43	140	121	151
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	50	457	50	164	142	177
Percent Heavy Vehicles	4	--	--	12	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	LTR			LT		R
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	28	110	390	153	48	18
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	32	129	458	179	56	21
Percent Heavy Vehicles	2	2	2	16	16	16
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT		LTR			LTR	
v (veh/h)	50	164		619			256	
C (m) (veh/h)	1230	1008		303			6	
v/c	0.04	0.16		2.04			42.67	
95% queue length	0.13	0.58		44.69			34.07	
Control Delay (s/veh)	8.1	9.3		508.4			19950	
LOS	A	A		F			F	
Approach Delay (s/veh)	--	--	508.4			19950		
Approach LOS	--	--	F			F		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SK	Intersection	Alfred & Mill/Thompson
Agency/Co.	MTR	Jurisdiction	Kennebunk
Date Performed	12/6/2010	Analysis Year	2020
Analysis Time Period	PM Peak Hour		

Project Description 2020 PM Peak Hour All Build

East/West Street: Alfred Road | North/South Street: Mill/Thompson

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	37	169	32	382	315	48
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	43	198	37	449	370	56
Percent Heavy Vehicles	4	--	--	3	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	LTR			LT		R
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	63	135	266	48	85	11
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR (veh/h)	74	158	312	56	99	12
Percent Heavy Vehicles	2	2	2	9	9	9
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT		LTR			LTR	
v (veh/h)	43	449		544			167	
C (m) (veh/h)	1123	1326		0			0	
v/c	0.04	0.34						
95% queue length	0.12	1.51						
Control Delay (s/veh)	8.3	9.1						
LOS	A	A		F			F	
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

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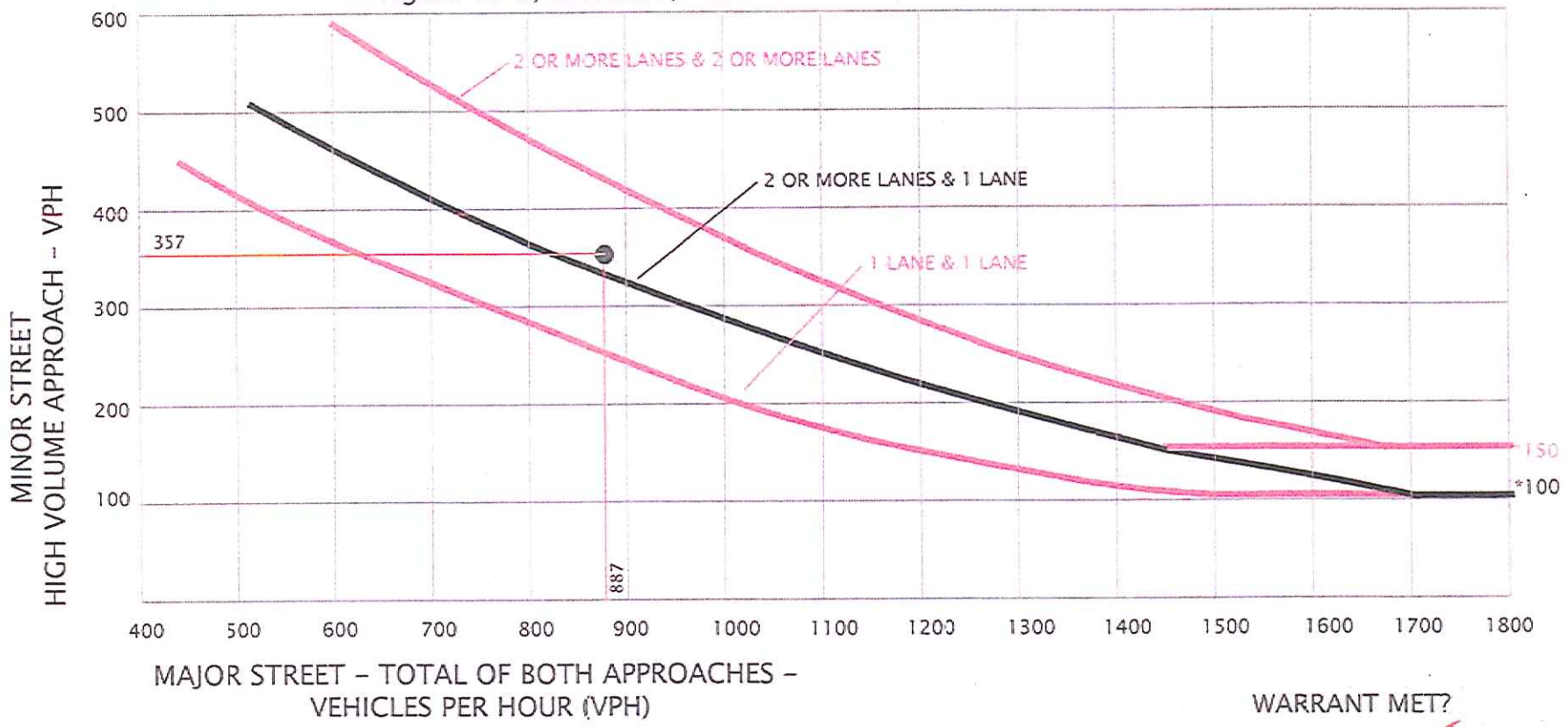
BASE 2020 VOLUMES
Figure 4C-3, Warrant 3, Peak Hour



*Note: 150 vph applies as lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

WARRANT MET?

☑ YES ☐ NO

Alfred Road & Thompson/Mill St.
2020 Base PM Peak Hour Volumes
Kennebunk, Maine

Maine Traffic Resources
25 Vine Street
Gardiner, ME
04345
tel: (207) 582-5252
fax: (207) 582-1677

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	361	39	134	113	146	25	101	368	132	41	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		0.90			0.99	
Flt Protected		1.00			0.97	1.00		1.00			0.97	
Satd. Flow (prot)		1797			1652	1442		1671			1566	
Flt Permitted		0.95			0.49	1.00		0.98			0.38	
Satd. Flow (perm)		1712			830	1442		1635			620	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.80	0.80	0.80	0.75	0.75	0.75
Adj. Flow (vph)	46	425	46	158	133	172	31	126	460	176	55	19
RTOR Reduction (vph)	0	5	0	0	0	102	0	154	0	0	4	0
Lane Group Flow (vph)	0	512	0	0	291	70	0	463	0	0	246	0
Heavy Vehicles (%)	4%	4%	4%	12%	12%	12%	2%	2%	2%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		26.0			26.0	26.0		28.1			28.1	
Effective Green, g (s)		26.0			26.0	26.0		28.1			28.1	
Actuated g/C Ratio		0.41			0.41	0.41		0.44			0.44	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		694			337	585		717			272	
v/s Ratio Prot												
v/s Ratio Perm		0.30			c0.35	0.05		0.28			c0.40	
v/c Ratio		0.74			0.86	0.12		0.65			0.90	
Uniform Delay, d1		16.2			17.4	11.9		14.1			16.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		4.1			19.8	0.1		2.0			30.4	
Delay (s)		20.3			37.2	12.0		16.1			47.1	
Level of Service		C			D	B		B			D	
Approach Delay (s)		20.3			27.9			16.1			47.1	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	152	27	357	283	40	55	112	255	41	70	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.92			0.99	
Flt Protected		0.99			0.97	1.00		0.99			0.98	
Satd. Flow (prot)		1783			1812	1583		1683			1697	
Flt Permitted		0.88			0.72	1.00		0.94			0.63	
Satd. Flow (perm)		1586			1346	1583		1590			1085	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	31	169	30	397	314	44	65	132	300	55	93	11
RTOR Reduction (vph)	0	8	0	0	0	16	0	78	0	0	4	0
Lane Group Flow (vph)	0	222	0	0	711	28	0	419	0	0	155	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	3%	3%	3%	9%	9%	9%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		37.6			37.6	37.6		19.3			19.3	
Effective Green, g (s)		37.6			37.6	37.6		19.3			19.3	
Actuated g/C Ratio		0.56			0.56	0.56		0.29			0.29	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		891			756	890		459			313	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.53	0.02		c0.26			0.14	
v/c Ratio		0.25			0.94	0.03		0.91			0.50	
Uniform Delay, d1		7.5			13.6	6.5		23.0			19.8	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			19.6	0.0		22.3			1.2	
Delay (s)		7.6			33.2	6.5		45.3			21.0	
Level of Service		A			C	A		D			C	
Approach Delay (s)		7.6			31.7			45.3			21.0	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	389	43	140	121	151	28	110	390	153	48	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		0.90			0.99	
Flt Protected		1.00			0.97	1.00		1.00			0.97	
Satd. Flow (prot)		1796			1652	1442		1673			1565	
Flt Permitted		0.94			0.45	1.00		0.97			0.37	
Satd. Flow (perm)		1701			755	1442		1629			595	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.80	0.80	0.80	0.75	0.75	0.75
Adj. Flow (vph)	51	458	51	165	142	178	35	138	488	204	64	24
RTOR Reduction (vph)	0	5	0	0	0	107	0	131	0	0	4	0
Lane Group Flow (vph)	0	555	0	0	307	71	0	530	0	0	288	0
Heavy Vehicles (%)	4%	4%	4%	12%	12%	12%	2%	2%	2%	16%	16%	16%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		30.0			30.0	30.0		35.0			35.0	
Effective Green, g (s)		30.0			30.0	30.0		35.0			35.0	
Actuated g/C Ratio		0.40			0.40	0.40		0.47			0.47	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		680			302	577		760			278	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.41	0.05		0.33			c0.48	
v/c Ratio		0.82			1.02	0.12		0.70			1.04	
Uniform Delay, d1		20.0			22.5	14.2		15.8			20.0	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		7.5			56.1	0.1		2.8			63.4	
Delay (s)		27.6			78.6	14.3		18.6			83.4	
Level of Service		C			E	B		B			F	
Approach Delay (s)		27.6			55.0			18.6			83.4	
Approach LOS		C			D			B			F	

Intersection Summary			
HCM Average Control Delay	39.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	169	32	382	315	48	63	135	266	48	85	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0			5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.92			0.99	
Flt Protected		0.99			0.97	1.00		0.99			0.98	
Satd. Flow (prot)		1780			1813	1583		1690			1696	
Flt Permitted		0.76			0.70	1.00		0.93			0.58	
Satd. Flow (perm)		1356			1305	1583		1581			998	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	41	188	36	424	350	53	74	159	313	64	113	15
RTOR Reduction (vph)	0	7	0	0	0	15	0	60	0	0	4	0
Lane Group Flow (vph)	0	258	0	0	774	38	0	486	0	0	189	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	3%	3%	3%	9%	9%	9%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		46.0			46.0	46.0		24.0			24.0	
Effective Green, g (s)		46.0			46.0	46.0		24.0			24.0	
Actuated g/C Ratio		0.58			0.58	0.58		0.30			0.30	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		780			750	910		474			299	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.59	0.02		c0.31			0.19	
v/c Ratio		0.33			1.03	0.04		1.02			0.63	
Uniform Delay, d1		8.9			17.0	7.4		28.0			24.2	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.3			41.4	0.0		47.8			4.3	
Delay (s)		9.2			58.4	7.4		75.8			28.5	
Level of Service		A			E	A		E			C	
Approach Delay (s)		9.2			55.1			75.8			28.5	
Approach LOS		A			E			E			C	

Intersection Summary			
HCM Average Control Delay	51.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/7/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	361	39	134	113	146	25	101	368	132	41	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	0.92			0.90			0.99	
Flt Protected		1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)		1797		1612	1553			1671			1566	
Flt Permitted		0.95		0.36	1.00			0.98			0.40	
Satd. Flow (perm)		1707		606	1553			1636			655	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.80	0.80	0.80	0.75	0.75	0.75
Adj. Flow (vph)	46	425	46	158	133	172	31	126	460	176	55	19
RTOR Reduction (vph)	0	4	0	0	58	0	0	134	0	0	4	0
Lane Group Flow (vph)	0	513	0	158	247	0	0	483	0	0	246	0
Heavy Vehicles (%)	4%	4%	4%	12%	12%	12%	2%	2%	2%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.5		23.5	23.5			28.8			28.8	
Effective Green, g (s)		23.5		23.5	23.5			28.8			28.8	
Actuated g/C Ratio		0.38		0.38	0.38			0.46			0.46	
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		644		229	586			756			303	
v/s Ratio Prot					0.16							
v/s Ratio Perm		c0.30		0.26				0.29			c0.38	
v/c Ratio		0.80		0.69	0.42			0.64			0.81	
Uniform Delay, d1		17.3		16.3	14.4			12.8			14.4	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		6.8		8.4	0.5			1.8			15.2	
Delay (s)		24.0		24.7	14.9			14.6			29.6	
Level of Service		C		C	B			B			C	
Approach Delay (s)		24.0			18.2			14.6			29.6	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/7/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	152	27	357	283	40	55	112	255	41	70	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.98			0.92			0.99	
Flt Protected		0.99		0.95	1.00			0.99			0.98	
Satd. Flow (prot)		1783		1770	1828			1683			1697	
Flt Permitted		0.93		0.65	1.00			0.94			0.76	
Satd. Flow (perm)		1664		1206	1828			1589			1306	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	31	169	30	397	314	44	65	132	300	55	93	11
RTOR Reduction (vph)	0	7	0	0	7	0	0	72	0	0	4	0
Lane Group Flow (vph)	0	223	0	397	351	0	0	425	0	0	155	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	3%	3%	3%	9%	9%	9%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		25.9		25.9	25.9			20.7			20.7	
Effective Green, g (s)		25.9		25.9	25.9			20.7			20.7	
Actuated g/C Ratio		0.46		0.46	0.46			0.37			0.37	
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		761		552	836			581			478	
v/s Ratio Prot					0.19							
v/s Ratio Perm		0.13		c0.33				c0.27			0.12	
v/c Ratio		0.29		0.72	0.42			0.73			0.32	
Uniform Delay, d1		9.6		12.4	10.3			15.5			12.9	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.2		4.5	0.3			4.7			0.4	
Delay (s)		9.8		16.9	10.7			20.3			13.3	
Level of Service		A		B	B			C			B	
Approach Delay (s)		9.8			13.9			20.3			13.3	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	56.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

1/10/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	389	43	140	121	151	28	110	390	153	48	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	0.92			0.90			0.99	
Flt Protected		1.00		0.95	1.00			1.00			0.97	
Satd. Flow (prot)		1796		1612	1555			1673			1565	
Flt Permitted		0.94		0.31	1.00			0.97			0.38	
Satd. Flow (perm)		1697		527	1555			1630			622	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.80	0.80	0.80	0.75	0.75	0.75
Adj. Flow (vph)	51	458	51	165	142	178	35	138	488	204	64	24
RTOR Reduction (vph)	0	5	0	0	60	0	0	119	0	0	4	0
Lane Group Flow (vph)	0	555	0	165	260	0	0	542	0	0	288	0
Heavy Vehicles (%)	4%	4%	4%	12%	12%	12%	2%	2%	2%	16%	16%	16%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		27.9		27.9	27.9			37.2			37.2	
Effective Green, g (s)		27.9		27.9	27.9			37.2			37.2	
Actuated g/C Ratio		0.37		0.37	0.37			0.50			0.50	
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		630		196	578			807			308	
v/s Ratio Prot					0.17							
v/s Ratio Perm		c0.33		0.31				0.33			c0.46	
v/c Ratio		0.88		0.84	0.45			0.67			0.94	
Uniform Delay, d1		22.0		21.6	17.8			14.3			17.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		13.6		26.5	0.6			2.2			34.6	
Delay (s)		35.7		48.1	18.4			16.5			52.5	
Level of Service		D		D	B			B			D	
Approach Delay (s)		35.7			28.5			16.5			52.5	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Alfred Road & Thompson Road

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	322	286	214	229	260
Average Queue (ft)	189	97	99	166	162
95th Queue (ft)	301	199	178	256	266
Link Distance (ft)	315	348	348	214	210
Upstream Blk Time (%)	0			5	14
Queuing Penalty (veh)	0			0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
3: Alfred Road & Thompson Road

12/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	169	32	382	315	48	63	135	266	48	85	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	0.98			0.92			0.99	
Flt Protected		0.99		0.95	1.00			0.99			0.98	
Satd. Flow (prot)		1780		1770	1826			1690			1696	
Flt Permitted		0.90		0.60	1.00			0.93			0.71	
Satd. Flow (perm)		1620		1118	1826			1579			1227	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	41	188	36	424	350	53	74	159	313	64	113	15
RTOR Reduction (vph)	0	7	0	0	7	0	0	62	0	0	4	0
Lane Group Flow (vph)	0	258	0	424	396	0	0	484	0	0	188	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	3%	3%	3%	9%	9%	9%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		30.3		30.3	30.3			24.4			24.4	
Effective Green, g (s)		30.3		30.3	30.3			24.4			24.4	
Actuated g/C Ratio		0.47		0.47	0.47			0.38			0.38	
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		759		524	855			595			463	
v/s Ratio Prot					0.22							
v/s Ratio Perm		0.16		c0.38				c0.31			0.15	
v/c Ratio		0.34		0.81	0.46			0.81			0.41	
Uniform Delay, d1		10.9		14.7	11.7			18.1			14.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.3		9.0	0.4			8.4			0.6	
Delay (s)		11.1		23.7	12.1			26.5			15.4	
Level of Service		B		C	B			C			B	
Approach Delay (s)		11.1			18.0			26.5			15.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Alfred Road & Thompson Road

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	204	327	246	243	156
Average Queue (ft)	93	167	116	170	75
95th Queue (ft)	163	275	199	269	136
Link Distance (ft)	315	348	348	214	210
Upstream Blk Time (%)	0	0		7	
Queuing Penalty (veh)	0	0		0	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 0