

Prepared by the  
**MONTACHUSETT REGIONAL  
PLANNING COMMISSION  
(MRPC)**



## Westminster – Gardner – Winchendon Route 140 North Corridor Profile

### TECHNICAL APPENDIX



Route 140 at Route 101, Gardner, MA  
Source: Google Street View

The preparation of this document has been financed in part through a grant from the U.S. Department of Transportation, Federal Highway Administration, under Contracts #0052453 and #69656 and with the Massachusetts Department of Transportation. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

**January 2012**



MONTACHUSETT METROPOLITAN PLANNING ORGANIZATION SIGNATORIES

Massachusetts Department of Transportation (MassDOT) Secretary	Richard A. Davey
MassDOT Highway Division Administrator	Frank DePaola
Montachusett Regional Planning Commission (MRPC) Chairman	Victor Koivumaki
Montachusett Regional Transit Authority (MART) Chairman	Mayor Lisa Wong
Mayor City of Leominster	Mayor Dean Mazzarella
Mayor City of Gardner	Mayor Mark Hawke
Chairperson, Winchendon Board of Selectmen <i>Subregion 1</i>	R. Jackson Blair
Chairperson, Townsend Board of Selectmen <i>Subregion 2</i>	David Chenelle
Chairperson, Ayer Board of Selectmen <i>Subregion 3</i>	Gary Luca
Chairperson, Lancaster Board of Selectmen <i>Subregion 4</i>	Christopher Williams

MPO SUB-SIGNATORY COMMITTEE MEMBERS

David Mohler, Director OTP, MassDOT for Secretary Davey  
Arthur Frost, Project Development Engineer for Administrator Frank DePaola  
Glenn Eaton, Executive Director, MRPC, for Chairman Koivumaki  
Mohammed H. Khan, Administrator, MART, for Chairman Mayor Wong

EXOFFICIO MEMBERS

Paul Maloney, P.E. Federal Highway Administration  
William Gordon, P.E. Federal Transit Administration

MONTACHUSETT REGIONAL PLANNING COMMISSION (MRPC) OFFICERS

Victor Koivumaki, Chairman	Lancaster
Paula Caron, Vice Chairman	Fitchburg
Christopher Jones, Secretary	Townsend
James W. Meehan, Treasurer	Athol
Robert Grubb, Asst. Treasurer	Gardner

MONTACHUSETT JOINT TRANSPORTATION COMMITTEE (MJTC) OFFICERS

David Manugian, Chairman	Groton
Paula Caron, Vice Chairman	Fitchburg
Robert Saiia, Secretary	Lunenburg

MONTACHUSETT REGIONAL PLANNING COMMISSION STAFF

Glenn Eaton, Executive Director  
Brad Harris, Transportation Project Director  
George Kahale, Transit Project Director  
John Hume, Director of Planning and Development  
Kevin Flynn, Director of Community Development  
Chantell Fleck, Regional Planner  
Linda Parmenter, Administrative Assistant  
George Snow, Principal Planner  
Sheri Bean, Transportation Planner  
Brian Doherty, Transportation Planner  
Ann Carabba, Regional Planner  
Nancy Belliveau, Fiscal Director  
Bobbi Jo Johnson, Fiscal/Planning Assistant  
Jason Stanton, GIS Director  
Renee Marion, GIS Analyst  
Stephanie Brow, Administrative Secretary  
Mariena Harris, Intern  
Nicola Kahale, Intern

MONTACHUSETT JOINT TRANSPORTATION COMMITTEE

<u>COMMUNITY</u>	<u>APPOINTED BY SELECTMEN OR MAYOR</u>	<u>APPOINTED BY PLANNING BOARD</u>
Ashburnham	Margaret Whitney	Bruce Whitney
Ashby	Mary Krapf	Wayne Stacy
Athol	Doug Walsh	
Ayer	Pauline Hamel	Peter Johnston
Clinton		
Fitchburg		Paula Caron
Gardner		
Groton	Anna Eliot	Joshua Degen
Harvard	Lucy Wallace	Joseph Sudol, Jr.
Hubbardston	Lyn Gauthier	James Crystoff
Lancaster		Noreen Piazza
Leominster	David DiGiovanni	
Lunenburg		Robert Saiia
Petersham	Roy Nilson	
Phillipston	Ronald Recos	
Royalston	Andrew West	
Shirley		
Sterling		Charles Hadju
Templeton	Bud Chase	Gerald White
Townsend	Edward Kukkula	
Westminster		Andrew J. Sear
Winchendon	Jim Kreidler	John White

EXOFFICIO MEMBERS

Trey Joseph Wadsworth	Office of Transportation Planning (OTP) and Massachusetts Department of Transportation (MassDOT)
Paul Maloney, P.E.	Federal Highway Administration (FHWA)
William Gordon, P.E.	Federal Transit Administration (FTA)
Thomas C. Curron	Department of Environmental Protection (DEP)
Laurie Scarbrough	MassDOT Highway Division - District 2 MassDOT Highway Division - District 3 Montachusett Regional Planning Commission (MRPC)

ORGANIZATION MEMBERS

Al Futterman	Nashua River Watershed Association (NRWA)
Donna Brooks	Northern Worcester County Board of Realtors
Tony Salerno	Amalgamated Transit Union #690 (ATU 690)
Kit Walker	Fitchburg Airport Commission North Central MA Chamber of Commerce Fitchburg Council on Aging
Frank Garcia	South Fitchburg Neighborhood Association
Peter Lowitt	Mass Development Devens Enterprise Commission (DEC)

**Route 140 North  
Safety Improvement Steering Committee  
Membership**

**Town of Westminster**

Karen Murphy, Westminster Town Administrator  
Steve Wallace, Westminster Town Planner  
Marie Auger, Westminster Planning Board

**City of Gardner**

Rob Hubbard, Planning Director  
Robert Hankinson, City Engineer (Gardner)  
Edward Goss, GIS Coordinator (Gardner Engineering Dept)  
Rock Barrieau, Deputy Chief of Police (Gardner)  
Jennifer Dymek, Grants Administrator (Gardner)  
Neil Janssens, Gardner City Council

**Town of Winchendon**

Jim Kreidler, Winchendon Town Manager  
Ellen DeCoteau, Winchendon Planning Agent  
John White, Winchendon Planning Board Chair

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**Appendix – HSIP Criteria**

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## MRPC Highway Safety Improvement Program (HSIP) Candidate Eligibility Criteria\*

**Crash Cluster Locations:** A location must have a crash cluster (description below) ranked in the top 5% of the crash clusters in the MRPC region to become an HSIP eligible candidate. MassDOT crash data is the data source for the crash clusters. Based on the latest MassDOT results for the MRPC region, the top 5% of crash clusters obtained a minimum *Equivalent Property Damage Only* (EPDO) point total of 33 points. Crash clusters may occur anywhere along a roadway therefore any location is HSIP eligible. Furthermore, if an alternate source of crash data such as a municipality produces a crash cluster that would rank in a region's top 5% list the location may become an HSIP eligible candidate.

**Crash cluster and EPDO description:** MassDOT crash clusters aggregate crashes that occur at a location over a three year period through the use of Geographic Information System (GIS) processes. The resulting crash clusters are then ranked using the EPDO crash severity rating system which gives more weight, or points, to higher severity crash outcomes. EPDO rates gives one point (least weight) to a *Property Damage Only* (PDO) crash; five points for a crash involving at least one *Non-fatal Injury*; and ten points (most weight) to a crash that involves at least one *Fatal Injury*. After determining the EPDO points of each crash within a crash cluster, the points are totaled for each crash cluster.

**Other:** Often there are crash types that occur within a region that may not be significant state-wide or in other regions therefore a ranking has not been prepared for that crash type. Roadway lane departure crashes may become an HSIP eligible candidate using this criterion.

**MRPC 'Other' HSIP Eligible Candidate Recommendation:** A major consideration in reducing roadway lane departure crashes is to reduce the number of fatal or incapacitating injury (description below) crashes. As reported in the 2007 MRPC Regional Transportation Plan, several roadways experienced a total of three to four lane departure fatal or incapacitating injury crashes each - the highest for the MRPC region. If a roadway under study meets or exceeds that threshold total it will be submitted as an HSIP eligible candidate. Furthermore, if an alternate source of crash data such as a municipality produces lane departure fatal or incapacitating injury crash totals that meet or exceed the threshold it will be submitted as an HSIP eligible candidate.

**Incapacitating Injury vs Non-fatal Injury Crash:** An incapacitating injury crash is any crash that results in an injury which prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred. A non-fatal injury crash does not prevent the injured person from continuing their activity.

**Requirement:** All HSIP candidate locations will require a Road Safety Audit (RSA) report to be completed to determine eligibility. The report will then go before the MassDOT HSIP Committee and Project Review Committee for approval.

\*based on the MA HSIP

## Appendix – Traffic Volumes

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Montachusett Regional Planning Commission

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

Start Time	21-Sep-10 Tue	North	South	Combined Total	
12:00 AM		69	20	89	█
01:00		32	13	45	█
02:00		34	19	53	█
03:00		17	22	39	█
04:00		8	84	92	█
05:00		50	256	306	██████████
06:00		114	418	532	██████████████████
07:00		250	632	882	██████████████████████████████
08:00		281	503	784	██████████████████████████████
09:00		243	371	614	██████████████████████████████
10:00		284	336	620	██████████████████████████████
11:00		280	311	591	██████████████████████████████
12:00 PM		320	277	597	██████████████████████████████
01:00		316	355	671	██████████████████████████████
02:00		356	338	694	██████████████████████████████
03:00		488	387	875	██████████████████████████████
04:00		581	417	998	██████████████████████████████
05:00		639	345	984	██████████████████████████████
06:00		507	308	815	██████████████████████████████
07:00		314	187	501	██████████████████████████████
08:00		251	140	391	██████████████████████████████
09:00		215	83	298	██████████████████████████████
10:00		117	72	189	██████████████████████████████
11:00		74	41	115	██████████████████████████████
Total		5840	5935		
Percent		49.6%	50.4%		

Montachusett Regional Planning Commission

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

Start Time	22-Sep-10 Wed	North	South	Combined Total	
12:00 AM		71	11	82	█
01:00		34	13	47	█
02:00		26	11	37	█
03:00		10	20	30	█
04:00		22	91	113	█
05:00		46	284	330	█
06:00		128	442	570	█
07:00		250	605	855	█
08:00		271	505	776	█
09:00		265	361	626	█
10:00		247	335	582	█
11:00		342	297	639	█
12:00 PM		338	286	624	█
01:00		328	339	667	█
02:00		372	360	732	█
03:00		489	381	870	█
04:00		579	400	979	█
05:00		585	318	903	█
06:00		485	286	771	█
07:00		316	212	528	█
08:00		282	158	440	█
09:00		156	117	273	█
10:00		137	87	224	█
11:00		92	39	131	█
Total		5871	5958		
Percent		49.6%	50.4%		
Grand Total		11711	11893		
Percentage		49.6%	50.4%		
ADT		ADT 11,829		AADT 11,829	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

Start Time	21-Sep-10 Tue	South	North	Combined Total	
12:00 AM		22	71	93	█
01:00		15	32	47	█
02:00		24	37	61	█
03:00		26	17	43	█
04:00		92	11	103	█
05:00		280	52	332	██████████
06:00		469	128	597	██████████████████
07:00		691	280	971	██████████████████████████████
08:00		548	296	844	██████████████████████████████
09:00		391	262	653	██████████████████████████████
10:00		370	297	667	██████████████████████████████
11:00		337	305	642	██████████████████████████████
12:00 PM		311	354	665	██████████████████████████████
01:00		372	351	723	██████████████████████████████
02:00		368	393	761	██████████████████████████████
03:00		431	546	977	██████████████████████████████
04:00		445	636	1081	██████████████████████████████
05:00		352	691	1043	██████████████████████████████
06:00		331	536	867	██████████████████████████████
07:00		198	320	518	██████████████████████████████
08:00		157	280	437	██████████████████████████████
09:00		85	221	306	██████████
10:00		77	119	196	██████
11:00		38	83	121	███
Total		6430	6318		
Percent		50.4%	49.6%		

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 34320101003  
 Station ID:  
 Counter#018131

Start Time	22-Sep-10 Wed	South	North	Combined Total	
12:00 AM		14	74	88	█
01:00		12	35	47	█
02:00		13	28	41	█
03:00		23	12	35	█
04:00		102	27	129	█
05:00		304	48	352	█
06:00		497	152	649	█
07:00		658	277	935	█
08:00		560	294	854	█
09:00		377	291	668	█
10:00		357	277	634	█
11:00		329	366	695	█
12:00 PM		307	354	661	█
01:00		362	365	727	█
02:00		368	384	752	█
03:00		418	559	977	█
04:00		426	613	1039	█
05:00		401	679	1080	█
06:00		309	518	827	█
07:00		224	343	567	█
08:00		175	308	483	█
09:00		130	184	314	█
10:00		95	140	235	█
11:00		44	98	142	█
Total		6505	6426		
Percent		50.3%	49.7%		
Grand Total		12935	12744		
Percentage		50.4%	49.6%		
ADT		ADT 12,931		AADT 12,931	

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 10320103971  
 Station ID:  
 Counter#018130

Start Time	22-Sep-10 Wed	West	East	Combined Total	
12:00 AM		73	23	96	█
01:00		34	15	49	█
02:00		37	21	58	█
03:00		13	29	42	█
04:00		20	95	115	█
05:00		58	306	364	██████████
06:00		142	525	667	██████████████████
07:00		275	767	1042	██████████████████████████
08:00		312	596	908	██████████████████████████
09:00		278	421	699	██████████████████████████
10:00		315	382	697	██████████████████████████
11:00		337	345	682	██████████████████████████
12:00 PM		377	317	694	██████████████████████████
01:00		402	393	795	██████████████████████████
02:00		435	398	833	██████████████████████████
03:00		615	426	1041	██████████████████████████████
04:00		659	465	1124	██████████████████████████████
05:00		790	413	1203	██████████████████████████████
06:00		551	327	878	██████████████████████████
07:00		372	219	591	██████████████████████████
08:00		299	199	498	██████████████████████████
09:00		193	125	318	██████████
10:00		141	106	247	██████████
11:00		105	47	152	██████
Total		6833	6960		
Percent		49.5%	50.5%		
Grand Total		6833	6960		
Percentage		49.5%	50.5%		
ADT		Not Calculated			

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

Start Time	21-Sep-10 Tue	East	West	Combined Total	
12:00 AM		15	54	69	█
01:00		8	25	33	█
02:00		17	30	47	█
03:00		21	8	29	█
04:00		76	14	90	█
05:00		249	34	283	█
06:00		418	98	516	█
07:00		654	201	855	█
08:00		397	211	608	█
09:00		235	167	402	█
10:00		229	174	403	█
11:00		213	206	419	█
12:00 PM		192	183	375	█
01:00		220	186	406	█
02:00		251	250	501	█
03:00		240	391	631	█
04:00		280	454	734	█
05:00		226	548	774	█
06:00		197	381	578	█
07:00		122	250	372	█
08:00		86	161	247	█
09:00		64	145	209	█
10:00		54	87	141	█
11:00		34	64	98	█
Total		4498	4322		
Percent		51.0%	49.0%		

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

Start Time	22-Sep-10 Wed	East	West	Combined Total	
12:00 AM		10	56	66	█
01:00		9	25	34	█
02:00		7	29	36	█
03:00		19	9	28	█
04:00		82	21	103	█
05:00		282	34	316	█
06:00		438	126	564	█
07:00		601	198	799	█
08:00		405	216	621	█
09:00		242	194	436	█
10:00		213	189	402	█
11:00		207	210	417	█
12:00 PM		207	224	431	█
01:00		235	242	477	█
02:00		266	255	521	█
03:00		256	439	695	█
04:00		292	446	738	█
05:00		275	600	875	█
06:00		197	381	578	█
07:00		142	246	388	█
08:00		85	174	259	█
09:00		75	141	216	█
10:00		74	89	163	█
11:00		30	75	105	█
Total		4649	4619		
Percent		50.2%	49.8%		
Grand Total		9147	8941		
Percentage		50.6%	49.4%		
ADT		ADT 9,268		AADT 9,268	

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

Start Time	21-Sep-10 Tue	North	South	Combined Total	
12:00 AM		49	18	67	█
01:00		25	10	35	█
02:00		28	15	43	█
03:00		5	23	28	█
04:00		22	74	96	█
05:00		37	264	301	█
06:00		174	447	621	█
07:00		410	694	1104	█
08:00		425	433	858	█
09:00		377	299	676	█
10:00		304	295	599	█
11:00		262	481	743	█
12:00 PM		258	402	660	█
01:00		257	341	598	█
02:00		328	359	687	█
03:00		486	458	944	█
04:00		545	405	950	█
05:00		652	303	955	█
06:00		396	291	687	█
07:00		250	179	429	█
08:00		174	176	350	█
09:00		148	97	245	█
10:00		91	75	166	█
11:00		71	38	109	█
Total		5774	6177		
Percent		48.3%	51.7%		

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

Start Time	22-Sep-10 Wed	North	South	Combined Total	
12:00 AM		55	16	71	█
01:00		24	9	33	█
02:00		25	6	31	█
03:00		9	22	31	█
04:00		25	84	109	█
05:00		44	282	326	█
06:00		186	480	666	█
07:00		432	636	1068	█
08:00		423	432	855	█
09:00		423	292	715	█
10:00		329	297	626	█
11:00		262	326	588	█
12:00 PM		306	408	714	█
01:00		302	334	636	█
02:00		336	367	703	█
03:00		493	446	939	█
04:00		479	376	855	█
05:00		714	349	1063	█
06:00		395	249	644	█
07:00		269	174	443	█
08:00		175	185	360	█
09:00		143	109	252	█
10:00		86	105	191	█
11:00		83	40	123	█
Total		6018	6024		
Percent		50.0%	50.0%		
Grand Total		11792	12201		
Percentage		49.1%	50.9%		
ADT		ADT 12,042		AADT 12,042	

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

Start Time	21-Sep-10 Tue	North	South	Combined Total	
12:00 AM		71	19	90	█
01:00		28	13	41	█
02:00		38	15	53	█
03:00		15	20	35	█
04:00		18	81	99	█
05:00		42	286	328	██████████
06:00		151	540	691	██████████████████
07:00		419	718	1137	██████████████████████████████
08:00		455	529	984	██████████████████████████████
09:00		353	355	708	██████████████████████████████
10:00		325	307	632	██████████████████████████████
11:00		264	471	735	██████████████████████████████
12:00 PM		296	403	699	██████████████████████████████
01:00		301	359	660	██████████████████████████████
02:00		367	400	767	██████████████████████████████
03:00		520	459	979	██████████████████████████████
04:00		624	453	1077	██████████████████████████████
05:00		755	357	1112	██████████████████████████████
06:00		488	283	771	██████████████████████████████
07:00		313	195	508	██████████████████████████████
08:00		209	164	373	██████████████████████████████
09:00		173	116	289	██████████████████████████████
10:00		112	83	195	██████████████████████████████
11:00		86	39	125	██████████████████████████████
Total		6423	6665		
Percent		49.1%	50.9%		

Montachusett Regional Planning Commission

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

Start Time	22-Sep-10 Wed	North	South	Combined Total	
12:00 AM		72	16	88	█
01:00		29	14	43	█
02:00		31	10	41	█
03:00		12	20	32	█
04:00		23	87	110	█
05:00		40	319	359	█
06:00		166	554	720	█
07:00		440	688	1128	█
08:00		440	532	972	█
09:00		402	340	742	█
10:00		337	286	623	█
11:00		276	348	624	█
12:00 PM		337	428	765	█
01:00		333	354	687	█
02:00		374	395	769	█
03:00		543	427	970	█
04:00		574	425	999	█
05:00		776	366	1142	█
06:00		497	285	782	█
07:00		324	192	516	█
08:00		221	177	398	█
09:00		172	119	291	█
10:00		118	116	234	█
11:00		93	53	146	█
Total		6630	6551		
Percent		50.3%	49.7%		
Grand Total		13053	13216		
Percentage		49.7%	50.3%		
ADT		ADT 13,181		AADT 13,181	

Montachusett Regional Planning Commission

Community:Westminster  
 Street:West Main Street  
 Location:W. of Simplex Drive  
 Function Class:U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 33220104234  
 Station ID:  
 Counter#:018131

Start Time	22-Jul-10 Thu	East	West	Combined Total	
12:00 AM		75	77	152	█
01:00		57	51	108	█
02:00		28	29	57	█
03:00		21	27	48	█
04:00		28	19	47	█
05:00		82	68	150	█
06:00		259	251	510	██████████
07:00		359	398	757	██████████████
08:00		339	383	722	██████████████
09:00		324	315	639	██████████████
10:00		378	359	737	██████████████
11:00		376	377	753	██████████████
12:00 PM		479	429	908	██████████████
01:00		445	383	828	██████████████
02:00		496	474	970	██████████████
03:00		567	568	1135	██████████████
04:00		748	814	1562	██████████████
05:00		826	843	1669	██████████████
06:00		644	588	1232	██████████████
07:00		425	342	767	██████████████
08:00		335	308	643	██████████████
09:00		267	239	506	██████████
10:00		217	187	404	██████████
11:00		130	129	259	██████
Total		7905	7658		
Percent		50.8%	49.2%		
Grand Total		7905	7658		
Percentage		50.8%	49.2%		
ADT		Not Calculated			

Montachusett Regional Planning Commission

Community:Westminster  
 Street:West Main St.  
 Location:E. of Simplex Drive  
 Function Class:U-2

1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

Start Time	22-Jul-10 Thu	East	West	Combined Total	
12:00 AM		77	81	158	█
01:00		56	49	105	█
02:00		30	27	57	█
03:00		18	34	52	█
04:00		39	29	68	█
05:00		99	84	183	█
06:00		312	293	605	██████████
07:00		523	536	1059	██████████████████
08:00		441	515	956	██████████████████
09:00		384	376	760	██████████████████
10:00		409	388	797	██████████████████
11:00		415	395	810	██████████████████
12:00 PM		561	482	1043	██████████████████
01:00		520	466	986	██████████████████
02:00		558	506	1064	██████████████████
03:00		621	640	1261	██████████████████
04:00		787	854	1641	██████████████████
05:00		814	862	1676	██████████████████
06:00		669	648	1317	██████████████████
07:00		438	366	804	██████████████████
08:00		363	329	692	██████████████████
09:00		286	257	543	██████████████████
10:00		227	206	433	██████████████████
11:00		138	141	279	██████████████████
Total		8785	8564		
Percent		50.6%	49.4%		
Grand Total		8785	8564		
Percentage		50.6%	49.4%		
ADT		Not Calculated			

## Appendix – Speed Data

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Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

North																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/21/10	0	0	0	0	0	5	12	25	13	12	1	1	0	0	69	44-53	40	
01:00	2	0	0	0	1	5	5	5	8	5	1	0	0	0	32	44-53	13	
02:00	0	0	0	0	0	3	6	10	10	4	1	0	0	0	34	45-54	20	
03:00	0	0	0	0	0	1	2	4	6	4	0	0	0	0	17	47-56	11	
04:00	0	0	0	0	0	1	3	1	0	2	1	0	0	0	8	37-46	5	
05:00	0	0	0	0	0	2	11	18	10	6	3	0	0	0	50	41-50	29	
06:00	7	0	0	0	0	1	19	54	24	8	1	0	0	0	114	45-54	78	
07:00	15	0	0	0	0	7	27	88	68	35	9	1	0	0	250	46-55	156	
08:00	7	0	0	0	0	1	30	86	106	36	14	0	1	0	281	46-55	192	
09:00	8	0	0	0	0	0	15	79	103	31	5	2	0	0	243	46-55	182	
10:00	5	0	0	0	0	4	61	95	94	23	2	0	0	0	284	46-55	189	
11:00	6	0	0	0	0	5	38	112	98	19	2	0	0	0	280	46-55	210	
12 PM	4	0	0	0	0	8	36	133	117	21	0	1	0	0	320	46-55	250	
13:00	7	0	0	0	0	4	49	133	93	27	3	0	0	0	316	46-55	226	
14:00	11	0	0	0	1	5	52	130	114	36	7	0	0	0	356	46-55	244	
15:00	8	0	0	0	1	17	91	164	153	48	5	1	0	0	488	46-55	317	
16:00	6	1	0	0	6	7	80	241	182	53	5	0	0	0	581	46-55	423	
17:00	16	0	0	0	1	13	106	276	185	38	4	0	0	0	639	46-55	461	
18:00	10	1	0	0	0	4	74	229	147	36	5	1	0	0	507	46-55	376	
19:00	4	0	0	0	3	8	63	139	76	20	1	0	0	0	314	46-55	215	
20:00	3	0	0	0	0	11	62	89	67	19	0	0	0	0	251	44-53	156	
21:00	1	0	0	0	0	2	42	88	57	22	1	2	0	0	215	46-55	145	
22:00	0	0	0	0	1	3	10	48	30	19	5	1	0	0	117	46-55	78	
23:00	0	0	0	0	0	1	10	26	22	10	4	1	0	0	74	46-55	48	
<b>Total</b>	120	2	0	0	14	118	904	2273	1783	534	80	11	1	0	5840			
Percent	2.1%	0.0%	0.0%	0.0%	0.2%	2.0%	15.5%	38.9%	30.5%	9.1%	1.4%	0.2%	0.0%	0.0%				
AM Peak	07:00				01:00	07:00	10:00	11:00	08:00	08:00	08:00	09:00	08:00		10:00			
Vol.	15				1	7	61	112	106	36	14	2	1		284			
PM Peak	17:00	16:00			16:00	15:00	17:00	17:00	17:00	16:00	14:00	21:00			17:00			
Vol.	16	1			6	17	106	276	185	53	7	2			639			

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

North															Pace	Number		
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/22/10	0	0	0	0	1	3	8	17	32	6	4	0	0	0	71	46-55	49	
01:00	0	0	0	0	0	2	7	10	11	4	0	0	0	0	34	44-53	21	
02:00	0	0	0	0	0	1	8	8	6	2	1	0	0	0	26	42-51	17	
03:00	0	0	0	0	0	0	1	4	1	2	0	1	1	0	10	40-49	5	
04:00	0	0	0	0	0	1	5	7	7	2	0	0	0	0	22	43-52	14	
05:00	3	0	0	0	0	1	7	18	8	6	3	0	0	0	46	44-53	28	
06:00	5	1	0	0	0	1	19	49	33	16	4	0	0	0	128	46-55	82	
07:00	16	0	0	0	1	4	20	81	77	37	10	4	0	0	250	46-55	158	
08:00	4	0	0	0	0	7	38	104	82	30	6	0	0	0	271	46-55	186	
09:00	7	0	0	0	1	3	37	99	87	27	3	1	0	0	265	46-55	186	
10:00	6	0	0	0	9	5	44	95	71	15	2	0	0	0	247	46-55	166	
11:00	12	0	0	0	0	10	59	160	81	18	2	0	0	0	342	46-55	241	
12 PM	4	0	0	2	13	12	59	130	99	15	3	0	1	0	338	46-55	229	
13:00	10	0	0	0	0	5	72	114	96	28	3	0	0	0	328	46-55	210	
14:00	5	0	0	0	0	9	49	167	108	30	3	1	0	0	372	46-55	275	
15:00	20	5	1	10	21	37	92	152	112	36	3	0	0	0	489	46-55	264	
16:00	14	0	0	0	0	17	86	240	176	40	5	1	0	0	579	46-55	416	
17:00	187	36	21	16	7	19	58	157	58	24	2	0	0	0	585	43-52	217	
18:00	14	0	0	0	0	13	79	177	141	54	7	0	0	0	485	46-55	318	
19:00	5	0	0	0	0	10	70	135	71	23	1	0	0	1	316	42-51	206	
20:00	2	0	0	0	1	13	79	110	59	17	1	0	0	0	282	41-50	189	
21:00	2	0	0	0	0	2	18	66	49	14	4	1	0	0	156	46-55	115	
22:00	0	0	0	0	0	9	25	51	40	10	1	1	0	0	137	46-55	91	
23:00	0	0	0	0	0	1	10	41	30	7	2	1	0	0	92	46-55	71	
<b>Total</b>	<b>316</b>	<b>42</b>	<b>22</b>	<b>28</b>	<b>54</b>	<b>185</b>	<b>950</b>	<b>2192</b>	<b>1535</b>	<b>463</b>	<b>70</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>5871</b>			
Percent	5.4%	0.7%	0.4%	0.5%	0.9%	3.2%	16.2%	37.3%	26.1%	7.9%	1.2%	0.2%	0.0%	0.0%				
AM Peak	07:00	06:00			10:00	11:00	11:00	11:00	09:00	07:00	07:00	07:00	03:00		11:00			
Vol.	16	1			9	10	59	160	87	37	10	4	1		342			
PM Peak	17:00	17:00	17:00	17:00	15:00	15:00	15:00	16:00	16:00	18:00	18:00	14:00	12:00	19:00	17:00			
Vol.	187	36	21	16	21	37	92	240	176	54	7	1	1	1	585			
<b>Total</b>	<b>436</b>	<b>44</b>	<b>22</b>	<b>28</b>	<b>68</b>	<b>303</b>	<b>1854</b>	<b>4465</b>	<b>3318</b>	<b>997</b>	<b>150</b>	<b>22</b>	<b>3</b>	<b>1</b>	<b>11711</b>			
Percent	3.7%	0.4%	0.2%	0.2%	0.6%	2.6%	15.8%	38.1%	28.3%	8.5%	1.3%	0.2%	0.0%	0.0%				

15th Percentile : 43 MPH  
 50th Percentile : 49 MPH  
 85th Percentile : 55 MPH  
 95th Percentile : 58 MPH

Stats  
 10 MPH Pace Speed : 46-55 MPH  
 Number in Pace : 7783  
 Percent in Pace : 66.5%  
 Number of Vehicles > 45 MPH : 8956  
 Percent of Vehicles > 45 MPH : 76.5%  
 Mean Speed(Average) : 48 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

South																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/21/10	0	0	0	0	0	3	11	4	2	0	0	0	0	0	20	38-47	16	
01:00	0	0	0	0	0	0	9	4	0	0	0	0	0	0	13	40-49	13	
02:00	1	0	0	0	0	3	7	7	1	0	0	0	0	0	19	38-47	14	
03:00	0	0	0	0	0	3	7	9	0	3	0	0	0	0	22	40-49	16	
04:00	0	0	0	1	0	15	36	27	4	1	0	0	0	0	84	41-50	63	
05:00	1	0	0	0	2	31	120	85	15	2	0	0	0	0	256	41-50	205	
06:00	10	0	0	0	8	73	221	99	7	0	0	0	0	0	418	41-50	320	
07:00	25	0	0	5	30	121	292	144	14	1	0	0	0	0	632	41-50	436	
08:00	16	0	1	5	29	121	249	77	5	0	0	0	0	0	503	36-45	370	
09:00	15	0	1	5	31	98	155	60	3	2	1	0	0	0	371	36-45	253	
10:00	11	0	0	4	44	73	141	55	6	2	0	0	0	0	336	36-45	214	
11:00	7	0	0	5	22	92	133	50	2	0	0	0	0	0	311	36-45	225	
12 PM	15	0	0	5	26	79	124	25	2	0	1	0	0	0	277	36-45	203	
13:00	12	0	0	8	30	108	125	67	5	0	0	0	0	0	355	36-45	233	
14:00	13	2	0	0	21	95	158	45	4	0	0	0	0	0	338	36-45	253	
15:00	22	0	0	4	38	119	157	39	6	2	0	0	0	0	387	36-45	276	
16:00	20	0	0	7	60	123	156	47	4	0	0	0	0	0	417	36-45	279	
17:00	22	0	0	3	33	90	147	39	10	0	0	1	0	0	345	36-45	237	
18:00	18	0	0	1	28	90	118	44	7	1	0	0	0	1	308	36-45	208	
19:00	6	0	0	2	11	56	80	29	3	0	0	0	0	0	187	36-45	136	
20:00	0	0	0	1	12	32	61	28	4	1	1	0	0	0	140	36-45	93	
21:00	1	0	0	1	8	15	39	16	2	0	1	0	0	0	83	37-46	55	
22:00	0	0	0	0	0	13	35	18	5	0	1	0	0	0	72	39-48	53	
23:00	1	0	0	0	1	4	20	11	3	0	0	1	0	0	41	41-50	31	
<b>Total</b>	<b>216</b>	<b>2</b>	<b>2</b>	<b>57</b>	<b>434</b>	<b>1457</b>	<b>2601</b>	<b>1029</b>	<b>114</b>	<b>15</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>5935</b>			
Percent	3.6%	0.0%	0.0%	1.0%	7.3%	24.5%	43.8%	17.3%	1.9%	0.3%	0.1%	0.0%	0.0%	0.0%				
AM Peak	07:00		08:00	07:00	10:00	07:00	07:00	07:00	05:00	03:00	09:00				07:00			
Vol.	25		1	5	44	121	292	144	15	3	1				632			
PM Peak	15:00	14:00		13:00	16:00	16:00	14:00	13:00	17:00	15:00	12:00	17:00		18:00	16:00			
Vol.	22	2		8	60	123	158	67	10	2	1	1		1	417			

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

South	Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
9/22/10	0	0	0	0	0	0	1	4	2	3	1	0	0	0	0	11	40-49	6
01:00	0	0	0	0	0	1	3	5	3	1	0	0	0	0	0	13	38-47	10
02:00	1	0	0	0	0	0	1	6	3	0	0	0	0	0	0	11	39-48	10
03:00	0	0	0	0	0	0	4	9	3	2	2	0	0	0	0	20	37-46	14
04:00	0	0	0	0	0	6	15	36	25	8	1	0	0	0	0	91	41-50	61
05:00	3	0	0	0	0	2	26	115	121	14	2	1	0	0	0	284	41-50	236
06:00	9	0	0	0	1	22	98	217	85	8	2	0	0	0	0	442	36-45	315
07:00	<b>23</b>	0	0	0	1	29	110	<b>296</b>	<b>126</b>	<b>19</b>	1	0	0	0	0	<b>605</b>	41-50	422
08:00	19	0	0	0	1	28	<b>111</b>	250	91	3	1	1	0	0	0	505	36-45	361
09:00	12	0	0	0	1	0	24	106	160	49	9	0	0	0	0	361	36-45	266
10:00	7	0	0	0	0	5	<b>35</b>	104	130	45	9	0	0	0	0	335	36-45	234
11:00	18	0	0	0	3	27	85	118	44	2	0	0	0	0	0	297	36-45	203
12 PM	8	0	0	0	4	25	94	127	25	3	0	0	0	0	0	286	36-45	221
13:00	15	0	0	0	5	41	110	135	30	3	0	0	0	0	0	339	36-45	245
14:00	18	0	0	0	8	34	118	145	35	1	0	0	0	0	1	360	36-45	263
15:00	22	0	0	0	10	40	114	<b>154</b>	<b>36</b>	4	1	0	0	0	0	381	36-45	268
16:00	26	0	0	0	3	43	<b>144</b>	144	34	5	1	0	0	0	0	<b>400</b>	36-45	288
17:00	<b>43</b>	0	0	0	8	<b>48</b>	82	104	28	5	0	0	0	0	0	318	36-45	186
18:00	22	0	0	0	6	42	77	101	35	3	0	0	0	0	0	286	36-45	178
19:00	1	0	0	0	5	25	67	86	25	3	0	0	0	0	0	212	36-45	153
20:00	3	0	0	0	2	16	50	58	23	5	1	0	0	0	0	158	36-45	108
21:00	5	0	0	0	1	5	30	44	28	3	0	0	0	0	0	117	36-45	74
22:00	2	0	0	0	1	5	22	33	20	2	2	0	0	0	0	87	36-45	55
23:00	1	0	0	0	0	4	8	12	11	3	0	0	0	0	0	39	38-47	23
Total	258	0	0	1	64	502	1580	2489	927	118	15	2	0	1	1	5958		
Percent	4.3%	0.0%	0.0%	0.0%	1.1%	8.4%	26.5%	41.8%	15.6%	2.0%	0.3%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00			09:00	10:00	10:00	08:00	07:00	07:00	07:00	03:00	05:00					07:00	
Vol.	23			1	5	35	111	296	126	19	2	1					605	
PM Peak	17:00				15:00	17:00	16:00	15:00	15:00	16:00	22:00		14:00	21:00		16:00		
Vol.	43				10	48	144	154	36	5	2		1	1		400		
Total	474	2	3	121	936	3037	5090	1956	232	30	7	2	1	2	11893			
Percent	4.0%	0.0%	0.0%	1.0%	7.9%	25.5%	42.8%	16.4%	2.0%	0.3%	0.1%	0.0%	0.0%	0.0%				

15th Percentile : 36 MPH  
 50th Percentile : 42 MPH  
 85th Percentile : 47 MPH  
 95th Percentile : 50 MPH

Stats  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 8127  
 Percent in Pace : 68.3%  
 Number of Vehicles > 45 MPH : 2230  
 Percent of Vehicles > 45 MPH : 18.8%  
 Mean Speed(Average) : 40 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

North, South

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/21/10	0	0	0	0	0	8	23	29	15	12	1	1	0	0	89	41-50 52
01:00	2	0	0	0	1	5	14	9	8	5	1	0	0	0	45	40-49 23
02:00	1	0	0	0	0	6	13	17	11	4	1	0	0	0	53	42-51 31
03:00	0	0	0	0	0	4	9	13	6	7	0	0	0	0	39	41-50 22
04:00	0	0	0	1	0	16	39	28	4	3	1	0	0	0	92	41-50 67
05:00	1	0	0	0	2	33	131	103	25	8	3	0	0	0	306	41-50 234
06:00	17	0	0	0	8	74	240	153	31	8	1	0	0	0	532	41-50 393
07:00	<b>40</b>	0	0	<b>5</b>	<b>30</b>	<b>128</b>	<b>319</b>	<b>232</b>	<b>82</b>	<b>36</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>882</b>	41-50 551
08:00	23	0	<b>1</b>	5	29	122	279	163	<b>111</b>	36	<b>14</b>	0	<b>1</b>	0	784	41-50 442
09:00	23	0	1	5	31	98	170	139	106	33	6	<b>2</b>	0	0	614	41-50 309
10:00	16	0	0	4	<b>44</b>	77	202	150	100	25	2	0	0	0	620	41-50 352
11:00	13	0	0	5	22	97	171	162	100	19	2	0	0	0	591	41-50 333
12 PM	19	0	0	5	26	87	160	158	119	21	1	1	0	0	597	41-50 318
13:00	19	0	0	<b>8</b>	30	112	174	200	98	27	3	0	0	0	671	41-50 374
14:00	24	<b>2</b>	0	0	22	100	210	175	118	36	<b>7</b>	0	0	0	694	41-50 385
15:00	30	0	0	4	39	<b>136</b>	248	203	159	50	5	1	0	0	875	41-50 451
16:00	26	1	0	7	<b>66</b>	130	236	288	186	<b>53</b>	5	0	0	0	<b>998</b>	41-50 524
17:00	<b>38</b>	0	0	3	34	103	<b>253</b>	<b>315</b>	<b>195</b>	38	4	1	0	0	984	41-50 568
18:00	28	1	0	1	28	94	192	273	154	37	5	1	0	<b>1</b>	815	41-50 465
19:00	10	0	0	2	14	64	143	168	79	20	1	0	0	0	501	41-50 311
20:00	3	0	0	1	12	43	123	117	71	20	1	0	0	0	391	41-50 240
21:00	2	0	0	1	8	17	81	104	59	22	2	<b>2</b>	0	0	298	41-50 185
22:00	0	0	0	0	1	16	45	66	35	19	6	1	0	0	189	41-50 111
23:00	1	0	0	0	1	5	30	37	25	10	4	2	0	0	115	41-50 67
<b>Total</b>	<b>336</b>	<b>4</b>	<b>2</b>	<b>57</b>	<b>448</b>	<b>1575</b>	<b>3505</b>	<b>3302</b>	<b>1897</b>	<b>549</b>	<b>85</b>	<b>13</b>	<b>1</b>	<b>1</b>	<b>11775</b>	
Percent	2.9%	0.0%	0.0%	0.5%	3.8%	13.4%	29.8%	28.0%	16.1%	4.7%	0.7%	0.1%	0.0%	0.0%		
AM Peak	07:00		08:00	07:00	10:00	07:00	07:00	07:00	08:00	07:00	08:00	09:00	08:00		07:00	
Vol.	40		1	5	44	128	319	232	111	36	14	2	1		882	
PM Peak	17:00	14:00		13:00	16:00	15:00	17:00	17:00	17:00	16:00	14:00	21:00		18:00	16:00	
Vol.	38	2		8	66	136	253	315	195	53	7	2		1	998	

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

North, South

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Pace Speed	Number in Pace
9/22/10	0	0	0	0	1	4	12	19	35	7	4	0	0	0	82	46-55	54	
01:00	0	0	0	0	1	5	12	13	12	4	0	0	0	0	47	43-52	27	
02:00	1	0	0	0	0	2	14	11	6	2	1	0	0	0	37	41-50	25	
03:00	0	0	0	0	0	4	10	7	3	4	0	1	1	0	30	38-47	17	
04:00	0	0	0	0	6	16	41	32	15	3	0	0	0	0	113	41-50	73	
05:00	6	0	0	0	2	27	122	139	22	8	4	0	0	0	330	41-50	261	
06:00	14	1	0	1	22	99	236	134	41	18	4	0	0	0	570	41-50	370	
07:00	39	0	0	1	30	114	316	207	96	38	10	4	0	0	855	41-50	523	
08:00	23	0	0	1	28	118	288	195	85	31	7	0	0	0	776	41-50	483	
09:00	19	0	1	0	25	109	197	148	96	27	3	1	0	0	626	41-50	345	
10:00	13	0	0	5	44	109	174	140	80	15	2	0	0	0	582	41-50	314	
11:00	30	0	0	3	27	95	177	204	83	18	2	0	0	0	639	41-50	381	
12 PM	12	0	0	6	38	106	186	155	102	15	3	0	1	0	624	41-50	341	
13:00	25	0	0	5	41	115	207	144	99	28	3	0	0	0	667	41-50	351	
14:00	23	0	0	8	34	127	194	202	109	30	3	1	1	0	732	41-50	396	
15:00	42	5	1	20	61	151	246	188	116	37	3	0	0	0	870	41-50	434	
16:00	40	0	0	3	43	161	230	274	181	41	5	1	0	0	979	41-50	504	
17:00	230	36	21	24	55	101	162	185	63	24	2	0	0	0	903	41-50	347	
18:00	36	0	0	6	42	90	180	212	144	54	7	0	0	0	771	41-50	392	
19:00	6	0	0	5	25	77	156	160	74	23	1	0	0	1	528	41-50	316	
20:00	5	0	0	2	17	63	137	133	64	18	1	0	0	0	440	41-50	270	
21:00	7	0	0	1	5	32	62	94	52	14	4	1	0	1	273	41-50	156	
22:00	2	0	0	1	5	31	58	71	42	12	1	1	0	0	224	41-50	129	
23:00	1	0	0	0	4	9	22	52	33	7	2	1	0	0	131	46-55	85	
Total	574	42	23	92	556	1765	3439	3119	1653	478	72	11	3	2	11829			
Percent	4.9%	0.4%	0.2%	0.8%	4.7%	14.9%	29.1%	26.4%	14.0%	4.0%	0.6%	0.1%	0.0%	0.0%				
AM Peak	07:00	06:00	09:00	10:00	10:00	08:00	07:00	07:00	07:00	07:00	07:00	07:00	03:00		07:00			
Vol.	39	1	1	5	44	118	316	207	96	38	10	4	1		855			
PM Peak	17:00	17:00	17:00	17:00	15:00	16:00	15:00	16:00	16:00	18:00	18:00	14:00	12:00	19:00	16:00			
Vol.	230	36	21	24	61	161	246	274	181	54	7	1	1	1	979			
Total	910	46	25	149	1004	3340	6944	6421	3550	1027	157	24	4	3	23604			
Percent	3.9%	0.2%	0.1%	0.6%	4.3%	14.2%	29.4%	27.2%	15.0%	4.4%	0.7%	0.1%	0.0%	0.0%				

15th Percentile : 38 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 52 MPH  
 95th Percentile : 56 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 13365  
 Percent in Pace : 56.6%  
 Number of Vehicles > 45 MPH : 11186  
 Percent of Vehicles > 45 MPH : 47.4%  
 Mean Speed(Average) : 44 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
9/21/10	0	0	0	0	1	2	4	7	7	1	0	0	0	0	22	43-52	14
01:00	0	0	0	0	1	1	3	9	0	1	0	0	0	0	15	40-49	12
02:00	3	0	0	0	1	1	5	9	3	1	0	1	0	0	24	40-49	14
03:00	2	0	0	0	1	1	3	9	6	1	1	1	1	0	26	43-52	15
04:00	4	0	0	0	1	6	10	41	22	5	2	0	1	0	92	46-55	63
05:00	3	0	0	0	5	13	37	136	72	10	1	3	0	0	280	46-55	208
06:00	8	1	2	1	12	31	93	205	98	13	2	2	0	1	469	44-53	303
07:00	20	1	0	0	8	22	121	326	167	22	3	1	0	0	691	46-55	493
08:00	16	0	0	2	7	29	129	247	104	13	1	0	0	0	548	41-50	376
09:00	10	0	0	1	9	23	84	175	78	9	1	1	0	0	391	41-50	259
10:00	15	0	0	0	6	21	76	160	71	16	5	0	0	0	370	41-50	236
11:00	13	0	0	1	3	15	62	143	83	16	1	0	0	0	337	46-55	226
12 PM	10	0	0	2	4	22	64	134	52	18	4	1	0	0	311	41-50	198
13:00	14	0	0	2	3	14	93	136	96	10	4	0	0	0	372	43-52	232
14:00	14	0	1	2	8	20	73	141	86	21	2	0	0	0	368	46-55	227
15:00	28	0	0	1	8	30	81	199	72	10	2	0	0	0	431	41-50	280
16:00	24	0	0	1	15	29	102	178	77	16	2	1	0	0	445	41-50	280
17:00	13	1	0	2	8	20	59	167	71	11	0	0	0	0	352	46-55	238
18:00	8	0	1	1	5	19	79	140	66	9	3	0	0	0	331	41-50	219
19:00	6	0	0	0	6	21	57	82	21	4	1	0	0	0	198	41-50	139
20:00	5	0	0	1	8	11	53	59	16	3	1	0	0	0	157	41-50	112
21:00	3	0	0	1	3	8	19	34	15	1	1	0	0	0	85	41-50	53
22:00	2	0	0	0	0	7	15	26	17	8	2	0	0	0	77	43-52	43
23:00	1	0	0	0	0	0	9	15	8	3	2	0	0	0	38	42-51	25
<b>Total</b>	<b>222</b>	<b>3</b>	<b>4</b>	<b>18</b>	<b>123</b>	<b>366</b>	<b>1331</b>	<b>2778</b>	<b>1308</b>	<b>222</b>	<b>41</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>6430</b>		
Percent	3.5%	0.0%	0.1%	0.3%	1.9%	5.7%	20.7%	43.2%	20.3%	3.5%	0.6%	0.2%	0.0%	0.0%			
AM Peak	07:00	06:00	06:00	08:00	06:00	06:00	08:00	07:00	07:00	07:00	10:00	05:00	03:00	06:00	07:00		
Vol.	20	1	2	2	12	31	129	326	167	22	5	3	1	1	691		
PM Peak	15:00	17:00	14:00	12:00	16:00	15:00	16:00	15:00	13:00	14:00	12:00	12:00			16:00		
Vol.	28	1	1	2	15	30	102	199	96	21	4	1			445		

Montachusett Regional Planning Commission  
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Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/22/10	0	0	0	0	1	1	3	3	4	1	0	1	0	0	14	43-52	8
01:00	0	0	0	0	0	4	0	6	2	0	0	0	0	0	12	43-52	8
02:00	1	0	0	0	1	0	2	6	2	1	0	0	0	0	13	43-52	10
03:00	3	0	0	0	0	0	2	10	5	1	1	1	0	0	23	44-53	15
04:00	1	0	0	0	2	6	17	38	35	2	1	0	0	0	102	46-55	73
05:00	6	0	0	0	4	9	43	145	74	18	1	2	1	1	304	46-55	219
06:00	8	0	0	2	12	25	109	236	94	8	1	2	0	0	497	41-50	345
07:00	20	1	0	0	7	34	129	287	153	22	4	0	0	1	658	46-55	440
08:00	21	0	1	6	7	40	153	226	96	9	1	0	0	0	560	41-50	379
09:00	10	0	0	0	6	20	97	157	82	3	1	0	0	1	377	41-50	254
10:00	13	0	0	0	5	12	73	164	77	12	0	1	0	0	357	43-52	241
11:00	13	0	0	1	9	12	71	147	61	13	2	0	0	0	329	41-50	218
12 PM	18	0	1	0	2	18	74	123	60	8	2	1	0	0	307	41-50	197
13:00	22	0	0	3	6	25	101	138	56	7	2	2	0	0	362	41-50	239
14:00	20	0	0	0	7	18	103	130	77	10	3	0	0	0	368	41-50	233
15:00	24	1	3	1	7	26	96	165	80	13	2	0	0	0	418	41-50	261
16:00	26	0	0	1	6	21	92	188	74	14	3	1	0	0	426	41-50	280
17:00	15	0	0	3	7	25	104	171	69	7	0	0	0	0	401	41-50	275
18:00	12	0	0	1	4	24	72	133	55	7	1	0	0	0	309	41-50	205
19:00	4	0	0	4	5	17	65	100	27	2	0	0	0	0	224	41-50	165
20:00	3	0	0	1	7	19	48	65	26	5	1	0	0	0	175	41-50	113
21:00	5	0	0	0	5	8	26	60	18	4	4	0	0	0	130	41-50	86
22:00	1	0	0	2	1	4	28	38	13	4	3	0	1	0	95	41-50	66
23:00	3	0	0	2	0	1	7	17	11	2	1	0	0	0	44	44-53	28
<b>Total</b>	<b>249</b>	<b>2</b>	<b>5</b>	<b>27</b>	<b>111</b>	<b>369</b>	<b>1515</b>	<b>2753</b>	<b>1251</b>	<b>173</b>	<b>34</b>	<b>11</b>	<b>2</b>	<b>3</b>	<b>6505</b>		
Percent	3.8%	0.0%	0.1%	0.4%	1.7%	5.7%	23.3%	42.3%	19.2%	2.7%	0.5%	0.2%	0.0%	0.0%			
AM Peak	08:00	07:00	08:00	08:00	06:00	08:00	08:00	07:00	07:00	07:00	07:00	05:00	05:00	05:00	07:00		
Vol.	21	1	1	6	12	40	153	287	153	22	4	2	1	1	658		
PM Peak	16:00	15:00	15:00	19:00	14:00	15:00	17:00	16:00	15:00	16:00	21:00	13:00	22:00	16:00			
Vol.	26	1	3	4	7	26	104	188	80	14	4	2	1	426			
Total	471	5	9	45	234	735	2846	5531	2559	395	75	22	4	4	12935		
Percent	3.6%	0.0%	0.1%	0.3%	1.8%	5.7%	22.0%	42.8%	19.8%	3.1%	0.6%	0.2%	0.0%	0.0%			

15th Percentile : 41 MPH  
 50th Percentile : 47 MPH  
 85th Percentile : 53 MPH  
 95th Percentile : 55 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 8377  
 Percent in Pace : 64.8%  
 Number of Vehicles > 45 MPH : 8590  
 Percent of Vehicles > 45 MPH : 66.4%  
 Mean Speed(Average) : 46 MPH

Montachusett Regional Planning Commission  
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Community:Winchendon  
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Site Code: 34320101003  
 Station ID:  
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North																	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/21/10	2	0	0	0	0	2	6	21	19	11	6	3	1	0	71	46-55	40
01:00	1	0	0	0	0	1	2	10	8	5	3	1	1	0	32	44-53	18
02:00	2	0	0	0	0	0	3	7	14	5	3	1	1	1	37	46-55	21
03:00	1	0	0	1	0	0	2	0	8	2	2	0	0	1	17	51-60	10
04:00	1	0	0	0	1	0	2	2	2	2	1	0	0	0	11	48-57	6
05:00	5	0	0	1	1	0	3	10	11	11	6	4	0	0	52	47-56	22
06:00	12	0	0	0	2	7	20	23	29	17	15	3	0	0	128	46-55	52
07:00	<b>36</b>	0	<b>1</b>	1	4	7	18	56	74	44	30	<b>8</b>	0	1	280	46-55	130
08:00	30	0	0	1	2	9	26	52	<b>88</b>	<b>49</b>	<b>31</b>	4	<b>2</b>	<b>2</b>	296	46-55	140
09:00	18	0	0	1	4	4	26	60	73	48	21	7	0	0	262	46-55	133
10:00	16	0	0	0	<b>5</b>	10	47	79	79	42	14	5	0	0	297	46-55	158
11:00	13	0	0	<b>2</b>	3	<b>29</b>	<b>65</b>	<b>108</b>	65	18	1	0	0	1	<b>305</b>	41-50	173
12 PM	8	0	<b>1</b>	1	10	20	86	120	82	23	3	0	0	0	354	41-50	206
13:00	16	0	0	1	5	17	89	141	56	21	3	2	0	0	351	41-50	230
14:00	19	0	1	2	5	23	96	147	79	19	2	0	0	0	393	41-50	243
15:00	23	0	1	<b>6</b>	<b>26</b>	<b>53</b>	<b>129</b>	184	95	26	3	0	0	0	546	41-50	313
16:00	<b>30</b>	0	0	3	14	21	106	224	176	48	13	0	1	0	636	46-55	400
17:00	29	0	0	0	4	31	93	<b>231</b>	<b>184</b>	<b>86</b>	22	<b>10</b>	1	0	<b>691</b>	46-55	415
18:00	18	0	0	1	4	20	76	160	146	79	<b>25</b>	7	0	0	536	46-55	306
19:00	18	0	0	2	4	12	50	96	79	39	14	6	0	0	320	46-55	175
20:00	10	0	0	0	2	9	42	83	63	39	21	10	0	1	280	46-55	146
21:00	7	0	0	0	1	3	17	53	62	49	22	5	2	0	221	46-55	115
22:00	1	0	0	0	3	0	10	21	27	34	15	4	2	<b>2</b>	119	51-60	61
23:00	1	0	0	0	1	1	7	9	19	18	14	9	<b>3</b>	1	83	51-60	37
<b>Total</b>	<b>317</b>	0	4	23	101	279	1021	1897	1538	735	290	89	14	10	6318		
Percent	5.0%	0.0%	0.1%	0.4%	1.6%	4.4%	16.2%	30.0%	24.3%	11.6%	4.6%	1.4%	0.2%	0.2%			
AM Peak	07:00		07:00	11:00	10:00	11:00	11:00	11:00	08:00	08:00	08:00	07:00	08:00	08:00	11:00		
Vol.	36		1	2	5	29	65	108	88	49	31	8	2	2	305		
PM Peak	16:00		12:00	15:00	15:00	15:00	15:00	17:00	17:00	17:00	18:00	17:00	23:00	22:00	17:00		
Vol.	30		1	6	26	53	129	231	184	86	25	10	3	2	691		

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

North	Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
9/22/10	1	0	0	0	0	0	0	3	20	11	18	11	6	3	1	74	46-55	31
01:00	1	0	0	0	0	1	1	9	6	8	6	2	1	0	0	35	46-55	15
02:00	2	0	0	0	0	1	3	5	5	5	3	3	0	1	28	43-52	10	
03:00	3	0	0	0	0	0	0	3	3	2	0	0	0	1	12	48-57	8	
04:00	4	0	0	0	2	0	2	7	7	2	1	1	1	0	27	44-53	14	
05:00	10	0	0	1	1	0	4	6	11	6	5	3	0	1	48	47-56	18	
06:00	18	0	0	0	5	4	13	35	30	18	17	8	3	1	152	46-55	65	
07:00	<b>32</b>	0	<b>1</b>	1	4	6	23	44	59	<b>54</b>	<b>35</b>	<b>12</b>	2	<b>4</b>	277	51-60	113	
08:00	29	0	0	0	4	12	28	50	83	52	21	11	3	1	294	48-57	135	
09:00	23	0	0	0	1	5	35	63	<b>84</b>	44	24	7	<b>4</b>	1	291	46-55	147	
10:00	9	0	0	1	1	20	44	76	74	35	14	1	1	1	277	46-55	150	
11:00	15	0	0	1	<b>9</b>	<b>32</b>	<b>93</b>	<b>122</b>	71	15	7	0	1	0	<b>366</b>	41-50	215	
12 PM	17	0	1	1	18	31	80	125	58	16	5	0	0	<b>2</b>	354	41-50	205	
13:00	23	0	0	1	9	27	105	125	55	15	3	1	<b>1</b>	0	365	41-50	230	
14:00	17	0	0	3	2	26	90	145	73	22	5	1	0	0	384	41-50	235	
15:00	17	0	1	<b>7</b>	<b>19</b>	41	137	213	90	28	6	0	0	0	559	41-50	350	
16:00	<b>32</b>	0	0	0	9	51	154	196	<b>139</b>	27	4	0	0	1	613	41-50	350	
17:00	32	0	0	1	5	<b>58</b>	<b>165</b>	<b>248</b>	129	35	6	0	0	0	<b>679</b>	41-50	413	
18:00	13	0	1	2	7	19	91	185	130	<b>50</b>	<b>15</b>	<b>4</b>	1	0	518	46-55	315	
19:00	12	0	<b>2</b>	2	9	25	75	130	62	17	7	2	0	0	343	41-50	205	
20:00	5	0	0	1	5	21	60	104	79	24	7	2	0	0	308	46-55	183	
21:00	7	0	1	1	2	3	23	60	44	29	12	2	0	0	184	46-55	104	
22:00	2	0	0	1	0	5	23	38	38	21	10	2	0	0	140	46-55	76	
23:00	1	0	0	0	5	4	8	21	27	18	11	2	1	0	98	46-55	48	
<b>Total</b>	<b>325</b>	<b>0</b>	<b>7</b>	<b>24</b>	<b>117</b>	<b>392</b>	<b>1260</b>	<b>2030</b>	<b>1368</b>	<b>561</b>	<b>235</b>	<b>70</b>	<b>22</b>	<b>15</b>	<b>6426</b>			
Percent	5.1%	0.0%	0.1%	0.4%	1.8%	6.1%	19.6%	31.6%	21.3%	8.7%	3.7%	1.1%	0.3%	0.2%				
AM Peak	07:00		07:00	05:00	11:00	11:00	11:00	11:00	09:00	07:00	07:00	07:00	09:00	07:00	11:00			
Vol.	32		1	1	9	32	93	122	84	54	35	12	4	4	366			
PM Peak	16:00		19:00	15:00	15:00	17:00	17:00	17:00	16:00	18:00	18:00	18:00	13:00	12:00	17:00			
Vol.	32		2	7	19	58	165	248	139	50	15	4	1	2	679			
Total	642	0	11	47	218	671	2281	3927	2906	1296	525	159	36	25	12744			
Percent	5.0%	0.0%	0.1%	0.4%	1.7%	5.3%	17.9%	30.8%	22.8%	10.2%	4.1%	1.2%	0.3%	0.2%				

15th Percentile : 41 MPH  
 50th Percentile : 49 MPH  
 85th Percentile : 56 MPH  
 95th Percentile : 62 MPH

Stats  
 10 MPH Pace Speed : 46-55 MPH  
 Number in Pace : 6833  
 Percent in Pace : 53.6%  
 Number of Vehicles > 45 MPH : 8874  
 Percent of Vehicles > 45 MPH : 69.6%  
 Mean Speed(Average) : 47 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South, North

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
9/21/10	2	0	0	0	1	4	10	28	26	12	6	3	1	0	93	46-55	54
01:00	1	0	0	0	1	2	5	19	8	6	3	1	1	0	47	44-53	27
02:00	5	0	0	0	1	1	8	16	17	6	3	2	1	1	61	46-55	33
03:00	3	0	0	1	1	1	5	9	14	3	3	1	1	1	43	46-55	23
04:00	5	0	0	0	2	6	12	43	24	7	3	0	1	0	103	46-55	67
05:00	8	0	0	1	6	13	40	146	83	21	7	7	0	0	332	46-55	229
06:00	20	1	2	1	14	38	113	228	127	30	17	5	0	1	597	46-55	355
07:00	56	1	1	1	12	29	139	382	241	66	33	9	0	1	971	46-55	623
08:00	46	0	0	3	9	38	155	299	192	62	32	4	2	2	844	46-55	491
09:00	28	0	0	2	13	27	110	235	151	57	22	8	0	0	653	46-55	386
10:00	31	0	0	0	11	31	123	239	150	58	19	5	0	0	667	46-55	389
11:00	26	0	0	3	6	44	127	251	148	34	2	0	0	1	642	46-55	399
12 PM	18	0	1	3	14	42	150	254	134	41	7	1	0	0	665	41-50	404
13:00	30	0	0	3	8	31	182	277	152	31	7	2	0	0	723	41-50	459
14:00	33	0	2	4	13	43	169	288	165	40	4	0	0	0	761	41-50	457
15:00	51	0	1	7	34	83	210	383	167	36	5	0	0	0	977	41-50	593
16:00	54	0	0	4	29	50	208	402	253	64	15	1	1	0	1081	46-55	655
17:00	42	1	0	2	12	51	152	398	255	97	22	10	1	0	1043	46-55	653
18:00	26	0	1	2	9	39	155	300	212	88	28	7	0	0	867	46-55	512
19:00	24	0	0	2	10	33	107	178	100	43	15	6	0	0	518	41-50	285
20:00	15	0	0	1	10	20	95	142	79	42	22	10	0	1	437	41-50	237
21:00	10	0	0	1	4	11	36	87	77	50	23	5	2	0	306	46-55	164
22:00	3	0	0	0	3	7	25	47	44	42	17	4	2	2	196	46-55	91
23:00	2	0	0	0	1	1	16	24	27	21	16	9	3	1	121	47-56	52
<b>Total</b>	<b>539</b>	<b>3</b>	<b>8</b>	<b>41</b>	<b>224</b>	<b>645</b>	<b>2352</b>	<b>4675</b>	<b>2846</b>	<b>957</b>	<b>331</b>	<b>100</b>	<b>16</b>	<b>11</b>	<b>12748</b>		
Percent	4.2%	0.0%	0.1%	0.3%	1.8%	5.1%	18.4%	36.7%	22.3%	7.5%	2.6%	0.8%	0.1%	0.1%			
AM Peak	07:00	06:00	06:00	08:00	06:00	11:00	08:00	07:00	07:00	07:00	07:00	07:00	08:00	08:00	07:00		
Vol.	56	1	2	3	14	44	155	382	241	66	33	9	2	2	971		
PM Peak	16:00	17:00	14:00	15:00	15:00	15:00	15:00	16:00	17:00	17:00	18:00	17:00	23:00	22:00	16:00		
Vol.	54	1	2	7	34	83	210	402	255	97	28	10	3	2	1081		

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South, North

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/22/10	1	0	0	0	1	1	6	23	15	19	11	7	3	1	88	46-55 38
01:00	1	0	0	0	0	5	1	15	8	8	6	2	1	0	47	46-55 23
02:00	3	0	0	0	1	1	5	11	7	6	3	3	0	1	41	43-52 18
03:00	6	0	0	0	0	0	2	13	8	3	1	1	0	1	35	44-53 21
04:00	5	0	0	0	4	6	19	45	42	4	2	1	1	0	129	46-55 87
05:00	16	0	0	1	5	9	47	151	85	24	6	5	1	2	352	46-55 236
06:00	26	0	0	2	17	29	122	271	124	26	18	10	3	1	649	44-53 396
07:00	<b>52</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>11</b>	<b>40</b>	<b>152</b>	<b>331</b>	<b>212</b>	<b>76</b>	<b>39</b>	<b>12</b>	<b>2</b>	<b>5</b>	<b>935</b>	46-55 543
08:00	50	0	1	<b>6</b>	11	<b>52</b>	<b>181</b>	276	179	61	22	11	3	1	854	41-50 457
09:00	33	0	0	0	7	25	132	220	166	47	25	7	<b>4</b>	2	668	46-55 386
10:00	22	0	0	1	6	32	117	240	151	47	14	2	1	1	634	46-55 391
11:00	28	0	0	2	<b>18</b>	44	164	269	132	28	9	0	1	0	695	41-50 433
12 PM	35	0	2	1	20	49	154	248	118	24	7	1	0	<b>2</b>	661	41-50 402
13:00	45	0	0	4	15	52	206	263	111	22	5	3	<b>1</b>	0	727	41-50 469
14:00	37	0	0	3	9	44	193	275	150	32	8	1	0	0	752	41-50 468
15:00	41	<b>1</b>	<b>4</b>	<b>8</b>	<b>26</b>	67	233	378	170	41	8	0	0	0	977	41-50 611
16:00	<b>58</b>	0	0	1	15	72	246	384	<b>213</b>	41	7	1	0	1	1039	41-50 630
17:00	47	0	0	4	12	<b>83</b>	<b>269</b>	<b>419</b>	198	42	6	0	0	0	<b>1080</b>	41-50 688
18:00	25	0	1	3	11	43	163	318	185	<b>57</b>	<b>16</b>	<b>4</b>	1	0	827	46-55 503
19:00	16	0	2	6	14	42	140	230	89	19	7	2	0	0	567	41-50 370
20:00	8	0	0	2	12	40	108	169	105	29	8	2	0	0	483	41-50 277
21:00	12	0	1	1	7	11	49	120	62	33	16	2	0	0	314	46-55 182
22:00	3	0	0	3	1	9	51	76	51	25	13	2	1	0	235	42-51 128
23:00	4	0	0	2	5	5	15	38	38	20	12	2	1	0	142	46-55 76
<b>Total</b>	<b>574</b>	<b>2</b>	<b>12</b>	<b>51</b>	<b>228</b>	<b>761</b>	<b>2775</b>	<b>4783</b>	<b>2619</b>	<b>734</b>	<b>269</b>	<b>81</b>	<b>24</b>	<b>18</b>	<b>12931</b>	
Percent	4.4%	0.0%	0.1%	0.4%	1.8%	5.9%	21.5%	37.0%	20.3%	5.7%	2.1%	0.6%	0.2%	0.1%		
AM Peak	07:00	07:00	07:00	08:00	11:00	08:00	08:00	07:00	07:00	07:00	07:00	07:00	09:00	07:00	07:00	
Vol.	52	1	1	6	18	52	181	331	212	76	39	12	4	5	935	
PM Peak	16:00	15:00	15:00	15:00	15:00	17:00	17:00	17:00	16:00	18:00	18:00	18:00	13:00	12:00	17:00	
Vol.	58	1	4	8	26	83	269	419	213	57	16	4	1	2	1080	
<b>Total</b>	<b>1113</b>	<b>5</b>	<b>20</b>	<b>92</b>	<b>452</b>	<b>1406</b>	<b>5127</b>	<b>9458</b>	<b>5465</b>	<b>1691</b>	<b>600</b>	<b>181</b>	<b>40</b>	<b>29</b>	<b>25679</b>	
Percent	4.3%	0.0%	0.1%	0.4%	1.8%	5.5%	20.0%	36.8%	21.3%	6.6%	2.3%	0.7%	0.2%	0.1%		

15th Percentile : 41 MPH  
 50th Percentile : 48 MPH  
 85th Percentile : 54 MPH  
 95th Percentile : 59 MPH

Stats 10 MPH Pace Speed : 46-55 MPH  
 Number in Pace : 14923  
 Percent in Pace : 58.1%  
 Number of Vehicles > 45 MPH : 17464  
 Percent of Vehicles > 45 MPH : 68.0%  
 Mean Speed(Average) : 47 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

Site Code: 10320103971  
 Station ID:  
 Counter#018130

West																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/22/10	0	0	0	0	1	4	23	32	11	2	0	0	0	0	73	41-50	55	
01:00	1	0	0	0	0	7	8	12	5	0	0	1	0	0	34	39-48	20	
02:00	3	0	0	0	0	2	13	10	6	2	1	0	0	0	37	41-50	23	
03:00	0	0	0	0	0	2	3	6	2	0	0	0	0	0	13	43-52	11	
04:00	1	0	0	0	0	2	5	7	4	1	0	0	0	0	20	39-48	12	
05:00	2	0	0	0	1	9	24	15	6	0	0	0	1	0	58	41-50	39	
06:00	11	0	0	0	3	35	46	35	9	3	0	0	0	0	142	36-45	81	
07:00	28	0	0	0	0	4	51	127	56	7	1	1	0	0	275	45-54	183	
08:00	22	0	0	1	1	11	88	133	48	5	2	0	0	1	312	41-50	221	
09:00	12	0	0	1	0	11	76	117	55	4	1	1	0	0	278	41-50	193	
10:00	13	0	0	0	0	9	106	142	41	3	1	0	0	0	315	41-50	248	
11:00	15	0	0	0	0	6	107	144	60	5	0	0	0	0	337	41-50	251	
12 PM	17	0	0	0	7	27	111	160	47	7	1	0	0	0	377	41-50	271	
13:00	14	0	0	0	0	23	110	186	56	11	1	1	0	0	402	41-50	296	
14:00	19	0	0	1	3	17	108	209	64	11	2	1	0	0	435	41-50	317	
15:00	20	0	0	0	4	36	185	274	87	9	0	0	0	0	615	41-50	459	
16:00	12	0	0	1	0	35	168	318	109	15	1	0	0	0	659	41-50	486	
17:00	17	0	1	2	11	60	223	351	110	12	1	2	0	0	790	41-50	574	
18:00	13	0	0	0	1	14	140	260	107	11	5	0	0	0	551	41-50	400	
19:00	10	0	0	0	2	14	109	174	54	6	1	2	0	0	372	41-50	283	
20:00	4	0	0	0	3	22	95	128	41	5	1	0	0	0	299	41-50	223	
21:00	3	0	0	0	0	3	55	94	35	3	0	0	0	0	193	41-50	149	
22:00	2	0	0	0	0	10	48	60	18	3	0	0	0	0	141	41-50	108	
23:00	2	0	0	0	0	5	26	50	18	4	0	0	0	0	105	41-50	76	
<b>Total</b>	<b>241</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>37</b>	<b>368</b>	<b>1928</b>	<b>3044</b>	<b>1049</b>	<b>129</b>	<b>19</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>6833</b>			
Percent	3.5%	0.0%	0.0%	0.1%	0.5%	5.4%	28.2%	44.5%	15.4%	1.9%	0.3%	0.1%	0.0%	0.0%				
AM Peak	07:00			08:00	06:00	06:00	11:00	11:00	11:00	07:00	08:00	01:00	05:00	08:00	11:00			
Vol.	28			1	3	35	107	144	60	7	2	1	1	1	337			
PM Peak	15:00		17:00	17:00	17:00	17:00	17:00	17:00	16:00	18:00	17:00				17:00			
Vol.	20		1	2	11	60	223	351	110	15	5	2			790			
Total	241	0	1	6	37	368	1928	3044	1049	129	19	9	1	1	6833			
Percent	3.5%	0.0%	0.0%	0.1%	0.5%	5.4%	28.2%	44.5%	15.4%	1.9%	0.3%	0.1%	0.0%	0.0%				

15th Percentile : 41 MPH  
 50th Percentile : 47 MPH  
 85th Percentile : 51 MPH  
 95th Percentile : 55 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 4972  
 Percent in Pace : 72.8%  
 Number of Vehicles > 45 MPH : 4252  
 Percent of Vehicles > 45 MPH : 62.2%  
 Mean Speed(Average) : 46 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

Site Code: 10320103971  
 Station ID:  
 Counter#018130

East																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/22/10	0	0	0	1	0	1	6	11	4	0	0	0	0	0	23	41-50	17	
01:00	1	0	0	0	1	4	2	6	0	1	0	0	0	0	15	41-50	8	
02:00	1	0	0	0	0	4	7	4	3	1	0	1	0	0	21	37-46	12	
03:00	4	0	0	0	0	2	6	6	4	3	3	1	0	0	29	39-48	12	
04:00	9	0	0	0	3	4	15	29	20	14	1	0	0	0	95	46-55	49	
05:00	16	0	0	1	9	44	72	89	49	18	6	1	1	0	306	41-50	161	
06:00	47	3	2	2	48	130	155	87	40	7	1	2	1	0	525	36-45	285	
07:00	58	0	0	0	13	103	274	209	85	17	6	1	1	0	767	41-50	483	
08:00	33	0	0	0	15	119	222	156	38	11	2	0	0	0	596	41-50	378	
09:00	18	0	1	2	4	88	167	101	34	4	1	1	0	0	421	41-50	268	
10:00	17	0	0	1	8	56	170	98	28	3	1	0	0	0	382	41-50	268	
11:00	17	0	0	1	20	81	144	64	15	3	0	0	0	0	345	36-45	225	
12 PM	15	0	0	2	7	95	135	49	13	0	1	0	0	0	317	36-45	230	
13:00	23	0	0	1	28	134	154	42	7	2	1	1	0	0	393	36-45	288	
14:00	14	0	0	1	21	145	165	36	13	3	0	0	0	0	398	36-45	310	
15:00	27	10	5	5	33	148	145	48	4	1	0	0	0	0	426	36-45	293	
16:00	28	0	0	2	21	143	197	61	12	1	0	0	0	0	465	36-45	340	
17:00	35	4	11	9	23	125	138	62	5	1	0	0	0	0	413	36-45	263	
18:00	15	0	0	0	21	95	129	50	14	3	0	0	0	0	327	36-45	224	
19:00	8	0	0	1	18	70	78	35	8	0	1	0	0	0	219	36-45	148	
20:00	6	0	0	0	13	45	72	50	9	4	0	0	0	0	199	41-50	122	
21:00	9	0	0	0	1	25	47	33	8	1	1	0	0	0	125	41-50	80	
22:00	3	0	0	0	6	23	31	26	12	4	1	0	0	0	106	38-47	57	
23:00	1	0	0	0	0	9	11	17	4	4	1	0	0	0	47	41-50	28	
<b>Total</b>	<b>405</b>	<b>17</b>	<b>19</b>	<b>29</b>	<b>313</b>	<b>1693</b>	<b>2542</b>	<b>1369</b>	<b>429</b>	<b>106</b>	<b>27</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>6960</b>			
Percent	5.8%	0.2%	0.3%	0.4%	4.5%	24.3%	36.5%	19.7%	6.2%	1.5%	0.4%	0.1%	0.0%	0.0%				
AM Peak	07:00	06:00	06:00	06:00	06:00	06:00	07:00	07:00	07:00	05:00	05:00	06:00	05:00		07:00			
Vol.	58	3	2	2	48	130	274	209	85	18	6	2	1		767			
PM Peak	17:00	15:00	17:00	17:00	15:00	15:00	16:00	17:00	18:00	20:00	12:00	13:00			16:00			
Vol.	35	10	11	9	33	148	197	62	14	4	1	1			465			
<b>Total</b>	<b>405</b>	<b>17</b>	<b>19</b>	<b>29</b>	<b>313</b>	<b>1693</b>	<b>2542</b>	<b>1369</b>	<b>429</b>	<b>106</b>	<b>27</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>6960</b>			
Percent	5.8%	0.2%	0.3%	0.4%	4.5%	24.3%	36.5%	19.7%	6.2%	1.5%	0.4%	0.1%	0.0%	0.0%				

15th Percentile : 36 MPH  
 50th Percentile : 42 MPH  
 85th Percentile : 49 MPH  
 95th Percentile : 53 MPH

Stats  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 4235  
 Percent in Pace : 60.8%  
 Number of Vehicles > 45 MPH : 1942  
 Percent of Vehicles > 45 MPH : 27.9%  
 Mean Speed(Average) : 41 MPH

Montachusett Regional Planning Commission  
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Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

Site Code: 10320103971  
 Station ID:  
 Counter#018130

West, East	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/22/10	0	0	0	1	1	5	29	43	15	2	0	0	0	0	96	41-50 72
01:00	2	0	0	0	1	11	10	18	5	1	0	1	0	0	49	41-50 28
02:00	4	0	0	0	0	6	20	14	9	3	1	1	0	0	58	40-49 34
03:00	4	0	0	0	0	4	9	12	6	3	3	1	0	0	42	42-51 22
04:00	10	0	0	0	3	6	20	36	24	15	1	0	0	0	115	45-54 60
05:00	18	0	0	1	10	53	96	104	55	18	6	1	2	0	364	41-50 200
06:00	58	3	2	2	51	165	201	122	49	10	1	2	1	0	667	36-45 366
07:00	86	0	0	0	13	107	325	336	141	24	7	2	1	0	1042	41-50 661
08:00	55	0	0	1	16	130	310	289	86	16	4	0	0	1	908	41-50 599
09:00	30	0	1	3	4	99	243	218	89	8	2	2	0	0	699	41-50 461
10:00	30	0	0	1	8	65	276	240	69	6	2	0	0	0	697	41-50 516
11:00	32	0	0	1	20	87	251	208	75	8	0	0	0	0	682	41-50 459
12 PM	32	0	0	2	14	122	246	209	60	7	2	0	0	0	694	41-50 455
13:00	37	0	0	1	28	157	264	228	63	13	2	2	0	0	795	41-50 492
14:00	33	0	0	2	24	162	273	245	77	14	2	1	0	0	833	41-50 518
15:00	47	10	5	5	37	184	330	322	91	10	0	0	0	0	1041	41-50 652
16:00	40	0	0	3	21	178	365	379	121	16	1	0	0	0	1124	41-50 744
17:00	52	4	12	11	34	185	361	413	115	13	1	2	0	0	1203	41-50 774
18:00	28	0	0	0	22	109	269	310	121	14	5	0	0	0	878	41-50 579
19:00	18	0	0	1	20	84	187	209	62	6	2	2	0	0	591	41-50 396
20:00	10	0	0	0	16	67	167	178	50	9	1	0	0	0	498	41-50 345
21:00	12	0	0	0	1	28	102	127	43	4	1	0	0	0	318	41-50 229
22:00	5	0	0	0	6	33	79	86	30	7	1	0	0	0	247	41-50 165
23:00	3	0	0	0	0	14	37	67	22	8	1	0	0	0	152	41-50 104
<b>Total</b>	<b>646</b>	<b>17</b>	<b>20</b>	<b>35</b>	<b>350</b>	<b>2061</b>	<b>4470</b>	<b>4413</b>	<b>1478</b>	<b>235</b>	<b>46</b>	<b>17</b>	<b>4</b>	<b>1</b>	<b>13793</b>	
Percent	4.7%	0.1%	0.1%	0.3%	2.5%	14.9%	32.4%	32.0%	10.7%	1.7%	0.3%	0.1%	0.0%	0.0%		
AM Peak	07:00	06:00	06:00	09:00	06:00	06:00	07:00	07:00	07:00	07:00	07:00	06:00	05:00	08:00	07:00	
Vol.	86	3	2	3	51	165	325	336	141	24	7	2	2	1	1042	
PM Peak	17:00	15:00	17:00	17:00	15:00	17:00	16:00	17:00	16:00	16:00	18:00	13:00			17:00	
Vol.	52	10	12	11	37	185	365	413	121	16	5	2			1203	
<b>Total</b>	<b>646</b>	<b>17</b>	<b>20</b>	<b>35</b>	<b>350</b>	<b>2061</b>	<b>4470</b>	<b>4413</b>	<b>1478</b>	<b>235</b>	<b>46</b>	<b>17</b>	<b>4</b>	<b>1</b>	<b>13793</b>	
Percent	4.7%	0.1%	0.1%	0.3%	2.5%	14.9%	32.4%	32.0%	10.7%	1.7%	0.3%	0.1%	0.0%	0.0%		

15th Percentile : 38 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 50 MPH  
 95th Percentile : 54 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 8883  
 Percent in Pace : 64.4%  
 Number of Vehicles > 45 MPH : 6194  
 Percent of Vehicles > 45 MPH : 44.9%  
 Mean Speed(Average) : 43 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East																	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/21/10	0	0	0	0	0	0	1	4	6	4	0	0	0	0	15	47-56	11
01:00	0	0	0	0	0	0	1	2	1	2	1	1	0	0	8	38-47	3
02:00	1	0	0	0	0	0	1	9	2	3	0	1	0	0	17	45-54	11
03:00	0	0	0	0	0	0	0	9	4	4	2	2	0	0	21	46-55	13
04:00	2	0	0	0	0	0	2	14	35	16	5	1	0	1	76	47-56	51
05:00	1	0	0	0	0	0	10	56	82	77	21	2	0	0	249	51-60	159
06:00	7	0	0	0	0	0	7	82	178	106	30	7	0	1	418	51-60	284
07:00	<b>15</b>	0	0	0	0	0	<b>13</b>	<b>93</b>	<b>257</b>	<b>207</b>	<b>52</b>	<b>9</b>	<b>5</b>	<b>3</b>	<b>654</b>	51-60	464
08:00	8	0	0	0	0	0	8	68	147	128	33	5	0	0	397	51-60	275
09:00	6	0	0	0	0	0	5	44	83	66	27	4	0	0	235	51-60	149
10:00	4	0	0	0	0	0	4	32	98	69	19	3	0	0	229	51-60	167
11:00	5	0	0	0	<b>1</b>	<b>2</b>	5	28	74	72	22	2	1	1	213	51-60	146
12 PM	7	0	0	0	0	0	4	39	73	56	11	2	0	0	192	51-60	129
13:00	6	0	0	0	0	0	8	54	87	46	16	1	<b>1</b>	<b>1</b>	220	46-55	141
14:00	4	0	0	0	0	<b>3</b>	8	60	98	56	<b>19</b>	1	0	<b>2</b>	251	46-55	158
15:00	<b>14</b>	0	0	0	0	1	11	55	94	49	14	2	0	0	240	46-55	149
16:00	4	0	0	0	<b>1</b>	<b>2</b>	<b>19</b>	<b>67</b>	<b>108</b>	<b>64</b>	12	2	1	0	<b>280</b>	46-55	175
17:00	7	0	0	0	0	0	11	40	96	63	8	1	0	0	226	51-60	159
18:00	3	0	0	0	0	0	3	26	87	51	18	<b>8</b>	1	0	197	51-60	138
19:00	1	0	0	0	0	0	3	25	56	29	8	0	0	0	122	50-59	85
20:00	2	0	0	0	0	0	5	17	36	19	6	1	0	0	86	49-58	56
21:00	1	0	0	0	0	0	6	25	18	8	5	1	0	0	64	46-55	43
22:00	2	0	0	0	0	1	4	9	18	14	3	2	1	0	54	50-59	32
23:00	3	0	0	0	0	1	6	4	14	2	2	1	0	1	34	46-55	18
<b>Total</b>	<b>103</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>145</b>	<b>862</b>	<b>1752</b>	<b>1211</b>	<b>334</b>	<b>59</b>	<b>10</b>	<b>10</b>	<b>4498</b>		
Percent	2.3%	0.0%	0.0%	0.0%	0.0%	0.2%	3.2%	19.2%	39.0%	26.9%	7.4%	1.3%	0.2%	0.2%			
AM Peak	07:00				11:00	11:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00		
Vol.	15				1	2	13	93	257	207	52	9	5	3	654		
PM Peak	15:00				16:00	14:00	16:00	16:00	16:00	16:00	14:00	18:00	13:00	14:00	16:00		
Vol.	14				1	3	19	67	108	64	19	8	1	2	280		

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 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East																Pace	Number	
Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	76	999	Total	Speed	in Pace
9/22/10	0	0	0	0	0	0	1	0	4	3	1	1	0	0	10	49-58	7	
01:00	0	0	0	0	0	0	1	4	2	2	0	0	0	0	9	45-54	6	
02:00	0	0	0	0	0	0	0	1	4	0	2	0	0	0	7	45-54	5	
03:00	1	0	0	0	0	0	0	5	6	4	2	1	0	0	19	46-55	11	
04:00	3	0	0	0	0	1	3	14	37	16	6	1	1	0	82	47-56	53	
05:00	3	0	0	0	0	0	3	47	107	82	32	7	1	0	282	51-60	189	
06:00	2	0	0	0	0	0	6	83	177	116	42	9	3	0	438	51-60	293	
07:00	10	0	0	0	0	0	4	85	219	191	73	14	3	2	601	51-60	410	
08:00	8	0	0	0	0	1	13	53	138	140	38	11	3	0	405	51-60	278	
09:00	5	0	0	0	0	0	9	45	102	68	10	3	0	0	242	51-60	170	
10:00	7	0	0	0	0	0	8	39	89	60	10	0	0	0	213	51-60	149	
11:00	7	0	0	0	0	0	5	45	92	40	15	3	0	0	207	46-55	137	
12 PM	10	0	0	0	0	0	4	41	88	45	15	3	1	0	207	50-59	133	
13:00	5	0	0	0	0	1	14	49	100	53	9	2	2	0	235	49-58	153	
14:00	6	0	0	0	0	1	9	64	99	64	18	3	1	1	266	47-56	164	
15:00	9	0	0	0	0	0	4	67	101	62	12	1	0	0	256	46-55	168	
16:00	7	0	0	0	0	0	13	54	109	81	22	5	1	0	292	51-60	190	
17:00	12	0	0	0	0	3	7	48	106	77	18	1	2	1	275	51-60	183	
18:00	9	0	0	0	0	0	2	47	60	60	14	3	1	1	197	51-60	120	
19:00	3	0	0	0	0	1	15	38	54	23	7	1	0	0	142	46-55	92	
20:00	1	0	0	0	0	0	4	21	33	18	8	0	0	0	85	46-55	54	
21:00	0	0	0	0	0	0	4	32	24	7	3	3	0	2	75	46-55	56	
22:00	2	0	0	0	0	0	6	21	16	19	7	1	2	0	74	46-55	37	
23:00	0	0	0	0	0	0	2	7	10	8	3	0	0	0	30	49-58	20	
<b>Total</b>	<b>110</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>137</b>	<b>910</b>	<b>1777</b>	<b>1239</b>	<b>367</b>	<b>73</b>	<b>21</b>	<b>7</b>	<b>4649</b>			
Percent	2.4%	0.0%	0.0%	0.0%	0.0%	0.2%	2.9%	19.6%	38.2%	26.7%	7.9%	1.6%	0.5%	0.2%				
AM Peak	07:00					04:00	08:00	07:00	07:00	07:00	07:00	07:00	06:00	07:00	07:00			
Vol.	10					1	13	85	219	191	73	14	3	2	601			
PM Peak	17:00					17:00	19:00	15:00	16:00	16:00	16:00	16:00	13:00	21:00	16:00			
Vol.	12					3	15	67	109	81	22	5	2	2	292			
<b>Total</b>	<b>213</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>18</b>	<b>282</b>	<b>1772</b>	<b>3529</b>	<b>2450</b>	<b>701</b>	<b>132</b>	<b>31</b>	<b>17</b>	<b>9147</b>			
Percent	2.3%	0.0%	0.0%	0.0%	0.0%	0.2%	3.1%	19.4%	38.6%	26.8%	7.7%	1.4%	0.3%	0.2%				

15th Percentile : 48 MPH  
 50th Percentile : 54 MPH  
 85th Percentile : 59 MPH  
 95th Percentile : 64 MPH

Stats  
 10 MPH Pace Speed : 51-60 MPH  
 Number in Pace : 5979  
 Percent in Pace : 65.4%  
 Number of Vehicles > 45 MPH : 8632  
 Percent of Vehicles > 45 MPH : 94.4%  
 Mean Speed(Average) : 53 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

West																	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/21/10	2	0	0	0	0	0	7	6	16	8	8	3	3	1	54	50-59	24
01:00	2	0	0	0	0	0	1	5	5	4	1	1	1	1	25	45-54	10
02:00	4	0	0	0	0	0	3	5	6	4	5	0	3	0	30	43-52	11
03:00	3	0	0	0	0	0	0	1	0	3	0	0	1	0	8	*	3
04:00	3	0	0	0	0	0	3	0	1	2	4	0	1	0	14	55-64	7
05:00	12	0	0	0	0	0	2	3	3	2	6	2	1	3	34	1-10	10
06:00	33	0	0	0	1	1	13	9	17	10	10	2	1	1	98	47-56	27
07:00	<b>44</b>	0	0	0	0	4	20	33	30	<b>40</b>	13	<b>9</b>	<b>4</b>	<b>4</b>	201	51-60	70
08:00	26	0	0	0	0	2	25	47	<b>45</b>	37	<b>23</b>	6	0	0	<b>211</b>	46-55	92
09:00	9	0	0	0	0	8	25	42	43	23	9	8	0	0	167	46-55	85
10:00	9	0	0	0	0	18	39	55	39	14	0	0	0	0	174	42-51	95
11:00	13	0	0	0	<b>3</b>	<b>23</b>	<b>52</b>	<b>69</b>	35	8	3	0	0	0	206	41-50	121
12 PM	8	0	0	0	1	<b>30</b>	57	44	33	9	0	1	0	0	183	41-50	101
13:00	7	0	0	0	2	21	50	42	48	15	1	0	0	0	186	41-50	92
14:00	12	0	0	0	<b>4</b>	25	60	72	58	17	2	0	0	0	250	41-50	132
15:00	18	0	0	0	4	29	89	109	91	45	4	2	0	0	391	42-51	200
16:00	18	0	0	0	0	22	89	110	116	80	12	5	1	1	454	46-55	226
17:00	17	0	0	0	4	30	<b>99</b>	<b>118</b>	<b>157</b>	<b>81</b>	<b>32</b>	8	2	0	<b>548</b>	46-55	275
18:00	<b>19</b>	0	0	0	1	14	62	75	94	77	26	7	5	1	381	48-57	171
19:00	13	0	0	0	0	5	26	40	69	60	20	<b>13</b>	4	0	250	51-60	129
20:00	12	0	0	0	0	4	11	34	29	37	21	8	1	<b>4</b>	161	51-60	66
21:00	12	0	0	0	0	2	8	11	33	40	21	10	<b>6</b>	2	145	51-60	73
22:00	4	0	0	0	0	2	2	10	23	15	14	9	5	3	87	51-60	38
23:00	4	0	0	0	0	1	1	12	14	15	6	8	1	2	64	49-58	29
<b>Total</b>	<b>304</b>	0	0	0	20	241	744	952	1005	647	244	102	40	23	4322		
Percent	7.0%	0.0%	0.0%	0.0%	0.5%	5.6%	17.2%	22.0%	23.3%	15.0%	5.6%	2.4%	0.9%	0.5%			
AM Peak	07:00				11:00	11:00	11:00	11:00	08:00	07:00	08:00	07:00	07:00	07:00	08:00		
Vol.	44				3	23	52	69	45	40	23	9	4	4	211		
PM Peak	18:00				14:00	12:00	17:00	17:00	17:00	17:00	17:00	19:00	21:00	20:00	17:00		
Vol.	19				4	30	99	118	157	81	32	13	6	4	548		

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

West																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/22/10	11	0	0	0	0	2	5	7	7	11	8	4	0	1	56	54-63	21	
01:00	0	0	0	0	0	1	1	4	3	5	6	1	2	2	25	53-62	11	
02:00	7	0	0	0	0	2	1	2	2	5	6	2	1	1	29	54-63	11	
03:00	2	0	0	0	0	0	0	3	1	2	1	0	0	0	9	46-55	4	
04:00	5	0	0	0	0	0	3	4	3	4	0	1	0	1	21	40-49	7	
05:00	7	0	0	0	0	1	3	4	4	3	7	2	3	0	34	56-65	10	
06:00	34	0	0	0	1	8	9	26	16	9	15	2	2	4	126	46-55	42	
07:00	<b>38</b>	0	0	0	0	7	25	39	21	29	<b>22</b>	<b>14</b>	2	1	198	41-50	64	
08:00	33	0	0	0	0	5	38	55	40	<b>31</b>	9	2	1	2	<b>216</b>	43-52	95	
09:00	14	0	0	0	1	17	40	44	43	29	6	0	0	0	194	44-53	87	
10:00	13	0	0	<b>1</b>	<b>3</b>	17	42	53	<b>47</b>	11	2	0	0	0	189	44-53	100	
11:00	16	0	0	0	2	<b>28</b>	<b>64</b>	<b>58</b>	32	9	0	1	0	0	210	41-50	122	
12 PM	11	0	0	1	5	32	60	62	41	10	0	1	0	1	224	41-50	122	
13:00	16	0	0	0	3	29	62	70	42	15	3	0	2	0	242	41-50	132	
14:00	11	0	0	0	1	23	76	75	39	23	3	4	0	0	255	41-50	151	
15:00	<b>20</b>	0	0	0	6	39	108	130	91	40	3	2	0	0	439	41-50	238	
16:00	13	0	0	0	1	33	87	135	120	42	11	3	0	1	446	46-55	255	
17:00	18	0	<b>3</b>	<b>4</b>	<b>18</b>	<b>64</b>	<b>133</b>	<b>146</b>	<b>134</b>	60	17	1	1	1	<b>600</b>	43-52	281	
18:00	15	0	0	0	1	17	64	98	93	<b>69</b>	14	<b>7</b>	2	1	381	46-55	191	
19:00	3	0	0	0	0	6	30	53	86	48	<b>18</b>	1	1	0	246	46-55	139	
20:00	3	0	0	0	0	5	30	37	46	33	15	4	1	0	174	46-55	83	
21:00	4	0	0	0	0	2	15	38	36	21	18	5	0	<b>2</b>	141	46-55	74	
22:00	2	0	0	0	0	4	11	19	30	13	8	1	1	0	89	46-55	49	
23:00	0	0	0	0	0	2	6	7	25	15	11	5	<b>4</b>	0	75	51-60	40	
Total	296	0	3	6	42	344	913	1169	1002	537	203	63	23	18	4619			
Percent	6.4%	0.0%	0.1%	0.1%	0.9%	7.4%	19.8%	25.3%	21.7%	11.6%	4.4%	1.4%	0.5%	0.4%				
AM Peak	07:00			10:00	10:00	11:00	11:00	11:00	10:00	08:00	07:00	07:00	05:00	06:00	08:00			
Vol.	38			1	3	28	64	58	47	31	22	14	3	4	216			
PM Peak	15:00		17:00	17:00	17:00	17:00	17:00	17:00	17:00	18:00	19:00	18:00	23:00	21:00	17:00			
Vol.	20		3	4	18	64	133	146	134	69	18	7	4	2	600			
Total	600	0	3	6	62	585	1657	2121	2007	1184	447	165	63	41	8941			
Percent	6.7%	0.0%	0.0%	0.1%	0.7%	6.5%	18.5%	23.7%	22.4%	13.2%	5.0%	1.8%	0.7%	0.5%				

15th Percentile : 41 MPH  
 50th Percentile : 49 MPH  
 85th Percentile : 58 MPH  
 95th Percentile : 63 MPH

Stats  
 10 MPH Pace Speed : 46-55 MPH  
 Number in Pace : 4128  
 Percent in Pace : 46.2%  
 Number of Vehicles > 45 MPH : 6028  
 Percent of Vehicles > 45 MPH : 67.4%  
 Mean Speed(Average) : 48 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East, West																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/21/10	2	0	0	0	0	0	8	10	22	12	8	3	3	1	69	48-57	34	
01:00	2	0	0	0	0	0	2	7	6	7	5	2	1	1	33	46-55	13	
02:00	5	0	0	0	0	0	4	14	8	7	5	1	3	0	47	44-53	22	
03:00	3	0	0	0	0	0	0	10	4	7	2	2	1	0	29	46-55	14	
04:00	5	0	0	0	0	0	5	14	36	18	9	1	1	1	90	49-58	54	
05:00	13	0	0	0	0	0	12	59	85	79	27	4	1	3	283	51-60	164	
06:00	40	0	0	0	1	1	20	91	195	116	40	9	1	2	516	51-60	311	
07:00	<b>59</b>	0	0	0	0	4	33	<b>126</b>	<b>287</b>	<b>247</b>	<b>65</b>	<b>18</b>	<b>9</b>	<b>7</b>	<b>855</b>	51-60	534	
08:00	34	0	0	0	0	2	33	115	192	165	56	11	0	0	608	51-60	357	
09:00	15	0	0	0	0	8	30	86	126	89	36	12	0	0	402	50-59	216	
10:00	13	0	0	0	0	18	43	87	137	83	19	3	0	0	403	46-55	224	
11:00	18	0	0	0	<b>4</b>	<b>25</b>	<b>57</b>	97	109	80	25	2	1	1	419	46-55	206	
12 PM	15	0	0	0	1	<b>30</b>	61	83	106	65	11	3	0	0	375	46-55	189	
13:00	13	0	0	0	2	21	58	96	135	61	17	1	1	1	406	46-55	231	
14:00	16	0	0	0	<b>4</b>	28	68	132	156	73	21	1	0	2	501	46-55	288	
15:00	<b>32</b>	0	0	0	4	30	100	164	185	94	18	4	0	0	631	46-55	349	
16:00	22	0	0	0	1	24	108	<b>177</b>	224	<b>144</b>	24	7	2	1	734	46-55	401	
17:00	24	0	0	0	4	30	<b>110</b>	158	<b>253</b>	144	40	9	2	0	<b>774</b>	46-55	411	
18:00	22	0	0	0	1	14	65	101	181	128	<b>44</b>	<b>15</b>	<b>6</b>	1	578	51-60	309	
19:00	14	0	0	0	0	5	29	65	125	89	28	13	4	0	372	51-60	214	
20:00	14	0	0	0	0	4	16	51	65	56	27	9	1	<b>4</b>	247	50-59	121	
21:00	13	0	0	0	0	2	14	36	51	48	26	11	6	2	209	51-60	99	
22:00	6	0	0	0	0	3	6	19	41	29	17	11	6	3	141	51-60	70	
23:00	7	0	0	0	0	2	7	16	28	17	8	9	1	3	98	48-57	46	
<b>Total</b>	<b>407</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>251</b>	<b>889</b>	<b>1814</b>	<b>2757</b>	<b>1858</b>	<b>578</b>	<b>161</b>	<b>50</b>	<b>33</b>	<b>8820</b>			
Percent	4.6%	0.0%	0.0%	0.0%	0.2%	2.8%	10.1%	20.6%	31.3%	21.1%	6.6%	1.8%	0.6%	0.4%				
AM Peak	07:00				11:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00			
Vol.	59				4	25	57	126	287	247	65	18	9	7	855			
PM Peak	15:00				14:00	12:00	17:00	16:00	17:00	16:00	18:00	18:00	18:00	20:00	17:00			
Vol.	32				4	30	110	177	253	144	44	15	6	4	774			

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East, West	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/22/10	11	0	0	0	0	2	6	7	11	14	9	5	0	1	66	50-59	25
01:00	0	0	0	0	0	1	2	8	5	7	6	1	2	2	34	44-53	13
02:00	7	0	0	0	0	2	1	3	6	5	8	2	1	1	36	54-63	13
03:00	3	0	0	0	0	0	0	8	7	6	3	1	0	0	28	46-55	15
04:00	8	0	0	0	0	1	6	18	40	20	6	2	1	1	103	48-57	60
05:00	10	0	0	0	0	1	6	51	111	85	39	9	4	0	316	51-60	196
06:00	36	0	0	0	1	8	15	109	193	125	57	11	5	4	564	51-60	318
07:00	<b>48</b>	0	0	0	0	7	29	<b>124</b>	<b>240</b>	<b>220</b>	<b>95</b>	<b>28</b>	5	3	<b>799</b>	51-60	460
08:00	41	0	0	0	0	6	51	108	178	171	47	13	4	2	621	51-60	349
09:00	19	0	0	0	1	17	49	89	145	97	16	3	0	0	436	51-60	242
10:00	20	0	0	1	3	17	50	92	136	71	12	0	0	0	402	46-55	228
11:00	23	0	0	0	2	<b>28</b>	<b>69</b>	103	124	49	15	4	0	0	417	46-55	227
12 PM	21	0	0	1	5	32	64	103	129	55	15	4	1	1	431	46-55	232
13:00	21	0	0	0	3	30	76	119	142	68	12	2	4	0	477	46-55	261
14:00	17	0	0	0	1	24	85	139	138	87	21	7	1	1	521	46-55	277
15:00	29	0	0	0	6	39	112	<b>197</b>	192	102	15	3	0	0	695	46-55	389
16:00	20	0	0	0	1	33	100	189	229	123	33	8	1	1	738	46-55	418
17:00	<b>30</b>	0	<b>3</b>	<b>4</b>	<b>18</b>	<b>67</b>	<b>140</b>	194	<b>240</b>	<b>137</b>	<b>35</b>	2	3	2	<b>875</b>	46-55	434
18:00	24	0	0	0	1	17	66	145	153	129	28	<b>10</b>	3	2	578	46-55	298
19:00	6	0	0	0	0	7	45	91	140	71	25	2	1	0	388	46-55	231
20:00	4	0	0	0	0	5	34	58	79	51	23	4	1	0	259	46-55	137
21:00	4	0	0	0	0	2	19	70	60	28	21	8	0	<b>4</b>	216	46-55	130
22:00	4	0	0	0	0	4	17	40	46	32	15	2	3	0	163	46-55	86
23:00	0	0	0	0	0	2	8	14	35	23	14	5	4	0	105	51-60	58
Total	406	0	3	6	42	352	1050	2079	2779	1776	570	136	44	25	9268		
Percent	4.4%	0.0%	0.0%	0.1%	0.5%	3.8%	11.3%	22.4%	30.0%	19.2%	6.2%	1.5%	0.5%	0.3%			
AM Peak	07:00			10:00	10:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	06:00	06:00	07:00		
Vol.	48			1	3	28	69	124	240	220	95	28	5	4	799		
PM Peak	17:00		17:00	17:00	17:00	17:00	17:00	15:00	17:00	17:00	17:00	18:00	13:00	21:00	17:00		
Vol.	30		3	4	18	67	140	197	240	137	35	10	4	4	875		
Total	813	0	3	6	64	603	1939	3893	5536	3634	1148	297	94	58	18088		
Percent	4.5%	0.0%	0.0%	0.0%	0.4%	3.3%	10.7%	21.5%	30.6%	20.1%	6.3%	1.6%	0.5%	0.3%			

15th Percentile : 44 MPH  
 50th Percentile : 52 MPH  
 85th Percentile : 59 MPH  
 95th Percentile : 64 MPH

Stats  
 10 MPH Pace Speed : 46-55 MPH  
 Number in Pace : 9429  
 Percent in Pace : 52.1%  
 Number of Vehicles > 45 MPH : 14660  
 Percent of Vehicles > 45 MPH : 81.0%  
 Mean Speed(Average) : 50 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North																
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/21/10	0	0	0	0	0	0	4	8	11	17	6	2	0	1	49	51-60 28
01:00	1	0	0	0	0	0	0	3	5	8	7	1	0	0	25	53-62 15
02:00	0	0	0	0	0	0	1	3	9	7	7	0	1	0	28	51-60 16
03:00	0	0	0	0	0	0	1	0	0	2	1	0	1	0	5	52-61 3
04:00	0	0	0	0	0	1	0	3	7	6	3	2	0	0	22	48-57 13
05:00	0	0	0	0	0	0	1	11	14	7	2	1	1	0	37	46-55 25
06:00	8	0	0	0	1	4	10	31	51	40	19	8	2	0	174	51-60 91
07:00	13	0	0	0	1	3	<b>26</b>	79	112	<b>109</b>	<b>46</b>	11	<b>9</b>	1	410	51-60 221
08:00	<b>17</b>	0	0	<b>1</b>	<b>2</b>	<b>10</b>	15	<b>84</b>	<b>139</b>	93	45	13	5	1	<b>425</b>	51-60 232
09:00	13	0	0	0	0	2	21	74	117	99	34	<b>15</b>	2	0	377	51-60 216
10:00	10	0	0	0	1	3	19	51	91	89	27	10	2	1	304	51-60 180
11:00	13	0	0	0	0	3	14	28	90	71	31	10	2	0	262	51-60 161
12 PM	8	0	0	0	0	2	15	51	82	55	32	11	2	0	258	50-59 137
13:00	3	0	0	0	1	1	12	39	90	67	26	10	6	2	257	51-60 157
14:00	9	0	0	0	1	<b>9</b>	18	40	73	98	53	20	6	1	328	51-60 171
15:00	11	1	0	0	0	0	17	<b>59</b>	162	135	65	24	6	<b>6</b>	486	51-60 297
16:00	<b>21</b>	0	0	0	0	0	1	33	140	192	<b>96</b>	<b>40</b>	<b>18</b>	4	545	51-60 332
17:00	18	<b>3</b>	0	0	<b>2</b>	7	<b>28</b>	56	<b>201</b>	<b>200</b>	93	28	12	4	<b>652</b>	51-60 401
18:00	8	1	0	0	0	0	6	34	102	142	71	20	9	3	396	51-60 244
19:00	4	0	0	0	0	1	7	38	77	72	37	10	4	0	250	51-60 149
20:00	1	0	0	0	0	1	3	25	62	41	24	9	7	1	174	51-60 103
21:00	2	0	0	0	0	1	2	23	63	37	15	5	0	0	148	51-60 100
22:00	0	0	0	0	0	1	3	12	24	27	16	6	2	0	91	51-60 51
23:00	0	0	0	<b>1</b>	0	1	2	4	14	27	14	6	1	1	71	52-61 42
<b>Total</b>	160	5	0	2	9	50	226	789	1736	1641	770	262	98	26	5774	
<b>Percent</b>	2.8%	0.1%	0.0%	0.0%	0.2%	0.9%	3.9%	13.7%	30.1%	28.4%	13.3%	4.5%	1.7%	0.5%		
<b>AM Peak</b>	08:00			08:00	08:00	08:00	07:00	08:00	08:00	07:00	07:00	09:00	07:00	00:00	08:00	
<b>Vol.</b>	17			1	2	10	26	84	139	109	46	15	9	1	425	
<b>PM Peak</b>	16:00	17:00		23:00	17:00	14:00	17:00	15:00	17:00	17:00	16:00	16:00	16:00	15:00	17:00	
<b>Vol.</b>	21	3		1	2	9	28	59	201	200	96	40	18	6	652	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North	Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
9/22/10		0	0	0	0	0	0	1	1	13	22	15	3	0	0	55	53-62	37
01:00		0	0	0	0	0	0	0	5	10	3	2	4	0	0	24	46-55	15
02:00		1	0	0	0	0	0	1	4	5	10	4	0	0	0	25	51-60	15
03:00		0	0	0	0	1	0	0	1	2	1	3	1	0	0	9	57-66	5
04:00		1	0	0	0	0	0	0	8	8	6	1	1	0	0	25	47-56	17
05:00		2	0	0	0	0	2	2	8	14	13	3	0	0	0	44	49-58	27
06:00		4	0	0	0	1	3	13	36	54	51	19	3	1	1	186	51-60	105
07:00		<b>20</b>	0	0	0	0	<b>9</b>	<b>21</b>	63	128	<b>118</b>	55	15	2	1	<b>432</b>	51-60	246
08:00		13	0	0	0	0	3	19	<b>86</b>	132	90	<b>62</b>	11	5	<b>2</b>	423	50-59	222
09:00		6	0	0	0	1	5	10	64	<b>157</b>	103	52	<b>18</b>	<b>6</b>	1	423	51-60	260
10:00		11	0	0	<b>2</b>	0	4	18	58	101	91	32	10	1	1	329	51-60	192
11:00		8	0	<b>1</b>	1	0	3	5	34	82	81	33	11	1	2	262	51-60	163
12 PM		10	0	0	0	2	8	20	33	94	76	44	13	3	3	306	51-60	170
13:00		4	0	0	0	0	0	13	44	125	73	30	9	2	2	302	51-60	198
14:00		4	0	0	0	1	2	8	48	99	105	40	20	9	0	336	51-60	204
15:00		26	0	0	0	0	<b>16</b>	22	64	143	120	68	25	4	<b>5</b>	493	51-60	263
16:00		8	0	0	0	2	6	9	52	158	153	62	20	5	4	479	51-60	311
17:00		<b>30</b>	<b>1</b>	0	<b>7</b>	<b>9</b>	7	<b>25</b>	<b>121</b>	<b>222</b>	<b>170</b>	<b>81</b>	<b>28</b>	<b>11</b>	2	<b>714</b>	51-60	392
18:00		13	0	0	0	0	2	11	29	114	124	68	23	8	3	395	51-60	238
19:00		5	0	0	0	1	0	11	48	91	86	20	2	5	0	269	51-60	177
20:00		8	0	0	0	0	2	4	21	57	46	25	10	1	1	175	51-60	103
21:00		0	0	0	0	0	1	2	20	50	45	14	5	5	1	143	51-60	95
22:00		0	0	0	0	0	0	4	9	39	22	10	2	0	0	86	51-60	61
23:00		0	0	0	0	0	0	3	12	19	29	14	6	0	0	83	51-60	48
Total		174	1	1	10	18	73	222	869	1917	1638	757	240	69	29	6018		
Percent		2.9%	0.0%	0.0%	0.2%	0.3%	1.2%	3.7%	14.4%	31.9%	27.2%	12.6%	4.0%	1.1%	0.5%			
AM Peak	07:00			11:00	10:00	03:00	07:00	07:00	08:00	09:00	07:00	08:00	09:00	09:00	08:00	07:00		
Vol.	20			1	2	1	9	21	86	157	118	62	18	6	2	432		
PM Peak	17:00	17:00		17:00	17:00	15:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	15:00	17:00		
Vol.	30	1		7	9	16	25	121	222	170	81	28	11	5	714			
Total	334	6	1	12	27	123	448	1658	3653	3279	1527	502	167	55	11792			
Percent	2.8%	0.1%	0.0%	0.1%	0.2%	1.0%	3.8%	14.1%	31.0%	27.8%	12.9%	4.3%	1.4%	0.5%				

15th Percentile : 48 MPH  
 50th Percentile : 55 MPH  
 85th Percentile : 62 MPH  
 95th Percentile : 67 MPH

Stats  
 10 MPH Pace Speed : 51-60 MPH  
 Number in Pace : 6932  
 Percent in Pace : 58.8%  
 Number of Vehicles > 45 MPH : 10841  
 Percent of Vehicles > 45 MPH : 91.9%  
 Mean Speed(Average) : 54 MPH

Montachusett Regional Planning Commission  
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Community: Gardner  
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 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

South																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
9/21/10	0	0	0	0	0	1	1	3	8	4	1	0	0	0	18	48-57	13	
01:00	1	0	0	0	0	1	0	3	3	1	1	0	0	0	10	44-53	6	
02:00	0	0	0	0	0	0	1	7	3	3	1	0	0	0	15	45-54	10	
03:00	0	0	0	0	0	0	0	6	7	8	1	1	0	0	23	49-58	16	
04:00	0	0	0	0	0	0	0	2	22	21	22	6	1	0	74	46-55	43	
05:00	1	0	0	0	0	4	14	60	94	73	15	3	0	0	264	51-60	167	
06:00	6	0	0	0	0	11	43	120	166	77	22	2	0	0	447	46-55	286	
07:00	<b>27</b>	0	0	<b>1</b>	1	22	<b>73</b>	<b>188</b>	<b>263</b>	<b>102</b>	15	2	0	0	<b>694</b>	46-55	451	
08:00	21	0	0	0	0	12	54	122	149	65	10	0	0	0	433	46-55	271	
09:00	9	0	0	0	0	6	19	86	100	60	15	<b>4</b>	0	0	299	46-55	186	
10:00	12	0	0	0	0	1	23	80	94	68	14	3	0	0	295	46-55	174	
11:00	12	<b>1</b>	0	0	<b>7</b>	<b>23</b>	61	153	156	55	10	2	<b>1</b>	0	481	46-55	309	
12 PM	12	0	0	0	1	14	40	140	124	61	10	0	0	0	402	46-55	264	
13:00	9	0	0	0	1	3	35	104	121	52	12	<b>3</b>	0	<b>1</b>	341	46-55	225	
14:00	9	0	0	<b>2</b>	<b>5</b>	9	34	111	110	63	<b>16</b>	0	0	0	359	46-55	221	
15:00	17	0	0	0	1	13	<b>69</b>	<b>159</b>	<b>146</b>	48	4	1	0	0	<b>458</b>	46-55	305	
16:00	15	0	0	0	2	<b>15</b>	64	99	124	<b>75</b>	11	0	0	0	405	46-55	223	
17:00	<b>19</b>	0	0	0	1	11	25	78	112	45	10	2	0	0	303	46-55	190	
18:00	7	0	0	0	0	4	26	99	96	51	7	0	<b>1</b>	0	291	46-55	195	
19:00	3	0	0	0	0	1	33	63	57	18	3	1	0	0	179	46-55	120	
20:00	3	0	0	0	0	6	36	62	43	18	7	1	0	0	176	45-54	105	
21:00	4	0	0	0	1	2	13	28	31	11	6	0	1	0	97	46-55	59	
22:00	0	0	0	0	0	2	11	21	26	12	2	0	1	0	75	46-55	47	
23:00	1	0	0	0	1	0	5	13	10	5	3	0	0	0	38	46-55	23	
<b>Total</b>	<b>188</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>21</b>	<b>161</b>	<b>682</b>	<b>1827</b>	<b>2064</b>	<b>997</b>	<b>202</b>	<b>26</b>	<b>4</b>	<b>1</b>	<b>6177</b>			
Percent	3.0%	0.0%	0.0%	0.0%	0.3%	2.6%	11.0%	29.6%	33.4%	16.1%	3.3%	0.4%	0.1%	0.0%				
AM Peak	07:00	11:00		07:00	11:00	11:00	07:00	07:00	07:00	07:00	06:00	09:00	11:00		07:00			
Vol.	27	1		1	7	23	73	188	263	102	22	4	1		694			
PM Peak	17:00			14:00	14:00	16:00	15:00	15:00	15:00	16:00	14:00	13:00	18:00	13:00	15:00			
Vol.	19			2	5	15	69	159	146	75	16	3	1	1	458			

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Community: Gardner  
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 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

South															Pace	Number		
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Speed	in Pace	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999				
9/22/10	0	0	0	0	0	1	2	1	7	3	1	0	1	0	16	49-58	11	
01:00	0	0	0	0	1	0	1	1	4	2	0	0	0	0	9	48-57	7	
02:00	0	0	0	0	0	0	0	1	1	2	2	0	0	0	6	53-62	5	
03:00	0	0	0	1	0	0	2	4	8	4	1	1	1	0	22	47-56	13	
04:00	0	0	0	0	0	1	5	18	39	14	7	0	0	0	84	46-55	57	
05:00	1	0	0	0	1	0	10	61	112	73	18	5	1	0	282	51-60	185	
06:00	5	0	0	0	2	8	33	126	178	100	22	4	0	2	480	46-55	304	
07:00	<b>18</b>	0	0	0	1	2	<b>37</b>	<b>175</b>	<b>243</b>	<b>125</b>	<b>32</b>	3	0	0	<b>636</b>	46-55	418	
08:00	12	0	0	0	3	12	26	104	179	80	14	1	1	0	432	46-55	283	
09:00	13	0	0	0	0	3	21	81	113	51	10	0	0	0	292	46-55	194	
10:00	6	0	0	0	0	8	14	81	123	57	7	0	0	1	297	46-55	204	
11:00	10	0	0	0	4	15	33	89	116	44	12	1	2	0	326	46-55	205	
12 PM	12	0	0	0	1	2	46	<b>149</b>	<b>149</b>	37	11	0	1	0	408	46-55	298	
13:00	6	0	0	1	7	5	45	100	116	43	10	1	0	0	334	46-55	216	
14:00	4	0	0	0	0	11	46	100	132	<b>54</b>	<b>18</b>	0	2	0	367	46-55	232	
15:00	23	0	0	0	7	10	<b>61</b>	136	149	43	12	5	0	0	<b>446</b>	46-55	285	
16:00	10	0	0	0	0	8	51	115	138	41	10	2	1	0	376	46-55	253	
17:00	<b>31</b>	0	<b>1</b>	0	3	7	41	95	109	44	16	1	1	0	349	46-55	204	
18:00	11	0	0	0	1	<b>13</b>	25	66	81	44	7	1	0	0	249	46-55	147	
19:00	3	0	0	0	1	8	26	50	56	21	9	0	0	0	174	46-55	106	
20:00	6	0	0	0	0	3	20	81	46	26	3	0	0	0	185	46-55	127	
21:00	1	0	0	0	1	0	18	42	29	10	6	2	0	0	109	46-55	71	
22:00	1	0	0	1	4	6	9	29	28	22	3	1	1	0	105	46-55	57	
23:00	0	0	0	0	0	0	2	17	8	12	1	0	0	0	40	46-55	25	
<b>Total</b>	<b>173</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>37</b>	<b>123</b>	<b>574</b>	<b>1722</b>	<b>2164</b>	<b>952</b>	<b>232</b>	<b>28</b>	<b>12</b>	<b>3</b>	<b>6024</b>			
Percent	2.9%	0.0%	0.0%	0.0%	0.6%	2.0%	9.5%	28.6%	35.9%	15.8%	3.9%	0.5%	0.2%	0.0%				
AM Peak	07:00			03:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	05:00	11:00	06:00	07:00			
Vol.	18			1	4	15	37	175	243	125	32	5	2	2	636			
PM Peak	17:00		17:00	13:00	13:00	18:00	15:00	12:00	12:00	14:00	14:00	15:00	14:00		15:00			
Vol.	31		1	1	7	13	61	149	149	54	18	5	2		446			
Total	361	1	1	6	58	284	1256	3549	4228	1949	434	54	16	4	12201			
Percent	3.0%	0.0%	0.0%	0.0%	0.5%	2.3%	10.3%	29.1%	34.7%	16.0%	3.6%	0.4%	0.1%	0.0%				

15th Percentile : 45 MPH  
 50th Percentile : 51 MPH  
 85th Percentile : 57 MPH  
 95th Percentile : 60 MPH

Stats  
 10 MPH Pace Speed : 46-55 MPH  
 Number in Pace : 7777  
 Percent in Pace : 63.7%  
 Number of Vehicles > 45 MPH : 10234  
 Percent of Vehicles > 45 MPH : 83.9%  
 Mean Speed(Average) : 50 MPH

Montachusett Regional Planning Commission  
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Community: Gardner  
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 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North, South

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/21/10	0	0	0	0	0	1	5	11	19	21	7	2	0	1	67	51-60 40
01:00	2	0	0	0	0	1	0	6	8	9	8	1	0	0	35	53-62 19
02:00	0	0	0	0	0	0	2	10	12	10	8	0	1	0	43	46-55 22
03:00	0	0	0	0	0	0	1	6	7	10	2	1	1	0	28	50-59 17
04:00	0	0	0	0	0	1	2	25	28	28	9	3	0	0	96	49-58 56
05:00	1	0	0	0	0	4	15	71	108	80	17	4	1	0	301	51-60 188
06:00	14	0	0	0	1	15	53	151	217	117	41	10	2	0	621	46-55 368
07:00	<b>40</b>	0	0	<b>1</b>	2	25	<b>99</b>	<b>267</b>	<b>375</b>	<b>211</b>	<b>61</b>	13	<b>9</b>	1	<b>1104</b>	46-55 642
08:00	38	0	0	1	2	22	69	206	288	158	55	13	5	1	858	46-55 494
09:00	22	0	0	0	0	8	40	160	217	159	49	<b>19</b>	2	0	676	46-55 377
10:00	22	0	0	0	1	4	42	131	185	157	41	13	2	1	599	51-60 342
11:00	25	<b>1</b>	0	0	<b>7</b>	<b>26</b>	75	181	246	126	41	12	3	0	743	46-55 427
12 PM	20	0	0	0	1	16	55	191	206	116	42	11	2	0	660	46-55 397
13:00	12	0	0	0	2	4	47	143	211	119	38	13	6	3	598	46-55 354
14:00	18	0	0	<b>2</b>	<b>6</b>	<b>18</b>	52	151	183	161	69	20	6	1	687	51-60 344
15:00	28	1	0	0	1	13	<b>86</b>	<b>218</b>	308	183	69	25	6	<b>6</b>	944	46-55 526
16:00	36	0	0	0	2	15	65	132	264	<b>267</b>	<b>107</b>	<b>40</b>	<b>18</b>	4	950	51-60 531
17:00	<b>37</b>	<b>3</b>	0	0	3	18	53	134	<b>313</b>	245	103	30	12	4	<b>955</b>	51-60 558
18:00	15	1	0	0	0	4	32	133	198	193	78	20	10	3	687	51-60 391
19:00	7	0	0	0	0	2	40	101	134	90	40	11	4	0	429	46-55 235
20:00	4	0	0	0	0	7	39	87	105	59	31	10	7	1	350	46-55 192
21:00	6	0	0	0	1	3	15	51	94	48	21	5	1	0	245	46-55 145
22:00	0	0	0	0	0	3	14	33	50	39	18	6	3	0	166	50-59 89
23:00	1	0	0	1	1	1	7	17	24	32	17	6	1	1	109	51-60 56
Total	348	6	0	5	30	211	908	2616	3800	2638	972	288	102	27	11951	
Percent	2.9%	0.1%	0.0%	0.0%	0.3%	1.8%	7.6%	21.9%	31.8%	22.1%	8.1%	2.4%	0.9%	0.2%		
AM Peak	07:00	11:00		07:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	09:00	07:00	00:00	07:00	
Vol.	40	1		1	7	26	99	267	375	211	61	19	9	1	1104	
PM Peak	17:00	17:00		14:00	14:00	14:00	15:00	15:00	17:00	16:00	16:00	16:00	16:00	15:00	17:00	
Vol.	37	3		2	6	18	86	218	313	267	107	40	18	6	955	

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North, South

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/22/10	0	0	0	0	0	1	3	2	20	25	16	3	1	0	71	51-60	45
01:00	0	0	0	0	1	0	1	6	14	5	2	4	0	0	33	46-55	20
02:00	1	0	0	0	0	0	1	5	6	12	6	0	0	0	31	52-61	19
03:00	0	0	0	1	1	0	2	5	10	5	4	2	1	0	31	46-55	15
04:00	1	0	0	0	0	1	5	26	47	20	8	1	0	0	109	46-55	73
05:00	3	0	0	0	1	2	12	69	126	86	21	5	1	0	326	51-60	212
06:00	9	0	0	0	3	11	46	162	232	151	41	7	1	3	666	46-55	394
07:00	<b>38</b>	0	0	0	1	11	<b>58</b>	<b>238</b>	<b>371</b>	<b>243</b>	<b>87</b>	<b>18</b>	2	1	<b>1068</b>	49-58	614
08:00	25	0	0	0	3	15	45	190	311	170	76	12	6	2	855	46-55	501
09:00	19	0	0	0	1	8	31	145	270	154	62	18	6	1	715	51-60	424
10:00	17	0	0	2	0	12	32	139	224	148	39	10	1	2	626	51-60	372
11:00	18	0	1	1	4	18	38	123	198	125	45	12	3	2	588	48-57	323
12 PM	22	0	0	0	3	10	66	182	243	113	55	13	4	3	714	46-55	425
13:00	10	0	0	1	7	5	58	144	241	116	40	10	2	2	636	46-55	385
14:00	8	0	0	0	1	13	54	148	231	159	58	20	11	0	703	51-60	390
15:00	49	0	0	0	7	<b>26</b>	<b>83</b>	200	292	163	80	<b>30</b>	4	<b>5</b>	939	46-55	492
16:00	18	0	0	0	2	14	60	167	296	194	72	22	6	4	855	51-60	490
17:00	<b>61</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>12</b>	14	66	<b>216</b>	<b>331</b>	<b>214</b>	<b>97</b>	29	<b>12</b>	2	<b>1063</b>	46-55	547
18:00	24	0	0	0	1	15	36	95	195	168	75	24	8	3	644	51-60	363
19:00	8	0	0	0	2	8	37	98	147	107	29	2	5	0	443	51-60	254
20:00	14	0	0	0	0	5	24	102	103	72	28	10	1	1	360	46-55	205
21:00	1	0	0	0	1	1	20	62	79	55	20	7	5	1	252	46-55	141
22:00	1	0	0	1	4	6	13	38	67	44	13	3	1	0	191	50-59	111
23:00	0	0	0	0	0	0	5	29	27	41	15	6	0	0	123	51-60	68
<b>Total</b>	<b>347</b>	<b>1</b>	<b>2</b>	<b>13</b>	<b>55</b>	<b>196</b>	<b>796</b>	<b>2591</b>	<b>4081</b>	<b>2590</b>	<b>989</b>	<b>268</b>	<b>81</b>	<b>32</b>	<b>12042</b>		
Percent	2.9%	0.0%	0.0%	0.1%	0.5%	1.6%	6.6%	21.5%	33.9%	21.5%	8.2%	2.2%	0.7%	0.3%			
AM Peak	07:00		11:00	10:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	06:00	07:00		
Vol.	38		1	2	4	18	58	238	371	243	87	18	6	3	1068		
PM Peak	17:00	17:00	17:00	17:00	17:00	15:00	15:00	17:00	17:00	17:00	17:00	15:00	17:00	15:00	17:00		
Vol.	61	1	1	7	12	26	83	216	331	214	97	30	12	5	1063		
<b>Total</b>	<b>695</b>	<b>7</b>	<b>2</b>	<b>18</b>	<b>85</b>	<b>407</b>	<b>1704</b>	<b>5207</b>	<b>7881</b>	<b>5228</b>	<b>1961</b>	<b>556</b>	<b>183</b>	<b>59</b>	<b>23993</b>		
Percent	2.9%	0.0%	0.0%	0.1%	0.4%	1.7%	7.1%	21.7%	32.8%	21.8%	8.2%	2.3%	0.8%	0.2%			

15th Percentile : 46 MPH  
 50th Percentile : 53 MPH  
 85th Percentile : 60 MPH  
 95th Percentile : 64 MPH

Stats  
 10 MPH Pace Speed : 51-60 MPH  
 Number in Pace : 13109  
 Percent in Pace : 54.6%  
 Number of Vehicles > 45 MPH : 21075  
 Percent of Vehicles > 45 MPH : 87.8%  
 Mean Speed(Average) : 52 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North																	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
9/21/10	1	0	0	0	3	11	22	18	12	1	3	0	0	0	71	40-49	40
01:00	1	0	0	0	0	2	8	13	4	0	0	0	0	0	28	41-50	21
02:00	1	0	0	0	0	5	13	11	7	1	0	0	0	0	38	41-50	24
03:00	1	0	0	0	0	3	2	4	3	1	1	0	0	0	15	44-53	9
04:00	3	0	0	0	0	2	8	4	1	0	0	0	0	0	18	39-48	13
05:00	5	0	0	0	2	4	18	8	2	1	2	0	0	0	42	39-48	26
06:00	13	0	0	0	1	13	56	53	14	1	0	0	0	0	151	41-50	109
07:00	17	0	0	0	1	41	147	157	44	11	1	0	0	0	419	41-50	304
08:00	21	0	0	0	15	60	164	148	42	4	1	0	0	0	455	41-50	312
09:00	8	0	0	1	3	34	113	135	53	6	0	0	0	0	353	41-50	248
10:00	9	0	0	0	2	36	133	105	32	7	0	1	0	0	325	41-50	238
11:00	14	0	0	0	5	24	109	85	22	4	1	0	0	0	264	41-50	194
12 PM	15	0	0	0	1	32	118	96	28	6	0	0	0	0	296	41-50	214
13:00	10	0	0	0	4	29	123	94	32	8	1	0	0	0	301	41-50	217
14:00	15	0	0	0	2	28	118	145	48	10	0	1	0	0	367	41-50	263
15:00	17	0	0	0	5	61	171	190	59	14	3	0	0	0	520	41-50	361
16:00	16	0	0	0	2	29	181	293	87	15	0	0	1	0	624	41-50	474
17:00	19	0	0	0	4	60	279	276	97	15	4	1	0	0	755	41-50	555
18:00	15	0	0	0	5	25	184	188	55	13	3	0	0	0	488	41-50	372
19:00	5	0	0	0	1	35	116	117	31	6	2	0	0	0	313	41-50	233
20:00	5	0	0	1	1	20	89	66	20	5	2	0	0	0	209	41-50	155
21:00	3	0	0	0	0	9	73	55	26	7	0	0	0	0	173	41-50	128
22:00	0	0	0	0	1	11	32	54	10	2	0	2	0	0	112	41-50	86
23:00	0	0	0	0	0	5	32	32	6	7	1	2	1	0	86	41-50	64
<b>Total</b>	<b>214</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>58</b>	<b>579</b>	<b>2309</b>	<b>2347</b>	<b>735</b>	<b>145</b>	<b>25</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>6423</b>		
Percent	3.3%	0.0%	0.0%	0.0%	0.9%	9.0%	35.9%	36.5%	11.4%	2.3%	0.4%	0.1%	0.0%	0.0%			
AM Peak	08:00			09:00	08:00	08:00	08:00	07:00	09:00	07:00	00:00	10:00			08:00		
Vol.	21			1	15	60	164	157	53	11	3	1			455		
PM Peak	17:00			20:00	15:00	15:00	17:00	16:00	17:00	16:00	17:00	22:00	16:00		17:00		
Vol.	19			1	5	61	279	293	97	15	4	2	1		755		

Montachusett Regional Planning Commission  
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Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North	Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
		15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/22/10		0	0	0	0	1	4	34	23	8	1	0	0	0	1	72	41-50 57
01:00		0	0	0	0	0	6	10	8	4	1	0	0	0	0	29	39-48 19
02:00		1	0	0	0	0	3	9	14	3	1	0	0	0	0	31	41-50 23
03:00		1	0	0	1	0	0	5	3	1	0	1	0	0	0	12	39-48 8
04:00		2	0	1	0	0	5	7	5	3	0	0	0	0	0	23	36-45 12
05:00		2	0	0	0	0	10	11	12	5	0	0	0	0	0	40	38-47 23
06:00		9	0	0	0	0	15	58	63	16	2	3	0	0	0	166	41-50 121
07:00		27	0	0	0	9	22	153	168	59	2	0	0	0	0	440	41-50 321
08:00		19	0	0	0	2	42	161	166	43	4	3	0	0	0	440	41-50 327
09:00		23	0	0	0	0	24	152	154	42	4	3	0	0	0	402	41-50 306
10:00		14	0	1	7	5	36	141	104	24	5	0	0	0	0	337	41-50 245
11:00		13	0	0	0	3	17	115	98	25	4	1	0	0	0	276	41-50 213
12 PM		20	0	0	1	17	37	119	101	34	4	3	1	0	0	337	41-50 220
13:00		13	0	0	0	8	35	127	106	35	7	2	0	0	0	333	41-50 233
14:00		9	0	0	0	2	33	133	131	59	5	2	0	0	0	374	41-50 264
15:00		25	0	0	0	21	100	179	162	46	7	3	0	0	0	543	41-50 341
16:00		18	0	0	0	1	42	224	205	66	14	2	2	0	0	574	41-50 429
17:00		18	9	9	44	54	89	259	194	92	8	0	0	0	0	776	41-50 453
18:00		11	0	0	0	3	43	199	182	49	9	1	0	0	0	497	41-50 381
19:00		7	0	0	0	0	41	130	115	24	5	2	0	0	0	324	41-50 245
20:00		2	0	0	0	4	30	87	73	15	5	3	1	1	0	221	41-50 160
21:00		3	0	0	0	1	21	52	69	21	4	1	0	0	0	172	41-50 121
22:00		1	0	0	0	4	18	41	44	9	0	0	1	0	0	118	41-50 85
23:00		1	0	0	0	1	7	30	38	14	1	0	0	1	0	93	41-50 68
Total		239	9	11	53	136	680	2436	2238	697	93	30	5	2	1	6630	
Percent		3.6%	0.1%	0.2%	0.8%	2.1%	10.3%	36.7%	33.8%	10.5%	2.1%	1.4%	0.5%	0.1%	0.0%		
AM Peak	07:00			04:00	10:00	07:00	08:00	08:00	07:00	07:00	10:00	06:00				00:00	07:00
Vol.	27			1	7	9	42	161	168	59	5	3				1	440
PM Peak	15:00	17:00	17:00	17:00	17:00	15:00	17:00	16:00	17:00	16:00	12:00	16:00	20:00				17:00
Vol.	25	9	9	44	54	100	259	205	92	14	3	2	1				776
Total	453	9	11	55	194	1259	4745	4585	1432	238	55	12	4	1		13053	
Percent	3.5%	0.1%	0.1%	0.4%	1.5%	9.6%	36.4%	35.1%	11.0%	1.8%	0.4%	0.1%	0.0%	0.0%			

15th Percentile : 40 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 50 MPH  
 95th Percentile : 54 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 9330  
 Percent in Pace : 71.5%  
 Number of Vehicles > 45 MPH : 6327  
 Percent of Vehicles > 45 MPH : 48.5%  
 Mean Speed(Average) : 44 MPH

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 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

South	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
9/21/10	1	0	0	0	0	2	7	4	3	1	0	1	0	0	19	39-48	12
01:00	1	0	0	0	0	1	2	6	3	0	0	0	0	0	13	44-53	11
02:00	1	0	0	0	0	3	5	5	0	1	0	0	0	0	15	38-47	10
03:00	1	0	0	0	0	0	7	2	6	2	1	1	0	0	20	48-57	10
04:00	8	0	0	0	0	4	19	26	15	3	2	1	2	1	81	41-50	45
05:00	19	0	0	0	1	14	70	105	58	14	3	1	1	0	286	41-50	175
06:00	40	0	0	1	3	54	178	166	61	25	6	4	2	0	540	41-50	344
07:00	<b>68</b>	0	0	0	3	44	<b>213</b>	<b>251</b>	<b>88</b>	<b>38</b>	8	3	1	1	<b>718</b>	41-50	464
08:00	49	0	0	0	6	44	179	161	56	22	<b>10</b>	2	0	0	529	41-50	340
09:00	20	0	0	0	3	36	114	130	32	16	1	2	1	0	355	41-50	244
10:00	12	0	<b>2</b>	0	1	34	120	85	42	8	2	0	1	0	307	41-50	205
11:00	16	0	0	0	<b>9</b>	<b>63</b>	188	146	38	11	0	0	0	0	471	41-50	334
12 PM	16	0	0	0	4	62	179	<b>112</b>	25	4	1	0	0	0	403	41-50	291
13:00	13	0	0	0	10	64	153	84	25	8	2	0	0	0	359	41-50	237
14:00	12	0	0	<b>2</b>	13	76	184	94	16	3	0	0	0	0	400	41-50	278
15:00	20	0	0	0	5	<b>112</b>	<b>205</b>	94	16	7	0	0	0	0	<b>459</b>	36-45	317
16:00	21	0	0	0	<b>20</b>	81	195	100	28	8	0	0	0	0	453	41-50	295
17:00	25	0	0	0	9	59	135	88	33	5	2	<b>1</b>	0	0	357	41-50	223
18:00	<b>26</b>	0	0	0	0	13	97	90	<b>43</b>	9	<b>5</b>	0	0	0	283	41-50	187
19:00	11	0	0	0	0	13	62	59	34	<b>11</b>	2	1	<b>2</b>	0	195	41-50	121
20:00	12	0	0	0	3	19	44	57	18	9	2	0	0	0	164	41-50	101
21:00	15	0	0	0	1	12	38	34	11	3	1	1	0	0	116	41-50	72
22:00	12	0	0	0	1	6	19	20	17	5	1	1	1	0	83	42-51	40
23:00	9	0	0	0	0	3	7	11	7	1	0	1	0	0	39	43-52	20
Total	428	0	2	3	92	819	2420	1930	675	214	49	20	11	2	6665		
Percent	6.4%	0.0%	0.0%	0.0%	1.4%	12.3%	36.3%	29.0%	10.1%	3.2%	0.7%	0.3%	0.2%	0.0%			
AM Peak	07:00		10:00	06:00	11:00	11:00	07:00	07:00	07:00	07:00	08:00	06:00	04:00	04:00	07:00		
Vol.	68		2	1	9	63	213	251	88	38	10	4	2	1	718		
PM Peak	18:00			14:00	16:00	15:00	15:00	12:00	18:00	19:00	18:00	17:00	19:00		15:00		
Vol.	26			2	20	112	205	112	43	11	5	1	2		459		

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

South	Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
	Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed	in Pace
9/22/10		1	0	0	0	0	2	1	7	4	0	0	1	0	0	16	45-54	12
01:00		2	0	0	0	0	1	4	3	3	1	0	0	0	0	14	40-49	7
02:00		3	0	0	0	0	0	2	2	2	1	0	0	0	0	10	43-52	6
03:00		1	0	0	0	0	3	6	2	4	3	1	0	0	0	20	36-45	9
04:00		8	0	0	0	0	6	24	31	14	2	0	2	0	0	87	41-50	55
05:00		23	0	0	0	2	17	82	111	55	16	5	6	1	1	319	41-50	193
06:00		49	0	0	0	5	42	176	186	69	14	9	2	1	1	554	41-50	362
07:00		<b>55</b>	0	0	0	3	30	<b>202</b>	<b>251</b>	<b>99</b>	<b>27</b>	<b>16</b>	3	1	1	<b>688</b>	41-50	453
08:00		32	0	0	0	5	47	159	192	66	24	6	1	0	0	532	41-50	351
09:00		21	0	0	<b>1</b>	5	38	128	105	29	8	3	1	0	1	340	41-50	233
10:00		13	0	0	0	0	42	105	91	25	10	0	0	0	0	286	41-50	196
11:00		18	0	0	0	<b>6</b>	<b>49</b>	149	85	32	8	1	0	0	0	348	41-50	234
12 PM		18	0	0	<b>1</b>	5	107	<b>195</b>	77	19	6	0	0	0	0	<b>428</b>	36-45	302
13:00		18	0	0	1	12	88	160	59	13	3	0	0	0	0	354	36-45	248
14:00		19	0	0	0	6	<b>109</b>	162	77	14	<b>7</b>	1	0	0	0	395	36-45	271
15:00		18	0	0	0	<b>14</b>	101	188	84	18	4	0	0	0	0	427	36-45	289
16:00		24	0	0	0	7	94	171	<b>98</b>	27	3	1	0	0	0	425	39-48	269
17:00		<b>26</b>	0	0	0	9	71	155	78	19	7	1	0	0	0	366	40-49	233
18:00		15	0	0	0	2	43	111	69	<b>33</b>	7	<b>4</b>	0	<b>1</b>	0	285	41-50	180
19:00		9	0	0	1	4	36	65	47	20	6	2	<b>2</b>	0	0	192	41-50	112
20:00		12	0	0	1	4	21	73	43	17	4	2	0	0	0	177	41-50	116
21:00		1	0	0	0	1	9	49	32	18	4	2	0	0	<b>3</b>	119	41-50	81
22:00		8	0	0	0	4	14	39	29	14	5	1	2	0	0	116	41-50	68
23:00		1	0	0	0	0	6	18	13	11	3	1	0	0	0	53	40-49	31
Total		395	0	0	5	94	976	2424	1772	625	173	56	20	4	7	6551		
Percent		6.0%	0.0%	0.0%	0.1%	1.4%	14.9%	37.0%	27.0%	9.5%	2.6%	0.9%	0.3%	0.1%	0.1%			
AM Peak	07:00				09:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	05:00	05:00	05:00	07:00		
Vol.	55				1	6	49	202	251	99	27	16	6	1	1	688		
PM Peak	17:00				12:00	15:00	14:00	12:00	16:00	18:00	14:00	18:00	19:00	18:00	21:00	12:00		
Vol.	26				1	14	109	195	98	33	7	4	2	1	3	428		
Total		823	0	2	8	186	1795	4844	3702	1300	387	105	40	15	9	13216		
Percent		6.2%	0.0%	0.0%	0.1%	1.4%	13.6%	36.7%	28.0%	9.8%	2.9%	0.8%	0.3%	0.1%	0.1%			

15th Percentile : 38 MPH  
 50th Percentile : 44 MPH  
 85th Percentile : 50 MPH  
 95th Percentile : 55 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 8546  
 Percent in Pace : 64.7%  
 Number of Vehicles > 45 MPH : 5558  
 Percent of Vehicles > 45 MPH : 42.1%  
 Mean Speed(Average) : 43 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North, South

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number
	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace
9/21/10	2	0	0	0	3	13	29	22	15	2	3	1	0	0	90	41-50 51
01:00	2	0	0	0	0	3	10	19	7	0	0	0	0	0	41	41-50 29
02:00	2	0	0	0	0	8	18	16	7	2	0	0	0	0	53	41-50 34
03:00	2	0	0	0	0	3	9	6	9	3	2	1	0	0	35	41-50 15
04:00	11	0	0	0	0	6	27	30	16	3	2	1	2	1	99	41-50 57
05:00	24	0	0	0	3	18	88	113	60	15	5	1	1	0	328	41-50 201
06:00	53	0	0	1	4	67	234	219	75	26	6	4	2	0	691	41-50 453
07:00	<b>85</b>	0	0	0	4	<b>85</b>	<b>360</b>	<b>408</b>	<b>132</b>	<b>49</b>	9	3	1	1	<b>1137</b>	41-50 768
08:00	70	0	0	0	<b>21</b>	<b>104</b>	343	309	98	26	<b>11</b>	2	0	0	984	41-50 652
09:00	28	0	0	1	6	70	227	265	85	22	1	2	1	0	708	41-50 492
10:00	21	0	<b>2</b>	0	3	70	253	190	74	15	2	1	1	0	632	41-50 443
11:00	30	0	0	0	14	87	297	231	60	15	1	0	0	0	735	41-50 528
12 PM	31	0	0	0	5	94	297	208	53	10	1	0	0	0	699	41-50 505
13:00	23	0	0	0	14	93	276	178	57	16	3	0	0	0	660	41-50 454
14:00	27	0	0	<b>2</b>	15	104	302	239	64	13	0	1	0	0	767	41-50 541
15:00	37	0	0	0	10	<b>173</b>	376	284	75	21	3	0	0	0	979	41-50 660
16:00	37	0	0	0	<b>22</b>	110	376	<b>393</b>	115	<b>23</b>	0	0	1	0	1077	41-50 769
17:00	<b>44</b>	0	0	0	13	119	<b>414</b>	364	<b>130</b>	20	6	2	0	0	<b>1112</b>	41-50 778
18:00	41	0	0	0	5	38	281	278	98	22	<b>8</b>	0	0	0	771	41-50 559
19:00	16	0	0	0	1	48	178	176	65	17	4	1	<b>2</b>	0	508	41-50 354
20:00	17	0	0	1	4	39	133	123	38	14	4	0	0	0	373	41-50 256
21:00	18	0	0	0	1	21	111	89	37	10	1	1	0	0	289	41-50 200
22:00	12	0	0	0	2	17	51	74	27	7	1	<b>3</b>	1	0	195	41-50 125
23:00	9	0	0	0	0	8	39	43	13	8	1	3	1	0	125	41-50 82
Total	642	0	2	5	150	1398	4729	4277	1410	359	74	27	13	2	13088	
Percent	4.9%	0.0%	0.0%	0.0%	1.1%	10.7%	36.1%	32.7%	10.8%	2.7%	0.6%	0.2%	0.1%	0.0%		
AM Peak	07:00		10:00	06:00	08:00	08:00	07:00	07:00	07:00	07:00	08:00	06:00	04:00	04:00	07:00	
Vol.	85		2	1	21	104	360	408	132	49	11	4	2	1	1137	
PM Peak	17:00			14:00	16:00	15:00	17:00	16:00	17:00	16:00	18:00	22:00	19:00		17:00	
Vol.	44			2	22	173	414	393	130	23	8	3	2		1112	

Montachusett Regional Planning Commission  
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 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North, South

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
9/22/10	1	0	0	0	1	6	35	30	12	1	0	1	0	1	88	41-50	65
01:00	2	0	0	0	0	7	14	11	7	2	0	0	0	0	43	39-48	25
02:00	4	0	0	0	0	3	11	16	5	2	0	0	0	0	41	41-50	27
03:00	2	0	0	1	0	3	11	5	5	3	2	0	0	0	32	38-47	16
04:00	10	0	1	0	0	11	31	36	17	2	0	2	0	0	110	41-50	67
05:00	25	0	0	0	2	27	93	123	60	16	5	6	1	1	359	41-50	216
06:00	58	0	0	0	5	57	234	249	85	16	12	2	1	1	720	41-50	483
07:00	<b>82</b>	0	0	0	<b>12</b>	<b>52</b>	<b>355</b>	<b>419</b>	<b>158</b>	<b>29</b>	<b>16</b>	3	1	1	<b>1128</b>	41-50	774
08:00	51	0	0	0	7	<b>89</b>	320	358	109	28	9	1	0	0	972	41-50	678
09:00	44	0	0	1	5	62	280	259	71	12	6	1	0	1	742	41-50	539
10:00	27	0	1	<b>7</b>	5	78	246	195	49	15	0	0	0	0	623	41-50	441
11:00	31	0	0	0	9	66	264	183	57	12	2	0	0	0	624	41-50	447
12 PM	38	0	0	2	22	144	314	178	53	10	3	1	0	0	765	41-50	492
13:00	31	0	0	1	20	123	287	165	48	10	2	0	0	0	687	41-50	452
14:00	28	0	0	0	8	142	295	208	73	12	3	0	0	0	769	41-50	503
15:00	43	0	0	0	35	<b>201</b>	367	246	64	11	3	0	0	0	970	41-50	613
16:00	42	0	0	0	8	136	395	<b>303</b>	93	<b>17</b>	3	2	0	0	999	41-50	698
17:00	<b>44</b>	<b>9</b>	<b>9</b>	<b>44</b>	<b>63</b>	160	<b>414</b>	272	<b>111</b>	15	1	0	0	0	<b>1142</b>	41-50	686
18:00	26	0	0	0	5	86	310	251	82	16	<b>5</b>	0	<b>1</b>	0	782	41-50	561
19:00	16	0	0	1	4	77	195	162	44	11	4	2	0	0	516	41-50	357
20:00	14	0	0	1	8	51	160	116	32	9	5	1	1	0	398	41-50	276
21:00	4	0	0	0	2	30	101	101	39	8	3	0	0	<b>3</b>	291	41-50	202
22:00	9	0	0	0	8	32	80	73	23	5	1	<b>3</b>	0	0	234	41-50	153
23:00	2	0	0	0	1	13	48	51	25	4	1	0	1	0	146	41-50	99
<b>Total</b>	<b>634</b>	<b>9</b>	<b>11</b>	<b>58</b>	<b>230</b>	<b>1656</b>	<b>4860</b>	<b>4010</b>	<b>1322</b>	<b>266</b>	<b>86</b>	<b>25</b>	<b>6</b>	<b>8</b>	<b>13181</b>		
Percent	4.8%	0.1%	0.1%	0.4%	1.7%	12.6%	36.9%	30.4%	10.0%	2.0%	0.7%	0.2%	0.0%	0.1%			
AM Peak	07:00		04:00	10:00	07:00	08:00	07:00	07:00	07:00	07:00	07:00	05:00	05:00	00:00	07:00		
Vol.	82		1	7	12	89	355	419	158	29	16	6	1	1	1128		
PM Peak	17:00	17:00	17:00	17:00	17:00	15:00	17:00	16:00	17:00	16:00	18:00	22:00	18:00	21:00	17:00		
Vol.	44	9	9	44	63	201	414	303	111	17	5	3	1	3	1142		
<b>Total</b>	<b>1276</b>	<b>9</b>	<b>13</b>	<b>63</b>	<b>380</b>	<b>3054</b>	<b>9589</b>	<b>8287</b>	<b>2732</b>	<b>625</b>	<b>160</b>	<b>52</b>	<b>19</b>	<b>10</b>	<b>26269</b>		
Percent	4.9%	0.0%	0.0%	0.2%	1.4%	11.6%	36.5%	31.5%	10.4%	2.4%	0.6%	0.2%	0.1%	0.0%			

15th Percentile : 39 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 50 MPH  
 95th Percentile : 55 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 17876  
 Percent in Pace : 68.0%  
 Number of Vehicles > 45 MPH : 11885  
 Percent of Vehicles > 45 MPH : 45.2%  
 Mean Speed(Average) : 44 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Westminster  
 Street:West Main Street  
 Location:W. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104234  
 Station ID:  
 Counter#:018131

East																Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75					
7/22/10	1	0	0	1	7	22	26	17	1	0	0	0	0	0	75	36-45	48	
01:00	0	0	0	2	7	17	19	11	0	0	1	0	0	0	57	36-45	36	
02:00	0	0	0	1	5	8	11	3	0	0	0	0	0	0	28	36-45	19	
03:00	0	0	0	1	2	5	6	5	2	0	0	0	0	0	21	34-43	11	
04:00	2	0	0	0	2	11	5	4	3	0	0	1	0	0	28	34-43	16	
05:00	1	0	0	4	4	16	26	24	6	1	0	0	0	0	82	40-49	50	
06:00	12	2	0	6	23	38	68	78	27	4	1	0	0	0	259	41-50	146	
07:00	12	2	0	8	48	60	109	88	28	4	0	0	0	0	359	41-50	197	
08:00	10	0	0	17	29	65	97	81	38	2	0	0	0	0	339	41-50	178	
09:00	3	0	2	2	24	60	114	86	30	3	0	0	0	0	324	41-50	200	
10:00	6	1	1	13	22	54	118	134	27	2	0	0	0	0	378	41-50	252	
11:00	8	1	4	8	11	59	85	112	75	10	2	1	0	0	376	41-50	197	
12 PM	20	7	5	15	74	89	128	96	37	5	3	0	0	0	479	41-50	224	
13:00	15	2	3	9	33	56	150	127	48	2	0	0	0	0	445	41-50	277	
14:00	15	2	1	7	30	69	172	135	59	4	2	0	0	0	496	41-50	307	
15:00	22	0	2	15	51	93	152	157	67	6	1	1	0	0	567	41-50	309	
16:00	28	1	3	30	76	111	188	219	81	10	1	0	0	0	748	41-50	407	
17:00	39	0	5	50	134	147	179	195	65	10	2	0	0	0	826	41-50	374	
18:00	22	0	0	11	42	88	175	234	64	7	0	1	0	0	644	41-50	409	
19:00	8	0	1	3	13	60	146	146	43	5	0	0	0	0	425	41-50	292	
20:00	14	0	0	5	18	44	135	87	26	6	0	0	0	0	335	41-50	222	
21:00	1	0	0	1	15	56	107	72	15	0	0	0	0	0	267	41-50	179	
22:00	3	0	0	3	20	45	97	41	8	0	0	0	0	0	217	36-45	142	
23:00	1	0	0	2	6	16	53	38	12	2	0	0	0	0	130	41-50	91	
<b>Total</b>	<b>243</b>	<b>18</b>	<b>27</b>	<b>214</b>	<b>696</b>	<b>1289</b>	<b>2366</b>	<b>2190</b>	<b>762</b>	<b>83</b>	<b>13</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7905</b>			
Percent	3.1%	0.2%	0.3%	2.7%	8.8%	16.3%	29.9%	27.7%	9.6%	1.0%	0.2%	0.1%	0.0%	0.0%				
AM Peak	06:00	06:00	11:00	08:00	07:00	08:00	10:00	10:00	11:00	11:00	11:00	04:00			10:00			
Vol.	12	2	4	17	48	65	118	134	75	10	2	1			378			
PM Peak	17:00	12:00	12:00	17:00	17:00	17:00	16:00	18:00	16:00	16:00	12:00	15:00			17:00			
Vol.	39	7	5	50	134	147	188	234	81	10	3	1			826			
<b>Total</b>	<b>243</b>	<b>18</b>	<b>27</b>	<b>214</b>	<b>696</b>	<b>1289</b>	<b>2366</b>	<b>2190</b>	<b>762</b>	<b>83</b>	<b>13</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7905</b>			
Percent	3.1%	0.2%	0.3%	2.7%	8.8%	16.3%	29.9%	27.7%	9.6%	1.0%	0.2%	0.1%	0.0%	0.0%				

15th Percentile : 35 MPH  
 50th Percentile : 44 MPH  
 85th Percentile : 50 MPH  
 95th Percentile : 54 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 4556  
 Percent in Pace : 57.6%  
 Number of Vehicles > 40 MPH : 5418  
 Percent of Vehicles > 40 MPH : 68.5%  
 Mean Speed(Average) : 42 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Westminster  
 Street:West Main Street  
 Location:W. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104234  
 Station ID:  
 Counter#:018131

West	Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
7/22/10	01:00	1	0	0	2	2	8	29	24	8	2	1	0	0	0	77	41-50	53
	02:00	0	0	0	0	2	4	15	21	6	3	0	0	0	0	51	41-50	36
	03:00	2	0	0	0	1	2	8	14	2	0	0	0	0	0	29	41-50	22
	04:00	1	0	0	0	0	4	8	8	6	0	0	0	0	0	27	42-51	17
	05:00	0	0	0	0	0	6	6	4	1	1	0	0	1	0	19	36-45	12
	06:00	2	2	0	3	1	8	16	26	8	1	1	0	0	0	68	41-50	42
	07:00	7	2	0	0	10	23	51	84	44	20	7	3	0	0	251	41-50	135
	08:00	15	1	2	1	28	<b>69</b>	98	103	55	<b>22</b>	3	1	0	0	<b>398</b>	41-50	201
	09:00	13	0	0	<b>11</b>	25	42	77	<b>126</b>	68	11	7	2	1	0	383	41-50	203
	10:00	4	0	0	4	14	29	85	96	56	20	3	3	0	<b>1</b>	315	41-50	181
	11:00	5	0	1	8	9	35	89	122	<b>70</b>	11	4	2	<b>2</b>	1	359	41-50	211
	12 PM	<b>17</b>	1	<b>3</b>	11	<b>31</b>	55	<b>102</b>	105	32	15	3	2	0	0	377	41-50	207
	13:00	14	<b>3</b>	5	17	49	89	113	87	34	12	6	0	0	0	429	37-46	203
	14:00	18	1	0	2	20	57	88	119	50	20	4	2	2	0	383	41-50	207
	15:00	16	1	1	2	23	36	89	138	102	42	14	5	3	<b>2</b>	474	46-55	240
	16:00	26	3	6	13	26	69	92	148	111	49	13	5	<b>5</b>	2	568	46-55	259
	17:00	<b>40</b>	3	<b>11</b>	<b>23</b>	<b>89</b>	141	<b>184</b>	172	98	29	15	6	2	1	814	41-50	356
	18:00	37	0	2	13	65	<b>144</b>	155	<b>211</b>	131	<b>51</b>	<b>22</b>	<b>8</b>	2	2	<b>843</b>	41-50	366
	19:00	8	0	0	0	18	75	111	165	<b>146</b>	48	11	3	2	1	588	46-55	311
	20:00	4	0	0	1	14	25	76	103	87	26	5	1	0	0	342	46-55	190
	21:00	3	0	1	2	10	24	116	101	40	9	1	1	0	0	308	41-50	217
	22:00	1	0	1	1	8	17	75	93	34	6	1	0	1	1	239	41-50	168
	23:00	0	0	0	0	5	20	60	62	26	11	1	1	1	0	187	41-50	122
	Total	2	0	0	0	3	7	31	56	24	4	2	0	0	0	129	41-50	87
	Total	236	17	33	114	453	989	1774	2188	1239	413	124	45	22	11	7658		
	Percent	3.1%	0.2%	0.4%	1.5%	5.9%	12.9%	23.2%	28.6%	16.2%	5.4%	1.6%	0.6%	0.3%	0.1%			
AM Peak	11:00	05:00	11:00	08:00	11:00	07:00	11:00	08:00	10:00	07:00	06:00	06:00	10:00	09:00	07:00			
Vol.	17	2	3	11	31	69	102	126	70	22	7	3	2	1	398			
PM Peak	16:00	12:00	16:00	16:00	16:00	17:00	16:00	17:00	18:00	17:00	17:00	17:00	15:00	14:00	17:00			
Vol.	40	3	11	23	89	144	184	211	146	51	22	8	5	2	843			
Total	236	17	33	114	453	989	1774	2188	1239	413	124	45	22	11	7658			
Percent	3.1%	0.2%	0.4%	1.5%	5.9%	12.9%	23.2%	28.6%	16.2%	5.4%	1.6%	0.6%	0.3%	0.1%				

15th Percentile : 37 MPH  
 50th Percentile : 46 MPH  
 85th Percentile : 53 MPH  
 95th Percentile : 58 MPH

Stats  
 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 3962  
 Percent in Pace : 51.7%  
 Number of Vehicles > 40 MPH : 5816  
 Percent of Vehicles > 40 MPH : 75.9%  
 Mean Speed(Average) : 45 MPH

Montachusett Regional Planning Commission  
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 Fitchburg, MA 01420  
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Community:Westminster  
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 Location:W. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104234  
 Station ID:  
 Counter#:018131

East, West	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
7/22/10	2	0	0	3	9	30	55	41	9	2	1	0	0	0	152	41-50	96
01:00	0	0	0	2	9	21	34	32	6	3	1	0	0	0	108	41-50	66
02:00	2	0	0	1	6	10	19	17	2	0	0	0	0	0	57	41-50	36
03:00	1	0	0	1	2	9	14	13	8	0	0	0	0	0	48	39-48	27
04:00	2	0	0	0	2	17	11	8	4	1	0	1	1	0	47	36-45	28
05:00	3	2	0	7	5	24	42	50	14	2	1	0	0	0	150	41-50	92
06:00	19	4	0	6	33	61	119	162	71	24	8	3	0	0	510	41-50	281
07:00	27	3	2	9	76	129	207	191	83	26	3	1	0	0	757	41-50	398
08:00	23	0	0	28	54	107	174	207	106	13	7	2	1	0	722	41-50	381
09:00	7	0	2	6	38	89	199	182	86	23	3	3	0	1	639	41-50	381
10:00	11	1	2	21	31	89	207	256	97	13	4	2	2	1	737	41-50	463
11:00	25	2	7	19	42	114	187	217	107	25	5	3	0	0	753	41-50	404
12 PM	34	10	10	32	123	178	241	183	71	17	9	0	0	0	908	39-48	424
13:00	33	3	3	11	53	113	238	246	98	22	4	2	2	0	828	41-50	484
14:00	31	3	2	9	53	105	261	273	161	46	16	5	3	2	970	41-50	534
15:00	48	3	8	28	77	162	244	305	178	55	14	6	5	2	1135	41-50	549
16:00	68	4	14	53	165	252	372	391	179	39	16	6	2	1	1562	41-50	763
17:00	76	0	7	63	199	291	334	406	196	61	24	8	2	2	1669	41-50	740
18:00	30	0	0	11	60	163	286	399	210	55	11	4	2	1	1232	41-50	685
19:00	12	0	1	4	27	85	222	249	130	31	5	1	0	0	767	41-50	471
20:00	17	0	1	7	28	68	251	188	66	15	1	1	0	0	643	41-50	439
21:00	2	0	1	2	23	73	182	165	49	6	1	0	1	1	506	41-50	347
22:00	3	0	0	3	25	65	157	103	34	11	1	1	1	0	404	41-50	260
23:00	3	0	0	2	9	23	84	94	36	6	2	0	0	0	259	41-50	178
Total	479	35	60	328	1149	2278	4140	4378	2001	496	137	49	22	11	15563		
Percent	3.1%	0.2%	0.4%	2.1%	7.4%	14.6%	26.6%	28.1%	12.9%	3.2%	0.9%	0.3%	0.1%	0.1%			
AM Peak	07:00	06:00	11:00	08:00	07:00	07:00	07:00	10:00	11:00	07:00	06:00	06:00	10:00	09:00	07:00		
Vol.	27	4	7	28	76	129	207	256	107	26	8	3	2	1	757		
PM Peak	17:00	12:00	16:00	17:00	17:00	17:00	16:00	17:00	18:00	17:00	17:00	17:00	15:00	14:00	17:00		
Vol.	76	10	14	63	199	291	372	406	210	61	24	8	5	2	1669		
Total	479	35	60	328	1149	2278	4140	4378	2001	496	137	49	22	11	15563		
Percent	3.1%	0.2%	0.4%	2.1%	7.4%	14.6%	26.6%	28.1%	12.9%	3.2%	0.9%	0.3%	0.1%	0.1%			

15th Percentile : 36 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 51 MPH  
 95th Percentile : 55 MPH

Stats 10 MPH Pace Speed : 41-50 MPH  
 Number in Pace : 8518  
 Percent in Pace : 54.7%  
 Number of Vehicles > 40 MPH : 11234  
 Percent of Vehicles > 40 MPH : 72.2%  
 Mean Speed(Average) : 44 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Westminster  
 Street:West Main St.  
 Location:E. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

East																Pace	Number	
Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	76	999	Total	Speed	in Pace
7/22/10	0	0	1	6	25	28	17	0	0	0	0	0	0	0	0	77	31-40	53
01:00	0	0	0	3	17	23	10	2	1	0	0	0	0	0	0	56	31-40	40
02:00	0	0	0	4	10	13	3	0	0	0	0	0	0	0	0	30	31-40	23
03:00	1	0	0	0	6	6	5	0	0	0	0	0	0	0	0	18	31-40	12
04:00	0	0	0	2	18	12	5	1	1	0	0	0	0	0	0	39	31-40	30
05:00	2	0	1	3	23	44	24	2	0	0	0	0	0	0	0	99	33-42	69
06:00	7	0	3	4	64	147	78	8	1	0	0	0	0	0	0	312	36-45	225
07:00	3	0	1	14	<b>126</b>	<b>279</b>	92	8	0	0	0	0	0	0	0	<b>523</b>	31-40	405
08:00	6	0	1	13	116	220	78	7	0	0	0	0	0	0	0	441	31-40	336
09:00	<b>10</b>	0	1	<b>18</b>	125	166	60	4	0	0	0	0	0	0	0	384	31-40	291
10:00	5	0	<b>5</b>	15	97	203	80	4	0	0	0	0	0	0	0	409	31-40	300
11:00	5	0	1	8	57	172	<b>135</b>	<b>34</b>	<b>3</b>	0	0	0	0	0	0	415	36-45	307
12 PM	12	3	7	29	161	255	89	4	1	0	0	0	0	0	0	561	31-40	416
13:00	8	1	1	17	123	228	124	16	<b>2</b>	0	0	0	0	0	0	520	33-42	353
14:00	7	<b>4</b>	2	9	116	279	121	<b>19</b>	1	0	0	0	0	0	0	558	35-44	400
15:00	13	0	0	17	159	272	143	17	0	0	0	0	0	0	0	621	31-40	431
16:00	<b>24</b>	0	8	24	153	<b>383</b>	186	9	0	0	0	0	0	0	0	787	36-45	569
17:00	17	0	<b>10</b>	<b>48</b>	<b>212</b>	336	179	12	0	0	0	0	0	0	0	<b>814</b>	31-40	548
18:00	16	0	1	13	130	298	<b>196</b>	14	1	0	0	0	0	0	0	669	36-45	494
19:00	5	0	0	12	70	218	127	6	0	0	0	0	0	0	0	438	36-45	345
20:00	0	0	1	13	82	194	65	8	0	0	0	0	0	0	0	363	31-40	276
21:00	3	0	0	6	82	131	60	4	0	0	0	0	0	0	0	286	31-40	213
22:00	3	0	0	7	60	118	38	1	0	0	0	0	0	0	0	227	31-40	178
23:00	3	0	0	3	23	59	46	4	0	0	0	0	0	0	0	138	36-45	105
<b>Total</b>	<b>150</b>	<b>8</b>	<b>44</b>	<b>288</b>	<b>2055</b>	<b>4084</b>	<b>1961</b>	<b>184</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8785</b>		
Percent	1.7%	0.1%	0.5%	3.3%	23.4%	46.5%	22.3%	2.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	09:00		10:00	09:00	07:00	07:00	11:00	11:00	11:00									07:00
Vol.	10		5	18	126	279	135	34	3									523
PM Peak	16:00	14:00	17:00	17:00	17:00	16:00	18:00	14:00	13:00									17:00
Vol.	24	4	10	48	212	383	196	19	2									814
<b>Total</b>	<b>150</b>	<b>8</b>	<b>44</b>	<b>288</b>	<b>2055</b>	<b>4084</b>	<b>1961</b>	<b>184</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8785</b>		
Percent	1.7%	0.1%	0.5%	3.3%	23.4%	46.5%	22.3%	2.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 33 MPH  
 50th Percentile : 38 MPH  
 85th Percentile : 43 MPH  
 95th Percentile : 45 MPH

Stats  
 10 MPH Pace Speed : 31-40 MPH  
 Number in Pace : 6139  
 Percent in Pace : 69.9%  
 Number of Vehicles > 40 MPH : 2156  
 Percent of Vehicles > 40 MPH : 24.5%  
 Mean Speed(Average) : 37 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Westminster  
 Street:West Main St.  
 Location:E. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

West																Pace	Number	
Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Total	Speed	in Pace
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85			
7/22/10	1	0	0	2	17	35	20	4	2	0	0	0	0	0	0	81	34-43	55
01:00	0	0	1	2	10	17	15	3	1	0	0	0	0	0	0	49	36-45	32
02:00	1	0	2	1	4	7	8	3	1	0	0	0	0	0	0	27	34-43	15
03:00	0	0	1	2	5	11	8	6	0	1	0	0	0	0	0	34	34-43	19
04:00	2	0	1	3	0	5	12	4	2	0	0	0	0	0	0	29	36-45	17
05:00	5	0	1	2	15	26	24	8	1	1	1	0	0	0	0	84	36-45	50
06:00	16	0	1	14	32	93	73	43	13	5	2	0	1	0	0	293	36-45	166
07:00	18	0	2	26	95	154	152	70	16	2	0	1	0	0	0	536	36-45	306
08:00	12	0	1	15	90	149	178	66	4	0	0	0	0	0	0	515	36-45	327
09:00	10	0	0	13	53	108	138	47	6	1	0	0	0	0	0	376	36-45	246
10:00	8	0	1	23	67	105	129	45	7	2	0	1	0	0	0	388	36-45	234
11:00	10	0	5	36	104	145	80	14	1	0	0	0	0	0	0	395	31-40	249
12 PM	16	1	5	40	123	180	94	20	3	0	0	0	0	0	0	482	31-40	303
13:00	7	0	5	21	125	164	122	18	3	1	0	0	0	0	0	466	31-40	289
14:00	6	0	4	14	78	118	180	77	25	2	2	0	0	0	0	506	36-45	298
15:00	13	0	1	19	88	182	210	103	17	5	2	0	0	0	0	640	36-45	392
16:00	18	0	2	21	133	261	285	108	13	7	3	1	1	1	1	854	36-45	546
17:00	14	0	1	19	131	282	257	126	29	3	0	0	0	0	0	862	36-45	539
18:00	18	0	1	13	63	205	200	122	21	2	2	1	0	0	0	648	36-45	405
19:00	6	0	0	5	47	89	146	59	12	2	0	0	0	0	0	366	36-45	235
20:00	6	0	2	27	65	92	99	34	3	1	0	0	0	0	0	329	36-45	191
21:00	5	0	1	10	53	78	79	26	5	0	0	0	0	0	0	257	36-45	157
22:00	5	0	0	9	36	66	61	17	9	3	0	0	0	0	0	206	36-45	127
23:00	4	0	0	5	26	32	46	19	9	0	0	0	0	0	0	141	36-45	78
<b>Total</b>	<b>201</b>	<b>1</b>	<b>38</b>	<b>342</b>	<b>1460</b>	<b>2604</b>	<b>2616</b>	<b>1042</b>	<b>203</b>	<b>38</b>	<b>12</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>8564</b>			
<b>Percent</b>	<b>2.3%</b>	<b>0.0%</b>	<b>0.4%</b>	<b>4.0%</b>	<b>17.0%</b>	<b>30.4%</b>	<b>30.5%</b>	<b>12.2%</b>	<b>2.4%</b>	<b>0.4%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>			
<b>AM Peak</b>	<b>07:00</b>		<b>11:00</b>	<b>11:00</b>	<b>11:00</b>	<b>07:00</b>	<b>08:00</b>	<b>07:00</b>	<b>07:00</b>	<b>06:00</b>	<b>06:00</b>	<b>07:00</b>	<b>06:00</b>		<b>07:00</b>			
<b>Vol.</b>	<b>18</b>		<b>5</b>	<b>36</b>	<b>104</b>	<b>154</b>	<b>178</b>	<b>70</b>	<b>16</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>		<b>536</b>			
<b>PM Peak</b>	<b>16:00</b>	<b>12:00</b>	<b>12:00</b>	<b>12:00</b>	<b>16:00</b>	<b>17:00</b>	<b>16:00</b>	<b>17:00</b>	<b>17:00</b>	<b>16:00</b>	<b>16:00</b>	<b>16:00</b>	<b>16:00</b>	<b>16:00</b>	<b>17:00</b>			
<b>Vol.</b>	<b>18</b>	<b>1</b>	<b>5</b>	<b>40</b>	<b>133</b>	<b>282</b>	<b>285</b>	<b>126</b>	<b>29</b>	<b>7</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>862</b>			
<b>Total</b>	<b>201</b>	<b>1</b>	<b>38</b>	<b>342</b>	<b>1460</b>	<b>2604</b>	<b>2616</b>	<b>1042</b>	<b>203</b>	<b>38</b>	<b>12</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>8564</b>			
<b>Percent</b>	<b>2.3%</b>	<b>0.0%</b>	<b>0.4%</b>	<b>4.0%</b>	<b>17.0%</b>	<b>30.4%</b>	<b>30.5%</b>	<b>12.2%</b>	<b>2.4%</b>	<b>0.4%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>			

15th Percentile : 33 MPH  
 50th Percentile : 40 MPH  
 85th Percentile : 46 MPH  
 95th Percentile : 50 MPH

Stats  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 5220  
 Percent in Pace : 61.0%  
 Number of Vehicles > 40 MPH : 3918  
 Percent of Vehicles > 40 MPH : 45.7%  
 Mean Speed(Average) : 39 MPH

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Westminster  
 Street:West Main St.  
 Location:E. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

East, West	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Pace	Number	
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Speed in Pace	
7/22/10	1	0	1	8	42	63	37	4	2	0	0	0	0	0	158	31-40	105
01:00	0	0	1	5	27	40	25	5	2	0	0	0	0	0	105	31-40	67
02:00	1	0	2	5	14	20	11	3	1	0	0	0	0	0	57	32-41	35
03:00	1	0	1	2	11	17	13	6	0	1	0	0	0	0	52	34-43	31
04:00	2	0	1	5	18	17	17	5	3	0	0	0	0	0	68	31-40	35
05:00	7	0	2	5	38	70	48	10	1	1	0	0	0	0	183	36-45	118
06:00	<b>23</b>	0	4	18	96	240	151	51	14	<b>5</b>	<b>2</b>	0	<b>1</b>	0	605	36-45	391
07:00	21	0	3	40	<b>221</b>	<b>433</b>	244	<b>78</b>	<b>16</b>	2	0	<b>1</b>	0	0	<b>1059</b>	36-45	677
08:00	18	0	2	28	206	369	<b>256</b>	73	4	0	0	0	0	0	956	36-45	625
09:00	20	0	1	31	178	274	198	51	6	1	0	0	0	0	760	36-45	472
10:00	13	0	<b>6</b>	38	164	308	209	49	7	2	0	1	0	0	797	36-45	517
11:00	15	0	6	<b>44</b>	161	317	215	48	4	0	0	0	0	0	810	36-45	532
12 PM	28	<b>4</b>	<b>12</b>	<b>69</b>	284	435	183	24	4	0	0	0	0	0	1043	31-40	719
13:00	15	1	6	38	248	392	246	34	5	1	0	0	0	0	986	32-41	641
14:00	13	4	6	23	194	397	301	96	26	2	2	0	0	0	1064	36-45	698
15:00	26	0	1	36	247	454	353	120	17	5	2	0	0	0	1261	36-45	807
16:00	<b>42</b>	0	10	45	286	<b>644</b>	<b>471</b>	117	13	<b>7</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	1641	36-45	1115
17:00	31	0	11	67	<b>343</b>	618	436	<b>138</b>	<b>29</b>	3	0	0	0	0	<b>1676</b>	36-45	1054
18:00	34	0	2	26	193	503	396	136	22	2	2	1	0	0	1317	36-45	899
19:00	11	0	0	17	117	307	273	65	12	2	0	0	0	0	804	36-45	580
20:00	6	0	3	40	147	286	164	42	3	1	0	0	0	0	692	36-45	450
21:00	8	0	1	16	135	209	139	30	5	0	0	0	0	0	543	35-44	348
22:00	8	0	0	16	96	184	99	18	9	3	0	0	0	0	433	35-44	284
23:00	7	0	0	8	49	91	92	23	9	0	0	0	0	0	279	36-45	183
Total	351	9	82	630	3515	6688	4577	1226	214	38	12	4	2	1	17349		
Percent	2.0%	0.1%	0.5%	3.6%	20.3%	38.5%	26.4%	7.1%	1.2%	0.2%	0.1%	0.0%	0.0%	0.0%			
AM Peak	06:00		10:00	11:00	07:00	07:00	08:00	07:00	07:00	06:00	06:00	07:00	06:00		07:00		
Vol.	23		6	44	221	433	256	78	16	5	2	1	1		1059		
PM Peak	16:00	12:00	12:00	12:00	17:00	16:00	16:00	17:00	17:00	16:00	16:00	16:00	16:00	16:00	17:00		
Vol.	42	4	12	69	343	644	471	138	29	7	3	1	1	1	1676		
Total	351	9	82	630	3515	6688	4577	1226	214	38	12	4	2	1	17349		
Percent	2.0%	0.1%	0.5%	3.6%	20.3%	38.5%	26.4%	7.1%	1.2%	0.2%	0.1%	0.0%	0.0%	0.0%			

15th Percentile : 33 MPH  
 50th Percentile : 39 MPH  
 85th Percentile : 44 MPH  
 95th Percentile : 48 MPH

Stats  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 11265  
 Percent in Pace : 64.9%  
 Number of Vehicles > 40 MPH : 6074  
 Percent of Vehicles > 40 MPH : 35.0%  
 Mean Speed(Average) : 38 MPH

## Appendix – Vehicle Classification

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Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	57	10	1	0	0	0	0	1	0	0	0	0	0	69
01:00	1	20	5	0	2	0	0	1	1	0	0	0	0	2	32
02:00	1	26	3	1	0	0	0	2	1	0	0	0	0	0	34
03:00	0	10	3	0	2	0	0	1	0	1	0	0	0	0	17
04:00	0	2	4	0	0	0	0	2	0	0	0	0	0	0	8
05:00	0	30	9	0	2	0	0	4	5	0	0	0	0	0	50
06:00	3	65	23	1	7	0	0	1	5	2	0	0	0	7	114
07:00	3	153	43	2	14	3	4	5	7	0	0	0	1	15	250
08:00	1	173	70	3	12	4	6	2	3	0	0	0	0	7	281
09:00	1	167	43	4	12	0	0	1	5	1	0	0	0	9	243
10:00	3	211	44	3	5	3	2	0	7	1	0	0	0	5	284
11:00	5	207	41	2	10	1	0	0	7	0	0	0	0	7	280
12 PM	1	247	50	4	7	0	0	2	5	0	0	0	0	4	320
13:00	3	237	44	4	7	2	0	4	7	1	0	0	0	7	316
14:00	3	259	59	1	14	3	0	2	2	2	0	0	0	11	356
15:00	6	325	118	2	18	1	0	2	7	1	0	0	0	8	488
16:00	4	411	127	4	20	0	0	2	6	1	0	0	0	6	581
17:00	5	469	126	0	13	0	0	1	7	0	0	0	0	18	639
18:00	4	371	98	1	19	0	0	2	1	1	0	0	0	10	507
19:00	2	245	52	2	7	1	0	1	0	0	0	0	0	4	314
20:00	1	190	53	0	3	0	0	0	1	0	0	0	0	3	251
21:00	2	173	37	0	2	0	0	0	0	0	0	0	0	1	215
22:00	1	96	16	0	2	0	0	1	1	0	0	0	0	0	117
23:00	2	58	12	0	1	0	0	0	1	0	0	0	0	0	74
Total	52	4202	1090	35	179	18	12	36	80	11	0	0	1	124	5840
Percent	0.9%	72.0%	18.7%	0.6%	3.1%	0.3%	0.2%	0.6%	1.4%	0.2%	0.0%	0.0%	0.0%	2.1%	
AM Peak	11:00	10:00	08:00	09:00	07:00	08:00	08:00	07:00	07:00	06:00			07:00	07:00	
Vol.	5	211	70	4	14	4	6	5	7	2			1	15	
PM Peak	15:00	17:00	16:00	12:00	16:00	14:00		13:00	13:00	14:00				17:00	
Vol.	6	469	127	4	20	3		4	7	2				18	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	57	10	1	1	0	0	1	0	0	0	0	0	0	71
01:00	0	21	8	1	2	0	0	0	2	0	0	0	0	0	34
02:00	0	20	1	1	0	0	0	2	1	1	0	0	0	0	26
03:00	0	5	2	0	1	1	0	1	0	0	0	0	0	0	10
04:00	0	11	2	1	0	0	0	2	6	0	0	0	0	0	22
05:00	2	25	7	1	2	2	0	3	1	0	0	0	0	3	46
06:00	3	62	34	3	8	4	2	1	5	1	0	0	0	5	128
07:00	1	152	41	5	12	3	7	5	6	2	0	0	0	16	250
08:00	2	177	52	5	15	3	1	2	10	0	0	0	0	4	271
09:00	2	179	52	1	8	4	3	2	5	2	0	0	0	7	265
10:00	4	179	39	2	6	4	2	2	3	0	0	0	0	6	247
11:00	5	219	77	2	8	6	1	0	11	1	0	0	0	12	342
12 PM	4	239	63	1	10	1	3	2	9	2	0	0	0	4	338
13:00	9	225	55	0	16	5	1	2	5	0	0	0	0	10	328
14:00	11	261	72	0	9	2	2	1	7	2	0	0	0	5	372
15:00	6	340	104	4	13	0	2	3	5	0	0	0	0	12	489
16:00	3	409	132	4	14	0	0	0	2	0	0	0	0	15	579
17:00	8	419	98	3	8	2	0	6	3	0	0	0	0	38	585
18:00	5	364	90	0	9	0	0	2	0	0	0	0	0	15	485
19:00	6	236	51	1	13	2	0	2	0	0	0	0	0	5	316
20:00	1	232	43	0	3	0	0	0	1	0	0	0	0	2	282
21:00	0	125	24	0	4	0	0	0	0	1	0	0	0	2	156
22:00	0	116	18	2	0	0	0	1	0	0	0	0	0	0	137
23:00	0	73	18	0	0	0	0	0	1	0	0	0	0	0	92
Total	73	4146	1093	38	162	39	24	40	83	12	0	0	0	161	5871
Percent	1.2%	70.6%	18.6%	0.6%	2.8%	0.7%	0.4%	0.7%	1.4%	0.2%	0.0%	0.0%	0.0%	2.7%	
AM Peak	11:00	11:00	11:00	07:00	08:00	11:00	07:00	07:00	11:00	07:00				07:00	
Vol.	5	219	77	5	15	6	7	5	11	2				16	
PM Peak	14:00	17:00	16:00	15:00	13:00	13:00	12:00	17:00	12:00	12:00				17:00	
Vol.	11	419	132	4	16	5	3	6	9	2				38	
Grand Total	125	8348	2183	73	341	57	36	76	163	23	0	0	1	285	11711
Percent	1.1%	71.3%	18.6%	0.6%	2.9%	0.5%	0.3%	0.6%	1.4%	0.2%	0.0%	0.0%	0.0%	2.4%	

Montachusett Regional Planning Commission  
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Community:Winchendon  
 Street:Gardner Road  
 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	18	2	0	0	0	0	0	0	0	0	0	0	0	20
01:00	0	13	0	0	0	0	0	0	0	0	0	0	0	0	13
02:00	1	12	0	0	0	1	0	0	3	1	0	0	0	1	19
03:00	1	15	1	0	1	0	0	0	3	1	0	0	0	0	22
04:00	3	60	14	0	1	1	0	0	5	0	0	0	0	0	84
05:00	6	211	26	1	3	1	0	0	6	1	0	0	0	1	256
06:00	6	353	36	0	4	1	0	0	6	2	0	0	0	10	418
07:00	16	540	38	0	5	0	0	1	7	0	0	0	0	25	632
08:00	6	442	20	0	6	0	0	0	13	0	0	0	0	16	503
09:00	7	318	16	0	6	3	0	0	5	1	0	0	0	15	371
10:00	6	283	15	0	5	3	0	2	11	0	0	0	0	11	336
11:00	7	271	16	0	4	0	0	0	6	0	0	0	0	7	311
12 PM	11	223	14	0	6	5	0	0	3	0	0	0	0	15	277
13:00	11	283	26	0	8	5	0	4	6	0	0	0	0	12	355
14:00	5	289	16	0	5	5	0	0	4	1	0	0	0	13	338
15:00	11	323	19	0	4	2	0	1	2	3	0	0	0	22	387
16:00	19	346	18	0	4	1	0	2	5	2	0	0	0	20	417
17:00	4	299	18	0	1	0	0	0	1	0	0	0	0	22	345
18:00	14	266	9	0	1	0	0	0	0	0	0	0	0	18	308
19:00	3	164	7	0	3	0	0	1	3	0	0	0	0	6	187
20:00	4	126	8	0	2	0	0	0	0	0	0	0	0	0	140
21:00	5	66	8	0	0	0	0	0	3	0	0	0	0	1	83
22:00	1	64	3	0	0	0	0	4	0	0	0	0	0	0	72
23:00	3	30	4	0	0	0	0	3	0	0	0	0	0	1	41
Total	150	5015	334	1	69	28	0	18	92	12	0	0	0	216	5935
Percent	2.5%	84.5%	5.6%	0.0%	1.2%	0.5%	0.0%	0.3%	1.6%	0.2%	0.0%	0.0%	0.0%	3.6%	
AM Peak	07:00	07:00	07:00	05:00	08:00	09:00		10:00	08:00	06:00				07:00	
Vol.	16	540	38	1	6	3		2	13	2				25	
PM Peak	16:00	16:00	13:00		13:00	12:00		13:00	13:00	15:00				15:00	
Vol.	19	346	26		8	5		4	6	3				22	

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 Location:S. of Spring St. (Rt. 12)  
 Function Class:U-0

Site Code: 34320101001  
 Station ID:  
 Counter#:014701

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	0	11	0	0	0	0	0	0	0	0	0	0	0	0	11
01:00	0	12	1	0	0	0	0	0	0	0	0	0	0	0	13
02:00	0	9	0	0	0	0	0	0	0	1	0	0	0	1	11
03:00	1	16	0	0	0	0	0	0	3	0	0	0	0	0	20
04:00	1	72	9	0	2	0	0	0	7	0	0	0	0	0	91
05:00	7	234	32	1	2	1	0	0	4	0	0	0	0	3	284
06:00	9	386	26	0	3	2	0	0	6	1	0	0	0	9	442
07:00	23	513	34	1	5	1	0	1	4	0	0	0	0	23	605
08:00	11	431	19	0	5	9	1	2	8	0	0	0	0	19	505
09:00	10	308	12	0	2	6	0	3	6	2	0	0	0	12	361
10:00	14	283	13	1	7	4	0	1	5	0	0	0	0	7	335
11:00	4	249	7	0	7	10	0	0	2	0	0	0	0	18	297
12 PM	9	236	12	1	2	6	0	2	10	0	0	0	0	8	286
13:00	10	281	13	0	6	8	1	4	0	1	0	0	0	15	339
14:00	19	277	27	0	7	4	0	3	5	0	0	0	0	18	360
15:00	18	310	15	0	6	2	1	1	5	0	0	0	0	23	381
16:00	19	322	18	1	7	2	0	1	4	0	0	0	0	26	400
17:00	10	253	9	0	1	0	0	0	1	1	0	0	0	43	318
18:00	20	228	7	0	4	2	0	0	3	0	0	0	0	22	286
19:00	4	200	4	1	0	0	0	0	2	0	0	0	0	1	212
20:00	4	143	5	0	0	0	0	0	3	0	0	0	0	3	158
21:00	1	99	7	1	0	0	0	0	4	0	0	0	0	5	117
22:00	4	76	2	0	0	0	0	2	1	0	0	0	0	2	87
23:00	0	34	1	0	1	0	0	2	0	0	0	0	0	1	39
Total	198	4983	273	7	67	57	3	22	83	6	0	0	0	259	5958
Percent	3.3%	83.6%	4.6%	0.1%	1.1%	1.0%	0.1%	0.4%	1.4%	0.1%	0.0%	0.0%	0.0%	4.3%	
AM Peak	07:00	07:00	07:00	05:00	10:00	11:00	08:00	09:00	08:00	09:00				07:00	
Vol.	23	513	34	1	7	10	1	3	8	2				23	
PM Peak	18:00	16:00	14:00	12:00	14:00	13:00	13:00	13:00	12:00	13:00				17:00	
Vol.	20	322	27	1	7	8	1	4	10	1				43	
Grand Total	348	9998	607	8	136	85	3	40	175	18	0	0	0	475	11893
Percent	2.9%	84.1%	5.1%	0.1%	1.1%	0.7%	0.0%	0.3%	1.5%	0.2%	0.0%	0.0%	0.0%	4.0%	

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North, South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	75	12	1	0	0	0	0	1	0	0	0	0	0	89
01:00	1	33	5	0	2	0	0	1	1	0	0	0	0	2	45
02:00	2	38	3	1	0	1	0	2	4	1	0	0	0	1	53
03:00	1	25	4	0	3	0	0	1	3	2	0	0	0	0	39
04:00	3	62	18	0	1	1	0	2	5	0	0	0	0	0	92
05:00	6	241	35	1	5	1	0	4	11	1	0	0	0	1	306
06:00	9	418	59	1	11	1	0	1	11	4	0	0	0	17	532
07:00	19	693	81	2	19	3	4	6	14	0	0	0	1	40	882
08:00	7	615	90	3	18	4	6	2	16	0	0	0	0	23	784
09:00	8	485	59	4	18	3	0	1	10	2	0	0	0	24	614
10:00	9	494	59	3	10	6	2	2	18	1	0	0	0	16	620
11:00	12	478	57	2	14	1	0	0	13	0	0	0	0	14	591
12 PM	12	470	64	4	13	5	0	2	8	0	0	0	0	19	597
13:00	14	520	70	4	15	7	0	8	13	1	0	0	0	19	671
14:00	8	548	75	1	19	8	0	2	6	3	0	0	0	24	694
15:00	17	648	137	2	22	3	0	3	9	4	0	0	0	30	875
16:00	23	757	145	4	24	1	0	4	11	3	0	0	0	26	998
17:00	9	768	144	0	14	0	0	1	8	0	0	0	0	40	984
18:00	18	637	107	1	20	0	0	2	1	1	0	0	0	28	815
19:00	5	409	59	2	10	1	0	2	3	0	0	0	0	10	501
20:00	5	316	61	0	5	0	0	0	1	0	0	0	0	3	391
21:00	7	239	45	0	2	0	0	0	3	0	0	0	0	2	298
22:00	2	160	19	0	2	0	0	5	1	0	0	0	0	0	189
23:00	5	88	16	0	1	0	0	3	1	0	0	0	0	1	115
Total	202	9217	1424	36	248	46	12	54	172	23	0	0	1	340	11775
Percent	1.7%	78.3%	12.1%	0.3%	2.1%	0.4%	0.1%	0.5%	1.5%	0.2%	0.0%	0.0%	0.0%	2.9%	
AM Peak	07:00	07:00	08:00	09:00	07:00	10:00	08:00	07:00	10:00	06:00			07:00	07:00	
Vol.	19	693	90	4	19	6	6	6	18	4			1	40	
PM Peak	16:00	17:00	16:00	12:00	16:00	14:00		13:00	13:00	15:00				17:00	
Vol.	23	768	145	4	24	8		8	13	4				40	

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North, South

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9/22/10	1	68	10	1	1	0	0	1	0	0	0	0	0	0	82
01:00	0	33	9	1	2	0	0	0	2	0	0	0	0	0	47
02:00	0	29	1	1	0	0	0	2	1	2	0	0	0	1	37
03:00	1	21	2	0	1	1	0	1	3	0	0	0	0	0	30
04:00	1	83	11	1	2	0	0	2	13	0	0	0	0	0	113
05:00	9	259	39	2	4	3	0	3	5	0	0	0	0	6	330
06:00	12	448	60	3	11	6	2	1	11	2	0	0	0	14	570
07:00	24	665	75	6	17	4	7	6	10	2	0	0	0	39	855
08:00	13	608	71	5	20	12	2	4	18	0	0	0	0	23	776
09:00	12	487	64	1	10	10	3	5	11	4	0	0	0	19	626
10:00	18	462	52	3	13	8	2	3	8	0	0	0	0	13	582
11:00	9	468	84	2	15	16	1	0	13	1	0	0	0	30	639
12 PM	13	475	75	2	12	7	3	4	19	2	0	0	0	12	624
13:00	19	506	68	0	22	13	2	6	5	1	0	0	0	25	667
14:00	30	538	99	0	16	6	2	4	12	2	0	0	0	23	732
15:00	24	650	119	4	19	2	3	4	10	0	0	0	0	35	870
16:00	22	731	150	5	21	2	0	1	6	0	0	0	0	41	979
17:00	18	672	107	3	9	2	0	6	4	1	0	0	0	81	903
18:00	25	592	97	0	13	2	0	2	3	0	0	0	0	37	771
19:00	10	436	55	2	13	2	0	2	2	0	0	0	0	6	528
20:00	5	375	48	0	3	0	0	0	4	0	0	0	0	5	440
21:00	1	224	31	1	4	0	0	0	4	1	0	0	0	7	273
22:00	4	192	20	2	0	0	0	3	1	0	0	0	0	2	224
23:00	0	107	19	0	1	0	0	2	1	0	0	0	0	1	131
Total	271	9129	1366	45	229	96	27	62	166	18	0	0	0	420	11829
Percent	2.3%	77.2%	11.5%	0.4%	1.9%	0.8%	0.2%	0.5%	1.4%	0.2%	0.0%	0.0%	0.0%	3.6%	
AM Peak	07:00	07:00	11:00	07:00	08:00	11:00	07:00	07:00	08:00	09:00				07:00	
Vol.	24	665	84	6	20	16	7	6	18	4				39	
PM Peak	14:00	16:00	16:00	16:00	13:00	13:00	12:00	13:00	12:00	12:00				17:00	
Vol.	30	731	150	5	22	13	3	6	19	2				81	
Grand Total	473	18346	2790	81	477	142	39	116	338	41	0	0	1	760	23604
Percent	2.0%	77.7%	11.8%	0.3%	2.0%	0.6%	0.2%	0.5%	1.4%	0.2%	0.0%	0.0%	0.0%	3.2%	

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Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	19	3	0	0	0	0	0	0	0	0	0	0	0	22
01:00	0	14	1	0	0	0	0	0	0	0	0	0	0	0	15
02:00	0	16	0	1	1	1	0	2	0	0	0	0	0	3	24
03:00	1	11	7	0	1	0	0	1	2	1	0	0	0	2	26
04:00	0	60	21	0	1	2	0	2	2	0	0	0	0	4	92
05:00	3	205	56	1	6	1	0	1	3	1	0	0	0	3	280
06:00	5	353	87	2	8	3	0	1	3	0	0	0	0	7	469
07:00	5	533	111	1	11	3	0	2	4	0	0	0	0	21	691
08:00	7	442	61	3	7	4	0	2	6	0	0	0	0	16	548
09:00	4	311	46	2	7	6	0	1	4	0	0	0	0	10	391
10:00	5	289	42	1	8	6	0	1	3	0	0	0	0	15	370
11:00	7	247	53	0	9	4	0	3	1	0	0	0	0	13	337
12 PM	7	235	39	3	9	4	0	2	2	0	0	0	0	10	311
13:00	5	268	56	3	15	5	0	4	2	0	0	0	0	14	372
14:00	6	279	42	2	14	6	0	5	0	0	0	0	0	14	368
15:00	3	331	49	2	11	1	0	3	1	1	0	0	0	29	431
16:00	7	335	59	0	12	2	0	5	1	0	0	0	0	24	445
17:00	2	285	43	1	5	2	0	0	1	0	0	0	0	13	352
18:00	4	274	42	0	2	0	0	1	0	0	0	0	0	8	331
19:00	1	162	21	0	5	0	0	1	2	0	0	0	0	6	198
20:00	3	122	24	0	2	0	0	0	1	0	0	0	0	5	157
21:00	1	69	10	0	1	0	0	0	1	0	0	0	0	3	85
22:00	0	67	6	0	0	0	0	2	0	0	0	0	0	2	77
23:00	0	27	7	0	1	0	0	2	0	0	0	0	0	1	38
Total	76	4954	886	22	136	50	0	41	39	3	0	0	0	223	6430
Percent	1.2%	77.0%	13.8%	0.3%	2.1%	0.8%	0.0%	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	3.5%	
AM Peak	08:00	07:00	07:00	08:00	07:00	09:00		11:00	08:00	03:00				07:00	
Vol.	7	533	111	3	11	6		3	6	1				21	
PM Peak	12:00	16:00	16:00	12:00	13:00	14:00		14:00	12:00	15:00				15:00	
Vol.	7	335	59	3	15	6		5	2	1				29	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	11	2	0	0	0	0	0	0	0	0	0	0	0	14
01:00	0	10	2	0	0	0	0	0	0	0	0	0	0	0	12
02:00	0	9	2	0	0	0	0	0	1	0	0	0	0	1	13
03:00	0	16	1	0	0	0	0	2	1	0	0	0	0	3	23
04:00	1	65	27	2	1	1	0	0	4	0	0	0	0	1	102
05:00	3	216	68	1	4	2	0	2	2	0	0	0	0	6	304
06:00	4	374	100	1	6	1	0	0	5	0	0	0	0	6	497
07:00	8	531	81	0	10	4	0	1	3	0	0	0	0	20	658
08:00	3	436	69	3	12	11	0	1	4	0	0	0	0	21	560
09:00	3	303	42	1	6	5	0	1	4	1	0	0	0	11	377
10:00	3	275	45	4	11	1	0	1	4	0	0	0	0	13	357
11:00	5	248	38	1	15	8	0	0	2	0	0	0	0	12	329
12 PM	7	217	45	2	7	6	0	2	3	0	0	0	0	18	307
13:00	7	253	61	1	10	3	0	4	0	0	0	0	0	23	362
14:00	17	262	46	1	13	6	0	0	3	0	0	0	0	20	368
15:00	10	315	46	4	12	4	1	1	1	0	0	0	0	24	418
16:00	8	318	54	2	15	1	0	2	0	0	0	0	0	26	426
17:00	1	325	52	0	4	2	0	1	1	0	0	0	0	15	401
18:00	8	249	29	1	6	3	0	0	1	0	0	0	0	12	309
19:00	2	180	30	2	5	0	0	0	1	0	0	0	0	4	224
20:00	2	145	19	0	3	2	0	0	1	0	0	0	0	3	175
21:00	5	96	16	0	5	2	0	1	0	0	0	0	0	5	130
22:00	3	81	8	0	0	0	0	1	1	0	0	0	0	1	95
23:00	0	36	4	0	1	0	0	0	0	0	0	0	0	3	44
Total	101	4971	887	26	146	62	1	20	42	1	0	0	0	248	6505
Percent	1.6%	76.4%	13.6%	0.4%	2.2%	1.0%	0.0%	0.3%	0.6%	0.0%	0.0%	0.0%	0.0%	3.8%	
AM Peak	07:00	07:00	06:00	10:00	11:00	08:00		03:00	06:00	09:00				08:00	
Vol.	8	531	100	4	15	11		2	5	1				21	
PM Peak	14:00	17:00	13:00	15:00	16:00	12:00	15:00	13:00	12:00					16:00	
Vol.	17	325	61	4	15	6	1	4	3					26	
Grand Total	177	9925	1773	48	282	112	1	61	81	4	0	0	0	471	12935
Percent	1.4%	76.7%	13.7%	0.4%	2.2%	0.9%	0.0%	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%	3.6%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	48	19	0	2	0	0	0	0	0	0	0	0	2	71
01:00	0	22	7	0	1	0	0	1	0	0	0	0	0	1	32
02:00	0	19	12	1	0	0	0	1	1	1	0	0	0	2	37
03:00	0	9	5	0	2	0	0	0	0	0	0	0	0	1	17
04:00	1	3	6	0	0	0	0	0	0	0	0	0	0	1	11
05:00	1	21	18	0	2	0	0	2	3	0	0	0	0	5	52
06:00	5	41	49	0	9	3	0	1	6	2	0	0	0	12	128
07:00	5	99	105	2	12	6	3	6	6	0	0	0	0	36	280
08:00	3	133	105	2	14	3	1	1	4	0	0	0	0	30	296
09:00	2	154	65	2	11	2	0	1	7	0	0	0	0	18	262
10:00	4	204	56	2	7	2	0	1	5	0	0	0	0	16	297
11:00	9	238	29	2	4	2	0	2	6	0	0	0	0	13	305
12 PM	1	295	31	2	11	1	0	1	4	0	0	0	0	8	354
13:00	3	279	31	0	9	5	0	3	4	1	0	0	0	16	351
14:00	5	320	36	0	5	4	0	1	2	1	0	0	0	19	393
15:00	9	418	80	1	6	2	0	2	4	0	0	0	0	24	546
16:00	4	502	81	2	10	0	0	2	5	0	0	0	0	30	636
17:00	8	537	107	0	6	1	0	0	3	0	0	0	0	29	691
18:00	4	396	102	1	12	0	0	2	1	0	0	0	0	18	536
19:00	1	212	83	2	2	0	0	1	1	0	0	0	0	18	320
20:00	2	174	90	0	3	1	0	0	0	0	0	0	0	10	280
21:00	1	135	76	0	2	0	0	0	0	0	0	0	0	7	221
22:00	1	69	40	1	6	0	0	1	0	0	0	0	0	1	119
23:00	1	42	36	0	2	0	0	0	1	0	0	0	0	1	83
Total	70	4370	1269	20	138	32	4	29	63	5	0	0	0	318	6318
Percent	1.1%	69.2%	20.1%	0.3%	2.2%	0.5%	0.1%	0.5%	1.0%	0.1%	0.0%	0.0%	0.0%	5.0%	
AM Peak	11:00	11:00	07:00	07:00	08:00	07:00	07:00	07:00	09:00	06:00				07:00	
Vol.	9	238	105	2	14	6	3	6	7	2				36	
PM Peak	15:00	17:00	17:00	12:00	18:00	13:00		13:00	16:00	13:00				16:00	
Vol.	9	537	107	2	12	5		3	5	1				30	

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 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	42	27	0	2	0	0	1	0	0	0	0	0	1	74
01:00	0	14	14	3	2	0	0	0	1	0	0	0	0	1	35
02:00	1	13	10	0	0	0	0	1	0	1	0	0	0	2	28
03:00	0	2	5	0	1	0	0	1	0	0	0	0	0	3	12
04:00	2	5	10	1	2	2	0	1	0	0	0	0	0	4	27
05:00	2	11	17	1	3	1	0	2	1	0	0	0	0	10	48
06:00	0	37	73	2	12	4	1	2	3	0	0	0	0	18	152
07:00	6	99	97	6	19	5	2	4	5	2	0	0	0	32	277
08:00	2	141	94	1	14	4	0	3	6	0	0	0	0	29	294
09:00	3	150	97	1	8	2	1	0	5	1	0	0	0	23	291
10:00	4	181	61	0	12	4	1	2	3	0	0	0	0	9	277
11:00	3	281	40	3	9	5	0	0	10	0	0	0	0	15	366
12 PM	6	277	35	1	7	2	2	1	6	0	0	0	0	17	354
13:00	7	284	29	2	12	2	1	1	3	0	0	0	0	24	365
14:00	9	302	40	2	4	2	0	1	5	1	0	0	0	18	384
15:00	6	456	64	2	9	2	0	1	2	0	0	0	0	17	559
16:00	7	478	79	3	8	1	0	2	3	0	0	0	0	32	613
17:00	10	530	94	1	8	1	0	0	3	0	0	0	0	32	679
18:00	4	412	81	0	5	1	0	2	0	0	0	0	0	13	518
19:00	4	264	53	0	7	2	0	1	0	0	0	0	0	12	343
20:00	1	238	61	0	1	0	0	1	1	0	0	0	0	5	308
21:00	1	146	28	0	1	1	0	0	0	0	0	0	0	7	184
22:00	0	107	27	0	2	1	0	1	0	0	0	0	0	2	140
23:00	0	71	24	0	1	0	0	1	0	0	0	0	0	1	98
Total	79	4541	1160	29	149	42	8	29	57	5	0	0	0	327	6426
Percent	1.2%	70.7%	18.1%	0.5%	2.3%	0.7%	0.1%	0.5%	0.9%	0.1%	0.0%	0.0%	0.0%	5.1%	
AM Peak	07:00	11:00	07:00	07:00	07:00	07:00	07:00	07:00	11:00	07:00				07:00	
Vol.	6	281	97	6	19	5	2	4	10	2				32	
PM Peak	17:00	17:00	17:00	16:00	13:00	12:00	12:00	16:00	12:00	14:00				16:00	
Vol.	10	530	94	3	12	2	2	2	6	1				32	
Grand Total	149	8911	2429	49	287	74	12	58	120	10	0	0	0	645	12744
Percent	1.2%	69.9%	19.1%	0.4%	2.3%	0.6%	0.1%	0.5%	0.9%	0.1%	0.0%	0.0%	0.0%	5.1%	

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 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South, North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	67	22	0	2	0	0	0	0	0	0	0	0	2	93
01:00	0	36	8	0	1	0	0	1	0	0	0	0	0	1	47
02:00	0	35	12	2	1	1	0	3	1	1	0	0	0	5	61
03:00	1	20	12	0	3	0	0	1	2	1	0	0	0	3	43
04:00	1	63	27	0	1	2	0	2	2	0	0	0	0	5	103
05:00	4	226	74	1	8	1	0	3	6	1	0	0	0	8	332
06:00	10	394	136	2	17	6	0	2	9	2	0	0	0	19	597
07:00	10	632	216	3	23	9	3	8	10	0	0	0	0	57	971
08:00	10	575	166	5	21	7	1	3	10	0	0	0	0	46	844
09:00	6	465	111	4	18	8	0	2	11	0	0	0	0	28	653
10:00	9	493	98	3	15	8	0	2	8	0	0	0	0	31	667
11:00	16	485	82	2	13	6	0	5	7	0	0	0	0	26	642
12 PM	8	530	70	5	20	5	0	3	6	0	0	0	0	18	665
13:00	8	547	87	3	24	10	0	7	6	1	0	0	0	30	723
14:00	11	599	78	2	19	10	0	6	2	1	0	0	0	33	761
15:00	12	749	129	3	17	3	0	5	5	1	0	0	0	53	977
16:00	11	837	140	2	22	2	0	7	6	0	0	0	0	54	1081
17:00	10	822	150	1	11	3	0	0	4	0	0	0	0	42	1043
18:00	8	670	144	1	14	0	0	3	1	0	0	0	0	26	867
19:00	2	374	104	2	7	0	0	2	3	0	0	0	0	24	518
20:00	5	296	114	0	5	1	0	0	1	0	0	0	0	15	437
21:00	2	204	86	0	3	0	0	0	1	0	0	0	0	10	306
22:00	1	136	46	1	6	0	0	3	0	0	0	0	0	3	196
23:00	1	69	43	0	3	0	0	2	1	0	0	0	0	2	121
Total	146	9324	2155	42	274	82	4	70	102	8	0	0	0	541	12748
Percent	1.1%	73.1%	16.9%	0.3%	2.1%	0.6%	0.0%	0.5%	0.8%	0.1%	0.0%	0.0%	0.0%	4.2%	
AM Peak	11:00	07:00	07:00	08:00	07:00	07:00	07:00	07:00	09:00	06:00					
Vol.	16	632	216	5	23	9	3	8	11	2				57	
PM Peak	15:00	16:00	17:00	12:00	13:00	13:00		13:00	12:00	13:00				16:00	
Vol.	12	837	150	5	24	10		7	6	1				54	

Montachusett Regional Planning Commission  
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Community:Winchendon  
 Street:Gardner Road  
 Location:N. of Teel Road  
 Function Class:R-2

Site Code: 34320101003  
 Station ID:  
 Counter#018131

South, North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	2	53	29	0	2	0	0	1	0	0	0	0	0	1	88
01:00	0	24	16	3	2	0	0	0	1	0	0	0	0	1	47
02:00	1	22	12	0	0	0	0	1	1	1	0	0	0	3	41
03:00	0	18	6	0	1	0	0	3	1	0	0	0	0	6	35
04:00	3	70	37	3	3	3	0	1	4	0	0	0	0	5	129
05:00	5	227	85	2	7	3	0	4	3	0	0	0	0	16	352
06:00	4	411	173	3	18	5	1	2	8	0	0	0	0	24	649
07:00	14	630	178	6	29	9	2	5	8	2	0	0	0	52	935
08:00	5	577	163	4	26	15	0	4	10	0	0	0	0	50	854
09:00	6	453	139	2	14	7	1	1	9	2	0	0	0	34	668
10:00	7	456	106	4	23	5	1	3	7	0	0	0	0	22	634
11:00	8	529	78	4	24	13	0	0	12	0	0	0	0	27	695
12 PM	13	494	80	3	14	8	2	3	9	0	0	0	0	35	661
13:00	14	537	90	3	22	5	1	5	3	0	0	0	0	47	727
14:00	26	564	86	3	17	8	0	1	8	1	0	0	0	38	752
15:00	16	771	110	6	21	6	1	2	3	0	0	0	0	41	977
16:00	15	796	133	5	23	2	0	4	3	0	0	0	0	58	1039
17:00	11	855	146	1	12	3	0	1	4	0	0	0	0	47	1080
18:00	12	661	110	1	11	4	0	2	1	0	0	0	0	25	827
19:00	6	444	83	2	12	2	0	1	1	0	0	0	0	16	567
20:00	3	383	80	0	4	2	0	1	2	0	0	0	0	8	483
21:00	6	242	44	0	6	3	0	1	0	0	0	0	0	12	314
22:00	3	188	35	0	2	1	0	2	1	0	0	0	0	3	235
23:00	0	107	28	0	2	0	0	1	0	0	0	0	0	4	142
Total	180	9512	2047	55	295	104	9	49	99	6	0	0	0	575	12931
Percent	1.4%	73.6%	15.8%	0.4%	2.3%	0.8%	0.1%	0.4%	0.8%	0.0%	0.0%	0.0%	0.0%	4.4%	
AM Peak	07:00	07:00	07:00	07:00	07:00	08:00	07:00	07:00	11:00	07:00				07:00	
Vol.	14	630	178	6	29	15	2	5	12	2				52	
PM Peak	14:00	17:00	17:00	15:00	16:00	12:00	12:00	13:00	12:00	14:00				16:00	
Vol.	26	855	146	6	23	8	2	5	9	1				58	
Grand Total	326	18836	4202	97	569	186	13	119	201	14	0	0	0	1116	25679
Percent	1.3%	73.4%	16.4%	0.4%	2.2%	0.7%	0.1%	0.5%	0.8%	0.1%	0.0%	0.0%	0.0%	4.3%	

Montachusett Regional Planning Commission  
 1427R Water Street  
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 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

Site Code: 10320103971  
 Station ID:  
 Counter#018130

West

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	2	63	5	0	1	1	0	1	0	0	0	0	0	0	73
01:00	1	26	2	0	1	0	0	1	2	0	0	0	0	1	34
02:00	1	28	1	1	1	0	0	2	0	0	0	0	0	3	37
03:00	0	11	2	0	0	0	0	0	0	0	0	0	0	0	13
04:00	0	13	3	0	0	1	0	2	0	0	0	0	0	1	20
05:00	4	39	8	1	1	1	0	1	1	0	0	0	0	2	58
06:00	2	100	16	2	3	2	0	3	2	1	0	0	0	11	142
07:00	4	192	26	1	12	2	1	3	6	0	0	0	0	28	275
08:00	3	230	36	1	10	3	1	0	6	0	0	0	0	22	312
09:00	4	216	24	1	8	2	0	1	10	0	0	0	0	12	278
10:00	1	264	18	1	8	4	1	0	3	2	0	0	0	13	315
11:00	7	261	32	1	8	3	0	2	6	1	0	0	0	16	337
12 PM	9	304	31	0	5	3	3	2	3	0	0	0	0	17	377
13:00	11	328	28	0	9	5	1	1	5	0	0	0	0	14	402
14:00	9	356	36	0	3	9	0	1	1	0	0	0	0	20	435
15:00	5	519	50	1	11	1	1	2	5	0	0	0	0	20	615
16:00	6	557	68	1	10	2	0	2	1	0	0	0	0	12	659
17:00	16	683	66	0	4	2	0	0	1	1	0	0	0	17	790
18:00	7	482	45	0	3	1	0	0	0	0	0	0	0	13	551
19:00	5	324	29	1	2	0	0	1	0	0	0	0	0	10	372
20:00	3	271	18	0	0	2	0	1	0	0	0	0	0	4	299
21:00	0	180	9	0	0	0	0	0	1	0	0	0	0	3	193
22:00	0	128	7	1	2	0	0	1	0	0	0	0	0	2	141
23:00	0	98	4	0	0	0	0	0	1	0	0	0	0	2	105
Total	100	5673	564	13	102	44	8	27	54	5	0	0	0	243	6833
Percent	1.5%	83.0%	8.3%	0.2%	1.5%	0.6%	0.1%	0.4%	0.8%	0.1%	0.0%	0.0%	0.0%	3.6%	
AM Peak	11:00	10:00	08:00	06:00	07:00	10:00	07:00	06:00	09:00	10:00				07:00	
Vol.	7	264	36	2	12	4	1	3	10	2				28	
PM Peak	17:00	17:00	16:00	15:00	15:00	14:00	12:00	12:00	13:00	17:00				14:00	
Vol.	16	683	68	1	11	9	3	2	5	1				20	
Grand Total	100	5673	564	13	102	44	8	27	54	5	0	0	0	243	6833
Percent	1.5%	83.0%	8.3%	0.2%	1.5%	0.6%	0.1%	0.4%	0.8%	0.1%	0.0%	0.0%	0.0%	3.6%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

Site Code: 10320103971  
 Station ID:  
 Counter#018130

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	0	20	2	0	0	0	0	0	1	0	0	0	0	0	23
01:00	0	14	0	0	0	0	0	0	0	0	0	0	0	1	15
02:00	1	13	1	0	0	0	0	1	3	1	0	0	0	1	21
03:00	1	14	5	0	1	0	0	0	3	1	0	0	0	4	29
04:00	1	64	15	1	1	0	0	1	3	0	0	0	0	9	95
05:00	9	212	53	0	8	4	0	0	4	0	0	0	0	16	306
06:00	11	385	69	1	6	2	0	1	3	1	0	0	0	46	525
07:00	13	635	49	0	5	2	0	0	5	0	0	0	0	58	767
08:00	6	510	28	0	6	3	0	1	8	0	0	0	0	34	596
09:00	9	361	17	1	3	4	0	1	7	0	0	0	0	18	421
10:00	9	331	7	0	4	5	0	1	8	0	0	0	0	17	382
11:00	7	298	10	0	4	4	0	2	3	0	0	0	0	17	345
12 PM	8	269	9	0	1	7	0	1	6	1	0	0	0	15	317
13:00	10	337	6	0	8	4	1	0	2	1	0	0	0	24	393
14:00	24	326	13	0	7	5	0	2	6	0	0	0	0	15	398
15:00	19	355	11	0	4	3	1	1	4	1	0	0	0	27	426
16:00	8	405	11	1	5	5	0	1	1	0	0	0	0	28	465
17:00	9	359	8	0	2	1	0	0	1	0	0	0	0	33	413
18:00	8	290	3	1	4	2	0	0	4	0	0	0	0	15	327
19:00	4	198	6	0	2	0	0	0	1	0	0	0	0	8	219
20:00	5	180	4	0	1	0	0	0	3	0	0	0	0	6	199
21:00	0	107	4	1	1	0	0	0	3	0	0	0	0	9	125
22:00	2	95	3	0	1	0	0	1	1	0	0	0	0	3	106
23:00	0	42	3	0	0	0	0	1	0	0	0	0	0	1	47
Total	164	5820	337	6	74	51	2	15	80	6	0	0	0	405	6960
Percent	2.4%	83.6%	4.8%	0.1%	1.1%	0.7%	0.0%	0.2%	1.1%	0.1%	0.0%	0.0%	0.0%	5.8%	
AM Peak	07:00	07:00	06:00	04:00	05:00	10:00		11:00	08:00	02:00				07:00	
Vol.	13	635	69	1	8	5		2	8	1				58	
PM Peak	14:00	16:00	14:00	16:00	13:00	12:00	13:00	14:00	12:00	12:00				17:00	
Vol.	24	405	13	1	8	7	1	2	6	1				33	
Grand Total	164	5820	337	6	74	51	2	15	80	6	0	0	0	405	6960
Percent	2.4%	83.6%	4.8%	0.1%	1.1%	0.7%	0.0%	0.2%	1.1%	0.1%	0.0%	0.0%	0.0%	5.8%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Green Street  
 Function Class: U-2

Site Code: 10320103971  
 Station ID:  
 Counter#018130

West, East																
Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total	
9/22/10	2	83	7	0	1	1	0	1	1	0	0	0	0	0	96	
01:00	1	40	2	0	1	0	0	1	2	0	0	0	0	2	49	
02:00	2	41	2	1	1	0	0	3	3	1	0	0	0	4	58	
03:00	1	25	7	0	1	0	0	0	3	1	0	0	0	4	42	
04:00	1	77	18	1	1	1	0	3	3	0	0	0	0	10	115	
05:00	13	251	61	1	9	5	0	1	5	0	0	0	0	18	364	
06:00	13	485	85	3	9	4	0	4	5	2	0	0	0	57	667	
07:00	17	827	75	1	17	4	1	3	11	0	0	0	0	86	1042	
08:00	9	740	64	1	16	6	1	1	14	0	0	0	0	56	908	
09:00	13	577	41	2	11	6	0	2	17	0	0	0	0	30	699	
10:00	10	595	25	1	12	9	1	1	11	2	0	0	0	30	697	
11:00	14	559	42	1	12	7	0	4	9	1	0	0	0	33	682	
12 PM	17	573	40	0	6	10	3	3	9	1	0	0	0	32	694	
13:00	21	665	34	0	17	9	2	1	7	1	0	0	0	38	795	
14:00	33	682	49	0	10	14	0	3	7	0	0	0	0	35	833	
15:00	24	874	61	1	15	4	2	3	9	1	0	0	0	47	1041	
16:00	14	962	79	2	15	7	0	3	2	0	0	0	0	40	1124	
17:00	25	1042	74	0	6	3	0	0	2	1	0	0	0	50	1203	
18:00	15	772	48	1	7	3	0	0	4	0	0	0	0	28	878	
19:00	9	522	35	1	4	0	0	1	1	0	0	0	0	18	591	
20:00	8	451	22	0	1	2	0	1	3	0	0	0	0	10	498	
21:00	0	287	13	1	1	0	0	0	4	0	0	0	0	12	318	
22:00	2	223	10	1	3	0	0	2	1	0	0	0	0	5	247	
23:00	0	140	7	0	0	0	0	1	1	0	0	0	0	3	152	
Total	264	11493	901	19	176	95	10	42	134	11	0	0	0	648	13793	
Percent	1.9%	83.3%	6.5%	0.1%	1.3%	0.7%	0.1%	0.3%	1.0%	0.1%	0.0%	0.0%	0.0%	4.7%		
AM Peak	07:00	07:00	06:00	06:00	07:00	10:00	07:00	06:00	09:00	06:00				07:00		
Vol.	17	827	85	3	17	9	1	4	17	2				86		
PM Peak	14:00	17:00	16:00	16:00	13:00	14:00	12:00	12:00	12:00	12:00				17:00		
Vol.	33	1042	79	2	17	14	3	3	9	1				50		
Grand Total	264	11493	901	19	176	95	10	42	134	11	0	0	0	648	13793	
Percent	1.9%	83.3%	6.5%	0.1%	1.3%	0.7%	0.1%	0.3%	1.0%	0.1%	0.0%	0.0%	0.0%	4.7%		

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	11	2	0	1	0	0	0	1	0	0	0	0	0	15
01:00	0	7	1	0	0	0	0	0	0	0	0	0	0	0	8
02:00	0	9	1	1	2	0	0	0	3	0	0	0	0	1	17
03:00	2	12	3	0	1	1	0	0	2	0	0	0	0	0	21
04:00	2	49	15	1	1	0	0	0	6	0	0	0	0	2	76
05:00	3	187	47	2	4	0	0	0	5	0	0	0	0	1	249
06:00	5	337	57	0	6	0	0	0	4	2	0	0	0	7	418
07:00	7	537	81	1	7	2	0	1	2	1	0	0	0	15	654
08:00	4	325	39	1	7	2	0	1	10	0	0	0	0	8	397
09:00	2	187	23	2	2	6	0	2	4	1	0	0	0	6	235
10:00	1	177	24	3	8	2	0	1	9	0	0	0	0	4	229
11:00	3	168	21	4	6	2	0	0	4	0	0	0	0	5	213
12 PM	3	144	24	3	7	2	0	1	1	0	0	0	0	7	192
13:00	6	159	22	6	11	4	0	3	3	0	0	0	0	6	220
14:00	3	203	15	2	14	6	0	2	2	0	0	0	0	4	251
15:00	6	191	16	2	4	1	0	0	4	2	0	0	0	14	240
16:00	7	214	37	0	6	2	0	2	6	2	0	0	0	4	280
17:00	2	191	18	1	2	2	0	0	2	0	0	0	0	8	226
18:00	3	172	14	0	2	2	0	1	0	0	0	0	0	3	197
19:00	2	106	9	0	1	0	0	1	2	0	0	0	0	1	122
20:00	0	74	9	0	1	0	0	0	0	0	0	0	0	2	86
21:00	1	54	3	1	2	0	0	1	1	0	0	0	0	1	64
22:00	1	47	2	0	0	0	0	2	0	0	0	0	0	2	54
23:00	0	23	5	0	0	0	0	3	0	0	0	0	0	3	34
Total	63	3584	488	30	95	34	0	21	71	8	0	0	0	104	4498
Percent	1.4%	79.7%	10.8%	0.7%	2.1%	0.8%	0.0%	0.5%	1.6%	0.2%	0.0%	0.0%	0.0%	2.3%	
AM Peak	07:00	07:00	07:00	11:00	10:00	09:00		09:00	08:00	06:00				07:00	
Vol.	7	537	81	4	8	6		2	10	2				15	
PM Peak	16:00	16:00	16:00	13:00	14:00	14:00		13:00	16:00	15:00				15:00	
Vol.	7	214	37	6	14	6		3	6	2				14	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	0	7	3	0	0	0	0	0	0	0	0	0	0	0	10
01:00	0	6	3	0	0	0	0	0	0	0	0	0	0	0	9
02:00	0	5	1	0	0	0	0	0	0	1	0	0	0	0	7
03:00	0	13	3	0	0	0	0	0	2	0	0	0	0	1	19
04:00	1	61	8	1	1	0	0	1	6	0	0	0	0	3	82
05:00	4	217	49	1	2	2	0	1	3	0	0	0	0	3	282
06:00	4	374	47	0	3	1	0	1	6	0	0	0	0	2	438
07:00	10	501	60	1	8	5	0	2	3	0	0	0	0	11	601
08:00	3	324	44	1	8	8	1	2	6	0	0	0	0	8	405
09:00	5	189	26	1	4	7	0	0	4	1	0	0	0	5	242
10:00	1	164	22	4	9	1	0	0	5	0	0	0	0	7	213
11:00	0	159	18	1	11	8	0	0	2	0	0	0	0	8	207
12 PM	6	144	26	1	4	8	0	1	6	1	0	0	0	10	207
13:00	2	189	18	1	5	6	0	6	1	1	0	0	0	6	235
14:00	12	204	14	1	16	8	0	1	4	0	0	0	0	6	266
15:00	5	204	15	4	8	3	1	3	3	1	0	0	0	9	256
16:00	3	235	34	2	3	1	0	2	5	0	0	0	0	7	292
17:00	3	227	27	1	1	0	0	0	2	2	0	0	0	12	275
18:00	0	160	19	0	3	1	0	1	4	0	0	0	0	9	197
19:00	2	124	10	1	0	0	0	1	1	0	0	0	0	3	142
20:00	0	69	12	0	0	0	0	0	3	0	0	0	0	1	85
21:00	5	61	4	1	0	1	0	0	3	0	0	0	0	0	75
22:00	1	62	4	0	2	0	0	2	1	0	0	0	0	2	74
23:00	1	25	2	0	0	0	0	2	0	0	0	0	0	0	30
Total	68	3724	469	22	88	60	2	26	70	7	0	0	0	113	4649
Percent	1.5%	80.1%	10.1%	0.5%	1.9%	1.3%	0.0%	0.6%	1.5%	0.2%	0.0%	0.0%	0.0%	2.4%	
AM Peak	07:00	07:00	07:00	10:00	11:00	08:00	08:00	07:00	04:00	02:00				07:00	
Vol.	10	501	60	4	11	8	1	2	6	1				11	
PM Peak	14:00	16:00	16:00	15:00	14:00	12:00	15:00	13:00	12:00	17:00				17:00	
Vol.	12	235	34	4	16	8	1	6	6	2				12	
Grand Total	131	7308	957	52	183	94	2	47	141	15	0	0	0	217	9147
Percent	1.4%	79.9%	10.5%	0.6%	2.0%	1.0%	0.0%	0.5%	1.5%	0.2%	0.0%	0.0%	0.0%	2.4%	

Montachusett Regional Planning Commission  
 1427R Water Street  
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Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

West

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	1	33	16	0	1	0	0	1	0	0	0	0	0	2	54
01:00	1	9	9	0	1	1	0	1	1	0	0	0	0	2	25
02:00	0	13	9	0	1	0	0	2	0	1	0	0	0	4	30
03:00	0	2	3	0	0	0	0	0	0	0	0	0	0	3	8
04:00	0	4	6	0	0	0	0	1	0	0	0	0	0	3	14
05:00	1	4	13	0	3	0	0	0	1	0	0	0	0	12	34
06:00	4	27	18	0	8	3	0	3	2	0	0	0	0	33	98
07:00	3	82	52	0	10	3	1	1	5	0	0	0	0	44	201
08:00	2	110	52	1	11	5	0	0	4	0	0	0	0	26	211
09:00	6	125	17	0	2	2	0	0	6	0	0	0	0	9	167
10:00	4	140	7	1	4	3	0	2	4	0	0	0	0	9	174
11:00	12	161	8	0	4	2	0	1	5	0	0	0	0	13	206
12 PM	2	155	1	1	9	0	0	2	5	0	0	0	0	8	183
13:00	13	146	5	0	7	3	0	1	4	0	0	0	0	7	186
14:00	7	211	8	1	5	2	0	0	2	2	0	0	0	12	250
15:00	11	336	16	0	4	1	0	1	4	0	0	0	0	18	391
16:00	12	392	18	0	7	0	0	2	5	0	0	0	0	18	454
17:00	11	483	29	1	2	1	0	0	3	1	0	0	0	17	548
18:00	8	314	36	0	3	0	0	0	1	0	0	0	0	19	381
19:00	2	193	40	0	0	1	0	0	1	0	0	0	0	13	250
20:00	1	116	31	0	0	0	0	1	0	0	0	0	0	12	161
21:00	1	89	43	0	0	0	0	0	0	0	0	0	0	12	145
22:00	1	47	28	0	4	0	0	1	2	0	0	0	0	4	87
23:00	0	41	18	0	1	0	0	0	0	0	0	0	0	4	64
Total	103	3233	483	5	87	27	1	20	55	4	0	0	0	304	4322
Percent	2.4%	74.8%	11.2%	0.1%	2.0%	0.6%	0.0%	0.5%	1.3%	0.1%	0.0%	0.0%	0.0%	7.0%	
AM Peak	11:00	11:00	07:00	08:00	08:00	08:00	07:00	06:00	09:00	02:00				07:00	
Vol.	12	161	52	1	11	5	1	3	6	1				44	
PM Peak	13:00	17:00	21:00	12:00	12:00	13:00		12:00	12:00	14:00				18:00	
Vol.	13	483	43	1	9	3		2	5	2				19	

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 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

West

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	25	15	0	2	0	0	2	0	0	0	0	0	11	56
01:00	1	8	10	1	3	1	0	0	1	0	0	0	0	0	25
02:00	1	9	9	0	2	1	0	0	0	0	0	0	0	7	29
03:00	1	1	2	0	1	1	0	0	1	0	0	0	0	2	9
04:00	1	4	6	0	2	1	0	0	2	0	0	0	0	5	21
05:00	1	5	15	1	1	3	0	1	0	0	0	0	0	7	34
06:00	3	32	30	0	16	5	0	3	2	0	0	0	0	35	126
07:00	4	102	42	1	5	0	0	0	4	2	0	0	0	38	198
08:00	4	134	28	0	9	2	0	1	4	1	0	0	0	33	216
09:00	1	160	4	0	2	3	3	1	6	0	0	0	0	14	194
10:00	7	146	11	0	1	5	0	1	4	0	0	0	0	14	189
11:00	10	164	5	0	3	5	0	0	7	0	0	0	0	16	210
12 PM	14	177	10	0	1	0	1	2	8	0	0	0	0	11	224
13:00	14	192	7	1	7	3	0	0	2	0	0	0	0	16	242
14:00	18	207	11	1	3	2	0	0	2	0	0	0	0	11	255
15:00	12	379	18	0	5	2	0	0	3	0	0	0	0	20	439
16:00	17	385	23	0	7	0	0	0	1	0	0	0	0	13	446
17:00	13	522	38	0	3	1	0	0	3	0	0	0	1	19	600
18:00	14	323	28	0	1	0	0	0	0	0	0	0	0	15	381
19:00	2	212	26	0	0	1	0	2	0	0	0	0	0	3	246
20:00	0	151	17	0	0	0	0	2	0	1	0	0	0	3	174
21:00	1	123	12	0	1	0	0	0	0	0	0	0	0	4	141
22:00	0	70	13	0	3	1	0	0	0	0	0	0	0	2	89
23:00	0	59	15	0	0	0	0	0	1	0	0	0	0	0	75
Total	140	3590	395	5	78	37	4	15	51	4	0	0	1	299	4619
Percent	3.0%	77.7%	8.6%	0.1%	1.7%	0.8%	0.1%	0.3%	1.1%	0.1%	0.0%	0.0%	0.0%	6.5%	
AM Peak	11:00	11:00	07:00	01:00	06:00	06:00	09:00	06:00	11:00	07:00					07:00
Vol.	10	164	42	1	16	5	3	3	7	2				38	
PM Peak	14:00	17:00	17:00	13:00	13:00	13:00	12:00	12:00	12:00	20:00			17:00	15:00	
Vol.	18	522	38	1	7	3	1	2	8	1			1	20	
Grand Total	243	6823	878	10	165	64	5	35	106	8	0	0	1	603	8941
Percent	2.7%	76.3%	9.8%	0.1%	1.8%	0.7%	0.1%	0.4%	1.2%	0.1%	0.0%	0.0%	0.0%	6.7%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East, West																
Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total	
9/21/10	1	44	18	0	2	0	0	1	1	0	0	0	0	2	69	
01:00	1	16	10	0	1	1	0	1	1	0	0	0	0	2	33	
02:00	0	22	10	1	3	0	0	2	3	1	0	0	0	5	47	
03:00	2	14	6	0	1	1	0	0	2	0	0	0	0	3	29	
04:00	2	53	21	1	1	0	0	1	6	0	0	0	0	5	90	
05:00	4	191	60	2	7	0	0	0	6	0	0	0	0	13	283	
06:00	9	364	75	0	14	3	0	3	6	2	0	0	0	40	516	
07:00	10	619	133	1	17	5	1	2	7	1	0	0	0	59	855	
08:00	6	435	91	2	18	7	0	1	14	0	0	0	0	34	608	
09:00	8	312	40	2	4	8	0	2	10	1	0	0	0	15	402	
10:00	5	317	31	4	12	5	0	3	13	0	0	0	0	13	403	
11:00	15	329	29	4	10	4	0	1	9	0	0	0	0	18	419	
12 PM	5	299	25	4	16	2	0	3	6	0	0	0	0	15	375	
13:00	19	305	27	6	18	7	0	4	7	0	0	0	0	13	406	
14:00	10	414	23	3	19	8	0	2	4	2	0	0	0	16	501	
15:00	17	527	32	2	8	2	0	1	8	2	0	0	0	32	631	
16:00	19	606	55	0	13	2	0	4	11	2	0	0	0	22	734	
17:00	13	674	47	2	4	3	0	0	5	1	0	0	0	25	774	
18:00	11	486	50	0	5	2	0	1	1	0	0	0	0	22	578	
19:00	4	299	49	0	1	1	0	1	3	0	0	0	0	14	372	
20:00	1	190	40	0	1	0	0	1	0	0	0	0	0	14	247	
21:00	2	143	46	1	2	0	0	1	1	0	0	0	0	13	209	
22:00	2	94	30	0	4	0	0	3	2	0	0	0	0	6	141	
23:00	0	64	23	0	1	0	0	3	0	0	0	0	0	7	98	
Total	166	6817	971	35	182	61	1	41	126	12	0	0	0	408	8820	
Percent	1.9%	77.3%	11.0%	0.4%	2.1%	0.7%	0.0%	0.5%	1.4%	0.1%	0.0%	0.0%	0.0%	4.6%		
AM Peak	11:00	07:00	07:00	10:00	08:00	09:00	07:00	06:00	08:00	06:00				07:00		
Vol.	15	619	133	4	18	8	1	3	14	2				59		
PM Peak	13:00	17:00	16:00	13:00	14:00	14:00		13:00	16:00	14:00				15:00		
Vol.	19	674	55	6	19	8		4	11	2				32		

Montachusett Regional Planning Commission  
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 Fitchburg, MA 01420  
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Community: Gardner  
 Street: Green Street  
 Location: N. of Matthews St  
 Function Class: U-5

Site Code: 10320101087  
 Station ID:  
 Counter#: 021173

East, West																
Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total	
9/22/10	1	32	18	0	2	0	0	2	0	0	0	0	0	11	66	
01:00	1	14	13	1	3	1	0	0	1	0	0	0	0	0	34	
02:00	1	14	10	0	2	1	0	0	0	1	0	0	0	7	36	
03:00	1	14	5	0	1	1	0	0	3	0	0	0	0	3	28	
04:00	2	65	14	1	3	1	0	1	8	0	0	0	0	8	103	
05:00	5	222	64	2	3	5	0	2	3	0	0	0	0	10	316	
06:00	7	406	77	0	19	6	0	4	8	0	0	0	0	37	564	
07:00	14	603	102	2	13	5	0	2	7	2	0	0	0	49	799	
08:00	7	458	72	1	17	10	1	3	10	1	0	0	0	41	621	
09:00	6	349	30	1	6	10	3	1	10	1	0	0	0	19	436	
10:00	8	310	33	4	10	6	0	1	9	0	0	0	0	21	402	
11:00	10	323	23	1	14	13	0	0	9	0	0	0	0	24	417	
12 PM	20	321	36	1	5	8	1	3	14	1	0	0	0	21	431	
13:00	16	381	25	2	12	9	0	6	3	1	0	0	0	22	477	
14:00	30	411	25	2	19	10	0	1	6	0	0	0	0	17	521	
15:00	17	583	33	4	13	5	1	3	6	1	0	0	0	29	695	
16:00	20	620	57	2	10	1	0	2	6	0	0	0	0	20	738	
17:00	16	749	65	1	4	1	0	0	5	2	0	0	1	31	875	
18:00	14	483	47	0	4	1	0	1	4	0	0	0	0	24	578	
19:00	4	336	36	1	0	1	0	3	1	0	0	0	0	6	388	
20:00	0	220	29	0	0	0	0	2	3	1	0	0	0	4	259	
21:00	6	184	16	1	1	1	0	0	3	0	0	0	0	4	216	
22:00	1	132	17	0	5	1	0	2	1	0	0	0	0	4	163	
23:00	1	84	17	0	0	0	0	2	1	0	0	0	0	0	105	
Total	208	7314	864	27	166	97	6	41	121	11	0	0	1	412	9268	
Percent	2.2%	78.9%	9.3%	0.3%	1.8%	1.0%	0.1%	0.4%	1.3%	0.1%	0.0%	0.0%	0.0%	4.4%		
AM Peak	07:00	07:00	07:00	10:00	06:00	11:00	09:00	06:00	08:00	07:00				07:00		
Vol.	14	603	102	4	19	13	3	4	10	2				49		
PM Peak	14:00	17:00	17:00	15:00	14:00	14:00	12:00	13:00	12:00	17:00			17:00	17:00		
Vol.	30	749	65	4	19	10	1	6	14	2			1	31		
Grand Total	374	14131	1835	62	348	158	7	82	247	23	0	0	1	820	18088	
Percent	2.1%	78.1%	10.1%	0.3%	1.9%	0.9%	0.0%	0.5%	1.4%	0.1%	0.0%	0.0%	0.0%	4.5%		

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Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	1	35	9	1	1	0	0	1	1	0	0	0	0	0	49
01:00	0	17	2	0	0	0	0	3	2	0	0	0	0	1	25
02:00	0	19	4	1	1	0	0	2	0	1	0	0	0	0	28
03:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
04:00	1	13	1	0	1	0	0	4	2	0	0	0	0	0	22
05:00	2	21	6	0	2	1	0	2	3	0	0	0	0	0	37
06:00	1	91	33	3	20	2	4	1	9	2	0	0	0	8	174
07:00	1	275	71	7	25	3	6	1	7	0	0	0	1	13	410
08:00	0	274	91	6	23	2	2	3	6	0	1	0	0	17	425
09:00	3	257	63	5	22	2	0	5	6	1	0	0	0	13	377
10:00	1	200	56	5	17	2	3	1	5	2	0	0	1	11	304
11:00	1	163	58	3	16	1	0	1	5	0	0	0	0	14	262
12 PM	0	163	53	6	16	0	0	4	7	1	0	0	0	8	258
13:00	2	156	65	7	13	1	1	2	4	1	0	0	0	5	257
14:00	5	196	75	5	26	3	0	3	3	2	0	0	1	9	328
15:00	3	308	113	5	33	1	0	5	6	0	0	0	1	11	486
16:00	1	330	133	3	43	0	0	5	5	1	0	0	0	24	545
17:00	9	445	119	2	39	2	0	9	4	3	0	0	0	20	652
18:00	3	269	80	1	25	0	0	9	1	0	0	0	0	8	396
19:00	1	189	49	1	3	0	0	3	0	0	0	0	0	4	250
20:00	0	129	30	0	12	0	0	2	0	0	0	0	0	1	174
21:00	0	112	27	0	5	1	0	1	0	0	0	0	0	2	148
22:00	1	69	12	0	6	0	0	1	2	0	0	0	0	0	91
23:00	2	43	18	0	8	0	0	0	0	0	0	0	0	0	71
Total	38	3777	1169	61	358	21	16	68	78	14	1	0	4	169	5774
Percent	0.7%	65.4%	20.2%	1.1%	6.2%	0.4%	0.3%	1.2%	1.4%	0.2%	0.0%	0.0%	0.1%	2.9%	
AM Peak	09:00	07:00	08:00	07:00	07:00	07:00	07:00	09:00	06:00	06:00	08:00		07:00	08:00	
Vol.	3	275	91	7	25	3	6	5	9	2	1		1	17	
PM Peak	17:00	17:00	16:00	13:00	16:00	14:00	13:00	17:00	12:00	17:00			14:00	16:00	
Vol.	9	445	133	7	43	3	1	9	7	3			1	24	

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Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	34	17	1	0	0	0	2	0	0	0	0	0	0	55
01:00	0	15	2	3	1	0	0	2	1	0	0	0	0	0	24
02:00	0	16	5	0	1	1	0	0	0	1	0	0	0	1	25
03:00	0	4	1	0	0	1	0	1	2	0	0	0	0	0	9
04:00	0	12	4	1	1	0	0	2	4	0	0	0	0	1	25
05:00	0	20	9	2	3	2	1	2	3	0	0	0	0	2	44
06:00	1	91	39	8	19	2	4	4	10	2	0	0	1	5	186
07:00	1	300	64	5	22	2	6	4	4	2	0	0	1	21	432
08:00	2	276	84	4	29	3	0	3	8	1	0	0	0	13	423
09:00	4	288	86	8	13	2	6	2	6	0	0	0	1	7	423
10:00	2	215	63	5	19	2	5	2	4	0	0	0	1	11	329
11:00	3	151	61	7	19	2	0	0	10	1	0	0	0	8	262
12 PM	6	183	67	1	22	1	6	3	6	1	0	0	0	10	306
13:00	7	190	60	4	22	1	2	4	8	0	0	0	0	4	302
14:00	5	228	62	4	18	2	4	1	7	1	0	0	0	4	336
15:00	4	307	111	7	23	2	0	4	7	1	1	0	0	26	493
16:00	9	298	113	3	33	2	0	11	1	0	0	0	0	9	479
17:00	8	487	135	4	34	1	0	5	1	0	0	0	4	35	714
18:00	1	265	80	1	27	2	0	4	0	0	1	0	0	14	395
19:00	2	208	39	0	13	0	0	2	0	0	0	0	0	5	269
20:00	0	122	29	0	13	0	0	1	1	1	0	0	0	8	175
21:00	1	105	30	0	6	0	0	0	1	0	0	0	0	0	143
22:00	0	59	20	3	3	0	0	1	0	0	0	0	0	0	86
23:00	0	59	19	1	4	0	0	0	0	0	0	0	0	0	83
Total	57	3933	1200	72	345	28	34	60	84	11	2	0	8	184	6018
Percent	0.9%	65.4%	19.9%	1.2%	5.7%	0.5%	0.6%	1.0%	1.4%	0.2%	0.0%	0.0%	0.1%	3.1%	
AM Peak	09:00	07:00	09:00	06:00	08:00	08:00	07:00	06:00	06:00	06:00			06:00	07:00	
Vol.	4	300	86	8	29	3	6	4	10	2			1	21	
PM Peak	16:00	17:00	17:00	15:00	17:00	14:00	12:00	16:00	13:00	12:00	15:00		17:00	17:00	
Vol.	9	487	135	7	34	2	6	11	8	1	1		4	35	
Grand Total	95	7710	2369	133	703	49	50	128	162	25	3	0	12	353	11792
Percent	0.8%	65.4%	20.1%	1.1%	6.0%	0.4%	0.4%	1.1%	1.4%	0.2%	0.0%	0.0%	0.1%	3.0%	

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 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	13	2	0	2	0	0	0	1	0	0	0	0	0	18
01:00	0	8	1	0	0	0	0	0	0	0	0	0	0	1	10
02:00	1	8	1	0	0	0	0	0	4	1	0	0	0	0	15
03:00	1	14	3	0	1	0	0	0	3	1	0	0	0	0	23
04:00	3	44	18	1	2	0	0	0	6	0	0	0	0	0	74
05:00	4	167	75	2	8	0	0	1	6	0	0	0	0	1	264
06:00	7	315	98	0	12	0	0	1	5	3	0	0	0	6	447
07:00	7	494	137	0	17	1	0	4	6	0	0	0	0	28	694
08:00	4	331	50	1	10	2	0	5	9	0	0	0	0	21	433
09:00	1	230	38	3	6	3	0	2	6	1	0	0	0	9	299
10:00	3	206	47	2	10	6	0	1	8	0	0	0	0	12	295
11:00	4	369	49	10	18	4	0	2	12	1	0	0	0	12	481
12 PM	1	325	44	5	8	0	0	3	4	0	0	0	0	12	402
13:00	4	244	48	10	12	5	0	3	6	0	0	0	0	9	341
14:00	3	274	42	4	14	4	0	4	3	2	0	0	0	9	359
15:00	5	363	52	2	9	1	0	1	5	3	0	0	0	17	458
16:00	2	297	65	1	11	2	0	3	7	0	0	1	0	16	405
17:00	1	228	42	3	8	2	0	0	0	0	0	0	0	19	303
18:00	2	231	39	3	7	1	0	1	0	0	0	0	0	7	291
19:00	2	151	17	1	2	0	0	1	2	0	0	0	0	3	179
20:00	1	145	24	1	2	0	0	0	0	0	0	0	0	3	176
21:00	2	80	8	0	1	0	0	0	2	0	0	0	0	4	97
22:00	1	62	7	0	1	0	0	4	0	0	0	0	0	0	75
23:00	1	24	6	0	3	0	0	3	0	0	0	0	0	1	38
Total	60	4623	913	49	164	31	0	39	95	12	0	1	0	190	6177
Percent	1.0%	74.8%	14.8%	0.8%	2.7%	0.5%	0.0%	0.6%	1.5%	0.2%	0.0%	0.0%	0.0%	3.1%	
AM Peak	06:00	07:00	07:00	11:00	11:00	10:00		08:00	11:00	06:00				07:00	
Vol.	7	494	137	10	18	6		5	12	3				28	
PM Peak	15:00	15:00	16:00	13:00	14:00	13:00		14:00	16:00	15:00		16:00		17:00	
Vol.	5	363	65	10	14	5		4	7	3		1		19	

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 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	0	10	5	0	1	0	0	0	0	0	0	0	0	0	16
01:00	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
02:00	0	4	1	0	1	0	0	0	0	0	0	0	0	0	6
03:00	0	17	2	0	0	0	0	0	3	0	0	0	0	0	22
04:00	1	51	22	1	2	0	0	0	7	0	0	0	0	0	84
05:00	5	182	76	3	8	0	0	3	4	0	0	0	0	1	282
06:00	4	336	109	1	16	1	0	2	5	1	0	0	0	5	480
07:00	8	474	108	1	17	2	0	1	4	1	0	1	0	19	636
08:00	1	318	63	4	12	6	1	5	9	0	0	0	0	13	432
09:00	2	209	49	2	4	5	0	1	6	1	0	0	0	13	292
10:00	1	219	48	4	10	1	0	1	6	0	0	0	1	6	297
11:00	2	240	45	6	12	8	0	0	3	0	0	0	0	10	326
12 PM	7	305	57	3	7	5	1	2	8	1	0	0	0	12	408
13:00	2	249	44	4	9	8	1	8	1	1	0	0	0	7	334
14:00	5	270	50	5	15	4	0	5	7	0	0	0	0	6	367
15:00	6	342	45	3	9	5	1	6	5	2	0	0	0	22	446
16:00	3	286	56	1	11	1	0	3	4	1	0	0	0	10	376
17:00	2	258	43	4	6	1	0	1	2	1	0	0	0	31	349
18:00	3	190	33	2	3	1	0	1	4	0	1	0	0	11	249
19:00	1	144	18	1	4	0	0	1	2	0	0	0	0	3	174
20:00	1	152	21	0	1	1	0	0	3	0	0	0	0	6	185
21:00	3	91	6	1	3	0	0	0	4	0	0	0	0	1	109
22:00	2	79	15	0	3	0	0	4	0	0	0	0	0	2	105
23:00	0	34	3	0	0	0	0	3	0	0	0	0	0	0	40
Total	59	4467	920	46	155	49	4	47	87	9	1	1	1	178	6024
Percent	1.0%	74.2%	15.3%	0.8%	2.6%	0.8%	0.1%	0.8%	1.4%	0.1%	0.0%	0.0%	0.0%	3.0%	
AM Peak	07:00	07:00	06:00	11:00	07:00	11:00	08:00	08:00	08:00	06:00		07:00	10:00	07:00	
Vol.	8	474	109	6	17	8	1	5	9	1		1	1	19	
PM Peak	12:00	15:00	12:00	14:00	14:00	13:00	12:00	13:00	12:00	15:00	18:00			17:00	
Vol.	7	342	57	5	15	8	1	8	8	2	1			31	
Grand Total	119	9090	1833	95	319	80	4	86	182	21	1	2	1	368	12201
Percent	1.0%	74.5%	15.0%	0.8%	2.6%	0.7%	0.0%	0.7%	1.5%	0.2%	0.0%	0.0%	0.0%	3.0%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Green Street  
 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North, South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	1	48	11	1	3	0	0	1	2	0	0	0	0	0	67
01:00	0	25	3	0	0	0	0	3	2	0	0	0	0	2	35
02:00	1	27	5	1	1	0	0	2	4	2	0	0	0	0	43
03:00	1	17	4	0	2	0	0	0	3	1	0	0	0	0	28
04:00	4	57	19	1	3	0	0	4	8	0	0	0	0	0	96
05:00	6	188	81	2	10	1	0	3	9	0	0	0	0	1	301
06:00	8	406	131	3	32	2	4	2	14	5	0	0	0	14	621
07:00	8	769	208	7	42	4	6	5	13	0	0	0	1	41	1104
08:00	4	605	141	7	33	4	2	8	15	0	1	0	0	38	858
09:00	4	487	101	8	28	5	0	7	12	2	0	0	0	22	676
10:00	4	406	103	7	27	8	3	2	13	2	0	0	1	23	599
11:00	5	532	107	13	34	5	0	3	17	1	0	0	0	26	743
12 PM	1	488	97	11	24	0	0	7	11	1	0	0	0	20	660
13:00	6	400	113	17	25	6	1	5	10	1	0	0	0	14	598
14:00	8	470	117	9	40	7	0	7	6	4	0	0	1	18	687
15:00	8	671	165	7	42	2	0	6	11	3	0	0	1	28	944
16:00	3	627	198	4	54	2	0	8	12	1	0	1	0	40	950
17:00	10	673	161	5	47	4	0	9	4	3	0	0	0	39	955
18:00	5	500	119	4	32	1	0	10	1	0	0	0	0	15	687
19:00	3	340	66	2	5	0	0	4	2	0	0	0	0	7	429
20:00	1	274	54	1	14	0	0	2	0	0	0	0	0	4	350
21:00	2	192	35	0	6	1	0	1	2	0	0	0	0	6	245
22:00	2	131	19	0	7	0	0	5	2	0	0	0	0	0	166
23:00	3	67	24	0	11	0	0	3	0	0	0	0	0	1	109
Total	98	8400	2082	110	522	52	16	107	173	26	1	1	4	359	11951
Percent	0.8%	70.3%	17.4%	0.9%	4.4%	0.4%	0.1%	0.9%	1.4%	0.2%	0.0%	0.0%	0.0%	3.0%	
AM Peak	06:00	07:00	07:00	11:00	07:00	10:00	07:00	08:00	11:00	06:00	08:00		07:00	07:00	
Vol.	8	769	208	13	42	8	6	8	17	5	1		1	41	
PM Peak	17:00	17:00	16:00	13:00	16:00	14:00	13:00	18:00	16:00	14:00		16:00	14:00	16:00	
Vol.	10	673	198	17	54	7	1	10	12	4		1	1	40	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
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 Location: N. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010382  
 Station ID:  
 Counter#: 021172

North, South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	44	22	1	1	0	0	2	0	0	0	0	0	0	71
01:00	0	22	3	3	2	0	0	2	1	0	0	0	0	0	33
02:00	0	20	6	0	2	1	0	0	0	1	0	0	0	1	31
03:00	0	21	3	0	0	1	0	1	5	0	0	0	0	0	31
04:00	1	63	26	2	3	0	0	2	11	0	0	0	0	1	109
05:00	5	202	85	5	11	2	1	5	7	0	0	0	0	3	326
06:00	5	427	148	9	35	3	4	6	15	3	0	0	1	10	666
07:00	9	774	172	6	39	4	6	5	8	3	0	1	1	40	1068
08:00	3	594	147	8	41	9	1	8	17	1	0	0	0	26	855
09:00	6	497	135	10	17	7	6	3	12	1	0	0	1	20	715
10:00	3	434	111	9	29	3	5	3	10	0	0	0	2	17	626
11:00	5	391	106	13	31	10	0	0	13	1	0	0	0	18	588
12 PM	13	488	124	4	29	6	7	5	14	2	0	0	0	22	714
13:00	9	439	104	8	31	9	3	12	9	1	0	0	0	11	636
14:00	10	498	112	9	33	6	4	6	14	1	0	0	0	10	703
15:00	10	649	156	10	32	7	1	10	12	3	1	0	0	48	939
16:00	12	584	169	4	44	3	0	14	5	1	0	0	0	19	855
17:00	10	745	178	8	40	2	0	6	3	1	0	0	4	66	1063
18:00	4	455	113	3	30	3	0	5	4	0	2	0	0	25	644
19:00	3	352	57	1	17	0	0	3	2	0	0	0	0	8	443
20:00	1	274	50	0	14	1	0	1	4	1	0	0	0	14	360
21:00	4	196	36	1	9	0	0	0	5	0	0	0	0	1	252
22:00	2	138	35	3	6	0	0	5	0	0	0	0	0	2	191
23:00	0	93	22	1	4	0	0	3	0	0	0	0	0	0	123
Total	116	8400	2120	118	500	77	38	107	171	20	3	1	9	362	12042
Percent	1.0%	69.8%	17.6%	1.0%	4.2%	0.6%	0.3%	0.9%	1.4%	0.2%	0.0%	0.0%	0.1%	3.0%	
AM Peak	07:00	07:00	07:00	11:00	08:00	11:00	07:00	08:00	08:00	06:00		07:00	10:00	07:00	
Vol.	9	774	172	13	41	10	6	8	17	3		1	2	40	
PM Peak	12:00	17:00	17:00	15:00	16:00	13:00	12:00	16:00	12:00	15:00	18:00		17:00	17:00	
Vol.	13	745	178	10	44	9	7	14	14	3	2		4	66	
Grand Total	214	16800	4202	228	1022	129	54	214	344	46	4	2	13	721	23993
Percent	0.9%	70.0%	17.5%	1.0%	4.3%	0.5%	0.2%	0.9%	1.4%	0.2%	0.0%	0.0%	0.1%	3.0%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	2	66	1	1	0	0	0	0	0	0	0	0	0	1	71
01:00	1	24	0	0	1	0	0	0	1	0	0	0	0	1	28
02:00	0	29	3	1	0	0	0	2	1	1	0	0	0	1	38
03:00	1	11	1	0	0	0	0	0	0	0	0	0	1	1	15
04:00	0	11	0	0	0	0	0	2	1	1	0	0	0	3	18
05:00	2	24	5	0	0	1	0	3	2	0	0	0	0	5	42
06:00	3	105	13	0	5	6	1	0	5	0	0	0	0	13	151
07:00	9	347	24	2	6	3	2	1	8	0	0	0	0	17	419
08:00	6	381	15	3	15	5	1	1	6	0	0	0	0	22	455
09:00	7	306	17	0	6	2	0	2	4	1	0	0	0	8	353
10:00	5	261	25	1	10	5	0	0	8	1	0	0	0	9	325
11:00	6	219	14	1	3	2	0	0	5	0	0	0	0	14	264
12 PM	4	247	14	0	9	3	0	1	3	0	0	0	0	15	296
13:00	3	249	14	1	8	6	0	2	5	3	0	0	0	10	301
14:00	5	303	26	2	8	1	0	2	3	2	0	0	0	15	367
15:00	11	435	27	1	15	3	0	5	6	0	0	0	0	17	520
16:00	7	546	31	0	13	4	0	2	5	0	0	0	0	16	624
17:00	15	682	24	2	8	2	0	1	3	0	0	0	0	18	755
18:00	15	428	28	0	2	0	0	0	0	0	0	0	0	15	488
19:00	2	295	5	1	1	1	0	1	2	0	0	0	0	5	313
20:00	6	188	9	0	0	0	0	0	0	1	0	0	0	5	209
21:00	3	162	5	0	0	0	0	0	0	0	0	0	0	3	173
22:00	2	101	5	0	1	0	0	1	2	0	0	0	0	0	112
23:00	4	80	1	0	1	0	0	0	0	0	0	0	0	0	86
Total	119	5500	307	16	112	44	4	26	70	10	0	0	1	214	6423
Percent	1.9%	85.6%	4.8%	0.2%	1.7%	0.7%	0.1%	0.4%	1.1%	0.2%	0.0%	0.0%	0.0%	3.3%	
AM Peak	07:00	08:00	10:00	08:00	08:00	06:00	07:00	05:00	07:00	02:00			03:00	08:00	
Vol.	9	381	25	3	15	6	2	3	8	1			1	22	
PM Peak	17:00	17:00	16:00	14:00	15:00	13:00		15:00	15:00	13:00				17:00	
Vol.	15	682	31	2	15	6		5	6	3				18	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	66	2	0	1	0	0	2	0	0	0	0	0	0	72
01:00	1	23	1	0	2	1	0	0	1	0	0	0	0	0	29
02:00	0	24	2	1	0	0	0	2	0	1	0	0	0	1	31
03:00	1	6	0	0	0	0	0	1	2	1	0	0	0	1	12
04:00	1	15	1	0	1	0	0	1	2	0	0	0	0	2	23
05:00	1	25	4	0	1	3	0	0	4	0	0	0	0	2	40
06:00	3	112	16	2	7	6	2	2	7	0	0	0	0	9	166
07:00	8	365	19	1	6	3	4	2	3	2	0	0	0	27	440
08:00	5	364	15	5	18	3	0	3	6	2	0	0	0	19	440
09:00	10	338	12	0	3	7	3	0	6	0	0	0	0	23	402
10:00	10	278	14	0	5	6	2	2	5	0	0	0	0	15	337
11:00	5	225	8	2	5	5	0	1	11	1	0	0	0	13	276
12 PM	11	265	23	0	4	6	2	1	4	1	0	0	0	20	337
13:00	11	272	17	0	6	7	0	2	5	0	0	0	0	13	333
14:00	9	317	22	1	3	7	1	1	4	0	0	0	0	9	374
15:00	8	473	11	3	11	5	2	1	4	0	0	0	0	25	543
16:00	13	504	28	3	6	1	0	1	0	0	0	0	0	18	574
17:00	15	689	32	0	5	4	0	3	3	0	0	0	3	22	776
18:00	15	449	19	0	1	1	0	0	1	0	0	0	0	11	497
19:00	9	289	15	0	1	1	0	2	0	0	0	0	0	7	324
20:00	1	207	8	0	0	1	0	1	0	1	0	0	0	2	221
21:00	1	161	6	0	1	0	0	0	0	0	0	0	0	3	172
22:00	2	108	2	1	2	1	0	1	0	0	0	0	0	1	118
23:00	5	84	2	0	0	0	0	1	0	0	0	0	0	1	93
Total	146	5659	279	19	89	68	16	30	68	9	0	0	3	244	6630
Percent	2.2%	85.4%	4.2%	0.3%	1.3%	1.0%	0.2%	0.5%	1.0%	0.1%	0.0%	0.0%	0.0%	3.7%	
AM Peak	09:00	07:00	07:00	08:00	08:00	09:00	07:00	08:00	11:00	07:00					
Vol.	10	365	19	5	18	7	4	3	11	2				27	
PM Peak	17:00	17:00	17:00	15:00	15:00	13:00	12:00	17:00	13:00	12:00			17:00	15:00	
Vol.	15	689	32	3	11	7	2	3	5	1			3	25	
Grand Total	265	11159	586	35	201	112	20	56	138	19	0	0	4	458	13053
Percent	2.0%	85.5%	4.5%	0.3%	1.5%	0.9%	0.2%	0.4%	1.1%	0.1%	0.0%	0.0%	0.0%	3.5%	

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South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	0	14	3	0	0	0	0	0	1	0	0	0	0	1	19
01:00	0	12	0	0	0	0	0	0	0	0	0	0	0	1	13
02:00	0	9	0	0	0	0	0	0	4	1	0	0	0	1	15
03:00	1	14	1	1	1	0	0	0	1	0	0	0	0	1	20
04:00	2	51	8	1	4	3	0	0	4	0	0	0	0	8	81
05:00	5	240	11	0	4	1	0	1	5	0	0	0	0	19	286
06:00	8	436	31	0	12	4	0	2	6	1	0	0	0	40	540
07:00	5	610	21	1	4	2	0	0	7	0	0	0	0	68	718
08:00	9	431	22	0	2	4	0	1	11	0	0	0	0	49	529
09:00	8	296	13	0	6	3	0	1	8	0	0	0	0	20	355
10:00	6	260	9	1	7	2	0	1	9	0	0	0	0	12	307
11:00	14	389	12	2	19	6	0	1	11	0	0	0	0	17	471
12 PM	7	359	11	0	7	3	0	0	0	0	0	0	0	16	403
13:00	9	304	10	0	11	3	0	1	8	0	0	0	0	13	359
14:00	16	336	10	0	13	7	0	1	4	1	0	0	0	12	400
15:00	19	403	4	1	4	3	0	0	3	1	0	0	0	21	459
16:00	14	394	9	0	5	5	0	0	4	1	0	0	0	21	453
17:00	11	309	4	1	1	3	0	0	1	0	0	0	0	27	357
18:00	3	242	7	0	2	2	0	0	0	0	0	0	0	27	283
19:00	2	168	8	0	3	0	0	1	2	0	0	0	0	11	195
20:00	0	140	10	0	1	0	0	0	1	0	0	0	0	12	164
21:00	1	95	4	0	0	0	0	0	1	0	0	0	0	15	116
22:00	3	62	5	0	0	0	0	1	0	0	0	0	0	12	83
23:00	1	21	5	0	0	0	0	3	0	0	0	0	0	9	39
Total	144	5595	218	8	106	51	0	14	91	5	0	0	0	433	6665
Percent	2.2%	83.9%	3.3%	0.1%	1.6%	0.8%	0.0%	0.2%	1.4%	0.1%	0.0%	0.0%	0.0%	6.5%	
AM Peak	11:00	07:00	06:00	11:00	11:00	11:00		06:00	08:00	02:00				07:00	
Vol.	14	610	31	2	19	6		2	11	1				68	
PM Peak	15:00	15:00	12:00	15:00	14:00	14:00		23:00	13:00	14:00				17:00	
Vol.	19	403	11	1	13	7		3	8	1				27	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	0	14	1	0	0	0	0	0	0	0	0	0	0	1	16
01:00	0	11	1	0	0	0	0	0	0	0	0	0	0	2	14
02:00	0	5	1	0	1	0	0	0	0	0	0	0	0	3	10
03:00	1	14	1	0	0	1	0	0	2	0	0	0	0	1	20
04:00	4	54	7	2	6	0	0	2	4	0	0	0	0	8	87
05:00	3	263	23	0	2	2	0	0	3	0	0	0	0	23	319
06:00	5	452	22	0	15	4	0	2	5	0	0	0	0	49	554
07:00	9	581	26	1	5	3	0	1	6	1	0	0	0	55	688
08:00	6	458	14	0	5	10	1	1	5	0	0	0	0	32	532
09:00	3	291	10	0	2	6	0	2	5	0	0	0	0	21	340
10:00	4	249	5	0	6	4	0	0	5	0	0	0	0	13	286
11:00	12	291	8	0	7	9	0	0	3	0	0	0	0	18	348
12 PM	20	359	8	1	8	6	0	2	6	0	0	0	0	18	428
13:00	27	297	1	0	5	2	0	0	3	1	0	0	0	18	354
14:00	31	315	6	0	13	7	0	0	4	0	0	0	0	19	395
15:00	25	361	10	0	6	3	0	2	2	0	0	0	0	18	427
16:00	22	362	5	0	2	4	1	0	4	1	0	0	0	24	425
17:00	9	321	3	0	3	1	1	0	0	2	0	0	0	26	366
18:00	8	244	8	1	4	1	0	0	4	0	0	0	0	15	285
19:00	7	168	6	0	1	0	0	0	1	0	0	0	0	9	192
20:00	4	153	3	0	1	1	0	0	3	0	0	0	0	12	177
21:00	5	102	5	0	2	0	0	0	4	0	0	0	0	1	119
22:00	3	99	4	0	1	0	0	0	1	0	0	0	0	8	116
23:00	2	49	1	0	0	0	0	0	0	0	0	0	0	1	53
Total	210	5513	179	5	95	64	3	12	70	5	0	0	0	395	6551
Percent	3.2%	84.2%	2.7%	0.1%	1.5%	1.0%	0.0%	0.2%	1.1%	0.1%	0.0%	0.0%	0.0%	6.0%	
AM Peak	11:00	07:00	07:00	04:00	06:00	08:00	08:00	04:00	07:00	07:00				07:00	
Vol.	12	581	26	2	15	10	1	2	6	1				55	
PM Peak	14:00	16:00	15:00	12:00	14:00	14:00	16:00	12:00	12:00	17:00				17:00	
Vol.	31	362	10	1	13	7	1	2	6	2				26	
Grand Total	354	11108	397	13	201	115	3	26	161	10	0	0	0	828	13216
Percent	2.7%	84.0%	3.0%	0.1%	1.5%	0.9%	0.0%	0.2%	1.2%	0.1%	0.0%	0.0%	0.0%	6.3%	

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community: Gardner  
 Street: Rt. 140 (Bypass)  
 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North, South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/21/10	2	80	4	1	0	0	0	0	1	0	0	0	0	2	90
01:00	1	36	0	0	1	0	0	0	1	0	0	0	0	2	41
02:00	0	38	3	1	0	0	0	2	5	2	0	0	0	2	53
03:00	2	25	2	1	1	0	0	0	1	0	0	0	1	2	35
04:00	2	62	8	1	4	3	0	2	5	1	0	0	0	11	99
05:00	7	264	16	0	4	2	0	4	7	0	0	0	0	24	328
06:00	11	541	44	0	17	10	1	2	11	1	0	0	0	53	691
07:00	14	957	45	3	10	5	2	1	15	0	0	0	0	85	1137
08:00	15	812	37	3	17	9	1	2	17	0	0	0	0	71	984
09:00	15	602	30	0	12	5	0	3	12	1	0	0	0	28	708
10:00	11	521	34	2	17	7	0	1	17	1	0	0	0	21	632
11:00	20	608	26	3	22	8	0	1	16	0	0	0	0	31	735
12 PM	11	606	25	0	16	6	0	1	3	0	0	0	0	31	699
13:00	12	553	24	1	19	9	0	3	13	3	0	0	0	23	660
14:00	21	639	36	2	21	8	0	3	7	3	0	0	0	27	767
15:00	30	838	31	2	19	6	0	5	9	1	0	0	0	38	979
16:00	21	940	40	0	18	9	0	2	9	1	0	0	0	37	1077
17:00	26	991	28	3	9	5	0	1	4	0	0	0	0	45	1112
18:00	18	670	35	0	4	2	0	0	0	0	0	0	0	42	771
19:00	4	463	13	1	4	1	0	2	4	0	0	0	0	16	508
20:00	6	328	19	0	1	0	0	0	1	1	0	0	0	17	373
21:00	4	257	9	0	0	0	0	0	1	0	0	0	0	18	289
22:00	5	163	10	0	1	0	0	2	2	0	0	0	0	12	195
23:00	5	101	6	0	1	0	0	3	0	0	0	0	0	9	125
Total	263	11095	525	24	218	95	4	40	161	15	0	0	1	647	13088
Percent	2.0%	84.8%	4.0%	0.2%	1.7%	0.7%	0.0%	0.3%	1.2%	0.1%	0.0%	0.0%	0.0%	4.9%	
AM Peak	11:00	07:00	07:00	07:00	11:00	06:00	07:00	05:00	08:00	02:00			03:00	07:00	
Vol.	20	957	45	3	22	10	2	4	17	2			1	85	
PM Peak	15:00	17:00	16:00	17:00	14:00	13:00		15:00	13:00	13:00				17:00	
Vol.	30	991	40	3	21	9		5	13	3				45	

Montachusett Regional Planning Commission  
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 Location: S.E. of Pearl St. (Rt. 101)  
 Function Class: U-2

Site Code: 1032010418  
 Station ID:  
 Counter#: 18132

North, South

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/22/10	1	80	3	0	1	0	0	2	0	0	0	0	0	1	88
01:00	1	34	2	0	2	1	0	0	1	0	0	0	0	2	43
02:00	0	29	3	1	1	0	0	2	0	1	0	0	0	4	41
03:00	2	20	1	0	0	1	0	1	4	1	0	0	0	2	32
04:00	5	69	8	2	7	0	0	3	6	0	0	0	0	10	110
05:00	4	288	27	0	3	5	0	0	7	0	0	0	0	25	359
06:00	8	564	38	2	22	10	2	4	12	0	0	0	0	58	720
07:00	17	946	45	2	11	6	4	3	9	3	0	0	0	82	1128
08:00	11	822	29	5	23	13	1	4	11	2	0	0	0	51	972
09:00	13	629	22	0	5	13	3	2	11	0	0	0	0	44	742
10:00	14	527	19	0	11	10	2	2	10	0	0	0	0	28	623
11:00	17	516	16	2	12	14	0	1	14	1	0	0	0	31	624
12 PM	31	624	31	1	12	12	2	3	10	1	0	0	0	38	765
13:00	38	569	18	0	11	9	0	2	8	1	0	0	0	31	687
14:00	40	632	28	1	16	14	1	1	8	0	0	0	0	28	769
15:00	33	834	21	3	17	8	2	3	6	0	0	0	0	43	970
16:00	35	866	33	3	8	5	1	1	4	1	0	0	0	42	999
17:00	24	1010	35	0	8	5	1	3	3	2	0	0	3	48	1142
18:00	23	693	27	1	5	2	0	0	5	0	0	0	0	26	782
19:00	16	457	21	0	2	1	0	2	1	0	0	0	0	16	516
20:00	5	360	11	0	1	2	0	1	3	1	0	0	0	14	398
21:00	6	263	11	0	3	0	0	0	4	0	0	0	0	4	291
22:00	5	207	6	1	3	1	0	1	1	0	0	0	0	9	234
23:00	7	133	3	0	0	0	0	1	0	0	0	0	0	2	146
Total	356	11172	458	24	184	132	19	42	138	14	0	0	3	639	13181
Percent	2.7%	84.8%	3.5%	0.2%	1.4%	1.0%	0.1%	0.3%	1.0%	0.1%	0.0%	0.0%	0.0%	4.8%	
AM Peak	07:00	07:00	07:00	08:00	08:00	11:00	07:00	06:00	11:00	07:00				07:00	
Vol.	17	946	45	5	23	14	4	4	14	3				82	
PM Peak	14:00	17:00	17:00	15:00	15:00	14:00	12:00	12:00	12:00	17:00			17:00	17:00	
Vol.	40	1010	35	3	17	14	2	3	10	2			3	48	
Grand Total	619	22267	983	48	402	227	23	82	299	29	0	0	4	1286	26269
Percent	2.4%	84.8%	3.7%	0.2%	1.5%	0.9%	0.1%	0.3%	1.1%	0.1%	0.0%	0.0%	0.0%	4.9%	

**Montachusett Regional Planning Commission**  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: [mrpc@mrpc.org](mailto:mrpc@mrpc.org)

Community:Westminster  
 Street:West Main Street  
 Location:W. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104234  
 Station ID:  
 Counter#:018131

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
7/22/10	1	65	6	2	0	0	0	0	0	0	0	0	0	1	75
01:00	1	46	5	0	0	0	0	2	3	0	0	0	0	0	57
02:00	0	18	6	0	1	0	0	3	0	0	0	0	0	0	28
03:00	1	14	3	0	1	0	0	0	2	0	0	0	0	0	21
04:00	0	18	3	0	0	0	0	2	2	1	0	0	0	2	28
05:00	0	51	11	1	4	1	0	4	6	2	0	0	0	2	82
06:00	5	177	43	2	6	2	0	3	9	1	0	0	0	11	259
07:00	1	256	63	3	7	2	0	7	3	2	0	0	0	15	359
08:00	2	256	39	0	10	4	1	4	10	2	0	0	0	11	339
09:00	5	227	54	2	11	8	1	1	11	1	0	0	0	3	324
10:00	5	284	49	2	9	5	2	3	9	3	0	0	0	7	378
11:00	5	275	53	4	10	6	0	3	7	1	0	0	1	11	376
12 PM	10	343	57	2	12	6	2	12	14	0	0	0	0	21	479
13:00	5	351	45	1	6	4	1	3	11	1	0	0	1	16	445
14:00	11	389	62	1	1	3	0	6	6	0	0	1	0	16	496
15:00	11	445	67	1	8	3	1	5	1	1	0	0	0	24	567
16:00	15	585	90	1	10	7	1	3	3	0	0	0	0	33	748
17:00	17	670	74	1	10	4	0	4	3	0	1	0	0	42	826
18:00	20	532	57	2	6	1	0	4	0	0	0	0	0	22	644
19:00	4	360	44	0	1	2	0	3	2	1	0	0	0	8	425
20:00	4	279	33	0	3	0	0	2	0	0	0	0	0	14	335
21:00	4	242	17	0	0	0	0	0	3	0	0	0	0	1	267
22:00	2	194	16	0	0	0	1	0	1	0	0	0	0	3	217
23:00	2	113	11	0	1	1	0	1	0	0	0	0	0	1	130
Total	131	6190	908	25	117	59	10	75	106	16	1	1	2	264	7905
Percent	1.7%	78.3%	11.5%	0.3%	1.5%	0.7%	0.1%	0.9%	1.3%	0.2%	0.0%	0.0%	0.0%	3.3%	
AM Peak	06:00	10:00	07:00	11:00	09:00	09:00	10:00	07:00	09:00	10:00			11:00	07:00	
Vol.	5	284	63	4	11	8	2	7	11	3			1	15	
PM Peak	18:00	17:00	16:00	12:00	12:00	16:00	12:00	12:00	12:00	13:00	17:00	14:00	13:00	17:00	
Vol.	20	670	90	2	12	7	2	12	14	1	1	1	1	42	
Grand Total	131	6190	908	25	117	59	10	75	106	16	1	1	2	264	7905
Percent	1.7%	78.3%	11.5%	0.3%	1.5%	0.7%	0.1%	0.9%	1.3%	0.2%	0.0%	0.0%	0.0%	3.3%	

**Montachusett Regional Planning Commission**  
 1427R Water Street  
 Fitchburg, MA 01420  
**Tel: (978) 345-7376 Email: mrpc@mrpc.org**

Community:Westminster  
 Street:West Main Street  
 Location:W. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104234  
 Station ID:  
 Counter#:018131

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
7/22/10	0	65	9	1	0	0	0	0	1	0	0	0	0	1	77
01:00	0	39	7	0	2	0	0	1	2	0	0	0	0	0	51
02:00	2	19	2	0	2	0	0	2	0	0	0	0	0	2	29
03:00	1	18	6	0	0	1	0	0	0	0	0	0	0	1	27
04:00	0	13	0	1	1	0	1	2	1	0	0	0	0	0	19
05:00	1	38	13	1	3	4	0	3	3	0	0	0	0	2	68
06:00	7	152	50	5	13	1	0	3	10	2	0	0	0	8	251
07:00	6	275	61	6	19	4	0	6	6	0	0	0	0	15	398
08:00	4	261	61	5	16	7	0	5	7	1	0	0	1	15	383
09:00	3	230	49	2	14	6	0	1	5	0	0	0	0	5	315
10:00	5	237	75	3	20	3	0	2	7	1	1	0	0	5	359
11:00	9	256	65	5	5	5	0	4	8	1	1	0	0	18	377
12 PM	8	280	78	6	21	10	0	4	6	2	0	0	0	14	429
13:00	6	264	57	5	17	7	1	2	4	1	0	0	0	19	383
14:00	5	336	85	3	17	4	0	6	3	0	0	0	0	15	474
15:00	8	361	120	8	24	5	0	5	8	0	0	0	1	28	568
16:00	8	547	151	8	35	8	1	12	5	0	1	1	0	37	814
17:00	12	638	114	3	18	3	0	7	3	3	0	1	1	40	843
18:00	5	459	98	2	10	0	0	3	2	0	0	0	0	9	588
19:00	3	283	42	0	6	0	0	3	0	0	0	0	0	5	342
20:00	5	254	39	0	2	1	0	2	1	0	0	0	0	4	308
21:00	2	194	35	0	3	0	0	0	2	0	0	0	0	3	239
22:00	1	151	30	0	4	0	0	1	0	0	0	0	0	0	187
23:00	2	114	10	0	0	0	0	0	1	0	0	0	0	2	129
Total	103	5484	1257	64	252	69	3	74	85	11	3	2	3	248	7658
Percent	1.3%	71.6%	16.4%	0.8%	3.3%	0.9%	0.0%	1.0%	1.1%	0.1%	0.0%	0.0%	0.0%	3.2%	
AM Peak	11:00	07:00	10:00	07:00	10:00	08:00	04:00	07:00	06:00	06:00	10:00		08:00	11:00	
Vol.	9	275	75	6	20	7	1	6	10	2	1		1	18	
PM Peak	17:00	17:00	16:00	15:00	16:00	12:00	13:00	16:00	15:00	17:00	16:00	16:00	15:00	17:00	
Vol.	12	638	151	8	35	10	1	12	8	3	1	1	1	40	
Grand Total	103	5484	1257	64	252	69	3	74	85	11	3	2	3	248	7658
Percent	1.3%	71.6%	16.4%	0.8%	3.3%	0.9%	0.0%	1.0%	1.1%	0.1%	0.0%	0.0%	0.0%	3.2%	

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Site Code: 33220104234  
 Station ID:  
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East, West																Latitude: 0' 0.000 Undefined
Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total	
7/22/10	1	130	15	3	0	0	0	0	1	0	0	0	0	2	152	
01:00	1	85	12	0	2	0	0	3	5	0	0	0	0	0	108	
02:00	2	37	8	0	3	0	0	5	0	0	0	0	0	2	57	
03:00	2	32	9	0	1	1	0	0	2	0	0	0	0	1	48	
04:00	0	31	3	1	1	0	1	4	3	1	0	0	0	2	47	
05:00	1	89	24	2	7	5	0	7	9	2	0	0	0	4	150	
06:00	12	329	93	7	19	3	0	6	19	3	0	0	0	19	510	
07:00	7	531	124	9	26	6	0	13	9	2	0	0	0	30	757	
08:00	6	517	100	5	26	11	1	9	17	3	0	0	1	26	722	
09:00	8	457	103	4	25	14	1	2	16	1	0	0	0	8	639	
10:00	10	521	124	5	29	8	2	5	16	4	1	0	0	12	737	
11:00	14	531	118	9	15	11	0	7	15	2	1	0	1	29	753	
12 PM	18	623	135	8	33	16	2	16	20	2	0	0	0	35	908	
13:00	11	615	102	6	23	11	2	5	15	2	0	0	1	35	828	
14:00	16	725	147	4	18	7	0	12	9	0	0	1	0	31	970	
15:00	19	806	187	9	32	8	1	10	9	1	0	0	1	52	1135	
16:00	23	1132	241	9	45	15	2	15	8	0	1	1	0	70	1562	
17:00	29	1308	188	4	28	7	0	11	6	3	1	1	1	82	1669	
18:00	25	991	155	4	16	1	0	7	2	0	0	0	0	31	1232	
19:00	7	643	86	0	7	2	0	6	2	1	0	0	0	13	767	
20:00	9	533	72	0	5	1	0	4	1	0	0	0	0	18	643	
21:00	6	436	52	0	3	0	0	0	5	0	0	0	0	4	506	
22:00	3	345	46	0	4	0	1	1	1	0	0	0	0	3	404	
23:00	4	227	21	0	1	1	0	1	1	0	0	0	0	3	259	
Total	234	11674	2165	89	369	128	13	149	191	27	4	3	5	512	15563	
Percent	1.5%	75.0%	13.9%	0.6%	2.4%	0.8%	0.1%	1.0%	1.2%	0.2%	0.0%	0.0%	0.0%	3.3%		
AM Peak	11:00	07:00	07:00	07:00	10:00	09:00	10:00	07:00	06:00	10:00	10:00		08:00	07:00		
Vol.	14	531	124	9	29	14	2	13	19	4	1		1	30		
PM Peak	17:00	17:00	16:00	15:00	16:00	12:00	12:00	12:00	12:00	17:00	16:00	14:00	13:00	17:00		
Vol.	29	1308	241	9	45	16	2	16	20	3	1	1	1	82		
Grand Total	234	11674	2165	89	369	128	13	149	191	27	4	3	5	512	15563	
Percent	1.5%	75.0%	13.9%	0.6%	2.4%	0.8%	0.1%	1.0%	1.2%	0.2%	0.0%	0.0%	0.0%	3.3%		

Montachusett Regional Planning Commission  
 1427R Water Street  
 Fitchburg, MA 01420  
 Tel: (978) 345-7376 Email: mrpc@mrpc.org

Community:Westminster  
 Street:West Main St.  
 Location:E. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
7/22/10	1	72	1	0	2	0	0	0	1	0	0	0	0	0	77
01:00	1	47	3	0	0	0	0	2	3	0	0	0	0	0	56
02:00	0	23	4	0	0	0	0	3	0	0	0	0	0	0	30
03:00	0	14	1	0	1	0	0	0	1	0	0	0	0	1	18
04:00	0	30	2	0	0	0	0	1	5	1	0	0	0	0	39
05:00	0	74	6	0	5	1	0	3	6	2	0	0	0	2	99
06:00	2	254	25	0	6	4	1	3	8	2	0	0	0	7	312
07:00	2	459	37	2	5	3	0	4	5	1	0	0	2	3	523
08:00	2	390	20	0	5	5	2	2	9	0	0	0	0	6	441
09:00	2	309	32	1	9	5	1	2	12	1	0	0	0	10	384
10:00	6	343	23	2	5	7	2	4	9	2	0	0	0	6	409
11:00	3	339	39	2	6	4	0	4	10	1	1	0	0	6	415
12 PM	3	465	40	1	11	4	3	5	11	1	0	1	2	14	561
13:00	4	449	29	0	3	4	0	4	16	1	1	0	0	9	520
14:00	4	485	45	1	0	0	2	4	7	0	0	1	1	8	558
15:00	4	549	32	0	7	3	0	4	6	2	0	0	0	14	621
16:00	7	690	41	0	5	7	0	5	5	0	0	1	0	26	787
17:00	6	734	35	0	8	3	0	5	4	1	0	0	0	18	814
18:00	9	609	28	0	5	1	0	0	1	0	0	0	0	16	669
19:00	5	400	21	0	0	0	0	2	2	2	0	0	1	5	438
20:00	3	340	14	0	2	0	0	2	1	1	0	0	0	0	363
21:00	4	267	9	0	0	0	0	0	2	0	0	0	1	3	286
22:00	0	213	9	0	0	0	0	1	1	0	0	0	0	3	227
23:00	1	127	4	0	1	0	0	1	0	1	0	0	0	3	138
Total	69	7682	500	9	86	51	11	61	125	19	2	3	7	160	8785
Percent	0.8%	87.4%	5.7%	0.1%	1.0%	0.6%	0.1%	0.7%	1.4%	0.2%	0.0%	0.0%	0.1%	1.8%	
AM Peak	10:00	07:00	11:00	07:00	09:00	10:00	08:00	07:00	09:00	05:00	11:00		07:00	09:00	
Vol.	6	459	39	2	9	7	2	4	12	2	1		2	10	
PM Peak	18:00	17:00	14:00	12:00	12:00	16:00	12:00	12:00	13:00	15:00	13:00	12:00	12:00	16:00	
Vol.	9	734	45	1	11	7	3	5	16	2	1	1	2	26	
Grand Total	69	7682	500	9	86	51	11	61	125	19	2	3	7	160	8785
Percent	0.8%	87.4%	5.7%	0.1%	1.0%	0.6%	0.1%	0.7%	1.4%	0.2%	0.0%	0.0%	0.1%	1.8%	

Montachusett Regional Planning Commission  
 1427R Water Street  
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Community:Westminster  
 Street:West Main St.  
 Location:E. of Simplex Drive  
 Function Class:U-2

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

West

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
7/22/10	1	70	6	1	1	0	0	1	0	0	0	0	0	1	81
01:00	2	38	4	0	3	0	0	0	2	0	0	0	0	0	49
02:00	3	18	3	0	0	0	0	2	0	0	0	0	0	1	27
03:00	1	26	3	0	2	0	0	0	1	1	0	0	0	0	34
04:00	1	21	3	0	1	1	0	0	0	0	0	0	0	2	29
05:00	2	53	14	0	3	1	0	1	5	0	0	0	0	5	84
06:00	11	185	52	2	12	2	0	2	9	2	0	0	0	16	293
07:00	11	415	61	4	10	3	0	5	9	0	0	0	0	18	536
08:00	10	404	52	4	11	3	0	7	12	0	0	0	0	12	515
09:00	7	283	50	2	12	4	0	2	6	0	0	1	0	9	376
10:00	5	293	49	5	14	1	0	3	9	1	0	0	0	8	388
11:00	9	292	50	3	6	7	1	7	8	0	0	0	1	11	395
12 PM	11	332	72	8	20	4	0	5	12	1	0	0	1	16	482
13:00	8	335	63	6	29	3	0	1	12	1	0	0	0	8	466
14:00	12	387	73	2	13	4	0	4	5	0	0	0	0	6	506
15:00	15	470	97	4	18	10	0	5	7	0	0	0	0	14	640
16:00	9	663	114	3	24	3	1	8	11	0	0	0	0	18	854
17:00	14	727	86	2	10	0	0	4	3	0	0	0	1	15	862
18:00	13	521	78	0	9	2	0	3	4	0	0	0	0	18	648
19:00	5	316	32	1	4	0	0	2	0	0	0	0	0	6	366
20:00	14	277	24	1	4	0	0	3	0	0	0	0	0	6	329
21:00	3	228	16	0	2	0	0	0	2	0	0	0	1	5	257
22:00	4	166	26	0	3	0	0	1	0	0	0	0	0	6	206
23:00	8	120	8	0	0	0	0	0	1	0	0	0	0	4	141
Total	179	6640	1036	48	211	48	2	66	118	6	0	1	4	205	8564
Percent	2.1%	77.5%	12.1%	0.6%	2.5%	0.6%	0.0%	0.8%	1.4%	0.1%	0.0%	0.0%	0.0%	2.4%	
AM Peak	06:00	07:00	07:00	10:00	10:00	11:00	11:00	08:00	08:00	06:00		09:00	11:00	07:00	
Vol.	11	415	61	5	14	7	1	7	12	2		1	1	18	
PM Peak	15:00	17:00	16:00	12:00	13:00	15:00	16:00	16:00	12:00	12:00			12:00	16:00	
Vol.	15	727	114	8	29	10	1	8	12	1			1	18	
Grand Total	179	6640	1036	48	211	48	2	66	118	6	0	1	4	205	8564
Percent	2.1%	77.5%	12.1%	0.6%	2.5%	0.6%	0.0%	0.8%	1.4%	0.1%	0.0%	0.0%	0.0%	2.4%	

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 Function Class:U-2

Site Code: 33220104235  
 Station ID:  
 Counter#:016642

East, West																
Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total	
7/22/10	2	142	7	1	3	0	0	1	1	0	0	0	0	1	158	
01:00	3	85	7	0	3	0	0	2	5	0	0	0	0	0	105	
02:00	3	41	7	0	0	0	0	5	0	0	0	0	0	1	57	
03:00	1	40	4	0	3	0	0	0	2	1	0	0	0	1	52	
04:00	1	51	5	0	1	1	0	1	5	1	0	0	0	2	68	
05:00	2	127	20	0	8	2	0	4	11	2	0	0	0	7	183	
06:00	13	439	77	2	18	6	1	5	17	4	0	0	0	23	605	
07:00	13	874	98	6	15	6	0	9	14	1	0	0	2	21	1059	
08:00	12	794	72	4	16	8	2	9	21	0	0	0	0	18	956	
09:00	9	592	82	3	21	9	1	4	18	1	0	1	0	19	760	
10:00	11	636	72	7	19	8	2	7	18	3	0	0	0	14	797	
11:00	12	631	89	5	12	11	1	11	18	1	1	0	1	17	810	
12 PM	14	797	112	9	31	8	3	10	23	2	0	1	3	30	1043	
13:00	12	784	92	6	32	7	0	5	28	2	1	0	0	17	986	
14:00	16	872	118	3	13	4	2	8	12	0	0	1	1	14	1064	
15:00	19	1019	129	4	25	13	0	9	13	2	0	0	0	28	1261	
16:00	16	1353	155	3	29	10	1	13	16	0	0	1	0	44	1641	
17:00	20	1461	121	2	18	3	0	9	7	1	0	0	1	33	1676	
18:00	22	1130	106	0	14	3	0	3	5	0	0	0	0	34	1317	
19:00	10	716	53	1	4	0	0	4	2	2	0	0	1	11	804	
20:00	17	617	38	1	6	0	0	5	1	1	0	0	0	6	692	
21:00	7	495	25	0	2	0	0	0	4	0	0	0	2	8	543	
22:00	4	379	35	0	3	0	0	2	1	0	0	0	0	9	433	
23:00	9	247	12	0	1	0	0	1	1	1	0	0	0	7	279	
Total	248	14322	1536	57	297	99	13	127	243	25	2	4	11	365	17349	
Percent	1.4%	82.6%	8.9%	0.3%	1.7%	0.6%	0.1%	0.7%	1.4%	0.1%	0.0%	0.0%	0.1%	2.1%		
AM Peak	06:00	07:00	07:00	10:00	09:00	11:00	08:00	11:00	08:00	06:00	11:00	09:00	07:00	06:00		
Vol.	13	874	98	7	21	11	2	11	21	4	1	1	2	23		
PM Peak	18:00	17:00	16:00	12:00	13:00	15:00	12:00	16:00	13:00	12:00	13:00	12:00	12:00	16:00		
Vol.	22	1461	155	9	32	13	3	13	28	2	1	1	3	44		
Grand Total	248	14322	1536	57	297	99	13	127	243	25	2	4	11	365	17349	
Percent	1.4%	82.6%	8.9%	0.3%	1.7%	0.6%	0.1%	0.7%	1.4%	0.1%	0.0%	0.0%	0.1%	2.1%		

## Appendix – Turning Movement Counts

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Community: Winchendon  
 Street: Route 140  
 Location: At Route 12 (Spring St)  
 Function Class: R-2

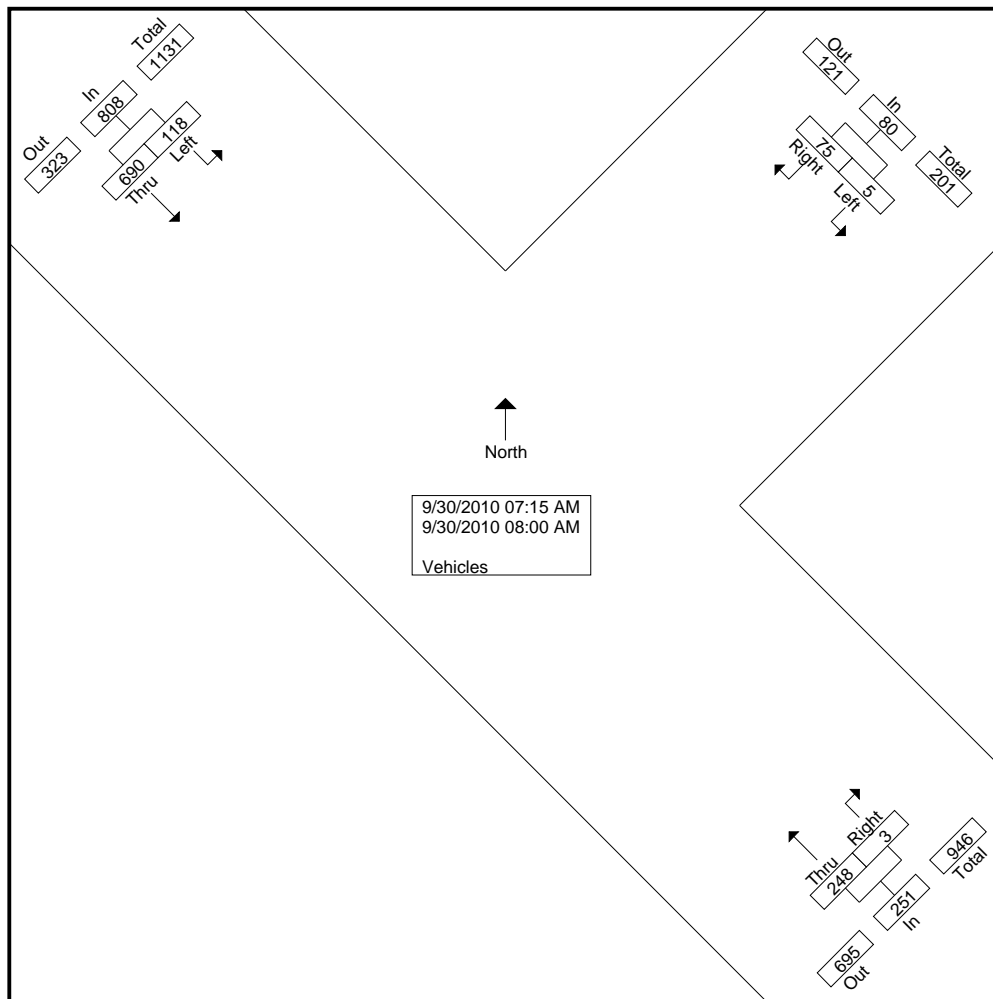
File Name : 343-2010-4257 AM 2  
 Site Code : 00004357  
 Start Date : 9/30/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	From Northeast			From Southeast			From Northwest			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
07:15 AM	9	0	9	2	65	67	201	44	245	321
07:30 AM	19	3	22	1	61	62	185	34	219	303
07:45 AM	19	0	19	0	51	51	170	19	189	259
Total	47	3	50	3	177	180	556	97	653	883
08:00 AM	28	2	30	0	71	71	134	21	155	256
Grand Total	75	5	80	3	248	251	690	118	808	1139
Apprch %	93.8	6.2		1.2	98.8		85.4	14.6		
Total %	6.6	0.4	7	0.3	21.8	22	60.6	10.4	70.9	

Community: Winchendon  
Street: Route 140  
Location: At Route 12 (Spring St)  
Function Class: R-2

File Name : 343-2010-4257 AM 2  
Site Code : 00004357  
Start Date : 9/30/2010  
Page No : 2



Community: Winchendon  
 Street: Route 140  
 Location: At Route 12 (Spring St)  
 Function Class: R-2

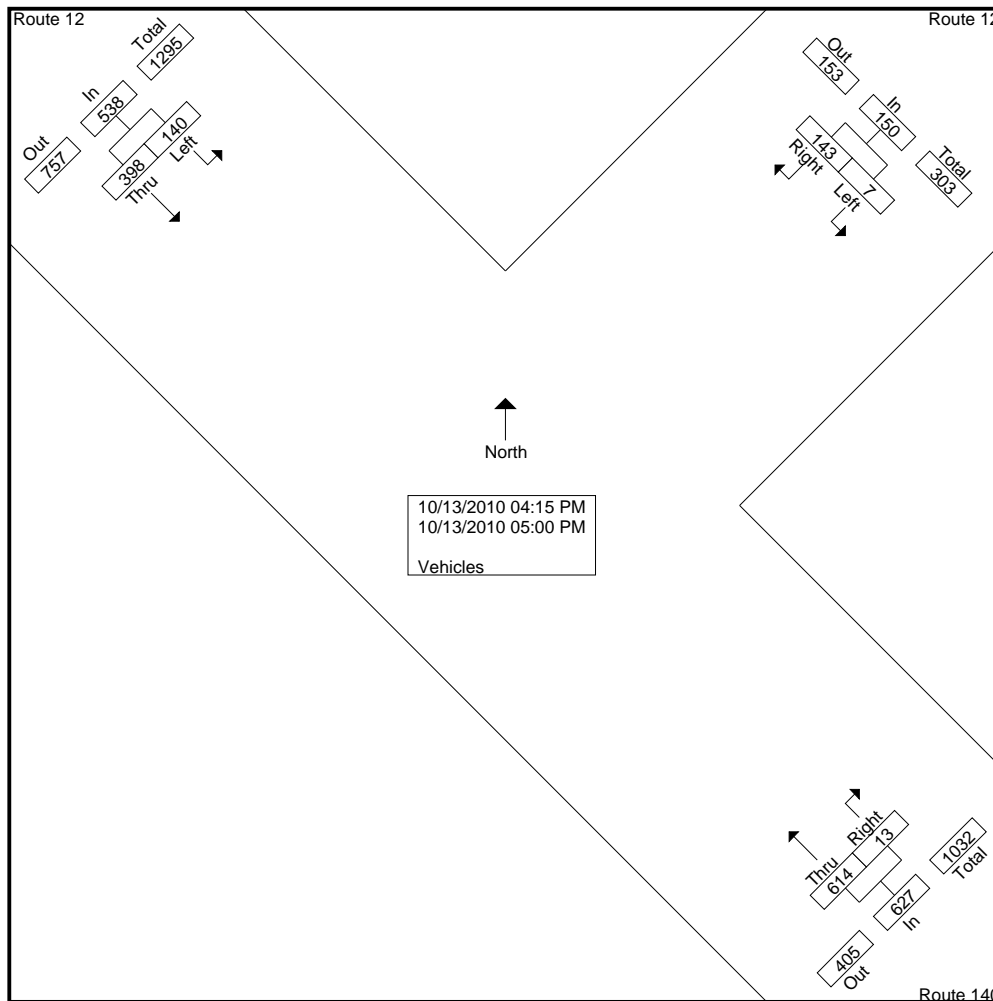
File Name : 343-2010-4257 pm  
 Site Code : 00004257  
 Start Date : 10/13/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Route 12 From Northeast			Route 140 From Southeast			Route 12 From Northwest			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
04:15 PM	30	3	33	1	164	165	103	40	143	341
04:30 PM	39	1	40	6	133	139	96	34	130	309
04:45 PM	41	2	43	4	165	169	101	34	135	347
Total	110	6	116	11	462	473	300	108	408	997
05:00 PM	33	1	34	2	152	154	98	32	130	318
Grand Total	143	7	150	13	614	627	398	140	538	1315
Apprch %	95.3	4.7		2.1	97.9		74	26		
Total %	10.9	0.5	11.4	1	46.7	47.7	30.3	10.6	40.9	

Community: Winchendon  
Street: Route 140  
Location: At Route 12 (Spring St)  
Function Class: R-2

File Name : 343-2010-4257 pm  
Site Code : 00004257  
Start Date : 10/13/2010  
Page No : 2



Community: Winchendon  
 Street: Route 140  
 Location: At Old Gardner Road  
 Function Class: R-2

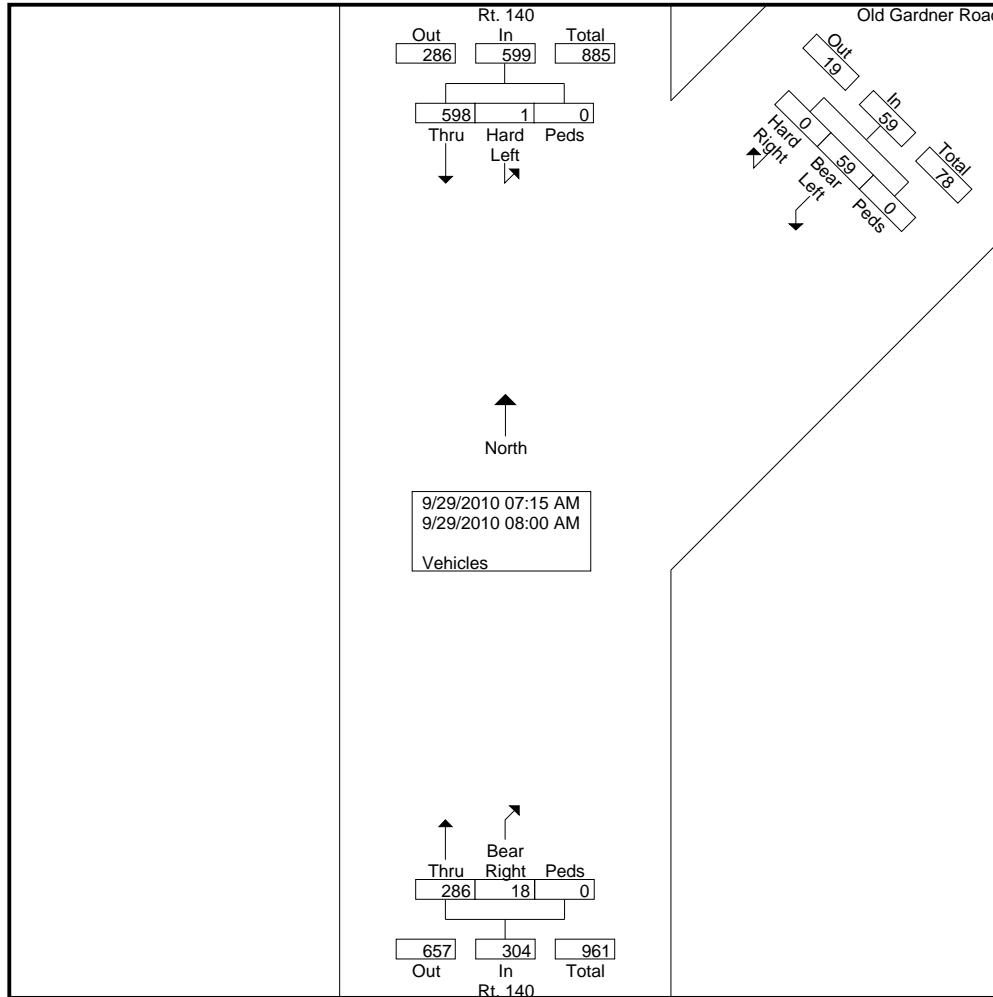
File Name : 343-2010-4256AM  
 Site Code : 4256  
 Start Date : 9/29/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North				Old Gardner Road From Northeast				Rt. 140 From South				Int. Total
	Thru	Hard Left	Peds	App. Total	Hard Right	Bear Left	Peds	App. Total	Bear Right	Thru	Peds	App. Total	
07:15 AM	154	0	0	154	0	14	0	14	5	75	0	80	248
07:30 AM	179	0	0	179	0	19	0	19	3	76	0	79	277
07:45 AM	158	0	0	158	0	13	0	13	4	69	0	73	244
Total	491	0	0	491	0	46	0	46	12	220	0	232	769
08:00 AM	107	1	0	108	0	13	0	13	6	66	0	72	193
Grand Total	598	1	0	599	0	59	0	59	18	286	0	304	962
Apprch %	99.8	0.2	0		0	100	0		5.9	94.1	0		
Total %	62.2	0.1	0	62.3	0	6.1	0	6.1	1.9	29.7	0	31.6	

Community: Winchendon  
 Street: Route 140  
 Location: At Old Gardner Road  
 Function Class: R-2

File Name : 343-2010-4256AM  
 Site Code : 4256  
 Start Date : 9/29/2010  
 Page No : 2



Community: Winchendon  
 Street: Route 140  
 Location: At Old Gardner Road  
 Function Class: R-2

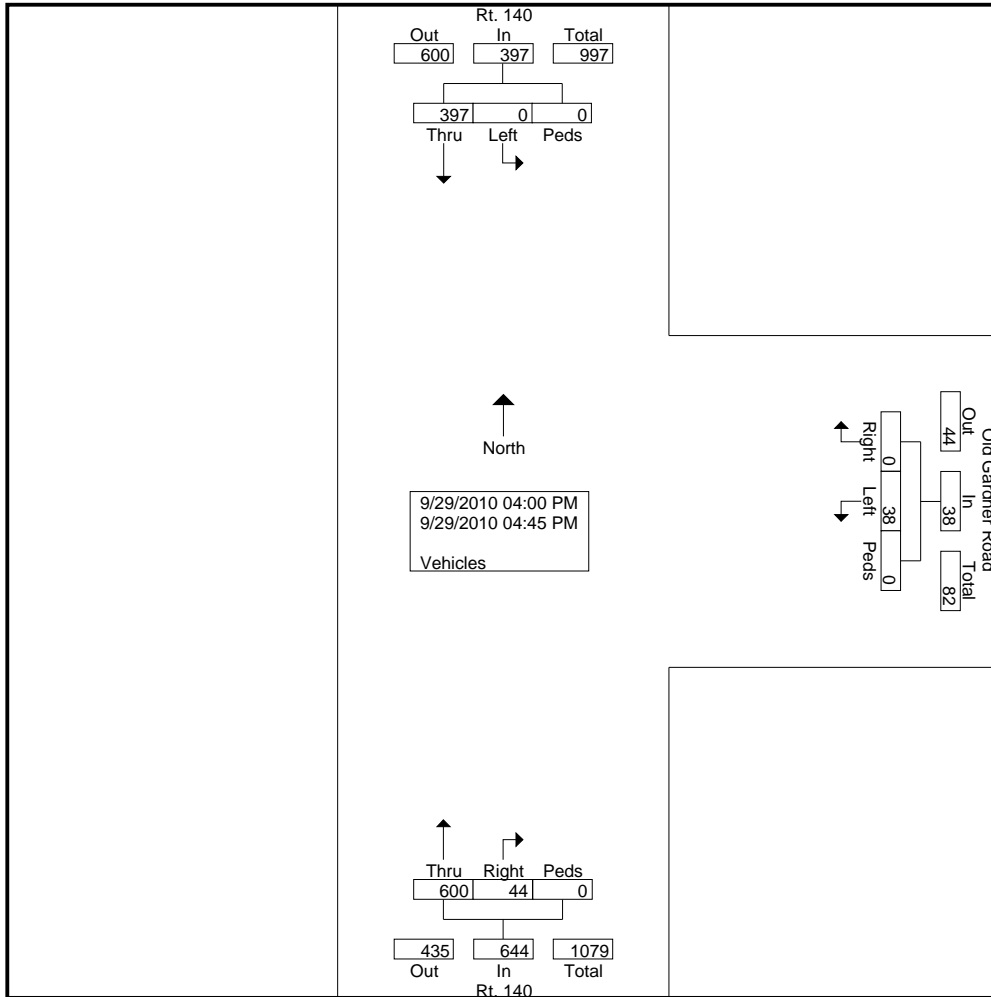
File Name : Rt 140 at Old Gardner Rd PM  
 Site Code : 00004256  
 Start Date : 9/29/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North				Old Gardner Road From East				Rt. 140 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
04:00 PM	112	0	0	112	0	7	0	7	9	110	0	119	238
04:15 PM	78	0	0	78	0	13	0	13	9	172	0	181	272
04:30 PM	110	0	0	110	0	11	0	11	14	156	0	170	291
04:45 PM	97	0	0	97	0	7	0	7	12	162	0	174	278
Total	397	0	0	397	0	38	0	38	44	600	0	644	1079
Grand Total	397	0	0	397	0	38	0	38	44	600	0	644	1079
Apprch %	100	0	0		0	100	0		6.8	93.2	0		
Total %	36.8	0	0	36.8	0	3.5	0	3.5	4.1	55.6	0	59.7	

Community: Winchendon  
 Street: Route 140  
 Location: At Old Gardner Road  
 Function Class: R-2

File Name : Rt 140 at Old Gardner Rd PM  
 Site Code : 00004256  
 Start Date : 9/29/2010  
 Page No : 2



Community: Winchendon  
 Street: Route 140  
 Location: At Teel Street  
 Function Class: R-2

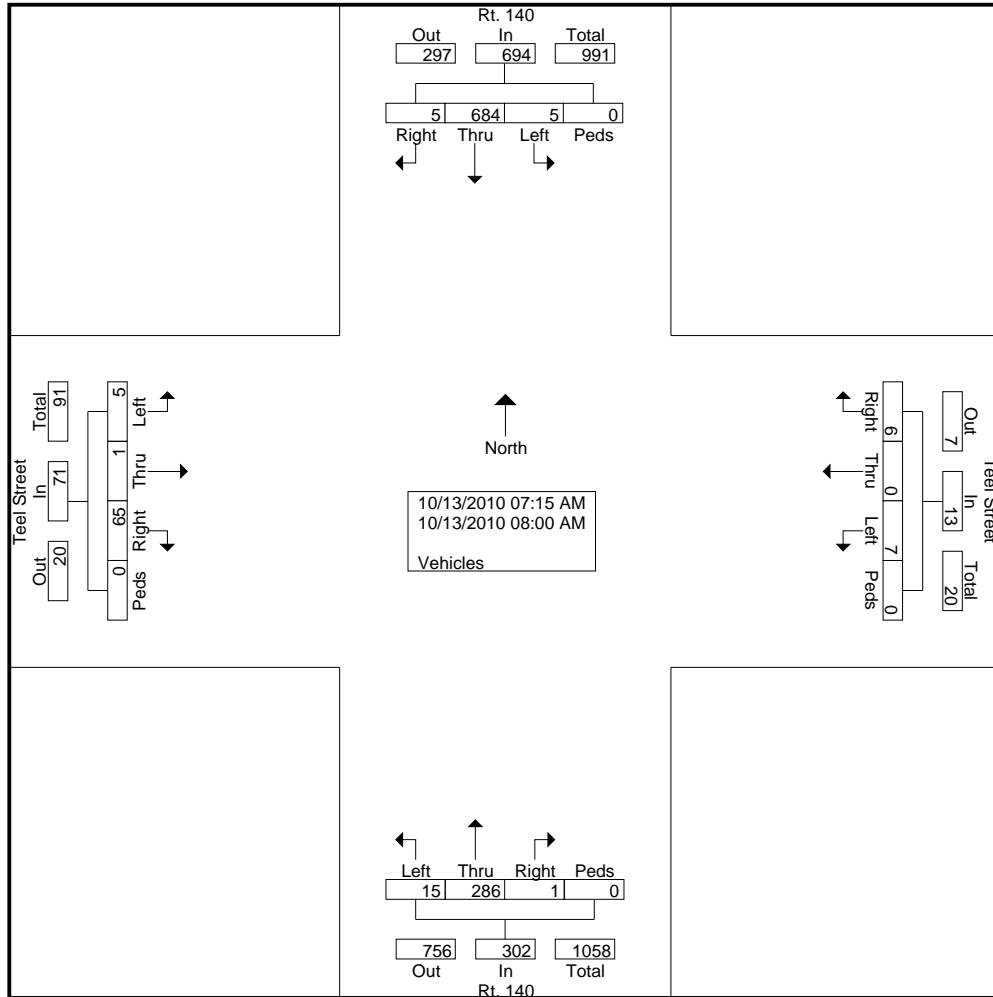
File Name : Rt 140 at Teel St AM  
 Site Code : 00004255  
 Start Date : 10/13/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North					Teel Street From East					Rt. 140 From South					Teel Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:15 AM	1	189	1	0	191	3	0	1	0	4	0	78	5	0	83	19	0	3	0	22	300
07:30 AM	0	184	2	0	186	1	0	2	0	3	0	53	0	0	53	18	1	1	0	20	262
07:45 AM	4	189	1	0	194	1	0	1	0	2	0	90	2	0	92	23	0	0	0	23	311
Total	5	562	4	0	571	5	0	4	0	9	0	221	7	0	228	60	1	4	0	65	873
08:00 AM	0	122	1	0	123	1	0	3	0	4	1	65	8	0	74	5	0	1	0	6	207
Grand Total	5	684	5	0	694	6	0	7	0	13	1	286	15	0	302	65	1	5	0	71	1080
Apprch %	0.7	98.6	0.7	0		46.2	0	53.8	0		0.3	94.7	5	0		91.5	1.4	7	0		
Total %	0.5	63.3	0.5	0	64.3	0.6	0	0.6	0	1.2	0.1	26.5	1.4	0	28	6	0.1	0.5	0	6.6	

Community: Winchendon  
 Street: Route 140  
 Location: At Teel Street  
 Function Class: R-2

File Name : Rt 140 at Teel St AM  
 Site Code : 00004255  
 Start Date : 10/13/2010  
 Page No : 2



Community: Winchendon  
 Street: Route 140  
 Location: At Teel Street  
 Function Class: R-2

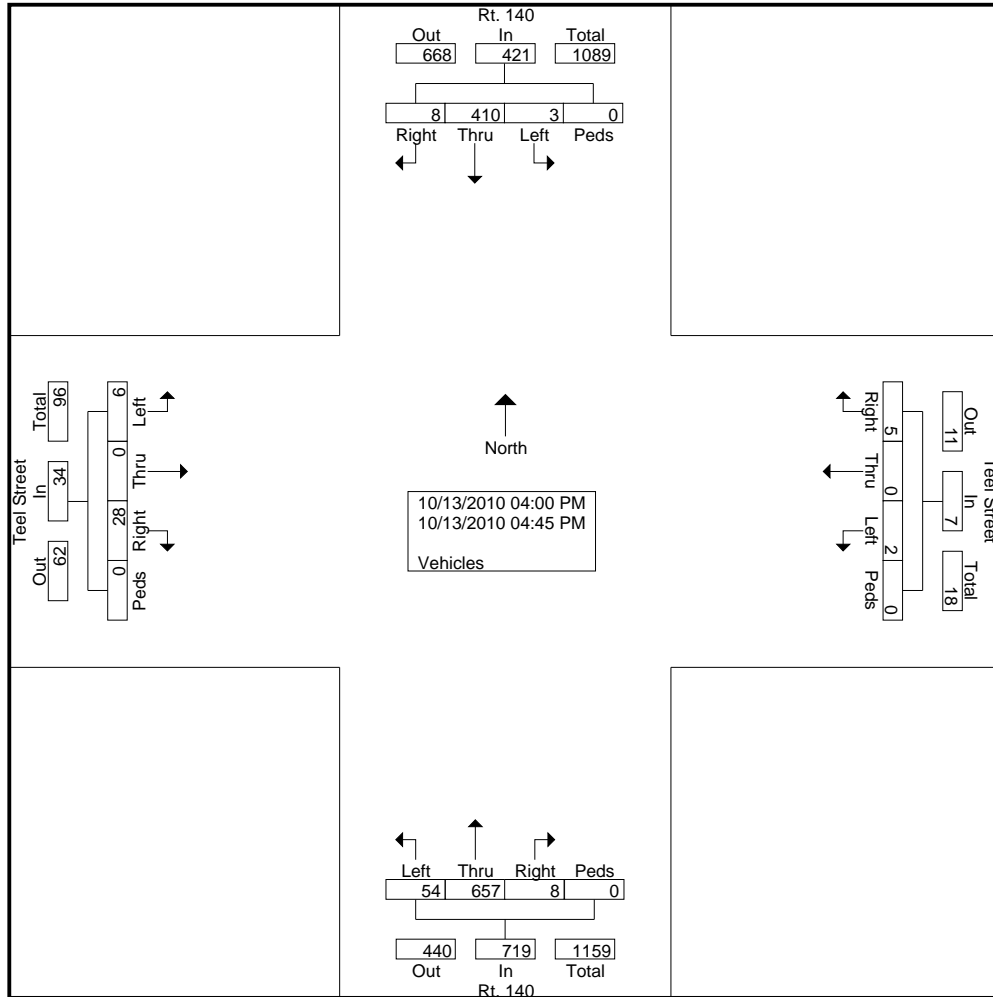
File Name : Rt 140 at Teel St PM  
 Site Code : 00004255  
 Start Date : 10/13/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North					Teel Street From East					Rt. 140 From South					Teel Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	3	97	0	0	100	2	0	0	0	2	1	169	9	0	179	9	0	0	0	9	290
04:15 PM	1	109	2	0	112	0	0	0	0	0	3	168	17	0	188	7	0	2	0	9	309
04:30 PM	1	100	0	0	101	2	0	1	0	3	3	150	15	0	168	6	0	3	0	9	281
04:45 PM	3	104	1	0	108	1	0	1	0	2	1	170	13	0	184	6	0	1	0	7	301
Total	8	410	3	0	421	5	0	2	0	7	8	657	54	0	719	28	0	6	0	34	1181
Grand Total	8	410	3	0	421	5	0	2	0	7	8	657	54	0	719	28	0	6	0	34	1181
Apprch %	1.9	97.4	0.7	0		71.4	0	28.6	0		1.1	91.4	7.5	0		82.4	0	17.6	0		
Total %	0.7	34.7	0.3	0	35.6	0.4	0	0.2	0	0.6	0.7	55.6	4.6	0	60.9	2.4	0	0.5	0	2.9	

Community: Winchendon  
 Street: Route 140  
 Location: At Teel Street  
 Function Class: R-2

File Name : Rt 140 at Teel St PM  
 Site Code : 00004255  
 Start Date : 10/13/2010  
 Page No : 2



Community: Gardner  
 Street: Route 140  
 Location: At Green Street  
 Function Class: U-2

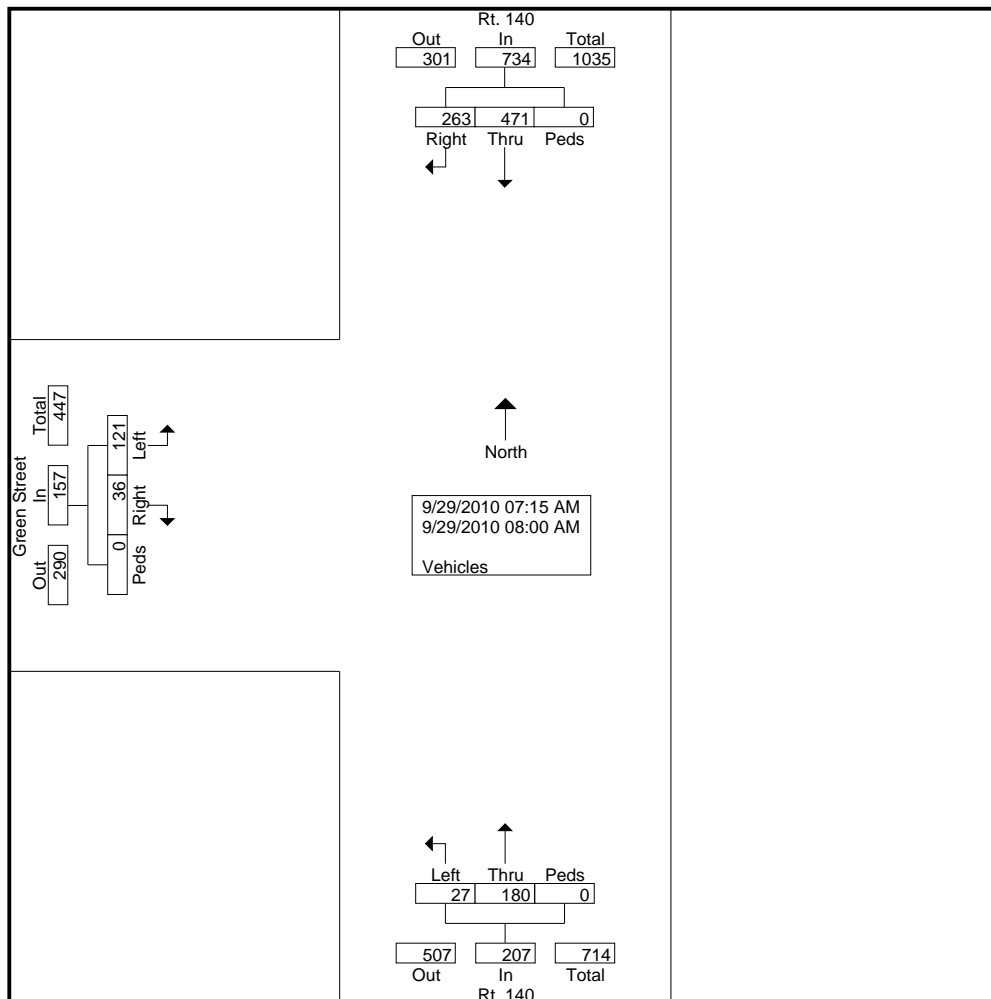
File Name : 103-2010-4254AM  
 Site Code : 4254  
 Start Date : 9/29/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North				Rt. 140 From South				Green Street From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
07:15 AM	52	137	0	189	58	4	0	62	12	28	0	40	291
07:30 AM	66	126	0	192	42	7	0	49	8	24	0	32	273
07:45 AM	96	117	0	213	41	8	0	49	9	38	0	47	309
Total	214	380	0	594	141	19	0	160	29	90	0	119	873
08:00 AM	49	91	0	140	39	8	0	47	7	31	0	38	225
Grand Total	263	471	0	734	180	27	0	207	36	121	0	157	1098
Apprch %	35.8	64.2	0		87	13	0		22.9	77.1	0		
Total %	24	42.9	0	66.8	16.4	2.5	0	18.9	3.3	11	0	14.3	

Community: Gardner  
 Street: Route 140  
 Location: At Green Street  
 Function Class: U-2

File Name : 103-2010-4254AM  
 Site Code : 4254  
 Start Date : 9/29/2010  
 Page No : 2



Community: Gardner  
 Street: Route 140  
 Location: At Green Street  
 Function Class: U-2

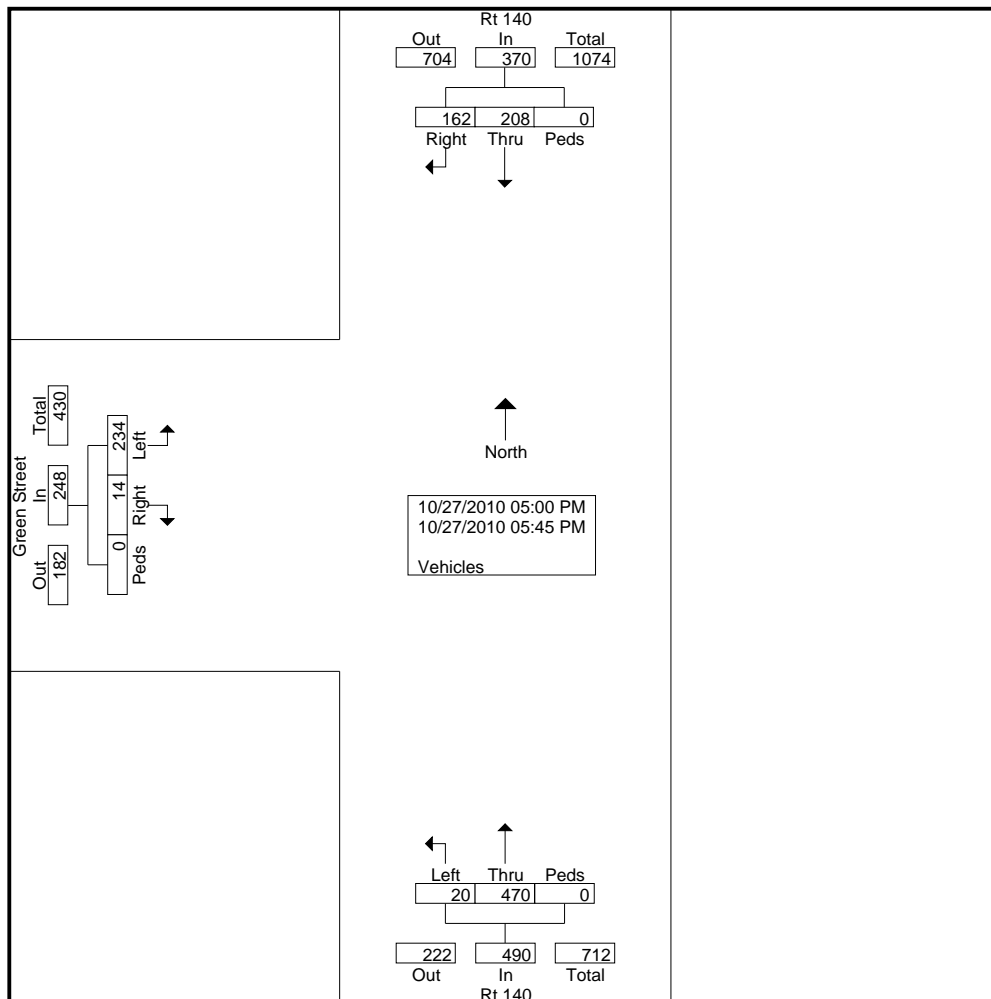
File Name : Rt 140 at Green St PM  
 Site Code : 00004254  
 Start Date : 10/27/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt 140 From North				Rt 140 From South				Green Street From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
05:00 PM	44	60	0	104	150	8	0	158	6	70	0	76	338
05:15 PM	40	55	0	95	130	6	0	136	2	53	0	55	286
05:30 PM	36	47	0	83	109	3	0	112	3	64	0	67	262
05:45 PM	42	46	0	88	81	3	0	84	3	47	0	50	222
Total	162	208	0	370	470	20	0	490	14	234	0	248	1108
Grand Total	162	208	0	370	470	20	0	490	14	234	0	248	1108
Apprch %	43.8	56.2	0		95.9	4.1	0		5.6	94.4	0		
Total %	14.6	18.8	0	33.4	42.4	1.8	0	44.2	1.3	21.1	0	22.4	

Community: Gardner  
 Street: Route 140  
 Location: At Green Street  
 Function Class: U-2

File Name : Rt 140 at Green St PM  
 Site Code : 00004254  
 Start Date : 10/27/2010  
 Page No : 2



Town: Gardner  
 Street: Rt. 140  
 Location: At Matthews Street  
 Functional Class: U-2

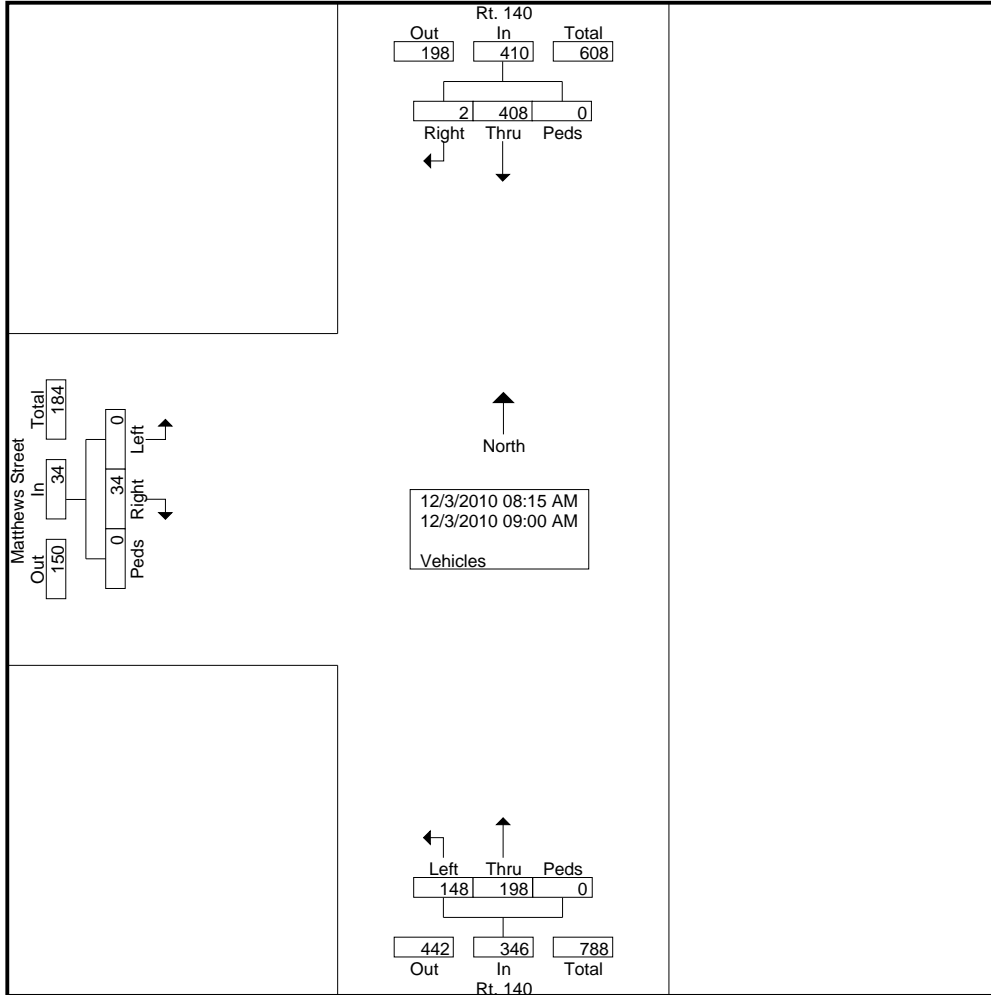
File Name : 103-2010-4260 AM  
 Site Code : 4260  
 Start Date : 12/3/2010  
 Page No : 1

Groups Printed- Vehicles

Start Time	Rt. 140 From North				Rt. 140 From South				Matthews Street From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
08:15 AM	1	105	0	106	54	19	0	73	11	0	0	11	190
08:30 AM	0	119	0	119	46	35	0	81	5	0	0	5	205
08:45 AM	0	101	0	101	47	51	0	98	8	0	0	8	207
Total	1	325	0	326	147	105	0	252	24	0	0	24	602
09:00 AM	1	83	0	84	51	43	0	94	10	0	0	10	188
Grand Total	2	408	0	410	198	148	0	346	34	0	0	34	790
Apprch %	0.5	99.5	0		57.2	42.8	0		100	0	0		
Total %	0.3	51.6	0	51.9	25.1	18.7	0	43.8	4.3	0	0	4.3	

Town: Gardner  
 Street: Rt. 140  
 Location: At Matthews Street  
 Functional Class: U-2

File Name : 103-2010-4260 AM  
 Site Code : 4260  
 Start Date : 12/3/2010  
 Page No : 2



Town: Gardner  
 Street: Rt. 140  
 Location: At Matthews Street  
 Functional Class: U-2

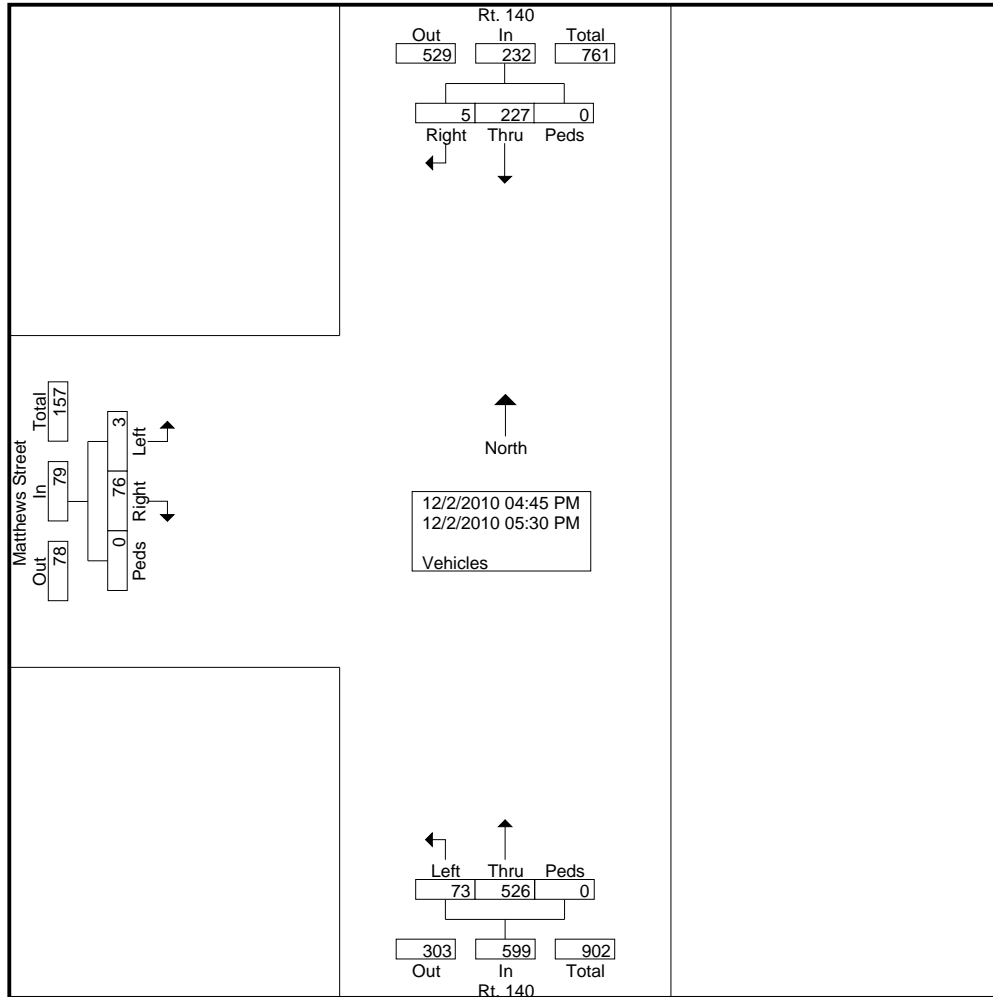
File Name : 103-2010-4260 PM  
 Site Code : 4260  
 Start Date : 12/2/2010  
 Page No : 1

Groups Printed- Vehicles

Start Time	Rt. 140 From North				Rt. 140 From South				Matthews Street From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
04:45 PM	3	59	0	62	124	15	0	139	22	0	0	22	223
Total	3	59	0	62	124	15	0	139	22	0	0	22	223
05:00 PM	1	60	0	61	147	20	0	167	26	0	0	26	254
05:15 PM	1	50	0	51	144	14	0	158	14	1	0	15	224
05:30 PM	0	58	0	58	111	24	0	135	14	2	0	16	209
Grand Total	5	227	0	232	526	73	0	599	76	3	0	79	910
Apprch %	2.2	97.8	0		87.8	12.2	0		96.2	3.8	0		
Total %	0.5	24.9	0	25.5	57.8	8	0	65.8	8.4	0.3	0	8.7	

Town: Gardner  
 Street: Rt. 140  
 Location: At Matthews Street  
 Functional Class: U-2

File Name : 103-2010-4260 PM  
 Site Code : 4260  
 Start Date : 12/2/2010  
 Page No : 2



Community: Gardner  
 Street: Route 140  
 Location: At Route 101 (Pearl Street)  
 Function Class: U-2

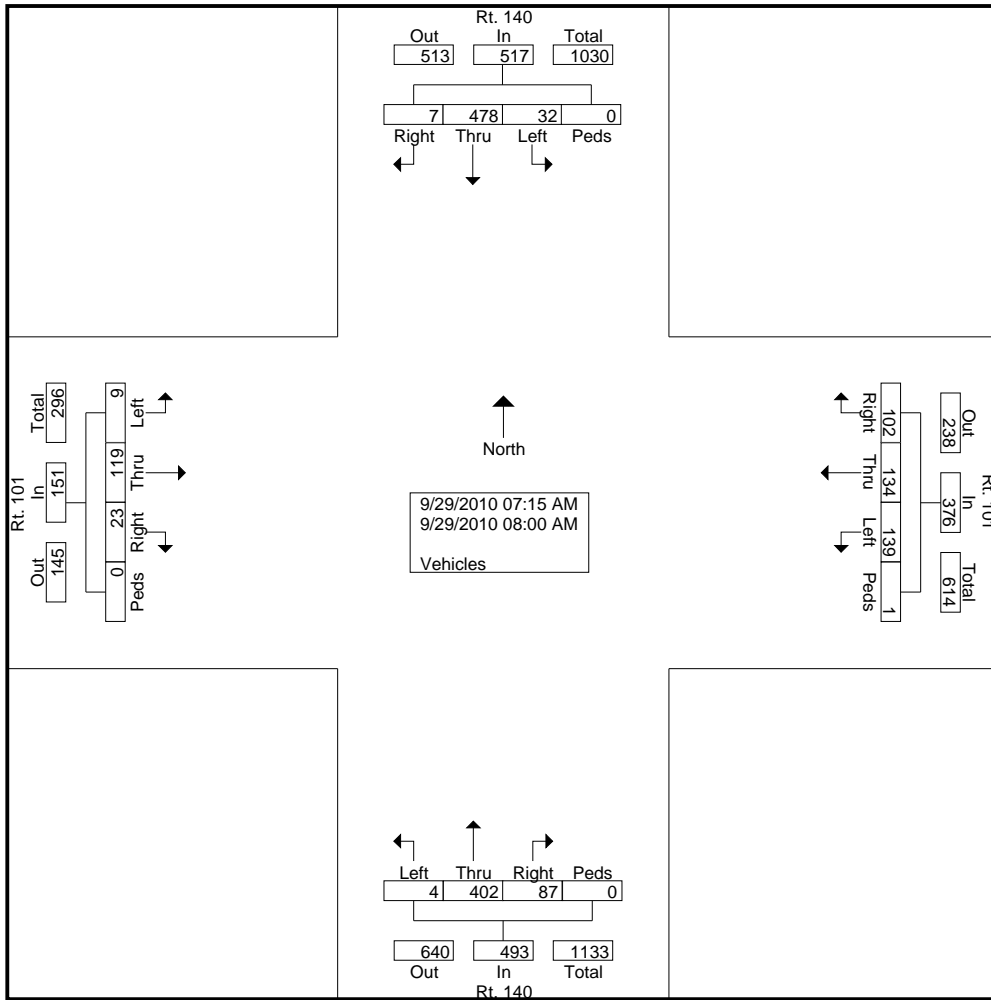
File Name : 103-2010-3728AM  
 Site Code : 3728  
 Start Date : 9/29/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North					Rt. 101 From East					Rt. 140 From South					Rt. 101 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:15 AM	2	131	13	0	146	25	25	38	1	89	28	75	0	0	103	6	35	1	0	42	380
07:30 AM	2	128	3	0	133	31	39	40	0	110	25	123	0	0	148	6	18	4	0	28	419
07:45 AM	3	125	10	0	138	31	46	38	0	115	19	128	1	0	148	2	39	3	0	44	445
Total	7	384	26	0	417	87	110	116	1	314	72	326	1	0	399	14	92	8	0	114	1244
08:00 AM	0	94	6	0	100	15	24	23	0	62	15	76	3	0	94	9	27	1	0	37	293
Grand Total	7	478	32	0	517	102	134	139	1	376	87	402	4	0	493	23	119	9	0	151	1537
Apprch %	1.4	92.5	6.2	0		27.1	35.6	37	0.3		17.6	81.5	0.8	0		15.2	78.8	6	0		
Total %	0.5	31.1	2.1	0	33.6	6.6	8.7	9	0.1	24.5	5.7	26.2	0.3	0	32.1	1.5	7.7	0.6	0	9.8	

Community: Gardner  
 Street: Route 140  
 Location: At Route 101 (Pearl Street)  
 Function Class: U-2

File Name : 103-2010-3728AM  
 Site Code : 3728  
 Start Date : 9/29/2010  
 Page No : 2



Community: Gardner  
 Street: Rt. 140  
 Location: at Rt. 101  
 Function Class: U-2

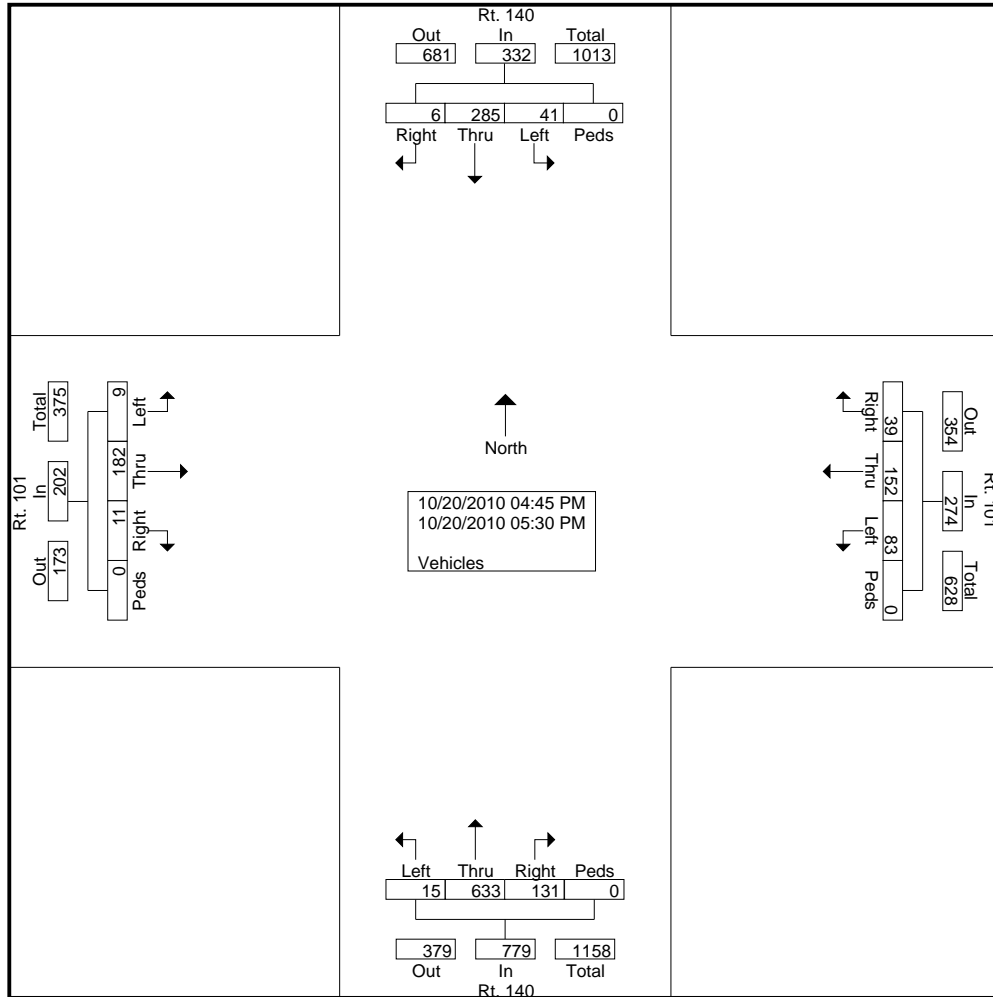
File Name : 103-2010-3728 PM  
 Site Code : 00003728  
 Start Date : 10/20/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North					Rt. 101 From East					Rt. 140 From South					Rt. 101 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:45 PM	0	88	4	0	92	7	36	23	0	66	31	155	1	0	187	4	51	3	0	58	403
Total	0	88	4	0	92	7	36	23	0	66	31	155	1	0	187	4	51	3	0	58	403
05:00 PM	1	71	7	0	79	10	49	25	0	84	42	161	5	0	208	2	42	5	0	49	420
05:15 PM	4	66	14	0	84	10	41	16	0	67	31	156	6	0	193	4	47	1	0	52	396
05:30 PM	1	60	16	0	77	12	26	19	0	57	27	161	3	0	191	1	42	0	0	43	368
Grand Total	6	285	41	0	332	39	152	83	0	274	131	633	15	0	779	11	182	9	0	202	1587
Apprch %	1.8	85.8	12.3	0		14.2	55.5	30.3	0		16.8	81.3	1.9	0		5.4	90.1	4.5	0		
Total %	0.4	18	2.6	0	20.9	2.5	9.6	5.2	0	17.3	8.3	39.9	0.9	0	49.1	0.7	11.5	0.6	0	12.7	

Community: Gardner  
 Street: Rt. 140  
 Location: at Rt. 101  
 Function Class: U-2

File Name : 103-2010-3728 PM  
 Site Code : 00003728  
 Start Date : 10/20/2010  
 Page No : 2



Community: Westminster  
 Street: Rt. 140  
 Location: At Colony Road  
 Function Class: U-0

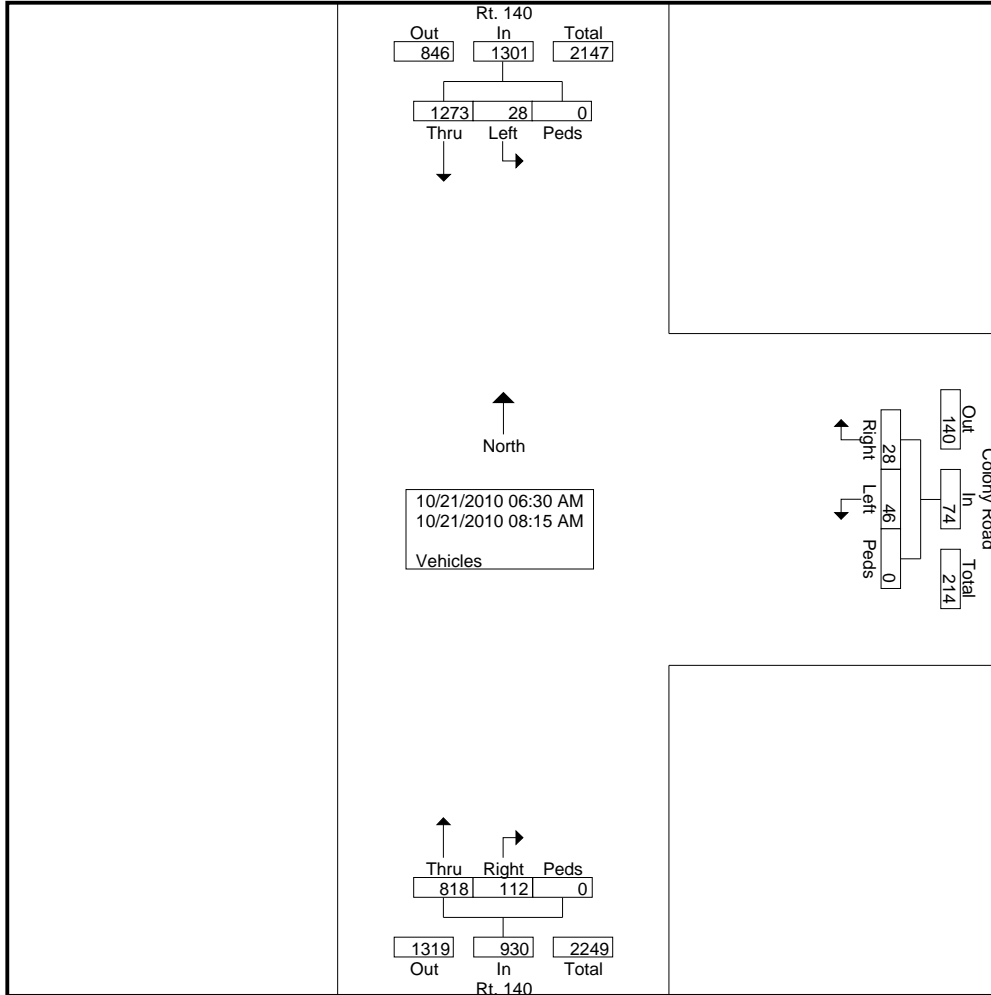
File Name : 332-2010-4259 AM  
 Site Code : 4259  
 Start Date : 10/21/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North				Colony Road From East				Rt. 140 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
06:30 AM	167	6	0	173	8	5	0	13	20	82	0	102	288
06:45 AM	146	1	0	147	6	16	0	22	12	79	0	91	260
Total	313	7	0	320	14	21	0	35	32	161	0	193	548
07:00 AM	196	4	0	200	1	2	0	3	12	100	0	112	315
07:15 AM	167	4	0	171	0	6	0	6	19	121	0	140	317
07:30 AM	200	4	0	204	3	9	0	12	25	156	0	181	397
07:45 AM	140	3	0	143	5	2	0	7	9	99	0	108	258
Total	703	15	0	718	9	19	0	28	65	476	0	541	1287
08:00 AM	131	3	0	134	3	1	0	4	7	100	0	107	245
08:15 AM	126	3	0	129	2	5	0	7	8	81	0	89	225
Grand Total	1273	28	0	1301	28	46	0	74	112	818	0	930	2305
Apprch %	97.8	2.2	0		37.8	62.2	0		12	88	0		
Total %	55.2	1.2	0	56.4	1.2	2	0	3.2	4.9	35.5	0	40.3	

Community: Westminster  
 Street: Rt. 140  
 Location: At Colony Road  
 Function Class: U-0

File Name : 332-2010-4259 AM  
 Site Code : 4259  
 Start Date : 10/21/2010  
 Page No : 2



Community: Westminster  
 Street: West Main St (Rt. 140)  
 Location: At Colony Road  
 Function Class: U-0

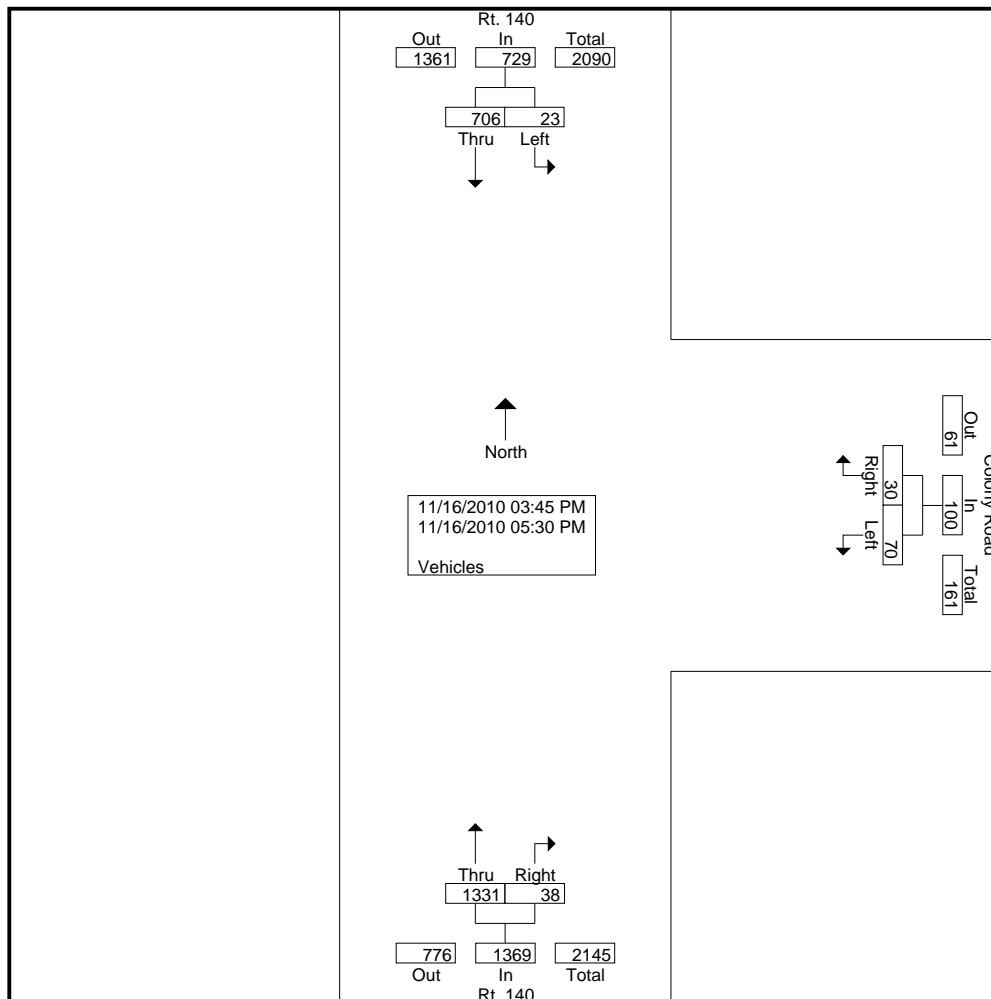
File Name : Rt 140 at Colony Rd PM  
 Site Code : 4259  
 Start Date : 11/16/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North			Colony Road From East			Rt. 140 From South			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
03:45 PM	93	2	95	3	4	7	4	138	142	244
Total	93	2	95	3	4	7	4	138	142	244
04:00 PM	100	2	102	0	20	20	6	143	149	271
04:15 PM	101	0	101	3	13	16	5	153	158	275
04:30 PM	100	0	100	5	13	18	4	151	155	273
04:45 PM	83	2	85	4	5	9	1	168	169	263
Total	384	4	388	12	51	63	16	615	631	1082
05:00 PM	100	2	102	7	7	14	3	231	234	350
05:15 PM	62	10	72	2	2	4	4	184	188	264
05:30 PM	67	5	72	6	6	12	11	163	174	258
Grand Total	706	23	729	30	70	100	38	1331	1369	2198
Apprch %	96.8	3.2		30	70		2.8	97.2		
Total %	32.1	1	33.2	1.4	3.2	4.5	1.7	60.6	62.3	

Community: Westminster  
 Street: West Main St (Rt. 140)  
 Location: At Colony Road  
 Function Class: U-0

File Name : Rt 140 at Colony Rd PM  
 Site Code : 4259  
 Start Date : 11/16/2010  
 Page No : 2



Community: Westminster  
 Street: Route 140  
 Location: At Betty Spring Road  
 Function Class: U-5

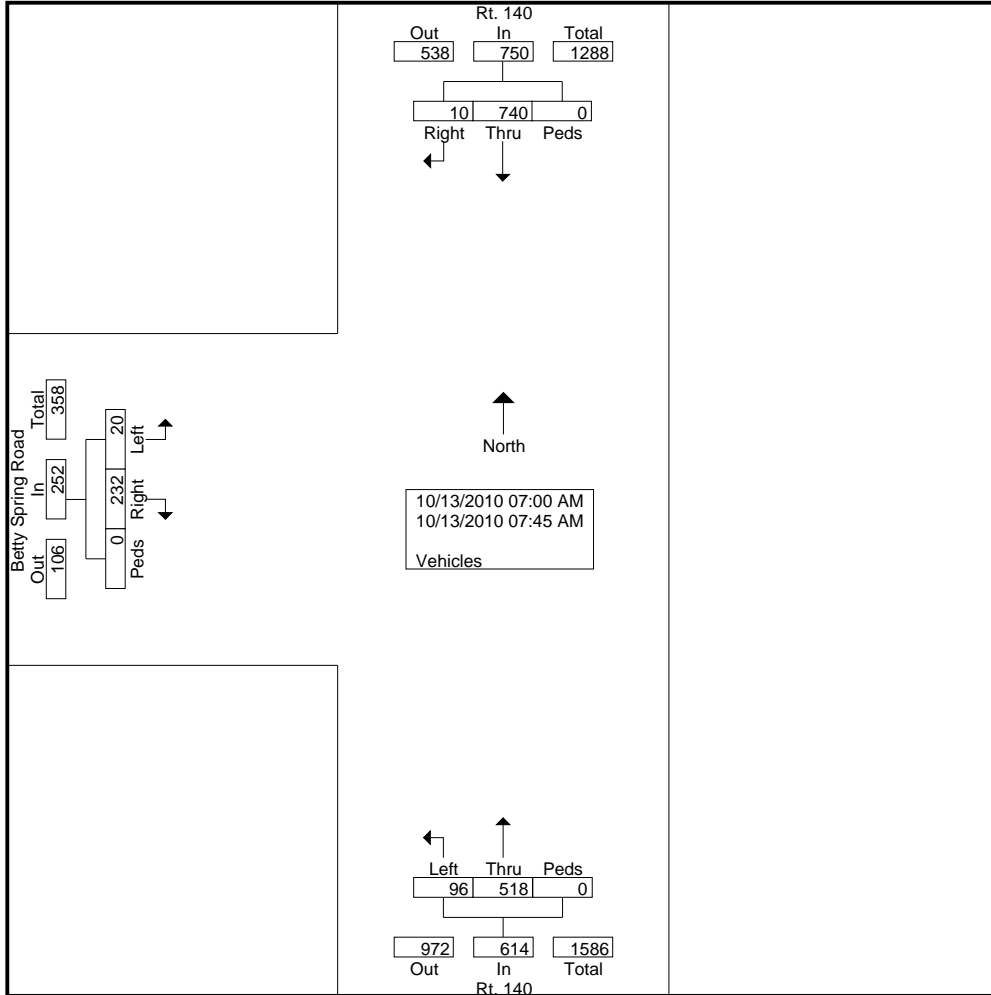
File Name : Rt 140 at Betty Spring Rd AM  
 Site Code : 4252  
 Start Date : 10/13/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North				Rt. 140 From South				Betty Spring Road From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
07:00 AM	3	170	0	173	104	22	0	126	55	6	0	61	360
07:15 AM	3	194	0	197	105	28	0	133	67	5	0	72	402
07:30 AM	2	184	0	186	182	23	0	205	55	3	0	58	449
07:45 AM	2	192	0	194	127	23	0	150	55	6	0	61	405
Total	10	740	0	750	518	96	0	614	232	20	0	252	1616
Grand Total	10	740	0	750	518	96	0	614	232	20	0	252	1616
Apprch %	1.3	98.7	0		84.4	15.6	0		92.1	7.9	0		
Total %	0.6	45.8	0	46.4	32.1	5.9	0	38	14.4	1.2	0	15.6	

Community: Westminster  
 Street: Route 140  
 Location: At Betty Spring Road  
 Function Class: U-5

File Name : Rt 140 at Betty Spring Rd AM  
 Site Code : 4252  
 Start Date : 10/13/2010  
 Page No : 2



Community: Westminster  
 Street: Route 140  
 Location: At Betty Spring Rd  
 Function Class: U-5

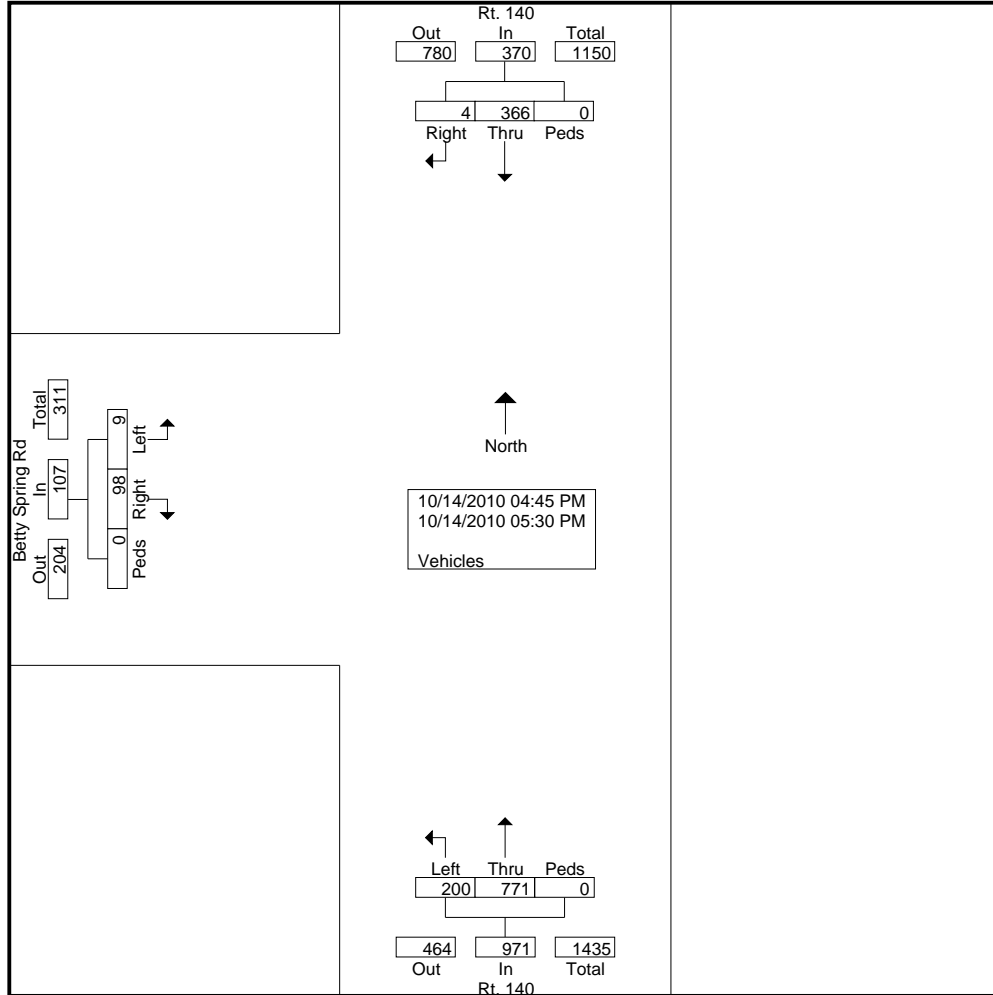
File Name : Rt 140 at Betty Spring Rd PM  
 Site Code : 00004252  
 Start Date : 10/14/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From North				Rt. 140 From South				Betty Spring Rd From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
04:45 PM	0	105	0	105	167	49	0	216	28	3	0	31	352
Total	0	105	0	105	167	49	0	216	28	3	0	31	352
05:00 PM	0	93	0	93	203	62	0	265	24	2	0	26	384
05:15 PM	1	72	0	73	212	43	0	255	23	2	0	25	353
05:30 PM	3	96	0	99	189	46	0	235	23	2	0	25	359
Grand Total	4	366	0	370	771	200	0	971	98	9	0	107	1448
Apprch %	1.1	98.9	0		79.4	20.6	0		91.6	8.4	0		
Total %	0.3	25.3	0	25.6	53.2	13.8	0	67.1	6.8	0.6	0	7.4	

Community: Westminster  
 Street: Route 140  
 Location: At Betty Spring Rd  
 Function Class: U-5

File Name : Rt 140 at Betty Spring Rd PM  
 Site Code : 00004252  
 Start Date : 10/14/2010  
 Page No : 2



Community: Westminster  
 Street: West Main St (Rt. 140)  
 Location: At Simplex Drive  
 Function Class: U-2

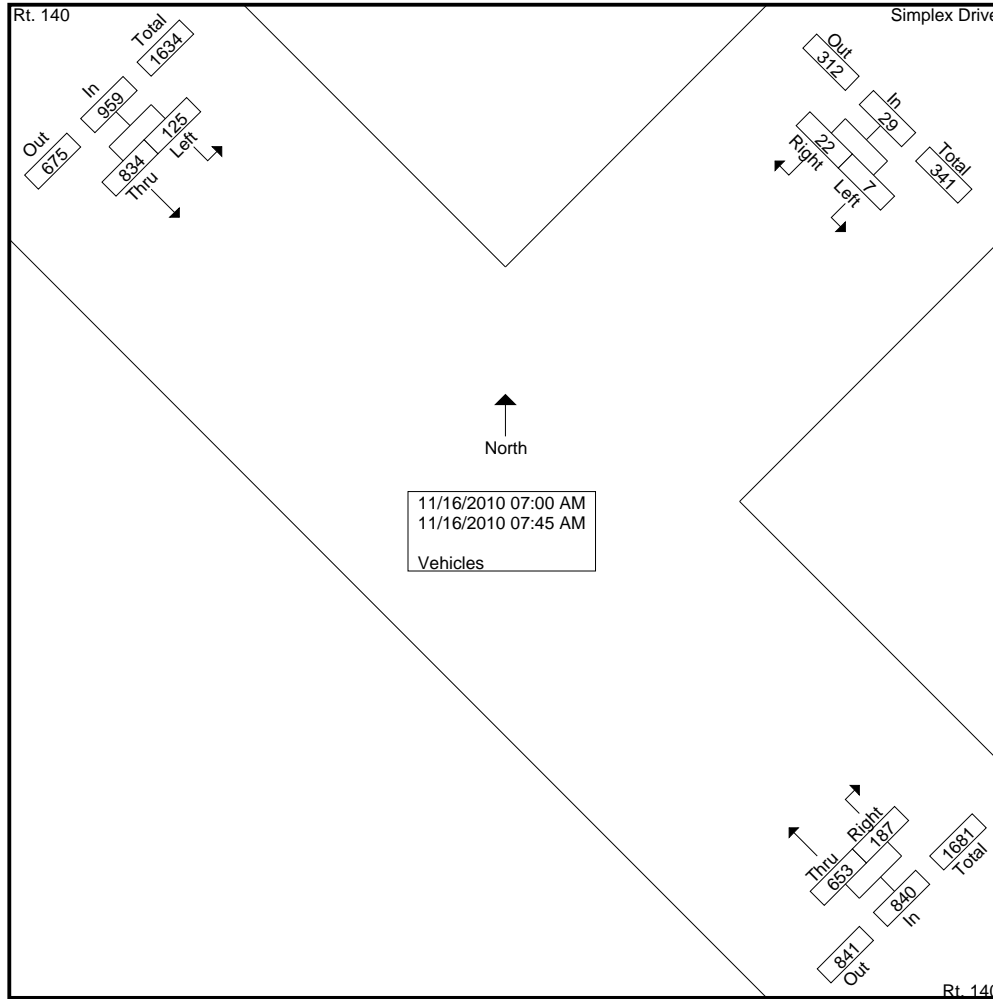
File Name : 332-2010-4251 AM  
 Site Code : 20104251  
 Start Date : 11/16/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From Northwest			Simplex Drive From Northeast			Rt. 140 From Southeast			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
07:00 AM	184	12	196	4	3	7	23	137	160	363
07:15 AM	228	14	242	1	2	3	27	153	180	425
07:30 AM	218	38	256	5	2	7	41	157	198	461
07:45 AM	204	61	265	12	0	12	96	206	302	579
Total	834	125	959	22	7	29	187	653	840	1828
Grand Total	834	125	959	22	7	29	187	653	840	1828
Apprch %	87	13		75.9	24.1		22.3	77.7		
Total %	45.6	6.8	52.5	1.2	0.4	1.6	10.2	35.7	46	

Community: Westminster  
Street: West Main St (Rt. 140)  
Location: At Simplex Drive  
Function Class: U-2

File Name : 332-2010-4251 AM  
Site Code : 20104251  
Start Date : 11/16/2010  
Page No : 2



Community: Westminster  
 Street: West Main St (Rt. 140)  
 Location: At Simplex Drive  
 Function Class: U-2

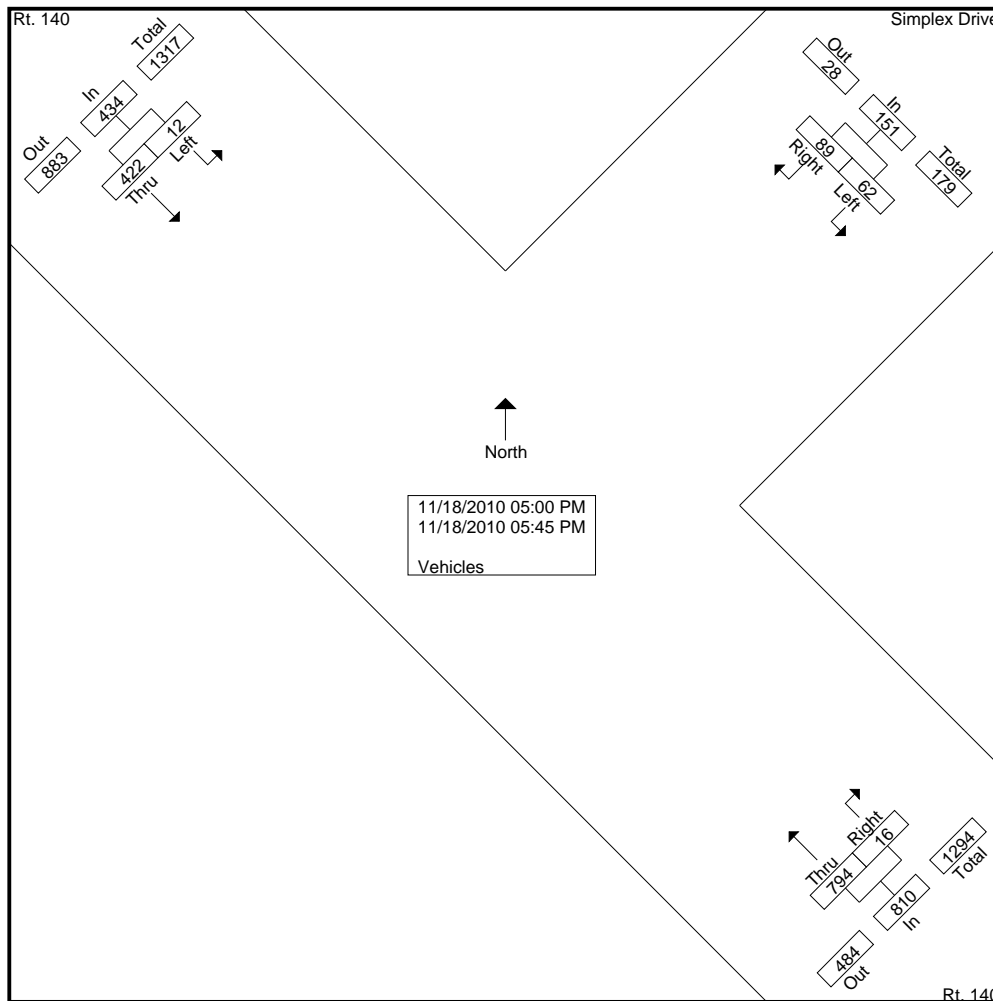
File Name : 332-2010-4251 PM  
 Site Code : 4251  
 Start Date : 11/18/2010  
 Page No : 1

**Groups Printed- Vehicles**

Start Time	Rt. 140 From Northwest			Simplex Drive From Northeast			Rt. 140 From Southeast			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
05:00 PM	135	9	144	56	31	87	6	215	221	452
05:15 PM	99	0	99	10	12	22	5	218	223	344
05:30 PM	95	2	97	17	8	25	3	182	185	307
05:45 PM	93	1	94	6	11	17	2	179	181	292
Total	422	12	434	89	62	151	16	794	810	1395
Grand Total	422	12	434	89	62	151	16	794	810	1395
Apprch %	97.2	2.8		58.9	41.1		2	98		
Total %	30.3	0.9	31.1	6.4	4.4	10.8	1.1	56.9	58.1	

Community: Westminster  
Street: West Main St (Rt. 140)  
Location: At Simplex Drive  
Function Class: U-2

File Name : 332-2010-4251 PM  
Site Code : 4251  
Start Date : 11/18/2010  
Page No : 2



## **Appendix – Capacity Analysis**

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**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Spring St (Rt 12)**

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Analyst: BD Inter.: 140 / 12  
 Agency: Area Type: All other areas  
 Date: 10/13/2010 Jurisd:  
 Period: 7:15 - 8:15 AM Year : 2011  
 Project ID: Route 140 North Study  
 E/W St: Route 12 N/S St:

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	0	0	0	1	0	1	1	0
LGConfig					LR			TR		L	T	
Volume				5		75	248	3		118	690	
Lane Width					12.0		12.0			12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru					Thru	P		
Right					Right	P		
Peds					Peds			
WB Left		P			SB Left	P	P	
Thru					Thru	P	P	
Right		P			Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	15.0				10.0	27.0	0.0	
Yellow	4.0				4.0	4.0		
All Red	2.0				2.0	2.0		
Cycle Length: 70.0								secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

Westbound

LR 378 1655 0.24 0.23 23.5 C 23.5 C

Northbound

TR 813 1897 0.35 0.43 14.6 B 14.6 B

Southbound

L 648 1805 0.21 0.63 6.8 A  
 T 1249 1900 0.63 0.66 9.4 A 9.0 A

Intersection Delay = 11.3 (sec/veh) Intersection LOS = B

Phone: Fax:  
 E-Mail:

OPERATIONAL ANALYSIS

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Analyst: BD  
 Agency/Co.:  
 Date Performed: 10/13/2010  
 Analysis Time Period: 7:15 - 8:15 AM  
 Intersection: 140 / 12  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2011  
 Project ID: Route 140 North Study  
 E/W St: Route 12 N/S St:

VOLUME DATA

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	Eastbound			Westbound			Northbound			Southbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume				5		75		248	3		118	690	
% Heavy Veh				0		0		0	0		0	0	
PHF				0.88		0.88		0.88	0.88		0.88	0.88	
PK 15 Vol				2		21		70	1		34	196	
Hi Ln Vol													
% Grade					0			0			0		
Ideal Sat					1900			1900			1900	1900	
ParkExist													
NumPark													
No. Lanes	0	0	0	0	0	0	0	1	0		1	1	0
LGConfig					LR			TR			L	T	
Lane Width					12.0			12.0			12.0	12.0	
RTOR Vol						0			0				
Adj Flow					91			285			134	784	
%InSharedLn													
Prop LTs					0.066			0.000			1.000	0.000	
Prop RTs					0.934			0.011			0.000		
Peds Bikes	0			0			0						
Buses					0			0			0	0	
%InProtPhase											0.0		
Duration	0.25			Area Type: All other areas									

OPERATING PARAMETERS

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	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet					0.0			0.0			0.0	0.0
Arriv. Type					3			3			3	3
Unit Ext.					3.0			3.0			3.0	3.0
I Factor					1.000			1.000			1.000	
Lost Time					2.0			2.0			2.0	2.0
Ext of g					3.0			5.0			3.0	5.0
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4		5	6	7	8
EB Left						NB Left			
Thru						Thru		P	
Right						Right		P	
Peds						Peds			
WB Left		P				SB Left	P	P	
Thru						Thru	P	P	
Right		P				Right			
Peds						Peds			
NB Right						EB Right			
SB Right						WB Right			
Green		15.0					10.0	27.0	0.0
Yellow		4.0					4.0	4.0	
All Red		2.0					2.0	2.0	

Cycle Length: 70.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V				5		75	248	3		118	690	
PHF				0.88		0.88	0.88	0.88		0.88	0.88	
Adj flow				6		85	282	3		134	784	
No. Lanes	0	0	0	0	0	0	0	1	0	1	1	0
Lane group					LR			TR		L	T	
Adj flow					91			285		134	784	
Prop LTs					0.066			0.000		1.000	0.000	
Prop RTs					0.934			0.011			0.000	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound				Westbound				Northbound				Southbound			
					LR				TR				L T			
So					1900				1900				1900 1900			
Lanes	0	0	0	0	0	0	0	0	1	0			1	1		0
fW					1.000				1.000				1.000 1.000			
fHV					1.000				1.000				1.000 1.000			
fG					1.000				1.000				1.000 1.000			
fP					1.000				1.000				1.000 1.000			
fBB					1.000				1.000				1.000 1.000			
fA					1.000				1.000				1.000 1.000			
fLU					1.000				1.000				1.000 1.000			
fRT					0.874				0.999				1.000			
fLT					0.997				1.000				0.950 1.000			
Sec.													0.407			
fLpb					1.000				1.000				1.000 1.000			
fRpb					1.000				1.000				1.000			
S					1655				1897				1805 1900			
Sec.													773			

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru							
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LR	91	1655	# 0.05	0.23	378	0.24
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	TR	285	1897	0.15	0.43	813	0.35
Right							
Southbound							
Prot		134	1805	0.07	0.157	284	0.47
Perm		0	773	0.00	0.471	364	0.00
Left	L	134			0.63	648	0.21
Prot							
Perm							
Thru	T	784	1900	# 0.41	0.66	1249	0.63
Right							

Sum of flow ratios for critical lane groups,  $Y_c = \text{Sum (v/s)} = 0.47$   
Total lost time per cycle,  $L = 8.00 \text{ sec}$   
Critical flow rate to capacity ratio,  $X_c = (Y_c)(C)/(C-L) = 0.53$

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios		Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Res Del d2	Res Del d3	Lane Group		Approach	
	v/c	g/C							Delay	LOS	Delay	LOS
Eastbound												
Westbound												
LR	0.24	0.23	22.0	1.000	378	0.50	1.5	0.0	23.5	C	23.5	C
Northbound												
TR	0.35	0.43	13.4	1.000	813	0.50	1.2	0.0	14.6	B	14.6	B
Southbound												
L	0.21	0.63	6.0	1.000	648	0.50	0.7	0.0	6.8	A		
T	0.63	0.66	7.0	1.000	1249	0.50	2.4	0.0	9.4	A	9.0	A

Intersection delay = 11.3 (sec/veh)      Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET  
for exclusive lefts

Input	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C				70.0 sec
Total actual green time for LT lane group, G (s)				43.0
Effective permitted green time for LT lane group, g(s)				33.0
Opposing effective green time, go (s)				30.0
Number of lanes in LT lane group, N				1
Number of lanes in opposing approach, No				1
Adjusted LT flow rate, VLT (veh/h)				134
Proportion of LT in LT lane group, PLT				1.000
Proportion of LT in opposing flow, PLTo				0.00
Adjusted opposing flow rate, Vo (veh/h)				285
Lost time for LT lane group, tL				5.00
Computation				
LT volume per cycle, LTC=VLTC/3600				2.61
Opposing lane util. factor, fLUo	1.000		1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				5.54
gf=G[exp(- a * (LTC ** b))]-tL, gf<=g				0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				0.57
gq, (see Exhibit C16-4,5,6,7,8)				10.06
gu=g-gq if gq>=gf, or = g-gf if gq<gf				22.94
n=Max(gq-gf)/2,0)				5.03
PTHo=1-PLTo				1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				1.00
EL1 (refer to Exhibit C16-3)				1.71
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				0.12
gdifff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				0.41
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdifff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				0.407

For special case of single-lane approach opposed by multilane approach, see text.

\* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

\*\* For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET  
for shared lefts

Input	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C				70.0 sec
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No  
Adjusted LT flow rate, VLT (veh/h)  
Proportion of LT in LT lane group, PLT 0.066 0.000 0.000  
Proportion of LT in opposing flow, PLTo  
Adjusted opposing flow rate, Vo (veh/h)  
Lost time for LT lane group, tL  
Computation  
LT volume per cycle, LTC=VLTC/3600  
Opposing lane util. factor, fLUo 1.000 1.000 1.000  
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)  
 $gf=G[\exp(-a * (LTC ** b))]-tL$ ,  $gf \leq g$   
Opposing platoon ratio, Rpo (refer Exhibit 16-11)  
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]  
gq, (see Exhibit C16-4,5,6,7,8)  
 $gu=g-gq$  if  $gq \geq gf$ , or  $= g-gf$  if  $gq < gf$   
 $n=Max(gq-gf)/2,0$   
 $PTHo=1-PLTo$   
 $PL^*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]$   
EL1 (refer to Exhibit C16-3)  
 $EL2=Max((1-Ptho**n)/Plto, 1.0)$   
 $fmin=2(1+PL)/g$  or  $fmin=2(1+Pl)/g$   
 $gdiff=max(gq-gf,0)$   
 $fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]$ , (min=fmin;max=1.00)  
 $flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)]$ , (fmin<=fm<=1.00)  
or  $flt=[fm+0.91(N-1)]/N**$   
Left-turn adjustment, fLT

For special case of single-lane approach opposed by multilane approach,  
see text.

\* If  $Pl > 1$  for shared left-turn lanes with  $N > 1$ , then assume de-facto  
left-turn lane and redo calculations.  
\*\* For permitted left-turns with multiple exclusive left-turn lanes,  $flt=fm$ .  
For special case of multilane approach opposed by single-lane approach  
or when  $gf > gq$ , see text.

\_\_\_\_\_SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET\_\_\_\_\_

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbicg  
 OCCr  
 Number of cross-street receiving lanes, Nrec  
 Number of turning lanes, Nturn  
 ApbT  
 Proportion right-turns, PRT  
 Proportion right-turns using protected phase, PRTA  
 Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	70.0			sec
Adj. LT vol from Vol Adjustment Worksheet, v				134
v/c ratio from Capacity Worksheet, X				0.21
Protected phase effective green interval, g (s)				11.0
Opposing queue effective green interval, gq				10.06
Unopposed green interval, gu				22.94
Red time r=(C-g-gq-gu)				26.0
Arrival rate, qa=v/(3600(max[X,1.0]))				0.04
Protected ph. departure rate, Sp=s/3600				0.501
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				0.31
XPerm				0.17
XProt				0.25
Case				1
Queue at beginning of green arrow, Qa				0.97
Queue at beginning of unsaturated green, Qu				0.37
Residual queue, Qr				0.00
Uniform Delay, d1				6.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay		Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
			Unadj. ds	Adj. d1 sec				
Eastbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Westbound								
	0.0						0.0	
LR	0.0	0.00	27.0	22.0	0.00	0.0	0.0	23.5
	0.0						0.0	
Northbound								
	0.0						0.0	
TR	0.0	0.00	20.0	13.4	0.00	0.0	0.0	14.6
	0.0						0.0	
Southbound								
L	0.0	0.00		6.0	0.00	0.0	0.0	6.8
T	0.0	0.00	12.0	7.0	0.00	0.0	0.0	9.4
	0.0						0.0	

Intersection Delay 11.3 sec/veh      Intersection LOS B

	Eastbound			Westbound			Northbound			Southbound		
LaneGroup				LR			TR			L T		
Init Queue				0.0			0.0			0.0 0.0		
Flow Rate				91			285			134 784		
So				1900			1900			1900 1900		
No.Lanes	0	0	0	0	0	0	0	1	0	1	1	0
SL				1655			1897			1031 1900		
LnCapacity				378			813			648 1249		
Flow Ratio				0.1			0.2			0.1 0.4		
v/c Ratio				0.24			0.35			0.21 0.63		
Grn Ratio				0.23			0.43			0.63 0.66		
I Factor				1.000			1.000			1.000		
AT or PVG				3			3			3 3		
Pltn Ratio				1.00			1.00			1.00 1.00		
PF2				1.00			1.00			1.00 1.00		
Q1				1.4			3.7			1.0 8.9		
kB				0.5			0.8			0.7 1.1		
Q2				0.2			0.4			0.2 1.8		
Q Average				1.6			4.2			1.2 10.7		
Q Spacing				25.0			25.0			25.0 25.0		
Q Storage				0			0			0 0		
Q S Ratio												
70th Percentile Output:												
fB%				1.3			1.2			1.3 1.2		
BOQ				2.0			5.2			1.5 13.0		
QSRatio												
85th Percentile Output:												
fB%				1.6			1.5			1.6 1.4		
BOQ				2.6			6.4			1.9 15.4		
QSRatio												
90th Percentile Output:												
fB%				1.9			1.7			1.9 1.6		
BOQ				3.0			7.2			2.2 16.7		
QSRatio												
95th Percentile Output:												
fB%				2.3			2.0			2.4 1.7		
BOQ				3.7			8.5			2.8 18.4		
QSRatio												
98th Percentile Output:												
fB%				2.8			2.4			2.9 1.9		
BOQ				4.5			9.8			3.4 20.1		
QSRatio												

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ERROR MESSAGES

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No errors to report.

Analyst: BD Inter.: 140 / 12  
 Agency: Area Type: All other areas  
 Date: 10/13/2010 Jurisd:  
 Period: 4:15 - 5:15 PM Year : 2011  
 Project ID: Route 140 North Study  
 E/W St: Route 12 N/S St:

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	0	0	0	1	0	1	1	0
LGConfig					LR			TR		L	T	
Volume				7		143	614	13		140	398	
Lane Width					12.0		12.0			12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru					Thru	P		
Right					Right	P		
Peds					Peds			
WB Left		P			SB Left	P	P	
Thru					Thru	P	P	
Right		P			Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	15.0				10.0	27.0	0.0	
Yellow	4.0				4.0	4.0		
All Red	2.0				2.0	2.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

Westbound

LR 378 1652 0.45 0.23 27.1 C 27.1 C

Northbound

TR 812 1895 0.88 0.43 31.2 C 31.2 C

Southbound

L 421 1805 0.38 0.63 11.6 B  
 T 1249 1900 0.36 0.66 6.2 A 7.6 A

Intersection Delay = 21.1 (sec/veh) Intersection LOS = C

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_

OPERATIONAL ANALYSIS

Analyst: BD  
 Agency/Co.:  
 Date Performed: 10/13/2010  
 Analysis Time Period: 4:15 - 5:15 PM  
 Intersection: 140 / 12  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2011  
 Project ID: Route 140 North Study  
 E/W St: Route 12 N/S St:

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				7		143	614	13		140	398	
% Heavy Veh				0		0	0	0		0	0	
PHF				0.88		0.88	0.88	0.88		0.88	0.88	
PK 15 Vol				2		41	174	4		40	113	
Hi Ln Vol												
% Grade					0		0				0	
Ideal Sat					1900		1900			1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	0	0	0	0	1	0	1	1	0
LGConfig					LR			TR		L	T	
Lane Width					12.0			12.0		12.0	12.0	
RTOR Vol						0			0			
Adj Flow					171			713		159	452	
%InSharedLn												
Prop LTs					0.047			0.000		1.000	0.000	
Prop RTs					0.953			0.021		0.000		
Peds Bikes	0			0			0					
Buses					0			0		0	0	
%InProtPhase										0.0		
Duration	0.25			Area Type: All other areas								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet					0.0			0.0		0.0	0.0	
Arriv. Type					3			3		3	3	
Unit Ext.					3.0			3.0		3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time					2.0			2.0		2.0	2.0	
Ext of g					3.0			5.0		3.0	5.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4		5	6	7	8
EB Left						NB Left			
Thru						Thru		P	
Right						Right		P	
Peds						Peds			
WB Left		P				SB Left	P	P	
Thru						Thru	P	P	
Right		P				Right			
Peds						Peds			
NB Right						EB Right			
SB Right						WB Right			
Green		15.0					10.0	27.0	0.0
Yellow		4.0					4.0	4.0	
All Red		2.0					2.0	2.0	

Cycle Length: 70.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V				7		143	614	13		140	398	
PHF				0.88		0.88	0.88	0.88		0.88	0.88	
Adj flow				8		163	698	15		159	452	
No. Lanes	0	0	0	0	0	0	0	1	0	1	1	0
Lane group					LR			TR		L	T	
Adj flow					171			713		159	452	
Prop LTs					0.047			0.000		1.000	0.000	
Prop RTs					0.953			0.021			0.000	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound				Westbound				Northbound				Southbound			
	L	T	R		L	T	R		L	T	R		L	T	R	
LG					LR				TR				L	T		
So					1900				1900				1900	1900		
Lanes	0	0	0	0	0	0	0	0	1	0			1	1		0
fW					1.000				1.000				1.000	1.000		
fHV					1.000				1.000				1.000	1.000		
fG					1.000				1.000				1.000	1.000		
fP					1.000				1.000				1.000	1.000		
fBB					1.000				1.000				1.000	1.000		
fA					1.000				1.000				1.000	1.000		
fLU					1.000				1.000				1.000	1.000		
fRT					0.871				0.997					1.000		
fLT					0.998				1.000				0.950	1.000		
Sec.													0.152			
fLpb					1.000				1.000				1.000	1.000		
fRpb					1.000				1.000					1.000		
S					1652				1895				1805	1900		
Sec.													290			

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru							
Right							
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LR	171	1652	# 0.10	0.23	378	0.45
Right							
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	TR	713	1895	# 0.38	0.43	812	0.88
Right							
Southbound							
Prot		159	1805	# 0.09	0.157	284	0.56
Perm		0	290	0.00	0.471	137	0.00
Left	L	159			0.63	421	0.38
Prot							
Perm							
Thru	T	452	1900	0.24	0.66	1249	0.36
Right							

Sum of flow ratios for critical lane groups,  $Y_c = \text{Sum (v/s)} = 0.57$   
Total lost time per cycle,  $L = 13.00 \text{ sec}$   
Critical flow rate to capacity ratio,  $X_c = (Y_c)(C)/(C-L) = 0.70$

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios		Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Res Del d2	Res Del d3	Lane Group		Approach	
	v/c	g/C							Delay	LOS	Delay	LOS
Eastbound												
Westbound												
LR	0.45	0.23	23.2	1.000	378	0.50	3.9	0.0	27.1	C	27.1	C
Northbound												
TR	0.88	0.43	18.3	1.000	812	0.50	12.9	0.0	31.2	C	31.2	C
Southbound												
L	0.38	0.63	9.0	1.000	421	0.50	2.6	0.0	11.6	B		
T	0.36	0.66	5.4	1.000	1249	0.50	0.8	0.0	6.2	A	7.6	A

Intersection delay = 21.1 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET

for exclusive lefts

Input	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C				70.0 sec
Total actual green time for LT lane group, G (s)				43.0
Effective permitted green time for LT lane group, g(s)				33.0
Opposing effective green time, go (s)				30.0
Number of lanes in LT lane group, N				1
Number of lanes in opposing approach, No				1
Adjusted LT flow rate, VLT (veh/h)				159
Proportion of LT in LT lane group, PLT				1.000
Proportion of LT in opposing flow, PLTo				0.00
Adjusted opposing flow rate, Vo (veh/h)				713
Lost time for LT lane group, tL				5.00
Computation				
LT volume per cycle, LTC=VLTC/3600				3.09
Opposing lane util. factor, fLUo	1.000		1.000	1.000
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)				13.86
gf=G[exp(- a * (LTC ** b))]-tL, gf<=g				0.0
Opposing platoon ratio, Rpo (refer Exhibit 16-11)				1.00
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]				0.57
gq, (see Exhibit C16-4,5,6,7,8)				20.24
gu=g-gq if gq>=gf, or = g-gf if gq<gf				12.76
n=Max(gq-gf)/2,0)				10.12
PTHo=1-PLTo				1.00
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]				1.00
EL1 (refer to Exhibit C16-3)				2.54
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g				0.12
gdiff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)				0.15
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT				0.152

For special case of single-lane approach opposed by multilane approach, see text.

\* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

\*\* For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET

for shared lefts

Input	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C				70.0 sec
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No  
Adjusted LT flow rate, VLT (veh/h)  
Proportion of LT in LT lane group, PLT 0.047 0.000 0.000  
Proportion of LT in opposing flow, PLTo  
Adjusted opposing flow rate, Vo (veh/h)  
Lost time for LT lane group, tL  
Computation  
LT volume per cycle, LTC=VLTC/3600  
Opposing lane util. factor, fLUo 1.000 1.000 1.000  
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)  
 $gf=G[\exp(-a * (LTC ** b))]-tL$ ,  $gf \leq g$   
Opposing platoon ratio, Rpo (refer Exhibit 16-11)  
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]  
gq, (see Exhibit C16-4,5,6,7,8)  
 $gu=g-gq$  if  $gq \geq gf$ , or  $= g-gf$  if  $gq < gf$   
 $n=Max(gq-gf)/2,0$   
 $PTHo=1-PLTo$   
 $PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]$   
EL1 (refer to Exhibit C16-3)  
 $EL2=Max((1-Ptho**n)/Plto, 1.0)$   
 $fmin=2(1+PL)/g$  or  $fmin=2(1+Pl)/g$   
 $gdiff=max(gq-gf,0)$   
 $fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]$ , (min=fmin;max=1.00)  
 $flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)]$ , (fmin<=fm<=1.00)  
or  $flt=[fm+0.91(N-1)]/N**$   
Left-turn adjustment, fLT

For special case of single-lane approach opposed by multilane approach,  
see text.

\* If  $Pl > 1$  for shared left-turn lanes with  $N > 1$ , then assume de-facto  
left-turn lane and redo calculations.  
\*\* For permitted left-turns with multiple exclusive left-turn lanes,  $flt=fm$ .  
For special case of multilane approach opposed by single-lane approach  
or when  $gf > gq$ , see text.

\_\_\_\_\_SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET\_\_\_\_\_

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbicg  
 OCCr  
 Number of cross-street receiving lanes, Nrec  
 Number of turning lanes, Nturn  
 ApbT  
 Proportion right-turns, PRT  
 Proportion right-turns using protected phase, PRTA  
 Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	70.0			sec
Adj. LT vol from Vol Adjustment Worksheet, v				159
v/c ratio from Capacity Worksheet, X				0.38
Protected phase effective green interval, g (s)				11.0
Opposing queue effective green interval, gq				20.24
Unopposed green interval, gu				12.76
Red time r=(C-g-gq-gu)				26.0
Arrival rate, qa=v/(3600(max[X,1.0]))				0.04
Protected ph. departure rate, Sp=s/3600				0.501
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				0.21
XPerm				0.55
XProt				0.30
Case				1
Queue at beginning of green arrow, Qa				1.15
Queue at beginning of unsaturated green, Qu				0.89
Residual queue, Qr				0.00
Uniform Delay, d1				9.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay		Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
			Unadj. ds	Adj. d1 sec				
Eastbound								
	0.0						0.0	
	0.0						0.0	
	0.0						0.0	
Westbound								
	0.0						0.0	
LR	0.0	0.00	27.0	23.2	0.00	0.0	0.0	27.1
	0.0						0.0	
Northbound								
	0.0						0.0	
TR	0.0	0.00	20.0	18.3	0.00	0.0	0.0	31.2
	0.0						0.0	
Southbound								
L	0.0	0.00		9.0	0.00	0.0	0.0	11.6
T	0.0	0.00	12.0	5.4	0.00	0.0	0.0	6.2
	0.0						0.0	

Intersection Delay 21.1 sec/veh      Intersection LOS C

	Eastbound			Westbound			Northbound			Southbound		
LaneGroup				LR			TR			L T		
Init Queue				0.0			0.0			0.0 0.0		
Flow Rate				171			713			159 452		
So				1900			1900			1900 1900		
No.Lanes	0	0	0	0	0	0	0	1	0	1	1	0
SL				1652			1895			669 1900		
LnCapacity				378			812			421 1249		
Flow Ratio				0.1			0.4			0.2 0.2		
v/c Ratio				0.45			0.88			0.38 0.36		
Grn Ratio				0.23			0.43			0.63 0.66		
I Factor				1.000			1.000			1.000		
AT or PVG				3			3			3 3		
Pltn Ratio				1.00			1.00			1.00 1.00		
PF2				1.00			1.00			1.00 1.00		
Q1				2.9			12.7			1.2 4.0		
kB				0.5			0.8			0.5 1.1		
Q2				0.4			4.4			0.3 0.6		
Q Average				3.3			17.1			1.5 4.6		
Q Spacing				25.0			25.0			25.0 25.0		
Q Storage				0			0			0 0		
Q S Ratio												
70th Percentile Output:												
fB%				1.3			1.2			1.3 1.2		
BOQ				4.1			20.6			2.0 5.7		
QSRatio												
85th Percentile Output:												
fB%				1.6			1.4			1.6 1.5		
BOQ				5.1			24.1			2.5 7.0		
QSRatio												
90th Percentile Output:												
fB%				1.8			1.5			1.9 1.7		
BOQ				5.7			25.9			2.9 7.8		
QSRatio												
95th Percentile Output:												
fB%				2.1			1.6			2.3 2.0		
BOQ				6.9			27.9			3.6 9.2		
QSRatio												
98th Percentile Output:												
fB%				2.5			1.7			2.8 2.3		
BOQ				8.1			29.9			4.3 10.5		
QSRatio												

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ERROR MESSAGES

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No errors to report.

**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Old Gardner Road**

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TWO-WAY STOP CONTROL SUMMARY

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period: 7:15-8:15 AM Peak Hour  
 Intersection: Route 140 at Old Gardner Rd  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Old Gardner Road  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		286	18		1	598		
Peak-Hour Factor, PHF		0.88	0.88		0.88	0.88		
Hourly Flow Rate, HFR		325	20		1	679		
Percent Heavy Vehicles		--	--		3	--	--	
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR			LT		
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		59		0				
Peak Hour Factor, PHF		0.88		0.88				
Hourly Flow Rate, HFR		67		0				
Percent Heavy Vehicles		3		3				
Percent Grade (%)			0			0		
Flared Approach: Exists?/Storage				No	/		/	
Lanes		0		0				
Configuration			LR					

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound				
			7	8	9	10	11	12		
Movement	1	4		7	8	9		10	11	12
Lane Config		LT			LR					
v (vph)		1		67						
C(m) (vph)		1208		263						
v/c		0.00		0.25						
95% queue length		0.00		0.99						
Control Delay		8.0		23.3						
LOS		A		C						
Approach Delay				23.3						
Approach LOS				C						

HCS+: Unsignalized Intersections Release 5.3

Phone:  
E-Mail:

Fax:

\_\_\_\_\_TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_\_\_\_\_

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period: 7:15-8:15 AM Peak Hour  
 Intersection: Route 140 at Old Gardner Rd  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Old Gardner Road  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

\_\_\_\_\_Vehicle Volumes and Adjustments\_\_\_\_\_

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		286	18	1	598	
Peak-Hour Factor, PHF		0.88	0.88	0.88	0.88	
Peak-15 Minute Volume		81	5	0	170	
Hourly Flow Rate, HFR		325	20	1	679	
Percent Heavy Vehicles		--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	59		0			
Peak Hour Factor, PHF	0.88		0.88			
Peak-15 Minute Volume	17		0			
Hourly Flow Rate, HFR	67		0			
Percent Heavy Vehicles	3		3			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0		0			
Configuration		LR				

\_\_\_\_\_Pedestrian Volumes and Adjustments\_\_\_\_\_

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		679
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		3	3		3			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		3	3		3			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

V c, x		345	1016		335			
s								
Px								
V c, u, x								

C r, x  
 C plat, x

Two-Stage Process

	7	8	10	11
--	---	---	----	----

V(c, x)  
 s 1500  
 P(x)  
 V(c, u, x)

C(r, x)  
 C(plat, x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St. 9 12

Conflicting Flows 335  
 Potential Capacity 705  
 Pedestrian Impedance Factor 1.00 1.00  
 Movement Capacity 705  
 Probability of Queue free St. 1.00 1.00

Step 2: LT from Major St. 4 1

Conflicting Flows 345  
 Potential Capacity 1208  
 Pedestrian Impedance Factor 1.00 1.00  
 Movement Capacity 1208  
 Probability of Queue free St. 1.00 1.00  
 Maj L-Shared Prob Q free St. 1.00

Step 3: TH from Minor St. 8 11

Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity  
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Conflicting Flows 1016  
 Potential Capacity 263  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 1.00  
 Maj. L, Min T Adj. Imp Factor. 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity 263

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St. 8 11

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity  
 Probability of Queue free St.

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity

---

Result for 2 stage process:

a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

---

Step 4: LT from Minor St. 7 10

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows 1016  
 Potential Capacity 263  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 1.00  
 Maj. L, Min T Adj. Imp Factor. 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity 263

---

Results for Two-stage process:

a  
 Y  
 C t 263

---

Worksheet 8-Shared Lane Calculations

---

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)	67		0			
Movement Capacity (vph)	263		705			
Shared Lane Capacity (vph)		263				

---

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	263		705			
Volume	67		0			
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh		263				
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		1		67				
C(m) (vph)		1208		263				
v/c		0.00		0.25				
95% queue length		0.00		0.99				
Control Delay		8.0		23.3				
LOS		A		C				
Approach Delay				23.3				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(i1), Volume for stream 2 or 5		679
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		1.00
d(M,LT), Delay for stream 1 or 4		8.0
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		0.0

TWO-WAY STOP CONTROL SUMMARY

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period: 4:00-5:00 PM Peak Hour  
 Intersection: Route 140 at Old Gardner Rd  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Old Gardner Road  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4   L	5 T	6 R	
Volume		600	44	1	397			
Peak-Hour Factor, PHF		0.88	0.88	0.88	0.88			
Hourly Flow Rate, HFR		681	50	1	451			
Percent Heavy Vehicles		--	--	3	--	--		
Median Type/Storage		Undivided		/				
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10   L	11 T	12 R
Volume		38		0			
Peak Hour Factor, PHF		0.88		0.88			
Hourly Flow Rate, HFR		43		0			
Percent Heavy Vehicles		3		3			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound				
			7	8	9	10	11	12		
Movement	1	4		7	8	9		10	11	12
Lane Config		LT			LR					
v (vph)		1		43						
C(m) (vph)		869		215						
v/c		0.00		0.20						
95% queue length		0.00		0.73						
Control Delay		9.1		25.9						
LOS		A		D						
Approach Delay				25.9						
Approach LOS				D						

HCS+: Unsignalized Intersections Release 5.3

Phone:  
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TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period: 4:00-5:00 PM Peak Hour  
 Intersection: Route 140 at Old Gardner Rd  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Old Gardner Road  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		600	44	1	397	
Peak-Hour Factor, PHF		0.88	0.88	0.88	0.88	
Peak-15 Minute Volume		170	12	0	113	
Hourly Flow Rate, HFR		681	50	1	451	
Percent Heavy Vehicles		--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	38		0			
Peak Hour Factor, PHF	0.88		0.88			
Peak-15 Minute Volume	11		0			
Hourly Flow Rate, HFR	43		0			
Percent Heavy Vehicles	3		3			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		451
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		3	3		3			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		3	3		3			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

V c, x	731	1159	706
s			
Px			
V c, u, x			

C r, x  
 C plat, x

Two-Stage Process

7	8	10	11
---	---	----	----

V(c,x)  
s 1500  
P(x)  
V(c,u,x)

C(r,x)  
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St. 9 12

Conflicting Flows 706  
Potential Capacity 434  
Pedestrian Impedance Factor 1.00 1.00  
Movement Capacity 434  
Probability of Queue free St. 1.00 1.00

Step 2: LT from Major St. 4 1

Conflicting Flows 731  
Potential Capacity 869  
Pedestrian Impedance Factor 1.00 1.00  
Movement Capacity 869  
Probability of Queue free St. 1.00 1.00  
Maj L-Shared Prob Q free St. 1.00

Step 3: TH from Minor St. 8 11

Conflicting Flows  
Potential Capacity  
Pedestrian Impedance Factor 1.00 1.00  
Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
Movement Capacity  
Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Conflicting Flows 1159  
Potential Capacity 215  
Pedestrian Impedance Factor 1.00 1.00  
Maj. L, Min T Impedance factor 1.00  
Maj. L, Min T Adj. Imp Factor. 1.00  
Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
Movement Capacity 215

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St. 8 11

Part 1 - First Stage  
Conflicting Flows  
Potential Capacity  
Pedestrian Impedance Factor  
Cap. Adj. factor due to Impeding mvmnt  
Movement Capacity  
Probability of Queue free St.

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity

Result for 2 stage process:  
 a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

Part 3 - Single Stage  
 Conflicting Flows 1159  
 Potential Capacity 215  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 1.00  
 Maj. L, Min T Adj. Imp Factor. 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity 215

Results for Two-stage process:  
 a  
 Y  
 C t 215

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	43		0			
Movement Capacity (vph)	215		434			
Shared Lane Capacity (vph)		215				

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	215		434			
Volume	43		0			
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh		215				
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		1		43				
C(m) (vph)		869		215				
v/c		0.00		0.20				
95% queue length		0.00		0.73				
Control Delay		9.1		25.9				
LOS		A		D				
Approach Delay				25.9				
Approach LOS				D				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(i1), Volume for stream 2 or 5		451
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		1.00
d(M,LT), Delay for stream 1 or 4		9.1
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		0.0

**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Teel Road**

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TWO-WAY STOP CONTROL SUMMARY

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period: 7:15-8:15 AM Peak Hour  
 Intersection: Route 140 at Teel Street  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Teel Street  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		15	286	1		5	684	5
Peak-Hour Factor, PHF		0.88	0.88	0.88		0.88	0.88	0.88
Hourly Flow Rate, HFR		17	325	1		5	777	5
Percent Heavy Vehicles		3	--	--		3	--	--
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		7	0	6		5	1	65
Peak Hour Factor, PHF		0.88	0.88	0.88		0.88	0.88	0.88
Hourly Flow Rate, HFR		7	0	6		5	1	73
Percent Heavy Vehicles		3	3	3		3	3	3
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound			
			4	7	8		9	10	11	12
Movement	1	4		7	8	9		10	11	12
Lane Config	LTR	LTR		LTR	LTR			LTR	LTR	
v (vph)	17	5		13				79		
C(m) (vph)	831	1228		210				359		
v/c	0.02	0.00		0.06				0.22		
95% queue length	0.06	0.01		0.20				0.83		
Control Delay	9.4	7.9		23.3				17.8		
LOS	A	A		C				C		
Approach Delay				23.3				17.8		
Approach LOS				C				C		

HCS+: Unsignalized Intersections Release 5.3

Phone:  
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TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period: 7:15-8:15 AM Peak Hour  
 Intersection: Route 140 at Teel Street  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Teel Street  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	15	286	1	5	684	5
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Peak-15 Minute Volume	4	81	0	1	194	1
Hourly Flow Rate, HFR	17	325	1	5	777	5
Percent Heavy Vehicles	3	--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal?	No			No		
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	7	0	6	5	1	65
Peak Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Peak-15 Minute Volume	2	0	2	1	0	18
Hourly Flow Rate, HFR	7	0	6	5	1	73
Percent Heavy Vehicles	3	3	3	3	3	3
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		No /
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	325	777
Shared ln volume, major rt vehicles:	1	5
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	3	3	3	3	3	3	3	3
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t(c,T):								
1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c)								
1-stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20	2.20	3.50	4.00	3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	3	3	3	3	3	3	3	3
t(f)	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

V c,x	782	326	1186	1152	326	1152	1150	780
s								
Px								
V c,u,x								

C r,x  
 C plat,x

Two-Stage Process

	7	8	10	11
--	---	---	----	----

---

V(c, x)							
s	1500		1500		1500		1500
P(x)							
V(c, u, x)							

---

C(r, x)  
C(plat, x)

---

Worksheet 6-Impedance and Capacity Equations

---

Step 1: RT from Minor St. 9 12

---

Conflicting Flows	326	780
Potential Capacity	713	394
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	713	394
Probability of Queue free St.	0.99	0.81

---

Step 2: LT from Major St. 4 1

---

Conflicting Flows	326	782
Potential Capacity	1228	831
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1228	831
Probability of Queue free St.	1.00	0.98
Maj L-Shared Prob Q free St.	0.99	0.97

---

Step 3: TH from Minor St. 8 11

---

Conflicting Flows	1152	1150
Potential Capacity	197	197
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.97	0.97
Movement Capacity	191	191
Probability of Queue free St.	1.00	0.99

---

Step 4: LT from Minor St. 7 10

---

Conflicting Flows	1186	1152
Potential Capacity	165	174
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.96	0.97
Maj. L, Min T Adj. Imp Factor.	0.97	0.98
Cap. Adj. factor due to Impeding mvmnt	0.79	0.97
Movement Capacity	131	168

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

---

Step 3: TH from Minor St. 8 11

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity  
 Probability of Queue free St.



Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	131	191	713	168	191	394
Volume	7	0	6	5	1	73
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh		210			359	
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	17	5		13			79	
C(m) (vph)	831	1228		210			359	
v/c	0.02	0.00		0.06			0.22	
95% queue length	0.06	0.01		0.20			0.83	
Control Delay	9.4	7.9		23.3			17.8	
LOS	A	A		C			C	
Approach Delay				23.3			17.8	
Approach LOS				C			C	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.98	1.00
v(i1), Volume for stream 2 or 5	325	777
v(i2), Volume for stream 3 or 6	1	5
s(i1), Saturation flow rate for stream 2 or 5	1700	1700
s(i2), Saturation flow rate for stream 3 or 6	1700	1700
P*(oj)	0.97	0.99
d(M,LT), Delay for stream 1 or 4	9.4	7.9
N, Number of major street through lanes	1	1
d(rank,1) Delay for stream 2 or 5	0.2	0.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period:  
 Intersection: Route 140 at Teel Street  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Teel Street  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4   L	5 T	6 R	
Volume		54	657	8	3	410	8	
Peak-Hour Factor, PHF		0.88	0.88	0.88	0.88	0.88	0.88	
Hourly Flow Rate, HFR		61	746	9	3	465	9	
Percent Heavy Vehicles		3	--	--	3	--	--	
Median Type/Storage		Undivided				/		
RT Channelized?								
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Westbound			Eastbound			
		7 L	8 T	9 R	10   L	11 T	12 R	
Volume		2	0	5	6	0	28	
Peak Hour Factor, PHF		0.88	0.88	0.88	0.88	0.88	0.88	
Hourly Flow Rate, HFR		2	0	5	6	0	31	
Percent Heavy Vehicles		3	3	3	3	3	3	
Percent Grade (%)		0				0		
Flared Approach: Exists?/Storage		No			/	No /		
Lanes		0	1	0		0	1	0
Configuration		LTR				LTR		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
			1	4   7	8	9   10	11	12
Movement	LTR	LTR		LTR		LTR		
Lane Config	LTR	LTR		LTR		LTR		
v (vph)	61	3		7		37		
C(m) (vph)	1083	851		228		354		
v/c	0.06	0.00		0.03		0.10		
95% queue length	0.18	0.01		0.09		0.35		
Control Delay	8.5	9.2		21.3		16.4		
LOS	A	A		C		C		
Approach Delay				21.3		16.4		
Approach LOS				C		C		

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TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: George Snow  
 Agency/Co.: MRPC  
 Date Performed: 3/31/2011  
 Analysis Time Period:  
 Intersection: Route 140 at Teel Street  
 Jurisdiction: Winchendon  
 Units: U. S. Customary  
 Analysis Year: 2010  
 Project ID: Rte 140 North Corridor Profile  
 East/West Street: Teel Street  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	54	657	8	3	410	8
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Peak-15 Minute Volume	15	187	2	1	116	2
Hourly Flow Rate, HFR	61	746	9	3	465	9
Percent Heavy Vehicles	3	--	--	3	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal?	No			No		
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	2	0	5	6	0	28
Peak Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Peak-15 Minute Volume	1	0	1	2	0	8
Hourly Flow Rate, HFR	2	0	5	6	0	31
Percent Heavy Vehicles	3	3	3	3	3	3
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		No /
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	746	465
Shared ln volume, major rt vehicles:	9	9
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	3	3	3	3	3	3	3	3
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t(c,T):								
1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c)								
1-stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20	2.20	3.50	4.00	3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	3	3	3	3	3	3	3	3
t(f)	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c, x	474	755	1363	1352	750	1351	1353	470
s								
Px								
V c, u, x								

C r, x  
 C plat, x

Two-Stage Process

	7	8	10	11
--	---	---	----	----

---

V(c,x)							
s	1500		1500		1500		1500
P(x)							
V(c,u,x)							

---

C(r,x)  
C(plat,x)

---

Worksheet 6-Impedance and Capacity Equations

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Step 1: RT from Minor St. 9 12

---

Conflicting Flows	750	470
Potential Capacity	410	591
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	410	591
Probability of Queue free St.	0.99	0.95

---

Step 2: LT from Major St. 4 1

---

Conflicting Flows	755	474
Potential Capacity	851	1083
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	851	1083
Probability of Queue free St.	1.00	0.94
Maj L-Shared Prob Q free St.	1.00	0.90

---

Step 3: TH from Minor St. 8 11

---

Conflicting Flows	1352	1353
Potential Capacity	149	149
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.89	0.89
Movement Capacity	133	133
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St. 7 10

---

Conflicting Flows	1363	1351
Potential Capacity	124	127
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.89	0.89
Maj. L, Min T Adj. Imp Factor.	0.92	0.92
Cap. Adj. factor due to Impeding mvmnt	0.87	0.91
Movement Capacity	108	115

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

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Step 3: TH from Minor St. 8 11

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity  
 Probability of Queue free St.



Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	108	133	410	115	133	591
Volume	2	0	5	6	0	31
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh		228			354	
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	61	3		7			37	
C(m) (vph)	1083	851		228			354	
v/c	0.06	0.00		0.03			0.10	
95% queue length	0.18	0.01		0.09			0.35	
Control Delay	8.5	9.2		21.3			16.4	
LOS	A	A		C			C	
Approach Delay				21.3			16.4	
Approach LOS				C			C	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.94	1.00
v(i1), Volume for stream 2 or 5	746	465
v(i2), Volume for stream 3 or 6	9	9
s(i1), Saturation flow rate for stream 2 or 5	1700	1700
s(i2), Saturation flow rate for stream 3 or 6	1700	1700
P*(oj)	0.90	1.00
d(M,LT), Delay for stream 1 or 4	8.5	9.2
N, Number of major street through lanes	1	1
d(rank,1) Delay for stream 2 or 5	0.9	0.0

**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Green St**

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Phone:  
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TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: bd  
 Agency/Co.:  
 Date Performed: 9/29/2010  
 Analysis Time Period: 7:15 - 8:15 AM  
 Intersection: 140 / Green St.  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Green Street  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	27	180			471	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	7	49			128	0
Hourly Flow Rate, HFR	29	195			511	0
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						Yes
Lanes	0	1			1	1
Configuration	LT				T	R
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				121		36
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				33		10
Hourly Flow Rate, HFR				131		39
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?						Yes
Lanes				1		1
Configuration				L		R

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	195	
Shared ln volume, major rt vehicles:	0	
Sat flow rate, major th vehicles:	1700	
Sat flow rate, major rt vehicles:	1700	
Number of major street through lanes:	1	

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.1		6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	0					0		0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70		0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.4		6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50		3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	0					0		0
t(f)	2.2					3.5		3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

V c, x	511					764		511
s								
Px								
V c, u, x								

C r, x  
 C plat, x

Two-Stage Process

	7	8	10	11
--	---	---	----	----

---

V(c, x)		
s		1500
P(x)		
V(c, u, x)		

---

C(r, x)		
C(plat, x)		

---

Worksheet 6-Impedance and Capacity Equations

---

Step 1: RT from Minor St.	9	12
---------------------------	---	----

---

Conflicting Flows		511
Potential Capacity		567
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		567
Probability of Queue free St.	1.00	0.93

---

Step 2: LT from Major St.	4	1
---------------------------	---	---

---

Conflicting Flows		511
Potential Capacity		1065
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		1065
Probability of Queue free St.	1.00	0.97
Maj L-Shared Prob Q free St.		0.97

---

Step 3: TH from Minor St.	8	11
---------------------------	---	----

---

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.97	0.97
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
---------------------------	---	----

---

Conflicting Flows		764
Potential Capacity		375
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.97	
Maj. L, Min T Adj. Imp Factor.	0.98	
Cap. Adj. factor due to Impeding mvmnt	0.91	0.97
Movement Capacity		365

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

---

Step 3: TH from Minor St.	8	11
---------------------------	---	----

---

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 0.97 0.97  
 Movement Capacity

---

Result for 2 stage process:

a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

---

Step 4: LT from Minor St. 7 10

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows 764  
 Potential Capacity 375  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 0.97  
 Maj. L, Min T Adj. Imp Factor. 0.98  
 Cap. Adj. factor due to Impeding mvmnt 0.91 0.97  
 Movement Capacity 365

---

Results for Two-stage process:

a  
 Y  
 C t 365

---

Worksheet 8-Shared Lane Calculations

---

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)				131		39
Movement Capacity (vph)				365		567
Shared Lane Capacity (vph)						

---

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep				365		567
Volume				131		39
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT					L		R
v (vph)	29					131		39
C(m) (vph)	1065					365		567
v/c	0.03					0.36		0.07
95% queue length	0.08					1.59		0.22
Control Delay	8.5					20.3		11.8
LOS	A					C		B
Approach Delay							18.3	
Approach LOS							C	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.97	1.00
v(i1), Volume for stream 2 or 5	195	
v(i2), Volume for stream 3 or 6	0	
s(i1), Saturation flow rate for stream 2 or 5	1700	
s(i2), Saturation flow rate for stream 3 or 6	1700	
P*(oj)	0.97	
d(M,LT), Delay for stream 1 or 4	8.5	
N, Number of major street through lanes	1	
d(rank,1) Delay for stream 2 or 5	0.3	



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TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: bd  
 Agency/Co.:  
 Date Performed:  
 Analysis Time Period: 5:00 - 6:00 PM  
 Intersection: 140 / Green St.  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Green Street  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	20	470			208	162
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	5	128			57	44
Hourly Flow Rate, HFR	21	510			226	176
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						Yes
Lanes	0	1			1	1
Configuration	LT				T	R
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				234		14
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				64		4
Hourly Flow Rate, HFR				254		15
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?						Yes
Lanes				1		1
Configuration				L		R

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	510	
Shared ln volume, major rt vehicles:	0	
Sat flow rate, major th vehicles:	1700	
Sat flow rate, major rt vehicles:	1700	
Number of major street through lanes:	1	

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.1		6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	0					0		0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70		0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.4		6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50		3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	0					0		0
t(f)	2.2					3.5		3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate,  $s$  (vph)  
 Arrival Type  
 Effective Green,  $g$  (sec)  
 Cycle Length,  $C$  (sec)  
 $R_p$  (from Exhibit 16-11)  
 Proportion vehicles arriving on green  $P$   
 $g(q1)$   
 $g(q2)$   
 $g(q)$

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 $V(t)$   $V(l,prot)$   $V(t)$   $V(l,prot)$

alpha  
 beta  
 Travel time,  $t(a)$  (sec)  
 Smoothing Factor,  $F$   
 Proportion of conflicting flow,  $f$   
 Max platooned flow,  $V(c,max)$   
 Min platooned flow,  $V(c,min)$   
 Duration of blocked period,  $t(p)$   
 Proportion time blocked,  $p$  0.000 0.000

Computation 3-Platoon Event Periods Result

$p(2)$  0.000  
 $p(5)$  0.000  
 $p(dom)$   
 $p(subo)$   
 Constrained or unconstrained?

Proportion unblocked for minor movements,  $p(x)$   
 (1) Single-stage Process (2) Two-Stage Process Stage I (3) Process Stage II

$p(1)$   
 $p(4)$   
 $p(7)$   
 $p(8)$   
 $p(9)$   
 $p(10)$   
 $p(11)$   
 $p(12)$

Computation 4 and 5  
 Single-Stage Process

Movement 1 4 7 8 9 10 11 12  
 L L L T R L T R

$V_{c,x}$  226 778 226  
 $s$   
 $P_x$   
 $V_{c,u,x}$

$C_{r,x}$   
 $C_{plat,x}$

Two-Stage Process 7 8 10 11

---

V(c, x)		
s		1500
P(x)		
V(c, u, x)		

---

C(r, x)		
C(plat, x)		

---

Worksheet 6-Impedance and Capacity Equations

---

Step 1: RT from Minor St.	9	12
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Conflicting Flows		226
Potential Capacity		818
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		818
Probability of Queue free St.	1.00	0.98

---

Step 2: LT from Major St.	4	1
---------------------------	---	---

---

Conflicting Flows		226
Potential Capacity		1354
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		1354
Probability of Queue free St.	1.00	0.98
Maj L-Shared Prob Q free St.		0.98

---

Step 3: TH from Minor St.	8	11
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---

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
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---

Conflicting Flows		778
Potential Capacity		368
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.98	
Maj. L, Min T Adj. Imp Factor.	0.98	
Cap. Adj. factor due to Impeding mvmnt	0.97	0.98
Movement Capacity		362

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

---

Step 3: TH from Minor St.	8	11
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---

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 0.98 0.98  
 Movement Capacity

---

Result for 2 stage process:

a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

---

Step 4: LT from Minor St. 7 10

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows 778  
 Potential Capacity 368  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 0.98  
 Maj. L, Min T Adj. Imp Factor. 0.98  
 Cap. Adj. factor due to Impeding mvmnt 0.97 0.98  
 Movement Capacity 362

---

Results for Two-stage process:

a  
 Y  
 C t 362

---

Worksheet 8-Shared Lane Calculations

---

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)				254		15
Movement Capacity (vph)				362		818
Shared Lane Capacity (vph)						

---

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep				362		818
Volume				254		15
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT					L		R
v (vph)	21					254		15
C(m) (vph)	1354					362		818
v/c	0.02					0.70		0.02
95% queue length	0.05					5.12		0.06
Control Delay	7.7					35.3		9.5
LOS	A					E		A
Approach Delay							33.8	
Approach LOS							D	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.98	1.00
v(i1), Volume for stream 2 or 5	510	
v(i2), Volume for stream 3 or 6	0	
s(i1), Saturation flow rate for stream 2 or 5	1700	
s(i2), Saturation flow rate for stream 3 or 6	1700	
P*(oj)	0.98	
d(M,LT), Delay for stream 1 or 4	7.7	
N, Number of major street through lanes	1	
d(rank,1) Delay for stream 2 or 5	0.2	

**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Matthews St**

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HCS+: Unsignalized Intersections Release 5.3

Phone:  
E-Mail:

Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: bd  
 Agency/Co.:  
 Date Performed: 12/3/2010  
 Analysis Time Period: 8:15 - 9:15 AM  
 Intersection: 140 / Matthews St.  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Matthews Street  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	148	198			408	2
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	40	54			111	1
Hourly Flow Rate, HFR	160	215			443	2
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1			2	0
Configuration	L	T			T	TR
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				0		34
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				0		9
Hourly Flow Rate, HFR				0		36
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		Yes /1
RT Channelized?						
Lanes				0		0
Configuration					LR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

Movement 2                      Movement 5

Shared ln volume, major th vehicles:  
 Shared ln volume, major rt vehicles:  
 Sat flow rate, major th vehicles:  
 Sat flow rate, major rt vehicles:  
 Number of major street through lanes:

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.5		6.2
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)	0					0		0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70		0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.8		6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50		3.30
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)	0					0		0
t(f)	2.2					3.5		3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

Movement 2                      Movement 5  
 V(t)    V(l,prot)    V(t)    V(l,prot)

V prog

Total Saturation Flow Rate,  $s$  (vph)  
 Arrival Type  
 Effective Green,  $g$  (sec)  
 Cycle Length,  $C$  (sec)  
 $R_p$  (from Exhibit 16-11)  
 Proportion vehicles arriving on green  $P$   
 $g(q1)$   
 $g(q2)$   
 $g(q)$

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 $V(t)$   $V(l,prot)$   $V(t)$   $V(l,prot)$

$\alpha$   
 $\beta$   
 Travel time,  $t(a)$  (sec)  
 Smoothing Factor,  $F$   
 Proportion of conflicting flow,  $f$   
 Max platooned flow,  $V(c,max)$   
 Min platooned flow,  $V(c,min)$   
 Duration of blocked period,  $t(p)$   
 Proportion time blocked,  $p$  0.000 0.000

Computation 3-Platoon Event Periods Result

$p(2)$  0.000  
 $p(5)$  0.000  
 $p(dom)$   
 $p(subo)$   
 Constrained or unconstrained?

Proportion unblocked for minor movements,  $p(x)$

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

$p(1)$   
 $p(4)$   
 $p(7)$   
 $p(8)$   
 $p(9)$   
 $p(10)$   
 $p(11)$   
 $p(12)$

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

$V_{c,x}$	445					979		222
$s$								
$P_x$								
$V_{c,u,x}$								

$C_{r,x}$   
 $C_{plat,x}$

Two-Stage Process

	7	8	10	11
--	---	---	----	----

---

V(c, x)		
s		1500
P(x)		
V(c, u, x)		

---

C(r, x)		
C(plat, x)		

---

Worksheet 6-Impedance and Capacity Equations

---

Step 1: RT from Minor St.	9	12
---------------------------	---	----

---

Conflicting Flows		222
Potential Capacity		823
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		823
Probability of Queue free St.	1.00	0.96

---

Step 2: LT from Major St.	4	1
---------------------------	---	---

---

Conflicting Flows		445
Potential Capacity		1126
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		1126
Probability of Queue free St.	1.00	0.86
Maj L-Shared Prob Q free St.		

---

Step 3: TH from Minor St.	8	11
---------------------------	---	----

---

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.86	0.86
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
---------------------------	---	----

---

Conflicting Flows		979
Potential Capacity		251
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.86	
Maj. L, Min T Adj. Imp Factor.	0.89	
Cap. Adj. factor due to Impeding mvmnt	0.85	0.86
Movement Capacity		215

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

---

Step 3: TH from Minor St.	8	11
---------------------------	---	----

---

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 0.86 0.86  
 Movement Capacity

---

Result for 2 stage process:  
 a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

---

Step 4: LT from Minor St. 7 10

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows 979  
 Potential Capacity 251  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 0.86  
 Maj. L, Min T Adj. Imp Factor. 0.89  
 Cap. Adj. factor due to Impeding mvmnt 0.85 0.86  
 Movement Capacity 215

---

Results for Two-stage process:  
 a  
 Y  
 C t 215

---

Worksheet 8-Shared Lane Calculations

---

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)				0		36
Movement Capacity (vph)				215		823
Shared Lane Capacity (vph)					823	

---

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep				215		823
Volume				0		36
Delay				21.7		9.6
Q sep				0.00		0.10
Q sep +1				1.00		1.10
round (Qsep +1)				1		1
n max					1	
C sh					823	
SUM C sep						
n					1	
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	L						LR	
v (vph)	160						36	
C(m) (vph)	1126							
v/c	0.14							
95% queue length	0.49							
Control Delay	8.7						9.6	
LOS	A							
Approach Delay							9.6	
Approach LOS							A	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.86	1.00
v(i1), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(i1), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4	8.7	
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		



HCS+: Unsignalized Intersections Release 5.3

Phone:  
E-Mail:

Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: bd  
 Agency/Co.:  
 Date Performed: 12/3/2010  
 Analysis Time Period: 4:45 - 5:45 PM  
 Intersection: 140 / Matthews St.  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Matthews Street  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	73	526			227	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	20	143			62	0
Hourly Flow Rate, HFR	79	571			246	0
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1			2	0
Configuration	L	T			T	TR
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				3		76
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				1		21
Hourly Flow Rate, HFR				3		82
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		Yes /1
RT Channelized?						
Lanes				0		0
Configuration					LR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

Movement 2                      Movement 5

Shared ln volume, major th vehicles:  
 Shared ln volume, major rt vehicles:  
 Sat flow rate, major th vehicles:  
 Sat flow rate, major rt vehicles:  
 Number of major street through lanes:

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.5		6.2
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)	0					0		0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70		0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.8		6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50		3.30
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)	0					0		0
t(f)	2.2					3.5		3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

Movement 2                      Movement 5  
 V(t)    V(l,prot)    V(t)    V(l,prot)

V prog

Total Saturation Flow Rate,  $s$  (vph)  
 Arrival Type  
 Effective Green,  $g$  (sec)  
 Cycle Length,  $C$  (sec)  
 $R_p$  (from Exhibit 16-11)  
 Proportion vehicles arriving on green  $P$   
 $g(q1)$   
 $g(q2)$   
 $g(q)$

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 $V(t)$   $V(l,prot)$   $V(t)$   $V(l,prot)$

alpha  
 beta  
 Travel time,  $t(a)$  (sec)  
 Smoothing Factor,  $F$   
 Proportion of conflicting flow,  $f$   
 Max platooned flow,  $V(c,max)$   
 Min platooned flow,  $V(c,min)$   
 Duration of blocked period,  $t(p)$   
 Proportion time blocked,  $p$  0.000 0.000

Computation 3-Platoon Event Periods Result

$p(2)$  0.000  
 $p(5)$  0.000  
 $p(dom)$   
 $p(subo)$   
 Constrained or unconstrained?

Proportion unblocked for minor movements,  $p(x)$   
 (1) Single-stage Process (2) Two-Stage Process Stage I (3) Process Stage II

$p(1)$   
 $p(4)$   
 $p(7)$   
 $p(8)$   
 $p(9)$   
 $p(10)$   
 $p(11)$   
 $p(12)$

Computation 4 and 5  
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

$V_{c,x}$	246					975		123
$s$								
$P_x$								
$V_{c,u,x}$								

$C_{r,x}$   
 $C_{plat,x}$

Two-Stage Process	7	8	10	11

---

V(c,x)		
s		1500
P(x)		
V(c,u,x)		

---

C(r,x)		
C(plat,x)		

---

Worksheet 6-Impedance and Capacity Equations

---

Step 1: RT from Minor St.	9	12
---------------------------	---	----

---

Conflicting Flows		123
Potential Capacity		933
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		933
Probability of Queue free St.	1.00	0.91

---

Step 2: LT from Major St.	4	1
---------------------------	---	---

---

Conflicting Flows		246
Potential Capacity		1332
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		1332
Probability of Queue free St.	1.00	0.94
Maj L-Shared Prob Q free St.		

---

Step 3: TH from Minor St.	8	11
---------------------------	---	----

---

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.94	0.94
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
---------------------------	---	----

---

Conflicting Flows		975
Potential Capacity		252
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.94	
Maj. L, Min T Adj. Imp Factor.	0.95	
Cap. Adj. factor due to Impeding mvmnt	0.87	0.94
Movement Capacity		237

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

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Step 3: TH from Minor St.	8	11
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---

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 0.94 0.94  
 Movement Capacity

---

Result for 2 stage process:  
 a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

---

Step 4: LT from Minor St. 7 10

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows 975  
 Potential Capacity 252  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 0.94  
 Maj. L, Min T Adj. Imp Factor. 0.95  
 Cap. Adj. factor due to Impeding mvmnt 0.87 0.94  
 Movement Capacity 237

---

Results for Two-stage process:  
 a  
 Y  
 C t 237

---

Worksheet 8-Shared Lane Calculations

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Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (vph)				3		82
Movement Capacity (vph)				237		933
Shared Lane Capacity (vph)					845	

---

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep				237		933
Volume				3		82
Delay				20.4		9.2
Q sep				0.02		0.21
Q sep +1 round (Qsep +1)				1.02 1		1.21 1
n max					1	
C sh					845	
SUM C sep					967	
n					1	
C act					967	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	L						LR	
v (vph)	79						85	
C(m) (vph)	1332						967	
v/c	0.06						0.09	
95% queue length	0.19						0.29	
Control Delay	7.9						9.6	
LOS	A						A	
Approach Delay							9.6	
Approach LOS							A	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.94	1.00
v(i1), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(i1), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4	7.9	
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Rt 101**

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SHORT REPORT												
General Information						Site Information						
Analyst Agency or Co. Date Performed 10/20/2010 Time Period 7:15 - 8:15 AM						Intersection 140 / 101 Area Type All other areas Jurisdiction Analysis Year 2011						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	1		1	1		1	2	0	1	2	0
Lane Group	L	T		L	T		L	TR		L	TR	
Volume (vph)	9	119		139	134		4	402	87	32	478	7
% Heavy Vehicles	0	0		0	0		0	0	0	0	0	0
PHF	0.92	0.92		0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92
Pretimed/Actuated (P/A)	A	A		A	A		A	A	A	A	A	A
Startup Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Extension of Effective Green	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Arrival Type	3	3		3	3		3	3		3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Ped/Bike/RTOR Volume	0	0		0	0		0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0	0		0	0		0	0		0	0	
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 24.0	G =	G =	G =	G = 8.0	G = 41.0	G =	G =				
	Y = 6	Y =	Y =	Y =	Y = 6	Y = 7	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 92.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate	10	129		151	146		4	532		35	528	
Lane Group Capacity	330	516		346	516		157	1607		157	1648	
v/c Ratio	0.03	0.25		0.44	0.28		0.03	0.33		0.22	0.32	
Green Ratio	0.27	0.27		0.27	0.27		0.09	0.46		0.09	0.46	
Uniform Delay d <sub>1</sub>	24.6	26.2		27.7	26.4		38.4	16.0		39.1	15.9	
Delay Factor k	0.11	0.11		0.11	0.11		0.11	0.11		0.11	0.11	
Incremental Delay d <sub>2</sub>	0.0	0.3		0.9	0.3		0.1	0.1		0.7	0.1	
PF Factor	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Control Delay	24.6	26.4		28.6	26.7		38.5	16.1		39.8	16.0	
Lane Group LOS	C	C		C	C		D	B		D	B	
Approach Delay	26.3			27.7			16.3			17.5		
Approach LOS	C			C			B			B		
Intersection Delay	19.8			Intersection LOS						B		

Analyst: Inter.: 140 / 101  
 Agency: Area Type: All other areas  
 Date: 10/20/2010 Jurisd:  
 Period: 4:45 - 5:45 PM Year : 2011  
 Project ID: Route 140 North Study  
 E/W St: Route 101 N/S St: Route 140

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	2	0	1	2	0
LGConfig	L	T		L	T		L	TR		L	TR	
Volume	9	182		83	152		15	633	131	41	285	6
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol								0			0	

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru		A	
Right					Right		A	
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru		A	
Right					Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	21.0				10.0	41.0		
Yellow	4.0				4.0	5.0		
All Red	2.0				2.0	2.0		
Cycle Length: 91.0 secs								

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	273	1129	0.04	0.24	26.4	C		
T	459	1900	0.43	0.24	29.9	C	29.7	C
Westbound								
L	244	1010	0.37	0.24	29.7	C		
T	459	1900	0.36	0.24	29.1	C	29.3	C
Northbound								
L	198	1805	0.08	0.11	36.5	D		
TR	1627	3525	0.51	0.46	17.5	B	17.9	B
Southbound								
L	198	1805	0.23	0.11	37.6	D		
TR	1664	3606	0.19	0.46	14.5	B	17.4	B

Intersection Delay = 21.0 (sec/veh) Intersection LOS = C

Phone: Fax:  
 E-Mail:

OPERATIONAL ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 10/20/2010  
 Analysis Time Period: 4:45 - 5:45 PM  
 Intersection: 140 / 101  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2011  
 Project ID: Route 140 North Study  
 E/W St: Route 101 N/S St: Route 140

VOLUME DATA

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	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	9	182		83	152		15	633	131	41	285	6
% Heavy Veh	0	0		0	0		0	0	0	0	0	0
PHF	0.92	0.92		0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92
PK 15 Vol	3	49		23	41		4	172	36	11	77	2
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	1	1	0	1	1	0	1	2	0	1	2	0
LGConfig	L	T		L	T		L	TR		L	TR	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol								0			0	
Adj Flow	10	198		90	165		16	830		45	317	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000			0.000			0.000	
Prop RTs		0.000			0.000			0.171			0.022	
Peds Bikes		0			0			0			0	
Buses	0	0		0	0		0	0		0	0	
%InProtPhase												
Duration	0.25											

Area Type: All other areas

OPERATING PARAMETERS

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	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Ped Min g		3.2			3.2			3.2			3.2	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru		A	
Right					Right		A	
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru		A	
Right					Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	21.0				10.0	41.0		
Yellow	4.0				4.0	5.0		
All Red	2.0				2.0	2.0		

Cycle Length: 91.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	9	182		83	152		15	633	131	41	285	6
PHF	0.92	0.92		0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92
Adj flow	10	198		90	165		16	688	142	45	310	7
No. Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Lane group	L	T		L	T		L	TR		L	TR	
Adj flow	10	198		90	165		16	830		45	317	
Prop LTs	1.000	0.000		1.000	0.000			0.000			0.000	
Prop RTs		0.000			0.000			0.171			0.022	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

LG	Eastbound			Westbound			Northbound			Southbound		
	L	T		L	T		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes	1	1	0	1	1	0	1	2	0	1	2	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fA	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fLU	1.000	1.000		1.000	1.000		1.000	0.952		1.000	0.952	
fRT		1.000			1.000			0.974			0.997	
fLT	0.594	1.000		0.532	1.000		0.950	1.000		0.950	1.000	
Sec.												
fLpb	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fRpb		1.000			1.000			1.000			1.000	
S	1129	1900		1010	1900		1805	3525		1805	3606	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Capacity (c)	Group-- v/c Ratio
Eastbound							
Prot							
Perm							
Left	L	10	1129	0.01	0.24	273	0.04
Prot							
Perm							
Thru	T	198	1900	# 0.10	0.24	459	0.43
Right							
Westbound							
Prot							
Perm							
Left	L	90	1010	0.09	0.24	244	0.37
Prot							
Perm							
Thru	T	165	1900	0.09	0.24	459	0.36
Right							
Northbound							
Prot							
Perm							
Left	L	16	1805	0.01	0.11	198	0.08
Prot							
Perm							
Thru	TR	830	3525	# 0.24	0.46	1627	0.51
Right							
Southbound							
Prot							
Perm							
Left	L	45	1805	# 0.02	0.11	198	0.23
Prot							
Perm							
Thru	TR	317	3606	0.09	0.46	1664	0.19
Right							

Sum of flow ratios for critical lane groups,  $Y_c = \text{Sum (v/s)} = 0.36$

Total lost time per cycle,  $L = 17.00 \text{ sec}$

Critical flow rate to capacity ratio,  $X_c = (Y_c)(C)/(C-L) = 0.45$

#### Control Delay and LOS Determination

Appr/ Lane Grp	Ratios		Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Res Del d2	Res Del d3	Lane Group		Approach	
	v/c	g/C							Delay	LOS	Delay	LOS
Eastbound												
L	0.04	0.24	26.4	1.000	273	0.11	0.1	0.0	26.4	C		
T	0.43	0.24	29.2	1.000	459	0.11	0.7	0.0	29.9	C	29.7	C
Westbound												
L	0.37	0.24	28.7	1.000	244	0.11	0.9	0.0	29.7	C		
T	0.36	0.24	28.6	1.000	459	0.11	0.5	0.0	29.1	C	29.3	C
Northbound												
L	0.08	0.11	36.4	1.000	198	0.11	0.2	0.0	36.5	D		
TR	0.51	0.46	17.3	1.000	1627	0.12	0.3	0.0	17.5	B	17.9	B
Southbound												
L	0.23	0.11	37.0	1.000	198	0.11	0.6	0.0	37.6	D		
TR	0.19	0.46	14.5	1.000	1664	0.11	0.1	0.0	14.5	B	17.4	B

Intersection delay = 21.0 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET  
for exclusive lefts

Input	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C	91.0			
sec				
Total actual green time for LT lane group, G (s)	21.0	21.0		
Effective permitted green time for LT lane group, g(s)	22.0	22.0		
Opposing effective green time, go (s)	22.0	22.0		
Number of lanes in LT lane group, N	1	1		
Number of lanes in opposing approach, No	1	1		
Adjusted LT flow rate, VLT (veh/h)	10	90		
Proportion of LT in LT lane group, PLT	1.000	1.000		
Proportion of LT in opposing flow, PLTo	0.00	0.00		
Adjusted opposing flow rate, Vo (veh/h)	165	198		
Lost time for LT lane group, tL	5.00	5.00		
Computation				
LT volume per cycle, LTC=VLTC/3600	0.25	2.28		
Opposing lane util. factor, fLUo	1.000	1.000	0.952	0.952
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)	4.17	5.01		
gf=G[exp(- a * (LTC ** b))]-tL, gf<=g	0.0	0.0		
Opposing platoon ratio, Rpo (refer Exhibit 16-11)	1.00	1.00		
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]	0.76	0.76		
gq, (see Exhibit C16-4,5,6,7,8)	1.96	3.53		
gu=g-gq if gq>=gf, or = g-gf if gq<gf	20.04	18.47		
n=Max(gq-gf)/2,0)	0.98	1.76		
PTHo=1-PLTo	1.00	1.00		
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]	1.00	1.00		
EL1 (refer to Exhibit C16-3)	1.53	1.58		
EL2=Max((1-Ptho**n)/Plto, 1.0)				
fmin=2(1+PL)/g or fmin=2(1+Pl)/g	0.18	0.18		
gdifff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)	0.59	0.53		
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdifff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)				
or flt=[fm+0.91(N-1)]/N**				
Left-turn adjustment, fLT	0.594	0.532		

For special case of single-lane approach opposed by multilane approach, see text.

\* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

\*\* For permitted left-turns with multiple exclusive left-turn lanes, flt=fm. For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET  
for shared lefts

Input	EB	WB	NB	SB
Opposed by Single(S) or Multiple(M) lane approach				
Cycle length, C	91.0			
sec				
Total actual green time for LT lane group, G (s)				
Effective permitted green time for LT lane group, g(s)				
Opposing effective green time, go (s)				
Number of lanes in LT lane group, N				

Number of lanes in opposing approach, No  
Adjusted LT flow rate, VLT (veh/h)  
Proportion of LT in LT lane group, PLT 0.000 0.000 0.000 0.000  
Proportion of LT in opposing flow, PLTo  
Adjusted opposing flow rate, Vo (veh/h)  
Lost time for LT lane group, tL  
Computation  
LT volume per cycle, LTC=VLTC/3600  
Opposing lane util. factor, fLUo 1.000 1.000 0.952 0.952  
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)  
 $gf=G[\exp(-a * (LTC ** b))]-tL$ ,  $gf \leq g$   
Opposing platoon ratio, Rpo (refer Exhibit 16-11)  
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]  
gq, (see Exhibit C16-4,5,6,7,8)  
 $gu=g-gq$  if  $gq \geq gf$ , or  $= g-gf$  if  $gq < gf$   
 $n=Max(gq-gf)/2,0$   
 $PTHo=1-PLTo$   
 $PL^*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]$   
EL1 (refer to Exhibit C16-3)  
 $EL2=Max((1-Ptho**n)/Plto, 1.0)$   
 $fmin=2(1+PL)/g$  or  $fmin=2(1+Pl)/g$   
 $gdiff=max(gq-gf,0)$   
 $fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]$ , (min=fmin;max=1.00)  
 $flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)]$ , (fmin<=fm<=1.00)  
or  $flt=[fm+0.91(N-1)]/N**$   
Left-turn adjustment, fLT

For special case of single-lane approach opposed by multilane approach,  
see text.

\* If  $Pl > 1$  for shared left-turn lanes with  $N > 1$ , then assume de-facto  
left-turn lane and redo calculations.  
\*\* For permitted left-turns with multiple exclusive left-turn lanes,  $flt=fm$ .  
For special case of multilane approach opposed by single-lane approach  
or when  $gf > gq$ , see text.

\_\_\_\_\_SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET\_\_\_\_\_

Permitted Left Turns

	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				

OCCbicg  
 OCCr  
 Number of cross-street receiving lanes, Nrec  
 Number of turning lanes, Nturn  
 ApbT  
 Proportion right-turns, PRT  
 Proportion right-turns using protected phase, PRTA  
 Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

EBLT    WBLT    NBLT    SBLT

Cycle length, C 91.0    sec  
 Adj. LT vol from Vol Adjustment Worksheet, v  
 v/c ratio from Capacity Worksheet, X  
 Protected phase effective green interval, g (s)  
 Opposing queue effective green interval, gq  
 Unopposed green interval, gu  
 Red time  $r=(C-g-gq-gu)$   
 Arrival rate,  $qa=v/(3600(\max[X,1.0]))$   
 Protected ph. departure rate,  $Sp=s/3600$   
 Permitted ph. departure rate,  $Ss=s(gq+gu)/(gu*3600)$   
 XPerm  
 XProt  
 Case  
 Queue at beginning of green arrow, Qa  
 Queue at beginning of unsaturated green, Qu  
 Residual queue, Qr  
 Uniform Delay, d1

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial	Dur.	Uniform Delay		Initial	Final	Initial	Lane
	Unmet Demand Q veh	Unmet Demand t hrs.	Unadj. ds	Adj. d1 sec	Queue Param. u	Unmet Demand Q veh	Queue Delay d3 sec	Group Delay d sec
Eastbound								
L	0.0	0.00	34.5	26.4	0.00	0.0	0.0	26.4
T	0.0	0.00	34.5	29.2	0.00	0.0	0.0	29.9
	0.0						0.0	
Westbound								
L	0.0	0.00	34.5	28.7	0.00	0.0	0.0	29.7
T	0.0	0.00	34.5	28.6	0.00	0.0	0.0	29.1
	0.0						0.0	
Northbound								
L	0.0	0.00	40.5	36.4	0.00	0.0	0.0	36.5
TR	0.0	0.00	24.5	17.3	0.00	0.0	0.0	17.5
	0.0						0.0	
Southbound								
L	0.0	0.00	40.5	37.0	0.00	0.0	0.0	37.6
TR	0.0	0.00	24.5	14.5	0.00	0.0	0.0	14.5
	0.0						0.0	

Intersection Delay    21.0    sec/veh            Intersection LOS    C

LaneGroup	Eastbound			Westbound			Northbound			Southbound		
	L	T		L	T		L	TR		L	TR	
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flow Rate	10	198		90	165		16	435		45	166	
So	1900	1900		1900	1900		1900	1900		1900	1900	
No.Lanes	1	1	0	1	1	0	1	2	0	1	2	0
SL	1129	1900		1010	1900		1805	1851		1805	1893	
LnCapacity	273	459		244	459		198	854		198	873	
Flow Ratio	0.0	0.1		0.1	0.1		0.0	0.2		0.0	0.1	
v/c Ratio	0.04	0.43		0.37	0.36		0.08	0.51		0.23	0.19	
Grn Ratio	0.24	0.24		0.24	0.24		0.11	0.46		0.11	0.46	
I Factor		1.000			1.000			1.000			1.000	
AT or PVG	3	3		3	3		3	3		3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Q1	0.2	4.2		1.9	3.5		0.4	7.7		1.0	2.5	
kB	0.3	0.4		0.3	0.4		0.3	0.6		0.3	0.6	
Q2	0.0	0.3		0.2	0.2		0.0	0.6		0.1	0.2	
Q Average	0.2	4.6		2.1	3.7		0.4	8.4		1.1	2.6	
Q Spacing	25.0	25.0		25.0	25.0		25.0	25.0		25.0	25.0	
Q Storage	0	0		0	0		0	0		0	0	
Q S Ratio												
70th Percentile Output:												
fB%	1.2	1.2		1.2	1.2		1.2	1.2		1.2	1.2	
BOQ	0.2	5.4		2.5	4.4		0.5	9.9		1.3	3.1	
QSRatio												
85th Percentile Output:												
fB%	1.6	1.6		1.6	1.6		1.6	1.5		1.6	1.6	
BOQ	0.3	7.1		3.3	5.8		0.6	12.8		1.8	4.1	
QSRatio												
90th Percentile Output:												
fB%	1.8	1.7		1.8	1.7		1.8	1.7		1.8	1.8	
BOQ	0.4	7.8		3.6	6.4		0.7	13.9		2.0	4.6	
QSRatio												
95th Percentile Output:												
fB%	2.1	2.0		2.0	2.0		2.1	1.9		2.1	2.0	
BOQ	0.4	9.0		4.2	7.4		0.8	15.7		2.3	5.3	
QSRatio												
98th Percentile Output:												
fB%	2.7	2.4		2.6	2.5		2.7	2.2		2.6	2.5	
BOQ	0.6	11.0		5.3	9.1		1.0	18.7		2.9	6.6	
QSRatio												

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ERROR MESSAGES

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No errors to report.

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**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Colony Road**

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TWO-WAY STOP CONTROL SUMMARY

Analyst: bd  
 Agency/Co.:  
 Date Performed: 10/21/2010  
 Analysis Time Period: 7:00 - 8:00 AM  
 Intersection: 140 / Colony  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Colony Road  
 North/South Street: Route 140  
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound			
		1 L	2 T	3 R	4   L	5 T	6 R		
Volume		476	65	15	73				
Peak-Hour Factor, PHF		0.92	0.92	0.92	0.92				
Hourly Flow Rate, HFR		517	70	16	79				
Percent Heavy Vehicles		--	--	0	--	--			
Median Type/Storage		Undivided			/				
RT Channelized?									
Lanes		1	0		0	1			
Configuration			TR		LT				
Upstream Signal?		No			No				

Minor Street:	Approach Movement	Westbound				Eastbound			
		7 L	8 T	9 R	10   L	11 T	12 R		
Volume		19	9						
Peak Hour Factor, PHF		0.92	0.92						
Hourly Flow Rate, HFR		20	9						
Percent Heavy Vehicles		0	0						
Percent Grade (%)		0			0				
Flared Approach: Exists?/Storage			Yes	/2			/		
Lanes		0	0						
Configuration			LR						

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound			
			1	4   7	8   9	10   11	12			
Movement			LT	LR						
Lane Config										
v (vph)		16	29							
C(m) (vph)		998	612							
v/c		0.02	0.05							
95% queue length		0.05	0.15							
Control Delay		8.7	13.3							
LOS		A	B							
Approach Delay			13.3							
Approach LOS			B							

HCS+: Unsignalized Intersections Release 5.3

Phone:  
E-Mail:

Fax:

\_\_\_\_\_TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_\_\_\_\_

Analyst: bd  
 Agency/Co.:  
 Date Performed: 10/21/2010  
 Analysis Time Period: 7:00 - 8:00 AM  
 Intersection: 140 / Colony  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Colony Road  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

\_\_\_\_\_Vehicle Volumes and Adjustments\_\_\_\_\_

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		476	65	15	73	
Peak-Hour Factor, PHF		0.92	0.92	0.92	0.92	
Peak-15 Minute Volume		129	18	4	20	
Hourly Flow Rate, HFR		517	70	16	79	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume			19			9
Peak Hour Factor, PHF			0.92			0.92
Peak-15 Minute Volume			5			2
Hourly Flow Rate, HFR			20			9
Percent Heavy Vehicles			0			0
Percent Grade (%)			0			0
Flared Approach: Exists?/Storage			Yes	/2		/
RT Channelized?						
Lanes		0	0			
Configuration			LR			

\_\_\_\_\_Pedestrian Volumes and Adjustments\_\_\_\_\_

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		79
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		0	0		0			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		0	0		0			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Process Stage II
--	-----------------------------	----------------------------------	-------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process  
 Movement 1 4 7 8 9 10 11 12  
 L L L T R L T R

V c,x 587 663 552  
 s  
 Px  
 V c,u,x

C r,x  
 C plat,x

Two-Stage Process 7 8 10 11

V(c,x)  
s 1500  
P(x)  
V(c,u,x)

C(r,x)  
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St. 9 12

Conflicting Flows 552  
Potential Capacity 537  
Pedestrian Impedance Factor 1.00 1.00  
Movement Capacity 537  
Probability of Queue free St. 0.98 1.00

Step 2: LT from Major St. 4 1

Conflicting Flows 587  
Potential Capacity 998  
Pedestrian Impedance Factor 1.00 1.00  
Movement Capacity 998  
Probability of Queue free St. 0.98 1.00  
Maj L-Shared Prob Q free St. 0.98

Step 3: TH from Minor St. 8 11

Conflicting Flows  
Potential Capacity  
Pedestrian Impedance Factor 1.00 1.00  
Cap. Adj. factor due to Impeding mvmnt 0.98 0.98  
Movement Capacity  
Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Conflicting Flows 663  
Potential Capacity 429  
Pedestrian Impedance Factor 1.00 1.00  
Maj. L, Min T Impedance factor 0.98  
Maj. L, Min T Adj. Imp Factor. 0.99  
Cap. Adj. factor due to Impeding mvmnt 0.98 0.97  
Movement Capacity 422

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St. 8 11

Part 1 - First Stage  
Conflicting Flows  
Potential Capacity  
Pedestrian Impedance Factor  
Cap. Adj. factor due to Impeding mvmnt  
Movement Capacity  
Probability of Queue free St.



Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	422		537			
Volume	20		9			
Delay	14.0		11.8			
Q sep	0.08		0.03			
Q sep +1	1.08		1.03			
round (Qsep +1)	1		1			
n max		1				
C sh		452				
SUM C sep		612				
n		2				
C act		612				

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		16		29				
C(m) (vph)		998		612				
v/c		0.02		0.05				
95% queue length		0.05		0.15				
Control Delay		8.7		13.3				
LOS		A		B				
Approach Delay				13.3				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.98
v(i1), Volume for stream 2 or 5		79
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		0.98
d(M,LT), Delay for stream 1 or 4		8.7
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		0.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: bd  
 Agency/Co.:  
 Date Performed: 10/21/2010  
 Analysis Time Period: 4:15 - 5:15 PM  
 Intersection: 140 / Colony  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Colony Road  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R		4 L	5 T	6 R
Volume		703	13		4	0		
Peak-Hour Factor, PHF		0.92	0.92		0.92	0.92		
Hourly Flow Rate, HFR		764	14		4	0		
Percent Heavy Vehicles		--	--		0	--	--	
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0			0	1	
Configuration		TR				LT		
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R		10 L	11 T	12 R
Volume		38		19				
Peak Hour Factor, PHF		0.92		0.92				
Hourly Flow Rate, HFR		41		20				
Percent Heavy Vehicles		0		0				
Percent Grade (%)			0			0		
Flared Approach: Exists?/Storage				Yes	/2		/	
Lanes		0		0				
Configuration		LR						

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound				Eastbound			
			7	8	9		10	11	12	
Movement	1	4		7	8	9		10	11	12
Lane Config		LT			LR					
v (vph)		4			61					
C(m) (vph)		848			543					
v/c		0.00			0.11					
95% queue length		0.01			0.38					
Control Delay		9.3			15.5					
LOS		A			C					
Approach Delay					15.5					
Approach LOS					C					

HCS+: Unsignalized Intersections Release 5.3

Phone:  
E-Mail:

Fax:

\_\_\_\_\_TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_\_\_\_\_

Analyst: bd  
 Agency/Co.:  
 Date Performed: 10/21/2010  
 Analysis Time Period: 4:15 - 5:15 PM  
 Intersection: 140 / Colony  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Colony Road  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

\_\_\_\_\_Vehicle Volumes and Adjustments\_\_\_\_\_

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		703	13	4	0	
Peak-Hour Factor, PHF		0.92	0.92	0.92	0.92	
Peak-15 Minute Volume		191	4	1	0	
Hourly Flow Rate, HFR		764	14	4	0	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	0		0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	38		19			
Peak Hour Factor, PHF	0.92		0.92			
Peak-15 Minute Volume	10		5			
Hourly Flow Rate, HFR	41		20			
Percent Heavy Vehicles	0		0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			Yes	/2		/
RT Channelized?						
Lanes	0		0			
Configuration		LR				

\_\_\_\_\_Pedestrian Volumes and Adjustments\_\_\_\_\_

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		0
Shared ln volume, major rt vehicles:		0
Sat flow rate, major th vehicles:		1700
Sat flow rate, major rt vehicles:		1700
Number of major street through lanes:		1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.1		6.2			
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)		0	0		0			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.4		6.2			
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)		0	0		0			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1)	(2)	(3)
	Single-stage	Two-Stage Process	
	Process	Stage I	Stage II

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R

V c, x	778	779	771
s			
Px			
V c, u, x			

C r, x  
 C plat, x

Two-Stage Process	7	8	10	11
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V(c, x)		
s	1500	
P(x)		
V(c, u, x)		

---

C(r, x)		
C(plat, x)		

---

Worksheet 6-Impedance and Capacity Equations

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Step 1: RT from Minor St.	9	12
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Conflicting Flows	771	
Potential Capacity	403	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	403	
Probability of Queue free St.	0.95	1.00

---

Step 2: LT from Major St.	4	1
---------------------------	---	---

---

Conflicting Flows	778	
Potential Capacity	848	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	848	
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.	1.00	

---

Step 3: TH from Minor St.	8	11
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---

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
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---

Conflicting Flows	779	
Potential Capacity	367	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.95
Movement Capacity	365	

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

---

Step 3: TH from Minor St.	8	11
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---

Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor 1.00 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00  
 Movement Capacity

---

Result for 2 stage process:  
 a  
 Y  
 C t  
 Probability of Queue free St. 1.00 1.00

---

Step 4: LT from Minor St. 7 10

---

Part 1 - First Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 2 - Second Stage  
 Conflicting Flows  
 Potential Capacity  
 Pedestrian Impedance Factor  
 Cap. Adj. factor due to Impeding mvmnt  
 Movement Capacity

---

Part 3 - Single Stage  
 Conflicting Flows 779  
 Potential Capacity 367  
 Pedestrian Impedance Factor 1.00 1.00  
 Maj. L, Min T Impedance factor 1.00  
 Maj. L, Min T Adj. Imp Factor. 1.00  
 Cap. Adj. factor due to Impeding mvmnt 1.00 0.95  
 Movement Capacity 365

---

Results for Two-stage process:  
 a  
 Y  
 C t 365

---

Worksheet 8-Shared Lane Calculations

---

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	41		20			
Movement Capacity (vph)	365		403			
Shared Lane Capacity (vph)		377				

---

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	365		403			
Volume	41		20			
Delay	16.1		14.4			
Q sep	0.18		0.08			
Q sep +1	1.18		1.08			
round (Qsep +1)	1		1			
n max		1				
C sh		377				
SUM C sep		543				
n		2				
C act		543				

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		4		61				
C(m) (vph)		848		543				
v/c		0.00		0.11				
95% queue length		0.01		0.38				
Control Delay		9.3		15.5				
LOS		A		C				
Approach Delay				15.5				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(i1), Volume for stream 2 or 5		0
v(i2), Volume for stream 3 or 6		0
s(i1), Saturation flow rate for stream 2 or 5		1700
s(i2), Saturation flow rate for stream 3 or 6		1700
P*(oj)		1.00
d(M,LT), Delay for stream 1 or 4		9.3
N, Number of major street through lanes		1
d(rank,1) Delay for stream 2 or 5		0.0

**Appendix – Capacity Analysis – AM & PM Peak Hours  
Rt 140 and Betty Spring Road**

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HCS+: Unsignalized Intersections Release 5.3

Phone:  
E-Mail:

Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: bd  
 Agency/Co.:  
 Date Performed: 10/14/2010  
 Analysis Time Period: 7:00 - 8:00 AM  
 Intersection: 140 / Betty Spring  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Betty Spring Road  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	96	518			740	10
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	26	141			201	3
Hourly Flow Rate, HFR	104	563			804	10
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						Yes
Lanes	0	2			1	1
Configuration	LT T				T	R
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				20		232
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				5		63
Hourly Flow Rate, HFR				21		252
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?						Yes
Lanes				1		1
Configuration				L		R

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	0	
Shared ln volume, major rt vehicles:	0	
Sat flow rate, major th vehicles:	1700	
Sat flow rate, major rt vehicles:	1700	
Number of major street through lanes:	2	

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.5		6.2
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)	0					0		0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70		0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.8		6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50		3.30
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)	0					0		0
t(f)	2.2					3.5		3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
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p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

V c, x	804					1293		804
s								
Px								
V c, u, x								

C r, x  
 C plat, x

Two-Stage Process

	7	8	10	11
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V(c,x)		
s		3000
P(x)		
V(c,u,x)		

---

C(r,x)		
C(plat,x)		

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Worksheet 6-Impedance and Capacity Equations

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Step 1: RT from Minor St.	9	12
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Conflicting Flows		804
Potential Capacity		386
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		386
Probability of Queue free St.	1.00	0.35

---

Step 2: LT from Major St.	4	1
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---

Conflicting Flows		804
Potential Capacity		829
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		829
Probability of Queue free St.	1.00	0.87
Maj L-Shared Prob Q free St.		0.87

---

Step 3: TH from Minor St.	8	11
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Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.87	0.87
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
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---

Conflicting Flows		1293
Potential Capacity		157
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.87	
Maj. L, Min T Adj. Imp Factor.	0.90	
Cap. Adj. factor due to Impeding mvmnt	0.31	0.87
Movement Capacity		137

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Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

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Step 3: TH from Minor St.	8	11
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---

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		



Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep				137		386
Volume				21		252
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT					L		R
v (vph)	104					21		252
C(m) (vph)	829					137		386
v/c	0.13					0.15		0.65
95% queue length	0.43					0.52		4.46
Control Delay	10.0-					36.0		30.2
LOS	A					E		D
Approach Delay							30.7	
Approach LOS							D	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.87	1.00
v(i1), Volume for stream 2 or 5	0	
v(i2), Volume for stream 3 or 6	0	
s(i1), Saturation flow rate for stream 2 or 5	1700	
s(i2), Saturation flow rate for stream 3 or 6	1700	
P*(oj)	0.87	
d(M,LT), Delay for stream 1 or 4	10.0-	
N, Number of major street through lanes	2	
d(rank,1) Delay for stream 2 or 5		



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Phone:  
E-Mail:

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\_\_\_\_\_TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_\_\_\_\_

Analyst: bd  
 Agency/Co.:  
 Date Performed: 10/14/2010  
 Analysis Time Period: 4:45 - 5:45 PM  
 Intersection: 140 / Betty Spring  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2011  
 Project ID: Route 140 North Study 2011  
 East/West Street: Betty Spring Road  
 North/South Street: Route 140  
 Intersection Orientation: NS

Study period (hrs): 0.25

\_\_\_\_\_Vehicle Volumes and Adjustments\_\_\_\_\_

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	200	771			366	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	54	210			99	0
Hourly Flow Rate, HFR	217	838			397	0
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						Yes
Lanes	0	2			1	1
Configuration	LT T				T	R
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				9		98
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				2		27
Hourly Flow Rate, HFR				9		106
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?						Yes
Lanes				1		1
Configuration				L		R

\_\_\_\_\_Pedestrian Volumes and Adjustments\_\_\_\_\_

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	0	
Shared ln volume, major rt vehicles:	0	
Sat flow rate, major th vehicles:	1700	
Sat flow rate, major rt vehicles:	1700	
Number of major street through lanes:	2	

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.5		6.2
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)	0					0		0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70		0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.8		6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50		3.30
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)	0					0		0
t(f)	2.2					3.5		3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)  
 Arrival Type  
 Effective Green, g (sec)  
 Cycle Length, C (sec)  
 Rp (from Exhibit 16-11)  
 Proportion vehicles arriving on green P  
 g(q1)  
 g(q2)  
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked  
 Movement 2 Movement 5  
 V(t) V(l,prot) V(t) V(l,prot)

alpha  
 beta  
 Travel time, t(a) (sec)  
 Smoothing Factor, F  
 Proportion of conflicting flow, f  
 Max platooned flow, V(c,max)  
 Min platooned flow, V(c,min)  
 Duration of blocked period, t(p)  
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

p(2) 0.000  
 p(5) 0.000  
 p(dom)  
 p(subo)  
 Constrained or unconstrained?

Proportion unblocked for minor movements, p(x)

	(1) Single-stage Process	(2) Two-Stage Stage I	(3) Process Stage II
--	--------------------------------	-----------------------------	----------------------------

p(1)  
 p(4)  
 p(7)  
 p(8)  
 p(9)  
 p(10)  
 p(11)  
 p(12)

Computation 4 and 5  
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
----------	--------	--------	--------	--------	--------	---------	---------	---------

V c, x	397					1250		397
s								
Px								
V c, u, x								

C r, x  
 C plat, x

Two-Stage Process

	7	8	10	11
--	---	---	----	----

---

V(c,x)		
s		3000
P(x)		
V(c,u,x)		

---

C(r,x)		
C(plat,x)		

---

Worksheet 6-Impedance and Capacity Equations

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Step 1: RT from Minor St.	9	12
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Conflicting Flows		397
Potential Capacity		657
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		657
Probability of Queue free St.	1.00	0.84

---

Step 2: LT from Major St.	4	1
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---

Conflicting Flows		397
Potential Capacity		1173
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity		1173
Probability of Queue free St.	1.00	0.82
Maj L-Shared Prob Q free St.		0.82

---

Step 3: TH from Minor St.	8	11
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---

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.82	0.82
Movement Capacity		
Probability of Queue free St.	1.00	1.00

---

Step 4: LT from Minor St.	7	10
---------------------------	---	----

---

Conflicting Flows		1250
Potential Capacity		168
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.82	
Maj. L, Min T Adj. Imp Factor.	0.86	
Cap. Adj. factor due to Impeding mvmnt	0.72	0.82
Movement Capacity		137

---

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

---

Step 3: TH from Minor St.	8	11
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---

Part 1 - First Stage

Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		



Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep				137		657
Volume				9		106
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh						
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT					L		R
v (vph)	217					9		106
C(m) (vph)	1173					137		657
v/c	0.18					0.07		0.16
95% queue length	0.68					0.21		0.57
Control Delay	8.8					33.1		11.5
LOS	A					D		B
Approach Delay							13.2	
Approach LOS							B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.82	1.00
v(i1), Volume for stream 2 or 5	0	
v(i2), Volume for stream 3 or 6	0	
s(i1), Saturation flow rate for stream 2 or 5	1700	
s(i2), Saturation flow rate for stream 3 or 6	1700	
P*(oj)	0.82	
d(M,LT), Delay for stream 1 or 4	8.8	
N, Number of major street through lanes	2	
d(rank,1) Delay for stream 2 or 5		

**Appendix – Lane Departure Road Safety Audit for  
Route 140 in Gardner, MA**

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# Lane Departure Road Safety Audit for Route 140 in Gardner, Massachusetts



*Prepared by*  
**Montachusett Regional Planning Commission**  
and  
**University of Massachusetts Traffic Safety Research Program**



*Prepared for*

**Massachusetts Highway Department**



**Federal Highway Administration**



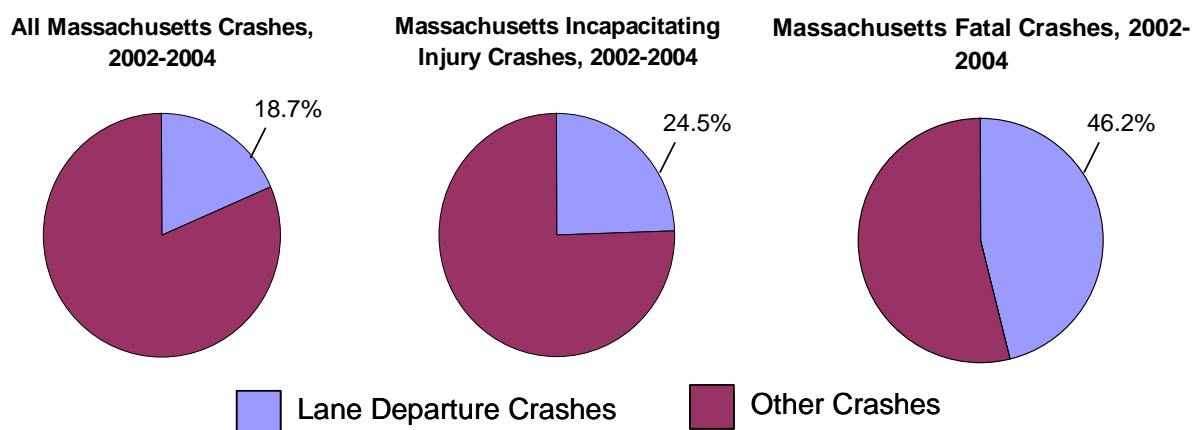
## 1.0 Introduction to Road Safety Audits & Lane Departure Crashes in Massachusetts

The Federal Highway Administration defines a Road Safety Audit (RSA) as *the formal safety examination* of an existing or future road or intersection by an *independent, multidisciplinary team*. The purpose of an RSA is to *identify potential safety issues and possible opportunities for safety improvements* considering all roadway users. Specific objectives of an RSA include, but are not limited to the following:

- Minimizing the risk and severity of road crashes that may be affected by the existing or future roadway at a specific location or nearby network;
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Although RSA's have been employed in other countries for some time, they are being fully embraced across the United States as a low cost opportunity to make significant safety improvements at any number of stages ranging from project development and planning through existing operation. Furthermore, RSA's have proven to be effective on projects of all shapes and sizes. The RSA program here in the Commonwealth presents a unique and exciting opportunity for improvements in roadway safety.

The RSA program in Massachusetts is being implemented in accordance with the Commonwealth's role as a lead state in preventing run-off the road (lane departure) crashes and in conjunction with the Strategic Highway Safety Plan (SHSP). Lane departure crashes are a notable problem area for Massachusetts, especially for crashes with high injury severities. Between 2002 and 2004, lane departure crashes accounted for nearly 20 percent of all crashes in Massachusetts and approximately one-quarter of crashes involving an incapacitating injury. Almost one-half of fatal crashes between 2002 and 2004 were lane departure crashes. As the crash severity increases, so too does the percent of lane departure crashes as shown in Figure 1.



**Figure 1. Relationship Between Lane Departure Crashes and Injury Severity**

In an effort to combat the lane departure problem, a strategy was developed for the SHSP to identify hot spot lane departure locations, perform road safety audits and implement low-cost comprehensive countermeasures. The following report summarizes the findings of a RSA focused on lane departure crashes (LD) along Route 140 in Gardner, Massachusetts.

## 2.0 Background Material for Route 140 in Gardner

Gardner is a Massachusetts municipality with approximately 20,770 residents (2000 census) and is located within Worcester County some 30 miles northwest of Worcester, MA. Along the eastern portion of Gardner, Route 140 connects to the communities of Westminster to the south and Winchendon along the north. Through Gardner, Route 140 is an undivided arterial roadway, which transitions between 2, 3, and 4 lanes with larger than average travel lanes (>12 ft) and shoulders (>8 ft in some places). The total length of Route 140 through Gardner is 6.36 miles which is owned and operated by the State of Massachusetts and the City of Gardner for distances of 4.93 miles (southern) and 1.43 miles (northern), respectively. A typical cross-section for Route 140 is pictured in Figure 2, and some of the major characteristics, including crash clusters, for Route 140 are summarized in Figure 3 below.

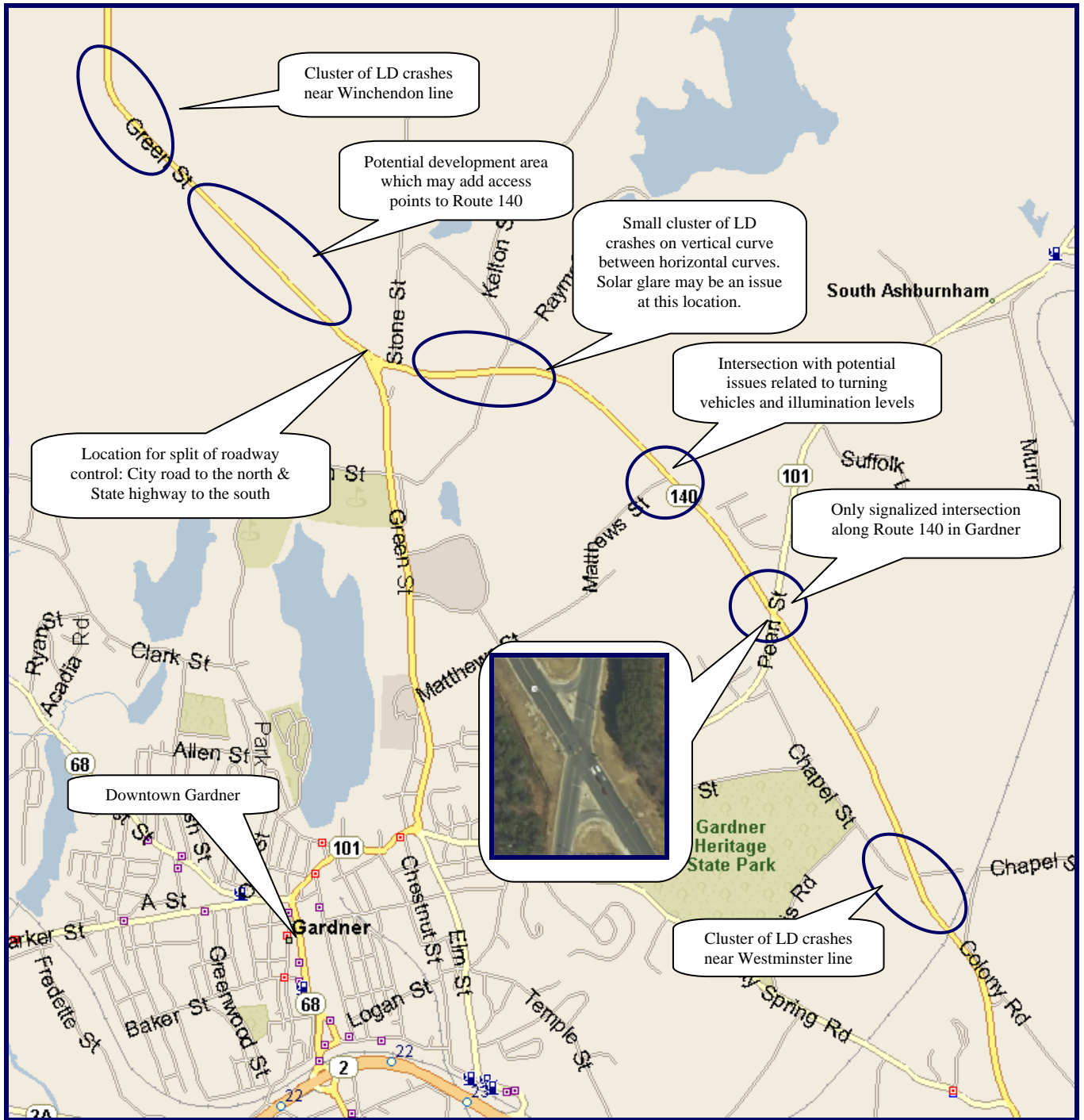


**Figure 2. Typical Cross-Section for Route 140**

The LD-RSA for Route 140 was held on May 29, 2007 in the City of Gardner. In total, 19 team members participated in the road safety audit, and as indicated in Table 1, representatives were present from Federal, State, Regional and Local agencies and included a cross-section of engineering/planning, education, and enforcement expertise.

**Table 1 Participating Audit Team Members**

Audit Team Members <sup>a</sup>	Agency/Affiliation
Bonnie Polin	Massachusetts Highway Department – Safety Section
Maliha Akhtar	Massachusetts Highway Department – Highway Design
Neil Boudreau	Massachusetts Highway Department – Traffic Engineering
Brian Doherty	Montachusett Regional Planning Commission
George Snow	Montachusett Regional Planning Commission
Michael Ellis	Greater Gardner Chamber of Commerce
Robert Babb	Massachusetts Highway Department – District 3
Tim White	Federal Highway Administration
Robert McCarthy	Federal Highway Administration
Michael Gerry	Greater Gardner Chamber of Commerce
Alan Agnelli	Representative Bob Rice’s Office
Dan Keeney	Gardner DCDP
Mark Johnson	Massachusetts Highway Department – District 3
Paul M. Capps	Massachusetts State Police
Rock Barrieau	Gardner Police Department
Bob Hankinson	Gardner City Engineer
Matthew Stanley	City of Gardner, Intern
Mary Delaney	City of Gardner
Michael Knodler	University of Massachusetts - Amherst



**Figure 3. Characterization of Roadway Features for Route 140**

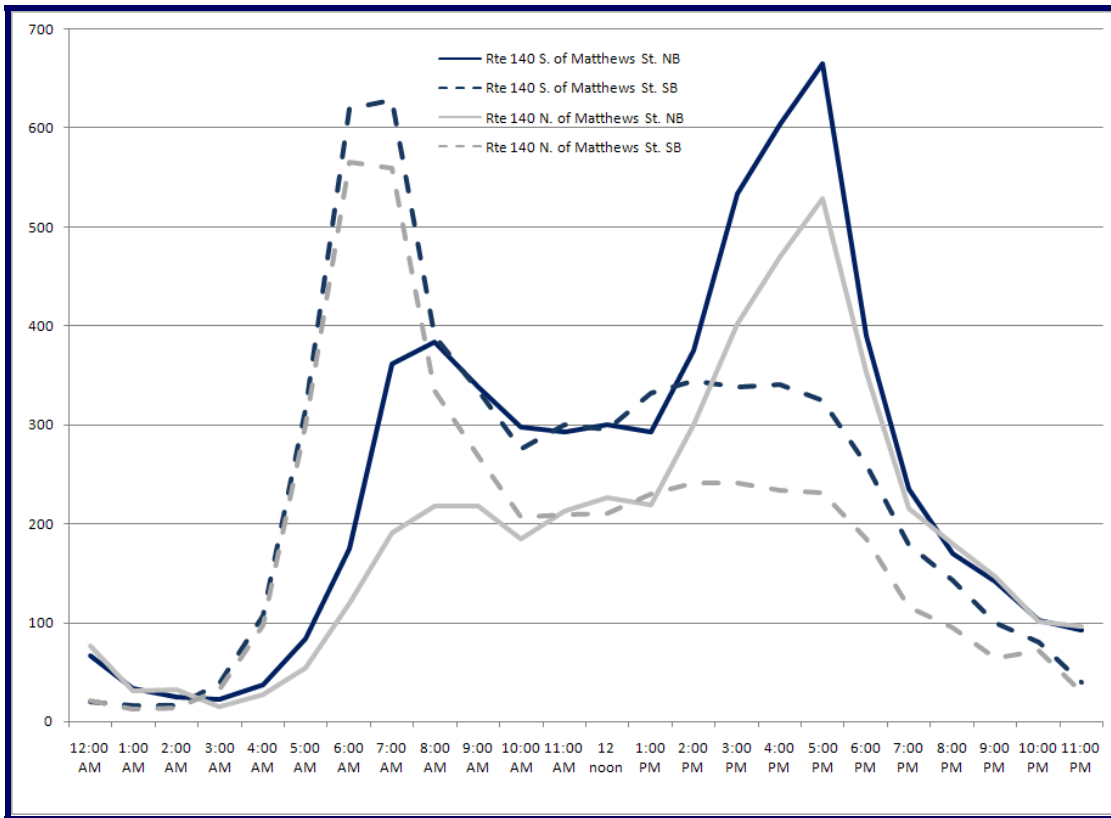
Given the length of Route 140 through Gardner, audit team members were asked to visit the site in advance of the meeting to familiarize themselves with the roadway attributes and characteristics. A copy of the meeting agenda and instructions as well as a packet of pertinent information was distributed to meeting invitees prior to the meeting (this information is included in Appendix A of this report). Specifically, the additional information provided was pertinent to the LD-RSA safety initiative and included traffic volumes along Route 140 as well as a description of relevant crashes as summarized below:

- Figure 4 presents hourly and directional distributions of traffic volumes along Route 140 at locations north and south of Matthews Street for an average weekday. From the compiled data collection efforts the maximum average daily traffic (ADT) was 11,842 vpd at the south location and 9,198 vpd at the north location.
- Similar to many roadways, the posted speeds vary along Route 140 in Gardner. Route 140 has segments posted at both 40 and 50 mph. The official speed regulations for Route 140 in Gardner are summarized below in Table 2.
- Between 2/12/03 and 3/20/05 there were 25 reported crashes (2 were later deemed as not occurring on Route 140) consistent with the lane departure initiative of which 19 were geolocated and presented in Figure 5. A complete summary of the 23 identified crashes over the 2-year period is included in Appendix A and was provided to participants prior to the audit meeting. Please note that this does not reflect all crashes along Route 140, but those deemed relevant to this initiative.

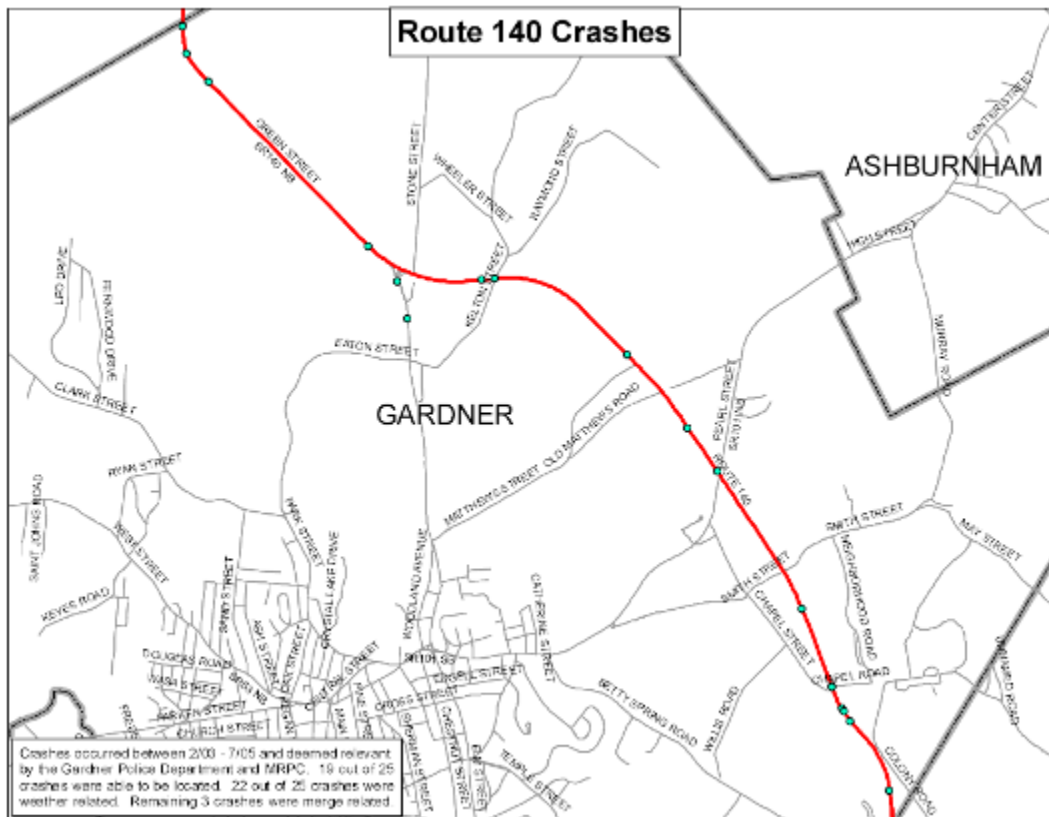
**Table 2 Summary of Speed Regulations for Route 140 in Gardner**

Northbound			Southbound		
	Beginning at the Westminster line		City Controlled	Beginning at the Winchendon line	
State	1.63 miles	at 50 mph		1.43 miles	At 50 mph
Controlled	0.36 miles	at 40 mph		0.33 miles	At 40 mph
	1.44 miles	at 50 mph		1.44 miles	At 50 mph
	0.33 miles	at 40 mph		0.36 miles	At 40 mph
City	1.43 miles	at 50 mph	State	1.63 miles	At 50 mph
Controlled	Ending at the Winchendon line		Controlled	Ending at the Westminster line	

Additional resources made available to the team during the audit meeting included field videos from several drives along Route 140 which were used in aiding discussion of specific roadway elements. Also available were alternative resources including the AASHTO Strategic Highway Safety Plan and the related National Cooperative Highway Research Program (NCHRP) 500 series reports.



**Figure 4. Hourly and Directional Distributions of Volumes for Route 140**



**Figure 5. 2-Year Summary of Route 140 Lane Departure-Related Crashes**

### 3.0 Characterization of Major Traffic Safety Challenges

Following a brief introduction to the RSA process in general, the meeting participants were asked to summarize and characterize potential safety considerations along Route 140. The initial characterization of the major safety considerations resulting in lane departure crashes focused on two key elements as follows:

- Speed was immediately identified as a primary factor in the operational elements of the roadway and in turn a significant factor in roadway crashes. Speeding was determined to be a result, in part, of large lane widths and shoulders as well as the lack of development (i.e. curb cuts). Additionally, it should be noted that many of the motorists travelling along Route 140 have just exited Route 2 (a major east- west access controlled highway through this section of Massachusetts). The Gardner police discussed challenges with enforcing the particular roadway, but noted that enforcement efforts are in place.
- A second major characterization of the crashes along Route 140 involved the weather. Of the reported crashes being considered during this RSA, 88 percent of all crashes were deemed weather-related. Twenty-one of the crashes occurred during the months of December through March. Also, 13 of the weather-related crashes occurred in the vicinity of a curve along the roadway.
- Other significant factors mentioned at the outset of the meeting that are discussed in further detail later in this report also included the following:
  - The skewed signalized intersection at Route 140 and Route 101;
  - The intersection of Route 140 and Matthews Street, including the impact of limited turning lanes;
  - Future development of subdivision with access via Route 140.

### 4.0 Summary of Short Term Recommendations for Route 140

The formal review of potential safety concerns along Route 140 was completed by the entire audit team. Following identification of a potential safety issue the dialogue subsequently focused on possible countermeasures with some preliminary discussion regarding the feasibility of implementation (timeframe and cost) as well as the potential payoff of safety benefits. Given the potential for an immediate impact there was an added focus on short term (less than 1 year) and low cost (less than \$10,000) improvements that could be done almost instantaneously resulting in a positive safety impact. Resulting recommendations for immediate actions along Route 140 include the following:

- Given the reported prevalence of speed among the lane departure crashes, it is recommended that Route 140 continue to remain a high speed enforcement area, especially during winter months. It is also recommended that speed data collection be completed by the City of Gardner to track current operating speeds throughout the year; this may also prove useful in the establishment of enforcement thresholds. Similarly, it is recommended that the speed regulations described in Table 2 are consistent with the current operating practice. It is also recommended that additional speed signage be provided along the roadway in an effort to further reinforce the limits for motorists.

- Given the reported prevalence of weather related crashes, 3 specific recommendations include the each of the following:
  - Add warning signs along the corridor which alert motorists about the impact of weather along the roadway. It is also recommended that variable message signs (VMS) be used periodically during the winter months to remind motorists about weather issues, and to be cognizant in the selection of their speeds. Candidate locations would include Route 140 near both bordering town lines, and at selected locations in the middle for traffic exiting downtown Gardner. Please note, it is not recommended that the VMS be used to suggest roadway speeds as variable speed limits are not as of yet permissible in Massachusetts.
  - Assess the exact condition of the pavement from a skid resistance perspective. Specifically, ensure pavement provides sufficient skid resistance.
  - Similarly, it is recommended that existing drainage characteristics be evaluated. Elements for consideration would be the presence of adequate and functional drainage features, roadway pavement conditions, and superelevation at known ice spots.
  - In the vicinity of the Winchendon line, it is recommended that the presence of trees which may be obscuring the roadway, resulting in black ice conditions with some regularity, be identified and potentially trimmed/removed.

Assure visible “Curve Ahead” warning signs for each direction of all horizontal curves. Signs should be placed in advance of the curve to allow adequate response time from motorists. To further enhance the delineation, chevrons and/or possibly roadside reflectors should be considered as budget permits. For example, at the first horizontal curve heading SB from the Winchendon town line has a curve ahead sign, but added delineation in the curve would provide an added benefit.






- With respect to signage along the corridor some short term recommendations include the following:
  - As noted above, it is recommended that additional speed limit signs and weather-related warning signs be added.
  - Additionally, it is recommended that unnecessary signage (i.e., extra speed limit sign) near the signal ahead warning sign (see inset, top) be removed to make it more visible; the sign clutter may cause some motorists to miss the warning sign.
  - Another recommendation is that the informational sign depicting the Gardner District Court be moved to a higher location (possibly a separate posting) as the current location is easily obscured by leading vehicles and possibly by snow during the winter months.
  - Continue general sign maintenance. Although it is common for signs to be knocked over, it is important to repair efficiently.
  - Assess the existing condition of current signs to identify faded signs which, in turn, should be replaced with an added emphasis on regulatory and warning signs.













**Figure 6. Typical Roadside Signage**



## 5.0 Summary of Additional Route 140 Countermeasures

Although an emphasis was placed upon short term and low cost improvements that could be carried out immediately, the focus of the team was not limited to solely those countermeasures. The following section details countermeasures discussed by the team, which are reflective of all costs and timeframes and includes both general (entire corridor) and specific safety opportunities. Please note that with respect to the timeframe there are some unknown variables that must be further explored. Additionally, some of the potential treatments discussed were experimental in nature resulting in an unknown level of safety benefits. Several definitions exist for low, mid, and high cost as well as for short, mid and long term implementation timeframes. For purposes of this report, low cost improvements will be under \$10,000, mid costs will be under \$50,000, and high costs will be above \$50,000. From a timeframe perspective short term will refer to less than 1 year while mid and long term will refer to countermeasures that will take 1 to 3, and greater than 3 years, respectively.

Potential Safety Issue	Possible Countermeasures	Implementation Timeframe & Cost	Potential Safety Payoff	Photos
Speed-related issues along entire Route 140 corridor	Continue and expand upon a concentrated enforcement and educational (i.e. speed feedback, community meetings, etc) program.	Short Term & Low/Mid Cost	Mid	
	Consider possible low-cost speed-related strategies, including restriping narrower lanes, installing optical speed bars, and adding more speed limit signs.	Short Term & Low Cost	Low	
Distracted or drowsy drivers	Route 140 already has rumble strips in many locations. Consider rumble strips and/or centerline rumble stripes in areas along the roadway that do not already have rumble strips.	Mid Term & Mid Cost	Mid	
Pavement Markings	Upgrade pavement markings to enhance delineation through increased reflectivity.	Short Term & Mid/High Cost	Mid	
Horizontal curve delineation	Install curve ahead warning signs, chevrons and possibly roadside reflectors for horizontal curves.	Short Term & Low/Mid Cost	Mid	

Potential Safety Issue	Possible Countermeasures	Implementation Timeframe & Cost	Potential Safety Payoff	Photos
Edge drop-off at roadside	Maintain and fill roadside as needed to prevent edge drop-off. Current locations may exist north of Route 101.	Short Term & Low Cost	Low	
Current operation of existing auxiliary lanes	Add warning signs at locations where drivers should be watching for turning vehicles.	Short Term & Low Cost	Low	
	For auxiliary lanes for turning purposes, add lane usage information including both roadway symbols and signage.	Short Term & Low Cost	Low	
Weather-related crashes along the Route 140 corridor	Add warning signs alerting motorists of possible weather impacts. Employ a VMS periodically during the winter months to remind motorists about weather issues.	Short Term & Low Cost	Mid	
	Assess pavement condition from a skid resistance perspective.	Short Term & Low Cost	N/A	
	Near Winchendon line, identify trees obscuring the roadway and contributing to black ice conditions, and potentially trim/remove.	Short Term & Low Cost	Low	

Potential Safety Issue	Possible Countermeasures	Implementation Timeframe & Cost	Potential Safety Payoff	Photos
Sign efficiency	Either relocate signal ahead warning sign or signs around it. Current cluster of signs may force driver to miss the warning sign.	Short Term & Low Cost	Low	
	Change location or elevate the Gardner District Court sign as it is easily obscured by leading vehicles and possibly by snow during winter months.	Short Term & Low/Mid Cost	N/A	
	Update worn and faded signs (emphasis on regulatory and warning), and continually perform sign maintenance.	Short Term & Low Cost	Low	 
Guard rail upgrades	In areas with guard rail, upgrade the existing end treatments to crash cushion model (some sections already equipped, see figure, right).	Mid Term & Mid/High Cost	Low	 
Dark stretches of Roadway in the vicinity of Green Street and Matthews Street	Consider exploration of or improvement of roadway lighting.	Long Term & Mid/High Cost	Low	
	Ensure retroreflective signage at these intersections to improve conspicuity.	Short Term & Low Cost	Low/Mid	

Potential Safety Issue	Possible Countermeasures	Implementation Timeframe & Cost	Potential Safety Payoff	Photos
Continued maintenance	The pavement condition is in excellent condition from the Westminster town line through the intersection with Route 101 and decreases considerably beyond that. This area should be the focus of continued maintenance such as removal of brush, edge drop-off repairs and overall pavement repairs. Specifically, to assure safety this needs to be maintained.	Short Term & Low Cost	Low	
Drainage	Evaluate existing drainage features to assure adequate drainage. During winter months assure all catch basins remain clear.	Short Term & Low Cost	Low/Mid	
Unsignalized intersection at Matthews Street	Safety recommendations to be considered at this location include dedicated turn lanes for left turns from Route 140 NB and right turns from Route 140 SB (may require reconfiguration of climbing lane).	Mid Term & Mid/High Cost	Low/Mid	

## 6.0 Discussion

With respect to the safety improvement opportunities described in the previous section it is important to consider the following: 1) many treatments are both low cost and short term and 2) there is a complimentary nature of many of the safety strategies in that one improvement will aid with multiple safety issues. Please note that although this document provides a series of specific recommendations which warrant short term implementation, the approach towards improved safety is dynamic in nature and warrants revisiting over time.

Several additional topics that were discussed at the audit meeting and warrant consideration include the following:

- Because of the number of weather related crashes, the RSA team determined that drivers familiar with the roadway were not intuitively aware of potential weather issues and were driving at normal operating speeds. It is the belief of the RSA team that if variable speed limits become permissible, or are even experimented within Massachusetts, this would be an ideal candidate location.
- During the RSA meeting one long term high cost strategy discussed was the possibility of making the entire stretch of Route 140 a two-lane divided roadway. Although it is recommended that this be considered, this would need to be studied in much greater detail to identify the operational impacts.
- There was also some discussion during the RSA meeting about the possibility of making Route 140 through Gardner a required daytime headlight use area.
- A proposed housing development is currently planned along Route 140 (near the Winchendon line). The RSA team feels that it is imperative for access issues to be definitively addressed for this and future developments to assure the safety of motorists along Route 140. Specifically, the RSA team strongly preferred that curb cuts be minimized along Route 140.

## **7.0 Appendix A: Distributed RSA Meeting Materials**

Materials provided to RSA team members in advance of the meeting included the following:

1. Agenda
2. RSA and Lane Departure Introduction
3. Tabulated Crash Summary
4. Map of Geolocated Crashes
5. MRPC Summary of Volumes
6. LD-RSA Checklist

# Agenda

## Road Safety Audit for Route 140

Meeting Location: 34 Pearly Lane  
Gardner, MA

Tuesday, May 29, 2007  
10:00 AM to 12:00 PM

Type of meeting: Lane Departure – Road Safety Audit  
Attendees: Invited Participants to Comprise a Multidisciplinary Team  
Please bring: Thoughts and Enthusiasm!!

10:00 AM Welcome and Introductions  
10:15 AM Introduction to Road Safety Audits and Lane Departure Crashes  
10:30 AM Review of Site Specific Material

- Crash & Volume – provided in advance
- Existing Geometries and Conditions
- Video and Images

11:00 AM Completion of RSA

- Identification of Safety Concerns – using checklists as a guide
- Identification of Possible Countermeasures

12:00 PM Adjourn for the Day – but the RSA has not ended

### Instructions for Participants:

- Before attending the RSA on May 29<sup>th</sup> participants are encouraged to drive Route 140 within Gardner, MA and complete/consider elements on the RSA advisory checklist with a focus on safety factors affecting roadway departure crashes.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' opinions are key elements to the success of the overall RSA process.
- After the initial RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.

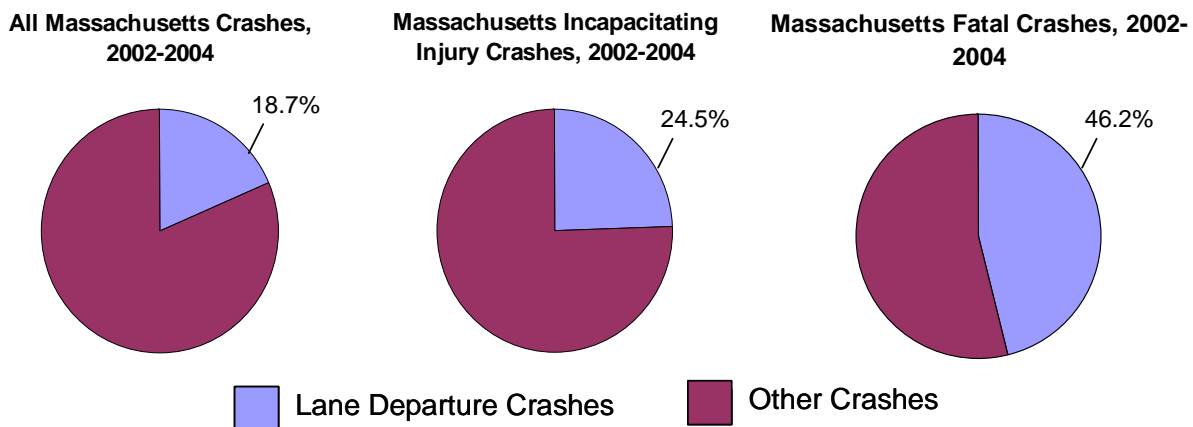
## An Introduction to Road Safety Audits & Lane Departure Crashes in Mass.chusetts

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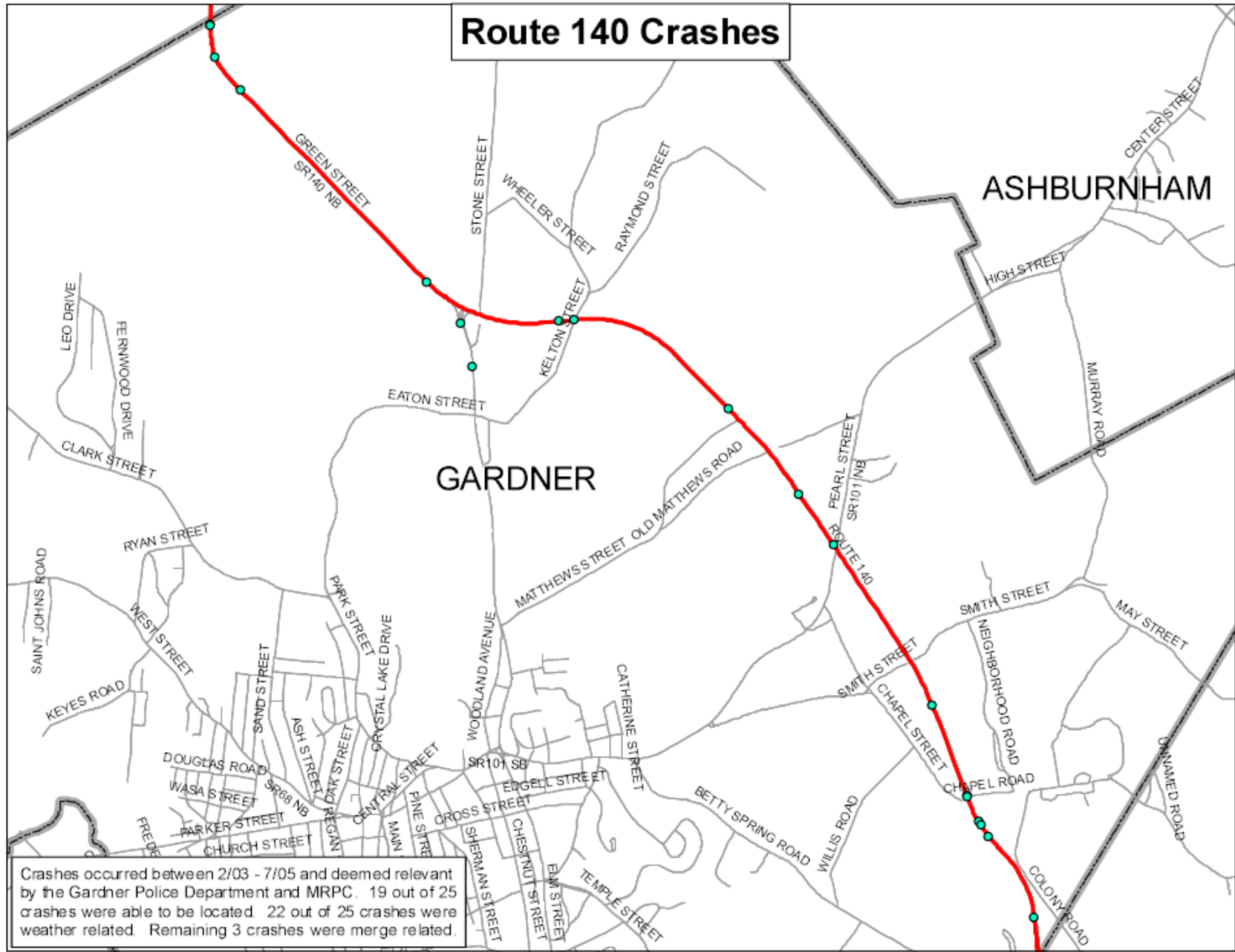
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In an effort to combat the lane departure problem, a strategy was developed for the SHSP to identify hot spot lane departure location, perform road safety audits and implement low-cost comprehensive countermeasures.

Crash	CRASH DATE	MAP (Y/N)	Direction	Object Struck	Curve (Y / N)	WEATHER 1	WEATHER 2	SURFACE TYPE	CRASH LOCATION
1	2/12/2003	Y	N/S	vehicle	Y	snow		snow	ROUTE 140 (#1490)
2	2/17/2003	Y	S	snow bank	N	snow		snow	ROUTE 140/CHAPEL STREET
3	2/23/2003	Y	S	snow bank	Y	snow	sleet, hail, freezing rain	ice	ROUTE 140 BY KELTON ST. OVERPASS
4	2/24/2003		N	snow bank	N	snow		snow	ROUTE 140
5	4/4/2003	Y	S	embankment	N	cloudy	sleet, hail, freezing rain	ice	ROUTE 140/CHAPEL STREET
6	4/5/2003		N/S	vehicle	Y	rain	sleet, hail, freezing rain	slush	ROUTE 140
7	12/8/2003	Y	N/N	vehicle	N-merge	cloudy	snow	snow	ROUTE 140/COLONY ROAD
8	12/12/2003	Y	S/S	vehicle	N-merge	clear		dry	ROUTE 140 (at merge from 2 to 1 lane per direction SB)
9	12/15/2003		S/S	vehicle/snow bank	Y	cloudy		ice	ROUTE 140
10	1/5/2004		N	guardrail	N	rain		slush	ROUTE 140
11	3/9/2004	Y	S	guardrail	N	cloudy		ice	ROUTE 140 (NORTH OF MATTHEW ST)
12	8/12/2004	Y	N	embankment	N	rain		wet	ROUTE 140/300 FT S OF SMITH STREET
13	12/6/2004	Y	N/S	vehicle	Y	snow	sleet, hail, freezing rain	ice	GREEN STREET/ROUTE 140 (N of Green)
14	1/5/2005	Y	S	embankment	Y	snow	sleet, hail, freezing rain	ice	ROUTE 140 (by the prison)
15	1/6/2005		S	vehicle	Y	snow	sleet, hail, freezing rain	snow	ROUTE 140
16	1/12/2005	Y	S	embankment	Y	sleet, hail, freezing rain	snow	slush	ROUTE 140 (by Winchendon town line)
17	1/13/2005	Y	N	guardrail	Y	sleet, hail, freezing rain		ice	ROUTE 140/500 FT S OF STONE STREET EXT
18	1/26/2005	Y	N/S	vehicle	N	snow		snow	GREEN STREET/300 FT N OF EATON ST
19	2/10/2005	Y	S	guardrail	Y	sleet, hail, freezing rain	snow	snow	ROUTE 140/300 FT FROM CHAPEL STREET
20	2/12/2005	Y	N	utility pole support wire	Y	cloudy	snow	wet	ROUTE 140/500 FT S OF WINCHENDON TL
21	2/23/2005	Y	S	utility pole support wire	Y	clear		wet	ROUTE 140 (near Winchendon town line)
22	3/1/2005	Y	W (N in diagram)	guardrail	N	cloudy		slush	ROUTE 140/100 FT N OF RAILROAD BRIDGE
23	3/1/2005		S	overturned	Y	cloudy	snow	snow	ROUTE 140/150 S OF MASS ELEC. POLE 41
24	3/20/2005	Y	S/S/N	vehicle	N-merge	cloudy		dry	ROUTE 140/1000 FT S OF MATTHEWS ST.
25	7/21/2005	Y	S/S	vehicle	N-merge	clear		dry	829 GREEN STREET (not on 140)

Crash	BRIEF SUMMARY/NARRATIVE
1	<ul style="list-style-type: none"> <li>• LOST CONTROL IN SNOW &amp; CROSSED OVER CENTER LINE</li> </ul>
2	<ul style="list-style-type: none"> <li>• LOST CONTROL AND WENT INTO SNOW BANK</li> </ul>
3	<ul style="list-style-type: none"> <li>• LOST CONTROL DUE TO EXCESSIVE ICE ON ROADWAY. SPUN INTO ONCOMING LANE.</li> </ul>
4	<ul style="list-style-type: none"> <li>• SLID INTO ONCOMING LANE AND STOPPED IN A SNOW BANK ON OPPOSITE SIDE OF ROAD</li> </ul>
5	<ul style="list-style-type: none"> <li>• LOST CONTROL DUE TO POOR WEATHER &amp; ROAD CONDITIONS. SLID OFF THE ROAD &amp; INTO EMBANKMENT</li> </ul>
6	<ul style="list-style-type: none"> <li>• LOST CONTROL AND WENT ONCOMING LANE &amp; HIT ANOTHER VEHICLE</li> </ul>
7	<ul style="list-style-type: none"> <li>• VEHICLES COLLIDED AS THE LANES THEY WERE DRIVING IN MERGED</li> </ul>
8	<ul style="list-style-type: none"> <li>• SPUN OUT OF CONTROL AFTER HITTING ANOTHER VEHICLE IN A FAILED ATTEMPT TO GET AHEAD OF OTHER VEHICLE WHEN THE LANES MERGED</li> </ul>
9	<ul style="list-style-type: none"> <li>• 2 VEHICLES CRASHED WHEN THEY WERE TRYING TO AVOID A 3RD VEHICLE THAT WAS SPINNING OUT OF CONTROL</li> </ul>
10	<ul style="list-style-type: none"> <li>• OPERATOR LOST CONTROL OF VEHICLE WHICH SPUN OUT OF CONTROL AND CROSSED OVER INTO ONCOMING LANE.</li> </ul>
11	<ul style="list-style-type: none"> <li>• OPERATOR LOST CONTROL OF VEHICLE AND STRUCK GUARDRAIL</li> </ul>
12	<ul style="list-style-type: none"> <li>• HYDROPLANED THROUGH A PUDDLE, CROSSED ACROSS THE ONCOMING LANE AND THEN LANDED IN AN EMBANKMENT</li> </ul>
13	<ul style="list-style-type: none"> <li>• OPERATOR LOST CONTROL OF VEHICLE DUE TO HORRENDOUS ROAD CONDITIONS. VEHICLE CROSSED INTO ONCOMING LANE AND HIT ANOTHER VEHICLE HEAD ON.</li> </ul>
14	<ul style="list-style-type: none"> <li>• VEHICLE FISHTAILED AS A RESULT OF DEPLORABLE ROAD CONDITIONS &amp; WENT OFF THE SIDE OF ROAD</li> </ul>
15	<ul style="list-style-type: none"> <li>• RESULT OF ONE VEHICLE ATTEMPTING TO PASS ANOTHER VEHICLE IN BAD DRIVING CONDITIONS. HIT VEHICLE WENT ACROSS THE MEDIAN AND INTO THE OPPOSITE LANE &amp; EVENTUALLY HIT THE GUARDRAIL ON THAT SIDE</li> </ul>
16	<ul style="list-style-type: none"> <li>• VEHICLE OUT OF CONTROL BECAUSE IT HIT A PATCH OF ICE. VEHICLE WENT OFF THE SHOULDER &amp; HIT A SNOW EMBANKMENT.</li> </ul>
17	<ul style="list-style-type: none"> <li>• LOST CONTROL &amp; FISHTAILED DUE TO ICY ROAD. CROSSED CL, STRUCK A GUARDRAIL, THEN RECROSSED THE CL &amp; RAN OFF ROAD DOWN AN EMBANKMENT.</li> </ul>
18	<ul style="list-style-type: none"> <li>• VEHICLE WAS TRYING TO MAKE IT UP A HILL BUT THE CAR KEPT SLIPPING AND HIT ANOTHER VEHICLE</li> </ul>
19	<ul style="list-style-type: none"> <li>• OPERATOR LOST CONTROL OF VEHICLE AND SLID INTO ANOTHER VEHICLE</li> </ul>
20	<ul style="list-style-type: none"> <li>• VEHICLE SLID INTO &amp; ACROSS ONCOMING LANE AS A RESULT OF SPEEDING.</li> </ul>
21	<ul style="list-style-type: none"> <li>• DRIVER CLAIMED THAT SHE SKID OFF OF ROAD DUE TO WET GROUND. OFFICER BELIEVES THAT SHE WAS INATTENTIVE AND DROVE OFF THE ROAD.</li> </ul>
22	<ul style="list-style-type: none"> <li>• VEHICLE SLID INTO ONCOMING LANE AND HIT A GUARDRAIL AS A RESULT OF SLIPPERY ROAD CONDITIONS</li> </ul>
23	<ul style="list-style-type: none"> <li>• OPERATOR LOST CONTROL OF VEHICLE DUE TO WEATHER &amp; POSSIBLE ALCOHOL INGESTION. VEHICLE SPUN OUT ON CONTROL, RAN OFF THE ROADWAY RIGHT, AND OVERTURNED.</li> </ul>
24	<ul style="list-style-type: none"> <li>• CRASH OCCURRED AS A RESULT OF ONE VEHICLE CUTTING OFF ANOTHER DUE TO LANE MERGE. THE VEHICLE BEING CUT OFF HIT THE BRAKES AND WENT INTO ONCOMING LANES AND HIT ANOTHER VEHICLE. THAT VEHICLE THEN HIT ANOTHER VEHICLE.</li> </ul>
25	<ul style="list-style-type: none"> <li>• OPERATOR DROVE VEHICLE IN FRONT OF ANOTHER WHEN TRYING TO CHANGE DIRECTION IN ORDER TO PICK UP A TURTLE ON THE ROAD</li> </ul>



Route 140 South of Mathews Street Raw count weekday average May 1, 2007			
Raw count weekday average May 1, 2007			
Start Time	Rte 140 S. of Mathews St.		Total
	NB	SB	
12:00 AM	66	20	86
1:00 AM	33	16	49
2:00 AM	25	16	41
3:00 AM	22	38	60
4:00 AM	37	107	144
5:00 AM	83	316	399
6:00 AM	174	619	793
7:00 AM	361	628	989
8:00 AM	383	390	773
9:00 AM	338	334	672
10:00 AM	297	275	572
11:00 AM	292	300	592
12 noon	300	295	595
1:00 PM	292	332	624
2:00 PM	375	344	719
3:00 PM	534	338	872
4:00 PM	604	340	944
5:00 PM	665	325	990
6:00 PM	390	259	649
7:00 PM	235	178	413
8:00 PM	170	143	313
9:00 PM	141	99	240
10:00 PM	102	80	182
11:00 PM	92	39	131
	6011	5831	11842

Route 140 North of Mathews Street Raw count weekday average May 1, 2007			
Raw count weekday average May 1, 2007			
Start Time	Rte 140 N. of Mathews St.		Total
	NB	SB	
12:00 AM	76	21	97
1:00 AM	31	13	44
2:00 AM	32	14	46
3:00 AM	15	33	48
4:00 AM	27	98	125
5:00 AM	54	301	355
6:00 AM	120	566	686
7:00 AM	191	560	751
8:00 AM	218	335	553
9:00 AM	218	269	487
10:00 AM	185	207	392
11:00 AM	213	210	423
12 noon	226	211	437
1:00 PM	219	230	449
2:00 PM	300	241	541
3:00 PM	402	242	644
4:00 PM	470	234	704
5:00 PM	529	232	761
6:00 PM	353	185	538
7:00 PM	216	116	332
8:00 PM	180	95	275
9:00 PM	147	64	211
10:00 PM	101	72	173
11:00 PM	96	30	126
	4619	4579	9198

<b>GEOMETRIC DESIGN</b>	
<b>Issue</b>	<b>Comment</b>
<b>A. Speed – (Design Speed; Speed Limit &amp; Zoning; Sight Distance; Overtaking)</b>	
<p>Are there speed-related issues along the corridor? Please consider the following elements:</p> <ul style="list-style-type: none"> <li>• Horizontal and vertical alignment;</li> <li>• Posted and advisory speeds</li> <li>• Driver compliance with speed limits</li> <li>• Approximate sight distance</li> <li>• Safety passing opportunities</li> </ul>	
<b>B. Road alignment and cross section</b>	
<p>With respect to the roadway alignment and cross-section please consider the appropriateness of the following elements:</p> <ul style="list-style-type: none"> <li>• Functional class (Urban Principal Arterial)</li> <li>• Delineation of alignment;</li> <li>• Widths (lanes, shoulders, medians);</li> <li>• Sight distance for access points;</li> <li>• Cross-slopes</li> <li>• Curbs and gutters</li> </ul> <p>Drainage features</p>	
<b>C. Intersections</b>	
<p>For intersections along the corridor please consider all potential safety issues. Some specific considerations should include the following:</p> <ul style="list-style-type: none"> <li>• Intersections fit alignment (i.e. curvature)</li> <li>• Traffic control devices’ alert motorists as necessary</li> <li>• Sight distance and sight lines seem appropriate</li> <li>• Vehicles can safely slow/stop for turns</li> <li>• Conflict point management</li> <li>• Adequate spacing for various vehicle types</li> </ul> <p>Capacity problems that result in safety problems</p>	
<b>D. Auxiliary lanes</b>	
<ul style="list-style-type: none"> <li>• Do auxiliary lanes appear to be adequate?</li> </ul>	
<ul style="list-style-type: none"> <li>• Could the taper locations and alignments be causing safety deficiencies?</li> </ul>	
<ul style="list-style-type: none"> <li>• Are shoulder widths at merges causing safety deficiencies?</li> </ul>	

<b>E. Clear zones and crash barriers</b>	
<p>For the roadside the major considerations are clear zone issues and crash barriers. Consider the following:</p> <ul style="list-style-type: none"> <li>• Do there appear to be clear zones issues? <ul style="list-style-type: none"> <li>— Are hazards located too close the road?</li> <li>— Are side slopes acceptable?</li> </ul> </li> <li>• Are suitable crash barriers (i.e, guard rails, curbs, etc.) appropriate for minimizing crash severity?</li> <li>• Barrier features: end treatments, visibility, etc.</li> </ul>	
<b>F. Bridges and culverts – (if necessary)</b>	
<p>Are there specific issues related to bridges and culverts that may result in safety concerns?</p>	
<b>G. Pavement – (Defects, Skid Resistance, and Flooding)</b>	
<ul style="list-style-type: none"> <li>• Is the pavement free of defects including excessive roughness or rutting, potholes, loose material, edge drop-offs, etc.) that could result in safety problems (for example, loss of steering control)?</li> <li>• Does the pavement appear to have adequate skid resistance, particularly on curves, step grades and approaches to intersections?</li> <li>• Is the pavement free of areas where flooding or sheet flow of water could contribute to safety problems?</li> <li>• In general, is the pavement quality sufficient for safe travel of heavy and oversized vehicles?</li> </ul>	
<b>H. Lighting (Lighting and Glare)</b>	
<p>It is important to consider to the impacts of lighting. Some specifics include the following:</p> <p>Is lighting required and, if so, has it been adequately provided?</p> <p>Are there glare issues resulting from headlights during night time operations or from sunlight?</p>	

<b>TRAFFIC CONTROL DEVICES</b>	
<b>Issue</b>	<b>Comment</b>
<b>I. Signs</b>	
<p>Signage is a critical element in providing a safe roadway environment. Please consider the following:</p> <ul style="list-style-type: none"> <li>• Are all current signs visible (consider both night and day)? Are they conspicuous and clear? Are the correct signs used for each situation?</li> </ul>	
<ul style="list-style-type: none"> <li>• Does the retroreflectivity or illumination appear satisfactory?</li> <li>• Are there any concerns regarding sign supports?</li> </ul>	
<b>J. Traffic signals</b>	
<p>Although the focus of this RSA are lane departures, this does present an opportunity for us to consider any traffic signals. Specifically:</p> <ul style="list-style-type: none"> <li>• If present, do the traffic signals appear to be designed, installed, and operating correctly?</li> <li>• Is the controller located in a safe position? (where it is unlikely to be hit, but maintenance access is safe)</li> <li>• Is there adequate sight distance to the ends of possible vehicle queues?</li> </ul>	
<b>K. Marking and delineation</b>	
<ul style="list-style-type: none"> <li>• Is the line marking and delineation: <ul style="list-style-type: none"> <li>— appropriate for the function of the road?</li> <li>— consistent along the route?</li> <li>— likely to be effective under all expected conditions? (day, night, wet, dry, fog, rising and setting sun, oncoming headlights, etc.)</li> </ul> </li> <li>• Are centerlines, edgelines, and lane lines provided? If not, do drivers have adequate guidance?</li> </ul>	

<b>ROADWAY ACTIVITY</b>	
<b>Issue</b>	<b>Comment</b>
<p>With respect to roadway activity please consider safety elements related to the following:</p> <ul style="list-style-type: none"> <li>• Pedestrians</li> <li>• Bicycles</li> <li>• Public transportation vehicles and riders</li> <li>• Emergency vehicles</li> <li>• Commercial vehicles</li> <li>• Slow moving vehicles</li> </ul>	

<b>ENVIRONMENTAL CONSIDERATIONS</b>	
<b>Issue</b>	<b>Comment</b>
<b>Weather &amp; Animals</b>	
<p>From an environmental perspective it is important to consider any potential impacts. Most notably is likely to be the impacts of weather or animals, including:</p> <ul style="list-style-type: none"> <li>• Possible effects of rain, fog, snow, ice, wind on design features.</li> <li>• Has snow fall accumulation been considered in the design (storage, sight distance around snowbanks, etc.)?</li> <li>• Are there any known animal travel/migration routes in surrounding areas which could affect design?</li> </ul>	

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## Appendix – Crash Tables

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### Rte 140, Winchendon Crashes, Table 1

Sorted by date. B Date: 1/01/08. E Date: 12/31/10											
#	Route 140 Location	Date	Day of Week	Time of Day	Type	Severity	Direction V1	V2	Weather	Conditions Light	Road
WIRS*-1	164 Gardner Road	3/5/2008	WED	7:30	Sideswipe same direction	Property Damage	NB	NB		Daylight	
WIRS-2	just south of Rte 12 intersection	3/12/2008	WED	19:40	Rollover (LD)	Property Damage	SB			Darkness	ice
WIRS-3	500' north of Brian's Place	4/27/2008	SUN	9:06	Ran off road (LD)	Property Damage	NB			Darkness	
WIRS-4	just south of Cornerstone Church	6/11/2008	WED	10:56	Ran into opposing lane (LD) & head on	<b>Incapacitating Injury</b>	SB	NB		Daylight	
WIRS-5	122 Gardner Road	8/5/2008	TUE	18:13	Sideswipe same direction	Property Damage	NB	NB		Daylight	
WIRS-6	161 Gardner Road	9/1/2008	MON	11:40	Rear end & Ran into opposing lane & off road (LD)	<b>Incapacitating Injury</b>	NB	NB		Daylight	
WIRS-7	at gravel lot just south of Rte 12 intersection	9/17/2008	WED	16:16	Sideswipe same direction	Property Damage	SB	SB		Daylight	
WIRS-8	56 Gardner Road	10/27/2008	MON	16:39	Rear end	Property Damage	NB	NB		Daylight	
WIRS-9	cannot be located, FYI only	11/9/2008	SUN	19:08	Bear	Property Damage	NB			Darkness	
WIRS-10	1 mile south of Brian's Place	11/20/2008	THU	7:04	Deer	Property Damage	SB			Daylight	
WIRS-11	114 Gardner Road	11/25/2008	TUE	10:05	Ran into opposing lane (LD)	<b>Incapacitating Injury</b>	SB			Daylight	wet
WIRS-12	156 Gardner Road near the farmstand NB	11/30/2008	SUN	18:26	Ran into next lane (LD) & sideswipe & head on	<b>Fatal Injury &amp; Personal Injury</b>	NB	SB		Darkness	
WIRS-13	just north of Cornerstone Church	12/19/2008	FRI	14:24	Rear end	<b>Personal Injury</b>	NB	NB		Daylight	snow
WIRS-14	cannot be located, FYI only	12/23/2008	TUE	17:19	Ran into opposing lane (LD) & head on	<b>Personal Injury</b>	NB	SB		Darkness	
WIRS-15	Utility pole #25&1/2	12/27/2008	SAT	1:58	Ran into opposing lane (LD)	Property Damage	NB		rain	Darkness	ice
WIRS-16	300' south of Brian's Place	12/27/2008	SAT	2:08	Parked Vehicle (LD)	Property Damage	SB			Darkness	ice
WIRS-17	200' south of Rte 12 traffic light	1/18/2009	SUN	13:18	Ran into opposing lane (LD) & left turn	Property Damage	SB	SB		Daylight	
WIRS-18	104 Gardner Road	3/9/2009	MON	8:06	Ran into opposing lane (LD)	Property Damage	NB			Daylight	snow
WIRS-19	144 Gardner Road / Madison Ave	4/1/2009	WED	8:00	Ran into opposing lane (LD)	Property Damage	NB	SB		Daylight	
WIRS-20	at Brian's Place	6/18/2009	THU	19:46	Ran into opposing lane (LD) & ran off road	Property Damage	SB			Daylight	wet
WIRS-21	just south of Rte 12 intersection	6/28/2009	SUN	1:39	Ran off road (LD) & rollover	<b>Incapacitating Injury</b>	SB			Daylight	
WIRS-22	122 Gardner Road	7/9/2009	THU	9:41	Ran into opposing lane (LD)	Property Damage	NB			Daylight	
WIRS-23	66 Gardner Road	10/15/2009	THU	17:02	Ran off road (LD)	Property Damage	NB			Darkness	
WIRS-24	Winchendon Self Storage	10/21/2009	WED	6:49	Ran off road (LD)	Property Damage	SB			Daylight	
WIRS-25	14 Gardner Road	1/2/2010	SAT	22:19	Rear end	Property Damage	SB	SB		Darkness	snow
WIRS-26	145 Gardner Road	2/16/2010	TUE	16:29	Ran off road (LD)	Property Damage	SB		snow	Dusk	snow
WIRS-27	93 Gardner Road	2/22/2010	MON	7:36	Ran off road (LD)	<b>Personal Injury</b>	NB			Daylight	
WIRS-28	93 Gardner Road	4/2/2010	FRI	3:06	Beaver	Property Damage	SB			Darkness	
WIRS-29	just north of Brian's Place	4/24/2010	SAT	14:29	Sideswipe & ran off road (LD) & rollover	<b>Personal Injury</b>	SB	SB		Daylight	
WIRS-30	just south of Rte 12 intersection	5/26/2010	WED	14:54	Sideswipe same direction	Property Damage	SB	SB		Daylight	
WIRS-31	just south of Rte 12 intersection	9/4/2010	SAT	7:59	Ran into opposing lane (LD) & sideswipe	<b>Personal Injury</b>	SB	NB		Daylight	
WIRS-32	just north of Teel Road	9/20/2010	MON	3:37	Skunks & ran off road (LD)	Property Damage	SB			Darkness	
WIRS-33	200' north of Brian's Place	10/10/2010	SUN	2:38		<b>Personal Injury</b>	SB	SB		Darkness	
WIRS-34	144 Gardner Road	11/9/2010	TUE	8:42	Ran into opposing lane (LD) & ran off road	Property Damage	SB			Daylight	
WIRS-35	just north of Old Gardner Road	11/22/2010	MON	18:09	Deer	Property Damage	NB			Darkness	
WIAP**1	93 Gardner Road	3/29/2008	SAT	13:37	Turning move (left)/Head on	<b>Personal Injury</b>	NB	SB		Daylight	
WIAP-2	Brian's Place	11/5/2008	WED	17:28	Sideswipe same direction	Property Damage	NB	NB		Darkness	
WIAP-3	Brian's Place	11/10/2008	MON	12:36	Rear end	Property Damage	NB	NB		Daylight	
WIAP-4	Brian's Place	11/18/2008	TUE	18:10	Rear end	<b>Personal Injury</b>	NB	NB		Darkness	
WIAP-5	80? Gardner Road	12/13/2008	SAT	13:25	Rear end	<b>Incapacitating Injury</b>	NB	NB		Daylight	
WIAP-6	Brian's Place	1/3/2009	SAT	17:14	Rear end	Property Damage	NB	NB		Darkness	
WIAP-7	93 Gardner Road	5/9/2009	SAT	8:50	Rear end	Property Damage	NB	NB		Daylight	
WIAP-8	93 Gardner Road	7/5/2010	MON	10:59	Rear end	<b>Incapacitating Injury</b>	NB	NB		Daylight	
WIAP-9	93 Gardner Road	8/4/2010	WED	9:02	Angle	Property Damage	SB	NB		Daylight	
WIAP-10	93 Gardner Road	10/25/2010	MON	8:55	Rear end	Property Damage	NB	NB		Daylight	
WIAP-11	93 Gardner Road	10/26/2010	TUE	9:29	Ran off road	<b>Incapacitating Injury</b>	NB			Daylight	
WIAP-12	93 Gardner Road	10/28/2010	THU	14:10	Rear end	Property Damage	SB	SB		Daylight	
WIAP-13	93 Gardner Road	11/9/2010	TUE	17:55	Rear end	Property Damage	NB	NB		Darkness	
WIAP-14	93 Gardner Road	12/28/2010	TUE	12:19	Rear end & ran off road & ran into opposing lane	Property Damage	NB	NB		Daylight	
WI-1	Teel Road intersection	3/15/2009	SUN	12:09	Angle	Property Damage	WB	SB		Daylight	
WI-2	"	8/14/2010	SAT	19:21	Angle	<b>Incapacitating Injury</b>	WB	SB		Daylight	
WI-3	"	12/24/2010	FRI	10:06	Rear end	Property Damage	NB	NB		Daylight	
WI-4	Spring Street (Rte 12) intersection	3/30/2009	MON	15:38	Ran off road	Property Damage	NB			Daylight	
WI-5	At signal ahead sign south of Rte 12	7/10/2009	FRI	12:18	Rear end	<b>Incapacitating Injury</b>	NB	NB		Daylight	
WI-6	Spring Street (Rte 12) intersection	8/1/2009	SAT	12:48	Rear end	<b>Personal Injury</b>	NB	NB		Daylight	
WI-7	"	1/22/2010	FRI	19:10	Rear end	<b>Incapacitating Injury</b>	SB	SB		Darkness	
WI-8	"	11/8/2010	MON	16:10	Rear end	Property Damage	SB	SB		Dusk	

\*RS = Road Segment crash

\*\*AP = Access Point crash

**Rte 140, Winchendon Crashes, Table 2**

#	Summary of Crash Narrative
WIRS-1	V1: Sideswiped V2 in same direction. Occurred at lane merge
WIRS-2	V1: Rolled over after fish tailing on icy road and struck snowbank
WIRS-3	V1: Left lane and ran off road into trees. Couple with personal issues, speed and alcohol were issues
WIRS-4	V1: Crossed over into opposing lane struck V2 which was a tractor trailer
WIRS-5	V1: Sideswiped V2 in same direction. Occurred at lane merge
WIRS-6	V1: Rear ended V2. V1 then ran into opposing lane and off road, flipped over and struck a tree
WIRS-7	V1: Sideswiped V2 in same direction in travel lane. V1 driver was distracted
WIRS-8	V1: Rear ended V2. V1 driver was distracted
WIRS-9	V1: Struck by bear
WIRS-10	V1: Struck deer
WIRS-11	V1: Crossed over into opposing lane, ran off road into tree. V1 hydroplaned. V1 operators travel speed to fast for road conditions
WIRS-12	V1: Crossed over into opposing lane sideswiped V2, V1 then had head on with V3, V1 driver died in hospital
WIRS-13	V1: Rear ended V2. V1 was out of control due to snow on road. V1 operators travel speed to fast for road conditions
WIRS-14	V1: Crossed over into opposing lane then had head on with V2
WIRS-15	V1: Crossed over into opposing lane, ran off road into pole. V1 operators travel speed to fast for road conditions
WIRS-16	V1: Lost control on icy road surface and rear passengers side struck side of V2 at an angle (not a sideswipe). V1 operators travel speed to fast for road
WIRS-17	V1: Crossed over into opposing lane in a no passing zone and was struck by V2
WIRS-18	V1: Crossed over into opposing lane due to road condition, ran off road into trees. V1 operators travel speed to fast for road conditions
WIRS-19	V1: Crossed over into opposing lane after driver feel asleep and sideswiped V2. V1 & V2 both ran off road after crash in opposing lanes
WIRS-20	V1: Crossed over into opposing lane due to road condition and ran off road. V1 operators travel speed to fast for road conditions
WIRS-21	V1: Left travel lane into ditch
WIRS-22	V1: Left travel lane then crossed over into opposing lane and back to travel lane. Driver was distracted
WIRS-23	V1: Left travel lane after driver feel asleep then struck a tree
WIRS-24	V1: Left travel lane into guardrail
WIRS-25	V1: Lost control on snowy road surface and rear ended V2. V1 operators travel speed to fast for road conditions
WIRS-26	V1: Started to slide and ran off road into packed ice embankment. V1 operators travel speed to fast for road conditions
WIRS-27	V1: Driver feel asleep and crossed over into opposing lane and into Brian's Place parking lot
WIRS-28	V1: After avoiding Beaver V1 crossed over into opposing lane but returned into travel lane and went off road
WIRS-29	V1: Sideswiped V2 while passing then went off road and overturned
WIRS-30	V1: Sideswiped V2 while passing
WIRS-31	V1: Crossed over into opposing lane striking V2 which was a tractor trailer. V1 driver was distracted
WIRS-32	V1: Ran off road to avoid hitting skunks
WIRS-33	
WIRS-34	V1: Crossed over into opposing lane, ran off road into mail box, retaining wall, & into woods. Driver was going to fall asleep
WIRS-35	V1: Struck by deer
WIAP-1	V1: Partially in opposing lane while making left turn and was struck by V2 which was traveling in opposing lane
WIAP-2	V1: Sideswiped V2 in same direction. Both vehicles driving recklessly
WIAP-3	V1: Rear ended V2 which rear ended V3 which was attempting to make a left turn
WIAP-4	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead. V1 was a single axel truck
WIAP-5	V1: Rear ended V2 which was attempting to make a left turn
WIAP-6	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead
WIAP-7	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead
WIAP-8	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead
WIAP-9	V1: Struck by V2 while traveling southbound
WIAP-10	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead
WIAP-11	V1: Crossed over into opposing lane and ran off road into a large rock. V1 was following too closely to a vehicle in front
WIAP-12	V1: Rear ended V2 which was attempting to make a right turn. V1 driver was not attentive to the tractor trailer making the turn
WIAP-13	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead
WIAP-14	V1: Rear ended V2 which was attempting to make a left turn. V1 driver was not attentive to the road ahead. Both vehicles ran off road. V3 ran off road to avoid crash
WI-1	V1: Left STOP sign then crashed into V2
WI-2	V1: Left STOP sign then caused V2 which was a motor cycle to lay down and slide on pavement
WI-3	V1: Rear ended V2 which was stopped to make left turn. Speed may have been a factor or following too closely
WI-4	V1: Driver feel asleep and struck traffic sign
WI-5	V1: Rear ended V2 which rear ended V3. V1 & V3 were stopped for red light
WI-6	V1: Rear ended V2 which was stopped at redlight. Speed may have been a factor or following too closely
WI-7	V1: Rear ended V2 which was stopped at redlight. Speed may have been a factor or following too closely. Health may have been a factor in V1 response time
WI-8	V1: Rear ended V2 which was stopped at redlight. Speed may have been a factor or following too closely

**Rte 140, Gardner Crashes, Table 1**

Sorted by date. B Date: 1/01/08. E Date: 12/31/10

#	Route 140 Location	Date	Day of Week	Time of Day	Type	Severity	Direction	Weather	Conditions Light	Road
GRS*-1	100 yards southeast of Stone St	10/31/2008	FRI	20:23	Deer	Property Damage	SB		Darkness	
GRS-2	Near telephone pole # 41	11/24/2008	MON	5:55	Ran off road (LD)	Property Damage	NB		Dawn	
GRS-3	Railroad bridge	12/17/2008	WED	6:35	Ran into opposing lane (LD) & sideswipe	Property Damage	SB NB		Dawn	
GRS-4	3.484 feet north of Green Street	1/8/2009	THU	18:52	Ran off road (LD)	Property Damage	NB		Darkness	ice
GRS-5	.04 miles S of Kelton St overpass	1/27/2009	TUE	5:56	Ran into opposing lane (LD)	Property Damage	SB		Dawn	
GRS-6	Winchendon Town Line	3/28/2009	SAT	18:34	Rear end & Head on	Personal Injury	SB NB		Dusk	
GRS-7	500 feet north of Matthews Street	4/9/2009	THU	21:56	Moose	Personal Injury	NB		Darkness	
GRS-8	250 feet north of Colony Road	4/16/2009	THU	18:33	Ran into opposing lane (LD) & sideswipe	Personal Injury	NB SB		Dusk	
GRS-9	need better location	5/8/2009	FRI	14:04	need more info	Property Damage	NB NB		Daylight	
GRS-10	90 feet north of Green Street	5/27/2009	WED	13:17	Crash with Pedestrian	Personal Injury	SB		Daylight	
GRS-11	1,320 feet south of Matthew St	8/4/2009	TUE	10:58	Sideswipe	Property Damage	SB SB		Daylight	
GRS-12	25 feet south of Ma Elec pole # 9	8/7/2009	FRI	0:020	Ran into opposing lane (LD) & sideswipe & overturn	Personal Injury	NB SB		Darkness	
GRS-13	Eaton Street over pass	8/28/2009	FRI	18:50	Ran into opposing lane (LD) & head on	Incapacitating Injury	SB NB		Daylight	
GRS-14	150 feet north of Matthews St	10/15/2009	THU	11:09	Deer & ran off road (LD)	Property Damage	NB		Daylight	
GRS-15	1,000 feet north of Matthews St	10/17/2009	SAT	18:20	Deer	Property Damage	SB		Dusk	
GRS-16	1,000 feet north of Green St	10/21/2009	WED	21:35	Deer	Property Damage	SB		Daylight	
GRS-17	800 feet south of Winchendon TL	12/9/2009	WED	5:50	Ran into opposing lane (LD) & head on	Property Damage	SB NB		Dawn	snow
GRS-18	High Ridge WMA	3/13/2010	SAT	21:32	Ran off road (LD)	Personal Injury	UNK		Daylight	slippery
GRS-19	600 feet north of Chapel Street	3/16/2010	TUE	4:30	Ran into opposing lane (LD)	Property Damage	SB NB		Darkness	ice, fldg
GRS-20	500 feet south of Smith Street	3/16/2010	TUE	2:56	Ran into opposing lane (LD)	Property Damage	NB		Darkness	ice
GRS-21	500 feet north of Chapel Street	3/23/2010	TUE	14:00	Rear end	Property Damage	NB NB		Daylight	
GRS-22	Kelton Street bridge	4/22/2010	THU	13:26	Deer	Property Damage	NB		Daylight	
GRS-23	Westminster TL	5/9/2010	SUN	1:21	Moose	Personal Injury	NB		Darkness	
GRS-24	500 feet south of Pearl Street	6/1/2010	TUE	7:46	Rear end	Property Damage	SB SB		Daylight	
GRS-25	Green Street (Rt 140) - 1433	7/24/2010	SAT	11:46	Motor cycle	Personal Injury	SB SB		Daylight	
GRS-26	500 feet south of mile marker 160	11/11/2010	THU	21:04	Mechanical failure	Property Damage	SB NB		Darkness	
GRS-27	300 feet north of Pearl Street	11/30/2010	TUE	15:32	Ran into opposing lane (LD) & sideswipe	Property Damage	NB NB		Daylight	
GRS-28	300 feet north of mile marker 102	12/21/2010	TUE	0:34	Deer	Property Damage	NB		Darkness	
GRS-29	need better location	12/22/2010	WED	16:43	Ran into opposing lane (LD) & head on	Incapacitating Injury	NB NB		Daylight	
G1	Green Street intersection	3/18/2008	TUE	15:31	Angle	Personal Injury	NB SB		Daylight	
G2	"	7/7/2008	MON	15:11	Rear end	Property Damage	NB NB		Daylight	
G3	"	10/12/2008	SUN	0:48	Ran off road	Personal Injury	NB		Darkness	
G4	"	10/16/2008	SUN	18:47	Turning move (left)	Property Damage	NB SB		Daylight	
G5	"	2/28/2009	SAT	9:25	Angle	Property Damage	SB SB		Daylight	
G6	"	3/1/2009	SUN	15:03	Turning move (left)	Personal Injury	SB SB		Daylight	
G7	"	9/13/2009	SUN	14:07	Ran off road	Property Damage	NB		Daylight	
G8	"	12/16/2009	WED	7:20	Angle	Personal Injury	NB SB		Daylight	
G9	"	8/27/2010	FRI	0:19	Ran off road	Personal Injury	NB		Darkness	
G10	"	10/6/2010	WED	6:37	Sideswipe	Property Damage	NB NB		Daylight	
G11	"	12/17/2010	FRI	18:56	Sideswipe	Incapacitating Injury	NB SB		Darkness	
G12	Stone Street intersection	2/5/2008	TUE	9:38	Ran off road	Property Damage	NB		Daylight	wet
G13	"	6/16/2008	MON	17:05	Sideswipe	Property Damage	SB SB		Daylight	
G14	Matthews Street	7/7/2008	MON	7:54	Deer	Property Damage	SB		Daylight	
G15	"	12/2/2008	TUE	6:59	Rear end	Property Damage	NB NB		Daylight	
G16	"	7/1/2010	THU	0:23	Moose	Property Damage	SB		Darkness	
G17	Pearl St, 200 feet north of Rt 140	2/14/2008	THU	7:58	Rear end	Property Damage	SB SB		Daylight	ice
G18	Pearl Street intersection	5/22/2009	FRI	16:34	Angle	Personal Injury	SB NB		Daylight	
G19	"	2/26/2010	FRI	14:20	Rear end	Property Damage	SB SB		Daylight	
G20	"	8/26/2010	THU	17:28	Ran off road	Property Damage	NB		Daylight	
G21	Colony Road intersection	10/13/2010	WED	20:29	Angle	Property Damage	SB NB		Darkness	

\*RS = Road Segment crash

**Rte 140, Gardner Crashes, Table 2**

#	Summary of Crash Narrative
GRS-1	V1: Struck deer
GRS-2	V1: Crossed over into opposing lane at curve in road & ran off road into woods
GRS-3	V1: Lost control (distraction/mechanical?) and crossed over into opposing lane striking guardrail then V2 sideswiped V1
GRS-4	V1: Lost control and crossed over into opposing lane and ran into guardrail. Crosswinds and icy roads were factors
GRS-5	V1: Crossed over into opposing lane striking guardrail
<b>GRS-6</b>	A motor cycle rear ended another motor cycle while passing motor vehicle. Motor cycles are struck by motor vehicle in travel lane. Motor vehicle moves into opposing lane and crashes head on with oncoming vehicle
GRS-7	V1: Struck moose
<b>GRS-8</b>	V1: Crossed over into opposing lane striking V2
GRS-9	V1: Struck V2
<b>GRS-10</b>	V1: Struck pedestrian
GRS-11	V1: Sideswiped V2 in same direction. Road rage involved. Occurred in no passing zone
<b>GRS-12</b>	V1: Crossed over into opposing lane but returned to original travel lane and V2 crossed over into opposing lane. V1 struck V2. V1 ran off road and overturned
<b>GRS-13</b>	V1: Crossed over into opposing lane struck V2
GRS-14	V1: Struck by deer then V1 ran off road
GRS-15	V1: Struck deer
GRS-16	V1: Struck deer
GRS-17	V1: Crossed over into opposing lane struck V2
<b>GRS-18</b>	V1: Left travel lane into guardrail
GRS-19	V1: Crossed over into opposing lane striking guardrail. V2: Crossed over into opposing lane striking V1
GRS-20	V1: Crossed over into opposing lane striking guardrail
GRS-21	V1: Struck V2. V1 was following too closely
GRS-22	V1: Struck deer
<b>GRS-23</b>	V1: Struck moose
GRS-24	V1: Struck V2 at merging lanes. Reckless driving by V1. Speed may have been a factor
<b>GRS-25</b>	V1 (motorcycle): Crashed on it's side after being cutoff by V2. Speed may have been a factor
GRS-26	V1: Front wheel ejects and crashes with V2 and V3
GRS-27	V1: Sideswiped V2 in same direction. Speed may have been a factor
GRS-28	V1: Struck deer
<b>GRS-29</b>	V1: Crossed over into opposing lane struck V2
<hr/>	
<b>G1</b>	V1: Left STOP sign and was struck by V2. V2 speed may have been excessive
G2	V1: Rear ended V2 which was stopped to make a left turn. V1 operator may have been distracted
<b>G3</b>	V1: Left road after making left turn from Route 140. Operator may have fallen asleep while making turn
G4	V1: While making left turn struck V2. V1 operator was distracted
G5	V1: Struck V2 while V1 was trying to make a legal U-turn. V2 was passing illegally
<b>G6</b>	V1: Struck V2 while making left turn
G7	V1: Went through STOP sign and crossed Route 140 and ran off road into chain link fence
<b>G8</b>	V1: Left STOP sign and struck V2
<b>G9</b>	V1: Went through STOP sign and crossed Route 140 and ran off road. Speed and alcohol were issues
G10	V1: Crossed into opposing lane and sideswiped V2 on left side as V2 which was stopped to make left turn
<b>G11</b>	V1: Crossed into opposing lane and sideswiped V2 then V1 struck V3. V1 was passing illegally
G12	V1: Left travel lane into guardrail
G13	V1: Sideswiped V2 which was stopped to make left turn. V1 was passing on left side
G14	V1: Struck by deer
G15	V1: Rear ended V2 which was stopped to make a left turn. Speed may have been a factor
G16	V1: Crossed over into opposing lane striking guardrail. Moose was in travel lane
G17	V1: Rear ended V2 which was stopped at redlight. Road was icy. Speed may have been a factor
<b>G18</b>	V1: Struck V2 at a right angle
G19	V1: Rear ended V2 which was stopped at redlight. Speed may have been a factor
G20	V1: Crossed over into opposing lanes striking embankment after making left turn. Operator was experiencing medical issues
G21	V1: Left STOP sign and was struck by V2. Speed may have been a factor

**Rte 140, Westminster Crashes, Table 1**

Sorted by date. B Date: 1/01/08. E Date: 12/31/10

#	Route 140 Location	Date	Day of Week	Time of Day	Type	Severity	Direction		Conditions		
							Weather	Light	Road		
WRS*-1	West Main Street - 187	2/22/2009	SUN	14:15	Ran into opposing lane (LD) & sideswipe	Property Damage	SB	SB		Daylight	snow
WRS-2	need better location	7/30/2009	THU	15:00	Ran off road (LD)	<b>Personal Injury</b>	SB	SB		Daylight	
WRS-3	Just south of Sargent Road	12/20/2009	SUN	8:52	Ran off road (LD)	<b>Personal Injury</b>	SB			Daylight	snow
WRS-4	200 feet East of Gardner City Line	7/28/2010	WED	15:09	Ran off road (LD)	Property Damage	NB			Daylight	
W1	Betty Spring Road intersection	3/13/2009	FRI	2:36	Ran off road (LD)	Property Damage	NB			Darkness	
W2	"	9/20/2010	MON	7:43	need more info		UNK			Daylight	
W3	"	12/2/2010	THU	16:49	Deer	Property Damage	NB			Darkness	
W4	Sargent Road intersection	11/23/2009	MON	21:04	Angle	Property Damage	WB	NB		Darkness	
W5	Simplex Drive intersection	9/5/2008	FRI	15:08	Deer	Property Damage	NB			Daylight	
W6	"	10/23/2008	THU	17:23	Sideswipe	Property Damage	NB	NB		Dusk	
W7	Rte 2 West Exit 24 OFF Ramp	10/30/2008	FRI	8:57	Rear end	<b>Incapacitating Injury</b>	NB	NB		Daylight	
W8	Simplex Drive intersection	9/25/2009	FRI	8:03	Rear end	<b>Personal Injury</b>	SB	SB		Daylight	
W9	"	9/27/2009	SUN	14:55	Rear end	<b>Personal Injury</b>	SB	SB		Daylight	
W10	"	12/17/2009	THU	7:36	Rear end	Property Damage	NB	NB		Daylight	
W11	"	12/23/2009	WED	12:41	Rear end	Property Damage	SB	SB		Daylight	
W12	"	5/5/2010	WED	8:08	Rear end	Property Damage	NB	NB		Daylight	
W13	"	10/9/2010	SAT	9:56	Rear end	Property Damage	SB	SB		Daylight	
W14	Rte 2 East Exit 24 OFF Ramp	12/14/2010	TUE	7:33	Rear end	Property Damage	SB	SB		Daylight	ice

\*RS = Road Segment crash

**Rte 140, Westminster Crashes, Table 2**

#	Summary of Crash Narrative
WRS*-1	V1 & V2 Sideswiped each other same direction. Operators travel speed to fast for road conditions
WRS-2	V1: Traveled onto center median and hit sign post after avoiding crash with truck where 2 lanes drop to 1 lane. Speed appears to be a factor
WRS-3	V1: Lost control on snow & slush & left road. Operators travel speed to fast for road conditions
WRS-4	V1: Traveled onto center median and hit sign post. Medication/alcohol involved
W1	V1: Traveling on Betty Spring Road & left road onto splitter island and hit sign post. Driver was distracted due to texting
W2	
W3	V1: Struck deer
W4	V1: Left STOP sign then V2 crashed into V1
W5	V1: Struck deer
W6	V1: Failed to stop at redlight & sideswiped V2 & V3. Medication/drugs involved. V1 brake failure. Criminal summons issued to V1 operator
W7	V1: Rear ended V2. V1 was directly behind V2 and V1 operator did not see V2 and was distracted and failed to yield
W8	V1: Rear ended V2 which was stopped at redlight. V1 speed appears to be a factor and operator claimed he could not see light
W9	V1: Rear ended V2. Both vehicles were traveling through lights. V1 was traveling at a higher rate of speed
W10	V1: Which was (at least) not stopping fast enough rear ended V2 which was stopping for redlight
W11	V1: Rear ended V2 which was stopped at redlight
W12	V1: Which was (at least) not stopping fast enough rear ended V2 which was stopping for redlight
W13	V1: Which was (at least) not stopping fast enough rear ended V2 which was stopping or stopped for redlight
W14	V1: Rear ended V2 (stopped vehicle at STOP sign) & V3 rear ended V2. V2 & V3 operators travel speed to fast for road conditions