

APPENDIX B
LEVEL OF SERVICE ANALYSIS

PAGE NO.

Existing Conditions Level of Service Report	B-1
Projected 2025 Traffic Volumes Level of Service Report.....	B-6

Existing Conditions Level of Service Report

Background

As a part of the long range transportation plan update, a detailed analysis of 23 intersections during the PM peak period were analyzed. The analysis includes a determination of the level of service for each intersection. The following intersections were selected to be analyzed:

- 32nd Ave. S. & I-29 West Ramp
- 32nd Ave. S. & I-29 East Ramp
- 32nd Ave. S. & S. 34th St.
- 32nd Ave. S. & Columbia Rd.
- 32nd Ave. S. & Washington St.
- 28th Ave. S. & Washington St.
- 24th Ave. S. & S. 20th St.
- Cambell Dr. & Washington St.
- 17th Ave. S. & 42nd St.
- 17th Ave. S. & Columbia Rd.
- 17th Ave. S. & Washington St.
- DeMers Ave. & 42nd St.
- DeMers Ave. & Columbia Rd.
- DeMers Ave. & Washington St.
- 4th Ave. & Belmont Rd.
- Gateway Dr. & 47th St.
- Gateway Dr. & I-29 West Ramp
- Gateway Dr. & I-29 East Ramp
- Gateway Dr. & Columbia Rd.
- Gateway Dr. & Washington St.
- Hwy 220 & US 2 (EGF)
- 1st Street and 3rd Avenue (EGF)
- 4th Street and DeMers Ave. (EGF)
- DeMers Ave. & I-29 Ramps

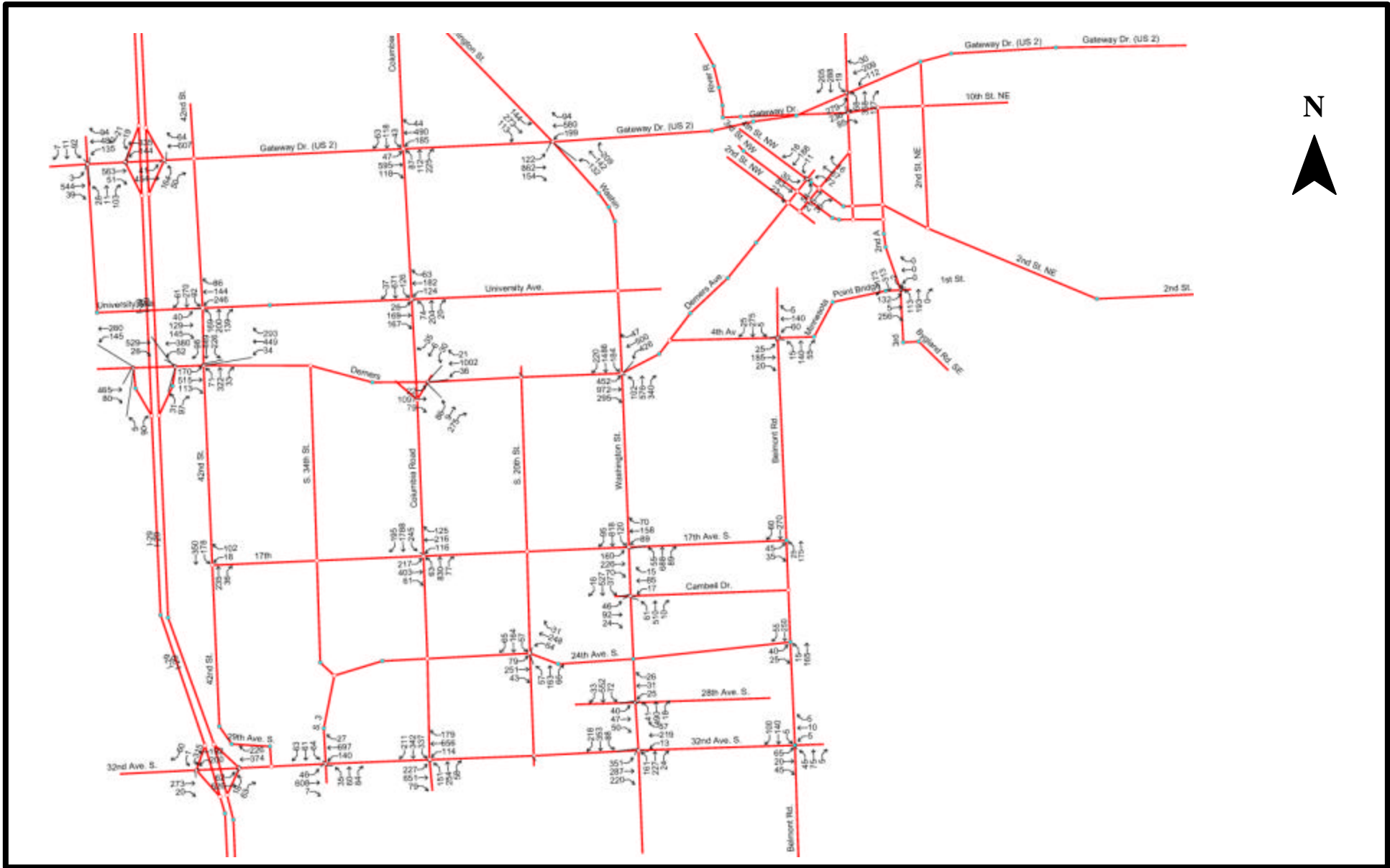
Existing Conditions

The GF/EGF MPO provided turning movement counts for each of the intersections to be analyzed. The PM peak hour turning movements for these intersections were calculated from the turning movement counts. Figure 1 illustrates the existing PM peak hour turning movements.

The existing lane configuration was determined from the aerial photographs provided by the GF/EGF MPO. Figure 2 illustrates the existing lane configuration for the intersections included in this analysis.

Intersection Capacity Analysis

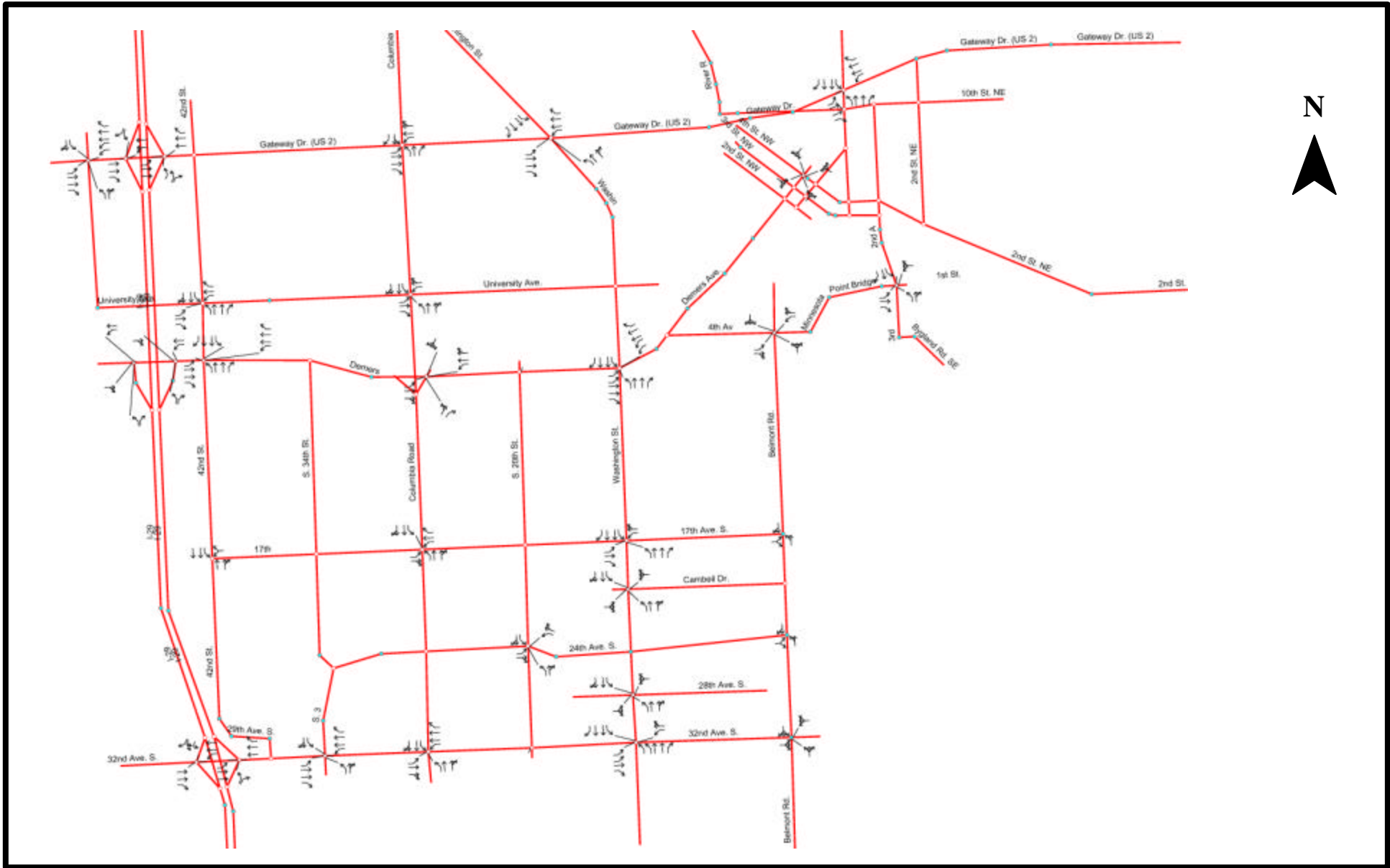
The level of service (LOS) for each intersection, was determined using the methodology described in the 2000 Highway Capacity Manual. Level of service is a qualitative system of ranking intersection performance using average stop delay per vehicle as the evaluation criteria. Level of service 'A' is considered desirable, level of service 'F' is considered unacceptable congestion. For planning purposes, level of service 'C' or better is considered acceptable. The 2000 Highway Capacity Manual does not support right turn on red calculations. Therefore, the congestion at intersections that currently experience heavy right turn on red volumes are sometimes over estimated. The GF/EGF MPO provided the existing signal timings and coordination for the signals. These timings were then input into Synchro traffic software. Table 1 illustrates the results from the LOS analysis.




LONG RANGE TRANSPORTATION PLAN UPDATE
 Grand Forks - East Grand Forks Metropolitan Planning Organization

Existing Turning Movements

Figure 3.1




LONG RANGE TRANSPORTATION PLAN UPDATE
 Grand Forks - East Grand Forks Metropolitan Planning Organization

Existing Turning Movements

Figure 3.2

Table 1 Grand Forks PM Peak Intersection Levels of Service

Intersection	HCM LOS
32nd Ave. S. & I-29 West Ramp	B
32nd Ave. S. & I-29 East Ramp	A
32nd Ave. S. & S. 34th St.	B
32nd Ave. S. & Columbia Rd.	C
32nd Ave. S. & Washington St.	C
28th Ave. S. & Washington St.	B
24th Ave. S. & S. 20th St.	A
Cambell Dr. & Washington St.	B
17th Ave. S. & 42nd St.	A
17th Ave. S. & Columbia Rd.	F
17th Ave. S. & Washington St.	C
DeMers Ave. & 42nd St.	C
DeMers Ave. & Columbia Rd.	B
DeMers Ave. & Washington St.	E
DeMers Ave. & 4th St. NW	A
DeMers Ave. and I-29 East Ramp	B
DeMers Ave. and I-29 West Ramp	C
4th Ave. & Belmont Rd.	A
Gateway Dr. & 47th St.	B
Gateway Dr. & I-29 West Ramp	A
Gateway Dr. & I-29 East Ramp	A
Gateway Dr. & Columbia Rd.	B
Gateway Dr. & Washington St.	C
Hwy 220 & US 2	B
1st St. & 3rd Ave.	A
4th St. and Demers Ave.	A

As illustrated in Table 1, all of the intersections operate at a LOS ‘C’ or better for the PM peak hour traffic volumes, except Washington and DeMers Ave. and 17th Ave. S. & Columbia Road.

Table 2 on the following page illustrates the level of service for each turning movement, which is ‘D’ or lower. As illustrated in the Figure, some of the intersections have individual movements of ‘D’ or lower, but only Washington and DeMers Ave. and 17th Ave. S. & Columbia Road have individual movements of ‘F’.

The intersections will be further evaluated in the long range transportation plan update with recommendations to improve the LOS to ‘C’ or better. Some of these recommendations may include changes in signal timing, signal coordination, additional through lanes, auxiliary lanes, and grade separations.

Table 2 Grand Forks PM Peak Turning Movement Levels of Service D or Lower

Intersection	HCM LOS											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
32nd Ave. S. & I-29 West Ramp												
32nd Ave. S. & I-29 East Ramp							D		D			
32nd Ave. S. & S. 34th St.												
32nd Ave. S. & Columbia Rd.										D		
32nd Ave. S. & Washington St.	D						D					D
28th Ave. S. & Washington St.												
24th Ave. S. & S. 20th St.												
Cambell Dr. & Washington St.		D										
17th Ave. S. & 42nd St.				E								
17th Ave. S. & Columbia Rd.	D	F		D	D	D	E			D	F	
17th Ave. S. & Washington St.												
DeMers Ave. & 42nd St.											D	
University and 42nd St.												
DeMers Ave. & Columbia Rd.									D			
DeMers Ave. & Washington St.	D	F	D	F	D	D	E				F	
DeMers Ave. & 4th St. NW												
DeMers Ave. and I-29 East Ramp												
DeMers Ave. and I-29 West Ramp				E								
4th Ave. & Belmont Rd.												
Gateway Dr. & 47th St.							D	E		D		
Gateway Dr. & I-29 West Ramp										D		D
Gateway Dr. & I-29 East Ramp							D		D			
Gateway Dr. & Columbia Rd.									D			
Gateway Dr. & Washington St.								D			D	D
Hwy 220 & US 2												
1st St. & 3rd Ave.												
4th St. and Demers Ave.												

Projected 2025 Traffic Volumes Level of Service Report

Background

A detailed analysis of 30 intersections for the 12 different group scenarios for the projected 2025 PM peak period were analyzed. The analysis includes a determination of the level of service for each intersection. The following intersections were selected to be analyzed:

- 32nd Ave. S. & I-29 West Ramp
- 32nd Ave. S. & I-29 East Ramp
- 32nd Ave. S. & Columbia Rd.
- 32nd Ave. S. & Washington St.
- 32nd Ave. S. & Belmont Rd.
- 17th Ave. S. & Columbia Rd.
- 17th Ave. S. & Washington St.
- 17th Ave. S. & Belmont Rd.
- DeMers Ave. & Washington St.
- DeMers Ave. & 4th St. NW
- DeMers Ave. & I-29 East Ramp
- DeMers Ave. & I-29 West Ramp
- Gateway Dr. & I-29 West Ramp
- Gateway Dr. & I-29 East Ramp
- Gateway Dr. & Columbia Rd.
- Gateway Dr. & Washington Rd.
- University Ave. & Columbia Rd.
- US 2 & 4th St. W. North
- US 2 & 4th St. W. South
- Hwy 220 & US 2.
- 1st St. & 2nd Ave.
- 47th Ave. & I-29 West Ramp
- 47th Ave. & I-29 East Ramp
- 47th Ave. & Columbia Rd.
- 47th Ave. & Columbia St.
- Merrifield Rd. & I-29 West Ramp
- Merrifield Rd. & I-29 East Ramp
- Merrifield Rd. & Columbia Road
- Merrifield Rd. & Washington St.
- Rinehart Dr. & Bygland Rd.

Intersection Capacity Analysis

The level of service (LOS) for each intersection, was determined using the methodology described in Appendix N of Highway Performance Monitoring System (HPMS) Field Manual. Level of service is a qualitative system of ranking intersection performance using average stop delay per vehicle as the evaluation criteria. Level of service 'A' is considered desirable, level of service 'F' is considered unacceptable congestion. For planning purposes, level of service 'C' or better is considered acceptable. The procedures used in HPMS for determining capacity conform to the Highway Capacity Manual 2000 (HCM 2000). The capacity analysis using HPMS is for system analysis, not project level analysis.

For all intersection with a level or service 'D' or worse using the HPMS methodology was further evaluated using the methodology described in the 2000 Highway Capacity Manual to provide a more detailed analysis. The projected turning movement volumes for these intersections, were developed using the average daily traffic volumes from each group scenario. The existing turning volumes, the existing directional distribution, and the existing percent of the average daily traffic occurring during the PM peak hour (k-factor), was used to determine the projected turning volumes for each intersection. However, the k-factors were adjusted for consistency and were limited to 8-10%. TMOVES software was then used to calculate the turning movements based upon the future traffic volumes and the existing intersection characteristics. The year 2025 projected turning movements for Group 2 – 32nd Avenue Bridge option, which is the preferred improvement group, are shown in Table 1. Table 2 illustrates the forecasted year 2025 average daily traffic volumes used to calculate the LOS for each intersection. Table 3 illustrates the results from the LOS analysis.

Table 1 – Group 2 32nd Avenue Bridge

Intersections	Turning Movements (vehicles per hour)											
	Eastbound			Westbound			Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
32nd Ave. S. & Columbia Rd.	410	1065	150	205	960	335	410	775	125	430	1195	390
17th Ave. S. & Columbia Rd.	110	270	50	135	135	90	70	1055	125	240	2210	130
17th Ave. S. & Washington St.	260	215	60	50	150	120	50	865	65	170	1055	165
DeMers Ave. & Washington St.	370	910	270	495	505	50	105	605	405	190	1510	195
University Ave. & Columbia Rd.	40	260	255	235	350	115	240	635	65	230	1205	65
Gateway Dr. & Washington St.	155	1130	160	250	770	145	140	175	265	225	340	145

Table 2 – 2025 Forecasts

Intersection	Leg	Group 1 17th Ave Bridge	Group 1 Elks Dr Bridge	Group 1 32nd Ave Bridge	Group 1a	Group 1b 17th Ave Bridge	Group 1b Elks Dr Bridge	Group 1b 32nd Ave Bridge	Group 2 17th Ave Bridge	Group 2 Elks Dr Bridge	Group 2 32nd Ave Bridge	Group 3	Group 4
32nd Ave S and I-29	East Leg	22,700	22,900	22,700	25,400	23,600	23,700	23,800	30,700	30,800	30,900	23,100	30,500
	42nd St North of 32nd Ave	3,100	3,000	3,000	2,800	3,200	3,200	3,200	2,600	2,600	2,600	3,000	2,700
	32nd Ave West of 42nd St	26,700	26,900	26,700	28,500	27,600	27,700	27,800	32,200	32,400	32,500	26,600	31,900
	West Leg	17,500	16,700	16,800	17,000	17,600	17,700	17,800	16,600	16,800	16,900	17,600	16,600
	NB Off Ramp	5,400	5,300	5,300	5,400	5,600	5,600	5,500	3,500	3,500	3,400	5,200	3,600
	NB On Ramp	4,900	5,800	5,800	6,600	5,000	5,100	5,100	8,000	8,000	8,000	4,900	8,000
	EB to NB On Loop Ramp	1,700	1,700	1,600	1,600	1,700	1,700	1,700	1,700	1,700	1,700	1,800	1,800
	SB Off Ramp	7,200	7,100	7,100	7,100	7,300	7,300	7,200	8,300	8,300	8,300	7,300	8,400
	WB to SB On Loop Ramp	2,000	2,000	2,000	2,500	2,700	2,700	2,700	2,600	2,600	2,600	2,000	2,700
	SB On Ramp	2,600	2,600	2,900	2,600	2,800	2,900	2,900	1,200	1,200	1,200	2,600	1,200
32nd Ave S and Columbia Rd	North Leg	38,100	38,600	39,000	38,900	35,000	35,700	36,200	38,700	38,700	39,300	38,800	39,700
	East Leg	29,600	29,500	31,000	34,200	28,900	28,400	30,500	32,400	32,700	34,600	28,600	31,200
	South Leg	26,400	26,500	26,500	26,600	22,700	22,800	22,900	31,600	31,700	31,800	26,400	31,600
	West Leg	28,700	28,800	29,400	33,000	28,600	28,600	29,500	36,500	36,700	37,600	28,700	36,200
32nd Ave S and Washington St	North Leg	22,300	23,200	22,200	22,200	22,800	23,400	22,800	22,900	23,500	22,300	23,100	22,400
	East Leg	10,400	10,900	14,500	14,700	10,400	10,700	15,300	11,100	11,400	15,000	8,900	10,100
	South Leg	18,800	19,000	19,600	20,000	20,400	20,400	20,800	19,100	19,400	20,200	19,100	19,300
	West Leg	17,100	17,900	20,200	21,800	16,200	16,000	18,600	19,500	19,800	22,200	16,300	18,000
32nd Ave S and Belmont	North Leg	7,600	7,700	5,900	6,000	7,800	7,600	5,600	7,600	7,700	6,100	5,100	6,000
	East Leg	200	200	9,600	9,600	200	200	9,600	200	200	9,600	200	200
	South Leg	5,100	5,000	4,400	4,600	5,100	4,800	5,000	5,500	5,400	4,800	4,900	5,400
	West Leg	5,600	6,000	9,800	9,900	5,600	5,800	10,500	6,100	6,400	10,200	4,000	5,100
17th Ave S and Columbia Rd	North Leg	41,200	41,600	41,300	41,800	37,200	37,900	37,700	42,000	42,200	42,200	43,300	44,100
	East Leg	12,100	11,900	11,800	11,100	11,200	11,300	10,300	11,700	11,500	11,100	12,200	11,300
	South Leg	40,600	40,700	40,400	40,400	36,500	37,200	35,700	41,100	41,000	40,900	43,000	42,900
	West Leg	9,000	8,600	8,600	8,400	8,500	8,100	8,200	9,000	8,500	8,500	8,500	8,500
17th Ave S and Washington St	North Leg	29,400	29,400	29,400	29,200	30,500	30,000	30,000	30,100	29,400	29,200	29,800	29,800
	East Leg	9,400	9,100	8,700	8,500	9,300	9,200	9,800	9,400	9,100	8,500	8,900	8,900
	South Leg	24,000	24,700	24,000	23,900	25,300	25,500	25,900	24,300	24,900	23,800	24,600	24,900
	West Leg	10,900	9,900	10,200	10,000	10,500	9,900	10,200	11,100	9,900	10,000	10,700	10,400
17th Ave S and Belmont	North Leg	5,600	5,000	5,200	5,300	5,900	5,000	5,100	5,700	5,100	5,400	7,400	7,500
	East Leg	9,800				9,700			10,000				
	South Leg	12,700	6,800	7,100	7,200	12,900	6,500	5,600	12,900	6,800	7,200	8,300	8,300
	West Leg	3,300	1,500	1,100	900	3,100	1,600	1,800	3,300	1,500	900	1,300	1,200

Intersection	Leg	Group 1 17th Ave Bridge	Group 1 Elks Dr Bridge	Group 1 32nd Ave Bridge	Group 1a	Group 1b 17th Ave Bridge	Group 1b Elks Dr Bridge	Group 1b 32nd Ave Bridge	Group 2 17th Ave Bridge	Group 2 Elks Dr Bridge	Group 2 32nd Ave Bridge	Group 3	Group 4
DeMers Ave and I-29	East Leg	15,200	15,200	15,300	15,600	15,400	15,500	15,500	15,000	15,200	15,100	15,400	15,400
	West Leg	13,200	13,200	13,200	13,300	13,100	13,300	13,200	13,100	13,100	13,000	13,200	13,200
	Between Ramps	13,600	13,500	13,600	13,500	13,500	13,700	13,700	13,200	13,300	13,100	13,600	13,400
	NB Off Ramp	1,900	2,000	2,000	2,400	2,000	2,100	2,100	2,100	2,100	2,100	1,900	2,200
	NB On Ramp	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,400	2,300	2,300
	SB Off Ramp	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200
	SB On Ramp	2,200	2,100	2,100	2,100	2,200	2,200	2,200	1,800	1,800	1,800	2,200	1,900
DeMers Ave and Washington St	North Leg	29,200	29,100	29,300	29,000	29,800	29,700	29,600	29,200	29,200	29,000	29,500	29,500
	East Leg	24,700	25,800	25,800	25,800	25,100	25,700	25,500	24,800	25,800	25,600	28,800	28,600
	South Leg	33,200	34,000	34,100	34,000	34,300	34,400	34,200	33,500	33,900	34,100	34,700	34,700
	West Leg	23,000	23,300	23,200	23,400	23,000	23,500	23,600	22,700	23,100	23,400	25,600	25,300
DeMers Ave and 4th St W (EGF)	Northwest Leg	11,900	11,900	11,900	12,000	12,000	12,000	12,000	11,900	12,000	12,000	12,300	12,300
	Northeast Leg	4,000	3,900	3,900	4,000	4,100	3,900	3,900	4,100	4,000	4,000	4,000	3,900
	Southeast Leg	7,500	7,600	7,600	7,600	7,500	7,700	7,600	7,500	7,700	7,600	8,000	8,000
	Southwest Leg	10,300	10,300	10,400	10,400	10,500	10,500	10,500	10,400	10,400	10,400	10,500	10,400
University Ave and Columbia Rd	North Leg	24,800	24,900	24,800	25,000	23,700	23,800	23,800	25,300	25,400	25,400	24,700	25,200
	East Leg	14,500	14,200	14,400	13,900	14,700	14,600	14,300	14,400	14,200	14,000	14,500	14,100
	South Leg	28,600	28,800	29,000	28,900	27,400	27,500	27,500	29,200	29,400	29,400	28,900	29,500
	West Leg	13,600	13,500	13,400	13,300	13,500	13,400	13,200	13,800	13,700	13,500	13,400	13,700
Gateway Dr and I-29	East Leg	26,400	26,400	26,400	26,000	26,900	26,900	26,800	26,000	26,000	25,900	26,500	25,900
	West Leg	26,300	27,300	27,300	27,300	26,300	26,400	26,300	27,400	27,400	27,500	26,400	27,400
	Between Ramps	26,600	27,500	27,500	27,100	26,800	26,800	26,700	27,100	27,100	27,200	26,600	27,100
	NB Off Ramp	7,200	8,200	8,200	8,200	7,400	7,400	7,400	8,100	8,100	8,300	7,200	8,100
	NB On Ramp	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
	SB Off Ramp	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	EB to SB On Ramp	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400
WB to SB On	2,400	2,400	2,400	2,100	2,700	2,700	2,600	2,000	1,900	2,000	2,500	1,900	
Gateway Dr and Columbia Rd	North Leg	3,900	3,900	3,900	3,900	3,800	3,800	3,800	3,800	3,900	3,900	3,800	3,800
	East Leg	29,100	29,100	28,900	28,800	29,000	29,000	28,900	29,100	29,100	29,000	29,500	29,600
	South Leg	11,800	11,800	11,700	12,100	11,200	11,200	11,200	12,200	12,200	12,200	11,700	12,100
	West Leg	26,600	26,600	26,500	26,000	26,900	27,000	26,800	26,200	26,200	26,100	27,000	26,500
Gateway Ave and Washington St	North Leg	13,100	13,200	13,200	13,200	13,200	13,200	13,300	13,100	13,100	13,200	13,200	13,300
	East Leg	31,100	31,100	31,000	31,000	30,900	31,000	30,900	31,100	31,200	31,000	31,500	31,500
	South Leg	14,800	14,800	14,900	14,800	14,900	14,900	15,000	14,800	14,800	14,800	15,000	15,000
	West Leg	27,900	27,900	27,800	27,700	27,700	27,800	27,700	27,800	27,900	27,800	28,400	28,300

Intersection	Leg	Group 1 17th Ave Bridge	Group 1 Elks Dr Bridge	Group 1 32nd Ave Bridge	Group 1a	Group 1b 17th Ave Bridge	Group 1b Elks Dr Bridge	Group 1b 32nd Ave Bridge	Group 2 17th Ave Bridge	Group 2 Elks Dr Bridge	Group 2 32nd Ave Bridge	Group 3	Group 4
US 2 and 4th St W (EGF)	North Leg	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,700	5,700
	East Leg	19,000	19,100	19,000	18,800	18,900	19,000	18,900	19,000	19,000	18,900	19,200	19,200
	South Leg	3,600	3,600	3,600	3,700	3,600	3,600	3,600	3,600	3,600	3,700	3,900	3,900
	West Leg	23,200	23,200	23,100	23,100	23,000	23,200	23,000	23,200	23,200	23,100	23,700	23,700
	4th St Between Ramps	5,100	5,100	5,100	5,100	5,100	5,200	5,100	5,100	5,200	5,200	5,300	5,300
	US 2 Between Ramps	15,600	15,700	15,600	15,400	15,500	15,600	15,500	15,600	15,600	15,400	15,800	15,800
	EB Off Ramp	4,300	4,300	4,300	4,400	4,300	4,300	4,300	4,300	4,300	4,400	4,400	4,400
	EB On Ramp	700	700	700	700	700	700	700	700	700	700	700	700
	WB Off Ramp	700	700	700	700	700	700	700	700	700	700	700	700
	WB On Ramp	5,300	5,400	5,400	5,400	5,300	5,400	5,400	5,300	5,400	5,400	5,600	5,600
Hwy 220 and US 2 (EGF)	North Leg	15,800	15,800	15,800	15,800	15,800	15,800	15,800	15,800	15,800	15,800	15,800	15,800
	East Leg	16,500	16,400	16,300	16,200	16,500	16,400	16,300	16,500	16,400	16,300	16,500	16,500
	South Leg	6,300	6,300	6,200	6,200	6,300	6,300	6,300	6,300	6,300	6,300	6,200	6,200
	West Leg	18,800	18,700	18,700	18,600	18,800	18,700	18,600	18,800	18,700	18,600	18,900	18,800
1st St and 2nd Ave (EGF)	North Leg	8,200	8,400	8,300	8,400	8,200	8,500	8,400	8,200	8,400	8,400	9,200	9,300
	South Leg	10,300	11,300	11,400	11,400	10,500	11,400	11,400	10,300	11,300	11,400	17,500	17,500
	West Leg	4,100	4,700	4,900	4,900	4,200	4,800	5,000	4,000	4,700	4,900	10,300	10,300
47th Ave and I-29	East Leg	10,300	10,200	10,600	8,900	10,200	10,300	10,300				10,000	
	West Leg	200	200	200	200	200	200	200				200	
	Between Ramps	5,000	5,000	5,200	4,200	4,700	4,900	4,900				4,900	
	NB Off Ramp	700	700	700	700	700	700	700				800	
	NB On Ramp	4,600	4,600	4,600	4,100	4,800	4,800	4,800				4,300	
	SB Off Ramp	3,500	3,500	3,800	3,300	3,800	3,900	3,900				3,500	
	SB On Ramp	1,200	1,200	1,200	800	800	800	800				1,300	
47th Ave and Columbia	North Leg	23,500	23,500	23,500	22,800	20,500	20,600	20,500	27,700	27,600	27,800	23,800	27,700
	East Leg	8,300	8,300	8,600	7,800	9,400	9,500	9,600	7,300	7,300	7,200	8,000	7,200
	South Leg	15,100	15,200	15,100	15,200	14,200	14,300	14,200	16,700	16,700	16,800	15,400	16,800
	West Leg	10,500	10,400	10,800	9,200	10,300	10,400	10,500	5,800	5,800	5,800	10,100	5,800
47th Ave and Washington	North Leg	13,200	13,100	13,200	12,700	14,900	14,800	14,900	12,800	12,900	12,800	13,300	13,200
	East Leg	8,600	8,600	8,900	8,300	8,800	9,000	9,000	7,900	7,900	7,800	8,300	7,800
	South Leg	12,400	12,300	12,400	12,000	12,900	12,700	12,800	12,100	12,100	12,000	12,600	12,400
	West Leg	8,700	8,700	9,000	8,300	9,900	10,000	10,100	7,900	7,800	7,800	8,400	7,800
Merrifield Rd and I-29	East Leg	8,400	8,300	8,300	7,900	8,600	8,600	8,600	9,200	9,100	9,100	8,300	9,300
	West Leg	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,500	2,500	2,500	2,300	2,500
	Between Ramps	5,000	5,000	5,000	4,900	5,300	5,200	5,300	5,800	5,700	5,700	5,000	5,800
	NB Off Ramp	2,200	2,200	2,200	1,800	2,200	2,200	2,200	2,300	2,300	2,400	2,100	2,300
	NB On Ramp	2,200	2,200	2,100	2,100	2,300	2,200	2,200	2,200	2,200	2,200	2,200	2,300
	SB Off Ramp	1,600	1,500	1,500	1,500	1,900	1,800	1,800	1,600	1,600	1,600	1,500	1,700
	SB On Ramp	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,800	2,800	2,800	2,200	2,800

Intersection	Leg	Group 1 17th Ave Bridge	Group 1 Elks Dr Bridge	Group 1 32nd Ave Bridge	Group 1a	Group 1b 17th Ave Bridge	Group 1b Elks Dr Bridge	Group 1b 32nd Ave Bridge	Group 2 17th Ave Bridge	Group 2 Elks Dr Bridge	Group 2 32nd Ave Bridge	Group 3	Group 4
Merrifield Rd and Columbia Rd	North Leg	3,700	3,600	3,600	3,600	3,500	3,400	3,400	4,800	4,800	4,800	3,900	5,000
	East Leg	7,300	7,300	7,200	6,800	7,300	7,200	7,200	6,900	6,800	6,800	7,500	7,300
	South Leg	700	700	700	700	700	700	700	700	700	700	700	700
	West Leg	6,500	6,500	6,400	6,100	6,500	6,400	6,400	7,300	7,300	7,300	6,500	7,500
Merrifield Rd and Washington St	North Leg	5,800	5,800	5,800	5,400	5,900	5,800	5,900	5,400	5,400	5,400	5,900	5,600
	East Leg	2,500	2,400	2,200	2,200	2,500	2,400	2,100	2,600	2,400	2,200	3,100	3,200
	South Leg	5,100	5,200	5,100	5,100	5,100	5,100	5,100	5,100	5,200	5,100	5,100	5,100
	West Leg	7,200	7,200	7,100	6,700	7,100	7,100	7,100	6,800	6,700	6,700	7,400	7,200

Table 3 Year 2025 PM Peak Hour Intersection Levels of Service

Intersection	Group 1 17th Ave Bridge	Group 1 Elks Dr Bridge	Group 1 32nd Ave Bridge	Group 1a	Group 1b 17th Ave Bridge	Group 1b Elks Dr Bridge	Group 1b 32nd Ave Bridge	Group 2 17th Ave Bridge	Group 2 Elks Dr Bridge	Group 2 32nd Ave Bridge	Group 3	Group 4
32nd Ave. S. & I-29 West Ramp	A	A	A	A	A	A	A	B	B	B	A	B
32nd Ave. S. & I-29 East Ramp	A	A	A	A	A	A	A	A	A	A	A	A
32nd Ave. S. & Columbia Rd.	C	C	D	C	D	D	D	C	C	C	C	C
32nd Ave. S. & Washington St.	A	A	B	A	A	A	B	A	A	A	A	A
32nd Ave. S. & Belmont Rd.	A	A	B	B	A	A	B	A	A	B	A	A
17th Ave. S. & Columbia Rd.	B	B	B	A	C	C	B	B	A	A	B	A
17th Ave. S. & Washington St.	C	B	B	B	C	B	B	C	B	B	B	B
17th Ave. S. & Belmont Rd.	C	A	A	A	C	A	A	C	A	A	A	A
DeMers Ave. and I-29 West Ramp	B	A	B	B	B	B	B	B	B	B	B	B
DeMers Ave. and I-29 East Ramp	A	A	A	A	A	A	A	A	A	A	A	A
DeMers Ave. & Washington St.	D	D	D	D	D	E	D	D	D	D	C	C
DeMers Ave. & 4th St. NW (EGF)	B	B	B	B	B	B	B	B	B	B	B	B
Universtiy Ave. & Columbia Rd.	C	C	C	C	C	C	C	C	C	C	C	C
Gateway Dr. & I-29 West Ramp	A	A	A	A	A	A	A	A	A	A	A	A
Gateway Dr. & I-29 East Ramp	B	B	B	B	B	B	B	B	B	B	B	B
Gateway Dr. & Columbia Rd.	C	C	C	C	C	C	C	C	C	C	C	C
Gateway Dr. & Washington St.	C	C	C	C	C	C	C	C	C	C	C	C
US 2 & 4th St W North (EGF)	A	A	A	A	A	A	A	A	A	A	A	A
US 2 & 4th St W South (EGF)	A	A	A	A	A	A	A	A	A	A	A	A
Hwy 220 & US 2 (EGF)	A	A	A	A	A	A	A	A	A	A	A	A
1st St. & 2nd Ave. (EGF)	A	A	A	A	A	A	A	A	A	A	D	D
47th Ave & I-29 West Ramp	A	A	A	A	A	A	A	N/A	N/A	N/A	A	N/A
47th Ave & I-29 East Ramp	A	A	A	A	A	A	A	N/A	N/A	N/A	A	N/A
47th Ave & Columbia Rd.	C	C	C	B	C	C	C	C	C	C	C	C
47th Ave & Washington St.	A	A	A	A	A	A	A	A	A	A	A	A
Merrifield Rd & I-29 West Ramp	A	A	A	A	A	A	A	A	A	A	A	A
Merrifield Rd & I-29 East Ramp	A	A	A	A	A	A	A	A	A	A	A	A
Merrifield Rd & Columbia Rd	A	A	A	A	A	A	A	A	A	A	A	A
Merrifield Rd & Washington St.	A	A	A	A	A	A	A	A	A	A	A	A
Rinehart and Bygland	A	A	A	A	A	A	A	A	A	A	C	C

*Highlighted Rows Level of Service was calculated using the 2000 Highway Capacity Manual Methodology