

CenDak Signalized Intersections Traffic Data Collection - 2025

Final Report

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Central Dakota Metropolitan Planning Organization

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INTRODUCTION

Upper Great Plains Transportation Institute's Advanced Traffic Analysis Center (ATAC), with support from the North Dakota Department of Transportation (NDDOT) had previously completed a pilot traffic data collection project for two of the state highway intersections located within the City of Minot (City). Realizing the value of the data being collected, Central Dakota Metropolitan Planning Organization (CenDak MPO) requested that the data collection efforts be expeditiously expanded networkwide.

OBJECTIVE

This project spanning the year 2025 set up 17 additional City intersections, raising the total locations reporting data to 19. Note that similar to the NDDOT sponsored pilot project, this phase of traffic data collection and reporting used existing infrastructure without the need to purchase or maintain any additional traffic data collection devices. The mostly under-utilized or un-utilized capabilities of the existing transportation infrastructure devices combined with UGPTI's cross-cutting expertise and innovative approach have made it possible to gather traffic data 24 hours per day, 7 days per week, and 365 days per year.

METHODOLOGY

This project was divided into major tasks such as traffic and pedestrian data collection setup, scripting to automate data import, reporting capabilities setup, and data quality audits. These tasks are discussed in detail below.

CenDak MPO, with input from the City, selected 17 of its intersections to be set up for traffic data collection. These intersection locations are listed in Table 1. All these intersections use VISION camera-based traffic detection technology. Using existing remote connections which were established during the pilot project, the calibration, zone labels and locations were reviewed and updated wherever it was deemed necessary. New zones were added to approaches where right-turn lanes were missing detection/counting. These newly added zones do not impact traffic signal operations and are required to count vehicles utilizing the dedicated turn lane. Traffic speed data was also available for these intersections. Some of the major issues noticed and corrected during this review process included:

1. Improper calibration
2. Camera malfunction – white imbalance
3. Overlapping vehicular detection zones
4. Misplaced detection zones
5. Inaccurate timeclock/time-zone settings
6. Camera movement over time

All these issues, in addition to reducing traffic count accuracy, inadvertently marred the camera's capability to properly detect traffic flowing through the City corridors, in turn, rendering the programmed signal timing and any implemented progression ineffective.

Table 1. City of Minot intersections

#	Main Street	Cross Street	Detector Type	Detector Model
1	37th Ave SW	16th St SW	Camera	VISION
2	37th Ave SW	23rd St SW	Camera	VISION
3	3rd St NE	5th Ave NE	Camera	VISION
4	Burdick Expy	Valley St/5th St SE	Camera	VISION
5	Burdick Expy W	6th St SW	Camera	VISION
6	E Burdick Expy	3rd St SE	Camera	VISION
7	N Broadway	4th Ave NW	Camera	VISION
8	N Broadway	University Ave W	Camera	VISION
9	N Broadway	11th Ave NW	Camera	VISION
10	N Broadway	46th Ave N	Camera	VISION
11	S Broadway	WB US Hwy 52 Ramp/22nd Ave SW	Camera	VISION
12	S Broadway	20th Ave S	Camera	VISION
13	S Broadway	EB US Hwy 52 Ramps/27th Ave SW	Camera	VISION
14	S Broadway	37th Ave SW	Camera	VISION
15	S Broadway	31st Ave SW	Camera	VISION
16	S Broadway	11th Ave SW	Camera	VISION
17	US Hwy 2	42nd St SE/14th Ave SE	Camera	VISION

An API data download script was created for the 17 VISION camera-based intersections. With assistance from the City's IT department, the related tasks for data download and transfer were scheduled to run on the Traffic server. As a result, the data from all the city's intersections on the Traffic Analysis Tool should ideally remain up to date as of the day prior to any given day. The intersection lane group assignments and the corresponding detector setup are shown in Table 2.

In order to continue using the existing infrastructure to its highest capability, especially for the vulnerable road user groups, bicycle detection (within travel lanes) and pedestrian counting (within crosswalks) was turned on at all intersections included in the current project. Bicycle detection would enable actuation of the traffic signal and would be especially practical when a bicyclist is the only traveler in their approach. This would effectively eliminate cases where such bicyclists would need to run the red light due to lack of actuation. Pedestrian counting started the data collection of such counts and helped create a database, which was non-existent prior to the pilot and the current project.

Table 2. City of Minot intersection lane group assignments and detector setup¹

#	Main	Cross Street	NB			EB			SB			WB		
			L	T	R	L	T	R	L	T	R	L	T	R
1	S Broadway	16th Ave SW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
2	Burdick Expy W	S Broadway	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
3	Burdick Expy	Valley St/5th St SE	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
4	S Broadway	WB US Hwy 52 Ramp/22nd Ave SW	↰	↑	N/A	↰	↑	↱	↰	↑	↱	↰	↑	↱
5	S Broadway	20th Ave S	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
6	E Burdick Expy	3rd St SE	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
7	S Broadway	EB US Hwy 52 Ramps/27th Ave SW	N/A	↑	↱	N/A	N/A		N/A	↑	N/A	N/A	N/A	
8	S Broadway	37th Ave SW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
9	S Broadway	31st Ave SW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
10	S Broadway	11th Ave SW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
11	N Broadway	4th Ave NW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
12	N Broadway	University Ave W	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
13	37th Ave SW	16th St SW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
14	N Broadway	11th Ave NW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
15	37th Ave SW	23rd St SW	N/A	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
16	US Hwy 2	42nd St SE/14th Ave SE	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
17	Burdick Expy W	6th St SW	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
18	N Broadway	46th Ave N	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
19	3rd St NE	5th Ave NE	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱

¹ Note that the intersections #1 S Broadway @ 16th Ave SW and #2 Burdick Expy W @ S Broadway were setup during NDDOT sponsored pilot project.

DATA QUALITY AUDITS

Similar to the pilot project, random data quality audits were performed, and traffic volumes were collected manually in 15-minute intervals at each approach at the selected intersections. These manually collected traffic counts were then compared to data collected by the respective traffic detection technology. Hourly traffic volumes from both data sources were compared using GEH statistic, which is computed as follows:

$$GEH = \sqrt{\frac{(A - M)^2}{(A + M)/2}}$$

Where:

A = detected traffic count

M = manual traffic count

Also, peak hour factors (PHF) were compared for the detected and manual hourly traffic volumes. For intersection turning movement counts, PHF is computed as follows:

$$PHF = \frac{V}{4 \times V_{15}}$$

Where:

V = hourly volume

V₁₅ = volume during the peak 15 minutes of flow

For detailed results of these audits please refer to Appendix A.

TRAFFIC ANALYSIS TOOL CAPABILITIES

The NDSU Traffic Analysis Tool, which the aforementioned agencies have had access to since the pilot project, has these reporting capabilities:

- Volume Profile
Line chart of 15-minute volumes for the selected intersection over a 24-hour period
- Speed Profile
Line chart of 15-minute mean through movement speeds for the selected intersection over a 24-hour period
- Monthly Seasonal Factors
Bar chart of monthly average daily traffic volumes and corresponding factors (in comparison to AADT) for the selected intersection
- Day-of-the-Week Seasonal Factors
Bar chart showing ADT for each day of the week for a given month
- Peak Hour Volume/Factor
Directional pedestrian count at crosswalks and intersection turning movement count diagram with approach and intersection factors for peak hour within the selected peak period(s)
- Annual Average Daily Traffic (AADT)
Directional pedestrian count at crosswalks and intersection turning movement count diagram for the immediate past 12 months or any selected calendar year with available data, averaged over the number of days under consideration
- Monthly Average Daily Traffic (MADT)
Directional pedestrian count at crosswalks and intersection turning movement count diagram for any selected calendar month and year with available data, averaged over the number of days under consideration

- Average Daily Traffic (ADT)
Directional pedestrian count at crosswalks and intersection turning movement count diagram for any selected calendar month and year with available data, averaged over the number of days under consideration

For more details on these reports, please refer to the Fargo-Moorhead Metro Traffic Data Collection and Reporting Final Report². Sample reports from each category are shown in figures 1 through 8.

² Sharma, K. (2021). "Fargo-Moorhead Metro Traffic Data Collection and Reporting." Upper Great Plains Transportation Institute, North Dakota State University, Fargo. <https://www.ugpti.org/resources/reports/downloads/atac-2021-09-fm-traffic-data-collection-and-reporting.pdf>

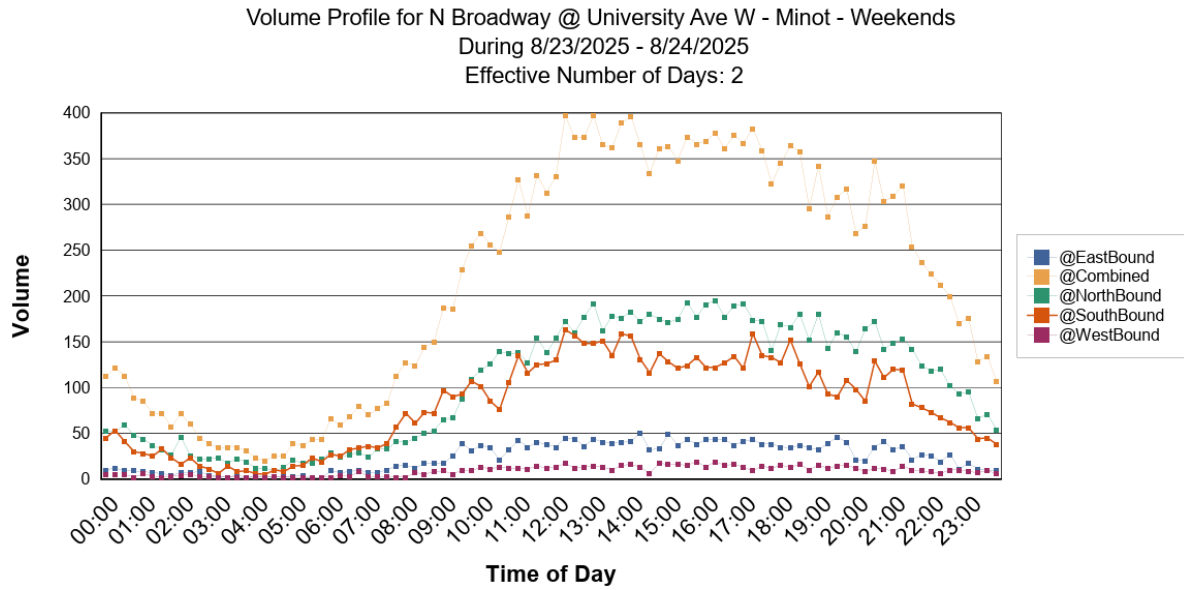


Figure 1. Sample Volume Profile report for N Broadway @ University Ave W for August 23 - 24, 2025 weekend

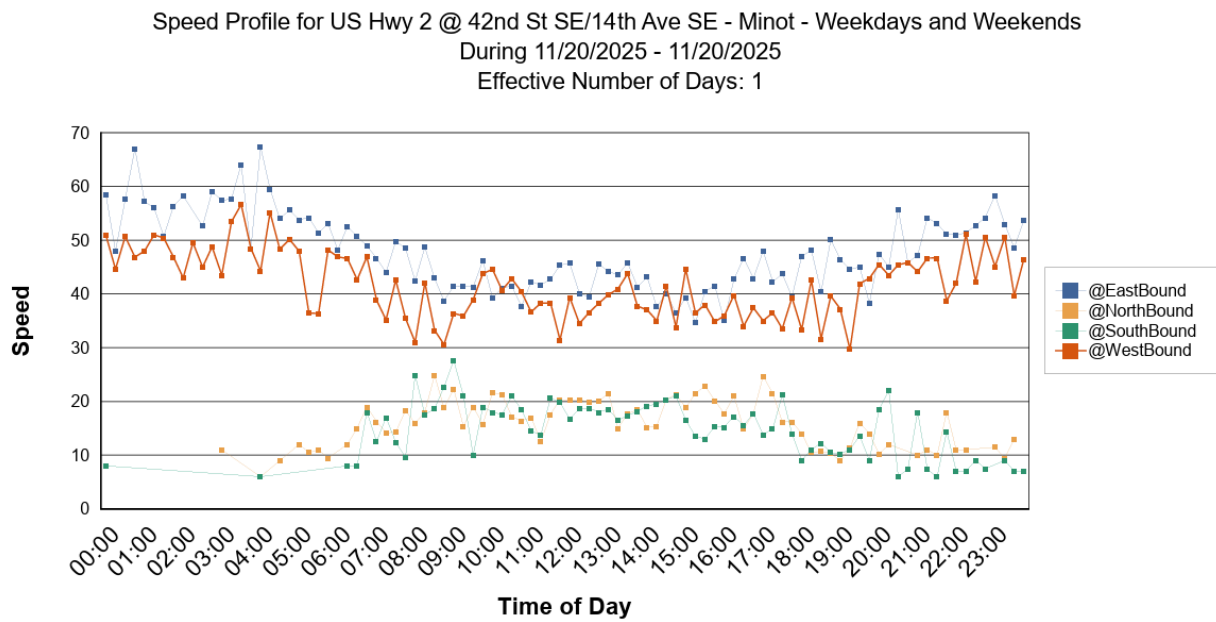


Figure 2. Sample Speed Profile report for US Hwy 2 @ 42nd St SE/14th Ave SE

2024 Monthly Seasonal Factors for Burdick Expy W @ 6th St SW - Minot
Effective Number of Days: 366

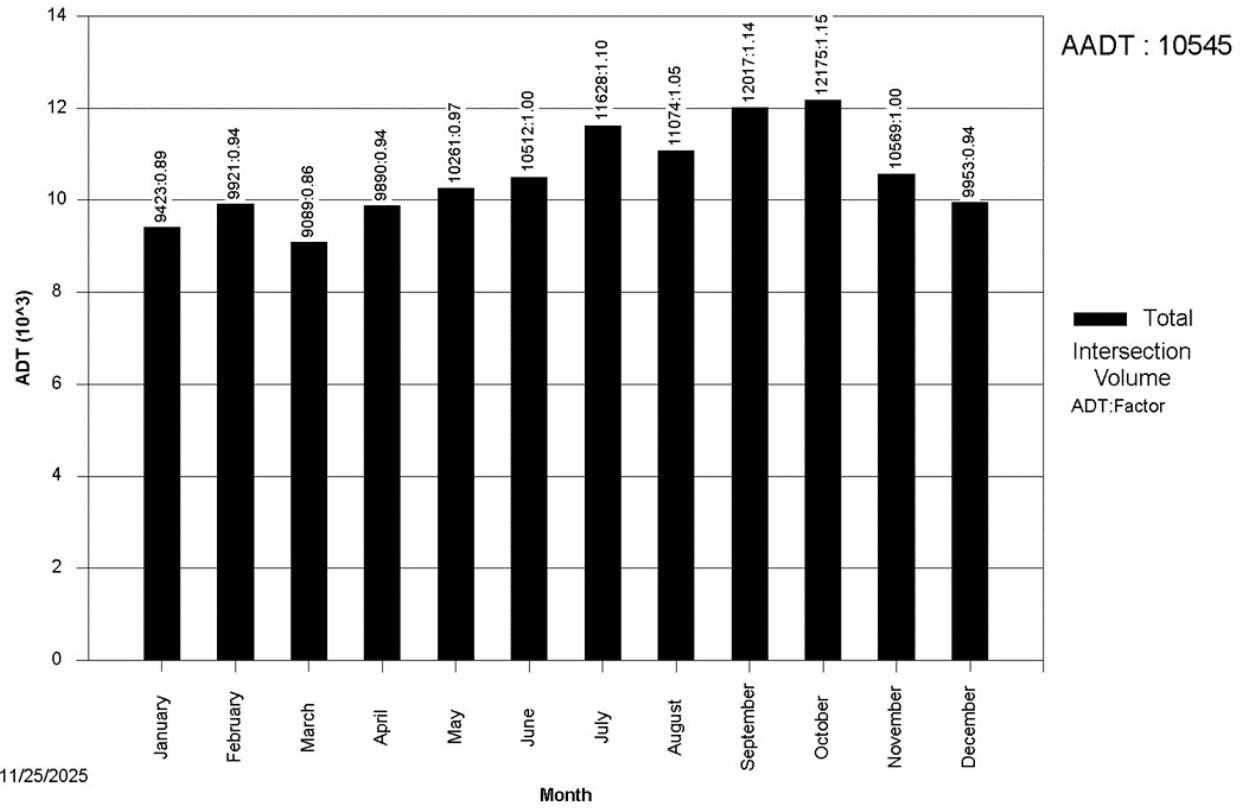


Figure 3. Sample 2024 Monthly Seasonal Factors report for Burdick Expy W @ 6th St SW

July 2025 Day of the Week Seasonal Factors for 37th Ave SW @ 23rd St SW - Minot
Effective Number of Days: 31

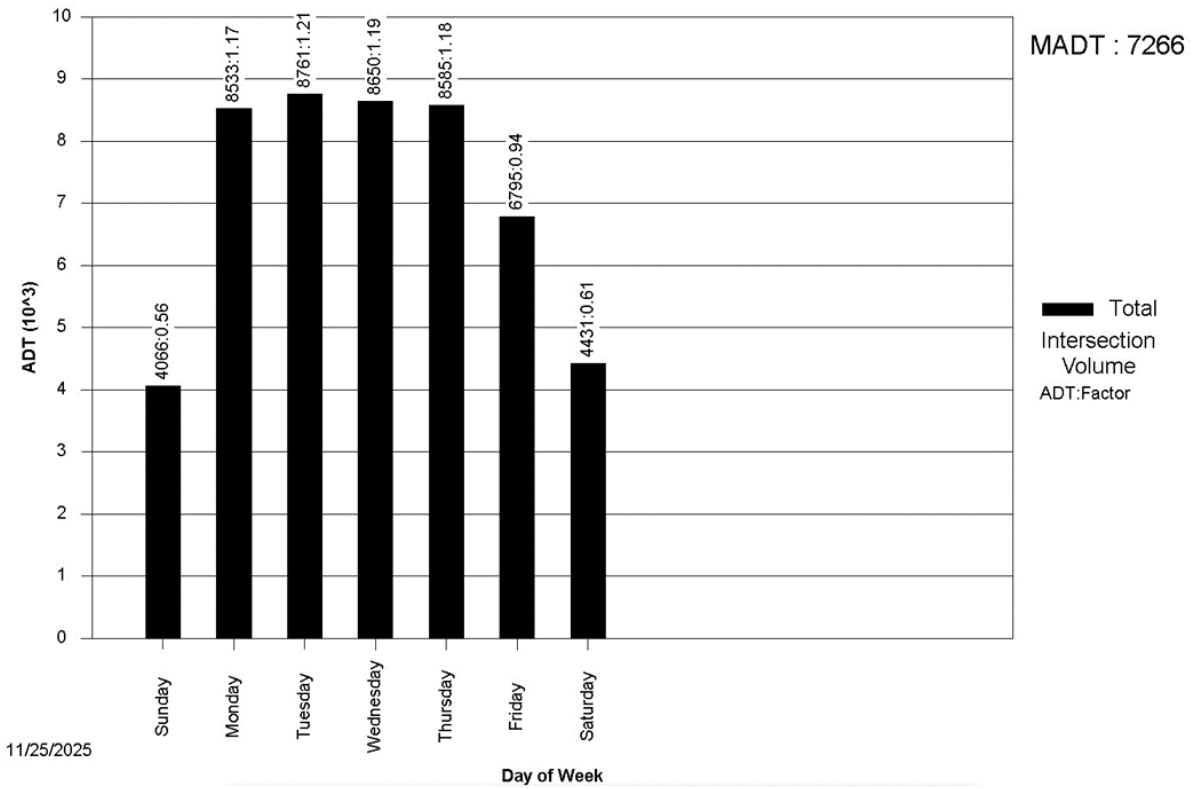
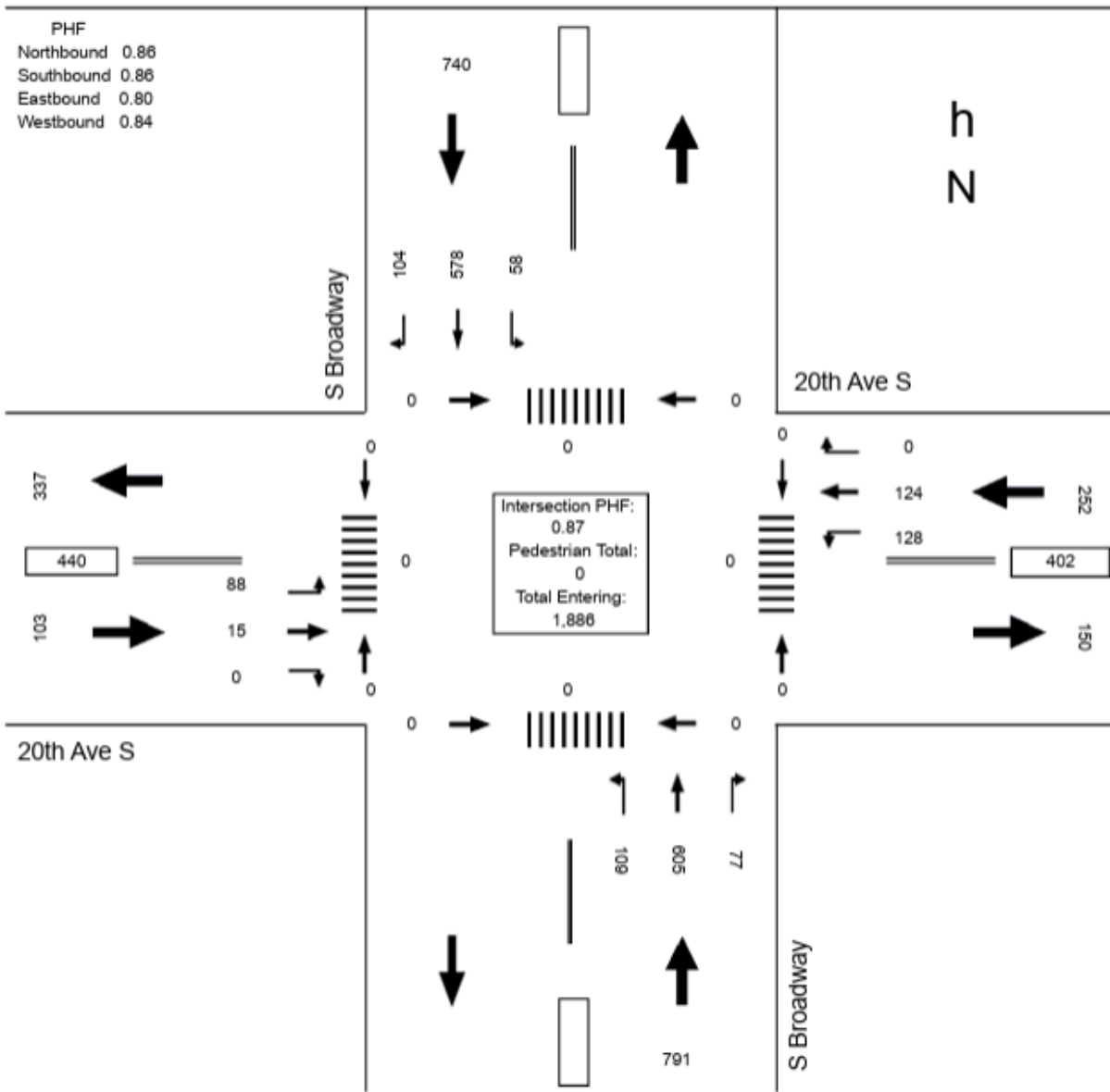


Figure 4. Sample July 2025 Day-of-the-week Seasonal Factor report for 37th Ave SW @ 23rd St SW

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Peak Hour Volume/Factor for S Broadway @ 20th Ave S - Minot - Weekdays
During 2024-08-25 - 2025-05-16
Effective Number of Days: 190
AM (6 - 10 AM)



The information generated by this calculator is for estimation uses only. The Upper Great Plains Transportation Institute and North Dakota State University make no representation or warranty, expressed or implied, regarding the accuracy or reliability of the results.

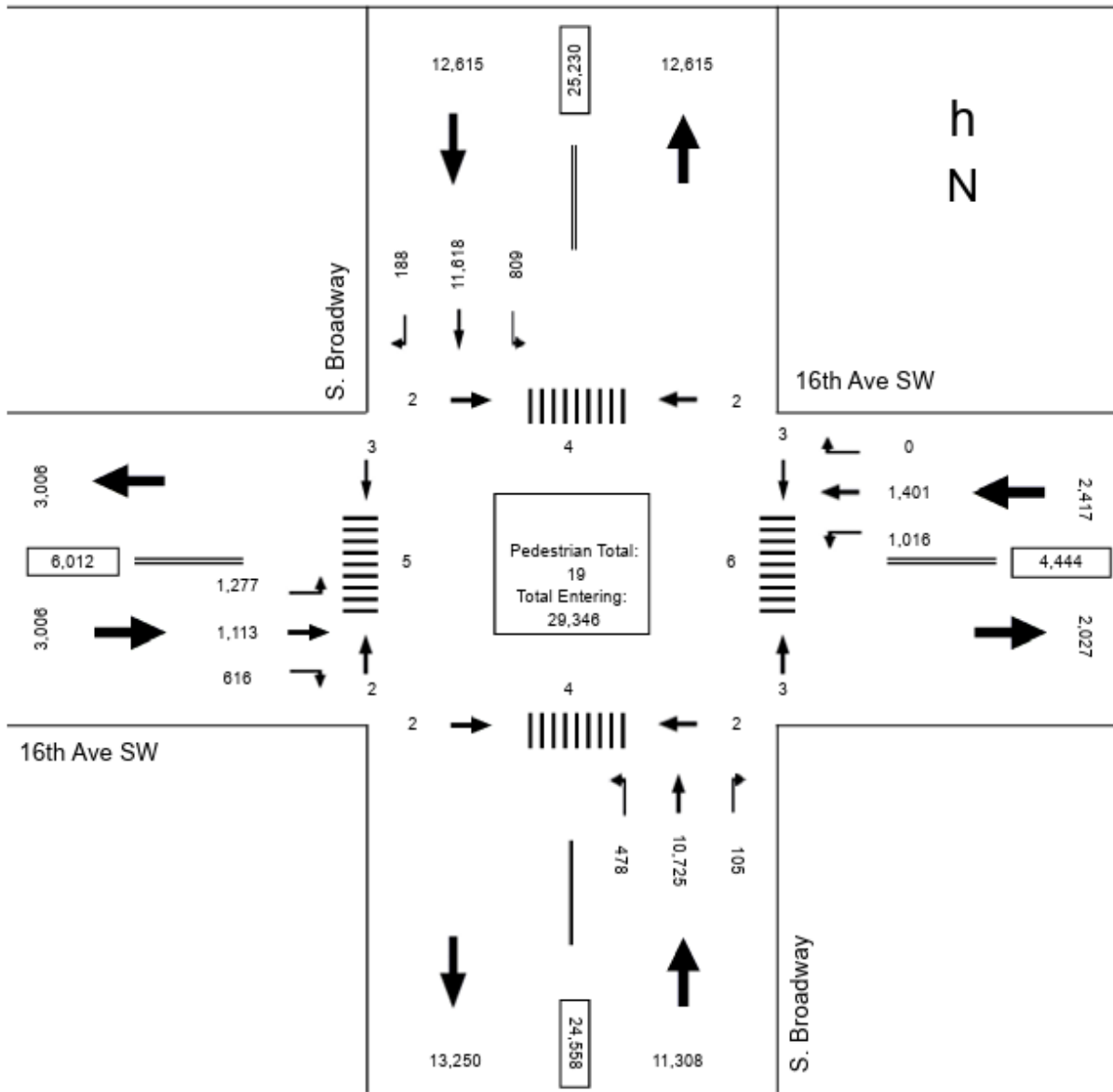
11/25/2025

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Figure 5. Peak Hour Volume/Factor Report for S Broadway @ 20th Ave S for weekdays from August 25, 2024 to May 16, 2025

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AADT TMC Diagram for S. Broadway @ 16th Ave SW - Minot - Weekdays and Weekends
During 01/01/2024 - 12/31/2024
Effective Number of Days: 366



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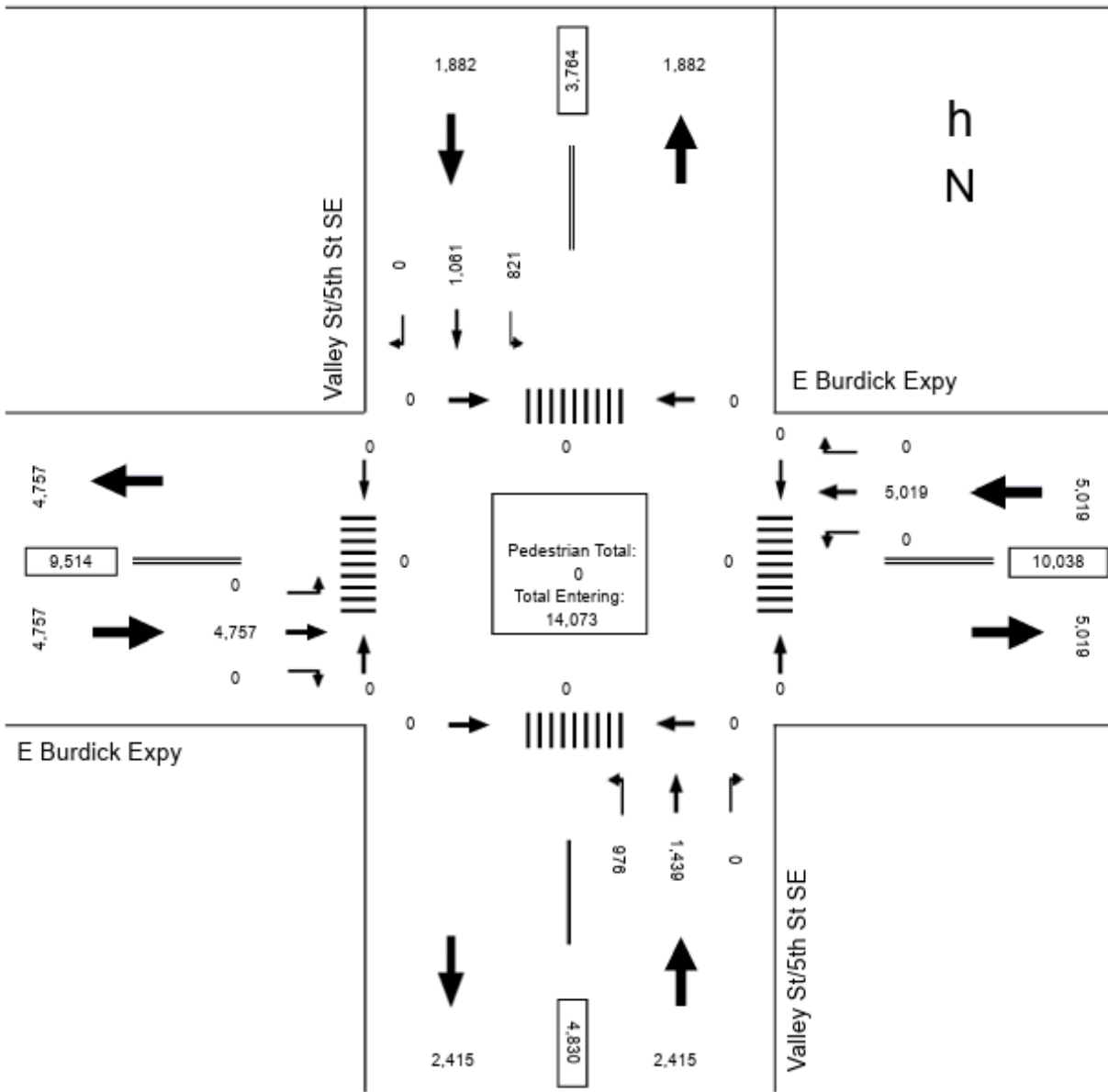
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Figure 6. Annual Average Daily Traffic (2024) report for S Broadway @ 16th Ave SW

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June MADT TMC Diagram for E Burdick Expy @ Valley St/5th St SE - Minot - Weekdays and Weekends
During 6/01/2023 - 6/30/2023
Effective Number of Days: 30



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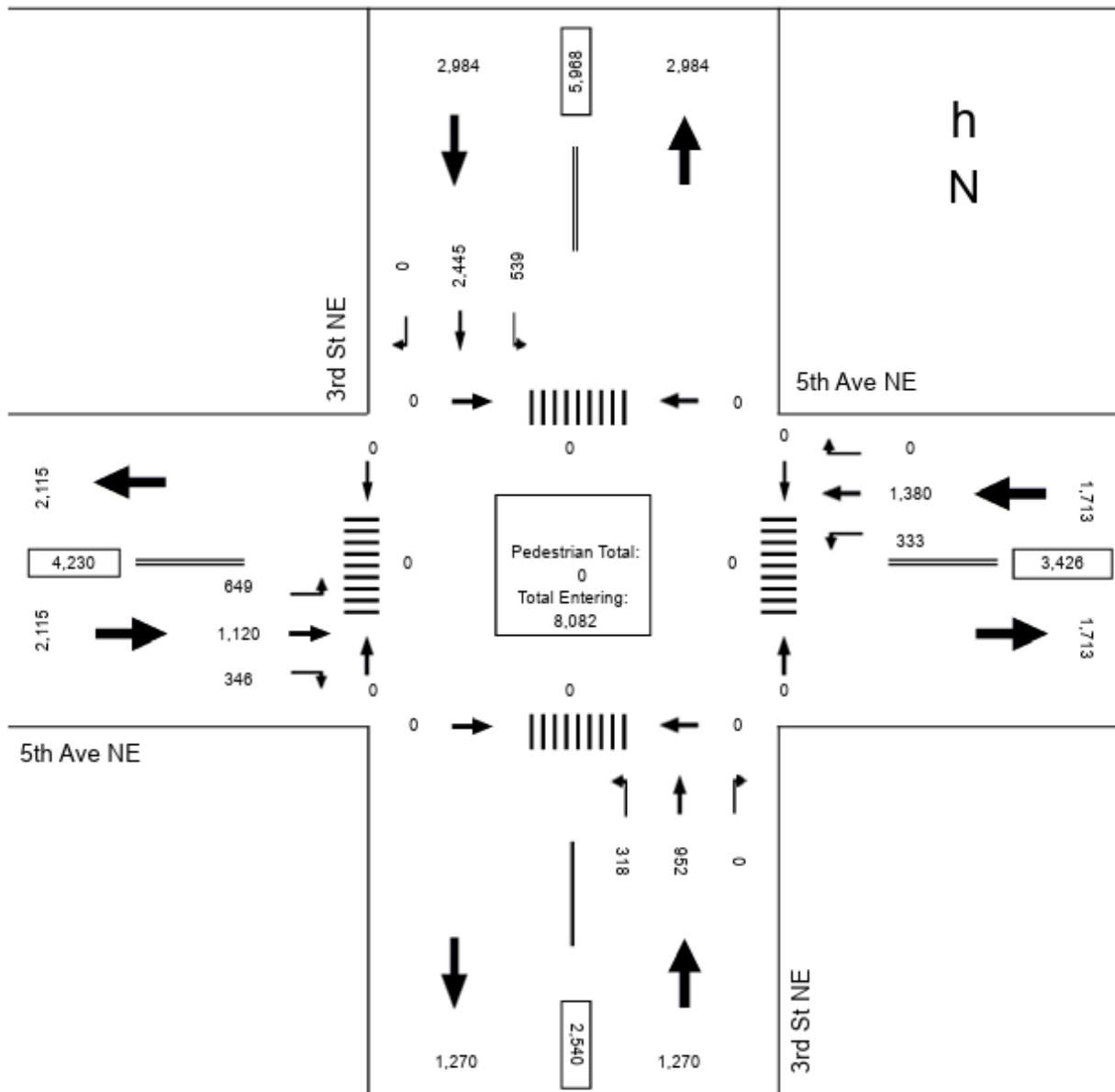
11/25/2025

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Figure 7. June 2023 MADT report for E Burdick Expy @ Valley St/5th St SE

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ADT TMC Diagram for 3rd St NE @ 5th Ave NE - Minot - Weekdays and Weekends
During 5/17/2025 - 8/24/2025
Effective Number of Days: 100



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11/25/2025

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Figure 8. Sample ADT report (May 17 – August 24, 2025) for 3rd St NE @ 5th Ave NE

RECOMMENDATIONS

Based on the findings of this project, several next steps have been identified and the corresponding recommendations are discussed below.

Consider:

- Setting up more intersections for traffic data collection mainly to include other signalized intersections within the City of Minot's jurisdiction.
- At all intersections:
 - Adding passive pedestrian detection as a backup option to physical pedestrian push buttons
- At other intersections
 - Repositioning cameras especially those currently mounted on luminaire extensions

APPENDIX A

E Burdick Expy @ 3rd St SE									
Interval	Source	Southbound		Westbound		Northbound		Eastbound	
		Thru	Total	Thru	Total	Thru	Total	Thru	Total
15-min interval	Manual	52	52	164	164	28	28	107	107
	Autoscope	50	50	159	159	28	28	93	93
15-min interval	Manual	32	32	134	134	33	33	107	107
	Autoscope	31	31	129	129	32	32	105	105
15-min interval	Manual	33	33	126	126	29	29	102	102
	Autoscope	33	33	125	125	39	39	104	104
15-min interval	Manual	51	51	127	127	28	28	83	83
	Autoscope	50	50	126	126	32	32	80	80
Hourly Totals	Manual	168	168	551	551	118	118	399	399
	Autoscope	164	164	539	539	131	131	382	382
	GEH	0.3	0.3	0.5	0.5	1.2	1.2	0.9	0.9

E Burdick Expy @ Valley St											
Interval	Source	Southbound			Westbound		Northbound			Eastbound	
		Thru	Left	Total	Thru	Total	Thru	Left	Total	Thru	Total
15-min interval	Manual	10	12	22	90	90	19	38	57	70	70
	Autoscope	10	12	22	88	88	19	40	59	73	73
15-min interval	Manual	6	7	13	69	69	18	17	35	68	68
	Autoscope	6	7	13	67	67	16	17	33	69	69
15-min interval	Manual	16	7	23	72	72	15	28	43	62	62
	Autoscope	17	7	24	70	70	13	29	42	63	63
15-min interval	Manual	12	6	18	59	59	16	22	38	94	94
	Autoscope	12	6	18	59	59	14	22	36	86	86
Hourly Totals	Manual	44	32	76	290	290	68	105	173	294	294
	Autoscope	45	32	77	284	284	62	108	170	291	291
	GEH	0.1	0.0	0.1	0.4	0.4	0.7	0.3	0.2	0.2	0.2

S Broadway @ 22nd Ave SW																
Interval	Source	Southbound			Westbound				Northbound				Eastbound			
		Right	Thru	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	4	251	255	21	0	41	62	24	190	3	217	2	0	0	2
	Autoscope	5	249	254	21	0	35	56	26	186	4	216	4	0	0	4
15-min interval	Manual	4	217	221	36	0	36	72	32	168	0	200	2	0	0	2
	Autoscope	4	225	229	24	0	34	58	35	171	0	206	3	0	0	3
15-min interval	Manual	1	211	212	24	1	29	54	24	159	1	184	4	0	0	4
	Autoscope	1	217	218	23	1	27	51	26	170	1	197	5	0	0	5
15-min interval	Manual	4	219	223	22	1	25	48	38	208	0	246	1	0	1	2
	Autoscope	4	233	237	21	1	25	47	42	199	0	241	1	1	0	2
Hourly Totals	Manual	13	898	911	103	2	131	236	118	725	4	847	9	0	1	10
	Autoscope	14	924	938	89	2	121	212	129	726	5	860	13	1	0	14
	GEH	0.3	0.9	0.9	1.4	0.0	0.9	1.6	1.0	0.0	0.5	0.4	1.2	1.4	1.4	1.2

S Broadway @ 20th Ave															
Interval	Source	Southbound				Westbound			Northbound				Eastbound		
		Right	Thru	Left	Total	Thru	Left	Total	Right	Thru	Left	Total	Thru	Left	Total
15-min	Manual	40	175	10	225	38	40	78	23	139	34	196	62	28	90
interval	Autoscope	41	174	10	225	49	52	101	25	150	44	219	64	29	93
15-min	Manual	32	152	19	203	52	45	97	25	143	32	200	76	32	108
interval	Autoscope	31	151	21	203	48	38	86	24	147	46	217	79	30	109
15-min	Manual	33	176	28	237	46	37	83	28	156	41	225	55	21	76
interval	Autoscope	36	174	29	239	48	34	82	29	153	41	223	56	19	75
15-min	Manual	39	193	17	249	51	32	83	26	168	33	227	82	42	124
interval	Autoscope	39	204	17	260	60	36	96	27	174	33	234	83	40	123
Hourly Totals	Manual	144	696	74	914	187	154	341	102	606	140	848	275	123	398
	Autoscope	147	703	77	927	205	160	365	105	624	164	893	282	118	400
	GEH	0.2	0.3	0.3	0.4	1.3	0.5	1.3	0.3	0.7	1.9	1.5	0.4	0.5	0.1

S Broadway @ 37th Ave SW																
Interval	Source	Southbound				Westbound				Northbound				Eastbound		
		Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Thru	Left	Total
15-min interval	Manual	36	72	20	128	15	20	9	44	2	66	5	73	35	60	95
	Autoscope	35	62	19	116	13	17	7	37	2	63	5	70	39	63	102
15-min interval	Manual	53	77	16	146	20	26	15	61	7	72	18	97	30	49	79
15-min interval	Autoscope	52	66	14	132	20	26	15	61	6	76	17	99	33	55	88
	Manual	52	62	24	138	14	28	10	52	3	70	12	85	25	58	83
15-min interval	Autoscope	50	62	22	134	14	27	10	51	4	72	12	88	27	60	87
	Manual	41	70	18	129	12	20	11	43	5	84	10	99	38	60	98
15-min interval	Autoscope	42	71	17	130	12	20	10	42	5	84	10	99	39	61	100
	Manual	182	281	78	541	61	94	45	200	17	292	45	354	128	227	355
Hourly Totals	Autoscope	179	261	72	512	59	90	42	191	17	295	44	356	138	239	377
	GEH	0.2	1.2	0.7	1.3	0.3	0.4	0.5	0.6	0.0	0.2	0.1	0.1	0.9	0.8	1.1

N Broadway @ University Ave														
Interval	Source	Southbound				Westbound			Northbound			Eastbound		
		Right	Thru	Left	Total	Thru	Left	Total	Thru	Left	Total	Thru	Left	Total
15-min	Manual	8	151	2	161	7	4	11	166	16	182	21	5	26
interval	Autoscope	8	142	3	153	7	5	12	166	16	182	22	6	28
15-min	Manual	4	148	3	155	10	3	13	157	15	172	17	4	21
interval	Autoscope	5	134	3	142	11	4	15	158	16	174	19	4	23
15-min	Manual	6	168	3	177	11	12	23	133	24	157	19	6	25
interval	Autoscope	6	157	3	166	12	9	21	132	22	154	22	7	29
15-min	Manual	6	162	6	174	9	5	14	189	17	206	30	3	33
interval	Autoscope	5	152	6	163	10	6	16	187	17	204	27	4	31
Hourly Totals	Manual	24	629	14	667	37	24	61	645	72	717	87	18	105
	Autoscope	24	585	15	624	40	24	64	643	71	714	90	21	111
	GEH	0.0	1.8	0.3	1.7	0.5	0.0	0.4	0.1	0.1	0.1	0.3	0.7	0.6

23rd St SW @ 37th Ave SW													
Interval	Source	Southbound			Westbound			Northbound			Eastbound		
		Thru	Left	Total	Thru	Left	Total	Right	Thru	Total	Thru	Left	Total
15-min interval	Manual	2	0	2	21	36	57	14	1	15	27	2	29
	Autoscope	2	0	2	15	40	55	16	1	17	22	2	24
15-min interval	Manual	3	4	7	30	37	67	23	5	28	27	1	28
	Autoscope	3	4	7	30	50	80	24	6	30	30	1	31
15-min interval	Manual	5	0	5	29	35	64	27	3	30	24	2	26
	Autoscope	5	0	5	30	38	68	27	3	30	20	2	22
15-min interval	Manual	1	1	2	29	38	67	22	1	23	32	2	34
	Autoscope	1	1	2	20	38	58	24	1	25	29	3	32
Hourly Totals	Manual	11	5	16	109	146	255	86	10	96	110	7	117
	Autoscope	11	5	16	95	166	261	91	11	102	101	8	109
	GEH	0.0	0.0	0.0	1.4	1.6	0.4	0.5	0.3	0.6	0.9	0.4	0.8

N Broadway @ 11th Ave NW														
Interval	Source	Southbound				Westbound			Northbound			Eastbound		
		Right	Thru	Left	Total	Thru	Left	Total	Thru	Left	Total	Thru	Left	Total
15-min interval	Manual	4	125	2	131	3	11	14	110	11	121	5	2	7
	Autoscope	5	126	2	133	3	11	14	118	11	129	5	2	7
15-min interval	Manual	6	121	6	133	9	7	16	108	17	125	11	3	14
	Autoscope	8	120	6	134	9	7	16	121	21	142	11	2	13
15-min interval	Manual	4	148	5	157	3.0	7	10	128	21	149	16	5	21
	Autoscope	4	150	5	159	3	6	9	131	26	157	18	5	23
15-min interval	Manual	6	168	4	178	10	5	15	165	22	187	21	3	24
	Autoscope	8	172	4	184	10	5	15	172	24	196	21	3	24
Hourly Totals	Manual	20	562	17	599	25	30	55	511	71	582	53	13	66
	Autoscope	25	568	17	610	25	29	54	542	82	624	55	12	67
	GEH	1.1	0.3	0.0	0.4	0.0	0.2	0.1	1.4	1.3	1.7	0.3	0.3	0.1

37th Ave SW @ 16th St SW															
Interval	Source	Southbound				Westbound			Northbound				Eastbound		
		Right	Thru	Left	Total	Right	Thru	Total	Right	Thru	Left	Total	Thru	Left	Total
15-min interval	Manual	48	10	46	104	47	28	75	1	6	3	10	41	59	100
	Autoscope	38	12	43	93	49	29	78	0	6	3	9	39	60	99
15-min interval	Manual	30	7	64	101	62	31	93	2	16	2	20	53	57	110
	Autoscope	26	8	57	91	62	31	93	2	13	2	17	51	57	108
15-min interval	Manual	34	5	74	113	74	36	110	0	10	0	10	40	59	99
	Autoscope	29	5	69	103	73	32	105	0	9	0	9	40	56	96
15-min interval	Manual	28	13	59	100	48	19	67	1	5	0	6	44	64	108
	Autoscope	25	13	57	95	48	19	67	1	5	1	7	45	65	110
Hourly Totals	Manual	140	35	243	418	231	114	345	4	37	5	46	178	239	417
	Autoscope	118	38	226	382	232	111	343	3	33	6	42	175	238	413
	GEH	1.9	0.5	1.1	1.8	0.1	0.3	0.1	0.5	0.7	0.4	0.6	0.2	0.1	0.2

US Hwy 2 @ 42nd St SE																	
Interval	Source	Southbound				Westbound				Northbound				Eastbound			
		Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	22	4	2	28	4	50	1	55	4	4	14	22	24	75	19	118
	Autoscope	16	5	2	23	6	49	0	55	5	4	10	19	26	72	23	121
15-min interval	Manual	17	5	2	24	2	61	2	65	0	5	3	8	11	67	26	104
	Autoscope	18	6	2	26	2	62	2	66	0	5	3	8	15	68	25	108
15-min interval	Manual	20	4	1	25	0	52	0	52	0	2	11	13	10	83	16	109
	Autoscope	17	4	1	22	0	55	0	55	0	2	9	11	14	87	17	118
15-min interval	Manual	23	11	1	35	0	47	0	47	0	3	7	10	9	63	11	83
	Autoscope	21	11	1	33	0	47	0	47	0	4	6	10	13	66	11	90
Hourly Totals	Manual	82	24	6	112	6	210	3	219	4	14	35	53	54	288	72	414
	Autoscope	72	26	6	104	8	213	2	223	5	15	28	48	68	293	76	437
	GEH	1.1	0.4	0.0	0.8	0.8	0.2	0.6	0.3	0.5	0.3	1.2	0.7	1.8	0.3	0.5	1.1

3rd St @ 5th Ave														
Interval	Source	Southbound			Westbound			Northbound			Eastbound			
		RT+Thru	Left	Total	Thru	Left	Total	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	40	10	50	30	0	30	23	2	25	2	28	14	44
	Autoscope	43	10	53	34	0	34	23	2	25	2	33	15	50
15-min interval	Manual	53	8	61	27	2	29	27	2	29	3	13	12	28
	Autoscope	52	8	60	29	1	30	26	2	28	3	14	17	34
15-min interval	Manual	40	6	46	13	5	18	34	3	37	8	21	12	41
	Autoscope	43	6	49	12	5	17	33	4	37	8	23	13	44
15-min interval	Manual	35	5	40	27	5	32	24	2	26	3	22	18	43
	Autoscope	41	3	44	21	7	28	22	2	24	3	27	19	49
Hourly Totals	Manual	168	29	197	97	12	109	108	9	117	16	84	56	156
	Autoscope	179	27	206	96	13	109	104	10	114	16	97	64	177
	GEH	0.8	0.4	0.6	0.1	0.3	0.0	0.4	0.3	0.3	0.0	1.4	1.0	1.6

46th Ave NW @ N. Broadway																	
Interval	Source	Southbound				Westbound				Northbound				Eastbound			
		Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	61	92	16	169	5	5	6	16	11	53	19	83	12	6	21	39
	Autoscope	61	101	20	182	7	5	6	18	11	53	17	81	11	7	23	41
15-min interval	Manual	71	89	8	168	6	7	9	22	7	50	10	67	6	6	19	31
	Autoscope	69	99	9	177	7	7	10	24	7	50	8	65	6	10	26	42
15-min interval	Manual	67	108	8	183	5	6	4	15	7	52	18	77	4	5	11	20
	Autoscope	63	108	9	180	5	5	4	14	10	56	17	83	4	5	12	21
15-min interval	Manual	93	122	15	230	5	4	4	13	11	66	15	92	6	6	16	28
	Autoscope	85	104	17	206	5	4	4	13	12	66	15	93	7	8	20	35
Hourly Totals	Manual	292	411	47	750	21	22	23	66	36	221	62	319	28	23	67	118
	Autoscope	278	412	55	745	24	21	24	69	40	225	57	322	28	30	81	139
	GEH	0.8	0.0	1.1	0.2	0.6	0.2	0.2	0.4	0.6	0.3	0.6	0.2	0.0	1.4	1.6	1.9

S Broadway @ 11th Ave SW																	
Interval	Source	Southbound				Westbound				Northbound				Eastbound			
		Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	12	246	4	262	17	17	36	70	9	256	16	281	19	9	12	40
	Autoscope	14	246	4	264	18	18	29	65	6	252	18	276	19	14	9	42
15-min interval	Manual	7	242	5	254	12	14	19	45	5	230	12	247	16	11	15	42
	Autoscope	8	244	6	258	12	14	17	43	6	226	11	243	15	13	11	39
15-min interval	Manual	9	212	2	223	13	12	18	43	8	265	13	286	21	6	12	39
	Autoscope	8	205	2	215	13	12	18	43	7	257	12	276	16	5	8	29
15-min interval	Manual	9	216	8	233	11	3	23	37	17	237	17	271	13	11	7	31
	Autoscope	12	210	9	231	11	4	21	36	17	221	18	256	13	12	7	32
Hourly Totals	Manual	37	916	19	972	53	46	96	195	39	988	58	1085	69	37	46	152
	Autoscope	42	905	21	968	54	48	85	187	36	956	59	1051	63	44	35	142
	GEH	0.8	0.4	0.4	0.1	0.1	0.3	1.2	0.6	0.5	1.0	0.1	1.0	0.7	1.1	1.7	0.8

S Broadway @ 31st Ave SW																	
Interval	Source	Southbound				Westbound				Northbound				Eastbound			
		Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	36	134	17	187	18	41	24	83	10	169	11	190	6	22	77	105
	Autoscope	40	148	18	206	19	40	20	79	16	163	12	191	6	22	73	101
15-min interval	Manual	49	129	24	202	34	15	27	76	7	148	7	162	12	31	55	98
	Autoscope	55	137	25	217	33	16	23	72	7	140	8	155	12	34	50	96
15-min interval	Manual	40	158	29	227	23	40	28	91	9	166	13	188	6	33	61	100
	Autoscope	46	165	26	237	23	35	26	84	14	151	13	178	6	35	50	91
15-min interval	Manual	52	144	30	226	25	29	28	82	9	154	21	184	12	31	50	93
	Autoscope	55	148	31	234	25	32	21	78	10	144	18	172	11	33	47	91
Hourly Totals	Manual	177	565	100	842	100	125	107	332	35	637	52	724	36	117	243	396
	Autoscope	196	598	100	894	100	123	90	313	47	598	51	696	35	124	220	379
	Difference	1.4	1.4	0.0	1.8	0.0	0.2	1.7	1.1	1.9	1.6	0.1	1.1	0.2	0.6	1.5	0.9

N Broadway @ 4th Ave NW																
Interval	Source	Southbound				Westbound			Northbound				Eastbound			
		Right	Thru	Left	Total	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	37	198	5	240	28	4	32	11	182	27	220	20	23	21	64
	Autoscope	32	197	6	235	22	4	26	12	193	26	231	22	21	19	62
15-min interval	Manual	48	224	1	273	30	5	35	14	173	23	210	19	13	14	46
	Autoscope	43	208	4	255	23	6	29	20	155	28	203	21	10	10	41
15-min interval	Manual	31	202	5	238	15	2	17	22	174	12	208	10	17	12	39
	Autoscope	32	192	6	230	17	1	18	24	164	15	203	8	17	13	38
15-min interval	Manual	17	175	4	196	22	3	25	17	186	22	225	9	23	23	55
	Autoscope	15	174	5	194	21	3	24	16	185	28	229	10	22	24	56
Hourly Totals	Manual	133	799	15	947	95	14	109	64	715	84	863	58	76	70	204
	Autoscope	122	771	21	914	83	14	97	72	697	97	866	61	70	66	197
	GEH	1.0	1.0	1.4	1.1	1.3	0.0	1.2	1.0	0.7	1.4	0.1	0.4	0.7	0.5	0.5

S Broadway @ 27th Ave SW															
Interval	Source	Southbound			Westbound				Northbound			Eastbound			
		Right	Thru	Total	Right	Thru	Left	Total	Right	Thru	Total	Right	Left	Total	
15-min interval	Manual	12	216	228	N/A				32	85	117	26	17	43	
	Autoscope	11	219	230					29	83	112	24	19	43	
15-min interval	Manual	8	205	213					42	90	132	17	15	32	
	Autoscope	6	208	214					42	91	133	18	17	35	
15-min interval	Manual	11	248	259					49	90	139	18	12	30	
	Autoscope	11	257	268					49	91	140	19	12	31	
15-min interval	Manual	8	207	215					39	62	101	11	13	24	
	Autoscope	7	212	219					36	65	101	11	13	24	
Hourly Totals	Manual	39	876	915					162	327	489	72	57	129	
	Autoscope	35	896	931					156	330	486	72	61	133	
	GEH	0.7	0.7	0.5					0.5	0.2	0.1	0.0	0.5	0.3	

W Burdick Expy @ 6th St SW															
Interval	Source	Southbound			Westbound				Northbound			Eastbound			
		RT+Thru	Left	Total	Right	Thru	Left	Total	RT+Thru	Left	Total	Right	Thru	Left	Total
15-min interval	Manual	42	33	75	26	21	11	58	50	7	57	8	110	9	127
	Autoscope	44	29	73	21	23	10	54	47	6	53	6	119	8	133
15-min interval	Manual	46	27	73	15	19	5	39	47	0	47	1	70	5	76
	Autoscope	45	19	64	10	13	6	29	44	0	44	1	74	5	80
15-min interval	Manual	30	15	45	21	57	8	86	41	0	41	5	50	8	63
	Autoscope	34	15	49	23	72	7	102	40	0	40	4	54	9	67
15-min interval	Manual	21	22	43	19	52	14	85	35	4	39	2	59	3	64
	Autoscope	22	25	47	13	60	13	86	29	4	33	1	62	2	65
Hourly Totals	Manual	139	97	236	81	149	38	268	173	11	184	16	289	25	330
	Autoscope	145	88	233	67	168	36	271	160	10	170	12	309	24	345
	GEH	0.5	0.9	0.2	1.6	1.5	0.3	0.2	1.0	0.3	1.1	1.1	1.2	0.2	0.8