
Memorandum

The City of Traverse City
Engineering Department



TO: Timothy J. Lodge, P.E., City Engineer
FROM: Abhishek Deora, Seasonal Engineering Aide
DATE: Thursday, June 28th, 2017
SUBJECT: 24 Hour Speed and Volume of Front St between Madison St and 6th St

City Engineering performed a 24 hour speed study on Front St between 6th St and Madison St beginning on Tuesday, June 27th, 2017 concluded Wednesday, June 28th, 2017. This memo is to formalize City Engineering's initial data observations and findings with to the speed statistics and volume of vehicular traffic on W. Front St.

The data was gathered using a JAMAR Radar Recorder, this data recorder collects both vehicle speed and volume using radar sensors in both Northbound and Southbound lanes. The raw data compiled and analyzed using TraxPro and reported vehicle speed count for every hour during the study in the increments of 5 miles per hour. The TraxPro software also compiled a report to be sent Traverse City Police Department to evaluate the possible percentage of enforceable violations. This data is organized into a small colored meter where red means there is a high enforcement potential and green equates to a low amount of speed infractions are occurring. For this report, the enforceable minimum speed a vehicle would need to be traveling is 5 miles per hour over the posted speed limit of 25 miles per hour.

During this 24 hour study, 14,400 vehicles were recorded. The average (mean) speed of the 14,400 vehicles is 36 miles per hour, with 97.8% of all vehicles traveling at speeds greater than the posted limit of 25 miles per hour. Giving motorist an extra 5 miles per hour over the posted speed limit for enforcement tolerance, the number of vehicles speeding is 89.7%.

Summary (Combined):

- **Mean Speed:** 36 MPH
- **Number of Vehicles above Posted Speed Limit** 97.8%
- **85th Percentile of Speed:** 39 MPH
- **95th Percentile of Speed:** 43 MPH

Enclosed:

Detailed TraxPro Speed Reports (Combined and Directional)
TraxPro Police Enforcement Reports

W.Front St
Btw Madison St and 6th St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

A= Eastbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
06/27/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	2	3	14	83	240	226	36	2	0	0	0	0	0	0	606	31-40	466
12 PM	2	0	10	73	240	226	35	2	0	0	0	0	0	0	588	31-40	466
13:00	2	1	10	40	198	179	38	4	0	0	0	0	0	0	472	31-40	377
14:00	3	2	2	58	210	181	43	5	0	0	0	0	0	0	504	31-40	391
15:00	4	0	7	41	207	226	46	5	2	0	0	0	0	0	538	31-40	433
16:00	4	1	7	71	260	203	50	3	0	0	0	0	0	0	599	31-40	463
17:00	7	0	4	35	237	221	64	7	0	0	0	0	0	0	575	31-40	458
18:00	1	0	1	17	105	149	40	3	0	0	0	0	0	0	316	31-40	254
19:00	5	1	0	6	67	104	36	5	1	0	0	0	0	0	225	31-40	171
20:00	1	0	2	7	45	62	20	9	1	0	0	0	0	0	147	31-40	107
21:00	0	0	0	6	37	48	24	10	1	0	0	0	0	0	126	31-40	85
22:00	0	0	1	7	25	29	11	3	0	0	0	0	0	0	76	31-40	54
23:00	0	0	1	1	16	13	7	0	0	0	0	0	0	0	38	31-40	29
Total	31	8	59	445	1887	1867	450	58	5	0	0	0	0	0	4810		
Percent	0.6%	0.2%	1.2%	9.3%	39.2%	38.8%	9.4%	1.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00							11:00		
Vol.	2	3	14	83	240	226	36	2							606		
PM Peak	17:00	14:00	12:00	12:00	16:00	12:00	17:00	21:00	15:00						16:00		
Vol.	7	2	10	73	260	226	64	10	2						599		

W.Front St
Btw Madison St and 6th St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

A= Eastbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
06/28/17	0	0	0	4	3	4	3	0	0	0	0	0	0	0	14	26-35	7
01:00	0	0	0	1	3	3	3	1	0	0	0	0	0	0	11	30-39	6
02:00	1	0	1	2	2	1	0	0	0	0	0	0	0	0	7	26-35	4
03:00	0	0	0	0	3	0	2	0	0	0	0	0	0	0	5	26-35	3
04:00	0	0	0	0	7	8	4	1	0	0	0	0	0	0	20	31-40	15
05:00	0	0	2	5	15	28	12	1	0	0	0	0	0	0	63	31-40	43
06:00	2	0	0	9	60	111	27	4	0	0	0	0	0	0	213	31-40	171
07:00	3	0	6	49	256	252	39	3	0	0	0	0	0	0	608	31-40	508
08:00	8	7	30	74	266	208	39	3	0	0	0	0	0	0	635	31-40	474
09:00	2	0	3	70	261	223	45	2	0	0	0	0	0	0	606	31-40	484
10:00	4	6	8	56	257	195	36	2	0	0	0	0	0	0	564	31-40	452
11:00	0	1	10	51	167	147	24	3	0	0	0	0	0	0	403	31-40	314
12 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	20	14	60	322	1300	1180	234	20	0	0	0	0	0	0	3150		
Percent	0.6%	0.4%	1.9%	10.2%	41.3%	37.5%	7.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	08:00	08:00	08:00	07:00	09:00	06:00							08:00		
Vol.	8	7	30	74	266	252	45	4							635		
PM Peak				12:00											12:00		
Vol.				1											1		
Total	51	22	119	767	3187	3047	684	78	5	0	0	0	0	0	7960		
Percent	0.6%	0.3%	1.5%	9.6%	40.0%	38.3%	8.6%	1.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 30 MPH
50th Percentile : 34 MPH
85th Percentile : 39 MPH
95th Percentile : 42 MPH

Stats
10 MPH Pace Speed : 31-40 MPH
Number in Pace : 6234
Percent in Pace : 78.3%
Number of Vehicles > 25 MPH : 7768
Percent of Vehicles > 25 MPH : 97.6%
Mean Speed(Average) : 35 MPH

W.Front St
Btw Madison St and 6th St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

B= Westbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
06/27/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	2	0	7	44	140	194	56	2	0	0	0	0	0	0	445	31-40	334
12 PM	2	4	7	54	191	236	40	3	0	0	0	0	0	0	537	31-40	427
13:00	3	0	3	54	247	228	57	3	0	0	0	0	0	0	595	31-40	475
14:00	1	1	5	48	187	213	56	5	0	0	0	0	0	0	516	31-40	400
15:00	0	0	11	28	176	257	70	5	0	0	0	0	0	0	547	31-40	433
16:00	2	1	1	39	169	359	85	2	0	0	0	0	0	0	658	31-40	528
17:00	4	0	4	17	139	334	123	11	0	0	0	0	0	0	632	31-40	473
18:00	2	3	2	10	124	230	85	9	1	0	0	0	0	0	466	31-40	354
19:00	1	0	1	10	81	154	66	2	0	0	0	0	0	0	315	31-40	235
20:00	1	0	0	4	69	146	54	6	0	0	0	0	0	0	280	31-40	215
21:00	1	0	1	11	92	122	27	2	0	0	0	0	0	0	256	31-40	214
22:00	0	0	1	15	68	60	12	2	1	0	0	0	0	0	159	31-40	128
23:00	0	0	0	3	31	23	9	2	0	0	0	0	0	0	68	31-40	54
Total	19	9	43	337	1714	2556	740	54	2	0	0	0	0	0	5474		
Percent	0.3%	0.2%	0.8%	6.2%	31.3%	46.7%	13.5%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00		11:00	11:00	11:00	11:00	11:00	11:00							11:00		
Vol.	2		7	44	140	194	56	2							445		
PM Peak	17:00	12:00	15:00	12:00	13:00	16:00	17:00	17:00	18:00						16:00		
Vol.	4	4	11	54	247	359	123	11	1						658		

W.Front St
Btw Madison St and 6th St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

A= Eastbound, B= Westbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
06/27/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	4	3	21	127	380	420	92	4	0	0	0	0	0	0	1051	31-40	800
12 PM	4	4	17	127	431	462	75	5	0	0	0	0	0	0	1125	31-40	893
13:00	5	1	13	94	445	407	95	7	0	0	0	0	0	0	1067	31-40	852
14:00	4	3	7	106	397	394	99	10	0	0	0	0	0	0	1020	31-40	791
15:00	4	0	18	69	383	483	116	10	2	0	0	0	0	0	1085	31-40	866
16:00	6	2	8	110	429	562	135	5	0	0	0	0	0	0	1257	31-40	991
17:00	11	0	8	52	376	555	187	18	0	0	0	0	0	0	1207	31-40	931
18:00	3	3	3	27	229	379	125	12	1	0	0	0	0	0	782	31-40	608
19:00	6	1	1	16	148	258	102	7	1	0	0	0	0	0	540	31-40	406
20:00	2	0	2	11	114	208	74	15	1	0	0	0	0	0	427	31-40	322
21:00	1	0	1	17	129	170	51	12	1	0	0	0	0	0	382	31-40	299
22:00	0	0	2	22	93	89	23	5	1	0	0	0	0	0	235	31-40	182
23:00	0	0	1	4	47	36	16	2	0	0	0	0	0	0	106	31-40	83
Total	50	17	102	782	3601	4423	1190	112	7	0	0	0	0	0	10284		
Percent	0.5%	0.2%	1.0%	7.6%	35.0%	43.0%	11.6%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00						11:00		
Vol.	4	3	21	127	380	420	92	4							1051		
PM Peak	17:00	12:00	15:00	12:00	13:00	16:00	17:00	17:00	15:00						16:00		
Vol.	11	4	18	127	445	562	187	18	2						1257		

W.Front St
Btw Madison St and 6th St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

A= Eastbound, B= Westbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
06/28/17	0	0	0	6	28	22	9	2	0	0	0	0	0	0	67	31-40	50
01:00	0	0	0	3	14	11	5	1	0	0	0	0	0	0	34	31-40	25
02:00	2	1	1	4	3	3	0	0	0	0	0	0	0	0	14	25-34	7
03:00	0	0	0	0	6	1	3	1	0	0	0	0	0	0	11	29-38	7
04:00	0	0	0	1	8	9	4	1	0	0	0	0	0	0	23	31-40	17
05:00	0	0	2	12	28	39	17	2	0	0	0	0	0	0	100	31-40	67
06:00	2	1	0	13	88	162	47	8	0	1	0	0	0	0	322	31-40	250
07:00	3	1	12	71	365	422	96	9	1	0	0	0	0	0	980	31-40	787
08:00	13	8	39	122	441	404	94	7	0	0	0	0	0	0	1128	31-40	845
09:00	4	0	8	128	442	406	88	4	0	0	0	0	0	0	1080	31-40	848
10:00	7	10	41	118	433	356	80	9	0	0	0	0	0	0	1054	31-40	789
11:00	2	2	14	80	327	292	55	7	1	0	0	0	0	0	780	31-40	619
12 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	33	23	117	559	2183	2127	498	51	2	1	0	0	0	0	5594		
Percent	0.6%	0.4%	2.1%	10.0%	39.0%	38.0%	8.9%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	10:00	10:00	09:00	09:00	07:00	07:00	07:00	07:00	06:00						08:00	
Vol.	13	10	41	128	442	422	96	9	1	1						1128	
PM Peak				12:00												12:00	
Vol.				1												1	
Total	83	40	219	1341	5784	6550	1688	163	9	1	0	0	0	0	15878		
Percent	0.5%	0.3%	1.4%	8.4%	36.4%	41.3%	10.6%	1.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 30 MPH
50th Percentile : 35 MPH
85th Percentile : 39 MPH
95th Percentile : 43 MPH

Stats
10 MPH Pace Speed : 31-40 MPH
Number in Pace : 12334
Percent in Pace : 77.7%
Number of Vehicles > 25 MPH : 15536
Percent of Vehicles > 25 MPH : 97.8%
Mean Speed(Average) : 36 MPH

W.Front St
Btw Madison St and 6th St
Count#4

Site Code: 0000001
Station ID:

Latitude: 0' 0.0000 South

Start Time	26-Jun-17 Mon	27-Jun-17 Tue	28-Jun-17 Wed	29-Jun-17 Thu	30-Jun-17 Fri	Weekday Average	01-Jul-17 Sat	02-Jul-17 Sun
12:00 AM	*	*	67	*	*	67	*	*
01:00	*	*	34	*	*	34	*	*
02:00	*	*	14	*	*	14	*	*
03:00	*	*	11	*	*	11	*	*
04:00	*	*	23	*	*	23	*	*
05:00	*	*	100	*	*	100	*	*
06:00	*	*	322	*	*	322	*	*
07:00	*	*	980	*	*	980	*	*
08:00	*	*	1128	*	*	1128	*	*
09:00	*	*	1080	*	*	1080	*	*
10:00	*	*	1054	*	*	1054	*	*
11:00	*	1051	780	*	*	916	*	*
12:00 PM	*	1125	1	*	*	563	*	*
01:00	*	1067	*	*	*	1067	*	*
02:00	*	1020	*	*	*	1020	*	*
03:00	*	1085	*	*	*	1085	*	*
04:00	*	1257	*	*	*	1257	*	*
05:00	*	1207	*	*	*	1207	*	*
06:00	*	782	*	*	*	782	*	*
07:00	*	540	*	*	*	540	*	*
08:00	*	427	*	*	*	427	*	*
09:00	*	382	*	*	*	382	*	*
10:00	*	235	*	*	*	235	*	*
11:00	*	106	*	*	*	106	*	*
Total	0	10284	5594	0	0		0	0
Percentage	0.0%	71.4%	38.8%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	11:00	08:00	-	-	-	-	-
Vol.	-	1051	1128	-	-	-	-	-
PM Peak	-	16:00	12:00	-	-	-	-	-
Vol.	-	1257	1	-	-	-	-	-
Total		10284	5594					

Speed Enforcement Evaluator

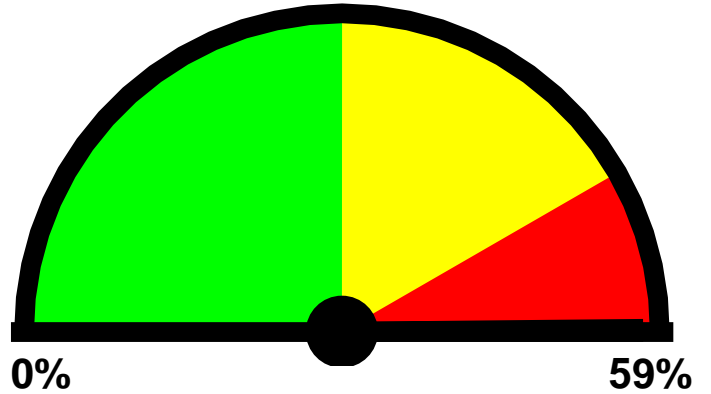
Location:
W. Front St

**Total Percentage of
Enforceable Violations**

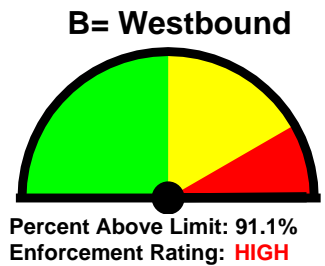
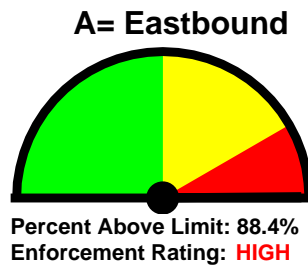
Closest Cross Street:
Btw Madison St and 6th St

Analysis Dates:
Tuesday, June 27, 2017
Wednesday, June 28, 2017

Equipment Used:



0% **59%**
Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 89.7%
Enforcement Rating: **HIGH**



Combined

1-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70
4	21	40	219	1341	5784	6550	1688	163	9	1	0	0	0

85 percentile = 39

A= Eastbound

1-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70
4	11	22	119	767	3187	3047	684	78	5	0	0	0	0

85 percentile = 38

B= Westbound

1-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70
0	10	18	100	574	2597	3503	1004	85	4	1	0	0	0

85 percentile = 39

Best Times for Enforcement

Location:

W. Front St

Closest Cross Street:

Btw Madison St and 6th St

Analysis Dates:

Tuesday, June 27, 2017

Wednesday, June 28, 2017

Sun

Mon

Tue

Combined: 4 PM to 6 PM

A= Eastbound: 4 PM to 6 PM

B= Westbound: 4 PM to 6 PM

Wed

Combined: 8 AM to 10 AM

A= Eastbound: 7 AM to 9 AM

B= Westbound: 8 AM to 10 AM

Thu

Fri

Sat

