



**Multi-Way Stop for the Intersection of  
Spruce St and Second St  
City Engineering Department  
August 2017**

**Criteria for Multi-Way Stop Installation**

Based on MUTCD 2009 Edition Standards

**Criterion 1: Crash Experience**

This criterion is **not satisfied** because there were no accidents at this intersection in the past 12 months that could have been prevented by a Multi-Way Stop.

**Criterion 2: 8-hour Vehicular Volume**

This criterion is **not satisfied** because the vehicles per hour entering the intersection of Spruce St and Second St coming from Spruce St is 67, which does not exceed the required minimum 300 vehicles per hour for any 8 hours of an average day. The vehicle per hour entering the intersection from Second St is 65, which does not exceed the required minimum 200 vehicles per hour for the same 8 hours.

**Criterion 3: Major Road Approach Speed**

This criterion is **not satisfied** because the 85<sup>th</sup>-percentile approach speed of traffic on Spruce St is 26 mph, which does not exceed the required minimum of 40 mph. However, it should be noted that 20% of the traffic on Spruce St was over the posted limit, with a mean speed of 20 mph both directions, 20 mph southbound, and 21 mph northbound.

**Additional Notes:**

Based on MUTCD 2009 standards none of the criteria's are satisfied for Multi-way stop Installation.

Prepared By: Abhishek Deora

Date: 08/22/17

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

Encl:



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# Memorandum

The City of Traverse City  
Engineering Department



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TO: Timothy J. Lodge, P.E., City Engineer  
FROM: Abhishek Deora, Seasonal Engineering Aide  
DATE: Tuesday, August 30th, 2017  
SUBJECT: 24 Hour Speed and Volume of 2nd St between Cedar St and Spruce St

City Engineering performed a 24 hour speed study on 2nd St between Cedar St and Spruce St beginning on Monday, August 28th, 2017 concluded Tuesday, August 29th, 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 2nd Street.

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, 596 vehicles were recorded. The average (mean) speed of the 596 vehicles is 21 miles per hour, with 15.2% 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 1.1%.

## Summary (Combined):

- **Mean Speed:** 21 MPH
- **Number of Vehicles above Posted Speed Limit** 15.2%
- **85<sup>th</sup> Percentile of Speed:** 25 MPH
- **95<sup>th</sup> Percentile of Speed:** 28 MPH

## Enclosed:

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

2nd St  
Between Cedar St & Spruce St  
Speed

Site Code: 00000001  
Station ID:

Latitude: 0' 0.0000 South

A=Eastbound

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
08/28/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	2	3	12	2	0	0	0	0	0	0	0	0	0	0	19	16-25	15
17:00	<b>3</b>	<b>5</b>	9	<b>3</b>	0	0	0	0	0	0	0	0	0	0	<b>20</b>	16-25	14
18:00	1	1	<b>13</b>	2	0	0	0	0	0	0	0	0	0	0	17	19-28	15
19:00	2	2	3	1	0	0	0	0	0	0	0	0	0	0	8	16-25	5
20:00	0	3	2	2	<b>1</b>	0	0	0	0	0	0	0	0	0	8	16-25	5
21:00	0	2	3	1	0	0	0	0	0	0	0	0	0	0	6	16-25	5
22:00	0	2	1	1	0	0	0	0	0	0	0	0	0	0	4	14-23	3
23:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	15-24	1
Total	9	19	43	12	1	0	0	0	0	0	0	0	0	0	84		
Percent	10.7%	22.6%	51.2%	14.3%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak Vol.	17:00 3	17:00 5	18:00 13	17:00 3	20:00 1										17:00 20		

2nd St  
Between Cedar St & Spruce St  
Speed

Site Code: 00000001  
Station ID:

Latitude: 0' 0.0000 South

A=Eastbound

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
08/29/17	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	9-18	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	14-23	1
06:00	0	1	4	2	0	0	0	0	0	0	0	0	0	0	7	19-28	6
07:00	1	4	8	1	1	0	0	0	0	0	0	0	0	0	15	16-25	12
08:00	1	5	15	2	0	0	0	0	0	0	0	0	0	0	23	16-25	20
09:00	1	6	10	4	0	0	0	0	0	0	0	0	0	0	21	16-25	16
10:00	1	4	14	4	0	0	0	0	0	0	0	0	0	0	23	16-25	18
11:00	3	7	14	2	0	0	0	0	0	0	0	0	0	0	26	16-25	21
12 PM	4	8	12	6	1	0	0	0	0	0	0	0	0	0	31	16-25	20
13:00	4	7	11	2	0	0	0	0	0	0	0	0	0	0	24	16-25	18
14:00	2	4	13	4	0	0	0	0	0	0	0	0	0	0	23	16-25	17
15:00	1	6	13	3	1	0	0	0	0	0	0	0	0	0	24	16-25	19
16:00	1	1	2	0	0	0	0	0	0	0	0	0	0	0	4	15-24	3
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	20	54	117	30	3	0	0	0	0	0	0	0	0	0	224		
Percent	8.9%	24.1%	52.2%	13.4%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00	08:00	09:00	07:00										11:00		
Vol.	3	7	15	4	1										26		
PM Peak	12:00	12:00	14:00	12:00	12:00										12:00		
Vol.	4	8	13	6	1										31		
Total	29	73	160	42	4	0	0	0	0	0	0	0	0	0	308		
Percent	9.4%	23.7%	51.9%	13.6%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 16 MPH  
50th Percentile : 21 MPH  
85th Percentile : 24 MPH  
95th Percentile : 28 MPH

Stats  
10 MPH Pace Speed : 16-25 MPH  
Number in Pace : 233  
Percent in Pace : 75.6%  
Number of Vehicles > 25 MPH : 46  
Percent of Vehicles > 25 MPH : 14.9%  
Mean Speed(Average) : 21 MPH

2nd St  
Between Cedar St & Spruce 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
08/28/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	<b>2</b>	<b>10</b>	<b>10</b>	<b>6</b>	0	0	0	0	0	0	0	0	0	0	<b>28</b>	16-25	20
17:00	0	4	9	4	1	0	0	0	0	0	0	0	0	0	18	16-25	13
18:00	1	6	5	2	0	0	0	0	0	0	0	0	0	0	14	16-25	11
19:00	2	1	7	1	0	0	0	0	0	0	0	0	0	0	11	17-26	8
20:00	0	4	2	1	0	0	0	0	0	0	0	0	0	0	7	16-25	6
21:00	0	2	6	0	0	0	0	0	0	0	0	0	0	0	8	16-25	8
22:00	0	4	1	1	0	0	0	0	0	0	0	0	0	0	6	16-25	5
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
Total	5	31	40	15	1	0	0	0	0	0	0	0	0	0	92		
Percent	5.4%	33.7%	43.5%	16.3%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak Vol.	16:00	16:00	16:00	16:00	17:00										16:00		
	2	10	10	6	1										28		

2nd St  
Between Cedar St & Spruce St  
Speed

Site Code: 00000001  
Station ID:

Latitude: 0' 0.0000 South

B=Westbound

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
08/29/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
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	14-23	1
03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
06:00	0	5	0	2	0	0	0	0	0	0	0	0	0	0	7	11-20	5
07:00	2	2	4	2	0	0	0	0	0	0	0	0	0	0	10	21-30	6
08:00	2	3	8	1	0	0	0	0	0	0	0	0	0	0	14	16-25	11
09:00	1	9	11	2	1	0	0	0	0	0	0	0	0	0	24	16-25	20
10:00	2	8	11	4	0	0	0	0	0	0	0	0	0	0	25	16-25	19
11:00	2	9	9	4	1	0	0	0	0	0	0	0	0	0	25	16-25	18
12 PM	1	14	16	3	0	0	0	0	0	0	0	0	0	0	34	16-25	30
13:00	3	10	14	7	0	0	0	0	0	0	0	0	0	0	34	16-25	24
14:00	1	9	8	4	0	0	0	0	0	0	0	0	0	0	22	16-25	17
15:00	1	6	11	2	0	0	0	0	0	0	0	0	0	0	20	16-25	17
16:00	0	3	5	0	0	0	0	0	0	0	0	0	0	0	8	16-25	8
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	16	78	98	31	2	0	0	0	0	0	0	0	0	0	225		
Percent	7.1%	34.7%	43.6%	13.8%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	09:00	09:00	10:00	09:00										10:00		
Vol.	2	9	11	4	1										25		
PM Peak	13:00	12:00	12:00	13:00											12:00		
Vol.	3	14	16	7											34		
Total	21	109	138	46	3	0	0	0	0	0	0	0	0	0	317		
Percent	6.6%	34.4%	43.5%	14.5%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 16 MPH  
50th Percentile : 21 MPH  
85th Percentile : 25 MPH  
95th Percentile : 28 MPH

Stats  
10 MPH Pace Speed : 16-25 MPH  
Number in Pace : 247  
Percent in Pace : 77.9%  
Number of Vehicles > 25 MPH : 49  
Percent of Vehicles > 25 MPH : 15.5%  
Mean Speed(Average) : 21 MPH

2nd St  
Between Cedar St & Spruce 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
08/28/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	<b>4</b>	<b>13</b>	<b>22</b>	<b>8</b>	0	0	0	0	0	0	0	0	0	0	<b>47</b>	16-25	35
17:00	3	9	18	7	1	0	0	0	0	0	0	0	0	0	38	16-25	27
18:00	2	7	18	4	0	0	0	0	0	0	0	0	0	0	31	16-25	25
19:00	4	3	10	2	0	0	0	0	0	0	0	0	0	0	19	16-25	13
20:00	0	7	4	3	1	0	0	0	0	0	0	0	0	0	15	16-25	11
21:00	0	4	9	1	0	0	0	0	0	0	0	0	0	0	14	16-25	13
22:00	0	6	2	2	0	0	0	0	0	0	0	0	0	0	10	16-25	8
23:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	15-24	1
Total	14	50	83	27	2	0	0	0	0	0	0	0	0	0	176		
Percent	8.0%	28.4%	47.2%	15.3%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak Vol.	16:00	16:00	16:00	16:00	17:00										16:00		
	4	13	22	8	1										47		

2nd St  
Between Cedar St & Spruce 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
08/29/17	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	9-18	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	*	1
03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	14-23	1
06:00	0	6	4	4	0	0	0	0	0	0	0	0	0	0	14	16-25	10
07:00	3	6	12	3	1	0	0	0	0	0	0	0	0	0	25	16-25	18
08:00	3	8	23	3	0	0	0	0	0	0	0	0	0	0	37	16-25	31
09:00	2	15	21	6	1	0	0	0	0	0	0	0	0	0	45	16-25	36
10:00	3	12	25	8	0	0	0	0	0	0	0	0	0	0	48	16-25	37
11:00	5	16	23	6	1	0	0	0	0	0	0	0	0	0	51	16-25	39
12 PM	5	22	28	9	1	0	0	0	0	0	0	0	0	0	65	16-25	50
13:00	7	17	25	9	0	0	0	0	0	0	0	0	0	0	58	16-25	42
14:00	3	13	21	8	0	0	0	0	0	0	0	0	0	0	45	16-25	34
15:00	2	12	24	5	1	0	0	0	0	0	0	0	0	0	44	16-25	36
16:00	1	4	7	0	0	0	0	0	0	0	0	0	0	0	12	16-25	11
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	36	132	215	61	5	0	0	0	0	0	0	0	0	0	449		
Percent	8.0%	29.4%	47.9%	13.6%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00	10:00	10:00	07:00												11:00
Vol.	5	16	25	8	1												51
PM Peak	13:00	12:00	12:00	12:00	12:00												12:00
Vol.	7	22	28	9	1												65
Total	50	182	298	88	7	0	0	0	0	0	0	0	0	0	625		
Percent	8.0%	29.1%	47.7%	14.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 16 MPH  
50th Percentile : 21 MPH  
85th Percentile : 25 MPH  
95th Percentile : 28 MPH

Stats  
10 MPH Pace Speed : 16-25 MPH  
Number in Pace : 480  
Percent in Pace : 76.8%  
Number of Vehicles > 25 MPH : 95  
Percent of Vehicles > 25 MPH : 15.2%  
Mean Speed(Average) : 21 MPH



2nd St  
Between Cedar St & Spruce St  
Speed

Site Code: 0000001  
Station ID:

Latitude: 0' 0.0000 South

Start Time	28-Aug-17 Mon	29-Aug-17 Tue	30-Aug-17 Wed	31-Aug-17 Thu	01-Sep-17 Fri	Weekday Average	02-Sep-17 Sat	03-Sep-17 Sun
12:00 AM	*	1	*	*	*	1	*	*
01:00	*	0	*	*	*	0	*	*
02:00	*	2	*	*	*	2	*	*
03:00	*	1	*	*	*	1	*	*
04:00	*	0	*	*	*	0	*	*
05:00	*	1	*	*	*	1	*	*
06:00	*	14	*	*	*	14	*	*
07:00	*	25	*	*	*	25	*	*
08:00	*	37	*	*	*	37	*	*
09:00	*	45	*	*	*	45	*	*
10:00	*	48	*	*	*	48	*	*
11:00	*	51	*	*	*	51	*	*
12:00 PM	*	65	*	*	*	65	*	*
01:00	*	58	*	*	*	58	*	*
02:00	*	45	*	*	*	45	*	*
03:00	*	44	*	*	*	44	*	*
04:00	47	12	*	*	*	30	*	*
05:00	38	*	*	*	*	38	*	*
06:00	31	*	*	*	*	31	*	*
07:00	19	*	*	*	*	19	*	*
08:00	15	*	*	*	*	15	*	*
09:00	14	*	*	*	*	14	*	*
10:00	10	*	*	*	*	10	*	*
11:00	2	*	*	*	*	2	*	*
Total	176	449	0	0	0		0	0
Percentage	29.5%	75.3%	0.0%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	11:00	-	-	-	-	-	-
Vol.	-	51	-	-	-	-	-	-
PM Peak	16:00	12:00	-	-	-	-	-	-
Vol.	47	65	-	-	-	-	-	-
Total		449	0					

# Speed Enforcement Evaluator

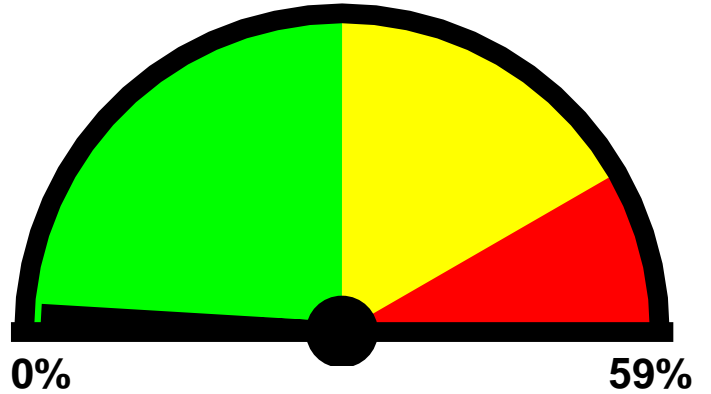
**Location:**  
**2nd St**

**Total Percentage of Enforceable Violations**

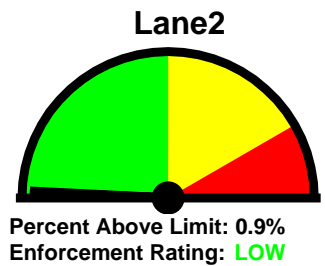
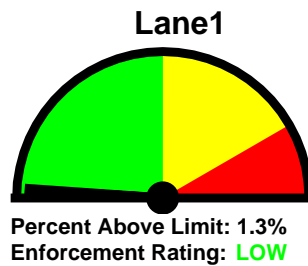
**Closest Cross Street:**  
Cedar St & Spruce St

**Analysis Dates:**  
Monday, August 28, 2017  
Tuesday, August 29, 2017

**Equipment Used:**



**Posted Speed Limit:** 25 MPH  
**Enforcement Tolerance:** 5 MPH  
**Enforcement Limit:** 31 MPH & Up  
**Percentage Above Limit:** 1.1%  
**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	4	46	182	298	88	7	0	0	0	0	0	0	0

85 percentile = 25

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	3	26	73	160	42	4	0	0	0	0	0	0	0

85 percentile = 25

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	1	20	109	138	46	3	0	0	0	0	0	0	0

85 percentile = 25

# Best Times for Enforcement

**Location:**  
**2nd St**  
**Closest Cross Street:**  
Cedar St & Spruce St

**Analysis Dates:**  
Monday, August 28, 2017  
Tuesday, August 29, 2017

**Sun**

**Mon**

Combined: 4 PM to 6 PM

Lane1: 7 PM to 9 PM

Lane2: 4 PM to 6 PM

**Tue**

Combined: 11 AM to 1 PM

Lane1: 6 AM to 8 AM

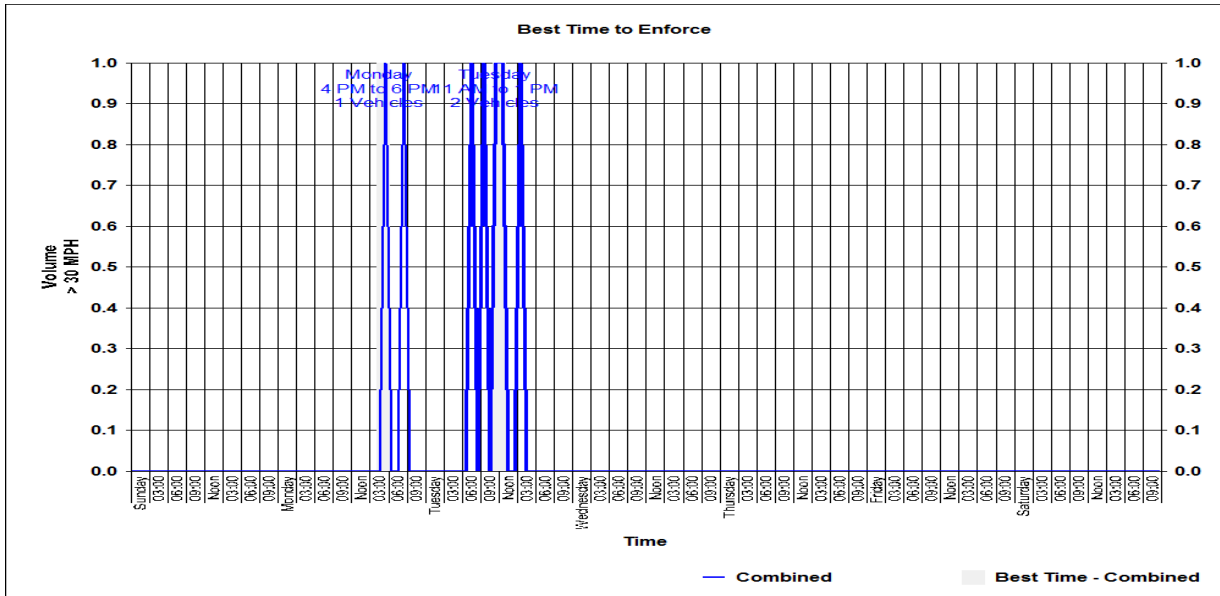
Lane2: 8 AM to 10 AM

**Wed**

**Thu**

**Fri**

**Sat**





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# Memorandum

The City of Traverse City  
Engineering Department



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TO: Timothy J. Lodge, P.E., City Engineer  
FROM: Abhishek Deora, Seasonal Engineering Aide  
DATE: Tuesday, August 22nd, 2017  
SUBJECT: 24 Hour Speed and Volume of Spruce St between 2<sup>nd</sup> St and 3<sup>rd</sup> St

City Engineering performed a 24 hour speed study on Spruce St between 2nd St and 3rd St beginning on Monday, August 21st, 2017 concluded Tuesday, August 22nd, 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 Spruce 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, 569 vehicles were recorded. The average (mean) speed of the 569 vehicles is 20 miles per hour, with 20.2% 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 3.1%.

## Summary (Combined):

- **Mean Speed:** 20 MPH
- **Number of Vehicles above Posted Speed Limit** 20.2%
- **85<sup>th</sup> Percentile of Speed:** 26 MPH
- **95<sup>th</sup> Percentile of Speed:** 29 MPH

## Enclosed:

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

Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 00000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

A=Southbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
08/21/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	1	3	6	<b>4</b>	0	0	0	0	0	0	0	0	0	0	14	21-30	10
15:00	3	6	4	2	0	0	0	0	0	0	0	0	0	0	15	16-25	10
16:00	2	3	9	4	0	0	0	0	0	0	0	0	0	0	18	21-30	13
17:00	<b>6</b>	<b>9</b>	<b>10</b>	2	0	0	0	0	0	0	0	0	0	0	<b>27</b>	16-25	19
18:00	3	8	<b>11</b>	1	0	0	0	0	0	0	0	0	0	0	23	16-25	19
19:00	5	9	9	1	0	0	0	0	0	0	0	0	0	0	24	16-25	18
20:00	3	2	5	2	0	0	0	0	0	0	0	0	0	0	12	21-30	7
21:00	1	4	2	0	0	0	0	0	0	0	0	0	0	0	7	15-24	6
22:00	0	0	4	1	0	0	0	0	0	0	0	0	0	0	5	19-28	5
23:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
Total	24	44	60	18	0	0	0	0	0	0	0	0	0	0	146		
Percent	16.4%	30.1%	41.1%	12.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak Vol.	17:00	17:00	18:00	14:00											17:00		
	6	9	11	4											27		

Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 00000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

A=Southbound

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
08/22/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	2	2	2	0	0	0	0	0	0	0	0	0	0	0	6	15-24	4
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
06:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	24-33	1
07:00	1	1	6	1	0	0	0	0	0	0	0	0	0	0	9	20-29	7
08:00	3	4	14	2	0	0	0	0	0	0	0	0	0	0	23	16-25	18
09:00	2	3	6	3	1	0	0	0	0	0	0	0	0	0	15	16-25	9
10:00	1	5	6	1	1	0	0	0	0	0	0	0	0	0	14	16-25	11
11:00	2	5	11	2	2	0	0	0	0	0	0	0	0	0	22	16-25	16
12 PM	3	15	16	1	0	0	0	0	0	0	0	0	0	0	35	16-25	31
13:00	8	8	12	5	0	0	0	0	0	0	0	0	0	0	33	16-25	20
14:00	3	2	8	1	0	0	0	0	0	0	0	0	0	0	14	16-25	10
15:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	10-19	2
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Total</b>	<b>26</b>	<b>47</b>	<b>81</b>	<b>16</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>175</b>		
<b>Percent</b>	<b>14.9%</b>	<b>26.9%</b>	<b>46.3%</b>	<b>9.1%</b>	<b>2.9%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>			
<b>AM Peak</b>	<b>08:00</b>	<b>10:00</b>	<b>08:00</b>	<b>09:00</b>	<b>11:00</b>											<b>08:00</b>	
<b>Vol.</b>	<b>3</b>	<b>5</b>	<b>14</b>	<b>3</b>	<b>2</b>											<b>23</b>	
<b>PM Peak</b>	<b>13:00</b>	<b>12:00</b>	<b>12:00</b>	<b>13:00</b>												<b>12:00</b>	
<b>Vol.</b>	<b>8</b>	<b>15</b>	<b>16</b>	<b>5</b>												<b>35</b>	
<b>Total</b>	<b>50</b>	<b>91</b>	<b>141</b>	<b>34</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>321</b>		
<b>Percent</b>	<b>15.6%</b>	<b>28.3%</b>	<b>43.9%</b>	<b>10.6%</b>	<b>1.6%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>			

15th Percentile : 14 MPH  
50th Percentile : 20 MPH  
85th Percentile : 24 MPH  
95th Percentile : 28 MPH

Stats  
10 MPH Pace Speed : 16-25 MPH  
Number in Pace : 232  
Percent in Pace : 72.3%  
Number of Vehicles > 25 MPH : 39  
Percent of Vehicles > 25 MPH : 12.1%  
Mean Speed(Average) : 20 MPH

Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 00000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

B=Northbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
08/21/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	0	1	3	7	<b>3</b>	0	0	0	0	0	0	0	0	0	14	21-30	10
15:00	1	0	8	5	2	<b>2</b>	0	0	0	0	0	0	0	0	18	21-30	13
16:00	<b>3</b>	3	4	<b>12</b>	0	0	0	0	0	0	0	0	0	0	<b>22</b>	21-30	16
17:00	0	<b>5</b>	6	6	1	0	0	0	0	0	0	0	0	0	18	19-28	12
18:00	2	3	<b>9</b>	3	0	0	0	0	0	0	0	0	0	0	17	16-25	12
19:00	3	5	9	1	1	0	0	0	0	0	0	0	0	0	19	16-25	14
20:00	1	2	3	4	0	0	0	0	0	0	0	0	0	0	10	20-29	7
21:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
22:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
Total	11	19	42	39	7	2	0	0	0	0	0	0	0	0	120		
Percent	9.2%	15.8%	35.0%	32.5%	5.8%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak Vol.	16:00	17:00	18:00	16:00	14:00	15:00									16:00		
	3	5	9	12	3	2									22		



Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 00000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

B=Northbound

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
08/22/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	<b>32</b>	<b>3</b>	0	1	0	0	0	0	0	0	0	0	0	0	<b>36</b>	6-15	21
04:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
06:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	19-28	2
07:00	0	1	3	0	0	0	0	0	0	0	0	0	0	0	4	16-25	4
08:00	0	1	5	4	1	0	0	0	0	0	0	0	0	0	11	21-30	9
09:00	1	1	1	2	1	0	0	0	0	0	0	0	0	0	6	26-35	3
10:00	7	2	6	3	1	0	0	0	0	0	0	0	0	0	19	19-28	9
11:00	0	1	9	3	1	0	0	0	0	0	0	0	0	0	14	21-30	12
12 PM	3	14	7	8	0	0	0	0	0	0	0	0	0	0	32	16-25	21
13:00	4	6	10	4	0	0	0	0	0	0	0	0	0	0	24	16-25	16
14:00	3	9	10	6	1	0	0	0	0	0	0	0	0	0	29	16-25	19
15:00	1	1	2	1	1	0	0	0	0	0	0	0	0	0	6	21-30	3
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Total</b>	<b>52</b>	<b>39</b>	<b>54</b>	<b>33</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>184</b>		
Percent	28.3%	21.2%	29.3%	17.9%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	03:00	03:00	11:00	08:00	08:00											03:00	
Vol.	32	3	9	4	1										36		
PM Peak	13:00	12:00	13:00	12:00	14:00											12:00	
Vol.	4	14	10	8	1										32		
<b>Total</b>	<b>63</b>	<b>58</b>	<b>96</b>	<b>72</b>	<b>13</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>304</b>		
Percent	20.7%	19.1%	31.6%	23.7%	4.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 10 MPH  
50th Percentile : 21 MPH  
85th Percentile : 27 MPH  
95th Percentile : 29 MPH

Stats  
10 MPH Pace Speed : 21-30 MPH  
Number in Pace : 168  
Percent in Pace : 55.3%  
Number of Vehicles > 25 MPH : 87  
Percent of Vehicles > 25 MPH : 28.6%  
Mean Speed(Average) : 21 MPH

Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 00000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

A=Southbound, B=Northbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
08/21/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	1	4	9	11	<b>3</b>	0	0	0	0	0	0	0	0	0	28	21-30	20
15:00	4	6	12	7	2	<b>2</b>	0	0	0	0	0	0	0	0	33	19-28	19
16:00	5	6	13	<b>16</b>	0	0	0	0	0	0	0	0	0	0	40	21-30	29
17:00	6	<b>14</b>	16	8	1	0	0	0	0	0	0	0	0	0	<b>45</b>	16-25	30
18:00	5	11	<b>20</b>	4	0	0	0	0	0	0	0	0	0	0	40	16-25	31
19:00	<b>8</b>	14	18	2	1	0	0	0	0	0	0	0	0	0	43	16-25	32
20:00	4	4	8	6	0	0	0	0	0	0	0	0	0	0	22	20-29	14
21:00	1	4	2	1	0	0	0	0	0	0	0	0	0	0	8	16-25	6
22:00	1	0	4	1	0	0	0	0	0	0	0	0	0	0	6	19-28	5
23:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
Total	35	63	102	57	7	2	0	0	0	0	0	0	0	0	266		
Percent	13.2%	23.7%	38.3%	21.4%	2.6%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak Vol.	19:00	17:00	18:00	16:00	14:00	15:00									17:00		
	8	14	20	16	3	2									45		

Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 00000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

A=Southbound, B=Northbound

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
08/22/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	<b>34</b>	5	2	1	0	0	0	0	0	0	0	0	0	0	<b>42</b>	1-10	23
04:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
05:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
06:00	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3	19-28	2
07:00	1	2	9	1	0	0	0	0	0	0	0	0	0	0	13	16-25	11
08:00	3	5	19	<b>6</b>	1	0	0	0	0	0	0	0	0	0	34	21-30	25
09:00	3	4	7	5	2	0	0	0	0	0	0	0	0	0	21	21-30	12
10:00	8	<b>7</b>	12	4	2	0	0	0	0	0	0	0	0	0	33	16-25	19
11:00	2	6	<b>20</b>	5	<b>3</b>	0	0	0	0	0	0	0	0	0	36	16-25	26
12 PM	6	<b>29</b>	<b>23</b>	<b>9</b>	0	0	0	0	0	0	0	0	0	0	<b>67</b>	16-25	52
13:00	<b>12</b>	14	22	9	0	0	0	0	0	0	0	0	0	0	57	16-25	36
14:00	6	11	18	7	<b>1</b>	0	0	0	0	0	0	0	0	0	43	16-25	29
15:00	1	3	2	1	1	0	0	0	0	0	0	0	0	0	8	16-25	5
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	78	86	135	49	11	0	0	0	0	0	0	0	0	0	359		
Percent	21.7%	24.0%	37.6%	13.6%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	03:00	10:00	11:00	08:00	11:00										03:00		
Vol.	34	7	20	6	3										42		
PM Peak	13:00	12:00	12:00	12:00	14:00										12:00		
Vol.	12	29	23	9	1										67		
Total	113	149	237	106	18	2	0	0	0	0	0	0	0	0	625		
Percent	18.1%	23.8%	37.9%	17.0%	2.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 12 MPH  
50th Percentile : 21 MPH  
85th Percentile : 26 MPH  
95th Percentile : 29 MPH

Stats  
10 MPH Pace Speed : 16-25 MPH  
Number in Pace : 386  
Percent in Pace : 61.8%  
Number of Vehicles > 25 MPH : 126  
Percent of Vehicles > 25 MPH : 20.2%  
Mean Speed(Average) : 20 MPH

Spruce St  
Between 2nd & 3rd St  
Speed

Site Code: 0000001  
Station ID:  
Spruce St  
Between 2nd and 3rd St  
Latitude: 0' 0.0000 South

Start Time	21-Aug-17 Mon	22-Aug-17 Tue	23-Aug-17 Wed	24-Aug-17 Thu	25-Aug-17 Fri	Weekday Average	26-Aug-17 Sat	27-Aug-17 Sun
12:00 AM	*	0	*	*	*	0	*	*
01:00	*	0	*	*	*	0	*	*
02:00	*	0	*	*	*	0	*	*
03:00	*	42	*	*	*	42	*	*
04:00	*	1	*	*	*	1	*	*
05:00	*	1	*	*	*	1	*	*
06:00	*	3	*	*	*	3	*	*
07:00	*	13	*	*	*	13	*	*
08:00	*	34	*	*	*	34	*	*
09:00	*	21	*	*	*	21	*	*
10:00	*	33	*	*	*	33	*	*
11:00	*	36	*	*	*	36	*	*
12:00 PM	*	67	*	*	*	67	*	*
01:00	*	57	*	*	*	57	*	*
02:00	28	43	*	*	*	36	*	*
03:00	33	8	*	*	*	20	*	*
04:00	40	*	*	*	*	40	*	*
05:00	45	*	*	*	*	45	*	*
06:00	40	*	*	*	*	40	*	*
07:00	43	*	*	*	*	43	*	*
08:00	22	*	*	*	*	22	*	*
09:00	8	*	*	*	*	8	*	*
10:00	6	*	*	*	*	6	*	*
11:00	1	*	*	*	*	1	*	*
Total	266	359	0	0	0		0	0
Percentage	46.7%	63.1%	0.0%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	03:00	-	-	-	-	-	-
Vol.	-	42	-	-	-	-	-	-
PM Peak	17:00	12:00	-	-	-	-	-	-
Vol.	45	67	-	-	-	-	-	-
Total		359	0					

# Speed Enforcement Evaluator

**Location:**  
**Spruce St**

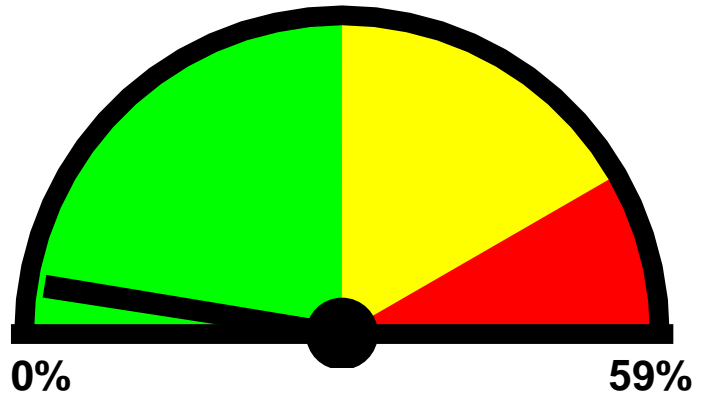
**Total Percentage of Enforceable Violations**

**GPS:**  
0' 0.0000 South  
0' 0.0000 East

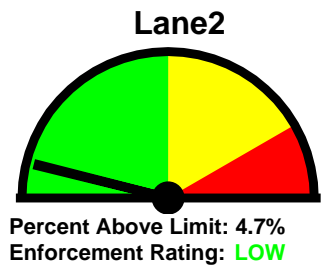
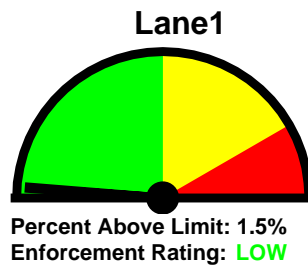
**Closest Cross Street:**  
Between 2nd and 3rd St

**Analysis Dates:**  
Monday, August 21, 2017  
Tuesday, August 22, 2017

**Equipment Used:**



**Posted Speed Limit:** 25 MPH  
**Enforcement Tolerance:** 5 MPH  
**Enforcement Limit:** 31 MPH & Up  
**Percentage Above Limit:** 3.1%  
**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	24	89	158	249	111	18	2	0	0	0	0	0	0

85 percentile = 25

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	23	28	96	145	35	5	0	0	0	0	0	0	0

85 percentile = 24

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	1	61	62	104	76	13	2	0	0	0	0	0	0

85 percentile = 26

# Best Times for Enforcement

## Location:

**Spruce St**

## Closest Cross Street:

Between 2nd and 3rd St

## Analysis Dates:

Monday, August 21, 2017

Tuesday, August 22, 2017

Sun

Mon

Combined: 2 PM to 4 PM

Tue

Lane2: 2 PM to 4 PM

Combined: 10 AM to Noon

Lane1: 10 AM to Noon

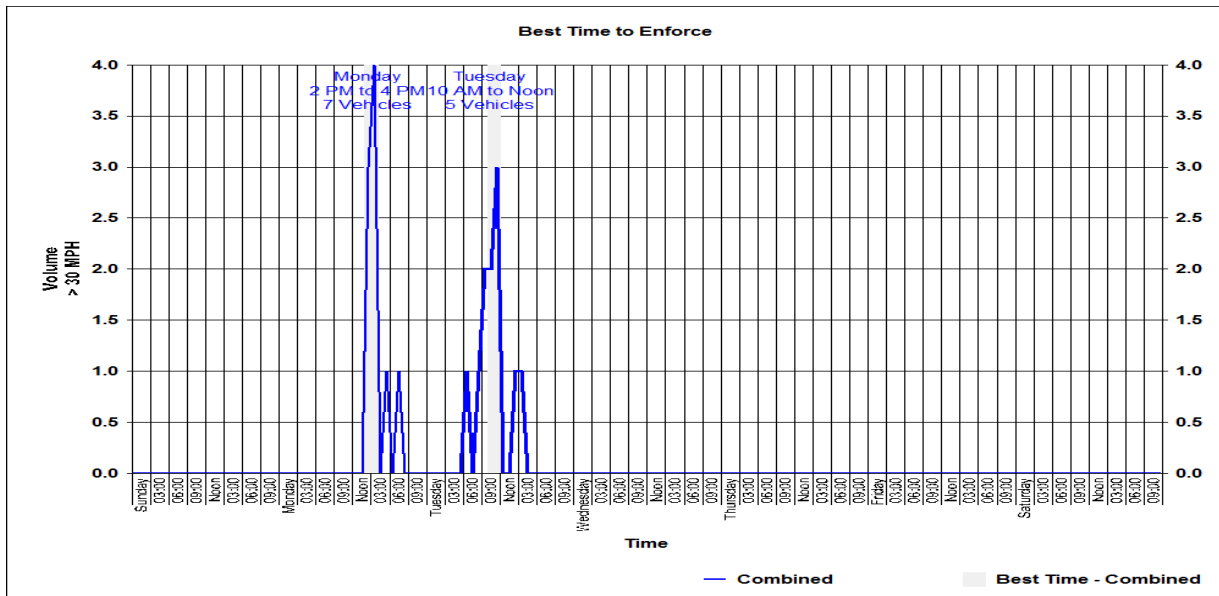
Lane2: 8 AM to 10 AM

Wed

Thu

Fri

Sat



Spruce St  
Between 2nd & 3rd St  
Speed

