

TECHNICAL MEMORANDUM

TO: Terry Woehl, NDDOT
FROM: Kshitij Sharma, ATAC
Subject: **Spot Speed Studies – I-29 in Fargo**
Date: June 27, 2016

This memorandum documents the Spot Speed Studies conducted on I-29 in Fargo.

BACKGROUND

NDDOT had requested ATAC to conduct spot speed studies at two locations along I-29 in Fargo. The two locations are:

1. Site 1
I-29 south of 52nd Ave S
RP 59.64
Posted Speed Limit 75mph

2. Site 2
I-29 south of 32nd Ave S
RP 61.00
Posted Speed Limit 75mph

A 24-hour speed study per site was requested. At each site, both northbound and southbound directions of travel were to be observed.

METHODOLOGY

For the purpose of these spot speed studies, Operating Speed Method, generally known as the 85th percentile speed method was used. The data was collected using JAMAR Black CAT Radar Recorders. In addition to the 85th percentile speed, the following parameters were processed using TRAX Pro:

- Mean Speed
Average speed of vehicles observed.
- Mode Speed
Most frequently observed speed.
- Median Speed
50th percentile speed.

- Pace
Window of 10mph range encompassing highest number of observed vehicles.
- Vehicles in pace
Percent of observed vehicles driving at speeds within pace.
- Over 75 mph
Total percent of vehicles speeding.
- Over 80mph
Percent of vehicles speeding over 80 mph.
- Over 85mph
Percent of vehicles speeding over 85 mph.

Added benefit of using JAMAR Black CAT Radar Recorder devices are:

1. It was possible to collect data concurrently at all sites/directions.
2. Reliable traffic volume data was collected at the same time.
3. Data statistics could be processed on a per-lane basis.

Data was collected starting at 2:00 pm on June 21, 2016 and ending at 2:00 pm on June 23, 2016. Note that the JAMAR reports, included in Appendix A, include frequency distribution charts showing the number of vehicles at each observed speed.

RESULTS

As aforementioned, various parameters were calculated from speed observations. A summary of the results is presented in tables 2 and 3. Each site and direction is divided into the following three time-periods per direction.

1. June 21, 2016: 2PM – Midnight (exception: Site 1 starts at 3pm)
2. June 22, 2016: 24-hr
3. June 23, 2016: Midnight – 2PM

At Site 1, the 85th percentile speed was found to be in the range of 78-82 mph for the northbound traffic and in the range of 77-81 mph for the southbound traffic. At Site 2, the 85th percentile speed was found to be in the range of 74-80 mph for the northbound traffic and in the range of 75-81 for the southbound traffic.

At Site 1, 5-10% of the traffic was found speeding over 80mph. The number of drivers speeding over 80mph at Site 2 was less than 4%. Less than 1% of the drivers were found speeding over 85 mph at both sites.

Additionally, no significant speed differential was observed between the two adjacent lanes.

Table 2. Summary of spot speed study results for Site 1.

Parameter	Site 1 (MP 59.64)																	
	NB									SB								
	June 21 3PM-Midnight			June 22 24-hr			June 23 Midnight-2PM			June 21 3PM-Midnight			June 22 24-hr			June 23 Midnight-2PM		
	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both
Volume	2,165	292	2,457	5,558	858	6,416	3,042	573	3,615	2,318	813	3,131	5,229	1,298	6,527	2,521	503	3,024
85th Percentile (mph)	79	82	80	79	82	80	78	81	80	78	81	79	77	81	78	76	81	78
Mean (mph)	73	79	74	73	79	74	73	79	74	72	77	73	71	77	72	70	77	71
Mode (mph)	78	78	78	78	80	78	78	78	78	75	78	75	73	78	75	75	78	75
Median (mph)	75	78	75	75	79	75	73	78	75	73	78	74	72	77	73	71	77	72
Pace (mph)	71-81	74-84	71-81	71-81	74-84	72-82	70-80	74-84	72-82	70-80	73-83	71-81	69-79	73-83	69-79	67-77	73-83	69-79
In pace (%)	67	82.9	66.5	66.7	85.7	66.7	64.5	88.5	65.6	64.6	82	66.2	61.5	78.9	61.7	59.3	77.5	58
Over 75mph (%)	41.2	81.8	46	41.3	81.5	46.7	40.5	83.6	47.3	28.4	71.6	39.6	23.8	65.5	32.1	20.3	63.4	27.5
Over 80mph (%)	6.7	32.2	9.8	6.6	30.4	9.8	6.5	28.3	9.9	4.3	18.3	7.9	2.9	17.7	5.9	2.8	15.3	4.9
Over 85mph (%)	0.4	2.7	0.7	0.4	2.6	0.7	0.5	1.6	0.7	0.3	1.7	0.7	0.1	2.2	0.5	0.3	1.8	0.6

Table 3. Summary of spot speed study results for Site 2.

Parameter	Site 2 (MP 61.00)																	
	NB									SB								
	June 21 2PM-Midnight			June 22 24-hr			June 23 Midnight-2PM			June 21 2PM-Midnight			June 22 24-hr			June 23 Midnight-2PM		
	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both	Lane 1	Lane 2	Both
Volume	3,071	577	3,648	3,976	560	4,536	1,866	206	2,072	5,891	667	6,558	10,949	1,224	12,173	4,845	525	5,370
85th Percentile (mph)	74	79	75	74	80	75	74	80	75	75	81	76	75	80	76	75	80	76
Mean (mph)	67	74	68	67	74	68	67	74	68	68	74	69	69	75	69	69	76	69
Mode (mph)	68	76	68	68	71	71	70	76	70	68	76	68	68	76	68	68	78	68
Median (mph)	68	74	68	67	75	68	68	75	68	69	76	70	68	76	70	69	76	70
Pace (mph)	62-72	71-81	62-72	62-72	71-81	62-72	62-72	71-81	62-72	66-76	72-82	66-76	64-74	72-82	66-76	64-74	71-81	67-77
In pace (%)	57.1	68.3	52.7	57.8	62.9	54.4	56.6	64.6	53.8	53	74.2	50.9	54	75	52.5	53.4	73.3	52
Over 75mph (%)	8.4	40.4	13.5	8.6	41.8	12.7	8.9	40.8	12.1	14.4	59.2	19	13.7	53.8	17.7	14.8	57.1	19
Over 80mph (%)	1.4	7.3	2.3	1.4	13	2.9	1.7	9.2	2.5	2.3	16.5	3.7	1.8	11.9	2.8	2.1	12.6	3.2
Over 85mph (%)	0.2	1.4	0.4	0.2	2.0	0.4	0.2	0.5	0.2	0.1	1.0	0.2	0.1	0.3	0.1	0.2	1.3	0.3

APPENDICES

Appendix A: JAMAR TraxPro reports.