
Memorandum

The City of Traverse City
Engineering Department



TO: Timothy J. Lodge, P.E., City Engineer
FROM: Abhishek Deora, Seasonal Engineering Aide
DATE: Friday, August 11th, 2017
SUBJECT: 24 Hour Speed and Volume of Boon St between Garfield Ave and Hastings St

City Engineering performed a 24 hour speed study on Boon St between Garfield Ave and Hastings St beginning on Tuesday, August 8th, 2017 concluded Wednesday, August 9th, 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 Boon 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, 4979 vehicles were recorded. The average (mean) speed of the 4779 vehicles is 26 miles per hour, with 54.4% 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 14.8%.

Summary (Combined):

- **Mean Speed:** 26 MPH
- **Number of Vehicles above Posted Speed Limit** 54.4%
- **85th Percentile of Speed:** 29 MPH
- **95th Percentile of Speed:** 33 MPH

Enclosed:

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

Boon St
Btw Garfield Ave and Hastings St
Speed

Site Code: 00000001
Station ID:
Boon St
Btw Garfield and Hastings
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
08/09/17	0	0	3	3	0	0	0	0	0	0	0	0	0	0	6	21-30	6
01:00	0	1	4	2	0	0	0	0	0	0	0	0	0	0	7	19-28	6
02:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	9-18	1
03:00	2	0	0	3	0	0	0	0	0	0	0	0	0	0	5	26-35	3
04:00	0	1	3	7	2	0	0	0	0	0	0	0	0	0	13	21-30	10
05:00	2	1	14	24	9	1	0	1	0	0	0	0	0	1	53	21-30	38
06:00	4	1	15	60	26	3	0	0	0	0	0	0	0	0	109	26-35	86
07:00	1	4	25	111	38	3	0	0	0	0	0	0	0	0	182	26-35	149
08:00	2	8	32	79	31	3	0	0	0	0	0	0	0	0	155	21-30	111
09:00	2	5	33	52	18	1	0	0	0	0	0	0	0	0	111	21-30	85
10:00	0	8	52	59	13	1	0	0	0	0	0	0	0	0	133	21-30	111
11:00	4	9	38	77	17	2	0	0	0	0	0	0	0	0	147	21-30	115
12 PM	7	8	60	81	9	3	1	0	0	0	0	0	0	0	169	21-30	141
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	24	47	279	559	163	17	1	1	0	0	0	0	0	1	1092		
Percent	2.2%	4.3%	25.5%	51.2%	14.9%	1.6%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%			
AM Peak	06:00	11:00	10:00	07:00	07:00	06:00		05:00						05:00	07:00		
Vol.	4	9	52	111	38	3		1						1	182		
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00	12:00									12:00	
Vol.	7	8	60	81	9	3	1								169		
Total	67	140	630	1163	366	41	2	1	0	0	0	0	0	1	2411		
Percent	2.8%	5.8%	26.1%	48.2%	15.2%	1.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 21 MPH
50th Percentile : 26 MPH
85th Percentile : 30 MPH
95th Percentile : 33 MPH

Stats
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 1793
Percent in Pace : 74.4%
Number of Vehicles > 25 MPH : 1574
Percent of Vehicles > 25 MPH : 65.3%
Mean Speed(Average) : 27 MPH

Boon St
Btw Garfield Ave and Hastings St
Speed

Site Code: 00000001
Station ID:
Boon St
Btw Garfield and Hastings
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
08/08/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	7	37	91	72	21	3	0	0	0	0	0	0	0	0	231	21-30	163
12 PM	7	67	113	52	18	3	0	0	0	0	0	0	0	0	260	16-25	180
13:00	10	40	108	70	17	2	0	0	0	0	0	0	0	0	247	21-30	178
14:00	10	48	84	78	27	4	0	0	0	0	0	0	0	0	251	21-30	162
15:00	9	38	93	100	33	1	0	0	0	0	0	0	0	0	274	21-30	193
16:00	8	52	91	109	43	9	1	0	0	0	0	0	0	0	313	21-30	200
17:00	7	42	101	96	23	2	0	0	0	0	0	0	0	0	271	21-30	197
18:00	2	13	40	62	19	2	0	0	0	0	0	0	0	0	138	21-30	102
19:00	1	1	21	35	8	2	0	0	0	0	0	0	0	0	68	21-30	56
20:00	0	4	10	30	16	3	1	0	0	0	0	0	0	0	64	26-35	46
21:00	2	6	11	13	5	4	0	0	0	0	0	0	0	0	41	21-30	24
22:00	0	0	7	15	9	3	1	0	0	0	0	0	0	0	35	25-34	24
23:00	1	0	3	3	1	0	0	0	0	0	0	0	0	0	8	21-30	6
Total	64	348	773	735	240	38	3	0	0	0	0	0	0	0	2201		
Percent	2.9%	15.8%	35.1%	33.4%	10.9%	1.7%	0.1%	0.0%	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		
Vol.	7	37	91	72	21	3									231		
PM Peak	13:00	12:00	12:00	16:00	16:00	16:00	16:00								16:00		
Vol.	10	67	113	109	43	9	1								313		

Boon St
Btw Garfield Ave and Hastings St
Speed

Site Code: 00000001
Station ID:
Boon St
Btw Garfield and Hastings
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
08/09/17	0	1	3	3	1	0	0	0	0	0	0	0	0	0	8	21-30	6
01:00	0	0	4	3	0	0	0	0	0	0	0	0	0	0	7	21-30	7
02:00	1	2	5	4	0	0	0	0	0	0	0	0	0	0	12	20-29	9
03:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	14-23	1
04:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3	14-23	2
05:00	0	3	3	5	0	0	0	0	0	0	0	0	0	0	11	20-29	8
06:00	0	3	9	14	3	4	0	0	0	0	0	0	0	0	33	21-30	23
07:00	4	7	28	36	6	7	0	0	0	0	0	0	0	0	88	21-30	64
08:00	3	25	34	36	26	3	0	0	0	0	0	0	0	0	127	21-30	70
09:00	5	25	61	58	25	4	0	0	0	0	0	0	0	0	178	21-30	119
10:00	5	33	84	76	20	3	0	0	0	0	0	0	0	0	221	21-30	160
11:00	6	33	95	81	32	1	1	0	0	0	0	0	0	0	249	21-30	176
12 PM	6	42	83	96	15	5	0	0	0	0	0	0	0	0	247	21-30	179
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	30	175	411	412	130	27	1	0	0	0	0	0	0	0	1186		
Percent	2.5%	14.8%	34.7%	34.7%	11.0%	2.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	10:00	11:00	11:00	11:00	07:00	11:00									11:00	
Vol.	6	33	95	81	32	7	1									249	
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00										12:00	
Vol.	6	42	83	96	15	5										247	
Total	94	523	1184	1147	370	65	4	0	0	0	0	0	0	0	3387		
Percent	2.8%	15.4%	35.0%	33.9%	10.9%	1.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 18 MPH
50th Percentile : 24 MPH
85th Percentile : 29 MPH
95th Percentile : 33 MPH

Stats
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 2331
Percent in Pace : 68.8%
Number of Vehicles > 25 MPH : 1586
Percent of Vehicles > 25 MPH : 46.8%
Mean Speed(Average) : 25 MPH

Boon St
Btw Garfield Ave and Hastings St
Speed

Site Code: 00000001
Station ID:
Boon St
Btw Garfield and Hastings
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
08/09/17	0	1	6	6	1	0	0	0	0	0	0	0	0	0	14	21-30	12
01:00	0	1	8	5	0	0	0	0	0	0	0	0	0	0	14	21-30	13
02:00	1	3	5	5	0	0	0	0	0	0	0	0	0	0	14	20-29	10
03:00	2	0	1	3	1	0	0	0	0	0	0	0	0	0	7	26-35	4
04:00	0	2	4	7	3	0	0	0	0	0	0	0	0	0	16	21-30	11
05:00	2	4	17	29	9	1	0	1	0	0	0	0	0	1	64	21-30	46
06:00	4	4	24	74	29	7	0	0	0	0	0	0	0	0	142	26-35	103
07:00	5	11	53	147	44	10	0	0	0	0	0	0	0	0	270	21-30	200
08:00	5	33	66	115	57	6	0	0	0	0	0	0	0	0	282	21-30	181
09:00	7	30	94	110	43	5	0	0	0	0	0	0	0	0	289	21-30	204
10:00	5	41	136	135	33	4	0	0	0	0	0	0	0	0	354	21-30	271
11:00	10	42	133	158	49	3	1	0	0	0	0	0	0	0	396	21-30	291
12 PM	13	50	143	177	24	8	1	0	0	0	0	0	0	0	416	21-30	320
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	54	222	690	971	293	44	2	1	0	0	0	0	0	1	2278		
Percent	2.4%	9.7%	30.3%	42.6%	12.9%	1.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00	10:00	11:00	08:00	07:00	11:00	05:00						05:00	11:00		
Vol.	10	42	136	158	57	10	1	1						1	396		
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00	12:00								12:00		
Vol.	13	50	143	177	24	8	1								416		
Total	161	663	1814	2310	736	106	6	1	0	0	0	0	0	1	5798		
Percent	2.8%	11.4%	31.3%	39.8%	12.7%	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 20 MPH
50th Percentile : 25 MPH
85th Percentile : 29 MPH
95th Percentile : 33 MPH

Stats
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 4124
Percent in Pace : 71.1%
Number of Vehicles > 25 MPH : 3160
Percent of Vehicles > 25 MPH : 54.5%
Mean Speed(Average) : 26 MPH

Boon St
Btw Garfield Ave and Hastings St
Speed

Site Code: 0000001
Station ID:
Boon St
Btw Garfield and hastngd
Latitude: 0' 0.0000 South

Start Time	07-Aug-17 Mon	08-Aug-17 Tue	09-Aug-17 Wed	10-Aug-17 Thu	11-Aug-17 Fri	Weekday Average	12-Aug-17 Sat	13-Aug-17 Sun
12:00 AM	*	*	14	*	*	14	*	*
01:00	*	*	14	*	*	14	*	*
02:00	*	*	14	*	*	14	*	*
03:00	*	*	7	*	*	7	*	*
04:00	*	*	16	*	*	16	*	*
05:00	*	*	64	*	*	64	*	*
06:00	*	*	142	*	*	142	*	*
07:00	*	*	270	*	*	270	*	*
08:00	*	*	282	*	*	282	*	*
09:00	*	*	289	*	*	289	*	*
10:00	*	*	354	*	*	354	*	*
11:00	*	392	396	*	*	394	*	*
12:00 PM	*	434	416	*	*	425	*	*
01:00	*	423	*	*	*	423	*	*
02:00	*	366	*	*	*	366	*	*
03:00	*	419	*	*	*	419	*	*
04:00	*	463	*	*	*	463	*	*
05:00	*	437	*	*	*	437	*	*
06:00	*	207	*	*	*	207	*	*
07:00	*	114	*	*	*	114	*	*
08:00	*	103	*	*	*	103	*	*
09:00	*	70	*	*	*	70	*	*
10:00	*	65	*	*	*	65	*	*
11:00	*	27	*	*	*	27	*	*
Total	0	3520	2278	0	0		0	0
Percentage	0.0%	70.7%	45.8%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	11:00	11:00	-	-	-	-	-
Vol.	-	392	396	-	-	-	-	-
PM Peak	-	16:00	12:00	-	-	-	-	-
Vol.	-	463	416	-	-	-	-	-
Total		3520	2278					

Speed Enforcement Evaluator

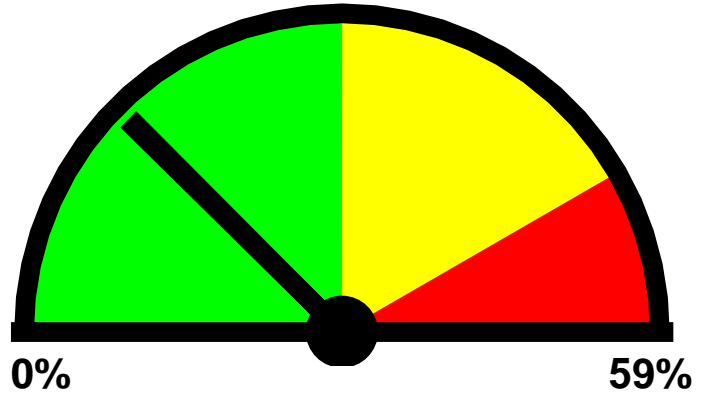
Location:
Boon St

Total Percentage of Enforceable Violations

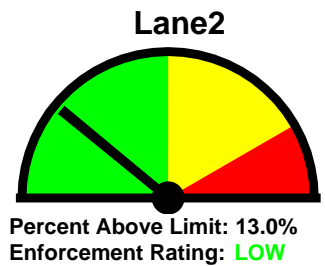
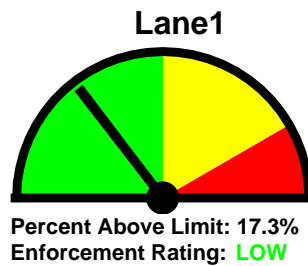
Closest Cross Street:
Btw Garfield and hastingd

Analysis Dates:
Tuesday, August 08, 2017
Wednesday, August 09, 2017

Equipment Used:



0% **59%**
Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 14.8%
Enforcement Rating: **LOW**



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	8	110	663	1814	2310	736	106	6	1	0	0	0	1

85 percentile = 30

Lane1

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	5	29	140	630	1163	366	41	2	1	0	0	0	1

85 percentile = 30

Lane2

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	3	81	523	1184	1147	370	65	4	0	0	0	0	0

85 percentile = 29

Best Times for Enforcement

Location:

Boon St

Closest Cross Street:

Btw Garfield and Hastingd

Analysis Dates:

Tuesday, August 08, 2017

Wednesday, August 09, 2017

Sun

Mon

Tue

Combined: 3 PM to 5 PM

A=Eastbound: 4 PM to 6 PM

B=Westbound: 3 PM to 5 PM

Wed

Combined: 7 AM to 9 AM

A=Eastbound: 7 AM to 9 AM

B=Westbound: 8 AM to 10 AM

Thu

Fri

Sat

