
Memorandum

The City of Traverse City
Engineering Department



TO: Timothy J. Lodge, P.E., City Engineer
FROM: Abhishek Deora, Engineering Aide
DATE: August 17th, 2017
SUBJECT: Arnold Rd between 15th St & 16th St Classification Count

This memo is to formalize City Engineering's initial findings and observations in regard to the class of vehicles traveling on Arnold Rd between 15th St and 16th St.

City Engineering performed a 24-hour classification count of Arnold Rd began at 3:56 pm on August 15th, 2017 and ended at 5:01 pm on August 16th, 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 147 vehicles traveled on Arnold Rd during the 24-hour class count. The vehicle class count showed that 0 vehicles, 0.0 percent, traveling on Arnold Rd during the count were a class 6 (FHA Scheme F) or higher.

7 vehicles, 4.8 percent, fell into class 14 which is for bicycles and unknown vehicles. This number suggests that many people use this section of Arnold Rd 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: 147 vehicles
- Class 6 or Higher: 0.0%
- Class 1 to 5: 95.2%
- Class 14 (Unknown/Bicycles): 4.8%

Encl.: Detailed TraxPro Classification Report

Arnold Rd
Btw 15th St and 16th St
Speed

Site Code: 00000000000
Station ID:

Latitude: 0' 0.0000 South

Start Time	14-Aug-17 Mon	15-Aug-17 Tue	16-Aug-17 Wed	17-Aug-17 Thu	18-Aug-17 Fri	Weekday Average	19-Aug-17 Sat	20-Aug-17 Sun
12:00 AM	*	*	0	*	*	0	*	*
01:00	*	*	0	*	*	0	*	*
02:00	*	*	0	*	*	0	*	*
03:00	*	*	1	*	*	1	*	*
04:00	*	*	1	*	*	1	*	*
05:00	*	*	4	*	*	4	*	*
06:00	*	*	2	*	*	2	*	*
07:00	*	*	7	*	*	7	*	*
08:00	*	*	11	*	*	11	*	*
09:00	*	*	3	*	*	3	*	*
10:00	*	*	9	*	*	9	*	*
11:00	*	*	15	*	*	15	*	*
12:00 PM	*	*	9	*	*	9	*	*
01:00	*	*	9	*	*	9	*	*
02:00	*	*	11	*	*	11	*	*
03:00	*	*	13	*	*	13	*	*
04:00	*	16	*	*	*	16	*	*
05:00	*	17	*	*	*	17	*	*
06:00	*	5	*	*	*	5	*	*
07:00	*	4	*	*	*	4	*	*
08:00	*	2	*	*	*	2	*	*
09:00	*	2	*	*	*	2	*	*
10:00	*	5	*	*	*	5	*	*
11:00	*	1	*	*	*	1	*	*
Total	0	52	95	0	0		0	0
Percentage	0.0%	35.4%	64.6%	0.0%	0.0%		0.0%	0.0%
AM Peak	-	-	11:00	-	-	-	-	-
Vol.	-	-	15	-	-	-	-	-
PM Peak	-	17:00	15:00	-	-	-	-	-
Vol.	-	17	13	-	-	-	-	-
Total		52	95					

Arnold Rd
Btw 15th St and 16th St
Speed

Site Code: 00000000000
Station ID:

Latitude: 0' 0.0000 South

A to B	Start	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999		Speed	in Pace	
08/15/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	5	2	0	0	0	0	0	0	0	0	0	0	0	9	16-25	7	
17:00	3	3	5	0	0	0	0	0	0	0	0	0	0	0	11	16-25	8	
18:00	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3	15-24	3	
19:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1	
20:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	21-30	1	
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	
22:00	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	9-18	2	
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	
Total	9	10	10	0	0	0	0	0	0	0	0	0	0	0	29			
Percent	31.0%	34.5%	34.5%	0.0%	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	17:00	16:00	17:00												17:00			
Vol.	3	5	5												11			

Arnold Rd
Btw 15th St and 16th St
Speed

Site Code: 00000000000
Station ID:

Latitude: 0' 0.0000 South

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
	15	20	25	30	35	40	45	50	55	60	65	70	75	9999			
08/15/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	1	2	3	1	0	0	0	0	0	0	0	0	0	0	7	16-25	5
17:00	0	2	2	2	0	0	0	0	0	0	0	0	0	0	6	15-24	4
18:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	15-24	2
19:00	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3	19-28	3
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
21:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	21-30	1
22:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8-17	1
23:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
Total	4	4	10	5	0	0	0	0	0	0	0	0	0	0	23		
Percent	17.4%	17.4%	43.5%	21.7%	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.	22:00	16:00	16:00	17:00											16:00		
	2	2	3	2											7		

Arnold Rd
Btw 15th St and 16th St
Speed

Site Code: 00000000000
Station ID:

Latitude: 0' 0.0000 South

B to A																	
Start	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999			
08/16/17	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	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	0	0	0	0	0	0	0	0	0	0	0	1	14-23	1
07:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	15-24	2
08:00	0	1	3	1	0	0	0	0	0	0	0	0	0	0	5	21-30	4
09:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
10:00	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3	19-28	2
11:00	2	1	2	1	0	0	0	0	0	0	0	0	0	0	6	21-30	3
12 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	9-18	1
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
14:00	3	2	2	0	0	0	0	0	0	0	0	0	0	0	7	16-25	4
15:00	2	0	1	1	0	0	0	0	0	0	0	0	0	0	4	21-30	2
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	9	6	11	7	0	0	0	0	0	0	0	0	0	0	33		
Percent	27.3%	18.2%	33.3%	21.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	08:00	08:00	10:00											11:00		
Vol.	2	1	3	2											6		
PM Peak	14:00	14:00	14:00	12:00											14:00		
Vol.	3	2	2	1											7		
Total	13	10	21	12	0	0	0	0	0	0	0	0	0	0	56		
Percent	23.2%	17.9%	37.5%	21.4%	0.0%	0.0%	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 : 26 MPH
95th Percentile : 28 MPH

Stats
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 33
Percent in Pace : 58.9%
Number of Vehicles > 25 MPH : 12
Percent of Vehicles > 25 MPH : 21.4%
Mean Speed(Average) : 20 MPH

Arnold Rd
Btw 15th St and 16th St
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
	15	20	25	30	35	40	45	50	55	60	65	70	75	9999			
08/15/17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	3	7	5	1	0	0	0	0	0	0	0	0	0	0	16	16-25	12
17:00	3	5	7	2	0	0	0	0	0	0	0	0	0	0	17	16-25	12
18:00	0	1	4	0	0	0	0	0	0	0	0	0	0	0	5	16-25	5
19:00	1	0	2	1	0	0	0	0	0	0	0	0	0	0	4	21-30	3
20:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	21-30	1
21:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	21-30	1
22:00	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	*	3
23:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
Total	13	14	20	5	0	0	0	0	0	0	0	0	0	0	52		
Percent	25.0%	26.9%	38.5%	9.6%	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.	22:00 4	16:00 7	17:00 7	17:00 2											17:00 17		

Arnold Rd
Btw 15th St and 16th St
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
	15	20	25	30	35	40	45	50	55	60	65	70	75	9999			
08/16/17	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
04:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	1
05:00	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	11-20	3
06:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	14-23	2
07:00	1	2	3	1	0	0	0	0	0	0	0	0	0	0	7	16-25	5
08:00	0	4	6	1	0	0	0	0	0	0	0	0	0	0	11	16-25	10
09:00	0	2	0	1	0	0	0	0	0	0	0	0	0	0	3	10-19	2
10:00	1	4	2	2	0	0	0	0	0	0	0	0	0	0	9	16-25	6
11:00	3	7	4	1	0	0	0	0	0	0	0	0	0	0	15	16-25	11
12 PM	2	4	2	1	0	0	0	0	0	0	0	0	0	0	9	16-25	6
13:00	3	3	3	0	0	0	0	0	0	0	0	0	0	0	9	16-25	6
14:00	4	3	4	0	0	0	0	0	0	0	0	0	0	0	11	16-25	7
15:00	5	3	4	1	0	0	0	0	0	0	0	0	0	0	13	16-25	7
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	23	35	29	8	0	0	0	0	0	0	0	0	0	0	95		
Percent	24.2%	36.8%	30.5%	8.4%	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	08:00	10:00											11:00		
Vol.	3	7	6	2											15		
PM Peak	15:00	12:00	14:00	12:00											15:00		
Vol.	5	4	4	1											13		
Total	36	49	49	13	0	0	0	0	0	0	0	0	0	0	147		
Percent	24.5%	33.3%	33.3%	8.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 9 MPH
50th Percentile : 18 MPH
85th Percentile : 24 MPH
95th Percentile : 27 MPH

Stats
10 MPH Pace Speed : 16-25 MPH
Number in Pace : 100
Percent in Pace : 68.0%
Number of Vehicles > 25 MPH : 13
Percent of Vehicles > 25 MPH : 8.8%
Mean Speed(Average) : 18 MPH