Memorandum

The City of Traverse City
Engineering Department

TO: Timothy J. Lodge, P.E., City Engineer
FROM: John Zarafonitis, Seasonal Engineering Aide
DATE: Wednesday, June 18, 2014
SUBJECT: 5 Day Speed Study of S. Garfield, 300 Block between Webster St. and Washington St.

City Engineering performed an on-site 5 day speed count beginning Friday, May 30, 2014 at 3 pm until Wednesday, June 4, 2014 at 4 pm on the 300 block of S. Garfield Ave. This memo is to formalize City Engineering's initial findings and observations with regard to the speeds of vehicles on the 300 block of S. Garfield Ave.

The data was gathered using a Jamar Radar Recorder which collected traffic data, including vehicle speed, for each lane of traffic (northbound and southbound). This information was then analyzed and the data for each lane compiled into one report, regardless of direction, using TraxPro. The TraxPro report organized the speeds of the vehicles into groups based on 5 mile per hour increments, starting with 0-15 miles per hour. The report shows how many vehicles were within the specified speed range during the time indicated by the report. The speed data was also analyzed through TraxPro's Police Report program to evaluate the possible percentage of enforceable violations. This data was then organized into a small colored chart where red means high enforcement potential and green means low on a total scale for enforceable violations of 30 percent. For this report the enforceable minimum speed a vehicle would need to be traveling was set to 5 miles per hour over the posted speed limit.

During the 5 day study, 64,363 vehicles were recorded on this section of S. Garfield Ave with about 74 percent of the vehicles traveling between 25 and 34 miles per hour and an average speed of 29 miles per hour. 8463 of these vehicles, about 13 percent, were recorded going speeds below the posted speed limit of 25 miles per hour. The total percentage of enforceable violations was about 38 percent.

Summary:

- Speed Limit: 25 mph
- Number of Recorded Vehicles (5 Days): 64,363
- Percent of Vehicles Under Speed Limit: 13.1 %
- Average Speed: 29 mph
- 10 Mile Per Hour Pace Speed: 25-34 mph
- 85th Percentile: 33 mph
- Total Enforcement Rating High
- Total Percentage Above Speed Limit 38.1 %

Encl.: Detailed TraxPro Speed Reports

S Garfield Ave
(300 Block, between Webster St. and Washington St.)
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

Direction 1, Direction 2

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
05/30/14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	39	66	237	550	264	36	2	0	0	0	0	0	0	0	1194
16:00	10	20	168	542	366	51	5	0	0	0	0	0	0	0	1162
17:00	2	15	109	553	399	40	1	4	0	0	0	0	0	0	1123
18:00	4	4	55	395	311	51	2	0	0	0	0	0	0	0	822
19:00	5	7	56	307	260	30	4	0	0	0	0	0	0	0	669
20:00	2	2	37	268	227	28	6	0	0	0	0	0	0	0	570
21:00	0	1	42	220	165	15	1	0	0	0	0	0	0	0	444
22:00	1	1	57	159	61	11	1	0	0	0	0	0	0	0	291
23:00	1	4	26	84	61	13	1	0	0	0	0	0	0	0	190
Day Total	64	120	787	3078	2114	275	23	4	0	0	0	0	0	0	6465

S Garfield Ave

(300 Block, between Webster St. and Washington St.)

Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

Direction 1, Direction 2

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
05/31/14	0	0	11	41	35	7	1	0	0	0	0	0	0	0	95
01:00	0	0	3	29	16	4	1	0	0	0	0	0	0	0	53
02:00	0	0	7	12	7	0	0	0	0	0	0	0	0	0	26
03:00	0	0	5	5	11	3	0	0	0	0	0	0	0	0	24
04:00	0	0	1	3	7	2	0	0	0	0	0	0	0	0	13
05:00	0	0	4	19	14	8	0	0	0	0	0	0	0	0	45
06:00	1	0	3	55	58	18	0	0	0	0	0	0	0	0	135
07:00	1	1	18	106	119	48	2	1	0	0	0	0	0	0	296
08:00	4	2	20	205	221	49	2	0	0	1	0	0	0	0	504
09:00	3	5	67	346	296	49	3	0	0	0	0	0	0	0	769
10:00	2	5	102	463	262	41	0	0	0	0	0	0	0	0	875
11:00	8	3	80	472	348	39	1	0	0	0	0	0	0	0	951
12 PM	3	4	80	531	330	48	0	0	0	0	0	0	0	0	996
13:00	8	11	128	444	274	37	3	0	0	0	0	0	0	0	905
14:00	1	5	57	417	300	63	1	0	0	0	0	0	0	0	844
15:00	8	6	63	360	304	47	6	0	0	0	0	0	0	0	794
16:00	4	1	47	345	292	65	3	0	0	0	0	0	0	0	757
17:00	0	4	54	294	286	53	0	1	0	0	0	0	0	0	692
18:00	1	0	38	252	249	44	7	0	0	0	0	0	0	0	591
19:00	3	6	32	200	196	40	3	0	0	0	0	0	0	0	480
20:00	5	0	18	209	174	16	3	0	0	0	0	0	0	0	425
21:00	4	2	58	203	102	17	0	0	0	0	0	0	0	0	386
22:00	3	2	38	124	59	4	2	0	0	0	0	0	0	0	232
23:00	0	0	22	89	55	9	1	0	0	0	0	0	0	0	176
Day Total	59	57	956	5224	4015	711	39	2	0	1	0	0	0	0	11064

S Garfield Ave

(300 Block, between Webster St. and Washington St.)

Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

Direction 1, Direction 2

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
06/01/14	1	0	9	44	30	5	0	0	0	0	0	0	0	0	89
01:00	0	1	5	21	15	4	0	1	0	0	0	0	0	0	47
02:00	0	0	1	13	11	1	0	0	0	0	0	0	0	0	26
03:00	0	0	3	12	9	2	0	0	0	0	0	0	0	0	26
04:00	0	1	1	11	8	4	0	0	0	0	0	0	0	0	25
05:00	0	0	1	8	14	6	2	0	0	0	0	0	0	0	31
06:00	0	0	1	22	31	19	2	1	0	0	0	0	0	0	76
07:00	0	1	10	59	63	16	6	0	0	0	0	0	0	0	155
08:00	0	1	8	78	120	25	5	0	0	0	0	0	0	0	237
09:00	3	1	14	183	178	30	3	0	0	0	0	0	0	0	412
10:00	3	2	30	271	277	41	2	0	0	0	0	0	0	0	626
11:00	4	2	44	256	256	52	0	0	0	0	0	0	0	0	614
12 PM	2	2	33	353	312	69	5	0	0	0	0	0	0	0	776
13:00	8	1	39	301	324	48	4	1	0	0	0	0	0	0	726
14:00	1	3	31	311	340	86	5	0	0	0	0	0	0	0	777
15:00	9	2	31	298	308	42	3	0	0	0	0	0	0	0	693
16:00	8	0	44	286	298	47	4	0	0	0	0	0	0	0	687
17:00	5	5	26	243	271	57	8	0	0	0	0	0	0	0	615
18:00	4	1	28	214	224	49	3	0	0	0	0	0	0	0	523
19:00	2	0	21	194	172	36	2	0	0	0	0	0	0	0	427
20:00	0	2	30	193	137	22	0	0	0	0	0	0	0	0	384
21:00	3	2	25	175	86	22	0	0	0	0	0	0	0	0	313
22:00	0	0	28	133	57	9	0	0	0	0	0	0	0	0	227
23:00	0	3	16	49	37	7	1	0	0	0	0	0	0	0	113
Day Total	53	30	479	3728	3578	699	55	3	0	0	0	0	0	0	8625

S Garfield Ave
(300 Block, between Webster St. and Washington St.)
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

Direction 1, Direction 2

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
06/02/14	1	0	7	33	22	5	0	0	0	0	0	0	0	0	68
01:00	0	0	5	13	10	1	0	0	0	0	0	0	0	0	29
02:00	0	0	6	13	2	3	0	0	0	0	0	0	0	0	24
03:00	0	2	6	16	8	0	1	0	0	0	0	0	0	0	33
04:00	0	1	4	23	21	4	1	0	0	0	0	0	0	0	54
05:00	0	0	12	67	59	18	3	1	0	0	0	0	0	0	160
06:00	0	1	16	116	132	15	1	0	0	0	0	0	0	0	281
07:00	0	8	101	436	281	44	4	0	0	0	0	0	0	0	874
08:00	0	7	118	465	312	21	1	0	0	0	0	0	0	0	924
09:00	2	3	65	429	322	32	2	0	0	0	0	0	0	0	855
10:00	8	3	111	538	269	27	2	0	0	0	0	0	0	0	958
11:00	7	13	141	459	332	35	3	0	0	0	0	0	0	0	990
12 PM	7	12	128	525	326	32	5	0	0	0	0	0	0	0	1035
13:00	1	7	144	491	340	49	5	0	0	0	0	0	0	0	1037
14:00	8	13	155	545	287	37	1	0	0	0	0	0	0	0	1046
15:00	100	104	209	493	162	13	1	0	0	0	0	0	0	0	1082
16:00	3	2	111	567	390	54	4	0	0	0	0	0	0	0	1131
17:00	8	7	110	543	388	38	3	0	0	0	0	0	0	0	1097
18:00	6	14	127	436	251	36	4	0	0	0	0	0	0	0	874
19:00	3	6	49	277	215	30	1	0	0	0	0	0	0	0	581
20:00	0	2	58	271	185	24	1	0	0	0	0	0	0	0	541
21:00	2	5	29	151	103	23	1	0	0	0	0	0	0	0	314
22:00	0	0	26	121	65	11	0	0	0	0	0	0	0	0	223
23:00	2	1	18	42	28	4	1	0	0	0	0	0	0	0	96
Day Total	158	211	1756	7070	4510	556	45	1	0	0	0	0	0	0	14307

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Direction 1, Direction 2

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
06/03/14	0	2	8	31	10	2	0	0	0	0	0	0	0	0	53
01:00	0	0	2	11	16	3	0	0	0	0	0	0	0	0	32
02:00	0	0	2	14	9	1	0	0	0	0	0	0	0	0	26
03:00	0	0	3	6	7	0	0	0	0	0	0	0	0	0	16
04:00	2	1	2	20	12	4	0	0	0	0	0	0	0	0	41
05:00	0	0	8	32	47	13	0	0	0	0	0	0	0	0	100
06:00	0	1	11	147	121	16	2	0	0	0	0	0	0	0	298
07:00	4	9	110	440	257	32	4	1	0	0	0	0	0	0	857
08:00	0	12	147	515	265	34	3	0	0	0	0	0	0	0	976
09:00	7	14	118	472	213	31	3	0	0	0	0	0	0	0	858
10:00	4	5	122	483	234	38	2	0	0	0	0	0	0	0	888
11:00	2	9	148	497	296	39	1	0	0	0	0	0	0	0	992
12 PM	13	20	153	567	293	32	1	0	0	0	0	0	0	0	1079
13:00	3	6	115	557	336	29	1	0	0	0	0	0	0	0	1047
14:00	2	16	145	634	246	39	2	0	0	0	0	0	0	0	1084
15:00	36	35	145	533	297	28	3	0	0	0	0	0	0	0	1077
16:00	6	8	108	492	353	32	5	0	0	0	0	0	0	0	1004
17:00	14	12	143	619	383	42	1	1	0	0	0	0	0	0	1215
18:00	22	14	90	426	278	30	2	0	0	0	0	0	0	0	862
19:00	12	4	54	358	260	23	1	0	0	0	0	0	0	0	712
20:00	3	5	48	274	226	28	2	1	0	0	0	0	0	0	587
21:00	3	2	35	223	134	18	2	0	0	0	0	0	0	0	417
22:00	2	3	28	113	66	5	0	0	0	0	0	0	0	0	217
23:00	1	2	14	68	32	5	0	0	0	0	0	0	0	0	122
Day Total	136	180	1759	7532	4391	524	35	3	0	0	0	0	0	0	14560

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Direction 1, Direction 2

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
06/04/14	1	0	7	25	17	3	0	0	0	0	0	0	0	0	53
01:00	1	0	2	23	15	0	0	0	1	0	0	0	0	0	42
02:00	0	0	3	14	2	2	0	0	0	0	0	0	0	0	21
03:00	0	0	5	6	8	2	0	0	0	0	0	0	0	0	21
04:00	0	0	3	10	15	3	2	1	0	1	0	0	0	0	35
05:00	0	0	5	32	49	12	1	0	0	0	0	0	0	0	99
06:00	2	1	12	120	149	35	3	0	0	0	0	0	0	0	322
07:00	6	10	94	408	291	41	4	0	0	0	0	0	0	0	854
08:00	6	9	106	442	337	31	2	0	0	0	0	0	0	0	933
09:00	6	11	100	441	283	30	2	1	0	0	0	0	0	0	874
10:00	1	9	133	515	262	23	1	0	0	0	0	0	0	0	944
11:00	4	20	155	514	251	38	1	0	0	0	0	0	0	0	983
12 PM	15	23	167	559	218	29	2	0	0	0	0	0	0	0	1013
13:00	4	7	161	538	259	33	1	0	1	0	0	0	0	0	1004
14:00	2	6	159	549	274	37	4	0	0	0	0	0	0	0	1031
15:00	63	86	253	487	208	16	0	0	0	0	0	0	0	0	1113
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Day Total	111	182	1365	4683	2638	335	23	2	2	1	0	0	0	0	9342
Grand Total	581	780	7102	31315	21246	3100	220	15	2	2	0	0	0	0	64363

15th Percentile :	24 MPH
50th Percentile :	28 MPH
85th Percentile :	33 MPH
95th Percentile :	36 MPH

Statistics

Mean Speed(Average) :	29 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	47408
Percent in Pace :	73.7%
Number of Vehicles > 25 MPH :	55900

Percent of Vehicles > 25 MPH : 86.9%