
Memorandum

The City of Traverse City
Engineering Department



TO: Timothy J. Lodge, P.E., City Engineer
FROM: Abhishek Deora, Seasonal Engineering Aide
DATE: Wednesday, September 6th, 2017
SUBJECT: 24 Hour Speed and Volume of Bay St between Elmwood Ave and Spruce St

City Engineering performed a 24 hour speed study on Bay St between Elmwood Ave and Spruce St beginning on Tuesday, September 5th, 2017 concluded Wednesday, September 6th, 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 Bay 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, 2118 vehicles were recorded. The average (mean) speed of the 2118 vehicles is 31 miles per hour, with 85.9% 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 63.0%.

Summary (Combined):

- **Mean Speed:** **31 MPH**
- **Number of Vehicles above Posted Speed Limit** **85.9%**
- **85th Percentile of Speed:** **37 MPH**
- **95th Percentile of Speed:** **40 MPH**

Enclosed:

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

Bay St
Between Elmwood Ave & Spruce St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

A=Westsound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
09/05/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	0	0	6	17	24	8	1	0	0	0	0	0	0	0	56	26-35	41
12 PM	0	0	2	18	19	8	0	0	0	0	0	0	0	0	47	26-35	37
13:00	1	0	3	19	25	8	3	0	0	0	0	0	0	0	59	26-35	44
14:00	1	0	2	26	20	6	1	0	0	0	0	0	0	0	56	26-35	46
15:00	1	0	2	17	33	27	6	1	0	0	0	0	0	0	87	31-40	60
16:00	0	0	1	9	24	20	7	0	0	0	0	0	0	0	61	31-40	44
17:00	1	0	3	20	29	10	2	0	0	0	0	0	0	0	65	26-35	49
18:00	0	0	2	13	23	12	1	0	0	0	0	0	0	0	51	26-35	36
19:00	1	0	2	16	19	10	2	0	0	0	0	0	0	0	50	26-35	35
20:00	0	0	3	10	11	4	1	0	0	0	0	0	0	0	29	26-35	21
21:00	0	0	1	7	7	2	2	0	0	0	0	0	0	0	19	26-35	14
22:00	0	0	1	2	3	0	1	0	0	0	0	0	0	0	7	26-35	5
23:00	0	0	2	5	0	0	0	0	0	0	0	0	0	0	7	21-30	7
Total	5	0	30	179	237	115	27	1	0	0	0	0	0	0	594		
Percent	0.8%	0.0%	5.1%	30.1%	39.9%	19.4%	4.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.			11:00	11:00	11:00	11:00	11:00								11:00		
			6	17	24	8	1								56		
PM Peak Vol.	13:00		13:00	14:00	15:00	15:00	16:00	15:00							15:00		
	1		3	26	33	27	7	1							87		

Bay St
Between Elmwood Ave & Spruce St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

B=Eastbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
09/05/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	11	2	4	32	43	20	5	1	0	0	0	0	0	0	118	26-35	75
12 PM	0	0	3	21	37	23	2	1	0	0	0	0	0	0	87	30-39	60
13:00	27	12	7	14	24	11	8	0	0	0	0	0	0	0	103	26-35	38
14:00	27	17	4	11	40	12	5	1	1	0	0	0	0	0	118	31-40	52
15:00	9	3	5	22	46	33	10	0	0	0	0	0	0	0	128	31-40	79
16:00	9	7	6	20	33	20	7	0	0	0	0	0	0	0	102	26-35	53
17:00	6	2	2	16	43	34	7	0	0	0	0	0	0	0	110	31-40	77
18:00	13	2	2	14	26	16	3	0	0	0	0	0	0	0	76	31-40	42
19:00	0	0	1	6	15	3	2	1	0	0	0	0	0	0	28	26-35	21
20:00	1	0	0	9	13	3	3	0	0	0	0	0	0	0	29	26-35	22
21:00	0	0	0	5	7	3	2	0	0	0	0	0	0	0	17	26-35	12
22:00	32	5	2	2	1	1	0	0	0	0	0	0	0	0	43	6-15	21
23:00	7	0	0	0	1	0	1	0	0	0	0	0	0	0	9	1-10	5
Total	142	50	36	172	329	179	55	4	1	0	0	0	0	0	968		
Percent	14.7%	5.2%	3.7%	17.8%	34.0%	18.5%	5.7%	0.4%	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.	11	2	4	32	43	20	5	1							118		
PM Peak	22:00	14:00	13:00	15:00	15:00	17:00	15:00	12:00	14:00						15:00		
Vol.	32	17	7	22	46	34	10	1	1						128		

Bay St
Between Elmwood Ave & Spruce St
Speed

Site Code: 00000001
Station ID:

Latitude: 0' 0.0000 South

A=Westsound, B=Eastbopund

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
09/05/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	11	2	10	49	67	28	6	1	0	0	0	0	0	0	174	26-35	116
12 PM	0	0	5	39	56	31	2	1	0	0	0	0	0	0	134	26-35	95
13:00	28	12	10	33	49	19	11	0	0	0	0	0	0	0	162	26-35	82
14:00	28	17	6	37	60	18	6	1	1	0	0	0	0	0	174	26-35	97
15:00	10	3	7	39	79	60	16	1	0	0	0	0	0	0	215	31-40	139
16:00	9	7	7	29	57	40	14	0	0	0	0	0	0	0	163	31-40	97
17:00	7	2	5	36	72	44	9	0	0	0	0	0	0	0	175	31-40	116
18:00	13	2	4	27	49	28	4	0	0	0	0	0	0	0	127	29-38	77
19:00	1	0	3	22	34	13	4	1	0	0	0	0	0	0	78	26-35	56
20:00	1	0	3	19	24	7	4	0	0	0	0	0	0	0	58	26-35	43
21:00	0	0	1	12	14	5	4	0	0	0	0	0	0	0	36	26-35	26
22:00	32	5	3	4	4	1	1	0	0	0	0	0	0	0	50	6-15	21
23:00	7	0	2	5	1	0	1	0	0	0	0	0	0	0	16	21-30	7
Total	147	50	66	351	566	294	82	5	1	0	0	0	0	0	1562		
Percent	9.4%	3.2%	4.2%	22.5%	36.2%	18.8%	5.2%	0.3%	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.	11	2	10	49	67	28	6	1							174		
PM Peak	22:00	14:00	13:00	12:00	15:00	15:00	15:00	12:00	14:00						15:00		
Vol.	32	17	10	39	79	60	16	1	1						215		

Bay St
Between Elmwood Ave & Spruce St
Speed

Site Code: 0000001
Station ID:
Bay St
Elmwood Ave & Spruce St
Latitude: 0' 0.0000 South

Start Time	04-Sep-17 Mon	05-Sep-17 Tue	06-Sep-17 Wed	07-Sep-17 Thu	08-Sep-17 Fri	Weekday Average	09-Sep-17 Sat	10-Sep-17 Sun
12:00 AM	*	*	5	*	*	5	*	*
01:00	*	*	4	*	*	4	*	*
02:00	*	*	3	*	*	3	*	*
03:00	*	*	5	*	*	5	*	*
04:00	*	*	5	*	*	5	*	*
05:00	*	*	20	*	*	20	*	*
06:00	*	*	50	*	*	50	*	*
07:00	*	*	145	*	*	145	*	*
08:00	*	*	169	*	*	169	*	*
09:00	*	*	103	*	*	103	*	*
10:00	*	*	127	*	*	127	*	*
11:00	*	174	14	*	*	94	*	*
12:00 PM	*	134	*	*	*	134	*	*
01:00	*	162	*	*	*	162	*	*
02:00	*	174	*	*	*	174	*	*
03:00	*	215	*	*	*	215	*	*
04:00	*	163	*	*	*	163	*	*
05:00	*	175	*	*	*	175	*	*
06:00	*	127	*	*	*	127	*	*
07:00	*	78	*	*	*	78	*	*
08:00	*	58	*	*	*	58	*	*
09:00	*	36	*	*	*	36	*	*
10:00	*	50	*	*	*	50	*	*
11:00	*	16	*	*	*	16	*	*
Total	0	1562	650	0	0		0	0
Percentage	0.0%	73.7%	30.7%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	11:00	08:00	-	-	-	-	-
Vol.	-	174	169	-	-	-	-	-
PM Peak	-	15:00	-	-	-	-	-	-
Vol.	-	215	-	-	-	-	-	-
Total		1562	650					

Speed Enforcement Evaluator

Location:
Bay St

Total Percentage of Enforceable Violations

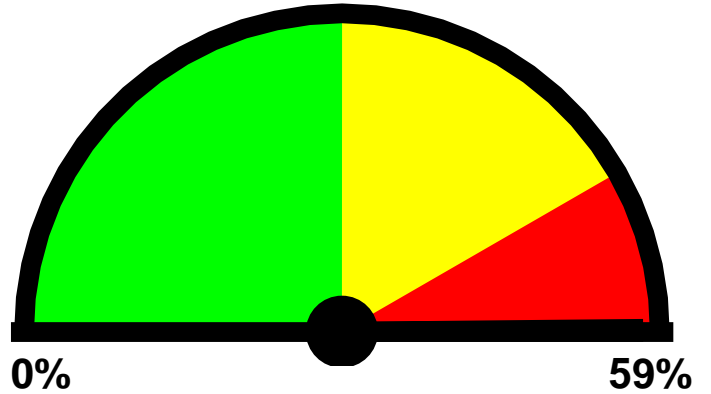
GPS:

0' 0.0000 South
0' 0.0000 East

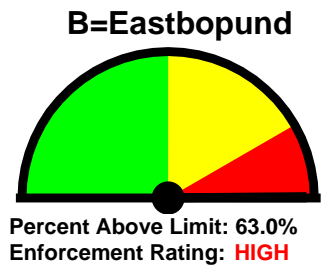
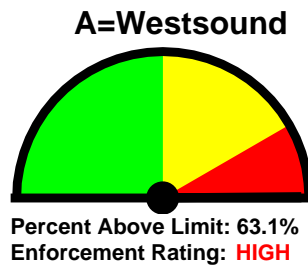
Closest Cross Street:
Elmwood Ave & Spruce St

Analysis Dates:
Tuesday, September 05, 2017
Wednesday, September 06, 2017

Equipment Used:



0% **59%**
Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 63.0%
Enforcement Rating: **HIGH**



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	148	57	93	510	867	399	115	7	2	0	0	0

85 percentile = 36

A=Westsound

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	0	5	4	46	249	342	143	33	1	0	0	0	0

85 percentile = 36

B=Eastbopund

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	143	53	47	261	525	256	82	6	2	0	0	0

85 percentile = 37

Best Times for Enforcement

Location:

Bay St

Closest Cross Street:

Elmwood Ave & Spruce St

Analysis Dates:

Tuesday, September 05, 2017

Wednesday, September 06, 2017

Sun

Mon

Tue

Combined: 3 PM to 5 PM

A=Westsound: 3 PM to 5 PM

B=Eastbopund: 3 PM to 5 PM

Wed

Combined: 7 AM to 9 AM

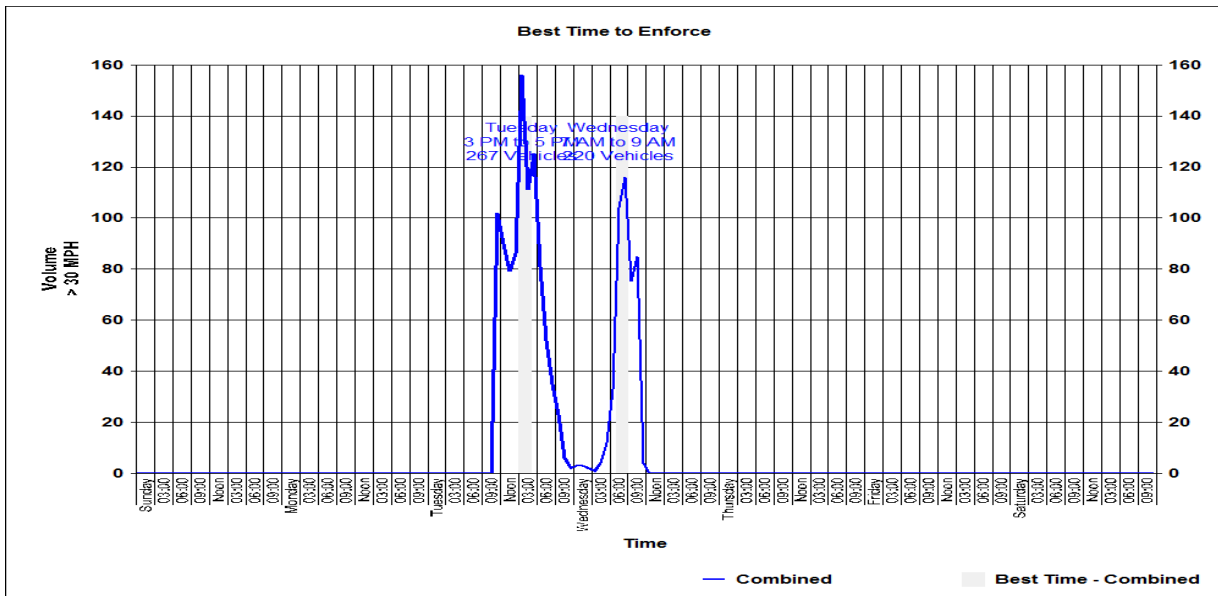
A=Westsound: 7 AM to 9 AM

B=Eastbopund: 7 AM to 9 AM

Thu

Fri

Sat



Bay St
Between Elmwood Ave & Spruce St
Speed

