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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, Engineering Aide  
DATE: September 1st, 2017  
SUBJECT: Railroad at 16<sup>th</sup> St Classification Count

This memo is to formalize City Engineering's initial findings and observations in regard to the class of vehicles traveling on 16th St at Railroad.

City Engineering performed a 24-hour classification count of 16th St began at 10:20 am on August 29<sup>th</sup>, 2017 and ended at 11:20 am on August 30<sup>th</sup>, 2017. The data was gathered using a Jamar Traffic Counter which collected traffic data, including vehicle classification, for each lane of traffic (northbound and southbound) using two parallel tubes that are placed on the road and are connected to the device. 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 classification of the vehicles into groups. The report shows how many vehicles were within the specified class during one hour intervals as indicated by the report.

A total of 195 vehicles traveled on 16<sup>th</sup> St during the 24-hour class count. The vehicle class count showed that 5 vehicles, 2.5 percent, traveling on 16thSt during the count were a class 6 (FHA Scheme F) or higher.

153 vehicles, 78.5 percent, fell into class 14 which is for bicycles and unknown vehicles. This number suggests that many people use this section of 16<sup>th</sup> St as a bicycling route. This number could also be partially due to vehicles parking on the tubes for the traffic counter.

## Summary:

- Number of Vehicles: 195 vehicles
- Class 6 or Higher: 2.5%
- Class 1 to 5: 19.0%
- Class 14 (Unknown/Bicycles): 78.5%

Encl.: Detailed TraxPro Classification Report



16th St at Railroad  
Class

Site Code: 00000000000  
Station ID:

Latitude: 0' 0.0000 South

A to B

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
08/30/17	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	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	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8
08:00	0	1	0	0	0	0	0	0	0	0	0	0	0	5	6
09:00	0	1	0	0	0	0	0	0	0	0	0	0	0	2	3
10:00	0	2	0	0	0	0	0	0	0	0	0	0	1	0	3
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	0	4	0	0	0	0	0	0	0	0	0	0	1	15	20
Percent	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	75.0%	
AM Peak Vol.		10:00											10:00	07:00	07:00
PM Peak Vol.		2											1	8	8
Grand Total	2	21	4	0	1	1	0	0	0	0	0	0	1	81	111
Percent	1.8%	18.9%	3.6%	0.0%	0.9%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	73.0%	



16th St at Railroad  
Class

Site Code: 00000000000  
Station ID:

Latitude: 0' 0.0000 South

B to A

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
08/30/17	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	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	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5
10:00	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	1	0	0	0	0	0	0	0	0	0	0	0	1	18	20
Percent	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	90.0%	
AM Peak	06:00												10:00	08:00	08:00
Vol.	1												1	6	6
PM Peak															
Vol.															
Grand Total	8	0	0	1	0	2	0	0	0	0	0	0	1	72	84
Percent	9.5%	0.0%	0.0%	1.2%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	85.7%	



16th St at Railroad  
Class

Site Code: 00000000000  
Station ID:

Latitude: 0' 0.0000 South

A to B, B to A

Start Time	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13	Class 14	Total
08/30/17	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	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	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10
08:00	0	1	0	0	0	0	0	0	0	0	0	0	0	11	12
09:00	0	1	0	0	0	0	0	0	0	0	0	0	0	7	8
10:00	0	2	0	0	0	0	0	0	0	0	0	0	2	4	8
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	1	4	0	0	0	0	0	0	0	0	0	0	2	33	40
Percent	2.5%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	82.5%	
AM Peak	06:00	10:00											10:00	08:00	08:00
Vol.	1	2											2	11	12
PM Peak															
Vol.															
Grand Total	10	21	4	1	1	3	0	0	0	0	0	0	2	153	195
Percent	5.1%	10.8%	2.1%	0.5%	0.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	78.5%	

16th St at Railroad  
Speed

Site Code: 000000000000  
Station ID:

Latitude: 0' 0.0000 South

A to B

Start Time	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
08/29/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	9999	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	7	1	0	0	0	0	0	0	0	0	0	0	0	0	8	*	5
12 PM	10	3	0	0	0	0	0	0	0	0	0	0	0	0	13	*	7
13:00	7	0	1	0	0	0	0	0	0	0	0	0	0	0	8	*	5
14:00	8	0	1	0	0	0	0	0	0	0	0	0	0	0	9	6-15	5
15:00	8	1	0	0	0	0	0	0	0	0	0	0	0	0	9	6-15	5
16:00	3	3	1	0	0	0	0	0	0	0	0	0	0	0	7	16-25	4
17:00	10	2	1	0	0	0	0	0	0	0	0	0	0	0	13	*	7
18:00	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6-15	3
19:00	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10	*	7
20:00	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6-15	4
21:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6-15	2
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
Total	77	10	4	0	0	0	0	0	0	0	0	0	0	0	91		
Percent	84.6%	11.0%	4.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00													11:00		
Vol.	7	1													8		
PM Peak	12:00	12:00	13:00												12:00		
Vol.	10	3	1												13		









16th St at Railroad  
Speed

Site Code: 00000000000  
Station ID:

Latitude: 0' 0.0000 South

A to B, B to A

Start Time	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
08/29/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	9	4	0	0	0	0	0	0	0	0	0	0	0	0	13	11-20	7
12 PM	15	5	0	0	0	0	0	0	0	0	0	0	0	0	20	11-20	10
13:00	9	3	3	0	0	0	0	0	0	0	0	0	0	0	15	16-25	6
14:00	11	2	1	0	0	0	0	0	0	0	0	0	0	0	14	6-15	7
15:00	11	5	0	0	0	0	0	0	0	0	0	0	0	0	16	11-20	9
16:00	8	4	3	0	0	0	0	0	0	0	0	0	0	0	15	16-25	7
17:00	15	5	2	0	0	0	0	0	0	0	0	0	0	0	22	11-20	10
18:00	11	3	0	0	0	0	0	0	0	0	0	0	0	0	14	8-17	7
19:00	12	0	0	0	0	0	0	0	0	0	0	0	0	1	13	6-15	8
20:00	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9	*	6
21:00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	*	3
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
Total	114	31	9	0	0	0	0	0	0	0	0	0	0	0	1	155	
Percent	73.5%	20.0%	5.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%		
AM Peak	11:00	11:00														11:00	
Vol.	9	4														13	
PM Peak	12:00	12:00	13:00											19:00	17:00		
Vol.	15	5	3											1	22		



16th St at Railroad  
Speed

Site Code: 00000000000  
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	*	*	0	*	*	0	*	*
01:00	*	*	0	*	*	0	*	*
02:00	*	*	0	*	*	0	*	*
03:00	*	*	0	*	*	0	*	*
04:00	*	*	0	*	*	0	*	*
05:00	*	*	0	*	*	0	*	*
06:00	*	*	2	*	*	2	*	*
07:00	*	*	10	*	*	10	*	*
08:00	*	*	12	*	*	12	*	*
09:00	*	*	8	*	*	8	*	*
10:00	*	*	8	*	*	8	*	*
11:00	*	13	*	*	*	13	*	*
12:00 PM	*	20	*	*	*	20	*	*
01:00	*	15	*	*	*	15	*	*
02:00	*	14	*	*	*	14	*	*
03:00	*	16	*	*	*	16	*	*
04:00	*	15	*	*	*	15	*	*
05:00	*	22	*	*	*	22	*	*
06:00	*	14	*	*	*	14	*	*
07:00	*	13	*	*	*	13	*	*
08:00	*	9	*	*	*	9	*	*
09:00	*	4	*	*	*	4	*	*
10:00	*	0	*	*	*	0	*	*
11:00	*	0	*	*	*	0	*	*
Total	0	155	40	0	0		0	0
Percentage	0.0%	79.5%	20.5%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	11:00	08:00	-	-	-	-	-
Vol.	-	13	12	-	-	-	-	-
PM Peak	-	17:00	-	-	-	-	-	-
Vol.	-	22	-	-	-	-	-	-
Total		155	40					