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: 7 Day Speed Study of Fifteenth Street, 100 Block between Cass St. and Union St.

City Engineering performed an on-site 7 day speed count beginning Tuesday, June 10, 2014 at 1 pm until Tuesday, June 17, 2014 at 1 pm on the 100 block of Fifteenth St. This memo is to formalize City Engineering's initial findings and observations with regard to the speeds of vehicles on the 100 block of Fifteenth St.

The data was gathered using a Jamar Radar Recorder which collected traffic data, including vehicle speed, for each lane of traffic (eastbound and westbound). 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 7 day study, 6,877 vehicles were recorded on this section of Fifteenth St. with about 53 percent of the vehicles traveling between 21 and 30 miles per hour and an average speed of 21 miles per hour. 4,027 of these vehicles, about 58 percent, were recorded going speeds below the posted speed limit of 25 miles per hour. The total percentage of enforceable violations was about 8 percent. Westbound traffic had an enforcement percentage of about 13 percent.

Summary:

- Speed Limit: 25 mph
- Number of Recorded Vehicles (7 days): 6,877
- Percent of Vehicles Under Speed Limit: 58.5 %
- Average Speed: 21 mph
- 10 Mile Per Hour Pace Speed: 21-30 mph
- 85th Percentile: 28 mph
- Total Enforcement Rating Low
- Total Percentage Above Speed Limit 8.3 %

Encl.: Detailed TraxPro Speed Reports

Fifteenth St

(100 Block, between Cass St and Union St)

Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/10/14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	17	9	27	24	10	2	0	0	0	0	0	0	0	0	89
14:00	6	16	51	27	10	0	0	0	0	0	0	0	0	0	110
15:00	11	11	45	39	9	2	0	0	0	0	0	0	0	0	117
16:00	10	5	43	38	7	1	0	0	0	0	0	0	0	0	104
17:00	15	15	42	52	9	1	0	0	0	0	0	0	0	0	134
18:00	16	4	23	18	3	0	0	0	0	0	0	0	0	0	64
19:00	13	7	11	10	2	0	0	0	0	0	0	0	0	0	43
20:00	7	1	9	10	2	0	0	0	0	0	0	0	0	0	29
21:00	5	0	9	8	2	0	0	0	0	0	0	0	0	0	24
22:00	1	3	10	6	0	0	0	0	0	0	0	0	0	0	20
23:00	0	0	2	2	1	0	0	0	0	0	0	0	0	0	5
Day Total	101	71	272	234	55	6	0	0	0	0	0	0	0	0	739

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/11/14	2	0	2	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
04:00	1	1	1	0	0	0	0	0	0	0	0	0	0	0	3
05:00	1	0	4	3	1	0	0	0	0	0	0	0	0	0	9
06:00	1	0	3	11	1	0	0	0	0	0	0	0	0	0	16
07:00	11	4	16	26	4	1	0	0	0	0	0	0	0	0	62
08:00	15	5	19	20	8	0	0	0	0	0	0	0	0	0	67
09:00	6	6	21	13	5	2	0	0	0	0	0	0	0	0	53
10:00	6	6	19	28	8	0	1	0	0	0	0	0	0	0	68
11:00	5	9	35	43	15	2	0	0	0	0	0	0	0	0	109
12 PM	5	4	34	46	4	1	0	0	0	0	0	0	0	0	94
13:00	14	6	28	36	8	1	0	0	0	0	0	0	0	0	93
14:00	5	7	29	35	6	0	0	0	0	0	0	0	0	0	82
15:00	16	5	31	35	15	1	0	0	0	0	0	0	0	0	103
16:00	8	6	36	43	7	0	0	0	0	0	0	0	0	0	100
17:00	21	4	36	55	7	3	0	0	0	0	0	0	0	0	126
18:00	7	6	26	21	5	0	0	0	0	0	0	0	0	0	65
19:00	4	4	13	6	4	0	0	0	0	0	0	0	0	0	31
20:00	3	3	10	9	1	0	0	0	0	0	0	0	0	0	26
21:00	3	2	10	4	1	0	0	0	0	0	0	0	0	1	21
22:00	1	1	5	3	0	0	0	0	0	0	0	0	0	0	10
23:00	1	1	6	0	0	0	0	0	0	0	0	0	0	0	8
Day Total	136	80	386	437	101	11	1	0	0	0	0	0	0	1	1153

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/12/14	0	2	4	1	0	0	0	0	0	0	0	0	0	0	7
01:00	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00	1	0	2	1	1	0	0	0	0	0	0	0	0	0	5
06:00	1	1	7	12	2	0	0	0	0	0	0	0	0	0	23
07:00	5	4	11	18	5	1	0	0	0	0	0	0	0	0	44
08:00	7	5	21	16	7	0	0	0	0	0	0	0	0	0	56
09:00	9	3	23	14	5	0	0	0	0	0	0	0	0	0	54
10:00	8	1	17	23	4	0	0	0	0	0	0	0	0	0	53
11:00	10	17	27	29	5	0	0	0	0	0	0	0	0	0	88
12 PM	9	8	34	43	6	0	0	0	0	0	0	0	0	0	100
13:00	10	7	29	36	4	0	0	0	0	0	0	0	0	0	86
14:00	8	3	30	29	5	1	0	0	0	0	0	0	0	0	76
15:00	6	7	37	30	6	0	0	0	0	0	0	0	0	0	86
16:00	14	6	39	46	11	0	0	0	0	0	0	0	0	0	116
17:00	8	12	39	36	9	2	0	0	0	0	0	0	0	0	106
18:00	8	15	15	23	4	0	0	0	0	0	0	0	0	0	65
19:00	2	4	15	20	4	0	0	0	0	0	0	0	0	0	45
20:00	5	5	18	6	0	0	0	0	0	0	0	0	0	0	34
21:00	3	3	5	8	0	0	0	0	0	0	0	0	0	0	19
22:00	1	3	12	5	2	0	0	0	0	0	0	0	0	0	23
23:00	2	1	3	6	0	0	0	0	0	0	0	0	0	0	12
Day Total	118	113	389	402	80	4	0	0	0	0	0	0	0	0	1106

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/13/14	2	0	1	1	0	0	0	0	0	0	0	0	0	0	4
01:00	0	1	2	1	0	0	0	0	0	0	0	0	0	0	4
02:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
03:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
05:00	1	0	0	2	2	0	0	0	0	0	0	0	0	0	5
06:00	3	2	8	4	1	1	0	0	0	0	0	0	0	0	19
07:00	7	4	17	20	3	0	0	0	0	0	0	0	0	0	51
08:00	5	4	13	15	5	0	0	0	0	0	0	0	0	0	42
09:00	8	3	31	16	4	0	0	0	0	0	0	0	0	0	62
10:00	7	12	23	28	4	1	0	0	0	0	0	0	0	0	75
11:00	8	8	25	29	6	1	0	0	0	0	0	0	0	0	77
12 PM	19	8	27	37	8	0	0	0	0	0	0	0	0	0	99
13:00	15	11	31	25	4	3	0	0	0	0	0	0	0	0	89
14:00	15	8	32	39	8	0	0	0	0	0	0	0	0	0	102
15:00	9	6	43	29	12	1	0	0	0	0	0	0	0	0	100
16:00	12	9	43	36	12	4	0	0	0	0	0	0	0	0	116
17:00	15	3	22	41	13	1	0	0	0	0	0	0	0	0	95
18:00	13	6	16	23	6	0	0	0	0	0	0	0	0	0	64
19:00	8	2	8	13	2	0	0	0	0	0	0	0	0	0	33
20:00	4	2	9	8	2	0	0	0	0	0	0	0	0	0	25
21:00	7	2	17	11	1	0	0	0	0	0	0	0	0	0	38
22:00	7	3	3	5	1	0	0	0	0	0	0	0	0	0	19
23:00	2	0	2	0	0	0	0	0	0	0	0	0	0	0	4
Day Total	169	94	374	386	94	12	0	0	0	0	0	0	0	0	1129

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/14/14	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
01:00	1	0	1	1	1	0	0	0	0	0	0	0	0	0	4
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	1	0	2	1	1	0	0	0	0	0	0	0	0	0	5
06:00	1	0	1	1	0	0	0	0	0	0	0	0	0	0	3
07:00	0	2	6	4	0	0	0	0	0	0	0	0	0	0	12
08:00	4	1	11	8	1	0	0	0	0	0	0	0	0	0	25
09:00	11	10	21	11	3	0	0	0	0	0	0	0	0	0	56
10:00	11	4	19	22	3	0	0	0	0	0	0	0	0	0	59
11:00	4	4	23	17	5	0	0	0	0	0	0	0	0	0	53
12 PM	10	6	25	24	3	2	1	0	0	0	0	0	0	0	71
13:00	11	2	13	19	8	2	0	0	0	0	0	0	0	0	55
14:00	11	4	14	20	4	1	1	0	0	0	0	0	0	0	55
15:00	8	7	25	11	1	1	0	0	0	0	0	0	0	0	53
16:00	9	2	16	21	4	0	0	0	0	0	0	0	0	0	52
17:00	10	9	18	6	4	0	0	0	0	0	0	0	0	0	47
18:00	13	6	9	10	2	0	0	0	0	0	0	0	0	0	40
19:00	6	2	14	9	1	0	0	0	0	0	0	0	0	0	32
20:00	5	2	13	7	2	0	0	0	0	0	0	0	0	0	29
21:00	6	3	7	7	1	0	0	0	0	0	0	0	0	0	24
22:00	4	1	9	5	0	0	0	0	0	0	0	0	0	0	19
23:00	1	1	4	2	1	0	0	0	0	0	0	0	0	0	9
Day Total	132	66	251	208	45	6	2	0	0	0	0	0	0	0	710

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/15/14	2	1	2	2	0	0	0	0	0	0	0	0	0	0	7
01:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
05:00	0	0	0	7	1	0	0	0	0	0	0	0	0	0	8
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	4	2	0	1	0	0	0	0	0	0	0	0	0	0	7
08:00	5	1	8	4	0	0	0	0	0	0	0	0	0	0	18
09:00	1	2	7	9	3	0	0	0	0	0	0	0	0	0	22
10:00	8	3	14	10	3	0	0	0	0	0	0	0	0	0	38
11:00	8	3	14	2	2	0	0	0	0	0	0	0	0	0	29
12 PM	11	10	16	8	2	0	0	0	0	0	0	0	0	0	47
13:00	3	7	15	13	3	0	0	0	0	0	0	0	0	0	41
14:00	7	2	20	17	2	0	0	0	0	0	0	0	0	0	48
15:00	10	5	12	13	3	0	0	0	0	0	0	0	0	0	43
16:00	11	5	23	8	4	0	0	0	0	0	0	0	0	0	51
17:00	13	7	19	5	3	0	0	0	0	0	0	0	0	0	47
18:00	18	3	12	9	1	1	0	0	0	0	0	0	0	0	44
19:00	7	3	9	8	0	0	0	0	0	0	0	0	0	0	27
20:00	6	3	7	8	2	0	0	0	0	0	0	0	0	0	26
21:00	8	3	3	2	0	0	0	0	0	0	0	0	0	0	16
22:00	0	2	1	2	0	0	0	0	0	0	0	0	0	0	5
23:00	1	0	2	4	0	0	0	0	0	0	0	0	0	0	7
Day Total	129	62	184	134	29	1	0	0	0	0	0	0	0	0	539

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/16/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
04:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
05:00	0	0	5	2	0	0	0	0	0	0	0	0	0	0	7
06:00	9	5	6	7	1	0	0	0	0	0	0	0	0	1	29
07:00	3	3	12	19	2	0	0	0	0	0	0	0	0	0	39
08:00	13	7	19	31	3	0	0	0	0	0	0	0	0	0	73
09:00	11	4	17	18	4	1	0	0	0	0	0	0	0	0	55
10:00	8	8	13	18	1	1	0	0	0	0	0	0	0	0	49
11:00	11	5	23	18	3	1	0	0	0	0	0	0	0	0	61
12 PM	11	5	27	20	7	0	0	0	0	0	0	0	0	0	70
13:00	14	7	32	16	4	0	0	0	0	0	0	0	0	0	73
14:00	12	6	34	22	5	0	0	0	0	0	0	0	0	0	79
15:00	15	4	24	17	7	0	0	0	0	0	0	0	0	0	67
16:00	25	10	36	32	5	1	0	0	0	0	0	0	0	0	109
17:00	27	19	67	54	8	1	0	0	0	0	0	0	0	0	176
18:00	13	7	18	23	4	1	0	0	0	0	0	0	0	0	66
19:00	3	0	11	10	4	0	0	0	0	0	0	0	0	0	28
20:00	4	2	12	11	1	0	0	0	0	0	0	0	0	0	30
21:00	3	2	11	6	1	0	0	0	0	0	0	0	0	0	23
22:00	1	0	6	9	0	0	0	0	0	0	0	0	0	0	16
23:00	1	0	1	3	0	0	0	0	0	0	0	0	0	0	5
Day Total	187	94	375	337	61	6	0	0	0	0	0	0	0	1	1061

Fifteenth St
(100 Block, between Cass St and Union St)
Speed

Site Code: 00000001
Station ID:
Fifteenth St
Cass St
Latitude: 0' 0.0000 South

EB, WB

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
06/17/14	2	0	2	0	0	0	0	0	0	0	0	0	0	0	4
01:00	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3
02:00	3	0	1	1	0	0	0	0	0	0	0	0	0	0	5
03:00	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
05:00	13	0	2	2	0	0	0	0	0	0	0	0	0	0	17
06:00	0	1	4	10	1	0	0	0	0	0	0	0	0	0	16
07:00	4	3	6	18	2	0	0	0	0	0	0	0	0	0	33
08:00	18	1	17	17	11	0	0	0	0	0	0	0	0	0	64
09:00	2	4	17	21	2	0	0	0	0	0	0	0	0	0	46
10:00	0	3	14	17	8	0	0	0	0	0	0	0	0	0	42
11:00	4	4	24	22	5	2	0	0	0	0	0	0	0	0	61
12 PM	13	4	29	21	6	2	0	0	0	0	0	0	0	0	75
13:00	6	5	32	18	8	0	0	0	0	0	0	0	0	0	69
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Day Total	68	27	149	148	43	5	0	0	0	0	0	0	0	0	440
Grand Total	1040	607	2380	2286	508	51	3	0	0	0	0	0	0	2	6877

15th Percentile :	9 MPH
50th Percentile :	22 MPH
85th Percentile :	28 MPH
95th Percentile :	31 MPH

Statistics

Mean Speed(Average) :	21 MPH
10 MPH Pace Speed :	21-30 MPH
Number in Pace :	3639
Percent in Pace :	52.9%
Number of Vehicles > 25 MPH :	2850

Percent of Vehicles > 25 MPH : 41.5%