

Appendix A-3: Traffic Operations Technical Memorandum and Interstate Access Modification Request Process Summary

Appendix A-3: Traffic Operations Technical Memorandum and Interstate Access Modification Request Process Summary are companion documents to the Supplemental Final Environmental Impact Statement containing Chapter 3 (Transportation). Metropolitan Council and the United States Department of Transportation - Federal Transit Administration are committed to ensuring that information is available in appropriate alternative formats to meet the requirements of persons who have a disability. If you require an alternative version of this file, please contact <u>FTAWebAccessibility@dot.gov</u>.

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Documents include:

- Traffic Operations Technical Memorandum March 2025 (this document contains technical appendices, if you
 require additional accessibility support please see contact information above)
- Interstate Access Modification Request Process Summary

The following documents were published with the Supplemental Draft Environmental Impact Statement and are available online at https://metrocouncil.org/Transportation/Projects/Light-Rail-Projects/METRO-Blue-Line-Extension/Publications-And-Resources/Environmental/SDEIS/BLE_SDEIS_Appendix-A-3-Traffic-and-Aviation-Docume.aspx:

- Crystal Airport Runway Protection Zone Technical Memorandum
- Crystal Airport Runway Protection Zone Exhibits
- Crystal Airport (MIC) Runway Protection Zone FAA Correspondence
- Crystal Airport MnDOT Safety Zones and Clear Zones Exhibit



Traffic Operations Technical Report

Supplemental Final Environmental Impact Statement

11/26/2024

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1.0 Introduction

The METRO Blue Line Extension project (Project) is proposed to be a 13.5-mile Light Rail Transit (LRT) line with 13 new stations that will operate from downtown Minneapolis through Robbinsdale, Crystal, and Brooklyn Park. The Project will serve as an extension of the METRO Blue Line (Hiawatha Corridor) and will also connect to the METRO Green Line in downtown Minneapolis.

A traffic analysis was previously completed for the 2016 Alignment that included the BNSF Railway Monticello Subdivision. To advance the Project without using railroad right-of-way, a modified route was approved by Hennepin County and the Metropolitan Council in 2022. A preliminary traffic analysis was completed in September 2022 for the Supplemental Draft Environmental Impact Statement (SDEIS).

The traffic analysis presented in this technical report is based on the Project scope as presented to the Metropolitan Council through January 2024 and is being used to inform the Supplemental Final Environmental Impact Statement (SFEIS).

1.1 Purpose of Report

This technical report has been prepared in support of the Project SFEIS. The objective of the traffic analysis is to define the scope of the Project improvements and evaluate the potential traffic impacts of the Project, including the following:

- Evaluate the Project's impacts on traffic operations at existing and proposed intersections and atgrade rail crossings along or near the Project Alignment.
- Identify proposed improvements to address operational issues identified in the traffic analysis.

The methodology, assumptions, and results of the analysis are presented in the following sections.

1.2 Study Areas

The location of the overall Project Alignment is shown in **Figure 1.1**. The proposed Project guideway will be at-grade for most of its alignment and includes areas with the LRT operating in mixed-use and semiexclusive street-running operation. The locations of the intersections and at-grade crossings studied as part of the Project traffic analysis are shown in **Figure 1.2-Figure 1.7**. The analysis was broken into six areas, as shown in **Figure 1.1** and described below:

- CSAH 103 (West Broadway)
 - Operations and Maintenance Facility (OMF) to County State Aid Highway (CSAH) 81 (Bottineau Boulevard)/73rd Avenue
 - Project Alignment side-running north of TH 610 and Project Alignment generally centerrunning along CSAH 103 (West Broadway Avenue)

- CSAH 81 North
 - o 73rd Avenue N to TH 100
 - Project Alignment center-running along CSAH 81 (Bottineau Boulevard)
- CSAH 81 South
 - o TH 100 to CSAH 153 (Lowry Avenue)
 - Project Alignment generally center-running along CSAH 81 (Bottineau Boulevard)
- CSAH 81 (West Broadway)
 - CSAH 153 (Lowry Avenue) to N James Avenue
 - Project Alignment generally center-running along CSAH 81 (W Broadway Avenue)
- CSAH 81 (West Broadway) / N 21st Avenue
 - o N James Avenue to West River Road
 - Project Alignment along N 21st Avenue
- CSAH 152 (N Washington Avenue)/ N 10th Avenue
 - N 21st Avenue to N 7th Street/Target Field Station
 - Project Alignment center-running along CSAH 152 (N Washington Avenue), along N 10th Avenue between CSAH 152 (N Washington Avenue) and N 5th Street, and side-running from N 5th Street to Target Field Station

1.3 Data Collection

Multiple data elements were collected for each of the areas analyzed:

- Weekday intersection movement counts including passenger vehicles, heavy vehicles, pedestrians, and bicycles
- Existing turning movement count data from 2021 was utilized where available
- Additional turning movement count data was collected from April 2022 to December 2023
- Freight rail train lengths and crossing times
- Signal timing and coordination plans for existing signalized intersections
- Bus routes, stops, and passenger loading/unloading

This data was used to assemble a comprehensive model of the existing conditions.

Figure 1.1: Project Alignment



Figure 1.2: Analysis Area/Intersections



Figure 1.3: Analysis Intersections



Figure 1.4: Analysis Intersections



Figure 1.5: Analysis Intersections



Figure 1.6: Analysis Intersections



Figure 1.7: Analysis Intersections



2.0 Methodology

2.1 Key Intersections and At-Grade Crossings

To determine the impacts of the Project on the local roadway network, a traffic operations analysis was conducted for signalized and unsignalized intersections within the vicinity of the Project Alignment or for intersections that would be expected to have increased traffic due to the Project stations, such as nearby park-and-ride facilities. The analysis area included signalized intersections with an LRT crossing in the intersection, unsignalized intersections that may have a change in intersection control, and intersections that provide access to an LRT station park-and-ride facility. Additional intersections were analyzed based on their proximity to an LRT crossing or park-and-ride facility and the potential for interaction with the crossing or park-and-ride facility.

2.2 Development of Traffic Volumes

The SFEIS future year analysis year assumed to be 2050, 20 years after the Project opening. The development of the 2050 future traffic forecasts was based on the following data sources:

- Historic annual average daily traffic (AADT) volumes in the study area
- 2040 forecast daily traffic volumes as documented in the Hennepin County and city 2040 comprehensive plans
- 2040 socioeconomic data developed by the Metropolitan Council and local communities
- 2050 draft socioeconomic data developed by the Metropolitan Council

The 2050 Twin Cities Activity Based Model (ABM) was not yet available at the time of this analysis. Therefore the 2050 forecasts were based on the published 2040 forecast daily traffic volumes and the projected growth in socioeconomic data between 2040 and 2050. This forecasting process was completed by running the 2050 socioeconomic data through the 2040 ABM without and with the Project (No Build and Build, respectively). Changes to roadway capacity and roadway connections proposed by the Project were included in the Build forecast model and therefore are reflected in the traffic forecasts.

Table 2.1 highlights projects that were not captured in the 2040 ABM but are expected to be included in the updated 2050 ABM from the Metropolitan Council. These projects have varying levels of anticipated impacts on the 2050 future volumes along the Project Alignment.

- Projects designated as having a "Low" impact to future volumes along the Project Alignment are projects that are regionally significant but are not anticipated to significantly influence future volumes along the Project Alignment.
- Projects designated as having a "Medium" impact to future volumes along the Project Alignment are regionally significant projects that are anticipated to influence the number of regional vehicle trips along the Project Alignment.
- Projects designated as having a "High" impact to future volumes along the Project Alignment are those that have a direct impact to the Project geometry. These projects have already been accounted for in the 2050 forecast volumes for the Project.

Table 2.1: 2050 Regionally Significant Capacity Improvement Projects

Regionally Significant Project Name, Location	Transportation Policy Plan (TPP) Scenario	Regionally Significant Project Description	Impact to Forecast Blue Line Extension Project Volumes
MN 65 Grade Separation, Anoka County	Current Revenue Stream (CRS)	Converts MN 65 to a freeway with new interchanges at 99th, 105th, 109th, and 117th Avenues as well as CR 116 (Bunker Lake Boulevard)	Low
I-394 Spot Mobility Improvement, Hennepin County	CRS	Connects 3 lanes west of Louisiana Avenue to 3 lanes east of Louisiana Avenue	Low
Hwy 610/East River Road Interchange Modification, Anoka County	CRS	Constructs the remaining two ramps to convert the existing interchange into a full access interchange	Low
MN 65 Grade Separation, Anoka County	CRS	Conversion to a hybrid freeway with improvements to the TH 10 interchange, new interchange at 93rd Avenue, and construction of an overpass with Right-In/Right-Out access at 85th Avenue	Low
Bass Lake Road Interchange, Hennepin County	CRS	Construction of a new interchange on CSAH 81 at Bass Lake Road as part of the Project	High (Already included in the Project forecasts)
Hwy 252 Freeway Conversion, Hennepin County	CRS	Converts Hwy 252 to a freeway with EZ-Pass Lanes from Hwy 610 to 4th Street and new interchanges at 85th Street, Brookdale Drive, and 66th Street	Medium (Based on Scoping Process documentation, this project is anticipated to reduce regional trips on CSAH 81)
West Broadway (CSAH 103) Avenue Expansion, Hennepin County	CRS	Converts West Broadway Avenue from a 2-lane to 4-lane facility along the Project Alignment	High (Already included in the Project forecasts)

There are not any "High" impact projects anticipated in the 2050 ABM that are not already captured in the Project forecasts. The "Medium" impact projects would be anticipated to reduce traffic volumes along the Project Alignment, therefore the 2050 Project forecasts are conservative.

2.3 Traffic Analysis Methodology

Three scenarios were analyzed as part of this traffic analysis:

- Existing conditions Used to validate and calibrate the simulation models of the study areas
- 2050 No Build conditions Analysis of future traffic conditions without the Project
- 2050 Build conditions Analysis of future traffic conditions with the Project (including park-and-rides)

The approach to the traffic operations analysis is derived from the established methodologies documented in the Highway Capacity Manual, 7th Edition (HCM). The HCM contains a series of analysis techniques for evaluating the operations of transportation facilities under specified conditions. The models for the Project analysis have been developed using VISSIM and Synchro/SimTraffic software packages that implement the HCM methodologies. The inputs to the software include lane geometrics, traffic volumes, pedestrian/bicycle volumes, transit stations, freight and LRT alignments, freight and LRT volumes, intersection and grade crossing control devices, and signal phase and timing characteristics.

The outputs of the models are evaluated using the level of service thresholds as defined in the HCM, which are shown in **Table 2.2**. Based on standard practice in the traffic engineering industry, as well as guidance from the American Association of State Highway and Transportation Officials (AASHTO) and conformance with MnDOT practice, level of service D/E is considered to be the threshold of acceptable operations for an overall intersection in an urban or suburban area during peak hours.

The analysis periods included the highest one hour of vehicle traffic volume during the weekday AM peak period (6:00-9:00 AM) and PM peak period (3:00-7:00 PM). The peak hour varied by intersection, but AM peak hours were generally identified as occurring between 7:00 AM and 8:45 AM and PM peak hours were generally identified as occurring between 4:00 PM and 5:45 PM.

Level of Service	Signalized Intersection Delay (seconds per vehicle)	Unsignalized Intersection Delay (seconds per vehicle)
А	\leq 10	\leq 10
В	> 10-20	> 10-15
С	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

Table 2.2: Intersection Level of Service Definitions

2.4 Design Criteria and Assumptions

All full-access intersections with the LRT guideway, where all vehicular movements are allowed across the guideway, were assumed to be signalized to provide safe movement of LRT, vehicles, pedestrians, and bicycles. Where an intersection along the LRT guideway was assumed to remain unsignalized, the intersections were converted to right-in, right-out only intersections. Except at N Theodore Wirth Parkway / N Lowry Avenue, gates were not assumed to be used at any of the LRT guideway crossings because the LRT operates in the street with traffic signal control and the LRT operating speed through intersections would not exceed 40 miles per hour, consistent with the Manual on Uniform Traffic Control Devices. Automatic gates are proposed for the at-grade LRT crossings on N Lowry Avenue and on N Theodore Wirth Parkway for the safe operation of the LRT because the grade crossings are not at an intersection and the sight lines are limited approaching the grade crossings.

2.5 Measures of Effectiveness

The measures of effectiveness used to evaluate the operations results and identify a Project impact in need of improvement were based on intersection delay (level of service) and queuing.

The level of service (LOS) criteria used to identify a Project impact and potential mitigation were as follows:

- Overall intersection LOS E or F in Build conditions, if intersection is LOS D or better in No Build conditions
- Approach or movement LOS E or F in Build conditions, if the movement negatively impacts upstream operations and approach or movement operates at LOS D or better in No Build conditions

The criteria used to identify a queuing issue were as follows:

- 95th percentile queue length that exceeds storage length, and one of the following criteria is also met:
 - $\circ \quad \text{Average back-of-queue exceeds storage length} \\$
 - \circ $\;$ Movement operates at LOS E or LOS F
 - 95th percentile queue blocks upstream full-access intersection(s)
- 95th percentile queue length exceeds 500 feet on a stop-controlled approach

For locations where a queuing issue was identified, the need for mitigation was based on a comparison to the No Build conditions, the severity of the issue, the potential safety and operations implications at the study intersection, and the impact the queue had on the larger roadway network. These improvements are listed in **Section 6.1**, along with all improvements that have been identified to be built as part of the Project.

3.0 Existing Conditions Analysis

The existing conditions models were developed to validate and calibrate the simulation models of the study areas, which were then used to model the future year conditions. The assumptions, methodology, and results of the existing conditions analysis are presented in the following sections.

3.1 Existing Conditions Assumptions

The existing conditions analysis was based on traffic volumes, roadway geometrics, rail crossing treatments, and signal operations as they existed in 2021 through 2023 when the data collection was completed. For the counts conducted in 2021 and 2022, the existing peak hour traffic volumes were developed using modification factors that adjusted for lower traffic volumes experienced during and shortly after COVID-19 pandemic. The geometrics and intersection control for the existing conditions are shown in the intersection layout tables provided in **Appendix B**: Intersection Layout Tables.

The actual calculated peak hours varied for each study area but occurred within the range of 7:00 AM and 8:45 AM for the AM peak hour and 4:00 PM and 5:45 PM for the PM peak hour in all sections, based on the turning movement data collected within the study area.

Information collected along the freight rail corridor as part of the traffic analysis of the 2016 Alignment showed that, at most, one train per day with less than 20 cars is expected on the BNSF Monticello Subdivision. The data collected in 2014 showed that trains typically travel through the freight rail corridor during the AM peak hour, between 7:30 and 8:00 AM. Thus, a freight train event was only included in a scenario in the AM peak hour where the freight rail grade crossing is within 1,000 feet of CSAH 81. The assumed freight event was approximately one minute in duration, which is consistent with the existing freight activity. No freight events were analyzed for the PM peak hour.

3.2 Existing Conditions Traffic Modeling Results

The existing operations results are presented for each of the six modeling areas in the following sections. All intersections were modeled in VISSIM.

3.2.1 CSAH 103 (West Broadway)

The results of the AM and PM peak hour analysis showed that all intersections currently operate at overall LOS D or better during the Existing peak hour scenarios with the following exception:

• CSAH 103 (W Broadway Avenue) / CSAH 30 (93rd Avenue N) in the PM peak hour.

The overall intersection results are shown in Table 3.1.

The poor LOS at the CSAH 103 (W Broadway Avenue)/CSAH 30 (93rd Avenue N) is due to the eastbound approach which currently operates at LOS F. The eastbound approach has the highest approach volume and the signal operations are limited by the use of protected only signal indications on that approach and do not allow for permissive left turn phasing.

No queueing issues were identified in the Existing conditions under AM peak hour conditions.

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

• CSAH 103 (W Broadway Avenue) / CSAH 30 (93rd Avenue N) – eastbound approach

The queuing issues on eastbound CSAH 30 (93rd Avenue N) are directly related to the signal operation and delays noted above.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 103 (W Broadway Ave) / 101 st Ave N*	2.0 A	6.7 A
CSAH 103 (W Broadway Ave) / Winnetka Ave N*	0.2 A	0.5 A
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	7.8 A	14.6 B
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	13.0 B	14.2 B
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	9.9 A	10.1 B
CSAH 103 (W Broadway Ave) / 94th Ave N*	1.9 A	2.1 A
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	36.5 D	69.5 E
CSAH 103 (W Broadway Ave) / 92nd Ave N*	1.9 A	2.7 A
CSAH 103 (W Broadway Ave) / Setzler Pkwy*	2.8 A	1.9 A
CSAH 103 (W Broadway Ave) / 89th Ave N*	2.1 A	2.0 A
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy*	2.2 A	2.9 A
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	28.3 C	32.5 C
CSAH 103 (W Broadway Ave) / 84th Ave N	5.9 A	6.8 A

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 103 (W Broadway Ave) / College Park Dr*	0.3 A	0.5 A
CSAH 103 (W Broadway Ave) / 82nd Ave N*	0.5 A	0.7 A
CSAH 103 (W Broadway Ave) / Candlewood Dr	4.6 A	4.9 A
CSAH 103 (W Broadway Ave) / 78th Ave N*	0.7 A	1.1 A
CSAH 103 (W Broadway Ave) / Shopping Center Access	1.6 A	9.3 A
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	24.7 C	27.9 C
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	9.6 A	13.8 B
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)*	0.4 A	1.1 A
CSAH 130 (W Broadway Ave) / 76th Ave N	6.4 A	9.3 A
CSAH 130 (W Broadway Ave) / 75th Ave N*	1.2 A	1.8 A
CSAH 130 (W Broadway Ave) / 74th Ave N*	1.2 A	1.6 A
CSAH 130 (W Broadway Ave) / 73rd Ave N	4.8 A	6.4 A

*Stop-controlled intersection

3.2.2 CSAH 81 North

The results of the AM and PM peak hour analysis showed that all intersections currently operate at overall LOS D or better during the Existing peak hour scenarios, including a 20-car freight event in the AM peak hour. The overall intersection results are shown in **Table 3.2**.

Movements for which queuing issues were identified under AM and PM peak hour conditions were as follows:

• CSAH 81 (Bottineau Boulevard) / 47th Avenue N – Eastbound right movement

The queueing issue at the intersection of CSAH 81 (Bottineau Boulevard) / 47th Avenue is due to the existing eastbound no right turn on red (RTOR) operation.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall	Overall	Overall
	Intersection	Intersection	Intersection
	Average	Average	Average
	Delay	Delay	Delay
	(seconds/	(seconds/	(seconds/
	vehicle) and	vehicle) and	vehicle) and
	LOS	LOS	LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / 73 rd Ave N	9.9	10.3	13.5
	A	B	B
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway	20.4	18.0	18.7
Ave) / 71st Ave N	C	B	B
CSAH 130 (W Broadway Ave) / 71 st Ave N	8.7	9.0	17.7
	A	A	B
CSAH 81 (Bottineau Blvd) / I-94/I-694 WB Ramps	9.7	11.6	10.4
	A	B	B
CSAH 81 (Bottineau Blvd) / I-94/I-694 EB Ramps	18.8	19.6	14.1
	B	B	B
CSAH 81 (Bottineau Blvd) / 63rd Ave N	28.5	30.8	29.6
	C	C	C
63rd Ave N / Louisiana Ave N / Park-and-Ride	1.7	1.8	1.6
Access*	A	A	A
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd)	26.6	30.4	35.2
	C	C	D
CSAH 10 (Bass Lake Rd) / Sherburne Ave	9.2	8.1	10.4
	A	A	B
CSAH 10 (Bass Lake Rd) / Adair Ave*	1.1	0.9	1.2
	A	A	A
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	9.5	10.6	10.9
	A	B	B
Wilshire Blvd / Lakeland Ave N*	1.2	5.5	4.9
	A	A	A

Table 3.2: CSAH 81 North – Existing Conditions Results

Intersection	Overall	Overall	Overall
	Intersection	Intersection	Intersection
	Average	Average	Average
	Delay	Delay	Delay
	(seconds/	(seconds/	(seconds/
	vehicle) and	vehicle) and	vehicle) and
	LOS	LOS	LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / Corvallis Ave	12.6	14.0	16.3
	B	B	B
CSAH 81 (Bottineau Blvd) / 47 th Ave N	8.4	9.2	9.3
	A	A	A
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramp	7.3	7.6	6.6
	A	A	A
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramp	12.0	11.5	6.5
	B	B	A

*Stop-controlled intersection

3.2.3 CSAH 81 South

The results of the AM and PM peak hour analysis showed that all intersections currently operate at overall LOS D or better during the Existing peak hour scenarios. The overall intersection results are shown in **Table 3.3** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / CSAH 9 (42nd Avenue N) eastbound left movement
- CSAH 81 (Bottineau Boulevard) / 40th Avenue N northbound right movement. The existing turn lane is only 65 feet and therefore can only accommodate a queue of 2 vehicles.

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / 40th Avenue N northbound right movement. The existing turn lane is only 65 feet and therefore can only accommodate a queue of about 2 vehicles.
- CSAH 81 (Bottineau Boulevard) / Abbott Avenue N eastbound left and right movements

These queues are due to higher volumes of vehicle traffic demand in peak hours and the short turn lanes. However, these queues are not considered to be significant operational or safety issues because average queues are contained within the existing storage and the movement operations are LOS D or better.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Table 3.3: CSAH 81 South – Existing Conditions Results

Intersection	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	0.2 A	0.2 A	0.2 A
CSAH 81 (Bottineau Blvd) / CSAH 9 (42 nd Ave N)	26.7 C	26.7 C	32.1 C
CSAH 9 (42 nd Ave N) / CSAH 8 (W Broadway Ave)	11.6 B	11.7 B	28.9 C
CSAH 81 (Bottineau Blvd) / 41 st Ave N	6.2 A	N/A	9.8 A
CSAH 81 (Bottineau Blvd) / 40 th Ave N	7.2 A	N/A	11.6 B
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	0.3 A	N/A	0.2 A
CSAH 81 (Bottineau Blvd) / 36 th Ave N	17.4 B	N/A	25.7 C
CSAH 81 (Bottineau Blvd) / 35 th Ave N	4.3 A	N/A	8.9 A
CSAH 81 (Bottineau Blvd) / Abbott Ave N	10.4 B	N/A	21.8 C
CSAH 81 (W Broadway Ave) / N Oakdale Ave*	0.9 A	N/A	2.0 A
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy*	7.4 A	N/A	7.6 A
CSAH 153 (N Lowry Ave) / N Washburn Ave*	0.4 A	N/A	0.3 A
CSAH 81 (W Broadway Ave) SB Ramp / Theodore Wirth Pkwy*	0.8 A	N/A	1.4 A

*Stop-controlled intersection

3.2.4 CSAH 81 (West Broadway)

The results of the AM and PM peak hour analysis showed that all intersections currently operate at overall LOS D or better during the Existing peak hour scenarios with the following exception:

• CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) / McNair Ave in the PM peak hour.

The poor LOS is due to the five-leg intersection, which results in inefficient signal operations. The overall intersection results are shown in **Table 3.4** below.

No queuing issues were identified in the Existing conditions under AM peak hour.

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

• CSAH 81 (W Broadway Avenue) / CSAH 2 (N Penn Avenue) / McNair Avenue – northbound left, eastbound through, and eastbound right movements

These queues are due to higher volumes of vehicle traffic demand in peak hours and some short turn lanes. However, these queues are not considered to be significant operational or safety issues because average queues are contained within the existing storage and the movement operations are LOS D or better.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 81 (W Broadway Ave) / 29 th Ave N	10.5	14.1
CSAH SI (W BIODOWOY AVE) / 29 AVE N	В	В
CEALL 81 (M, Broadway, Ave) / 26th Ave N	9.9	21.4
CSAH 81 (W Broadway Ave) / 26 th Ave N	А	С
CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) /	34.1	55.6
McNair Ave	С	E
CSALL 81 (M/ Broadway Ave) / Leage Ave N	3.8	4.4
CSAH 81 (W Broadway Ave) / Logan Ave N	А	А
CEALL 81 (M/ Broadway Ave) / Knov Ave N	7.4	8.5
CSAH 81 (W Broadway Ave) / Knox Ave N	А	А

3.2.5 CSAH 81 (West Broadway) / N 21st Avenue

The results of the AM and PM peak hour analysis showed that all intersections currently operate at overall LOS D or better during the Existing peak hour scenarios. The overall intersection results are shown in **Table 3.5** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N Girard Avenue northbound left/through movements
- CSAH 81 (W Broadway Avenue) / N 4th Street eastbound approach
- CSAH 81 (W Broadway Avenue) / I-94 EB Ramps westbound left movement
- CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) westbound through and right movements

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N Irving Avenue eastbound through/right movements
- CSAH 81 (W Broadway Avenue) / N Girard Avenue northbound right movement
- CSAH 81 (W Broadway Avenue) / N Fremont Avenue eastbound approach
- CSAH 81 (W Broadway Avenue) / N Lyndale Avenue southbound through/right movements
- CSAH 81 (W Broadway Avenue) / N 4th Street eastbound and westbound approaches
- CSAH 81 (W Broadway Avenue) / I-94 EB Ramps eastbound approach and westbound left movement
- CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) westbound through and right movements, and northbound approach
- CSAH 81 (W Broadway Avenue) / N 2nd Street eastbound through/right movements

For all of the AM and PM peak hour conditions queuing issues except the two described below, the 95th percentile queue extends to an upstream intersection that is less than 400 feet away. Based on the close intersection spacing, these are not considered to be significant operational issues.

At CSAH 81 (W Broadway Avenue) / I-94 EB Ramps, the westbound left movement serves between 500-700 vehicles in the peak hours and the queues can regularly extend to the upstream intersection (415 feet).

During the PM peak period, the intersection of CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) has vehicle demand of more than 3,800 total vehicles and is nearing the overall intersection capacity, resulting in the northbound queues and movements operating at LOS D and LOS E.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSALL 81 (W Broadway Avo) / N James Avet	0.9	1.5
CSAH 81 (W Broadway Ave) / N James Ave*	А	А
N Hillside Ave / N 21 st Ave / N Irving Ave*	2.4	3.1
	A	Α
CSAH 81 (W Broadway Ave) / N Irving Ave	6.9	8.7
	A	А
N 21 st Ave / N Girard Ave*	0.5	1.1
	A	А
CSAH 81 (W Broadway Ave) / N Girard Ave	6.7	13.5
	A	В
N 21 st Ave / N Fremont Ave*	1.5	1.9
	A	Α

Table 3.5: CSAH 81 (West Broadway) / N 21st Avenue – Existing Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 81 (W Broadway Ave) / N Fremont Ave	19.7 B	21.5 C	
N 21 st Ave / N Emerson Ave*	2.2 A	2.5 A	
CSAH 81 (W Broadway Ave) / N Emerson Ave	9.7 A	12.5 B	
CSAH 81 (W Broadway Ave) / N Dupont Ave	9.3 A	8.7 A	
N 21 st Ave / N Bryant Ave*	4.1 A	3.8 A	
N 21 st Ave / N Aldrich Ave*	3.4 A	3.4 A	
CSAH 81 (W Broadway Ave) / N Aldrich Ave	6.5 A	9.9 A	
N 21 st Ave / N Lyndale Ave*	2.5 A	6.5 A	
CSAH 81 (W Broadway Ave) / N Lyndale Ave	21.2 C	25.0 C	
N 21 st Ave / N 4 th St*	2.5 A	3.6 A	
CSAH 81 (W Broadway Ave) / N 4th St	10.7 B	19.6 B	
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	25.7 C	24.0 C	
CSAH 152 (N Washington Ave) / N 21 st Ave*	1.5 A	2.0 A	
N 22 nd Ave / N 2 nd St*	10.0 A	10.2 B	
N 21 st Ave / N 2 nd St*	2.5 A	1.4 A	
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	20.0 C	37.4 D	
CSAH 81 (W Broadway Ave) / N 2 nd St	12.1 B	24.2 C	

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 81 (W Broadway Ave) / W River Rd	5.8 A	10.9 B	

*Stop-controlled intersection

3.2.6 CSAH 152 (N Washington Avenue) / N 10th Avenue

The results of the AM and PM peak hour analysis showed that all intersections currently operate at overall LOS D or better during the Existing peak hour scenarios. The overall intersection results are shown in **Table 3.6** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- CSAH 152 (N Washington Avenue) / N Plymouth Avenue eastbound through, westbound left, and westbound through movements
- N Plymouth Avenue / N 2nd Street eastbound left/through movements
- CSAH 152 (N Washington Avenue) / N 10th Avenue southbound approach
- N 7th Street / N Oak Lake Avenue northbound and southbound approaches
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue southbound approach
- CSAH 152 (N Washington Avenue) / N 6th Avenue southbound through movement
- CSAH 152 (N Washington Avenue) / N 5th Avenue southbound through/right movements

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 152 (N Washington Avenue) / N Plymouth Avenue eastbound through, westbound through, northbound through, and northbound right movements
- CSAH 152 (N Washington Avenue) / N 10th Avenue eastbound approach, northbound through, northbound right, southbound through, and southbound right movements
- N 7th Street / N Oak Lake Avenue northbound and southbound approaches
- CSAH 152 (N Washington Avenue) / N 5th Avenue southbound through/right movements

For all of these AM and PM peak conditions queuing issues except the one described below, the 95th percentile queue extends to an upstream intersection that is less than 400 feet away. Based on the close intersection spacing, these are not considered to be significant operational issues.

During the AM peak period, the intersection of TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue has vehicle demand of more than 2,200 vehicles resulting in longer southbound queues. However, all southbound approach movements operate at LOS D or better so this is not considered a significant operational issue.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 152 (N Washington Ave) / N 17 th Ave / I-94 WB Ramp	17.0 B	20.9 C	
N 17 th Ave / N 2 nd St*	7.9 A	14.3 B	
CSAH 152 (N Washington Ave) / N 15 th Ave*	1.1 A	1.6 A	
N 15 th Ave / N 2 nd St*	1.0 A	1.6 A	
N Lyndale Ave / N Plymouth Ave	18.6 B	24.1 C	
CSAH 152 (N Washington Ave) / N Plymouth Ave	35.7 D	24.5 C	
N Plymouth Ave / N 2 nd St	36.6 D	35.0 C	
CSAH 152 (N Washington Ave) / N 10 th Ave	25.0 C	31.6 C	
N 10 th Ave / N 2 nd St	11.6 B	13.0 B	
CSAH 152 (N Washington Ave) / N 8 th Ave	3.6 A	5.9 A	
N 10 th Ave / N 3 rd St*	4.1 A	6.6 A	
N 10 th Ave / N 4 th St*	1.4 A	2.6 A	
N 10 th Ave / N 5 th St*	3.0 A	4.4 A	
N 8 th Ave / N 5 th St*	2.7 A	3.7 A	
N 8 th Ave / N Oak Lake Ave*	1.9 A	2.0 A	
N 7 th St / W Lyndale Ave	17.5 B	17.1 B	

Table 3.6: CSAH 152 (N Washington Avenue) / N 10th Avenue – Existing Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
N 7 th St / E Lyndale Ave	14.5 B	15.5 B	
N 7 th St / N Oak Lake Ave	20.7 C	23.7 C	
TH 55 (Olson Memorial Hwy) / N 7 th St / N 6 th Ave	28.3 C	26.8 C	
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	18.4 B	18.9 B	
N 6 th Ave / N 5 th St	13.2 B	17.2 B	
N 6 th Ave / N 3 rd St*	2.1 A	3.5 A	
CSAH 152 (N Washington Ave) / N 6 th Ave	8.8 A	12.6 B	
N 5 th Ave / N 3 rd St*	2.3 A	4.0 A	
CSAH 152 (N Washington Ave) / N 5 th Ave	12.9 B	16.0 B	
N 5 th Ave / N 2 nd St*	9.7 A	11.8 B	

*Stop-controlled intersection

3.3 Existing Conditions Traffic Modeling Summary

All intersections operate at overall LOS D or better in the AM and PM peak hour existing conditions, except

- CSAH 103 (W Broadway Avenue) / CSAH 30 (93rd Avenue N) which operates at LOS E in the PM peak hour. The poor LOS at the CSAH 103 (W Broadway Avenue) / CSAH 30 (93rd Avenue N) is due to the eastbound approach which currently operates at an LOS F. The eastbound approach has the highest approach volume, and the signal operations are limited due to the protected only signal phasing.
- CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) / McNair Ave which operates at LOS E in the PM peak hour due to the five-leg intersection which results in inefficient signal operations.

A number of queuing issues were identified in the existing conditions during peak hours, primarily due to existing signal operations, high peak hour vehicle volumes, short turn lanes, or short intersection spacing. None of the queuing issues identified are considered to be significant operational or safety issues.

4.0 No Build Analysis

The No Build modeling was conducted to identify the expected traffic operations for the forecast horizon year (2050). The assumptions, methodology, and results of the No Build conditions analysis are presented in the following sections.

4.1 No Build Conditions Assumptions

Forecast horizon year 2050 forecast peak hour volumes were based on the forecast No Build traffic volumes developed within the study area, as described in Section 2.2. The turning movement volumes for 2050 No Build AM and PM peak conditions are provided in **Appendix A**: Peak Hour Traffic Volumes.

The No Build analysis was based on the future year No Build traffic volumes, existing roadway geometrics and rail crossing treatments, existing signal operations, and programmed improvement projects. Geometric improvements assumed in the No Build analysis are shown in the intersection layouts provided in **Appendix B**: Intersection Layout Tables. The programmed improvement projects in the No Build conditions include:

- Oakdale Avenue N reconstruction currently programmed by the City of Robbinsdale.
- Intersection improvements at CSAH 81 (W Broadway Avenue) / N Lyndale Avenue by Hennepin County.
- 7th Street reconstruction from a four-lane to a three-lane roadway from N 10th Street to East Lyndale Avenue programmed by the City of Minneapolis.

No improvements are programmed at any of the existing rail crossings. Signal timing was assumed to be optimized in the 2050 No Build analysis. The CSAH 103 (West Broadway Avenue), CSAH 81 (Bottineau Boulevard/W Broadway Avenue), and CSAH 152 (N Washington Avenue) corridors were all assumed to operate with coordinated and interconnected signals. All modeling was completed in VISSIM.

The geometrics and intersection control for the No Build conditions are shown in the intersection layout tables provided in **Appendix B**: Intersection Layout Tables.

4.2 No Build Conditions Traffic Modeling Results

The same six modeling areas created for the Existing conditions modeling were used for the No Build analysis. The No Build operations results are presented by modeling area in the following sections.

4.2.1 CSAH 103 (West Broadway)

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the No Build peak hour scenarios with the following exceptions:

- CSAH 103 (West Broadway Avenue) / 101st Avenue N in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / Winnetka Avenue N in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / 94th Avenue N in the 2050 AM peak
- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) in the 2050 AM and PM peak

- CSAH 103 (West Broadway Avenue) / 92nd Avenue N in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / Setzler Parkway in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / 89th Avenue N in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / Maplebrook Parkway in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / CSAH 109 (85th Avenue N) in the 2050 PM peak

The overall intersection results are shown in **Table 4.1** below.

Movements for which queuing issues were identified under AM peak conditions were as follows:

- CSAH 103 (West Broadway Avenue) / Winnetka Avenue eastbound left and right movements
- CSAH 103 (West Broadway Avenue) / 94th Avenue N southbound through movement and all westbound movements
- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) northbound through and right movements, southbound through movement, and westbound left movement
- CSAH 103 (West Broadway Avenue) / 92nd Avenue N) all northbound movements
- CSAH 103 (West Broadway Avenue) / Setzler Parkway northbound through movement
- CSAH 103 (West Broadway Avenue) / 89th Avenue northbound left and through movements
- CSAH 103 (West Broadway Avenue) / Maplebrook Parkway northbound left and right movements
- CSAH 103 (West Broadway Avenue) / 85th Avenue N northbound left movement

Movements for which queuing issues were identified under PM peak conditions were as follows:

- CSAH 103 (West Broadway Avenue) / 101st Avenue –eastbound left and right movements
- CSAH 103 (West Broadway Avenue) / Winnetka Avenue –eastbound left and right movements
- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) northbound through and right movements and westbound left movement
- CSAH 103 (West Broadway Avenue) / 92nd Avenue N) all northbound movements
- CSAH 103 (West Broadway Avenue) / Setzler Parkway northbound through movement
- CSAH 103 (West Broadway Avenue) / 89th Avenue northbound left and through movements and eastbound left and right movements
- CSAH 103 (West Broadway Avenue) / Maplebrook Parkway all northbound movements and all westbound movements
- CSAH 103 (West Broadway Avenue) / CSAH 109 (85th Avenue N) northbound left and through movements, eastbound left and through movements, and westbound left and right movements
- CSAH 103 (West Broadway Avenue) / 84th Avenue N northbound through and right movements
- CSAH 103 (West Broadway Avenue) / Shopping Center Access all eastbound movements
- CSAH 103 (West Broadway Avenue) / CSAH 130 (Brooklyn Boulevard) eastbound left movement

The poor operations (delay and queuing) north of TH 610 in the 2050 No Build scenarios are due to the size and density of development planned to occur in this area by 2050. Currently this area is mostly undeveloped land, however the City of Brooklyn Park has identified this area as a regionally significant development location. The remaining poor operations (delay and queueing) are due to CSAH 103 (West Broadway Avenue) being over capacity as a two-lane facility. The major intersections including 93rd Avenue and 85th Avenue are the key bottlenecks in the north/south directions which spill back to adjacent intersections.

The full table of 2050 No Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 103 (W Broadway Ave) / 101 st Ave N*	5.4	54.8	
	А	F	
CSAH 103 (W Broadway Ave) / Winnetka Ave N*	32.8	52.8	
	D	F	
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	7.9	15.4	
	А	В	
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	16.7	18.8	
	В	В	
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	26.2	18.8	
	С	В	
CSAH 103 (W Broadway Ave) / 94th Ave N*	83.7	1.9	
	F	А	
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	>100	>100	
	F	F	
CSAH 103 (W Broadway Ave) / 92nd Ave N*	49.8	70.9	
	E	F	
CSAH 103 (W Broadway Ave) / Setzler Pkwy*	77.3	>100	
	F	F	
CSAH 103 (W Broadway Ave) / 89th Ave N*	68.6	>100	
	F	F	
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	38.4	>100	
,,,,, ,	E	F	
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave	36.1	>100	
N)	D	F	
CSAH 103 (W Broadway Ave) / 84th Ave N*	0.4	10.6	
	A	В	
CSAH 103 (W Broadway Ave) / College Park Dr	0.3	3.1	
	А	А	

Table 4.1: CSAH 103 (West Broadway) – 2050 No Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 103 (W Broadway Ave) / 82nd Ave N*	0.5	1.8	
CSAH 103 (W BIODDWdy AVE) / 82Nd AVE N"	А	А	
(CEALL 103 (W) Progducy Ave) / Candlewood Dr	5.4	8.5	
CSAH 103 (W Broadway Ave) / Candlewood Dr	А	А	
CEALL 102 (M. Broadway, Ave) / 78th Ave Nt	1.2	1.5	
CSAH 103 (W Broadway Ave) / 78th Ave N*	А	А	
CSAH 103 (W Broadway Ave) / Shopping Center	2.3	12.3	
Access	А	В	
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn	24.1	32.1	
Blvd) / CSAH 152	С	С	
CSAH 130 (Brooklyn Blvd) / Shopping Center Access	14.5	26.0	
(west of CSAH 103)	В	С	
CSAH 152 (Brooklyn Blvd) / Shopping Center Access	0.6	1.4	
(east of CSAH 103)*	А	А	
CSAH 130 (W Broadway Ave) / 76th Ave N	8.9	27.0	
CSAH 130 (W BIODOWOY AVE) / TOUT AVE N	А	С	
CSAH 130 (W Broadway Ave) / 75th Ave N*	1.4	4.5	
CSAH 130 (W Broadway Ave) / 75th Ave N*	А	А	
CSAH 130 (W Broadway Ave) / 74th Ave N*	0.5	1.0	
COATT 150 (W BIOLOWOY AVE) / 14th AVE N	А	А	
CSAH 130 (W Broadway Ave) / 73rd Ave N	6.0	8.3	
CSAIT 150 (W BIOLOWAY AVE) / TSIA AVE N	А	А	

*Stop-controlled intersection

4.2.2 CSAH 81 North

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the No Build peak hour scenarios.

The overall intersection results are shown in **Table 4.2** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

• CSAH 81 (Bottineau Boulevard) / 47th Avenue – eastbound right movement

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / CSAH 10 (Bass Lake Road) eastbound left movement
- CSAH 81 (Bottineau Boulevard) / 63rd Avenue N northbound through movement
- CSAH 81 (Bottineau Boulevard) / 47th Avenue eastbound right movement

The queueing issue at the intersection of CSAH 81 (Bottineau Boulevard) / 47th Avenue is due to the eastbound no right turn on red (RTOR) operation which was also noted in existing conditions.

The queueing issue identified at the intersection of CSAH 81 (Bottineau Boulevard) / CSAH 10 (Bass Lake Road) is due to the heavy volume of eastbound left-turn traffic in the PM peak hour and the closely-spaced full access intersection at Elmhurst Avenue. This is not considered a significant operational or safety issue.

The full table of 2050 No Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Table 4.2: CSAH 81 North – 2050 No Build Conditions Results

Intersection	Overall	Overall	Overall
	Intersection	Intersection	Intersection
	Average	Average	Average
	Delay	Delay	Delay
	(seconds/	(seconds/	(seconds/
	vehicle) and	vehicle) and	vehicle) and
	LOS	LOS	LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / 73rd Ave N	13.9	14.1	17.7
	B	B	B
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway	21.2	21.0	33.8
Ave) / 71st Ave N	C	C	C
CSAH 130 (W Broadway Ave) / 71 st Ave N	10.6	10.8	20.8
	B	B	C
CSAH 81 (Bottineau Blvd) / I-94 WB Ramps	12.2	12.1	14.5
	B	B	B
CSAH 81 (Bottineau Blvd) / I-94 EB Ramps	18.0	18.7	14.7
	B	B	B
CSAH 81 (Bottineau Blvd) / 63rd Ave N	29.1	29.6	51.9
	C	C	D
63rd Ave N / Louisiana Ave N / Park-and-Ride	2.3	2.4	2.8
Access*	A	A	A
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake	29.4	30.6	42.1
Rd)	C	C	D

Intersection	Overall	Overall	Overall
	Intersection	Intersection	Intersection
	Average	Average	Average
	Delay	Delay	Delay
	(seconds/	(seconds/	(seconds/
	vehicle) and	vehicle) and	vehicle) and
	LOS	LOS	LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 10 (Bass Lake Rd) / Sherburne Ave	8.8	9.0	12.2
	A	A	B
CSAH 10 (Bass Lake Rd) / Adair Ave*	1.0	0.9	1.1
	A	A	A
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	11.3	11.1	12.7
	B	B	B
Wilshire Blvd / Lakeland Ave N*	2.6	2.6	5.8
	A	A	A
CSAH 81 (Bottineau Blvd) / Corvallis Ave	15.7	16.3	17.0
	B	B	B
CSAH 81 (Bottineau Blvd) / 47 th Ave N	14.7	15.3	10.3
	B	B	B
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramp	5.3	5.3	6.5
	A	A	A
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramp	12.4	12.6	7.1
	B	B	A

*Stop-controlled intersection

4.2.3 CSAH 81 South

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the No Build peak hour scenarios.

The overall intersection results are shown in **Table 4.3** below.

There were no movements for which queuing issues were identified under AM peak hour.

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / CSAH 9 (42nd Avenue N) eastbound left, southbound left, and westbound right movements
- CSAH 81 (Bottineau Boulevard) / 41st Avenue N northbound left movement
- CSAH 81 (Bottineau Boulevard) / 40th Avenue N eastbound left, westbound left and right, northbound left, and southbound left and right movements
- CSAH 81 (Bottineau Boulevard) / 36th Avenue N eastbound left movement
- CSAH 81 (Bottineau Boulevard) / Abbott Avenue N eastbound left and right movements

These queues are due to higher volumes of vehicle traffic demand in peak hours. However, these queues are not anticipated to cause significant operational or safety issues because average queues can be contained within the existing storage and operations are LOS D or better.

The full table of 2050 No Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	0.2 A	0.2 A	0.3 A
CSAH 81 (Bottineau Blvd) / CSAH 9 (42 nd Ave N)	26.8 C	26.8 C	34.6 C
CSAH 9 (42 nd Ave N) / CSAH 8 (W Broadway Ave)	12.1 B	12.0 B	33.3 C
CSAH 81 (Bottineau Blvd) / 41 st Ave N	6.1 A	N/A	9.8 A
CSAH 81 (Bottineau Blvd) / 40 th Ave N	6.9 A	N/A	11.6 B
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	0.3 A	N/A	0.3 A
CSAH 81 (Bottineau Blvd) / 36 th Ave N	17.7 B	N/A	26.8 C
CSAH 81 (Bottineau Blvd) / 35 th Ave N	4.4 A	N/A	9.7 A

Table 4.3: CSAH 81 South – 2050 No Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / Abbott Ave N	10.7 B	N/A	23.5 C
CSAH 81 (W Broadway Ave) / N Oakdale Ave*	1.4 A	N/A	2.5 A
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy*	8.7 A	N/A	9.3 A
CSAH 153 (N Lowry Ave) / N Washburn Ave*	0.4 A	N/A	0.4 A
CSAH 81 (W Broadway Ave) SB Ramp / N Theodore Wirth Pkwy*	1.3 A	N/A	2.1 A

4.2.4 CSAH 81 (West Broadway)

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the No Build peak hour scenarios with the following exception:

• CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) / McNair Ave in the PM peak hour

This is similar to the existing conditions. The overall intersection results are shown in Table 4.4 below.

There were no movements for which queuing issues were identified under AM peak hour conditions.

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

• CSAH 81 (W Broadway Avenue) / CSAH 2 (Penn Avenue N) / McNair Avenue – northbound left and southbound left movements

The queues are due to higher volumes of vehicle traffic demand in peak hours and some short turn lanes, which are similar to existing conditions.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 81 (W Broadway Ave) / 29 th Ave N	12.1 B	14.1 B
CSAH 81 (W Broadway Ave) / 26 th Ave N	16.0 B	21.2 C
CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) / McNair Ave	33.5 C	60.8 E
CSAH 81 (W Broadway Ave) / Logan Ave N	4.2 A	5.1 A
CSAH 81 (W Broadway Ave) / Knox Ave N	7.1 A	9.1 A

Table 4.4: CSAH 81 (West Broadway) – 2050 No Build Conditions Results

4.2.5 CSAH 81 (West Broadway) / N 21st Avenue

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the No Build peak hour scenarios.

The overall intersection results are shown in **Table 4.5** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N Girard Avenue northbound approach
- •
- CSAH 81 (W Broadway Avenue / N 4th Street eastbound approach
- CSAH 81 (W Broadway Avenue) / I-94 EB Ramp westbound left movement

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N Irving Avenue eastbound through/right movements
- CSAH 81 (W Broadway Avenue) / N Girard Avenue eastbound through/right movements and northbound approach
- CSAH 81 (W Broadway Avenue) / N Fremont Avenue eastbound approach
- CSAH 81 (W Broadway Avenue) / N Lyndale Avenue eastbound through and right movements, northbound through/right movements, and southbound approach
- CSAH 81 (W Broadway Avenue) / N 4th Street eastbound and westbound approaches
- CSAH 81 (W Broadway Avenue) / I-94 EB Ramps eastbound approach and westbound left movement
- CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) westbound through and right movements, and northbound approach

• CSAH 81 (W Broadway Avenue) / N 2nd Street – westbound through and right movements

Many of the AM and PM queuing issues were present under existing conditions and became worse in the No Build conditions due to the slight increase in traffic volumes along CSAH 81 (W Broadway). Several movements at the intersection of CSAH 81 (W Broadway Avenue) / N Lyndale Avenue are only slightly below the threshold for being defined as a queuing issue in existing conditions. The combination of the increase in traffic along CSAH 81 (W Broadway Avenue) and minor changes in traffic operations and approach geometry pushes these over the threshold for being defined as a queuing issue. On the northbound approach, the removal of the additional width that is currently used by vehicles turning right would result in a more significant increase in queuing and delay compared to existing conditions.

High westbound volumes of about 1,000 vehicles per hour on CSAH 81 (W Broadway Avenue) in the PM peak are anticipated to result in queues extending from CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) through CSAH 81 (W Broadway Avenue) / N 2nd Street.

The full table of 2050 No Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 81 (W Broadway Ave) / N James Ave*	0.9 A	1.8 A
N Hillside Ave / N 21 st Ave / N Irving Ave*	2.3 A	3.2 A
CSAH 81 (W Broadway Ave) / N Irving Ave	6.7 A	9.9 A
N 21 st Ave / N Girard Ave*	0.7 A	1.6 A
CSAH 81 (W Broadway Ave) / N Girard Ave	6.9 A	16.3 B
N 21 st Ave / N Fremont Ave*	1.9 A	2.1 A
CSAH 81 (W Broadway Ave) / N Fremont Ave	20.2 C	19.2 B
N 21 st Ave / N Emerson Ave*	2.6 A	3.2 A
CSAH 81 (W Broadway Ave) / N Emerson Ave	10.7 B	11.5 B

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 81 (W Broadway Ave) / N Dupont Ave	8.3 A	9.9 A
N 21 st Ave / N Bryant Ave*	4.9 A	4.5 A
N 21 st Ave / N Aldrich Ave*	3.7 A	3.9 A
CSAH 81 (W Broadway Ave) / N Aldrich Ave	7.2 A	15.0 B
N 21 st Ave / N Lyndale Ave*	3.2 A	6.4 A
CSAH 81 (W Broadway Ave) / N Lyndale Ave	23.6 C	31.5 C
N 21 st Ave / N 4 th St*	2.2 A	5.5 A
CSAH 81 (W Broadway Ave) / N 4th St	9.8 A	22.4 C
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	29.1 C	26.2 C
CSAH 152 (N Washington Ave) / N 21 st Ave*	1.5 A	2.1 A
N 22 nd Ave / N 2 nd St*	11.0 B	11.6 B
N 21 st Ave / N 2 nd St*	2.8 A	1.6 A
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	21.8 C	46.1 D
CSAH 81 (W Broadway Ave) / N 2 nd St	12.2 B	31.6 C
CSAH 81 (W Broadway Ave) / W River Rd	5.5 A	14.7 B

4.2.6 CSAH 152 (N Washington Avenue) / N 10th Avenue

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the No Build peak hour scenarios with the following exceptions:

- N Lyndale Avenue / N Plymouth Avenue in the 2050 PM peak
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue in the 2050 AM peak and 2050 PM peak
- N Plymouth Avenue / N 2nd Street in the 2050 AM peak and 2050 PM peak
- N 7th Street / W Lyndale Avenue in the 2050 AM peak
- N 7th Street / E Lyndale Avenue in the 2050 AM peak
- N 7th Street / N Oak Lake Avenue in the 2050 AM peak
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue in the 2050 PM peak

The overall intersection results are shown in **Table 4.6** below. Protected-permissive phasing was assumed to be implemented in the 2050 PM peak at the westbound approach of N Lyndale Avenue / N Plymouth Avenue and the southbound approach of N 7th Street / N Oak Lake Avenue. Without this improvement, gridlock would be anticipated to occur in the network resulting in almost all intersections operating at LOS E/F.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- N Lyndale Avenue / N Plymouth Avenue eastbound through, eastbound right, and westbound left movements
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue eastbound and southbound approaches, westbound left and through movements
- N Plymouth Avenue / N 2nd Street eastbound left, eastbound through, westbound left, and westbound through movements
- CSAH 152 (N Washington Avenue) / N 10th Avenue northbound left and through movements, and southbound approach
- N 7th Street / W Lyndale Avenue eastbound through and right movements
- N 7th Street / E Lyndale Avenue eastbound through movement
- N 7th Street / Oak Lake Avenue N eastbound, northbound, and southbound approaches
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue eastbound through, eastbound right, and westbound left movements, and southbound approach
- TH 55 (Olson Memorial Highway) / N Oak Lake Avenue / Border Avenue eastbound left, eastbound through, and westbound right movements
- CSAH 152 (N Washington Avenue) / N 6th Avenue southbound through movement
- CSAH 152 (N Washington Avenue) / N 5th Avenue southbound through and right movements

Movements for which queuing issues were identified under PM peak conditions were as follows:

- CSAH 152 (N Washington Avenue) / N 17th Avenue / I-94 WB Ramp northbound through, northbound right, and westbound left movements
- N Lyndale Avenue / N Plymouth Avenue eastbound through, eastbound right, southbound through, and southbound right movements
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue northbound through, northbound right, eastbound left, eastbound through, and westbound through movements
- N Plymouth Avenue / N 2nd Street northbound left, northbound through, eastbound left, eastbound through, westbound left, and westbound through movements
- CSAH 152 (N Washington Avenue) / N 10th Avenue eastbound and northbound approaches, and southbound through and right movements
- N 7th Street / E Lyndale Avenue eastbound through movement

- N 7th Street / Oak Lake Avenue N eastbound left and westbound through/right movements, and northbound and southbound approaches
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue northbound through, northbound right, eastbound right, southbound through, southbound right, and westbound right movements
- CSAH 152 (N Washington Avenue) / N 6th Avenue southbound through movement
- CSAH 152 (N Washington Avenue) / N 5th Avenue southbound through and right movements

All three of the study intersections along N Plymouth Avenue are currently operating at LOS C or LOS D in existing conditions. Traffic volumes along N Plymouth Avenue (between N Lyndale Avenue and N 2nd Street) are anticipated to increase by 25-35% by 2050 which is anticipated to result in some of these intersections operating at LOS E or LOS F during both peak hours.

The intersections of N 7th Street / W Lyndale Avenue, N 7th Street / E Lyndale Avenue, and N 7th Street / N Oak Lake Avenue are projected to operate overall at LOS E or F during the AM peak hour. The intersection of TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue is anticipated to operate at LOS E in the PM peak. The capacity on N 7th Street was reduced to three lanes based on the programmed project planned by the City of Minneapolis, which resulted in the increased delays and queuing.

The other queuing issues identified in the 2050 No Build conditions were also present under existing conditions and were similar or worse in 2050 due to traffic volume growth.

The full table of 2050 No Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 152 (N Washington Ave) / N 17 th Ave / I-94 WB	17.9	37.6
Ramp	В	D
N 17 th Ave / N 2 nd St*	9.2	26.5
NIT AVE NZ St	А	С
$CCALLIE2$ (N Machington Ave) (N 15^{th} Avet	1.2	1.7
CSAH 152 (N Washington Ave) / N 15 th Ave*	А	А
N 15 th Ave / N 2 nd St*	0.9	1.7
N 15 AVE/N 2 St	А	А
N. Lyndala Aya / N. Diymayth Aya	26.2	57.7
N Lyndale Ave / N Plymouth Ave	С	E
CSAH 152 (N Washington Ave) / N Plymouth Ave	75.2	60.4
	E	Е

Table 4.6: CSAH 152 (N Washington Avenue) / N 10th Avenue – 2050 No Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
N Plymouth Ave / N 2 nd St	>100 F	74.3 E
CSAH 152 (N Washington Ave) / N 10 th Ave	25.5 C	35.3 D
N 10 th Ave / N 2 nd St	13.9 B	13.2 B
CSAH 152 (N Washington Ave) / N 8 th Ave*	3.5 A	5.6 A
N 10 th Ave / N 3 rd St*	4.4 A	10.8 B
N 10 th Ave / N 4 th St*	1.6 A	4.7 A
N 10 th Ave / N 5 th St*	3.0 A	7.3 A
N 8 th Ave / N 5 th St*	2.3 A	3.6 A
N 8 th Ave / N Oak Lake Ave*	5.1 A	9.2 A
N 7 th St / W Lyndale Ave	>100 F	19.2 B
N 7 th St / E Lyndale Ave	72.4 E	26.8 C
N 7 th St / N Oak Lake Ave	58.3 E	45.4 D
TH 55 (Olson Memorial Hwy) / N 7 th St / N 6 th Ave	34.4 C	69.5 E
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	29.8 C	22.4 C
N 6 th Ave / N 5 th St	13.1 B	18.3 B
N 6 th Ave / N 3 rd St*	3.1 A	4.2 A

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 152 (N Washington Ave) / N 6 th Ave	8.6	13.5
CSAH 152 (N Wushington Ave) / N O Ave	А	В
N 5 th Ave / N 3 rd St*	2.3	4.2
	А	А
CSAH 152 (N Washington Ave) / N 5 th Ave	13.5	17.2
	В	В
N 5 th Ave / N 2 nd St*	9.8	12.0
	А	В

4.3 No Build Conditions Traffic Modeling Summary

All intersections would be expected to operate at overall LOS D or better in the 2050 No Build AM and PM peak conditions, with the following exceptions:

- CSAH 103 (West Broadway Avenue) / 101st Avenue N in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / Winnetka Avenue N in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / 94th Avenue N in the 2050 AM peak
- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / 92nd Avenue N in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / Setzler Parkway in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / 89th Avenue N in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / Maplebrook Parkway in the 2050 AM and PM peak
- CSAH 103 (West Broadway Avenue) / CSAH 109 (85th Avenue N) in the 2050 PM peak
- CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) / McNair Ave in the 2050 PM peak
- N Lyndale Avenue / N Plymouth Avenue in the 2050 PM peak
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue in the 2050 AM peak and 2050 PM peak
- N Plymouth Avenue / N 2nd Street in the 2050 AM peak and 2050 PM peak
- N 7th Street / W Lyndale Avenue in the 2050 AM peak
- N 7th Street / E Lyndale Avenue in the 2050 AM peak
- N 7th Street / N Oak Lake Avenue in the 2050 AM peak
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue in the 2050 PM peak

The poor operations (delay and queuing) on CSAH 103 (West Broadway Avenue) north of TH 610 are due to the size and density of development planned to occur in this area by 2050. The remaining poor operations (delay and queuing) on CSAH 103 (West Broadway Avenue) are due to the existing two-lane section being over capacity and north/south queues spilling back from the 93rd Avenue N and 85th Avenue N intersections.

All three of the study intersections along N Plymouth Avenue were already operating at LOS C or LOS D in existing conditions. Traffic volumes along N Plymouth Avenue (between N Lyndale Avenue and N 2nd Street) are anticipated to increase by 25-35% by 2050 which is anticipated to result in some of these intersections operating at LOS E or LOS F during both peak hours.

The poor operations (delay and queuing) on 7th Street N are primarily due to the reduction in capacity as part of the 7th Street Reconstruction project planned by the City of Minneapolis.

5.0 Build Analysis

The Build modeling was conducted to identify the expected traffic operations for the forecast horizon year (2050), with the Project constructed and LRT operating. The assumptions, methodology, and results of the Build conditions analysis are presented in the following sections.

5.1 Build Conditions Assumptions

Traffic volumes for the Build conditions were developed following a similar process as the No Build conditions. At and near LRT stations, additional pedestrian volumes were incorporated into the modeling to account for increased activity near the stations. The pedestrian volume increase varied depending on how close the intersection was to an LRT station. Near park-and-ride facilities, additional vehicle traffic was added to the roadway network to account for traffic generated at these facilities. The modeled AM and PM peak hour Build turning movement volumes for the 2050 conditions are provided in **Appendix A**: Peak Hour Traffic Volumes.

The location and size of park-and-ride facilities included in the traffic modeling are summarized in **Table 5.1**. The number of spaces included in the traffic analysis was the maximum number of spaces that could be built to capture the worst case in terms of traffic impacts.

Location	Number of Park-and-Ride Spaces Analyzed
Oak Grove Station	850
63 rd Avenue Station	725
Bass Lake Road Station	170
Robbinsdale Station	500

Table 5.1: Park-and-Ride Facility – Analysis Summary

The control of each LRT crossing was identified based on the Project Alignment and geometric design. **Table 5.2** below displays the existing and proposed control of the freight and LRT crossings along the Project Alignment.

Table 5.2: 2050 Build Condition	ns Rail Crossing Treatments
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Crossing Location	Existing Freight Crossing Control	Proposed LRT and/or Freight Crossing Control
CSAH 103 (W Broadway Ave)/Oak Grove Pkwy	N/A – no freight crossings	LRT controlled by traffic signal (non- revenue track)

CSAH 103 (W Broadway Ave)/99 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/94 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/CSAH 30 (93 rd Ave N)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/Setzler Pkwy	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/Maplebrook Pkwy	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/CSAH 109 (85 th Ave N)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/College Park Dr	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/Candlewood Dr	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/CSAH 130 (Brooklyn Blvd)/ CSAH 152	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/76 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 103 (W Broadway Ave)/75 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/73 rd Ave N	Flashers; preemption of CSAH 81 (Bottineau Blvd)/73 rd Ave N traffic signal	Freight – flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/73 rd Ave N traffic signal LRT – grade separated over CSAH 81 (Bottineau Blvd)
CSAH 81 (Bottineau Blvd)/CSAH 8 (W Broadway Ave)/ 71 st Ave N	Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 8 (W Broadway Ave)/ 71 st Ave N traffic signal	Freight – flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 8 (W Broadway Ave)/ 71 st Ave N traffic signal LRT – Controlled by traffic signal with transit signal priority

CSAH 81 (Bottineau Blvd)/I- 694/I-94	Grade separated under I-94/I-694	Freight – Grade separated under I-94/I- 694 LRT – Controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/63 rd Ave N	Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/63 rd Ave N traffic signal	Freight – Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/63 rd Ave N traffic signal LRT – Controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/CSAH 10 (Bass Lake Rd)	Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 10 (Bass Lake Rd) traffic signal	Freight – Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 10 (Bass Lake Rd) traffic signal LRT – Controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/Wilshire Blvd	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/Corvallis Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/47 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/TH 100	Grade separated over TH 100	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/Lakeland Ave N (North)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/CSAH 9 (42 nd Ave N)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/41 st Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/40 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/Lakeland Ave N (South)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority

CSAH 81 (Bottineau Blvd)/36 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/35 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (Bottineau Blvd)/Abbott Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	N/A – no freight crossings	Flashers and automatic gates; preemption of CSAH 81 (W Broadway Ave) / N Lowry Ave traffic signal
CSAH 81 (W Broadway Ave)/29 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (W Broadway Ave)/26 th Ave N	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (W Broadway Ave)/CSAH 2 (Penn Ave N)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (W Broadway Ave)/N James Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N Hillside Ave/N 21 st Ave/N Irving Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N Girard Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N Fremont Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N Emerson Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N Bryant Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N Aldrich Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N Lyndale Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 21 st Ave/N 4 th St	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority

N 21 st Ave/I-94 EB Ramps	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 152 (N Washington Ave)/N 21 st Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 81 (W Broadway Ave)/CSAH 152 (N Washington Ave)	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 152 (N Washington Ave)/N 17 th Ave/I-94 WB Ramp	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 152 (N Washington Ave)/N 15 th Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 152 (N Washington Ave)/N Plymouth Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
CSAH 152 (N Washington Ave)/N 10 th Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 10 th Ave/N 3 rd St	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 10 th Ave/N 4 th St	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 10 th Ave/N 5 th St	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
N 8 th Ave/N Oak Lake Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority
TH 55 (Olson Memorial Hwy)/N 7 th St/N 6 th Ave	N/A – no freight crossings	LRT controlled by traffic signal with transit signal priority

Several improvements were identified as part of the Project scope o in order to provide control of the LRT at intersections and to provide adequate infrastructure to accommodate buses, pedestrians, and parkand-ride traffic near stations. These Project elements were incorporated into the Build conditions modeling and are shown in **Appendix B**: Intersection Layout Tables. The significant Project infrastructure improvements and changes are listed below:

- Reconstruct 101st Avenue N and Oak Grove Parkway to accommodate the needs of the Project OMF site.
- Reconstruct CSAH 103 (West Broadway Avenue) from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the Project Alignment, station location, and park-and-ride parking structure.

- Install a new traffic signal at CSAH 103 (West Broadway Avenue) / 99th Avenue N to provide a second access point to the park-and-ride facility.
- Install a new traffic signal at CSAH 103 (West Broadway Avenue) / 94th Avenue N to allow LRT to transition from side-running to center-running.
- Reconstruct CSAH 103 (West Broadway Avenue) from a two-lane to a four-lane roadway from 78th Avenue N to CSAH 30 (93rd Avenue N) in Brooklyn Park.
- Install a new traffic signal at CSAH 103 (West Broadway Avenue) / Setzler Parkway to provide safe crossings of the LRT.
- Remove the traffic signal and modify the CSAH 103 (W Broadway Avenue) / Shopping Center Access north of CSAH 130/152 (Brooklyn Boulevard) intersection to right-in/right-out access.
- Install a new traffic signal at CSAH 130 (W Broadway Avenue) / 75th Avenue N to allow LRT to transition in/out of the CSAH 130 (W Broadway Avenue) median.
- Reduce the number of through lanes on CSAH 81 (Bottineau Boulevard) from 6 lanes to 4 lanes between 73rd Avenue N and a point north of 47th Avenue N.
- Install a new traffic signal at 63rd Avenue N / Louisiana Avenue to provide for pedestrian crossings of 63rd Avenue N and facilitate traffic exiting the park-and-ride facility.
- Install new traffic signals at CSAH 81 (Bottineau Boulevard) / Lakeland Avenue N (North) and at CSAH 81 (Bottineau Boulevard) / Lakeland Avenue N (South) to provide safe vehicle crossings of the LRT.
- Install traffic signal at CSAH 153 (N Lowry Avenue) / Theodore Wirth Parkway to facilitate traffic movements near the at-grade LRT crossing.
- Realign Theodore Wirth Parkway, install a new traffic signal at CSAH 153 (Lowry Avenue) / Theodore Wirth Parkway, and construct a new directional ramp from southbound CSAH 81 (Bottineau Boulevard) to CSAH 153 (Lowry Avenue N).
- Reduce the number of through lanes on CSAH 81 (W Broadway Avenue) from 4 lanes to 2 lanes between 29th Avenue and Lyndale Avenue.
- Close McNair Avenue at CSAH 81 (W Broadway Avenue).
- Reconstruct CSAH 81 (W Broadway Avenue) / Knox Avenue N to be a right-in-right-out intersection only.
- Install a new traffic signal at CSAH 81 (W Broadway Avenue)/ N James Avenue to allow the LRT to transition from CSAH 81 (W Broadway Avenue) to N 21st Avenue.
- Remove vehicle traffic on N 21st Avenue from N Hillside Avenue / N Irving Avenue to N 4th Street to create a transit and pedestrian/bicycle mall.
- Install new traffic signals along N 21st Avenue at the intersections of N Hillside Avenue / N Irving Avenue, N Girard Avenue, N Fremont Avenue, N Emerson Avenue, N Bryant Avenue, N Aldrich Avenue, N Lyndale Avenue, and N 4th Street to maintain neighborhood access and provide safe LRT crossings for vehicles, pedestrians, and bicyclists.
- Construct a new intersection and install a new traffic signal at N 21st Avenue/ I-94 EB Ramps.
- Install a new traffic signal at CSAH 152 (N Washington Avenue) / N 21st Avenue to allow LRT to transition to/from N 21st Avenue and CSAH 152 (N Washington Avenue).
- Reduce the number of through lanes on CSAH 152 (Washington Avenue) from 4 lanes to 2 lanes between N 21st Avenue and N 10th Avenue.
- Install a new traffic signal at CSAH 152 (N Washington Avenue) / N 15th Avenue to provide safe crossings of the LRT.

- Remove vehicle traffic on N 10th Avenue from CSAH 152 (N Washington Avenue) to N 5th Street to create a transit and pedestrian/bicycle mall.
- Install a new traffic signal at CSAH 152 (N Washington Avenue) / N 8th Avenue.
- Install new traffic signals along N 10th Avenue at N 3rd Street, N 4th Street, N 5th Street, and Oak Lake Avenue / N 8th Avenue to maintain neighborhood access.
- Construct new roadway connection on N 9th Avenue between N 5th Street and N 4th Street to maintain neighborhood access.

Construct new roadway connection of N 8th Avenue between N 5th Street and N 3rd Street to provide a through route from N Washington Avenue to N Oak Lake Avenue. In addition to the new intersections mentioned above that will be constructed as part of the Project, several other new intersections were assumed in the analysis north of TH 610 for 2050 Build conditions.

Signal timing was assumed to be optimized in the 2050 Build conditions analysis. The CSAH 103 (West Broadway Avenue), CSAH 81 (Bottineau Boulevard), CSAH 81 (W Broadway Avenue), and CSAH 152 (N Washington Avenue) corridors were all assumed to operate with coordinated and interconnected signals. All modeling was completed in VISSIM, except the Oak Gove Parkway / Xylon Avenue intersection which was analyzed in Synchro/SimTraffic.

The geometrics and intersection control for the Build conditions are shown in the intersection layout tables provided in **Appendix B**: Intersection Layout Tables.

5.2 Build Conditions Traffic Modeling Results

The same modeling areas created for the Existing and No Build conditions modeling were used for the Build analysis. The Build operations results are presented by modeling area in the following sections.

5.2.1 CSAH 103 (West Broadway)

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the Build peak hour scenarios with the following exceptions:

- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) in the 2050 AM and PM peaks
- CSAH 103 (West Broadway Avenue) / CSAH 109 (85th Avenue) in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / College Park Drive in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / 82nd Avenue in the 2050 PM peak
- CSAH 130 (Brooklyn Boulevard) / Shopping Center Access (west of CSAH 103) in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / CSAH 130 (Brooklyn Boulevard) / CSAH 152 in the 2050 PM peak

The overall intersection results are shown in **Table 5.3** below.

Movements for which queuing issues were identified under AM peak conditions were as follows:

- CSAH 103 (West Broadway Avenue) / 94th Avenue eastbound left movement
- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) westbound left movement

Movements for which queuing issues were identified under PM peak conditions were as follows:

- CSAH 103 (West Broadway Avenue) / 94th Avenue eastbound left movement
- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) southbound left, eastbound and westbound approaches
- CSAH 103 (West Broadway Avenue) / CSAH 109 (85th Avenue N) –northbound and eastbound approaches, southbound left and westbound left movements
- CSAH 130 (Brooklyn Boulevard) / Shopping Center Access (west of CSAH 103) southbound left and eastbound through movements
- CSAH 103 (West Broadway Avenue) / CSAH 130 (Brooklyn Boulevard) eastbound left and westbound through movements
- CSAH 130 (West Broadway Avenue) / 76th Avenue eastbound left and westbound left movements

A future traffic signal is expected to be needed at the Oak Grove Parkway / Xylon Avenue intersection to accommodate future traffic volumes. The traffic signal is recommended to be constructed (by others) as development traffic warrants. The signal is not needed for the Project or for LRT operations, and therefore is not proposed to be constructed as part of the Project.

The expansion of CSAH 103 (West Broadway Avenue) addressed the operational issues under No Build conditions with the exception of the CSAH 30 (93rd Avenue N), CSAH 109 (85th Avenue), and CSAH 130 (Brooklyn Boulevard) intersections. The poor operations (delay and queueing) along CSAH 103 (West Broadway Avenue) at the intersections of CSAH 30 (93rd Avenue) and CSAH 109 (85th Avenue) are due to the high demand at these intersections. Additionally, the removal of the channelized right-turns at CSAH 109 (85th Avenue) are safety improvements but are expected to increase vehicle delays. Queuing from these intersections extends beyond adjacent signals in both the northbound/southbound and eastbound/westbound directions. There are no proposed mitigations at these intersections, but Hennepin County may consider dual left-turn lanes for eastbound and westbound in the future and the Project design allows for the second left-turn lane to be added in the median.

The poor operations at the intersection of CSAH 103 (West Broadway Avenue) and CSAH 130 (Brooklyn Boulevard) are due to the increased eastbound left-turn demand due to access management changes at adjacent intersections. Queuing for this movement extends beyond the adjacent signal to the west.

The full table of 2050 Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
Oak Grove Pkwy / Xylon Ave	21.0	24.3	
	С	С	
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	23.5	25.8	
	С	С	

Table 5.3: CSAH 103 (West Broadway) – 2050 Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 103 (W Broadway Ave) / 99 th Ave N	23.1 C	52.9 D	
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	17.9 B	21.8 C	
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	15.7 В	21.3 C	
CSAH 103 (W Broadway Ave) / 94 th Ave N	32.3 C	20.3 C	
CSAH 103 (W Broadway Ave) / CSAH 30 (93 rd Ave N)	83.1 F	>100 F	
CSAH 103 (W Broadway Ave) / 92 nd Ave N*	2.6 A	4.1 A	
CSAH 103 (W Broadway Ave) / Setzler Pkwy	13.3 B	10.3 B	
CSAH 103 (W Broadway Ave) / 89 th Ave N*	1.2 A	0.7 A	
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	5.3 A	9.0 A	
CSAH 103 (W Broadway Ave) / CSAH 109 (85 th Ave N)	51.0 D	>100 F	
CSAH 103 (W Broadway Ave) / 84 th Ave N*	0.6 A	28.0 D	
CSAH 103 (W Broadway Ave) / College Park Dr	8.5 A	65.8 E	
CSAH 103 (W Broadway Ave) / 82 nd Ave N*	0.5 A	48.8 E	
CSAH 103 (W Broadway Ave) / Candlewood Dr	5.7 A	40.5 D	
CSAH 103 (W Broadway Ave) / 78 th Ave N*	0.5 A	24.7 C	
CSAH 103 (W Broadway Ave) / Shopping Center Access*	0.6 A	17.5 C	

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS	
	AM Peak Hour	PM Peak Hour	
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	35.7 D	68.2 E	
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	17.6 B	81.3 F	
CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)*	0.7 A	14.8 B	
CSAH 130 (W Broadway Ave) / 76 th Ave N	16.0 B	43.2 D	
CSAH 130 (W Broadway Ave) / 75 th Ave N	16.1 B	22.2 C	
CSAH 130 (W Broadway Ave) / 74 th Ave N*	2.0 A	5.0 A	
CSAH 130 (W Broadway Ave) / 73 rd Ave N	11.4 B	16.1 B	

5.2.2 CSAH 81 North

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the Build peak hour scenarios with the following exceptions:

- CSAH 81 (Bottineau Boulevard) / 63rd Avenue in the 2050 AM and PM peaks
- Wilshire Boulevard / Lakeland Avenue in the 2050 PM peak

The overall intersection results are shown in **Table 5.4** below.

Movements for which queuing issues were identified under AM peak conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / 63rd Avenue westbound right movement
- CSAH 10 (Bass Lake Road) / Adair Avenue westbound right movement
- CSAH 81 (Bottineau Boulevard) / 47th Avenue all eastbound movements

Movements for which queuing issues were identified under PM peak conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / 71st Avenue eastbound left movement
- CSAH 81 (Bottineau Boulevard) / 63rd Avenue northbound through, southbound left, eastbound left, and westbound right movements
- CSAH 10 (Bass Lake Road) / Adair Avenue westbound right movement
- CSAH 81 (Bottineau Boulevard) / Wilshire Boulevard eastbound left movement

• CSAH 81 (Bottineau Boulevard) / 47th Avenue – all eastbound movements

The poor operations at the intersection of CSAH 81 (Bottineau Boulevard) / 63rd Avenue are primarily due to the reduction in capacity of the northbound through, southbound through, and southbound left movements. The intersection is expected to operate over capacity during the 2050 AM and PM peak hours. These changes are proposed to improve pedestrian safety at the intersection and therefore mitigations are not proposed to increase vehicle capacity.

The poor operations at the intersection of Wilshire Boulevard / Lakeland Avenue are primarily due to the close spacing to CSAH 81 (Bottineau Boulevard) and traffic exiting the park-and-ride during the PM peak. The intersection capacity and spacing are constrained by the proximity of the freight rail, therefore mitigation is not proposed.

The full table of 2050 Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall	Overall	Overall
	Intersection	Intersection	Intersection
	Average Delay	Average Delay	Average Delay
	(seconds/	(seconds/	(seconds/
	vehicle) and	vehicle) and	vehicle) and
	LOS	LOS	LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / 73 rd Ave N	16.7	17.7	18.3
	В	В	B
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)	32.9	32.4	50.9
/ 71 st Ave N	C	C	D
CSAH 130 (W Broadway Ave) / 71 st Ave N	11.9	11.9	26.2
	B	B	C
CSAH 81 (Bottineau Blvd) / I-694 / I-94 WB Ramps	11.1	11.1	29.3
	B	B	C
CSAH 81 (Bottineau Blvd) / I-694 / I-94 EB Ramps	24.4	24.5	33.1
	C	C	C
CSAH 81 (Bottineau Blvd) / 63 rd Ave N	59.9	57.9	90.2
	E	E	F
63 rd Ave N / Louisiana Ave N / Park-and-Ride Access*	8.3	8.3	20.8
	A	A	C
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd)	13.5	13.9	20.3
	B	B	C

Table 5.4: CSAH 81 North – 2050 Build Conditions Results

Intersection	Overall	Overall	Overall
	Intersection	Intersection	Intersection
	Average Delay	Average Delay	Average Delay
	(seconds/	(seconds/	(seconds/
	vehicle) and	vehicle) and	vehicle) and
	LOS	LOS	LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 10 (Bass Lake Rd) / Sherburne Ave	9.5	9.6	12.4
	A	A	B
CSAH 10 (Bass Lake Rd) / Adair Ave*	7.0	7.1	5.9
	A	A	A
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	15.1	14.8	34.9
	B	B	C
Wilshire Blvd / Lakeland Ave N*	6.7	6.7	61.9
	A	A	E
CSAH 81 (Bottineau Blvd) / Corvallis Ave	42.7	40.4	19.8
	D	D	B
CSAH 81 (Bottineau Blvd) / 47 th Ave N	13.0	13.2	14.9
	B	B	B
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramp	4.7	4.7	10.8
	A	A	B
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramp	12.0	12.1	11.6
	B	B	B

*Side street stop-controlled intersection

5.2.3 CSAH 81 South

The results of the AM and PM peak hour analysis showed that all intersections are anticipated to operate at overall LOS D or better during the Build peak hour scenarios.

The overall intersection results are shown in **Table 5.5** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

• CSAH 81 (Bottineau Boulevard) / 40th Avenue N – northbound right movement

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (Bottineau Boulevard) / CSAH 9 (42nd Avenue N) eastbound left movement
- CSAH 81 (Bottineau Boulevard) / 40th Avenue N northbound left and right movements
- CSAH 81 (Bottineau Boulevard) / Abbott Avenue N eastbound left and right movements

These queues are due to higher volumes of traffic demand in peak hours. The queuing issues are similar to the 2050 No Build conditions.

The full table of 2050 Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	0.4 A	0.8 A	12.0 B
CSAH 81 (Bottineau Blvd) / CSAH 9 (42 nd Ave N)	35.3 D	35.4 D	52.2 D
CSAH 9 (42 nd Ave N) / CSAH 8 (W Broadway Ave)	12.7 B	12.7 B	20.5 C
CSAH 81 (Bottineau Blvd) / 41 st Ave N	13.5 B	N/A	20.5 C
CSAH 81 (Bottineau Blvd) / 40 th Ave N	13.3 B	N/A	46.2 D
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	0.4 A	N/A	1.3 A
CSAH 81 (Bottineau Blvd) / 36 th Ave N	28.9 C	N/A	34.8 C
CSAH 81 (Bottineau Blvd) / 35 th Ave N	5.0 A	N/A	13.0 B
CSAH 81 (Bottineau Blvd) / Abbott Ave N	15.2 B	N/A	18.3 B
CSAH 81 (W Broadway Ave) / N Oakdale Ave*	1.3 A	N/A	3.4 A
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	19.0 B	N/A	30.8 C
CSAH 153 (N Lowry Ave) / N Washburn Ave*	1.3 A	N/A	1.0 A

Intersection	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS	Overall Intersection Average Delay (seconds/ vehicle) and LOS
	AM Peak Hour No Freight Event	AM Peak Hour Freight Event	PM Peak Hour
CSAH 81 (W Broadway Ave) SB Ramp / N Theodore	5.4	N/A	5.2
Wirth Pkwy*	А	N/A	А

*Side street stop-controlled intersection

5.2.4 CSAH 81 (West Broadway)

The results of the AM and PM peak hour analysis showed that all intersections are expected to operate at overall LOS D or better during the Build peak hour scenarios with the following exception:

• CSAH 81 (W Broadway Avenue) / CSAH 2 (N Penn Avenue) in the PM peak hour.

The overall intersection results are shown in Table 5.6 below.

There were no movements for which queuing issues were identified under AM peak hour conditions.

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N 26th Avenue southbound left movement
- CSAH 81 (W Broadway Avenue) / CSAH 2 (N Penn Avenue) northbound approach, southbound through and right movements

The queues are due to high volumes of traffic demand in peak hours and the protected left-turn phasing planned on CSAH 81 (W Broadway Avenue). The southbound left turn lanes on CSAH 81 (W Broadway Avenue) at N 29th Avenue, N 26th Avenue, and CSAH 2 (N Penn Avenue) were extended to be as long as possible without significant right-of-way impacts.

The intersection of CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) is significantly reconfigured in the Build scenario, and with LRT will continue to operate with similar LOS as the Existing and No-Build scenarios.

The full table of 2050 Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 81 (W Broadway Ave) / 29 th Ave N	18.4	33.7
	В	С
CSAH 81 (W Broadway Ave) / 26 th Ave N	33.6	39.6
	С	D
CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N)	38.3	65.8
	D	E
CSAH 81 (W Broadway Ave) / Logan Ave N	13.7	5.9
	В	А
CSAH 81 (W Broadway Ave) / Knox Ave N	1.8	2.0
	А	А

Table 5.6: CSAH 81 (West Broadway) – 2050 Build Conditions Results

5.2.5 CSAH 81 (West Broadway) / N 21st Avenue

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the Build peak hour scenarios with the following exception:

• CSAH 81 (W Broadway Avenue) / N 2nd Street in the 2050 PM peak

The overall intersection results are shown in **Table 5.7** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N Girard Avenue northbound approach
- CSAH 81 (W Broadway Avenue) / N Fremont Avenue eastbound through/right and westbound through movements
- CSAH 81 (W Broadway Avenue) / N Emerson Avenue eastbound through movement
- CSAH 81 (W Broadway Avenue) / N Dupont Avenue eastbound through/right movements
- CSAH 81 (W Broadway Avenue) / N Aldrich Avenue eastbound through/right and westbound through/right movements
- CSAH 81 (W Broadway Avenue) / N Lyndale Avenue eastbound through and right movements and southbound approach
- CSAH 81 (W Broadway Avenue) / N 4th Street eastbound and westbound approaches
- CSAH 81 (W Broadway Avenue) / I-94 EB Ramps eastbound approach and westbound left movement
- CSAH 152 (N Washington Avenue) / N 21st Avenue northbound through movement and eastbound and southbound approaches

• CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) – southbound left and right movements, and westbound through and right movements

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 81 (W Broadway Avenue) / N James Avenue westbound through/right movements
- CSAH 81 (W Broadway Avenue) / N Girard Avenue northbound right movement
- CSAH 81 (W Broadway Avenue) / N Fremont Avenue eastbound through/right and westbound through movements, and southbound approach
- CSAH 81 (W Broadway Avenue) / N Emerson Avenue eastbound through and westbound through/right movements
- CSAH 81 (W Broadway Avenue) / N Dupont Avenue eastbound through/right and westbound through/right movements, and southbound approach
- CSAH 81 (W Broadway Avenue) / N Aldrich Avenue eastbound through/right and westbound through/right movements
- N 21st Avenue / N Lyndale Avenue southbound through movement
- CSAH 81 (W Broadway Avenue) / N Lyndale Avenue eastbound through and right movements and northbound and southbound approaches
- CSAH 81 (W Broadway Avenue) / N 4th Street eastbound and westbound approaches
- N 21st Avenue / I-94 EB Ramps westbound approach
- CSAH 81 (W Broadway Avenue) / I-94 EB Ramps westbound left movement and eastbound and southbound approaches
- CSAH 152 (N Washington Avenue) / N 21st Avenue northbound through and right movements and eastbound and southbound approaches
- CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) eastbound left, northbound right, and westbound through and right movements, and southbound approach
- CSAH 81 (W Broadway Avenue) / N 2nd Street eastbound through/right and westbound through/right movements, and northbound and southbound approaches
- CSAH 81 (W Broadway Avenue) / W River Road westbound left movement

At CSAH 81 (W Broadway Avenue) / N 2nd Street, the overall intersection operates at LOS E in the PM peak conditions which is due to the short intersection spacing and queues from the CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) intersection. The westbound queue in the 2050 PM peak is anticipated to impact the intersection of CSAH 81 (W Broadway Avenue) / W River Road.

The full table of 2050 Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results. Project mitigations for this segment are discussed in section 6.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 81 (W Broadway Ave) / N James Ave	11.7	17.4
	В	В
N 21 st Ave / N Irving Ave	6.1	9.7
	А	А
CSAH 81 (W Broadway Ave) / N Irving Ave	10.8	11.5
CSAH 61 (W BIOUGWUY AVE) / N IIVING AVE	В	В
N 21 st Ave / N Girard Ave	0.9	1.9
	А	А
CSAH 81 (W Broadway Ave) / N Girard Ave	9.7	12.1
CSAH SI (W BIOGGWGY AVE) / N GIIGIG AVE	А	В
N 21 st Ave / N Fremont Ave	3.0	4.4
N 21 AVe / N Fremont Ave	А	А
	24.3	21.8
CSAH 81 (W Broadway Ave) / N Fremont Ave	С	С
N 21 st Ave / N Emerson Ave	1.4	3.3
N 21 st Ave / N Emerson Ave	А	А
	16.8	20.1
CSAH 81 (W Broadway Ave) / N Emerson Ave	В	С
	16.9	10.5
CSAH 81 (W Broadway Ave) / N Dupont Ave	В	В
	1.5	2.9
N 21 st Ave / N Bryant Ave	А	А
N 21 st Ave / N Aldrich Ave	1.3	3.7
N 21 st Ave / N Aldrich Ave	А	А
	20.8	21.2
CSAH 81 (W Broadway Ave) / N Aldrich Ave	С	С
	10.9	22.6
N 21 st Ave / N Lyndale Ave	В	С
CCALL 91 (M/ Progdurgy Ave) / N. Lyndala Ave	31.9	38.3
CSAH 81 (W Broadway Ave) / N Lyndale Ave	С	D

Table 5.7: CSAH 81 (West Broadway) / N 21st Avenue – 2050 Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
N 21 st Ave / N 4 th St	7.9 A	11.5 B
CSAH 81 (W Broadway Ave) / N 4 th St	15.4 B	24.8 C
N 21 st Ave / I-94 EB Ramps	37.6 D	39.0 D
CSAH 81 (W Broadway Ave) / I-94 Ramps	21.2 C	29.3 C
CSAH 152 (N Washington Ave) / N 21 st Ave	27.3 C	37.8 D
N 22 nd Ave / N 2 nd St*	2.9 A	8.0 A
N 21 st Ave / N 2 nd St*	5.1 A	18.7 B
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	35.6 D	46.6 D
CSAH 81 (W Broadway Ave) / N 2 nd St	19.5 B	56.4 E
CSAH 81 (W Broadway Ave) / W River Rd	8.6 A	36.3 D

Many of the intersections in this area of the Project Alignment are very closely spaced due to the grid network present in the area.

The northbound and southbound left turn queues at CSAH 81 (W Broadway Avenue) / N Lyndale Avenue are due to queuing on CSAH 81 (W Broadway Avenue).

The intersection of CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) is anticipated to operate at or over capacity in 2050 Build conditions resulting in queuing issues on all intersection approaches. The short spacing between CSAH 81 (W Broadway Avenue) and N 21st Avenue, as well as protected-only left turn phasing on CSAH 152 (N Washington Avenue) is expected to result in southbound queuing that has upstream impacts at multiple intersections.

5.2.6 CSAH 152 (N Washington Avenue) / N 10th Avenue

The results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the Build peak hour scenarios with the following exceptions:

- CSAH 152 (N Washington Avenue) / N 17th Avenue / I-94 WB Ramp in the 2050 PM peak
- N 17th Avenue / N 2nd Street in the 2050 PM peak
- N Lyndale Avenue / N Plymouth Avenue in the 2050 PM peak
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue in the 2050 AM peak and 2050 PM peak
- N Plymouth Avenue / N 2nd Street in the 2050 AM peak and 2050 PM peak
- N 8^{th} Avenue / N Oak Lake Avenue in the 2050 PM peak
- N 7th Street / W Lyndale Avenue in the 2050 AM peak
- N 7th Street / E Lyndale Avenue in the 2050 AM peak
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue in the 2050 AM peak and 2050 PM peak
- TH 55 (Olson Memorial Highway) / N Oak Lake Avenue / Border Avenue in the 2050 AM peak

The overall intersection results are shown in **Table 5.8** below.

Movements for which queuing issues were identified under AM peak hour conditions were as follows:

- N Lyndale Avenue / N Plymouth Avenue eastbound right and westbound left movements and southbound approach
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue eastbound through, eastbound right, southbound left, westbound left and westbound through movements
- N Plymouth Avenue / N 2nd Street eastbound left/through, westbound left and westbound through movements
- CSAH 152 (N Washington Avenue) / N 8th Avenue southbound approach
- N 8th Avenue / N Oak Lake Avenue northbound approach
- N 7th Street / W Lyndale Avenue eastbound through and right movements
- N 7th Street / E Lyndale Avenue eastbound through movement
- N 7th Street / Oak Lake Avenue N –northbound left/through movements and eastbound and southbound approaches
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue northbound left, eastbound through, eastbound right, and westbound left movements and southbound approach
- TH 55 (Olson Memorial Highway) / N Oak Lake Avenue / Border Avenue eastbound left, eastbound through, southbound left, and southbound through movements
- CSAH 152 (N Washington Avenue) / N 6th Avenue eastbound right and southbound through movements
- CSAH 152 (N Washington Avenue) / N 5th Avenue southbound through/right movements

Movements for which queuing issues were identified under PM peak hour conditions were as follows:

- CSAH 152 (N Washington Avenue) / N 17th Avenue / I-94 WB Ramp northbound right, southbound left, westbound left, and westbound right movements
- N 2nd Street / N 17th Avenue northbound, eastbound and southbound approaches

- N Lyndale Avenue / N Plymouth Avenue eastbound through, eastbound right, and westbound left movements, and northbound and southbound approaches
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue northbound left and westbound through movements, and eastbound approach
- N Plymouth Avenue / N 2nd Street eastbound left/through movements and northbound, southbound, and westbound approaches
- CSAH 152 (N Washington Avenue) / N 8th Avenue southbound and westbound approaches
- N 8th Avenue / N Oak Lake Avenue northbound and westbound approaches
- N 7th Street / Oak Lake Avenue N westbound through/right movements and northbound and southbound approaches
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue eastbound through, eastbound right, and westbound left movements, and northbound and southbound approaches
- TH 55 (Olson Memorial Highway) / N Oak Lake Avenue / Border Avenue eastbound left, eastbound through, westbound through, westbound right, southbound left, and southbound through movements
- N 6th Avenue / N 5th Street eastbound left and through movements
- CSAH 152 (N Washington Avenue) / N 6th Avenue –southbound through movement and eastbound approach
- CSAH 152 (N Washington Avenue) / N 5th Avenue –northbound through/right and southbound through/right movements and westbound approach

Many of the LOS and queueing issues in the 2050 Build conditions were also present in the Existing and/or No Build conditions, or the 95th percentile queue extends to an upstream intersection that is less than 400 feet away. Three areas where the LOS and queuing issues are directly related to the Build conditions are discussed in the following paragraphs.

In the PM peak, the increased traffic forecast on 2nd Street N and the existing side street stop control on N 17th Avenue result in insufficient gaps for traffic on N 17th Avenue. The queues on N 17th Avenue would extend from 2nd Street N to CSAH 152 (N Washington Avenue)

The 2050 PM peak hour forecasts would result in N Plymouth Avenue operating over capacity based on the existing geometry and signal phasing. While traffic volumes are not anticipated to significantly increase along N Plymouth Avenue compared to 2050 No Build conditions, the reduction in capacity on CSAH 152 (N Washington Avenue) reduces the amount of available green time on N Plymouth Avenue. The modeling showed delays and queues at all the intersections on N Plymouth Avenue.

In the AM peak, traffic operations along N 7th Street are not anticipated to significantly change compared to 2050 No Build conditions. At the TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue intersection, which is a key entry point to downtown, the LRT signal phasing causes the intersection delays to increase. The assumed 2050 geometry and signal operations have been optimized as much as possible, therefore no additional mitigations are being considered at this location.

The full table of 2050 Build conditions LOS and queuing analysis results can be found in **Appendix C**: Traffic Analysis Detailed Results. Project mitigations are discussed in the following section.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
CSAH 152 (N Washington Ave) / N 17 th Ave / I-94 WB Ramp	32.2 C	>100 F
	13.4	>100
N 17 th Ave / N 2 nd St*	В	F
	28.8	15.3
CSAH 152 (N Washington Ave) / N 15 th Ave	С	В
	1.7	30.2
N 15 th Ave / N 2 nd St*	А	С
	45.0	>100
N Lyndale Ave / N Plymouth Ave	D	F
	82.8	>100
CSAH 152 (N Washington Ave) / N Plymouth Ave	F	F
N Plymouth Ave / N 2 nd St	65.9	>100
N Plymouth Ave / N 2 St	E	F
CSAH 152 (N Washington Ave) / N 10 th Ave	18.1	18.4
CSAH 152 (N Wushington Ave) / N 10 Ave	В	В
N 10 th Ave / N 2 nd St	12.3	16.9
	В	В
CSAH 152 (N Washington Ave) / N 8 th Ave	28.9	26.2
	С	С
N 10 th Ave / N 3 rd St	10.9	10.0
	В	А
N 10 th Ave / N 4 th St	Not Analyzed	
N 10 th Ave / N 5 th St	8.5	8.7
	А	А
N 8 th Ave / N 5 th St*	4.4	25.4
NO AVE / NO SLA	А	С
N 9 th Ave / N 5 th St*	1.9	10.3
	А	В
N 8 th Ave / N Oak Lake Ave	28.6	77.1
	С	E

Table 5.8: CSAH 152 (N Washington Ave) / N 10th Ave - 2050 Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
N 7th Ct. (M Langela La Asso	>100	17.0
N 7 th St / W Lyndale Ave	F	В
N 7 th St / E Lyndale Ave	57.5	23.2
N 7 St / E Lynddie Ave	E	С
N 7 th St / N Oak Lake Ave	48.8	36.8
N 7 St 7 N Odk Lake Ave	D	D
	56.1	72.8
TH 55 (Olson Memorial Hwy) / N 7 th St / N 6 th Ave	E	E
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave /	>100	40.4
Border Ave	F	D
N 6 th Ave / N 5 th St	12.0	20.6
NO AVE/NO SI	В	С
N 6 th Ave / N 3 rd St*	4.3	12.8
NO AVE/NS St	А	В
CSAH 152 (N Washington Ave) / N 6 th Ave	14.9	20.3
CSAH 152 (N Washington Ave) / N 6 Ave	В	С
N 5 th Ave / N 3 rd St*	3.2	3.7
	А	А
CSAH 152 (N Washington Ave) / N 5 th Ave	14.4	32.1
	В	С
N 5 th Ave / N 2 nd St*	10.7	20.1
	В	С

5.3 Build Conditions Traffic Modeling Summary

The results of the 2050 Build AM and PM peak conditions analysis showed that all intersections would be expected to operate at overall LOS D or better during the Build peak hour scenarios with the following exceptions:

- CSAH 103 (West Broadway Avenue) / CSAH 30 (93rd Avenue N) in the 2050 AM and PM peaks
- CSAH 103 (West Broadway Avenue) / CSAH 109 (85th Avenue N) in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / College Park Drive in the 2050 PM peak
- CSAH 103 (West Broadway Avenue) / 82nd Avenue in the 2050 PM peak
- CSAH 130 (Brooklyn Boulevard) / Shopping Center Access (west of CSAH 103) in the 2050 PM peak

- CSAH 103 (West Broadway Avenue) / CSAH 130 (Brooklyn Boulevard) / CSAH 152 in the 2050 PM peak
- CSAH 81 (Bottineau Boulevard) / 63rd Avenue in the 2050 AM and PM peaks
- Wilshire Boulevard / Lakeland Avenue in the 2050 PM peak
- CSAH 81 (W Broadway Avenue) / CSAH 2 (N Penn Avenue) in the PM peak
- CSAH 81 (W Broadway Avenue) / N 2nd Street in the 2050 PM peak
- CSAH 152 (N Washington Avenue) / N 17th Avenue / I-94 WB Ramp in the 2050 PM peak
- N 17th Avenue / N 2nd Street in the 2050 PM peak
- N Lyndale Avenue / N Plymouth Avenue in the 2050 PM peak
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue in the 2050 AM peak and 2050 PM peak
- N Plymouth Avenue / N 2nd Street in the 2050 AM peak and 2050 PM peak
- N 8th Avenue / N Oak Lake Avenue in the 2050 PM peak
- N 7th Street / W Lyndale Avenue in the 2050 AM peak
- N 7th Street / E Lyndale Avenue in the 2050 AM peak
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue in the 2050 AM peak and 2050 PM peak
- TH 55 (Olson Memorial Highway) / N Oak Lake Avenue / Border Avenue in the 2050 AM peak

A future traffic signal is expected to be needed at the Oak Grove Parkway / Xylon Avenue intersection to accommodate future traffic volumes independent of the Project. The traffic signal is recommended to be constructed (by others) when warranted by development traffic. Therefore, the signal is not proposed to be constructed as part of the Project.

The expansion of CSAH 103 (West Broadway Avenue) addressed the operational issues under No Build conditions with the exception of the CSAH 30 (93rd Avenue N), CSAH 109 (85th Avenue) and CSAH 130 (Brooklyn Boulevard) intersections. The poor operations (delay and queueing) along CSAH 103 (West Broadway Avenue) at the intersections of CSAH 30 (93rd Avenue) and CSAH 109 (85th Avenue) are due to the high demand at these intersections. Additionally, the removal of the channelized right-turns at CSAH 109 (85th Avenue) are safety improvements but are expected to increase vehicle delays. Queuing from these intersections extends beyond adjacent signals in both the northbound/southbound and eastbound/westbound directions. There are no proposed mitigations at these intersections, but Hennepin County may consider dual left turn lanes for eastbound and westbound in the future and the Project design allows for the second left-turn lane to be added in the median.

The poor operations at the intersection of CSAH 103 (West Broadway Avenue) / CSAH 130 (Brooklyn Boulevard) are due to the increased eastbound left turn demand due to access management changes at adjacent intersections. Queuing for this movement extends beyond the adjacent signal to the west.

The poor operations at the intersection of CSAH 81 (Bottineau Boulevard) / 63rd Avenue are primarily due to the reduction in capacity of the northbound through, southbound through, and southbound left movements. The intersection is expected to operate over capacity during the 2050 AM and PM peak hours. These changes are proposed to improve pedestrian safety at the intersection and therefore mitigations are not proposed to increase vehicle capacity.

The poor operations at the intersection of Wilshire Boulevard / Lakeland Avenue are primarily due to the close spacing to CSAH 81 (Bottineau Boulevard) and traffic exiting the park-and-ride during the PM peak.

The intersection capacity and spacing are constrained by the proximity of the freight rail, therefore mitigation is not proposed.

The intersection of CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) is significantly reconfigured in the Build scenario, and with LRT will continue to operate with similar LOS as the Existing and No-Build scenarios.

At CSAH 81 (W Broadway Avenue) / N 2nd Street, the overall intersection operates at LOS E in the PM peak conditions which is due to the short intersection spacing and queues from the CSAH 81 (W Broadway Avenue) / CSAH 152 (N Washington Avenue) intersection. The westbound queue in the 2050 PM peak is anticipated to impact the intersection of CSAH 81 (W Broadway Avenue) / W River Road.

In the PM peak, the increased traffic forecast on 2nd Street N and the existing side street stop control on N 17th Avenue result in insufficient gaps for traffic on N 17th Avenue. The queues on N 17th Avenue would extend from 2nd Street N to CSAH 152 (N Washington Avenue).

The 2050 PM peak hour forecasts would result in N Plymouth Avenue operating over capacity based on the existing geometry and signal phasing. While traffic volumes are not anticipated to significantly increase along N Plymouth Avenue compared to 2050 No Build conditions, the reduction in capacity on CSAH 152 (N Washington Avenue) reduces the amount of available green time on N Plymouth Avenue. The modeling showed delays and queues at all the intersections on N Plymouth Avenue.

In the AM peak, traffic operations along N 7th Street are not anticipated to significantly change compared to 2050 No Build conditions. At the TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue intersection, which is a key entry point to downtown, the LRT signal phasing causes the intersection delays to increase. The assumed 2050 geometry and signal operations have been optimized as much as possible, therefore no additional mitigations are being considered at this location.

6.0 Mitigated Build Analysis

Where the 2050 Build analysis showed a traffic impact due to the Project, traffic improvements have been identified to mitigate the impacts. The following sections present the proposed mitigation measures and the resulting traffic operations. All intersections were modeled in VISSIM. Only the segments and intersections with proposed mitigations are presented in this section.

6.1 Traffic Mitigation

Proposed traffic mitigations for the Project are summarized in Table 6.1.

Table 6.1: 2050 Build Traffic Mitigations

Intersection	Recommended Mitigation Measures	Rationale
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	Provide 100-ft westbound right turn lane	Reduces westbound queues on CSAH 81 (W Broadway Ave)
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	Modify I-94 off-ramp lane configuration to L / L / TR Implement protected-permissive left phase for westbound left turn	Improves intersection LOS from LOS F to LOS D and eliminates queuing issues for all movements
N 17th Ave / N 2nd St	Install all-way stop control	Eliminates queuing issues on N 17 th Ave
N Lyndale Ave / N Plymouth Ave	Provide 150-ft northbound right turn lane Implement protected-permissive left-turn phasing	Reduces intersection delay to similar level as experienced in 2050 No Build
N Plymouth Ave / N 2nd St	Provide 100-ft southbound left turn lane Provide 50-ft eastbound left turn lane Provide 100-ft westbound left turn lane	Reduces intersection delay to similar level as experienced in 2050 No Build

6.2 Mitigated Build Conditions Traffic Modeling Results

6.2.1 CSAH 81 (West Broadway) / N 21st Avenue

After incorporating the improvements and mitigations described above, the results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the Mitigated Build peak hour scenarios.

The overall intersection results are shown in **Table 6.2** below.

Table 6.2: CSAH 81 (West Broadway) / N 21st Avenue – 2050 Mitigated Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
	AM Peak Hour	PM Peak Hour
	11.3	16.7
CSAH 81 (W Broadway Ave) / N James Ave	В	В
N 21 st Ave / N Irving Ave	5.9	10.3
N ZI AVE7 N IIVIIIg AVE	А	В
CSAH 81 (W Broadway Avo) / N Irving Avo	10.6	10.9
CSAH 81 (W Broadway Ave) / N Irving Ave	В	В
	0.8	2.0
N 21 st Ave / N Girard Ave	А	А
CSAH 81 (W Broadway Ave) / N Girard Ave	9.9	11.8
CSAH 81 (W BIODOWOY AVE) / N GIIDIO AVE	А	В
N 21 st Ave / N Fremont Ave	3.1	4.8
N ZI AVE / N FIEMONT AVE	А	А
	24.7	22.1
CSAH 81 (W Broadway Ave) / N Fremont Ave	С	С
N 21 st Ave / N Emerson Ave	1.4	3.0
N ZI AVE / N LINEISON AVE	А	А
CSAH 81 (W Broadway Ave) / N Emerson Ave	16.9	19.8
CSATISE (W BIOGGWGY AVE) / N EITHEISON AVE	В	В
CSAH 81 (W Broadway Ave) / N Dupont Ave	17.3	10.9
	В	В
N 21 st Ave / N Bryant Ave	1.5	2.3
	А	А
Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS
--	---	---
	AM Peak Hour	PM Peak Hour
N 21 st Ave / N Aldrich Ave	1.2	3.8
NZI AVE/ NAUTOTAVE	A	А
CSAH 81 (W Broadway Ave) / N Aldrich Ave	21.2	21.3
CSATIOL (W BIOLOWAY AVE) / N AIGHTAVE	С	С
N 21 st Ave / N Lyndale Ave	11.0	15.0
	В	В
CSAH 81 (W Broadway Ave) / N Lyndale Ave	31.9	35.8
CSATIOL (W BIOLOWAY AVE) / N Lynaule Ave	С	D
N 21 st Ave / N 4 th St	7.5	13.6
	A	В
CSAH 81 (W Broadway Ave) / N 4 th Street	16.2	26.5
CSAIT OI (W BIOLOWOY AVE) / N 4 Street	В	С
N 21 st Ave / I-94 EB Ramps	35.2	37.1
	D	D
	20.8	29.4
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	С	С
	27.7	35.2
CSAH 152 (N Washington Ave) / N 21 st Ave	С	D
N 22 nd Ave / N 2 nd St*	2.9	7.3
N 22 ^m Ave / N 2 ^m St ^A	А	А
N 21 st Ave / N 2 nd St*	5.3	4.9
N ZI AVE / N Z SL^	А	А
CSAH 81 (W Broadway Ave) / CSAH 152 (N	33.9	47.2
Washington Ave)	С	D
CSAH 81 (W Broadway Ave) / N 2 nd St	18.5	31.0
CSATT DE (W BIOGUWGY AVE) / N Z SL	В	С
CSAH 81 (W Broadway Ave) / W River Rd	8.5	20.3
	А	С

*Stop-controlled intersection

Even after the implementation of the Project mitigations, several queuing issues are still anticipated to exist. **Table 6.3** and **Table 6.4** and below summarizes these remaining queuing issues for the AM and PM peak periods respectively and why additional mitigations were not developed to address them.

Intersection	Movement(s)	Rationale for Not Proposing Additional Mitigation
CSAH 81 (W Broadway Ave) / N Lyndale Ave	Eastbound right	Average back of queue exceeds storage length but storage is only 100 feet
CSAH 152 (N Washington Ave) / N 21st Ave	Southbound left	Movement serves less than 100 vehicles and is less than 6 seconds from the LOS D/E threshold. Protected-permissive left-turn phasing already assumed to be implemented and turn lane length has been maximized within available space
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	Southbound left	Not anticipated to have a significant impact on the upstream CSAH 152 (N Washington Ave)/N 21st Ave intersection. All movements at that intersection (except southbound left) operate at LOS D or better.
CSAH 81 (W Broadway Ave) / I-94 Ramps	Eastbound right	Average back of queue exceeds storage length but storage is only 70 feet

Table 6.4: CSAH 81 (West Broadway) / N 21st Avenue: Remaining Queuing Issues after Mitigation (PM Peak)

Intersection	Movement(s)	Rationale for Not Proposing Additional Mitigation
N 21st Ave / N Lyndale Ave	Southbound through	Movement operates at LOS B
CSAH 81 (W Broadway Ave) / N Lyndale Ave	Eastbound right	Average back of queue exceeds storage length but storage is only 100 feet and right-turn on red is not allowed
CSAH 81 (W Broadway Ave) / N Lyndale Ave	Northbound approach	Queuing issue occurs in 2050 No Build for through and right movements
CSAH 81 (W Broadway Ave) / I-94 Ramps	Eastbound right	Average back of queue exceeds storage length but storage is only 70 feet
CSAH 152 (N Washington Ave) / N 21 st Ave	Eastbound approach	Eastbound approach queues not anticipated to impact upstream intersection at N 21st Ave/I-94 Ramps
CSAH 152 (N Washington Ave) / N 21 st Ave	Northbound approach	Average back of queue exceeds storage but approach operates at LOS D or better and queues are not anticipated to impact upstream intersections.

Intersection	Movement(s)	Rationale for Not Proposing Additional Mitigation
CSAH 152 (N Washington Ave) / N 21 st Ave	Southbound left	Movement less than 3 seconds from LOS D/E threshold. Protected-permissive left- turn phasing already assumed to be implemented and turn lane length has been maximized within available space
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	Eastbound left and right, southbound left, and westbound right	Intersection design accommodates future LRT station while minimizing ROW impacts
CSAH 81 (W Broadway Ave) / N 2nd St	Westbound through and right	To mitigate queuing issues at N 2 nd Street, additional capacity needed at CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave) intersection, which is limited by ROW (as described above)
CSAH 81 (W Broadway Ave) / N 4th St	Eastbound approach	Average back of queue exceeds storage length but storage length is only 125 feet and queues not anticipated to cause any upstream intersections to operate at LOS E or F

6.2.2 CSAH 152 (N Washington Avenue) / N 10th Avenue

After incorporating the improvements and mitigations described above, the results of the 2050 AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better during the Mitigated Build peak hour scenarios with the following exceptions:

- N Lyndale Avenue / N Plymouth Avenue in the 2050 PM peak
- CSAH 152 (N Washington Avenue) / N Plymouth Avenue in the 2050 AM peak and 2050 PM peak
- N Plymouth Avenue / N 2nd Street in the 2050 PM peak
- N 8th Avenue / N Oak Lake Avenue in the 2050 AM peak
- N 7th Street / W Lyndale Avenue in the 2050 AM peak
- N 7th Street / N Oak Lake Avenue in the 2050 AM peak
- TH 55 (Olson Memorial Highway) / N 7th Street / N 6th Avenue in the 2050 PM peak

With the exception of the N 8th Avenue/ N Oak Lake Avenue intersection, all these intersections operated at LOS E or LOS F in the 2050 No Build conditions. The overall intersection results are shown in **Table 6.5** below.

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS				
	AM Peak Hour	PM Peak Hour				
CSAH 152 (N Washington Ave) / N 17 th Ave / I-94 WB	32.6	46.8				
Ramp	С	D				
N 17 th Ave / N 2 nd St*	14.1	21.2				
	В	С				
CSAH 152 (N Washington Ave) / N 15 th Ave	29.8	13.7				
CSAH 152 (N Wushington Ave) / N 15 Ave	С	В				
N 15 th Ave / N 2 nd St*	1.6	4.3				
N 15 AVE / N 2 St"	А	А				
N Lyndale Ave / N Plymouth Ave	29.2	59.3				
N Lynddie Ave / N Plymouth Ave	С	E				
CCALL 152 (N. Machinester, Ave.) (N. Dhumouth Ave.	60.3	74.2				
CSAH 152 (N Washington Ave) / N Plymouth Ave	E	Е				
N Plymouth Ave / N 2 nd St	50.0	64.7				
N Plymouth Ave / N 2 St	D	E				
CSAH 152 (N Washington Ave) / N 10 th Ave	16.5	19.0				
CSAH 152 (N Wushington Ave) / N 10 Ave	В	В				
N 10 th Ave / N 2 nd St	11.8	14.5				
	В	В				
CSAH 152 (N Washington Ave) / N 8 th Ave	27.2	27.7				
	С	С				
N 10 th Ave / N 3 rd St	10.9	9.3				
	В	A				
N 10 th Ave / N 4 th St	Not Ar	nalyzed				
N 10 th Ave / N 5 th St	8.4	7.2				
	А	А				
N 8 th Ave / N 5 th St*	5.1	8.4				
	А	А				
N 9 th Ave / N 5 th St*	1.8	1.6				
	А	А				

Table 6.5: CSAH 152 (N Washington Ave) / N 10th Ave - 2050 Mitigated Build Conditions Results

Intersection	Overall Intersection Average Delay (seconds/vehicle) and LOS	Overall Intersection Average Delay (seconds/vehicle) and LOS				
	AM Peak Hour	PM Peak Hour				
N 8 th Ave / N Oak Lake Ave	79.0 E	46.6 D				
N 7 th St / W Lyndale Ave	>100 F	18.4 B				
N 7 th St / E Lyndale Ave	53.1 D	23.0 C				
N 7 th St / N Oak Lake Ave	57.0 E	42.8 D				
TH 55 (Olson Memorial Hwy) / N 7 th St / N 6 th Ave	54.0 D	71.9 E				
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	32.1 C	42.9 D				
N 6 th Ave / N 5 th St	12.1 B	20.5 C				
N 6 th Ave / N 3 rd St*	4.6 A	10.7 B				
CSAH 152 (N Washington Ave) / N 6 th Ave	13.7 B	20.5 C				
N 5 th Ave / N 3 rd St*	3.2 A	4.0 A				
CSAH 152 (N Washington Ave) / N 5 th Ave	15.9 B	34.7 C				
N 5 th Ave / N 2 nd St*	10.8 B	20.5 C				

*Stop-controlled intersection

Even after the implementation of the Project mitigations, several queuing issues are still anticipated to exist. **Table 6.6** and **Table 6.7** below summarizes these remaining queuing issues for the AM and PM peak periods respectively and why additional mitigations were not developed to address them.

Table 6.6: CSAH 152 (N Washington Ave) / N 10th Ave: Remaining Queuing Issues after Mitigation (AM Peak)

Intersection	Movement(s)	Rationale for Not Proposing Additional Mitigation
CSAH 152 (N Washington Ave) / N Plymouth Ave	Southbound left and right	Overall intersection delay expected to decrease compared to 2050 No Build conditions and queuing is not expected to impact the upstream intersection which is expected to operate at LOS C
CSAH 152 (N Washington Ave) / N Plymouth Ave	Westbound left	Expected to operate at LOS F with queuing issue in 2050 No Build. 2050 Mitigated Build delay within 2 seconds of LOS D/LOS E threshold
CSAH 152 (N Washington Ave) / N Plymouth Ave	Eastbound right	Average back of queue exceeds storage length but storage is only 90 feet
N Plymouth Ave / N 2nd St	Westbound left and through	Movement and overall intersection delays are expected to improve compared to 2050 No Build
N 7th St / W Lyndale Ave	Eastbound through and right	Movements expected to operate at LOS F (100+ sec of delay) in 2050 No Build
N 7th St / E Lyndale Ave	Eastbound through	Movement expected to operate at LOS F (100+ sec of delay) in 2050 No Build
N 7th St / N Oak Lake Ave	Eastbound through and right, northbound left and through, and southbound left and through	Overall intersection is expected to operate at LOS E under 2050 No Build and intersection delay is similar in 2050 Mitigated Build
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	Southbound approach	Queuing is similar in 2050 No Build
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	Eastbound through	Movement expected to operate at LOS D in 2050 Build

Table 6.7: CSAH 152 (N Washington Ave) / N 10th Ave: Remaining Queuing Issues after Mitigation (PM Peak)

Intersection	Movement(s)	Rationale for Not Proposing Additional Mitigation
N Lyndale Ave / N Plymouth Ave	Northbound right	Movement anticipated to operate with similar delay and queue as in 2050 No Build
N Lyndale Ave / N Plymouth Ave	Southbound left and through	Movement already anticipated to operate at LOS E in 2050 No Build. 2050 Mitigated Build delay for southbound through movement is within 1 second of LOS D/ LOS E threshold
CSAH 152 (N Washington Ave) / N Plymouth Ave	Eastbound approach and southbound left	Eastbound approach delay expected to improve compared to 2050 No Build
N Plymouth Ave / N 2nd St	Westbound approach, northbound left and through, and southbound left	Movement delays expected to improve compared to 2050 No Build
CSAH 152 (N Washington Ave) / N 8th Ave	Northbound approach	All movements expected to operate at LOS D or better and queuing issues don't result in any LOS or queuing issues at upstream intersection of CSAH 152 (N Washington Ave) / N 6th Ave
N 7th St / N Oak Lake Ave	Eastbound left and westbound through and right	Queuing issue expected in 2050 No Build and movement delays expected to be similar or better in 2050 Mitigated Build compared to 2050 No Build
N 7th St / N Oak Lake Ave	Northbound approach	Average back of queue exceeds storage length but storage is only 100 feet
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	Eastbound through	Queue not anticipated to significantly impact upstream intersection of TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	Westbound left and northbound left and through	Movements anticipated to operate with similar or less delay compared to 2050 No Build

Intersection	Movement(s)	Rationale for Not Proposing Additional Mitigation
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	Southbound approach	Queuing issue already anticipated for through and right movements under 2050 No Build and similar delay/LOS expected. Southbound left queue not anticipated to impact upstream intersection.
CSAH 152 (N Washington Ave) / N 5th Ave	Northbound through and right	Movements expected to operate at LOS D
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	Eastbound through	Eastbound through movement expected to operate within 5 sec of LOS D/E threshold
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	Southbound left	Movement expected to operate at LOS D in 2050 No Build and queue not anticipated to cause any upstream intersection movements to operate at LOS E or F

Appendix A: Peak Hour Traffic Volumes

Existing Conditions: AM Peak Hour Traffic Volumes

Intersection	10		East	bound			West	bound			North	bound			Southb	ound			Northea	stbound	
intersection	ID	Left	Thru	Right	Right 2	Left 2	Left oklyn Park	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
Oak Grove Pkwy / Xylon Ave	1					BIO	okiyn Park			Does n	ot exist in E	xisting cond	itions								
CSAH 103 (W Broadway Ave) / 101st Ave N	2	70	-	40	-		-	•	•	•	35	180	-	•	315	-	205	-	-	-	-
CSAH 103 (W Broadway Ave) / Winnetka Ave N CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	3	5	-	3	•	-	- 30		45	•	5	210 170	130	55	355 300	-	5	-	-	•	-
CSAH 105 (W Broadway Ave) / 99th Ave N	5	-				-	50		- 40	Does n	ot exist in E		itions	- 22	500	-	-		-	-	_
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	6	-	-	-	•	-	480	-	115	-	-	180	70	25	305	-	-	-	-	-	-
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	7	-	-	•	•	-	175	•	105	•	•	150	205	140	645	-	-	-	-	-	-
CSAH 103 (W Broadway Ave) / 94th Ave N	8	35	10	55	-	-	15	10	30	-	45	285	15	45	660	-	115	-	-	-	-
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	9	105	225	55 10	-	-	60 5	260	30	•	65 20	210	40	25	415	-	285 95	•	-	•	-
CSAH 103 (W Broadway Ave) / 92nd Ave N CSAH 103 (W Broadway Ave) / Setzler Pkwy	10	55	3	45			45	5	40		20	290	15	20	350	-	75	-		•	-
CSAH 103 (W Broadway Ave) / 89th Ave N	12	15	-	3	-	-			-	-	20	270			355	-	90	-	-	-	-
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	13	25	5	5	-	-	25	5	15	-	5	250	5	10	340	-	15	-	-	-	-
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	14	60	340	90	-	-	130	555	60	-	75	145	70	45	215	-	110	-	-	-	-
CSAH 103 (W Broadway Ave) / 84th Ave N	15	10	5	3	-	-	5	5	10	-	5	270	20	50	375	-	10	-	-	•	-
CSAH 103 (W Broadway Ave) / College Park Dr CSAH 103 (W Broadway Ave) / 82nd Ave N	16	5	-	15	•	•	-	-	-	•	5	290 285	•	· ·	375 390	-	3	•	-	-	-
CSAH 105 (W Broadway Ave) / Candiewood Dr	18	10					63		25		- 10	203	25	13	390						
CSAH 103 (W Broadway Ave) / 78th Ave N	19	3	3	,	-		10	3	30	-	3	265	3	10	440		3		-		-
CSAH 103 (W Broadway Ave) / Shopping Center Access	20	5	5	3	-	-	5	5	5	-	10	265	5	5	440	-	10	-	-	-	-
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Bivd) / CSAH 152	21	50	200	25	-	-	70	270	55	-	35	175	55	55	250	-	145	-	-	-	-
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	22	5	235	35	-		25	425	5	•	25	5	35	5	5	-	5	-	-	-	-
CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	23	3	305	1	-	-	3	385	3	-	3	3	5	3	3	-	3	-	-	-	-
CSAH 130 (W Broadway Ave) / 76th Ave N CSAH 130 (W Broadway Ave) / 75th Ave N	24	15	3	5 15	•	-	25 30	20	30 10	•	20	220 245	20	25	265	-	50	-		•	-
CSAH 130 (W Broadway Ave) / 74th Ave N	26	5	3	75		-	30	5	3		45	270	3	5	315	-	10				
CSAH 130 (W Broadway Ave) / 73rd Ave N	27	15	15	10	-		15	35	3	•	10	300	25	15	360	-	20	-	-		-
CSAH 81 (Bottineau Blvd) / 73rd Ave N	28	30	5	35	-	-	20	15	30	-	45	810	10	30	1340	-	65	-	-	-	-
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	29	65	60	30	•	-	315	120	50	-	70	755	250	55	1240	-	100	-	-	-	-
CSAH 130 (W Broadway Ave) / 71st Ave N	30	240	15	110		-	5	20	5	-	165	90	5	5	85	-	305	-	-	-	-
CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	31	-	-	•	•	•	120	•	435	•	•	635	415	135	1450	-	-	•	-	•	-
CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps CSAH 81 (Bottineau Blvd) / 63rd Ave N	32	115	120	75	•	•	360 200	185	120 265	•	75	935 770	220 175	380 150	1190 1285	•	115		•		-
63rd Ave N / Louisiana Ave N / Park and Ride Access	34	3	230	3		-	95	270	200		3	3	80	3	1200		3				
							Crystal														
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road)	35	145	180	380	•	-	70	255	70	-	250	800	45	60	1320	-	185	•	-	-	-
CSAH 10 (Bass Lake Road) / Sherburne Ave	36	3	640	10	•	•	70	610	5	•			65	,	3	-	5	•	•	•	-
CSAH 10 (Bass Lake Road) / Adair Ave N CSAH 81 (Bottineau Blvd) / Wilshire Blvd	37 38	40	235	10	•	•	135	350 10	5 70	•	25	1015	5	5	5	-	35 20			-	-
Wilshire Blvd / Lakeland Ave N	39				•	-	45		10		3	3	20	5	3	-	-			-	•
CSAH 81 (Bottineau Blvd) / Corvallis Ave N	40	40	5	130	•	-	35	20	35	-	100	1080	5	10	1780	-	50	-	-	-	-
CSAH 81 (Bottineau Blvd) / 47th Ave N	41	10	5	75	-		55	5	5	-	40	1170	15	3	1935	-	5	-	-	-	-
						Rol	235			-		1020			860						
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	42	15	195	5	•	•	230		200			300	220	170	925		1210		•		
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	44	-	-		-	-	0	-	3	-	-	650	0	3	750	-	-		-		-
CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	45	60	190	150	-	-	50	215	80	-	145	520	30	50	650	-	50	•	-	-	-
CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	46	35	340	65	•	-	25	350	35	-	80	50	25	35	60	-	40	-	-	-	-
CSAH 81 (Bottineau Blvd) / 41st Ave N	47	45	10	10	-	-	5	10	10	-	40	645	5	10	795	-	50	-	-	-	-
CSAH 81 (Bottineau Blvd) / 40th Ave N	48	50	30	10	•	-	40	50	90	-	5	550	20	40	735	•	35	•	•	•	-
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South) CSAH 81 (Bottineau Blvd) / 36th Ave N	49	65	- 70	135	•		0 55	185	0 75	-	85	575 430	25	20	785		- 80				-
CSAH 81 (Bottineau Blvd) / 35th Ave N	51	45	0	70	•	-	0	0	0		55	495	0	0	740		135				
CSAH 81 (Bottineau Blvd) / Abbott Ave N	52	170	0	100	-	-	0	0	0	-	70	380	0	0	510	-	300		-	-	-
CSAH 81 (W Broadway Ave) / N Oakdale Ave	53	10	105	0	-	-	0	135	45	-	0	0	0	20	0	-	5	-	-	-	-
						Mi	nneapolis														
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	54 55	10	70 285	45	•		150	100 250	15		50 15	30	180	35	145		25				
CSAH 153 (N Lowry Ave) / N Washburn Ave CSAH 81 (W Broadway Ave) SB Ramps / Theodore Wirth Pkwy	56					-		230	120		- 15	155	0	50	290						
CSAH 81 (W Broadway Ave) / N 29th Ave	57	50	10	45	-	-	10	20	10		0	295	10	30	435		20		-	-	-
CSAH 81 (W Broadway Ave) / N 26th Ave	58	15	45	10	-	-	5	60	30	-	5	245	10	50	460	-	0	-	-	-	-
CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	59	10	400	65	0	20	10	200	25	0	60	115	10	50	140	5	5	0	5	5	0
CSAH 81 (W Broadway Ave) / N Logan Ave	60	5	460	0	-	-	0	225	5	-	0	0	0	25	0	-	25	•	-	-	-
CSAH 81 (W Broadway Ave) / N Knox Ave	61	3	435	10	•	•	25	220	0	-	5	3	20	0	5	-	5	-	-	-	•
CSAH 81 (W Broadway Ave) / N James Ave N Hillside Ave / N 21st Ave / N Irving Ave	62 63	5 10	450	20	•	-	0	220	15	•	20	30	15	15	0 30		15		-		-
CSAH 81 (W Broadway Ave) / N Irving Ave	64	20	435	20			3	205	25	-	10	10	10	30	30	-	20	-	-		
N 21st Ave / N Girard Ave	65	3	0	10	-		0	0	0	-	3	150	0	0	20	-	3	-	-	-	-
CSAH 81 (W Broadway Ave) / N Girard Ave	66	30	430	15	-	•	65	205	85	-	20	40	85	10	10	-	10	-	-	-	-
N 21st Ave / N Fremont Ave	67	0	0	0	-	•	30	0	0	-	0	0	0	20	225	-	0	-	-	-	-
CSAH 81 (W Broadway Ave) / N Fremont Ave	68	0	465	60	-	•	15	325	0	-	0	0	0	50	175	-	30	-	-	-	-
N 21st Ave / N Emerson Ave	69	5	15	0	-	-	0	20	15	-	10	175	15	0	0	-	0	-	-	•	-
CSAH 81 (W Broadway Ave) / N Emerson Ave	70	40 20	475	0	•	-	0	260	50 15	•	80 15	110	15	20	0	-	35	•	-	-	•
SAH 81 (W Broadway Ave) / N Dupont Ave N 21st Ave / N Bryant Ave	71	20	25	20			10	260	15	•	15	15	10	20	10 20	-	35	-		•	-
N 21st Ave / N Aldrich Ave	73	5	25	10	-		10	20	5	-	3	25	5	5	10	-	5	-	-	· · ·	-
	-		-																		

Existing Conditions: AM Peak Hour Traffic Volumes

Intersection	ID		Eastbound					Westbound		Nort		bound			South	Southbound		Northeastbound		stbound	
Intersection	10	Left	Thru	Right	Right 2	Left 2	Left	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
CSAH 81 (W Broadway Ave) / N Aldrich Ave	74	5	560	20	-	-	35	330	25	-	10	5	40	20	5	-	5	-	-	•	-
N 21st Ave / N Lyndale Ave	75	10	10	15	-	-	10	5	10	-	10	150	10	40	270	-	20	-	-	-	-
CSAH 81 (W Broadway Ave) / N Lyndale Ave	76	30	525	65	-	-	95	340	40	-	25	100	55	125	145	-	25	-	-	-	-
N 21st Ave / N 4th St	77	5	5	35	-	-	15	5	0	-	15	35	15	0	65	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / N 4th St	78	10	590	20	-		20	405	50	-	15	5	50	100	5	-	10		-	-	-
N 21st Ave / I-94 EB Ramps	79									Does r	not exist in b	Existing cond	litions								
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	80	0	380	360	-	-	540	305	0	-	0	0	0	600	5	-	170		-	-	-
CSAH 152 (N Washington Ave) / N 21st Ave	81	0	0	0	-	-	5	0	10	-	0	900	15	5	400	-	0	-	-	-	-
N 22nd Ave / N 2nd St	82	20	35	5	-	-	10	25	25	-	35	170	10	40	140	-	40	-	-	-	-
N 21st Ave / N 2nd St	83	5	10	5	-	-	5	5	5	-	5	205	5	5	145	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	84	125	555	300	-	-	75	515	190	-	155	450	315	30	200	-	175	-	-	-	-
CSAH 81 (W Broadway Ave) / N 2nd St	85	25	750	40	-	-	20	575	35	-	20	80	45	25	85	-	55	-	-	-	-
CSAH 81 (W Broadway Ave) / W River Rd	86	20	730	70	-	-	25	575	30	-	40	15	40	15	20	-	15	-	-	-	-
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	87	520	135	140	-	-	95	0	20	-	0	335	55	40	465	-	0	-	-	-	-
N 17th Ave / N 2nd St	88	105	105	10	-	-	5	15	5	-	5	65	0	25	60	-	15	-	-	-	-
CSAH 152 (N Washington Ave) / N 15th Ave	89	0	5	5	-	-	15	0	5	-	5	235	10	5	495	-	5	-	-	-	-
N 15th Ave / N 2nd St	90	10	0	10	-	-	0	0	0	-	0	60	0	0	55	-	20	-	-	-	-
N Lyndale Ave / N Plymouth Ave	91	35	210	45	-	-	155	150	25	-	30	140	140	45	220	-	30	-	-	•	-
CSAH 152 (N Washington Ave) / N Plymouth Ave	92	60	365	145	-	-	75	310	55	-	45	160	35	75	500	-	80	-	-	•	-
N Plymouth Ave / N 2nd St	93	20	330	45	-	-	140	350	10	-	35	35	85	15	80	-	20	-	-	-	-
CSAH 152 (N Washington Ave) / N 10th Ave	94	40	105	40	-	-	30	155	10	-	55	205	70	90	490	-	145	-	-	-	-
N 10th Ave / N 2nd St	95	85	0	65	-	-	0	0	0	-	65	70	0	0	125	-	140	-	-	•	-
CSAH 152 (N Washington Ave) / N 8th Ave	96	10	0	15	-	•	15	0	5	-	15	330	5	5	450	•	110	•	-	•	-
N 10th Ave / N 3rd St	97	35	250	20	-	-	10	330	50	-	35	5	10	10	0	-	10	-	-	•	-
N 10th Ave / N 4th St	98	0	195	15	-	-	15	300	0	-	40	0	20	0	0	-	0	-	-	-	-
N 10th Ave / N 5th St	99	15	170	15	-	-	30	250	60	-	5	15	10	30	20	-	25	-	-	-	-
N 8th Ave / N 5th St	100	10	0	60	-	-	0	0	0	-	15	40	0	0	55	-	20	-	-	-	-
N 9th Ave / N 5th St	101									Doesr	ot exist in l	Existing cond	litions								
N 8th Ave / N Oak Lake Ave	102	5	0	15	-	-	25	5	5	-	30	285	65	5	280	-	5	-	-	-	-
N 7th St / W Lyndale Ave	103	0	240	195	-	-	15	290	0	-	0	0	0	725	715	-	190	-	-	-	-
N 7th St / E Lyndale Ave	104	100	865	0	-	-	0	105	145	-	200	525	30	0	0	-	0	-	-	-	-
N 7th St / N Oak Lake Ave	105	85	745	65	-	-	5	205	55	-	15	240	5	100	190	-	30	-	-	-	-
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	106	0	360	375	-	-	65	155	30	-	75	235	40	65	845	-	10	-	-	•	-
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	107	230	675	85	-	-	20	205	15	-	35	65	50	10	70	-	150	-	-	-	-
N 6th Ave / N 5th St	108	15	170	90	-	-	10	250	25	-	20	15	10	20	20	-	40	-	-	-	-
N 6th Ave / N 3rd St	109	5	110	25	-	-	10	75	5	-	15	5	10	0	0	-	5	-	-	-	-
CSAH 152 (N Washington Ave) / N 6th Ave	110	15	0	125	-	-	5	0	5	-	75	325	15	5	420	-	25	-	-	-	-
N 5th Ave / N 3rd St	111	5	75	5	-	-	35	105	20	-	5	5	5	30	5	-	15	-	-	-	-
CSAH 152 (N Washington Ave) / N 5th Ave	112	10	30	45	-	-	20	30	35	-	120	370	30	25	485	-	40	-	-	-	-
N 5th Ave / N 2nd St	113	35	0	55	-	-	0	0	0	-	75	90	0	0	190	-	40	-	•	•	-

Existing Conditions: PM Peak Hour Traffic Volumes

	_		Eastb	ound			West	bound			North	bound			South	bound			Northea	stbound	
Intersection	D	Left	Thru	Right	Right 2		Left	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
Oak Grove Pkwy / Xylon Ave	1	1				Bro	okiyn Park			Doesn	not exist in l	Existing con	ditions								
CSAH 103 (W Broadway Ave) / 101st Ave N	2	185	-	95	-	-	-	-	-	-	55	440	-	-	290	-	120	-	-	-	-
CSAH 103 (W Broadway Ave) / Winnetka Ave N	3	5	-	10	-	-	-	-	-	-	5	495	-	•	385	-	5	-	-	•	-
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy CSAH 103 (W Broadway Ave) / 99th Ave N	4		-	-	-	-	105	-	120	-	-	380 Existing conv	215	120	265	-	-			-	
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	6	· ·		-	•	-	230	•	160	-	-	435	120	70	300					· ·]	•
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	7	-	-	-	•	-	160	-	175	-	-	375	360	140	390	-	-	•	-	•	•
CSAH 103 (W Broadway Ave) / 94th Ave N	8	95	5	70	-	-	20	3	40	-	45	600	5	10	490	-	50	-	-	•	-
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) CSAH 103 (W Broadway Ave) / 92nd Ave N	9	235	515	50 35	-	•	55	170	60	•	30 15	355	110	130	315	•	135	-	-	•	-
CSAH 105 (W Broadway Ave) / Setzler Pkwy	11	30	5	20			35	5	25		20	480	65	40	365		20				
CSAH 103 (W Broadway Ave) / 89th Ave N	12	45	-	25	-	-	-	-	-	-	10	465	•	•	400	-	25	-	-	-	-
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	13	15	10	10	-	-	25	5	10	-	10	445	35	10	385	•	25	-	-	· _	-
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	14	135	1225	140	-	•	175	585	45 90	-	120	310 690	360	90 45	255	•	75	-	-	<u> </u>	-
CSAH 103 (W Broadway Ave) / 84th Ave N CSAH 103 (W Broadway Ave) / College Park Dr	15	10	-	20		-			90		45	740	40	40	555		20	-			
CSAH 103 (W Broadway Ave) / 82nd Ave N	17	10	-	20	-	-	-	-	-	-	30	775	-	-	565	-	10	-	-	-	-
CSAH 103 (W Broadway Ave) / Candlewood Dr	18	-	-	-	-	-	65	-	30	-		780	110	30	560	-	-	-	-	•	-
CSAH 103 (W Broadway Ave) / 78th Ave N	19	15	3	15	-	-	3		40	-	15	835	15	20	595	•	10	-	-	<u> </u>	-
CSAH 103 (W Broadway Ave) / Shopping Center Access CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	20	95 260	5	65 60	•	-	30 155	415	40	-	65 90	735	45	25	510 320	•	80 170	-	-	•	•
CSAH 105 (W Bloblway Are) / CSAH 150 (Bloblay Blob) / CSAH 152 CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	22	60	685	95	-		90	540	50	-	65	20	115	30	15	-	50	-	-		-
CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	23	35	765	10	-	-	5	645	35	-	10	5	5	25	5	-	30	-	-	-	-
CSAH 130 (W Broadway Ave) / 76th Ave N	24	110	25	60	-	-	45	45	55	•	50	555	60	80	325	-	135	-	-		
CSAH 130 (W Broadway Ave) / 75th Ave N CSAH 130 (W Broadway Ave) / 74th Ave N	25 26	10	10	90 160	-		25	10	15	-	85 80	640 755	45 20	15	405	•	10	-	-	⊢÷–∣	
CSAH 130 (W Broadway Ave) / 73rd Ave N CSAH 130 (W Broadway Ave) / 73rd Ave N	20	60	30	160	-		15	50	30	-	10	765	25	40	580	-	50	-	-		-
CSAH 81 (Bottineau Blvd) / 73rd Ave N	28	85	40	70	-	-	45	30	30	-	40	1495	40	30	1185	-	50	-	-	-	-
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	29	125	215	60	-	-	345	130	85	-	45	1365	585	55	1145	-	100	-	-	- I	-
CSAH 130 (W Broadway Ave) / 71st Ave N	30 31	595	30	225	•	-	5 175	15	5	-	175	200	5	15	225	-	370	-	-	-	•
CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps	31		•		-	•	395		195			1415	200	390	1440	•	•				•
CSAH 81 (Bottineau Blvd) / 63rd Ave N	33	140	240	70	-	-	235	220	260	-	80	1470	355	255	1250	-	115	-	-	· ·	•
63rd Ave N / Louisiana Ave N / Park and Ride Access	34	5	345	10	-	•	80	335	5	-	5	5	105	5	5	-	5	-	-	-	-
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road)	35	330	485	360			Crystal 80	340	30		520	1490	150	145	1155		260			· ·	
CSAH 10 (Bass Lake Road) / Sherburne Ave	36	3	1040	25	-	-	95	1015	10	-	15	3	120	10	3	-	10	-	-	-	•
CSAH 10 (Bass Lake Road) / Adair Ave N	37	45	720	5	-	-	5	420	15	-	10	5	5	15	5	-	70	-	-	-	-
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	38	15	10	35	-	•	95	5	70	-	25	2070	175	55	1515	-	20	-	-	-	•
Wilshire Blvd / Lakeland Ave N CSAH 81 (Bottineau Blvd) / Corvallis Ave N	39 40	73	20	160	-	•	10 20	20	40		135	5 2170	25 30	25	5 1530	-	55		-		•
CSAH 81 (Bottineau Blvd) / 47th Ave N	41	15	10	50	-	-	40	3	3	-	70	2315	50	3	1695	-	15	-	-	-	-
						Rol	bbinsdale														
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	42	50	125		-	•	220	•	330 1300	•	•	2105	- 190	- 80	935 1075	-	850	-	-	•	-
CSAH 81 (Bottineau Bivd) / TH 100 NB Kamps CSAH 81 (Bottineau Bivd) / Lakeland Ave N (North)	43		125		-		0		1300			1000	190	10	1075				-		
CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	45	85	190	175	-	-	65	215	130	-	215	785	100	150	615	-	80	-	-	·	-
CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	46	60	580	175	-	•	40	375	90	-	135	90	60	75	85	-	60	-	-		-
CSAH 81 (Bottineau Blvd) / 41st Ave N	47	105	10	55	-	•	25	10	45	-	75	950	15	35	745	-	80	-	-	<u> </u>	-
CSAH 81 (Bottineau Blvd) / 40th Ave N CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	48	60	30	25			70	50	85		20	895 965	50	95	670 765		60				
CSAH 81 (Bottineau Blvd) / 36th Ave N	50	130	70	165	-	-	40	185	85	-	135	750	60	60	585	-	120	-	-	-	-
CSAH 81 (Bottineau Blvd) / 35th Ave N	51	135	0	135	-	-	0	0	0	-	95	810	0	0	695	-	100	-	-	-	-
CSAH 81 (Bottineau Blvd) / Abbott Ave N	52 53	340	0	145	-	•	0	0	0	•	40	570	0	0 80	670	-	160	-	-	-	-
CSAH 81 (W Broadway Ave) / N Oakdale Ave	55		160			Mi	nneapolis	145						80						<u> </u>	<u> </u>
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	54	30	130	80	-	-	95	75	45	-	60	185	410	35	100	-	15	-	-	-]	-
CSAH 153 (N Lowry Ave) / N Washburn Ave	55	•	575	-	•	-	-	200	-	-	15	•	0	-	•	-	-	-	•	<u> </u>	-
CSAH 81 (W Broadway Ave) SB Ramps / Theodore Wirth Pkwy	56	•	-	•	•	•	50	•	125	•	•	530	5	30	240	-	•	-	•	•	-
CSAH 81 (W Broadway Ave) / N 29th Ave CSAH 81 (W Broadway Ave) / N 26th Ave	57	40	35	40	-	•	10	10	20	•	0	530 455	15	85	525 470	•	35	-	•	•	-
CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	59	25	375	95	0	25	15	345	90	0	145	305	40	100	240	10	10	5	15	15	0
CSAH 81 (W Broadway Ave) / N Logan Ave	60	30	500	0	-	-	0	450	30	-	-	0	0	25	0	-	20	-		· -	-
CSAH 81 (W Broadway Ave) / N Knox Ave	61	10	525	15	-	-	25	470	5	-	5	0	15	20	0	-	15	•	-		-
CSAH 81 (W Broadway Ave) / N James Ave	62 63	15	550 15	25	•	-	0	475	25	-	15 20	30	15	25	0 30	-	15	•	•	•	•
N Hillside Ave / N 21st Ave / N Irving Ave CSAH 81 (W Broadway Ave) / N Irving Ave	63	25	15	25	-	•	10	10 460	15	•	20	30	,	20	30	•	25				•
N 21st Ave / N Girard Ave	65	3	0	15	•	-	0	0	0	-	10	40	0	0	45	-	3	•	-	-	-
CSAH 81 (W Broadway Ave) / N Girard Ave	66	15	525	25	-	-	120	450	10	•	15	25	150	15	25	-	20	•	•	-	-
N 21st Ave / N Fremont Ave	67	0	0	0	-	-	30	0	0	•	0	0	0	55	275	-	0	•	•	•	•
CSAH 81 (W Broadway Ave) / N Fremont Ave N 21st Ave / N Emerson Ave	68 69	0	625	65	-	•	30 0	530	0 25	•	0	250	0 30	105	150 0	•	50 0		-		-
CSAH 81 (W Broadway Ave) / N Emerson Ave	70	60	670	0	-	-	0	450	80	-	110	155	55	0	0	-	0		-		-
,	_																				

Existing Conditions: PM Peak Hour Traffic Volumes

Intersection	ID		East	bound			West	bound			North	bound			South	bound			Northea	stbound	
		Left	Thru	Right	Right 2	Left 2	Left	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
CSAH 81 (W Broadway Ave) / N Dupont Ave	71	30	685	10	-	-	15	465	35		15	5	20	25	20	•	50	•	-	-	-
N 21st Ave / N Bryant Ave	72	5	35	20	-	-	20	25	5	•	20	30	25	5	40	-	5	•	-	-	-
N 21st Ave / N Aldrich Ave	73	5	40	20	-	-	10	35	10		10	30	10	15	50	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / N Aldrich Ave	74	10	720	40	-	•	55	505	10	-	45	30	65	35	30	-	15	-	-	-	-
N 21st Ave / N Lyndale Ave	75	15	20	30	-	•	25	15	15	•	20	275	30	25	320	-	20	-	-	-	-
CSAH 81 (W Broadway Ave) / N Lyndale Ave	76	80	665	75	-	•	90	475	80		50	165	85	150	180		45	-	-	-	-
N 21st Ave / N 4th St	77	5	5	60	-	•	40	5	5	•	30	55	20	5	65	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / N 4th St	78	25	810	55	-	•	50	615	70	•	35	10	35	130	10	· ·	25	•	-	-	-
N 21st Ave / I-94 EB Ramps	79									Does n	ot exist in E	Existing cond	litions								
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	80	0	500	475	-	-	695	555	0		0	0	0	615	10	-	175	-		-	-
CSAH 152 (N Washington Ave) / N 21st Ave	81	0	0	0	-	•	10	0	20	-	0	1200	15	10	395	•	0	-	-	-	-
N 22nd Ave / N 2nd St	82	10	10	15	-	•	15	110	85		70	135	5	25	130		45	-	-	-	-
N 21st Ave / N 2nd St	83	10	0	15	-	-	0	0	0	-	20	200	0	0	150	-	10	-	-	-	-
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	84	200	535	205	-	-	75	705	255	-	320	650	490	10	170	-	225	-	-	-	-
CSAH 81 (W Broadway Ave) / N 2nd St	85	25	800	25	-	-	10	895	80	-	20	75	65	60	55		65		-	-	-
CSAH 81 (W Broadway Ave) / W River Rd	86	25	820	80	-	-	40	885	55		75	85	80	30	15		25	-	-	-	
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	87	670	200	125	-	•	105	0	75	•	0	730	105	60	335	•	0	-	•	-	-
N 17th Ave / N 2nd St	88	130	180	5	-	-	5	80	30	-	10	95	10	15	65	•	90	-	-	-	-
CSAH 152 (N Washington Ave) / N 15th Ave	89	5	10	5	-	-	30	10	5	-		540	10	5	350	•	5	-	-	-	-
N 15th Ave / N 2nd St	90	20	0	5	•	•	0	0	0	•	10	95	0	0	40		35	-	•	-	-
N Lyndale Ave / N Plymouth Ave	91	45	255	60	-	-	260	240	50	-	30	245	185	45	275	-	45	-	-	-	-
CSAH 152 (N Washington Ave) / N Plymouth Ave	92	85	450	80	-	-	45	515	60	-	135	380	70	80	345	-	60	-	-	-	-
N Plymouth Ave / N 2nd St	93	10	500	45	-	-	110	470	15	-	50	75	230	20	70	-	25	-	•	-	-
CSAH 152 (N Washington Ave) / N 10th Ave	94	70	175	35	-	-	80	250	55	-	95	450	40	15	360	-	115	-	•	-	-
N 2nd St / N 10th Ave	95	205	0	90	-	-	0	0	0	-	80	150	0	0	115	-	110	-	-	-	-
CSAH 152 (N Washington Ave) / N 8th Ave	96	0	0	5	-	-	5	5	0	-	10	645	10	15	325	-	15	-	-	-	-
N 10th Ave / N 3rd St	97	10	395	25	-	-	15	430	10	-	40	5	25	15	5	-	35	-	•	-	-
N 10th Ave / N 4th St	98	0	210	30	-	-	30	540	0	-	40	0	30	0	0	-	0	-	-	•	-
N 10th Ave / N 5th St	99	20	190	15	-	-	35	470	90	-	10	30	35	20	15	-	35	-	-	-	-
N 8th Ave / N 5th St	100	20	0	25	-	-	0	0	0	-	25	95	0	0	50	-	15	-	•	-	-
N 9th Ave / N 5th St	101		·			·	·			Does n	ot exist in E	existing cond	litions			·				·	·
N 8th Ave / N Oak Lake Ave	102	5	0	0	-	-	30	0	10	•	30	370	40	5	450	•	5	-	-	-	-
N 7th St / W Lyndale Ave	103	0	210	205	-	-	35	450	0	•	0	0	0	330	675	-	135	-		-	-
N 7th St / E Lyndale Ave	104	150	390	0	-	-	0	255	430	-	230	1055	20	0	0	-	0	-	-	-	-
N 7th St / N Oak Lake Ave	105	50	325	35	-	-	10	615	105		15	285	10	150	275	-	55	-	-	-	-
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	106	0	290	260	-	-	55	295	65		140	665	95	45	465	-	25	-	-	-	-
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	107	255	520	25	-	-	20	425	15	•	55	85	20	10	30	-	255	-	-	-	-
N 6th Ave / N 5th St	108	25	180	60	-	•	5	175	25	•	85	10	5	25	20	•	30	-	-	•	-
N 6th Ave / N 3rd St	109	15	170	15	-	-	10	120	15	•	20	5	15	10	10	•	30	-	-	•	-
CSAH 152 (N Washington Ave) / N 6th Ave	110	50	10	180	-	•	10	5	5	•	120	520	15	5	365	-	30	-	-	•	-
N 5th Ave / N 3rd St	111	5	155	5	-	-	15	100	30	-	10	15	35	30	10	-	15	-	-	-	-
CSAH 152 (N Washington Ave) / N 5th Ave	112	30	70	155	-	-	20	20	55		65	570	40	60	470	-	25	-	-	•	-
N 5th Ave / N 2nd St	113	60	0	145	-	-	0	0	0	-	60	170	0	0	170	-	35	-	-	-	-

2050 No Build Conditions: AM Peak Hour Traffic Volumes

Intersection Intro Intersection Intersection Intro Intersection Intro Intersection Intersection Intersection Intersection Intersection Intersection Intersection Intersection Intersection		Thru Right - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Dak Grove Pkwy / Xylon Ave 1 Dees not exist in 2030 No Build CSAH 103 (W Broadway Ave) / Vinnetks Ave N 2 30 - - - 285 470 - - 300 - 240 - - 285 470 - - 300 - 240 - CSAH 103 (W Broadway Ave) / Vinnetks Ave N 3 233 - 170 - - - 25 - 320 - - - - - 25 - - 300 - 100 -<	• • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·
CSAH 103 [W Broadway Ave] / Winnetka Ave N 3 223 . 170 . <t< th=""><th>• • • • • • • • • • • • • • • • • • •</th><th>· · · · · · · · · · · · · · · · · · ·</th></t<>	• • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy 4 - - - - 45 - 23 - - 520 123 40 433 - - - CSAH 103 (W Broadway Ave) / Sth Ave N 5 - - 400 433 - - - - Does not exist in 2030 No Build CSAH 103 (W Broadway Ave) / Sth Ave N 6 - - - 773 - 245 - - 400 433 430 - - - CSAH 103 (W Broadway Ave) / Th 610 WB Ramps 7 - - 773 - 240 - 200 140 453 430 0 - - - 200 140 453 430 0 - - 253 140 - 60 510 200 100 100 100 - - 220 140 450 400 433 - - 253 140 - 60 510 410 100 100 100 100 100 100 100 100 <td< th=""><th>• • • • • • • • • • • • • • • • • • •</th><th>· · · · · · · · · · · · · · · · · · ·</th></td<>	• • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·
CSAH 103 [W Broadway Ave] / 98th Ave N S Does not exist in 2030 No Build CSAH 103 [W Broadway Ave] / TH 610 BRamps 6 - - 775 - 245 - - 400 45 430 -	• • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·
CSAH 103 (W Broadway Ave) / TH 510 UB Bamps 6 - - - 77 - 245 - - 400 430 430 - - - CSAH 103 (W Broadway Ave) / TH 510 EB Bamps 77 - - 775 - 225 - - 400 140 430 430 - - - CSAH 103 (W Broadway Ave) / TH 510 EB Bamps 77 - - 255 2 245 - - 300 310 810 855 - - - CSAH 103 (W Broadway Ave) / Sth Ave N) 20 1030 - 115 - CSAH 103 (W Broadway Ave) / Sth Ave N) 20 1030 - 120 - CSAH 103 (W Broadway Ave) / Sth Ave N) 20 103 - 120 - CSAH 103 (W Broadway Ave) / Sth Ave N 200 - - 830 10 - 100 - 120 - - 200 - 833 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 100 100	• • • • • • • • • • • • • • • • • • •	
CSAH 103 (W Broadway Ave) / Sth Ave N 8 23 5 40 - 95 25 140 - 60 510 10 20 1030 - 115 - CSAH 103 (W Broadway Ave) / CSAH 30 (\$3rd Ave N) 9 70 380 90 - - 240 445 55 - 155 450 320 90 833 - 240 - CSAH 103 (W Broadway Ave) / Stand Ave N 10 - 255 - - 90 - 680 510 100 833 - 240 - CSAH 103 (W Broadway Ave) / Stand Ave N 11 115 5 45 - - 90 - 640 10 80 870 - 855 - 10 - 855 - 10 - 855 - 10 - 250 10 10 20 100 0 855 - 10 - - 640 10 80 870 - 855 - 10 - - 50 50	- - - - - - - - - - - - - -	· · · · · · · · · · · · · · · · · · ·
CSAH 108 [W Broadway Ave] / CSAH 309 [93rd Ave N] 9 70 580 90 - 240 443 55 - 153 450 320 90 833 - 240 - CSAH 108 [W Broadway Ave] / Stand Ave N 10 - - 257 - - 90 837 - 240 - CSAH 108 [W Broadway Ave] / Stand Ave N 10 - - 257 - - - 90 837 - 240 - CSAH 108 [W Broadway Ave] / Stand Ave N 12 - - 257 - - - 90 - - 835 15 - 100 - 157 - 100 - 165 - 100 - 165 - 100 - 100 - 100 - 100 10 - 100 - 100 - 100 - 100 - 100 - 100 100 100 100 - 100 100 100 - 100 100 100 10	- - - - - - - - - - -	
CSAH 103 (W Broadway Ave) / \$2nd Ave N 10 - - 23 - - 90 - - 833 13 - 1010 - 183 - 1010 - 183 - 1010 - 183 - 1010 - 183 - 1010 - 183 - 100 - 183 - 100 10 100 10 100 </th <th>- - - - - - - - - - -</th> <th>· · · · · · · · · · · · · · · · · · ·</th>	- - - - - - - - - - -	· · · · · · · · · · · · · · · · · · ·
CSAH 103 (W Broadway Ave) / Settiaer Pixwy 11 115 5 45 - 30 5 60 - 45 640 10 80 870 - 855 - CSAH 103 (W Broadway Ave) / Setti Ave N 12 - - 25 - - - - - 655 - 685 - 685 - 685 - 10 800 - 110 - - 53 50 - - 55 50 - - 55 50 - - 55 50 - - 53 5 - - 250 165 855 333 - 130 - 150 - - 55 50 - - 55 50 10 - - 55 50 145 145 150 - 55 50 10 - - 50 10 - - 50 10 - 10 50 10 - 10 50 10 10 50 50	- - - -	· ·
CSAH 103 [W Broadway Ave] / Bith Ave N 12 - - 25 - - - 697 - - 825 - 110 - CSAH 103 [W Broadway Ave] / Shith Ave N 13 33 5 5 - - 5 5 60 - - 825 - 110 - CSAH 103 [W Broadway Ave] / Shith Ave N 14 190 365 85 - - 225 580 150 - 100 - 235 60 800 - 100 - 5 60 - - 255 160 855 333 - 390 - CSAH 103 [W Broadway Ave] / Sch 4xe N 15 - 5 - - 100 - - 573 15 700 - 10 - - 108 - - 100 - - 100 - 100 - 100 - 108 - - 100 - - 108 - - 100 - - 108 <td< th=""><th>- - - -</th><th>· ·</th></td<>	- - - -	· ·
(SAH 103 [W Broadway Ave] / CSAH 109 [85th Ave N] 14 190 365 85 - - 285 580 130 - 170 250 165 85 380 - (SAH 103 [W Broadway Ave] / Sth Ave N 15 - - 5 - - 10 - - 575 15 - 10 - - 575 10 - 10 10 10 - - 10 10 - - 10 10 - - 10 10 - - 10 10 10 10 10 10 10 10 10	• • •	
(CSAH 103 (W Brosdway Ave) / 84th Ave N 15 - - 5 - - 10 - - 573 15 - 700 - 10 - CSAH 103 (W Brosdway Ave) / Sth Ave N 16 15 - 5 - 5 - 10 - 573 15 - 700 - 10 - CSAH 103 (W Brosdway Ave) / Sth Ave N 17 - 10 - - 5 - - 10 570 - 700 630 - 5 - - 10 10 - - 10 570 - 700 630 - 5 - - 10 - - 10 - - - 10 - - - 10 - - - - - - - 5 -	-	
CSAH 103 (W Broodway Ave) / College Park Dr 16 13 - 5 - - 10 570 - 70 630 - 5 - Call 103 (W Broodway Ave) / Stand Ave N 17 - 10 - - 10 - - 5 - - 50 - - 630 - 5 - - 10 50 - 10 - 5 - - 10 50 - - 630 - 5 - - 10 - - 10 - - - - 50 - - 630 - 5 - - - 630 - 5 - - - 630 - 10 - - - - - - - 50 - - 630 30 35 610 - - - - - 50 - - 400 - - 10 - - - 50 - - 400 - </th <th>-</th> <th></th>	-	
CSAH 103 (W Broadway Ave) / E2nd Ave N 17 - - 10 - - - - - - - - - 50 - - 633 - 5 - CSAH 103 (W Broadway Ave) / E2nd Ave N 18 - - - 53 - 30 32 610 -	•	
CSAH 103 (W Broadway Ave) / 78th Ave N 19 - 10 90 - 485 20 - 680 - 10 -	-	
	-	
CSAH 103 [W Broadway Ave] / Shopping Center Access 20 10 3 13 - - 3 5 - 13 460 3 20 660 - 10 - CSAH 103 [W Broadway Ave] / Shopping Center Access 20 10 3 13 - - 3 5 - 13 460 3 20 660 - 10 - CSAH 103 [W Broadway Ave] / Shapping Center Access 21 100 29 40 - 85 260 90 - 40 305 5 95 35 - 215 - 215 - 215 - 215 - - 85 260 90 - 40 305 5 95 35 - 215 - 215 - 215 - - 85 36 - 215 - - 35 36 - 215 - - 36 36 36 - </th <th>•</th> <th></th>	•	
CSAH 103 (W Brookhyn Blvd) / CSAH 130 (Brookhyn Blvd) / CSAH 152 21 105 290 40 - 85 260 90 - 40 305 65 95 365 - 215 - CSAH 130 (Brookhyn Blvd) / Shopping Center Access (west of CSAH 103) 22 5 325 50 - - 35 475 5 - 80 5 105 5 10 - 5 -		
Lan 130 (production only) anopping concernaces (reaction cost) 12 2 3 440 3 -	-	
(SAH 130 (W Broadway Ave) / 76th Ave N 24 43 30 20 40 30 43 - 35 320 55 60 360 - 70 -	-	
CSAH130 (W Broadway Ave) / 75th Ave N 25 5 5 5 40 45 10 20 - 25 385 25 30 385 - 5 -	-	
CSAH 130 (W Broadway Ave) / 74th Ave N 26 - 5 15 - 5 430 15 5 460 - 5 - - 13 5 5 430 15 5 460 - 5 - - 13 5 5 430 15 5 460 - 5 - - 13 5 5 400 25 23 - - 13 5 5 400 25 23 410 - 55 - - 13 5 15 - 5 400 25 23 410 - 55 - - 13 5 13 - 5 400 25 23 410 - 55 - - 13 5 13 - 5 400 25 23 - - 23 55 15 - 5 400 25 23 410 - 55 - - 23 55 15 - 5 400 25 25	-	
CSAH 130 (W Broadway Ave) / 73rd Ave N 27 30 25 20 - 25 55 15 - 5 400 25 25 410 - 55 - CSAH 130 (W Broadway Ave) / 73rd Ave N 28 40 10 90 - - 50 33 30 - 120 970 20 50 1860 - 95 -		
Lan a loculinas Birdy / Journe 1 20 20 20 20 20 20 20 20 20 20 20 20 20		
CSAH 130 (W Broadway Ave) / 71:t Ave N 30 300 30 160 5 30 10 - 250 125 - 10 95 - 355 -	-	
LSAH 81 (Bottineau Blvd) / F94 / F694 WB Ramps 31 133 - 560 735 400 200 1920	-	
SAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps 32 400 - 123 1030 230 520 1333	•	
CSAH 81 (Bottineau Blvd) / 63rd Ave N 33 120 170 110 - - 310 270 310 - 90 830 200 200 1595 - 135 - 63rd Ave N / Louisiana Ave N / Park and Ride Access 34 - 305 20 - - 130 365 - - 100 - 95 5 - - 5 -	-	
para we wy kousiana we wy Pankano kale kucess 34 3 30 20 1 1 23 30 30 1 1 20 1 30 30 1 1 1 20 1 30 30 1 1 1 20 1 20	Lain La	
(SAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road) 35 150 190 405 - 65 285 65 - 275 900 45 80 1675 - 265 -	-	• •
CSAH 10 (Bass Lake Road) / Sherburne Ave 36 5 665 10 - 95 723 5 5 80 5 5 5 - 5 - 5 5 5 5 - 5 - 5 5 5 - 5 5 5 5 - 5 - 5 5 5 - 5 5 5 5 - 5 5 5 5 5 - 5	-	
CSAH 10 [Bass: Lake Road] / Adair Ave N 37 25 275 10 - - 3 370 3 - 5 3 3 3 5 5 5 5 5 5 - 45 - CSAH 21 (Bencine and Information and Informati	-	
CSAH 81 (Bottinesu Blvd) / Witshire Blvd 38 10 5 15 - 140 10 75 - 30 1135 95 60 2050 - 35 - Witshire Blvd / Lakeland Ave N 39 - - - - 65 - 10 - - 5 20 10 -<	-	· ·
CARA E3 (Bottimes Bind) / Convelis Ave N 40 43 5 143 - - 30 25 30 - 135 1180 5 10 2105 - 50 - - 500 25 30 - 135 1180 5 10 2105 - 50 -	-	
CSAH 81 [Bottinesu Blvd] / 47th Ave N 41 10 5 90 60 5 5 - 55 1305 15 5 2265 - 10 -	-	
Robbinsdale	——————————————————————————————————————	
CSAH 81 (Bottineau Blvd) / TH 100 58 Ramps 42 - - - 110 - 80 - - 1295 - 1005 - 1355 - 1355 - 1355 - 1355 - 1355 - 1355 - 1355 - 1355 - - - - 430 - - 470 - - 800 135 170 1000 -	•	
Lake a gottimesu Broy/ In 100 He Remps 49 23 180 470 800 133 170 1000		
ZSAH 81 (Bottinesu Blvd) / CSAH 9 (42nd Ave N) 45 60 175 140 - 65 225 80 - 163 570 40 60 735 - 55 -	-	
(SAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave) 46 33 330 73 33 380 33 - 95 53 35 40 73 - 45 -	-	
SAH 81 (Bottinesu Bivd) / 41st Ave N 47 50 10 15 - 0 10 10 - 45 725 5 10 880 - 55 -	-	
CSAH 81 (Bottineau Blvd) / 40th Ave N South 48 53 30 10 - 50 45 105 - 5 610 20 45 810 - 40 - CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South) 49 0 0 - - 0 0 - 0 640 0 0 870 - 0 -		
Law as a portune a		
SAH 81 (Bottinesu Bivd) / 35th Ave N 51 53 0 80 0 0 0 - 65 530 0 0 880 - 145 -	-	
SAH 81 (Bottineau Blvd) / Abbott Ave N 52 195 0 115 - 0 0 0 - 65 415 0 0 325 -	-	
SAH 81 (W Broadway Ave) / N Oakdale Ave 53 10 120 0 0 153 50 - 0 0 25 0 - 5 -	-	
Minnespois SAH 153 [N Lowry Ave) / Theodore Wirth Pkwy 54 23 145 55 - - 175 115 20 - 45 30 130 40 160 - 30 -		
Dan 135 (n Lowny Ave) / Newshorm Ave 55 0 310 0 - 0 25 0 - 225 0 - 20 5 0 0 - 0 - 0 -	-	
SAH 81 (W Brookway Ave) 58 Ramps / Theodore Wirth Pkwy 56 0 0 0 50 0 15 - 0 183 5 60 330 - 0 -	-	
SAH 81 (W Broadway Ave) / N 29th Ave 57 53 10 50 15 20 10 - 0 290 10 33 515 - 25 -	-	
SAH 81 (W Brosdway Ave) / N 26th Ave 58 20 43 10 - 5 50 60 33 - 0 243 10 55 520 - 0 -	-	
SAH 81 (W Broadway Ave) / SAH 2 (N Penn Ave) / McNair Ave 59 13 445 70 0 10 20 180 30 0 70 110 10 50 145 - 5 0 SAH 81 (W Broadway Ave) / NLogan Ave 60 5 505 0 - - 0 210 5 - 0 0 0 30 0 - 25 -	5	0 5
SAH 81 (W Broadway Ave) / N Logan Ave 60 5 505 0 - 0 210 5 - 0 0 0 30 0 - 25 - SAH 81 (W Broadway Ave) / N Knox Ave 61 5 465 10 - - 25 230 0 - 0 5 25 0 5 - 0 - 0 - 0 5 25 0 5 - 0 - 0 - 0 5 25 0 5 - 0 - 0 - 0 5 25 0 5 - 0 -	-	
Danis a moderney neg/minis/met/minis/met/met/minis/met/met/met/met/met/met/met/met/met/met	-	
N Hillside Ave / N Z1st Ave / N Irving Ave 63 10 5 20 5 5 0 - 20 30 5 15 30 - 5 -		
SAH 81 (W Brosdway Ave) / N Irving Ave 64 20 470 25 - 5 220 23 - 10 10 10 30 5 - 20 -	•	
N 21st Ave / N Girard Ave	-	
SAH 81 (W Broadway Ave) / N Girard Ave 66 30 465 15 - 75 210 90 - 20 40 90 10 10 - 20 - N21st Ave / N Fremont Ave 67 0 0 - - 45 0 0 - 0 0 25 250 - 0 -	•	
N 232 Wer / Nremonit ave		
V2ist Ave / NEmerson Ave 69 13 10 0 0 30 13 - 13 190 33 0 0 - 0 -	•	
SAH 81 (W Broadway Ave) / N Emerson Ave 70 50 495 0 - 0 275 50 - 80 140 15 0 0 - 0 -	•	
SAH 81 (W Broadway Ave) / N Dupont Ave 71 25 470 15 - 10 270 15 - 15 5 10 20 10 - 40 -	•	
N 21st Ave / N Bryant Ave 72 5 30 10 - - 20 15 5 - 15 10 15 20 25 - 5 - 15 10 15 20 25 - 5 - 15 10 15 20 25 - 5 - 10 15 20 25 - 5 - 10 15 20 25 - 5 - 10 15 20 25 - 5 - 15 10 15 20 25 - 5 - 15 10 15 20 25 - 5 - 15 10 15 20 25 - 5 15 - 15 10 15 20 25 - 5 10 15 20 25 - 5 5 50 5 5 5 15 15 - 5		
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2050 No Build Conditions: AM Peak Hour Traffic Volumes

Intersection	D		East	bound			West	bound			North	bound			South	bound			Northea	astbound	
Intersection		Left	Thru	Right	Right 2	Left 2	Left	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
CSAH 81 (W Broadway Ave) / N Aldrich Ave	74	10	585	20	•	•	35	345	30	-	10	20	40	20	20	-	5	-	-	-	-
N 21st Ave / N Lyndale Ave	75	15	10	20	-	•	10	20	10	-	10	170	10	45	285	-	20	-	-	-	-
CSAH 81 (W Broadway Ave) / N Lyndale Ave	76	35	545	65	-	•	95	360	40	-	25	115	60	135	155	-	25	-	-	-	-
N 21st Ave / N 4th St	77	5	5	45	-	-	10	5	0	-	15	45	15	0	60	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / N 4th St	78	15	615	20	-	•	20	420	55	-	15	5	50	100	5	-	10	-	-	-	-
N 21st Ave / I-94 EB Ramps	79									Doe	is not exist i	1 2050 No B	uild								
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	80	0	390	375	-	-	555	315	0	-	0	0	0	650	25	-	180	-	-	•	-
CSAH 152 (N Washington Ave) / N 21st Ave	81	0	0	0	-	-	5	0	10	-	0	975	15	5	435	-	0	-	-	•	-
N 22nd Ave / N 2nd St	82	25	35	5	-		15	30	30	-	45	205	15	50	170	•	50	-	-	•	-
N 21st Ave / N 2nd St	83	5	15	0	-	-	15	5	10	-	5	250	5	5	180	-	5	•	-	•	-
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	84	130	600	310	-	•	75	520	190	-	160	510	325	30	220	-	190	•	-	•	-
CSAH 81 (W Broadway Ave) / N 2nd St	85	50	780	40	-	•	20	580	55	-	20	80	45	30	105	-	70	•	•	•	-
CSAH 81 (W Broadway Ave) / W River Rd	86	20	765	70	-	•	25	600	30	-	40	10	40	15	20	•	15	•	-	•	-
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	87	615	160	165	-	•	105	0	20	-	0	330	60	40	480	•	0	•	-	•	-
N 17th Ave / N 2nd St	88	110	130	10	-	•	5	25	5	-	5	70	10	30	75	•	15	•	-	•	-
CSAH 152 (N Washington Ave) / N 15th Ave	89	0	5	5	-	•	15	0	5	-	5	235	10	5	540	•	5	•	-	•	-
N 15th Ave / N 2nd St	90	15	0	5	-	-	0	0	0	-	0	65	0	0	70	•	20	•	-	•	-
N Lyndale Ave / N Plymouth Ave	91	50	380	60	-	-	200	200	40	-	30	135	210	50	245	•	30	•	-	•	-
CSAH 152 (N Washington Ave) / N Plymouth Ave	92	90	530	220	-	-	110	450	40	-	75	150	40	75	455	•	120	•	-	-	-
N Plymouth Ave / N 2nd St	93	25	430	65	-	•	240	535	10	-	35	35	95	10	90	•	20	•	-	•	-
CSAH 152 (N Washington Ave) / N 10th Ave	94	45	120	45	-	-	30	160	5	-	65	230	80	105	540	•	165	•	-	•	-
N 2nd St / N 10th Ave	95	90	0	80	-	-	0	0	0	•	70	75	0	0	245	•	150	•	-	•	-
CSAH 152 (N Washington Ave) / N 8th Ave	96	10	0	15	-	-	15	0	5	-	15	360	5	5	510	•	100	•	•	•	-
N 10th Ave / N 3rd St	97	50	295	40	-	-	10	380	35	-	35	5	10	10	0	•	10	•	-	•	-
N 10th Ave / N 4th St	98	0	255	20	-	•	20	345	0	•	45	0	20	0	0	•	0	•	-	•	-
N 10th Ave / N 5th St	99	20	230	20	-	-	45	265	80	-	5	15	10	35	20	-	25	-	-	-	-
N 8th Ave / N 5th St	100	5	0	65	-	-	0	0	0	-	10	35	0	0	65	-	20	-	-	-	-
N 9th Ave / N 5th St	101									Doe	is not exist i	n 2050 No B	uild								
N 8th Ave / N Oak Lake Ave	102	5	0	15	-	•	20	5	5	•	35	355	65	5	295	•	5	•	-	•	-
N 7th St / W Lyndale Ave	103	0	245	200	-	•	15	315	0	•	0	0	0	800	795	•	180	•	-	•	-
N 7th St / E Lyndaie Ave	104	105	940	0	-	•	0	115	160	-	215	570	30	0	0	•	0	•	-	•	-
N 7th St / N Oak Lake Ave	105	95	800	75	-	•	5	225	70	-	15	290	5	105	190	•	35	•	-	-	-
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	106	0	385	420	-	-	65	160	30	-	85	270	50	40	930	•	10	•	-	-	-
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	107	255	705	85	-	-	20	220	15	-	65	115	90	10	80	•	150	-	-	-	-
N 6th Ave / N 5th St	108	15	175	90	-	•	10	255	15	-	20	15	10	15	35	•	45	-	-	-	-
N 6th Ave / N 3rd St	109	5	125	35	-	-	15	65	10	-	20	5	15	0	0	-	5	-	-	-	-
CSAH 152 (N Washington Ave) / N 6th Ave	110	20	0	140	-	-	5	0	5	-	80	355	15	5	510	-	25	-	-	-	-
N 5th Ave / N 3rd St	111	5	90	5	-	-	40	120	25	-	5	10	5	35	5	-	20	-	-	-	-
CSAH 152 (N Washington Ave) / N 5th Ave	112	10	30	50	-	-	20	30	45	-	125	395	40	25	590	-	40	-	-	-	-
N 5th Ave / N 2nd St	113	40	0	60	-	•	0	0	0	-	90	90	0	0	190	-	40	-	-	-	-

2050 No Build Conditions: PM Peak Hour Traffic Volumes

Intersection			East	bound			West	tbound			North	bound			South	bound			Northea	stbound	
intersection	D	Left	Thru	Right	Right 2	Left 2	Left oklyn Park	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
Oak Grove Pkwy / Xylon Ave	1	<u> </u>				Bro	okiyn Park			Doe	s not exist ii	n 2050 No B	luild								
CSAH 103 (W Broadway Ave) / 101st Ave N	2	170	•	280	-	•	-	•	-	-	215	700	-	-	275	-	300	-	-	-	-
CSAH 103 (W Broadway Ave) / Winnetka Ave N	3	150	-	225	-	•		•	•	-	200	765	-	-	430	•	125	•	-	-	-
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy CSAH 103 (W Broadway Ave) / 99th Ave N	4	•	•			•	70		85	- 000	- s not exist ii	880 2050 Mo 6	285	100	555		-		•	-	-
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	6	· ·	•	•	-	•	365	•	230	-	-	930	175	110	520	-	-	•	•	· · 1	-
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	7	-	-	-	-	•	325	-	465	-	-	640	380	385	500	-	-	-	-	-	-
CSAH 103 (W Broadway Ave) / 94th Ave N	8	75	5	80	-	-	10	5	15	-	30	930	25	40	750	-	35	-	-	-	-
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	9	280	1030	95	-	•	355	320	90	-	115	615	370	-	585	•	75	•	•	·	-
CSAH 103 (W Broadway Ave) / 92nd Ave N CSAH 103 (W Broadway Ave) / Setzler Pkwy	10	40		45	•	•	40		5 80	-	30	1100	110 30	30 115	1020 890		95 55		-		-
CSAH 103 (W Broadway Ave) / Settler Pxwy CSAH 103 (W Broadway Ave) / 89th Ave N	11	40		80			40				30	1050		- 115	915		40				
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	13	30	3	3	-	•	30	3	75	-	5	955	20	105	845	•	40		-	•	-
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	14	440	1120	480	-	-	370	590	115	-	295	425	790	220	185	-	475	-	-	-	-
CSAH 103 (W Broadway Ave) / 84th Ave N	15	-	-	15	-	-	-	-	100	-	-	1410	20	-	1025	•	10	•	-	•	-
CSAH 103 (W Broadway Ave) / College Park Dr	16	,	•	25	-	•	50	•	-	-	40	1405 1445	-	65	970 1025	•	10 20	•	•	-	-
CSAH 103 (W Broadway Ave) / 82nd Ave N CSAH 103 (W Broadway Ave) / Candlewood Dr	18			20			55		95		25	1340	85	75	975		20				
CSAH 103 (W Broadway Ave) / 78th Ave N	19			45					85			1340	25	40	975		40				
CSAH 103 (W Broadway Ave) / Shopping Center Access	20	140	10	75	-	-	40	5	70	-	70	1150	60	75	830	•	120	•	-	-	-
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	21	460	590	95	-	-	205	580	215	•	125	605	175	160	500	•	285	-	-	-	-
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	22	75	925	235	-	-	190	740	60	•	95	25	155	60	35	•	60	•	-	-	-
CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	23	35	870	20	-	-	10	915	25	-	30	•	10	25	-	· ·	55	•	-	· ·	-
CSAH 130 (W Broadway Ave) / 76th Ave N CSAH 130 (W Broadway Ave) / 75th Ave N	24	140	55 15	100	-	•	130 65	175	140 30	•	110 180	630 805	110 75	120	420		255		•		
CSAH 130 (W Broadway Ave) / 75th Ave N CSAH 130 (W Broadway Ave) / 74th Ave N	25		- 15	115	-	-	40		10		180	1055	45	30	765				-		-
CSAH 130 (W Broadway Ave) / 73rd Ave N	27	135	40	20	-	-	10	55	55	-	10	930	15	50	625	•	140	•	-	-	-
CSAH 81 (Bottineau Blvd) / 73rd Ave N	28	145	90	185	-	-	100	75	30	-	175	2235	75	25	1430	•	80	•	-	-	-
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	29	235	335	75	-	-	320	190	150	-	65	2095	680	105	1440	-	175	-	-	-	
CSAH 130 (W Broadway Ave) / 71st Ave N	30	700	50	375	-	-	-	25	5	-	260	245	5	20	255	•	380		-	-	
CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	31	•	-	•	•	•	165	•	835	•	•	2005	445	160	1675	•	-	•	•		-
CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps CSAH 81 (Bottineau Blvd) / 63rd Ave N	32	180	360	85	•	•	370 335	285	230 330	•	95	2215 1940	230	465 290	1375 1330		130		•		
63rd Ave N / Louisiana Ave N / Park and Ride Access	34	100	470	40	-	-	65	445	5		20	1940	155		- 1550		- 150		-		
							Crystal														
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road) CSAH 10 (Bass Lake Road) / Sherburne Ave	35	445	540 1195	400	-	-	90	355	115	-	530 15	2010	155	165	1320	-	265	•	-	•	-
CSAH 10 (Bass Lake Road) / Sherburne Ave CSAH 10 (Bass Lake Road) / Adair Ave N	30	50	800	10			- 115	495	10	•	10	3	180	10	5		50				-
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	38	25	10	40		•	75	3	65		20	2605	180	60	1720		30		-		-
Wilshire Blvd / Lakeland Ave N	39	•	•	•	-	-	15		40	-	•	3	30	45	5	-	•	-	-	- 1	-
CSAH 81 (Bottineau Blvd) / Corvallis Ave N	40	110	20	210	-	-	15	15	20	-	120	2670	25	60	1710	-	60	-	-	•	-
CSAH 81 (Bottineau Blvd) / 47th Ave N	41	25	10	65	-	•	35 bbinsdale	5	5	-	60	2785	50	5	1910	•	20	•	-	· ·	-
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps	42	•				RO	90		325			2570	•		1090		920	· ·	•	· · 1	•
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	43	60	130	5	-	•	-		1585	-		920	205	80	1100	-	-				-
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	44	0	0	0	-	-	0	0	0	-	0	1085	0	0	970	-	0	•	-	•	-
CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	45	95	205	200	-	-	80	235	140	-	240	840	115	170	700	-	85	•	-	•	-
CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	46	70	585	195	-	-	45	410	95	-	160	100	70	80	95	-	60	•	-	•	-
CSAH 81 (Bottineau Blvd) / 41st Ave N	47	120 70	10 30	65 25	-	-	30 80	10	50 95	-	85 20	1040 965	20 60	35 110	855 775	-	95 70	-	-	•	-
CSAH 81 (Bottineau Blvd) / 40th Ave N CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	48	0	0	0			0	0	90	-	20	1060	0	0	885		0				
CSAH 81 (Bottineau Blvd) / 36th Ave N	50	140	50	195	-	-	45	190	100	-	140	825	70	65	685	•	140	•	-	•	-
CSAH 81 (Bottineau Blvd) / 35th Ave N	51	155	0	150	-	-	0	0	0	-	110	875	0	0	800	-	120	-	-	-	-
CSAH 81 (Bottineau Blvd) / Abbott Ave N	52	395	0	170	-	-	0	0	0	-	40	590	0	0	775	•	180	-	-	•	-
CSAH 81 (W Broadway Ave) / N Oakdale Ave	53	5	185	0	-		0	160	5	•	0	0	0	100	0	•	5	•	-	•	-
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	54	75	255	95	•	-	nneapolis 115	90	50	•	45	150	340	35	110	•	15	•	•		•
CSAH 153 (N Lowry Ave) / N Washburn Ave	55	0	625	0	-	-	0	240	0	-	15	0	0	0	0	•	0		-		-
CSAH 81 (W Broadway Ave) SB Ramps / Theodore Wirth Pkwy	56	0	0	0	-	-	35	0	75	-	0	465	5	30	290	•	0	-	-	- 1	-
CSAH 81 (W Broadway Ave) / N 29th Ave	57	40	35	40	-	-	15	10	20	-	0	565	15	95	590	-	40	-	-	-	-
CSAH 81 (W Broadway Ave) / N 26th Ave	58	15	100	15	-	-	5	70	80	-	20	480	10	115	520	-	0	•	-	·	-
CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	59	25	410	105	0	15	30	340 450	85	0	155	315	45	106 20	240	•	10	5	20	0	15
CSAH 81 (W Broadway Ave) / N Logan Ave	60	40	535 555	13		•	0 30	450	30		0	0	20	20	5		20		•		•
CSAH 81 (W Broadway Ave) / N Knox Ave CSAH 81 (W Broadway Ave) / N James Ave	62	10	555	0	-		30	505	25	-	15	5	15	20	0		15		-		-
N Hillside Ave / N 21st Ave / N Irving Ave	63	3	15	25	-	-	3	10	0	-	20	30	3	20	30	•	3	-	-	-	-
CSAH 81 (W Broadway Ave) / N Irving Ave	64	25	580	25	-	-	10	495	15	-	15	15	15	20	15	-	25	-	-	-	-
N 21st Ave / N Girard Ave	65	20	0	20	-	-	0	0	0		10	40	0	0	60	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / N Girard Ave	66	15	565	35	-	-	125	485	10		15	25	160	15	45	-	20	•	-	•	-
N 21st Ave / N Fremont Ave	67	0	0	0	•	•	45	0	0	-	0	0	0	75	295	•	0	•	-	•	•
CSAH 81 (W Broadway Ave) / N Fremont Ave	68 69	0	660	80	•	•	30	550	0	-	0	0	0	110	160	-	70	•	-	-	•
N 21st Ave / N Emerson Ave SAH 81 (W Broadway Ave) / N Emerson Ave	69	25 60	50 710	0			0	30 470	25 85	-	15 110	260	35	0	0		0		-		•
ISAH 81 (W Broadway Ave) / N Emerson Ave	71	30	710	25	-	•	15	480	35	-	110	165	20	25	20	-	60		-		-
N 21st Ave / N Bryant Ave	72	3	40	25	-	-	25	400	3	-	25	35	25	30	45	-	3	•	-	-	-
N 21st Ave / N Aldrich Ave	73	25	45	25	-	-	15	50	15	-	15	45	15	45	65	-	5	-	-	<u> </u>	-

2050 No Build Conditions: PM Peak Hour Traffic Volumes

Intersection	ID		East	bound			West	bound			North	bound			South	bound			Northea	stbound	
intersection	10	Left	Thru	Right	Right 2	Left 2	Left	Thru	Right	Left 2	Left	Thru	Right	Left	Thru	Thru 2	Right	Left 2	Left	Thru	Right
CSAH 81 (W Broadway Ave) / N Aldrich Ave	74	10	750	50	-	-	55	525	10	-	45	55	65	35	50	-	20	-	-	-	-
N 21st Ave / N Lyndale Ave	75	45	25	35	-	•	30	20	10	-	20	290	30	25	340	-	40	-	-	-	-
CSAH 81 (W Broadway Ave) / N Lyndale Ave	76	80	695	75	-	-	90	485	80	-	55	180	95	160	195	-	50	-	-	-	-
N 21st Ave / N 4th St	77	0	5	75	-		50	10	5	-	30	60	0	5	75	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / N 4th St	78	25	845	70	-	•	95	635	55	-	35	10	35	140	35	-	25	-	-	-	-
N 21st Ave / I-94 EB Ramps	79									Doe	is not exist i	n 2050 No B	uild								
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	80	0	535	485	-	-	715	580	0	-	0	0	0	475	5	-	205	-	-	-	-
CSAH 152 (N Washington Ave) / N 21st Ave	81	0	0	0	-	-	10	0	20	-	0	1300	35	10	440	-	0	-	•	-	-
N 22nd Ave / N 2nd St	82	10	15	10	-	-	20	145	115	-	90	165	5	30	155	-	5	-	-	-	-
N 21st Ave / N 2nd St	83	15	10	20	-	-	0	0	0	-	25	245	0	0	180	-	5	-	-	-	-
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	84	205	550	255	-	•	75	710	255	-	330	735	505	10	185	-	255	-	•	-	-
CSAH 81 (W Broadway Ave) / N 2nd St	85	25	800	50	-	•	10	920	130	-	20	75	65	75	60	-	80	-	•	-	-
CSAH 81 (W Broadway Ave) / W River Rd	86	25	830	85	-	-	40	940	55	-	70	85	80	30	15	-	50	-	•	-	-
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	87	800	235	150	-	-	110	0	80	-	0	720	105	90	345	-	0	-	-	-	-
N 17th Ave / N 2nd St	88	140	230	5	-	•	5	75	25	-	15	95	10	10	70	•	100	-	-	-	-
CSAH 152 (N Washington Ave) / N 15th Ave	89	5	10	3	-	•	30	10	5	-	5	535	10	5	345	•	20	-	•	-	-
N 15th Ave / N 2nd St	90	20	0	5	-	-	0	0	0	-	10	100	0	0	45	-	35	-	-	-	-
N Lyndale Ave / N Plymouth Ave	91	60	490	40	-	-	335	285	75	-	30	240	185	50	265	-	50	-	-	-	-
CSAH 152 (N Washington Ave) / N Plymouth Ave	92	90	645	125	-	•	65	745	45	-	150	415	80	80	340	•	60	-	-	-	-
N Plymouth Ave / N 2nd St	93	15	680	49	-	•	185	705	25	-	50	80	245	20	75	•	25	-	-	-	-
CSAH 152 (N Washington Ave) / N 10th Ave	94	80	200	40	-	•	85	265	45	-	105	510	45	15	405	-	130	-	•	-	-
N 2nd St / N 10th Ave	95	220	0	95	-	•	0	0	0	-	85	155	0	0	185	•	115	-	•	-	-
CSAH 152 (N Washington Ave) / N 8th Ave	96	0	0	5	-	-	5	5	0	-	10	660	10	15	500	-	15	-	-	-	-
N 10th Ave / N 3rd St	97	15	480	40	-	•	15	470	10	-	40	5	20	15	5	-	35	-	-	-	-
N 10th Ave / N 4th St	98	0	265	45	-	-	40	585	0	-	45	0	35	0	0	-	0	-	-	-	-
N 10th Ave / N 5th St	99	35	260	20	-	-	50	495	125	-	10	25	35	20	15	-	40	-	-	-	-
N 8th Ave / N 5th St	100	15	0	35	-	•	0	0	0	-	20	105	0	0	60	-	5	-	-	-	-
N 9th Ave / N 5th St	101									Doe	is not exist i	n 2050 No B	uild								
N 8th Ave / N Oak Lake Ave	102	5	0	15	-	-	20	0	5	-	35	465	45	5	480	-	5	-	-	-	-
N 7th St / W Lyndale Ave	103	0	225	210	-	•	35	490	0	-	0	0	0	400	760	-	165	-	-	-	-
N 7th St / E Lyndale Ave	104	210	415	0	-	•	0	280	485	-	245	1140	30	0	0	-	0	-	-	-	-
N 7th St / N Oak Lake Ave	105	55	355	35	-	•	10	690	115	-	15	375	10	165	290	-	60	-	-	-	-
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	106	0	310	280	-	•	60	300	65	-	160	750	110	35	520	-	25	-	-	-	-
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	107	270	545	25	-	•	20	450	15	-	100	190	35	10	35	-	270	-	-	-	-
N 6th Ave / N 5th St	108	25	185	55	-	•	5	180	20	-	95	10	5	20	50	-	25	-	-	-	-
N 6th Ave / N 3rd St	109	20	230	20	-	•	15	115	20	-	25	5	20	10	10	-	30	-	-	-	-
CSAH 152 (N Washington Ave) / N 6th Ave	110	75	15	215	-	-	15	5	5	-	135	600	15	5	400	-	105	-	-	-	-
N 5th Ave / N 3rd St	111	5	190	5	-	-	15	115	35	-	10	20	50	35	10	-	20	-	-	-	-
CSAH 152 (N Washington Ave) / N 5th Ave	112	30	75	170	-	-	20	35	60	-	70	660	50	65	540	-	25	-	-	-	-
N 5th Ave / N 2nd St	113	65	0	160	-	•	0	0	0		80	170	0	0	170	-	35	-	-	-	-

			Eastbound			10/							
Intersection	ID	Left	Thru	Right	Left	Westbound Thru		Left	Northboun Thru		Left	Southbound Thru	
			oklyn Park	Right	Len	Inru	Right	Len	Inru	Right	ιεπ	Inru	Right
Oak Grove Pkwy / Xylon Ave	1	205	525	465	105	235	80	265	55	70	55	30	195
CSAH 103 (W Broadway Ave) / 101st Ave N	2						es not exis						
CSAH 103 (W Broadway Ave) / Winnetka Ave N	3						es not exist						
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	4	55	5	50	40	60	20	340	450	120	35	415	360
CSAH 103 (W Broadway Ave) / 99th Ave N	5	40	125	75	25	155	-	245	865	55	10	345	150
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	6	-		-	760	-	460	-	705	135	55	385	-
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	7		-	-	300	· ·	420	-	420	340	255	890	-
CSAH 103 (W Broadway Ave) / 94th Ave N	8	30	5	40	90	25	155	55	575	10	20	1050	120
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	9	110	590	145	525	520	80	130	455	300	70	980	135
CSAH 103 (W Broadway Ave) / 92nd Ave N	10	-	-	10	-	-	100	-	785	-	-	1455	190
CSAH 103 (W Broadway Ave) / Setzler Pkwy	11	130	5	45	40	5	70	25	585	10	50	1320	95
CSAH 103 (W Broadway Ave) / 89th Ave N	12	-	-	10	-	-	-	-	615	-	-	1310	90
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	13	40	5	5	5	5	65	5	510	5	95	1190	35
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	14	215	340	90	225	625	140	220	160	135	135	515	545
CSAH 103 (W Broadway Ave) / 84th Ave N	15	-	-	5	-	-	10	5	505	-	-	820	10
CSAH 103 (W Broadway Ave) / College Park Dr	16	20	-	10	5	-	-	10	485	15	70	750	5
CSAH 103 (W Broadway Ave) / 82nd Ave N	17	-	-	5	-	-	-	-	505	-	-	755	5
CSAH 103 (W Broadway Ave) / Candlewood Dr	18	5	-	5	50	-	50	15	455	35	35	670	55
CSAH 103 (W Broadway Ave) / 78th Ave N	19	-	-	5	-	-	55	-	450	10	-	715	5
CSAH 103 (W Broadway Ave) / Shopping Center Access	20	-	-	15	-	-	-	-	460	5	-	715	10
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	21	120	305	35	90	280	80	50	265	60	145	350	235
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	22	5	330	50	35	510	20	80	5	110	20	10	5
CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	23	15	490	5	5	435	5	5	-	5	10	-	15
CSAH 130 (W Broadway Ave) / 76th Ave N	24	40	30	20	40	30	40	30	300	50	60	345	70
CSAH 130 (W Broadway Ave) / 75th Ave N	25	5	5	40	50	10	20	25	355	25	30	375	5
CSAH 130 (W Broadway Ave) / 74th Ave N	26	-	-	-	10		5	-	400	15	10	455	-
CSAH 130 (W Broadway Ave) / 73rd Ave N	27	35	25	25	30	50	20	5	360	20	20	405	40
CSAH 81 (Bottineau Blvd) / 73rd Ave N	28	45	10	75	35	30	30	110	945	20	60	1800	110
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	29	110	100	50	365	175	75	100	885	265	95	1625	190
CSAH 130 (W Broadway Ave) / 71st Ave N	30	270	25	165	5	30	10	240	105	-	10	95	355
CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	31	-	-	-	135	-	555	-	695	410	195	1840	-
CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps	32	-	-	-	420	-	125	-	980	220	540	1430	-
CSAH 81 (Bottineau Blvd) / 63rd Ave N	33	145	185	105	280	350	310	100	740	180	195	1360	300
63rd Ave N / Louisiana Ave N / Park and Ride Access	34	110	310	20	125	385	235	10	-	90	35	-	20
			Crystal										
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road)	35	155	190	505	85	295	70	245	795	40	65	1470	210
CSAH 10 (Bass Lake Road) / Sherburne Ave	36	5	760	10	95	650	5	5	5	85	5	5	5
CSAH 10 (Bass Lake Road) / Adair Ave N	37	30	250	10	5	405	5	5	5	5	5	5	40
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	38	15	5	15	140	10	70	30	990	95	60	1890	105
Wilshire Blvd / Lakeland Ave N	39	-	-	-	60	-	85	-	-	20	15	-	-
CSAH 81 (Bottineau Blvd) / Corvallis Ave N	40	45	5	150	30	25	30	135	1040	5	10	1950	85
CSAH 81 (Bottineau Blvd) / 47th Ave N	41	10	5	85	60	5	5	50	1160	15	5	2120	10
		Ro	bbinsdale									1	
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps	42	•	-	-	115	-	80	-	1145	-	-	985	1280
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	43	15	145	-	-	•	450	-	680	165	160	940	-
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	44	0	0	0	0	0	0	0	790	0	10	915	0
CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	45	115	185	160	30	225	160	145	515	35	100	720	90
CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	46	35	395	75	25	400	40	95	55	35	40	75	45
CSAH 81 (Bottineau Blvd) / 41st Ave N	47	20	5	5	0	5	5	20	680	0	5	870	55
CSAH 81 (Bottineau Blvd) / 40th Ave N	48	45	25	10	40	40	95	5	585	20	35	800	40
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	49	0	0	0	0	0	0	0	675	0	0	855	0
CSAH 81 (Bottineau Blvd) / 36th Ave N	50	70	60	145	60	185	90	100	515	30	25	745	90
CSAH 81 (Bottineau Blvd) / 35th Ave N	51	50	0	80	0	0	0	65	585	0	0	800	145

2050 Build Conditions: AM Peak Hour Traffic Volumes

2050 Build Conditions: AM Peak Hour Traffic Volumes

			Eastbound			Westbound			Northbound	1		Southbound	1
Intersection	ID	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
CSAH 81 (Bottineau Blvd) / Abbott Ave N	52	195	0	115	0	0	0	70	455	0	0	555	320
CSAH 81 (W Broadway Ave) / N Oakdale Ave	53	10	120	0	0	155	50	0	0	0	25	0	5
		Mi	inneapolis										
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	54	30	160	105	180	120	20	40	25	115	40	155	30
CSAH 153 (N Lowry Ave) / N Washburn Ave	55	0	315	0	0	295	0	20	0	0	0	0	0
CSAH 81 (W Broadway Ave) SB Ramps / Theodore Wirth Pkwy	56	0	0	0	0	0	0	0	180	0	60	380	0
CSAH 81 (W Broadway Ave) / N 29th Ave	57	55	10	45	10	20	10	0	340	10	35	455	85
CSAH 81 (W Broadway Ave) / N 26th Ave	58	55	45	10	5	55	105	0	255	10	55	400	0
CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	59	15	300	65	20	210	30	65	115	10	50	130	15
CSAH 81 (W Broadway Ave) / N Logan Ave	60	0	485	0	0	240	10	0	0	0	0	0	25
CSAH 81 (W Broadway Ave) / N Knox Ave	61	0	495	10	0	260	0	0	0	25	0	0	5
CSAH 81 (W Broadway Ave) / N James Ave	62	5	340	0	0	120	15	30	5	15	15	0	15
N Hillside Ave / N 21st Ave / N Irving Ave	63	25	0	10	0	0	0	20	45	0	0	45	25
CSAH 81 (W Broadway Ave) / N Irving Ave	64	25	320	25	30	105	25	10	15	10	25	10	20
N 21st Ave / N Girard Ave	65	0	0	0	0	0	0	0	155	0	0	30	0
CSAH 81 (W Broadway Ave) / N Girard Ave	66	10	340	5	75	145	110	10	35	100	15	10	5
N 21st Ave / N Fremont Ave	67	0	0	0	0	0	0	0	0	0	0	290	0
CSAH 81 (W Broadway Ave) / N Fremont Ave	68	0	430	25	15	300	0	0	0	0	80	180	30
N 21st Ave / N Emerson Ave	69	0	0	0	0	0	0	0	235	0	0	0	0
CSAH 81 (W Broadway Ave) / N Emerson Ave	70	65	445	0	0	250	55	65	115	10	0	0	0
CSAH 81 (W Broadway Ave) / N Dupont Ave	71	20	425	10	10	240	20	20	5	10	25	10	45
N 21st Ave / N Bryant Ave	72	0	0	0	0	0	0	0	30	0	0	50	0
N 21st Ave / N Aldrich Ave	73	0	0	0	0	0	0	0	45	0	0	30	0
CSAH 81 (W Broadway Ave) / N Aldrich Ave	74	5	540	20	30	320	30	10	5	35	20	5	5
N 21st Ave / N Lyndale Ave	75	0	0	0	0	0	0	0	175	0	0	330	0
CSAH 81 (W Broadway Ave) / N Lyndale Ave	76	25	495	75	100	325	30	30	120	60	130	175	25
N 21st Ave / N 4th St	77	0	0	0	15	0	145	0	25	15	205	70	0
CSAH 81 (W Broadway Ave) / N 4th St	78	5	585	15	25	405	30	10	5	55	75	5	5
N 21st Ave / I-94 EB Ramps	79	0	150	70	80	140	0	0	0	0	100	645	20
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	80	0	260	455	460	300	0	0	0	0	490	145	160
CSAH 152 (N Washington Ave) / N 21st Ave	81	35	40	175	10	65	15	95	785	0	75	330	60
N 22nd Ave / N 2nd St	82	15	20	0	5	15	50	15	215	25	75	165	55
N 21st Ave / N 2nd St	83	30	30	55	5	5	0	80	225	5	0	165	5
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	84	110	500	140	65	490	255	100	345	260	155	190	170
CSAH 81 (W Broadway Ave) / N 2nd St	85	20	725	85	35	585	45	35	115	70	30	135	120
CSAH 81 (W Broadway Ave) / W River Rd	86	25	705	95	60	565	30	85	15	95	15	20	15
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	87 88	455 200	200	110 10	95 5	0	20	0	195 95	60 10	125 35	270 110	0 30
N 17th Ave / N 2nd St						-							
CSAH 152 (N Washington Ave) / N 15th Ave	89	0 20	15	5 20	15	0	5	5	160	20	130 0	340	5
N 15th Ave / N 2nd St N Lyndale Ave / N Plymouth Ave	90 91	35	0 315	20	0 210	210	0 70	10	90 115	205	115	105 170	20 35
	91	35	485	20	50	390	25	10	85	205	40	285	35
CSAH 152 (N Washington Ave) / N Plymouth Ave N Plymouth Ave / N 2nd St	92	20	485	45	260	390	100	20	20	130	115	285	25
CSAH 152 (N Washington Ave) / N 10th Ave	94	20	465	45	120	0	5	20	175	95	50	545	0
N 2nd St / N 10th Ave	95	45	0	45	0	0	0	50	1/5	0	0	210	100
CSAH 152 (N Washington Ave) / N 8th Ave	96	75	5	100	20	5	10	100	270	10	10	445	230
N 10th Ave / N 3rd St	97	0	0	0	0	0	0	0	240	0	0	95	0
N 10th Ave / N 4th St	98	0	0	0	0	0	0	0	0	0	0	0	0
N 10th Ave / N 5th St	99	15	0	20	0	0	0	10	20	0	0	55	10
N 8th Ave / N 5th St	100	10	185	100	10	65	10	70	10	15	5	50	15
N 9th Ave / N 5th St	100	0	0	0	20	0	15	0	15	10	5	70	0
N 8th Ave / N Oak Lake Ave	101	10	30	75	110	15	25	25	30	245	20	10	15
N 7th St / W Lyndale Ave	102	0	435	210	25	330	0	0	0	0	755	730	165
N 7th St / E Lyndale Ave	103	130	1060	0	0	110	145	245	575	35	0	0	0
in Aurocy E Cynuale Ave	104	120	1000	0	0	110	145	245	5/5	- 22	0	0	0

2050 Build Conditions: AM Peak Hour Traffic Volumes

Intersection	ID		Eastbound			Westbound	1		Northbound	d		Southboun	1
intersection	10	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
N 7th St / N Oak Lake Ave	105	100	895	100	0	160	15	30	185	0	25	105	65
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	106	0	385	570	65	170	15	140	200	50	105	855	25
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	107	190	790	70	60	250	25	20	100	120	45	140	115
N 6th Ave / N 5th St	108	15	245	90	5	250	25	20	15	10	50	50	50
N 6th Ave / N 3rd St	109	70	255	40	25	105	15	15	5	20	10	5	15
CSAH 152 (N Washington Ave) / N 6th Ave	110	40	115	140	5	0	10	100	320	15	10	415	85
N 5th Ave / N 3rd St	111	10	110	10	30	150	15	10	5	5	20	5	20
CSAH 152 (N Washington Ave) / N 5th Ave	112	5	65	25	70	30	60	80	370	95	35	515	10
N 5th Ave / N 2nd St	113	120	0	80	0	0	0	90	95	0	0	200	95

2050 Build Conditions: PM Peak Hour Traffic Volumes

			Eastbound			Westbound			Northbound			Southbound	
Intersection	ID	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
		Bro	oklyn Park										
Oak Grove Pkwy / Xylon Ave	1	160	475	370	175	425	135	355	70	95	70	40	260
CSAH 103 (W Broadway Ave) / 101st Ave N	2					Do	es not exist	in 2050 Bu	uild				
CSAH 103 (W Broadway Ave) / Winnetka Ave N	3					Do	es not exist	in 2050 Bu	uild				
CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	4	295	35	320	75	85	80	265	560	290	50	345	305
CSAH 103 (W Broadway Ave) / 99th Ave N	5	110	175	245	60	180	60	100	945	20	5	705	35
CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	6	-	-	-	390	-	255	-	805	455	480	535	-
CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	7	-	-	-	355	-	515	-	745	385	415	510	-
CSAH 103 (W Broadway Ave) / 94th Ave N	8	80	5	85	10	5	15	25	1030	25	40	785	35
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	9	250	995	110	460	335	85	165	750	555	190	615	75
CSAH 103 (W Broadway Ave) / 92nd Ave N	10	-	-	45	-	-	5	-	1465	115	-	1170	20
CSAH 103 (W Broadway Ave) / Setzler Pkwy	11	50	5	10	40	5	105	15	1430	35	100	1045	65
CSAH 103 (W Broadway Ave) / 89th Ave N	12	-	-	30	-	-	-	-	1475	-	-	1075	25
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	13	50	5	5	30	5	145	5	1275	20	75	975	50
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	14	560	1285	590	275	555	135	380	610	560	260	180	565
CSAH 103 (W Broadway Ave) / 84th Ave N	15	-	-	5	-	-	95	-	1455	-	-	1040	10
CSAH 103 (W Broadway Ave) / College Park Dr	16	30	-	10	50	5	-	40	1425	20	45	985	10
CSAH 103 (W Broadway Ave) / 82nd Ave N	17	-	-	15	-	-	-	-	1485	-	-	1040	5
CSAH 103 (W Broadway Ave) / Candlewood Dr	18	30	5	5	55	5	105	5	1350	75	60	990	5
CSAH 103 (W Broadway Ave) / 78th Ave N	19	-	-	20	-	-	75	-	1355	25	-	1030	20
CSAH 103 (W Broadway Ave) / Shopping Center Access	20	-	-	85	-	-	70	-	1310	60	-	930	120
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	21	605	625	85	225	640	205	135	565	160	260	465	285
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	22	100	935	230	195	750	120	90	30	155	225	35	60
CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	23	90	935	20	10	945	30	30	-	10	35	-	95
CSAH 130 (W Broadway Ave) / 76th Ave N	24	130	55	100	130	175	115	105	620	105	120	400	255
CSAH 130 (W Broadway Ave) / 75th Ave N	25	10	15	130	65	45	30	170	785	75	35	570	25
CSAH 130 (W Broadway Ave) / 74th Ave N	26	-	-	-	45	-	15	-	1015	30	5	760	-
CSAH 130 (W Broadway Ave) / 73rd Ave N	27	155	40	20	10	60	70	10	820	15	40	660	110
CSAH 81 (Bottineau Blvd) / 73rd Ave N	28	165	105	185	85	65	25	130	2160	80	30	1365	85
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	29	230	310	70	295	205	135	75	2005	615	100	1355	185
CSAH 130 (W Broadway Ave) / 71st Ave N	30	620	50	365	-	25	5	225	215	5	20	280	385
CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	31	-	-	-	165	-	860	-	1835	490	145	1575	-
CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps	32	-	-	-	355	-	245	-	2085	240	480	1260	-
CSAH 81 (Bottineau Blvd) / 63rd Ave N	33	355	460	100	325	275	360	70	1610	440	280	1175	160
63rd Ave N / Louisiana Ave N / Park and Ride Access	34	5	520 Crystal	45	60	400	45	15	5	160	225	-	100
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road)	35	405	545	425	100	365	115	510	1600	145	145	1220	225
CSAH 81 (Bottineau Bivd) / CSAH 10 (Bass Lake Road) CSAH 10 (Bass Lake Road) / Sherburne Ave	35	405	1190	35	100	970	10	15	5	145	145	5	10
CSAH 10 (Bass Lake Road) / Sherburne Ave CSAH 10 (Bass Lake Road) / Adair Ave N	37	50	775	10	5	520	15	10	5	5	10	5	50
CSAH 10 (Bass Lake Road) / Adair Ave N CSAH 81 (Bottineau Blvd) / Wilshire Blvd	37	90	10	40	75	520	60	20	2110	165	60	1645	40
Wilshire Blvd / Lakeland Ave N	39		- 10	40	10	-	50	- 20	5	30	105	5	40
CSAH 81 (Bottineau Blvd) / Corvallis Ave N	40	100	20	200	15	15	20	110	2175	25	55	1645	60
CSAH 81 (Bottineau Blvd) / 47th Ave N	41	20	10	65	35	5	5	55	2285	45	5	1835	15
			bbinsdale						2205	- 12		1000	
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps	42	-	-	-	70	· ·	305		2080		-	1055	880
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	43	30	145	5	-	· ·	1380	-	665	325	85	1045	-
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	44	0	0	0	0	0	5	0	889	0	0	859	0
CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	45	80	180	175	65	195	125	195	675	90	155	610	75
CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	46	65	520	175	35	345	85	140	90	60	80	85	60
CSAH 81 (Bottineau Blvd) / 41st Ave N	47	70	5	35	15	10	30	55	865	15	20	745	75
CSAH 81 (Bottineau Blvd) / 40th Ave N	48	50	20	25	60	40	75	15	810	50	80	650	55
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	49	0	0	0	0	0	0	0	962	0	0	738	0
CSAH 81 (Bottineau Blvd) / 36th Ave N	50	125	60	180	40	165	90	140	785	70	55	580	115
CSAH 81 (Bottineau Blvd) / 35th Ave N	51	135	0	135	0	0	0	105	860	0	0	695	105
						-				-			

2050 Build Conditions: PM Peak Hour Traffic Volumes

			Eastbound			Westbound	1		Northbound	1		Southbound	1
Intersection	ID	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
CSAH 81 (Bottineau Blvd) / Abbott Ave N	52	350	0	155	0	0	0	45	635	0	0	680	160
CSAH 81 (W Broadway Ave) / N Oakdale Ave	53	5	185	0	0	150	5	0	0	0	95	0	5
		Mi	nneapolis										
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	54	65	225	135	115	90	55	40	135	285	35	115	15
CSAH 153 (N Lowry Ave) / N Washburn Ave	55	0	545	0	0	240	0	15	0	0	0	0	0
CSAH 81 (W Broadway Ave) SB Ramps / Theodore Wirth Pkwy	56	0	0	0	0	0	0	0	455	5	35	330	0
CSAH 81 (W Broadway Ave) / N 29th Ave	57	40	35	35	15	10	20	0	625	15	120	535	65
CSAH 81 (W Broadway Ave) / N 26th Ave	58	40	100	15	5	75	105	20	490	10	165	370	50
CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	59	25	240	125	70	295	105	185	325	50	125	260	35
CSAH 81 (W Broadway Ave) / N Logan Ave	60	0	420	0	0	405	40	0	0	0	0	0	75
CSAH 81 (W Broadway Ave) / N Knox Ave	61	0	410	10	0	400	5	0	0	40	0	0	45
CSAH 81 (W Broadway Ave) / N James Ave	62	30	385	0	0	345	30	30	5	15	40	0	20
N Hillside Ave / N 21st Ave / N Irving Ave	63	20	0	35	0	0	0	20	40	0	0	30	20
CSAH 81 (W Broadway Ave) / N Irving Ave	64	25	390	25	30	335	10	15	25	10	20	20	25
N 21st Ave / N Girard Ave	65	0	0	0	0	0	0	0	70	0	0	80	0
CSAH 81 (W Broadway Ave) / N Girard Ave	66	5	400	15	120	360	40	0	25	180	55	10	15
N 21st Ave / N Fremont Ave	67 68	0	0 550	0 85	0 25	0 475	0	0	0	0	0	390 150	0 45
CSAH 81 (W Broadway Ave) / N Fremont Ave N 21st Ave / N Emerson Ave	68	0	0	0	25	4/5	0	0	355	0	195	0	45
	70	70	675	0	0	415	95	85	190	45	0	0	0
CSAH 81 (W Broadway Ave) / N Emerson Ave CSAH 81 (W Broadway Ave) / N Dupont Ave	70	35	675	10	15	415	40	15	5	20	30	20	55
N 21st Ave / N Bryant Ave	72	0	0/5	0	0	0	-+0	0	50	0	0	85	0
N 21st Ave / N Aldrich Ave	73	0	0	0	0	0	0	0	55	0	0	95	0
CSAH 81 (W Broadway Ave) / N Aldrich Ave	74	10	700	35	50	430	15	40	30	55	40	40	15
N 21st Ave / N Lyndale Ave	75	0	0	0	0	0	0	0	350	0	0	410	0
CSAH 81 (W Broadway Ave) / N Lyndale Ave	76	75	640	80	100	390	80	60	195	100	150	215	45
N 21st Ave / N 4th St	77	0	0	0	30	0	255	0	65	15	165	95	0
CSAH 81 (W Broadway Ave) / N 4th St	78	15	810	65	60	500	60	30	5	40	100	5	20
N 21st Ave / I-94 EB Ramps	79	0	125	55	85	230	0	0	0	0	115	545	55
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	80	0	365	585	570	435	0	0	0	0	380	120	185
CSAH 152 (N Washington Ave) / N 21st Ave	81	150	20	70	30	85	30	105	1105	45	110	320	125
N 22nd Ave / N 2nd St	82	15	0	10	15	105	140	50	220	25	40	155	55
N 21st Ave / N 2nd St	83	65	15	95	0	0	0	125	230	0	0	155	25
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	84	160	505	80	65	650	435	130	500	465	80	120	225
CSAH 81 (W Broadway Ave) / N 2nd St	85	25	755	80	15	910	160	35	115	90	115	95	80
CSAH 81 (W Broadway Ave) / W River Rd	86	40	740	180	95	855	60	200	90	220	30	15	30
CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	87	605	265	95	135	0	110	0	455	90	130	135	0
N 17th Ave / N 2nd St	88	255	135	5	5	75	35	15	180	10	15	115	155
CSAH 152 (N Washington Ave) / N 15th Ave	89	5	15	5	100	15	5	5	375	15	165	190	10
N 15th Ave / N 2nd St	90	30	0	20	0	0	0	15	175	0	0	75	50
N Lyndale Ave / N Plymouth Ave	91	40	405	20	335	310	125	10	200	270	175	235	40
CSAH 152 (N Washington Ave) / N Plymouth Ave	92	135	650	135	25	715	25	155	200	40	40	195	70
N Plymouth Ave / N 2nd St	93	10	725	40	150	710	150	50	30	255	225	45	30
CSAH 152 (N Washington Ave) / N 10th Ave	94	0	0	0	155	0	5	0	390	70	85	365	0
N 2nd St / N 10th Ave	95	120	0	75	0	0	0	60	215	0	0	155	80
CSAH 152 (N Washington Ave) / N 8th Ave	96	75	5	100	15	15	20	90	510	25	30	265	200
N 10th Ave / N 3rd St	97	0	0	0	0	0	0	0	175	0	0	85	0
N 10th Ave / N 4th St	98	0	0	0	0	0	0	0	0	0	0	0	0
N 10th Ave / N 5th St	99	10	0	10	0	0	0	10	35	0	0	60	70
N 8th Ave / N 5th St	100	15	130	15	15	130	5	65	55	10	15	65	80
N 9th Ave / N 5th St	101	0	0	0	20	0	15	0	30	10	5	65	0
N 8th Ave / N Oak Lake Ave	102	5	10	5	250	15	10	35 0	65 0	135	15	70 690	5
N 7th St / W Lyndale Ave	103	200	275 485	235	65 0	635 380	515	320	1165	0 20	410 0	690	110 0
N 7th St / E Lyndale Ave	104	200	465	0	0	580	515	520	1105	20	0	0	U

2050 Build Conditions: PM Peak Hour Traffic Volumes

Intersection	ID		Eastbound			Westbound	1	1	Northbound	d		Southboun	d
Intersection	10	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
N 7th St / N Oak Lake Ave	105	55	395	55	20	750	30	85	150	35	75	190	60
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	106	0	375	425	60	370	65	275	735	105	110	375	20
TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	107	105	665	10	50	535	80	25	150	65	70	65	245
N 6th Ave / N 5th St	108	25	340	60	5	180	25	155	10	25	25	20	35
N 6th Ave / N 3rd St	109	110	365	30	30	135	20	20	5	10	10	5	30
CSAH 152 (N Washington Ave) / N 6th Ave	110	115	10	185	10	10	5	160	450	10	5	430	70
N 5th Ave / N 3rd St	111	10	210	10	15	145	25	20	15	30	20	10	25
CSAH 152 (N Washington Ave) / N 5th Ave	112	5	180	95	80	90	85	40	530	150	90	530	5
N 5th Ave / N 2nd St	113	235	0	200	0	0	0	85	180	0	0	180	165

Appendix B: Intersection Layout Tables

			1				1
#	Intersection	Existing Conditions		o Build nditions		Build Conditions	Notes
1	Oak Grove Pkwy / Xylon Ave	N/A	N/A		Oak		
2	CSAH 103 (W Broadway Ave) / 101 [#] Ave N					N/A	
3	CSAH 103 (W Broadway Ave) / Winnetka Ave N				N/A		
4	CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	N Prot / E Prot	↓ L. N Pi	Osk Grove Pkwy		S Prot / N Perm / E-W Prot+Perm	
5	CSAH 103 (W Broadway Ave) / 99th Ave N	N/A	N Prot / E Prot			Signature N Signature N Signat	
Legen	1d Traffic Signal	No Turn on Red		NTOR Pe	erm	Permissive Left-Turn Pha	ise
		Freight Rail		> Pr	rot+Perm	Protected/Permissive Le	ft-Turn Phase
-	Lane Use			> Prot			
		Channelized Right-Tu	rn	FY FY	(A	Flashing Yellow Arrow L	eft-Turn Phase
NUT TO BCA				(

#	Intersection	Existing Conditions	No Build Condition		Build Conditions	Notes
6	CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	N Prot / E Prot	N Prot / E Prot	amps ♥	TH SID WB Ramps	
7	CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	N Prot / E Perm	TH 610 EB	Ramps	TH 610 EB Ramps	
8	CSAH 103 (W Broadway Ave) / 94 th Ave N				Ave N Ave N	*NTOR when LRT approaching
9	CSAH 103 (W Broadway Ave) / CSAH 30 (93 rd Ave N)	N-S Prot / E-W Prot	N-S Prot / E-W Pro		N-S Prot / E-W Prot	
10	CSAH 103 (W Broadway Ave) / 92 nd Ave N					Intersection converted to right-in right-out in 2050 Build conditions
Legen	d Traffic Signal	No Turn on Red	NTOR	Perm	Permissive Left-Turn Pha	ase
		Freight Rail	>	Prot+Perm	Protected/Permissive Le	eft-Turn Phase
	Lane Use	LRT	>	Prot	Protected Left-Turn Pha	se
NOT TO SCA	Lane Use Change	Channelized Right-Tu	m 💌	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	; (Build Conditions	Notes
11	CSAH 103 (W Broadway Ave) / Setzler Pkwy				Settler Pkwy	
12	CSAH 103 (W Broadway Ave) / 89 th Ave N					Intersection converted to right-in right-out in 2050 Build conditions
13	CSAH 103 (W Broadway Ave) / Maplebrook Pkwy			, <u> </u>	Maplebrook Pkwy	
14	CSAH 103 (W Broadway Ave) / CSAH 109 (85 th Ave N)	CGAH 109 CGAH 109 N-S Prot / E-W Prot	CSAH 10		V-S Prot / E-W Prot	
15	CSAH 103 (W Broadway Ave) / 84 th Ave N	N-S Prot / E-W Perm	N-S Prot / E-W Perm		S4 [®] Ave N	Intersection converted to right-in right-out in 2050 Build conditions
Legen	1d Traffic Signal	🔶 No Turn on Red	NTOR	Perm	Permissive Left-Turn Ph	ase
	Stop Control	Freight Rail	>	Prot+Perm	Protected/Permissive Le	eft-Turn Phase
	Lane Use	LRT LRT	>	Prot	Protected Left-Turn Phase	
	Lane Use Change	Channelized Right-Tur	n 💌	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Condition		Build Conditions	Notes
16	CSAH 103 (W Broadway Ave) / College Park Dr			↑↑ <u>→</u>	College Park Dr	
17	CSAH 103 (W Broadway Ave) / 82 nd Ave N			^ ^		Intersection converted to right-in right-out in 2050 Build conditions
18	CSAH 103 (W Broadway Ave) / Candlewood Dr	N FYA / E Prot	N FYA / E Prot		LS Prot / E-W Perm	
19	CSAH 103 (W Broadway Ave) / 78 th Ave N					Intersection converted to right-in right-out in 2050 Build conditions
20	CSAH 103 (W Broadway Ave) / Shopping Center Access	N-S Prot / E-W Perm	N-S Prot / E-W Per	-	Shopping Center	Intersection converted to right-in right-out in 2050 Build conditions
Legen	1d Traffic Signal	No Turn on Red	NTOR	Perm	Permissive Left-Turn Ph	ase
	1 1	Freight Rail	>	Prot+Perm	Protected/Permissive L	eft-Turn Phase
	Lane Use		>	Prot	Protected Left-Turn Pha	se
	Lane Use Change	Channelized Right-Tur	n 💌	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Conditior		Build Conditions	Notes
21	CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152	N-S Prot / E-W Prot	N-S Prot / E-W P	rot	CSAH 130 CSAH 130 N-S Prot / E-W Prot	
22	CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	CSAH 130 N-S FYA/E-W FYA	N-S FYA / E-W F		Salt 130	
23	CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)					
24	CSAH 130 (W Broadway Ave) / 76 th Ave N	→↓↓↓↓ → → → → → → → → → → → → →	N-S Prot / E-W Pe	erm	N-S Prot / E-W Perm	
25	CSAH 130 (W Broadway Ave) / 75 th Ave N			ve N	73" Ave N 73" Ave N	*NTOR when LRT approaching in 2050 Build conditions
Legen	Traffic Signal	No Turn on Red	NTOR	Perm	Permissive Left-Turn Pha	ase
		Freight Rail	>	Prot+Perm	Protected/Permissive Le	
			>	Prot	Protected Left-Turn Pha	
NOT TO SCA	Lane Use Change	Channelized Right-Tur	m 📕	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Condition		Build Conditions	Notes
26	CSAH 130 (W Broadway Ave) / 74 th Ave N			REN -	VIP Ave N	West approach (Jolly Lane) removed and cul- de-sac construct- ed for Jolly Lane in 2050 Build conditions.
27	CSAH 130 (W Broadway Ave) / 73 rd Ave N	N-S Perm / E-W Perm	N-S Perm / E-W Pe	erm I	V-S Perm / E-W Perm	
28	CSAH 81 (Bottineau Blvd) / 73 rd Ave N	N-S FYA/E-W FYA				LRT grade- separated over CSAH 81
29	CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	N-S FYA/ E-W FYA	N-S FYA / E-W FY		V-S Prot / E-W Prot	
30	CSAH 130 (W Broadway Ave) ∕71 [#] Ave N	S Prot+Perm / N Perm / E Perm/W Prot	S Prot+Perm / N Pe E Perm/ W Pro		Prot+Perm / N Perm / E Perm/W Prot	
Legen	d Traffic Signal	No Turn on Red	NTOR	Perm	Permissive Left-Turn Pha	ise
		Freight Rail	>	Prot+Perm	Protected/Permissive Le	
	Lane Use		> Prot		Protected Left-Turn Phase	
NOT TO SCA	Lane Use Change	Channelized Right-Tur	n 🔽	FYA	Flashing Yellow Arrow Lo	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
31	CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	N Prot / E Prot	N Prot / E Prot	N Prot / E Prot	
32	CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps	N Prot / E Prot	N Prot / E Prot	N Prot / E Prot	
33	CSAH 81 (Bottineau Blvd) / 63 rd Ave N	63" Ave N N-S Prot / E-W Prot	63" Ave N N-S Prot / E-W Prot	63" Ave N N-S Prot / E-W Prot	
34	63 [™] Ave N / Lousiana Ave N / Park and Ride Access		Louisiana Ave N Parkand Side	N-S Perm / E-W Perm	
35	CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd)	CGAH 10 N-S Prot / E-W Prot	CSAH 10 N-S Prot / E-W Prot	CSAH 10 CSAH 10 N-S Prot / E-W Prot	In 2050 Build conditions, NB/ SB CSAH 81 is grade seprated from CSAH 10.
Legen		No Turn on Red	NTOR Perm		
	Stop Control	Freight Rail	> Prot	Protected/Permissive L Protected Left-Turn Pha	
N		· _		Flashing Yellow Arrow L	
NOT TO SCA		Channelized Right-Tu		riesning reliow Arrow L	en fun Fildse

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
36	Sherburne Ave / CSAH 10 (Bass Lake Rd)	CSAH 10 CSAH 10 N-S Perm / E-W Prot	N-S Perm / E-W Prot	N-S Perm / E-W Prot	
37	CSAH 10 (Bass Lake Rd) / Adair Ave N				
38	CSAH 81 (Bottineau Blvd) / Wilshire Blvd	V U U U U U U U U U U U U U U U U U U U	Withire Blvd	N-S Prot / E-W Prot	
39	Wilshire Blvd / Lakeland Ave N	N avy pusiaver	N and puttients	Withire Blvd	
40	CSAH 81 (Bottineau Blvd) / Corvallis Ave N	N-S Prot/ E-W Prot+Perm	Corvalits Ave N	N-S Prot/ E-W Prot+Perm	

Legend	Traffic Signal	-	No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	-	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	r	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	1	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

#	Intersection	Existing Conditions		Build litions		uild ditions	Notes
41	CSAH 81 (Bottineau Blvd) / 47 th Ave N	A Contraction of the second se		47% Ave N		A7= Ave N	
42	CSAH 81 (Bottineau Blvd) / TH 100 Southbound Ramps	TH 100 SB Ramps E Prot	 ↑	100 SB Ramps		H 100 SB Ramps	
43	CSAH 81 (Bottineau Blvd) / TH 100 Northbound Ramps	N Prot / W Perm	N Prot /	TH 100 NB Ramps	↓↓↓ → N Prot/	TH 100 NB Ramps	
44	CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	↓↓ ↓ V - Lakeland Ave N	↓↓	skeland Ave N		Lakeland Ave N	Intersection converted to 3/4 access in 2050 Build conditions, with side-street left turns disal- lowed.
45	CSAH 81 (Bottineau Blvd) / CSAH 9 (42 nd Ave N)	A L L L L L L L L L L L L L L L L L L L	→↓↓↓ → → → N-S Prot	42= Ave N 42= Ave N (E-W Prot	N-S Pro	t / E-W Prot	
Legen	Traffic Signal	No Turn on Red	•	Perm	Perm	issive Left-Turn Ph	ase
	Stop Control T Freight Rail		-	-> Prot+		cted/Permissive Le	
- C	Lane Use			-> Prot			
NOT TO SC/	Lane Use Change	Channelized Right-Tu	rn	FYA	Flash	ing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Conditior		Build Conditions	Notes
46	CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	N-S Perm / E-W Perm	N-S Perm / E-W Pe	9 * -	L-S Perm / E-W Perm	*De facto right turn lane assumed due to larger approach width (bus stop/ bicycle lane)
47	CSAH 81 (Bottineau Blvd) / 41ª Ave N	A L L L L L L L L L L L L L L L L L L L	N-S Prot / E-W Pe	Ťr►	ALS Prot / E-W Perm	
48	CSAH 81 (Bottineau Blvd) / 40 th Ave N	V L L L L L L L L L L L L L L L L L L L	N-S Prot / E-W Pe	wen -	Ave N Ave N N-S Prot / E-W Perm	
49	CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)		↓↓ Lakeland A	ve N	Lakeland Ave N	
50	CSAH 81 (Bottineau Blvd) / 36 th Ave N	N-S Prot / E-W Prot	N-S Prot / E-W P	17	N-S Prot / E-W Prot	
Legen		No Turn on Red Freight Rail	NTOR	Perm Prot+Perm	Permissive Left-Turn Pha Protected/Permissive Left	
- P	Lane Use	LRT LRT	>	Prot	Protected Left-Turn Pha	
NOT TO SCA	Lane Use Change	Channelized Right-Tu	rn 📕	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Conditior		Build Conditions	Notes
51	CSAH 81 (Bottineau Blvd) / 35 th Ave N	S FYA / W Prot	33 ^m Ave N	•	S Prot / W Prot	
52	CSAH 81 (Bottineau Blvd) / Abbott Ave N	Abbott Ave N	Abbott Ave N S Prot / W Prot	Abbo	s Prot / W Prot	
53	CSAH 81 (W Broadway Ave) / N Oakdale Ave	Cakdale Ave N	V Broadway Are Cektale Av	• N _	W Broadway Ave N	
54	CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy				CSAH 133	
55	CSAH 153 (N Lowry Ave) / N Washburn Ave			-		
Legen		No Turn on Red	NTOR	Perm	Permissive Left-Turn Pha	ase
		Freight Rail	>	Prot+Perm	Protected/Permissive Le	
	Lane Use		Prot			
NOT TO SCA	Lane Use Change	Channelized Right-Tu	rn 🕨	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions		o Builo nditior		Build Conditions		Notes
56	Theodore Wirth Pkwy / CSAH 81 (W Broadway Ave) SB Ramp	With Pary CSAH B1 Off-Ramp			<u>-®</u> amp ↓,		Theo With Rwy CSAH 81 On-Ramp	Off-Ramp closed in 2050 Build conditions, with the on ramp re- maining open.
57	CSAH 81 (W Broadway Ave) / N 29th Ave	N-S Perm / E-W Perm	N-S Perm / E-W Perm			2	N 29° Ave	*South of intersection, on- street parking is permitted in outside lane in NB direction during AM peak hour and in SB direction during PM peak hour
58	CSAH 81 (W Broadway Ave) / N 26th Ave	NTOR NTOR N-S Perm / E-W Perm	NTOR N 26° Ave			NTOR	N 26 th Ave	*South of intersection, on- street parking is permitted in outside lane in NB direction during AM peak hour and in SB direction during PM peak hour
59	CSAH 81 (W Broadway Ave) / CSAH 2 (Penn Ave N) / McNair Ave	NTOR NOR N-S Prot+Perm/SW Prot / E-W Prot+Perm	NTOR N-S Prot+Perm/ SW Prot/ E-W Prot+Perm			NTO N-S Pr	rot+Perm / E-W Prot	*On-street parking permitted in outside lane in WB direction during AM peak hour and in EB direction during PM peak hour. McNair Avenue connection removed in 2050 Build conditions
60	CSAH 81 (W Broadway Ave) / N Logan Ave	W Broadway Ave	W Broadway Ave		W Broadway Ave Pedestrian Signal Only		*On-street park- ing permitted in outside lane in WB direction during AM peak hour and in EB direction during PM peak hour	
Legen		No Turn on Red		NTOR	Perm		Permissive Left-Turn Phase	
	Stop Control	Freight Rail		>	Prot+	Perm	Protected/Permissive Left-Turn Phase	
		Changelined Dight Tu		>	Prot			
NOT TO SC/	Lane Use Change	Lane Use Change 🖌 Channelized Right-Turn			FYA		Flashing Yellow Arrow Left-Turn Phase	
#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes			
----	--	------------------------	------------------------	---------------------	---			
61	CSAH 81 (W Broadway Ave) / N Knox Ave	W Broadway Ave	W Broadway Ave	W Broadway Ave	*On-street park- ing permitted in outside lane in WB direction during AM peak hour and in EB direction during PM peak hour			
62	CSAH 81 (W Broadway Ave) / N James Ave			N-S Perm / W Prot	*On-street park- ing permitted in outside lane in WB direction during AM peak hour and in EB direction during PM peak hour			
63	N Hillside Ave / N 21st Ave / N Irving Ave	N 21st Ave	N 21st Ave	N Hillside Avs	N 21st Avenue (east of N Irving Avenue) closed in 2050 Build conditions			
64	CSAH 81 (W Broadway Ave) / N Irving Ave	W Brosdwsy Ave	W Brosdwsy Ave	W Broadwsy Ave	*On-street park- ing permitted in outside lane in WB direction during AM peak hour and in EB direction during PM peak hour			
65	N 21st Ave / N Girard Ave	N 21st Ave	N Zist Ave	N Gard Ave	N 21st Avenue closed in 2050 Build conditions			

Legend	Traffic Signal	-	No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	Τ.	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	r	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	1	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
66	CSAH 81 (W Broadway Ave) Ave / N Girard Ave	W Broadway Ave	W Broadway Ave	W Broadwsy Ave	*On-street park- ing permitted in outside lane in WB direction during AM peak hour and in EB direction during PM peak hour
67	N 21st Ave / N Fremont Ave	Here out Ve	N Fremont fue	N fremont Ave	21st Avenue closed in 2050 Build conditions
68	CSAH 81 (W Broadway Ave) / N Fremont Ave	N Perm / E Perm	W Broadway Ave	W Brosdwsy Ave	
69	N 21st Ave / N Emerson Ave	N 21st Ave	N List Ave	← ←	21st Avenue closed in 2050 Build conditions
70	CSAH 81 (W Broadway Ave) / N Emerson Ave	S Perm / W Perm	S Perm / W Perm	S Perm / W Perm	

Legend	Traffic Signal		No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	H	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	1	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	€	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

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#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
71	CSAH 81 (W Broadway Ave) / N Dupont Ave	W Broadway Ave	W Broadway Ave	W Broadway Ave	
72	N 21st Ave / N Bryant Ave	N 21st Ave	N 21st Ave	N Bryant Aue	21st Avenue closed in 2050 Build conditions
73	N 21st Ave / N Aldrich Ave	N 21st Ave	N 21st Ave	A Aldreh Ave	21st Avenue closed in 2050 Build conditions
74	CSAH 81 (W Broadway Ave) Ave / N Aldrich Ave	W Brosdwsy Ave	N-S-W Perm / E Prot + Perm	N-S-W Perm / E Prot + Perm	
75	N 21st Ave / N Lyndale Ave	N 21st Ave	N 21st Ave	N Lyndale Ave	21st Avenue closed in 2050 Build conditions
Logon	Id Traffic Signal	No Turn on Red	NTOR Perm	Permissive Left-Turn Ph	·

Legend	Traffic Signal			No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	H	F	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	€	l	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	<		Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

#	Intersection	Existing Conditions	No Build Condition		Build Conditions	Notes
76	CSAH 81 (W Broadway Ave) / N Lyndale Ave	NTOR W Broadway Ave	W Brosd	way Ave	FYA / E-W Prot + Perm	*De facto right turn lane assumed due to larger approach width (bus stop/ bicycle lane)
77	N 21st Ave / N 4th St	$\begin{array}{c} \downarrow \downarrow$			N Perm / E Perm	21st Avenue closed west of 4th Street in 2050 Build con- ditions
78	CSAH 81 (W Broadway Ave) / N 4th St N	V-S Perm / E-W Perm	N-S Perm / E-W F	AH SI	CSAH 81	
79	N 21st Ave / I-94 EB Ramps	N/A	N/A	- -	N Perm / E Perm	Intersection exists only in 2050 Build conditions
80	CSAH 81 (W Broadway Ave) / I-94 Ramp N Perm / E Prot + Perm		N Perm / E Prot +	Perm N	CSAH 81	
Legen	nd Traffic Signal	No Turn on Red	NTOR	Perm	m Permissive Left-Turn Phase	
	Stop Control	Freight Rail	>	Prot+Perm	Protected/Permissive L	eft-Turn Phase
	Lane Use		>	Prot	Protected Left-Turn Pha	se
NOT TO SC	Lane Use Change	Channelized Right-Tu	rn 💌	FYA	Flashing Yellow Arrow L	eft-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
81	CSAH 152 (N Washington Ave) / N 21st Ave			N-S Perm / E-W Perm	21st Avenue bridge over I-94 constructed in 2050 Build conditions
82	N 22nd Ave / N 2nd St	N 22nd Ave	N 22nd Ave	N 22nd Ave	*De facto right turn lane assumed due to larger approach width (bicycle/ parking lane)
83	N 21st Ave / N 2nd St	N 21st Ave	N 21st Ave	N 21st Ave	*De facto right turn lane assumed due to larger approach width (bicycle/ parking lane)
84	CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	N-S-W Prot + Perm / E Perm (AM) ; Prot + Perm (PM)	N-S-W Prot + Perm / E Perm (AM); Prot + Perm (PM)	N-S Prot / W Prot+Perm / E Perm (AM): Prot + Perm (PM)	*Outside parking lane used as de facto right turn lane in Existing and 2050 No Build conditions due to parking restriction at intersection approach
85	CSAH 81 (W Broadway Ave) / N 2nd St	W Brosdway Ave	W Broadway Ave	W Broadway Ave	

Legend	Traffic Signal	•	II	No Turn on Red	NTOR		Perm	Permissive Left-Turn Phase
	Stop Control	H	II	Freight Rail	>	ſ	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	€		LRT	>		Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	€		Channelized Right-Turn			FYA	Flashing Yellow Arrow Left-Turn Phase

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#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
86	CSAH 81 (W Broadway Ave) / W River Rd	CSAH 81 CSAH 81 N-S-W Perm / E Prot+ Perm	CSAH 81	erm N-S-W Perm / E Prot+ Perm	
87	CSAH 152 (N Washington Ave) / N 17th Ave / I-94 WB Ramp	N Prot+Perm / E Perm / W Prot + Perm	N Prot+Perm W Prot + Perm	*	*Near side bus stop on north- bound CSAH 152 provides approach width for de facto right turn lane in Existing and 2050 No Build conditions
88	N 17th Ave / N 2nd St				
89	CSAH 152 (N Washington Ave) / N 15th Ave			N-S Prot / E-W Perm	
90	N 15th Ave / N 2nd St	N 15th Ave	N 13th Ave	N 13th Ave	
	Stop Control Lane Use Lane Use Change	No Turn on Red Freight Rail LRT Channelized Right-Tur	→ P → P	Perm Permissive Left-Turn Ph Prot+Perm Protected/Permissive L Prot Protected Left-Turn Pha PA Flashing Yellow Arrow I	eft-Turn Phase ase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
91	N Lyndale Ave / Plymouth Ave N	Plymouth Ave N Plymouth Ave N N-S Perm / E-W Perm	N-S-W Perm / E Perm (AM); Prot + Perm (PM)	N-S-W Perm / E Perm (AM); Prot + Perm (PM)	* De facto right turn lane assumed due to larger approach width (bus stop/ bicycle lane)
92	CSAH 152 (N Washington Ave) / N Plymouth Ave	N-S Prot + Perm / E-W Perm	N-S Prot + Perm / E-W Perm	N-S Prot / E-W Perm	
93	N Plymouth Ave / N 2nd St	N-S-W Perm / E Prot + Perm	N-S-W Perm / E Prot + Perm	N-S-W Perm / E Prot + Perm	* De facto right turn lane assumed due to larger approach width (bus stop/ bicycle lane)
94	CSAH 152 (N Washington Ave) / N 10th Ave	N-S Perm / E-W Perm	N-S Perm / E-W Perm	N Perm / E Perm	*Near side bus stop provides for de facto right turn lane N 10th Ave closed west of CSAH 152 in 2050 Build conditions.
95	N 2nd St / N 10th Ave	N 10th Ave	N 10th Ave	N 10th Ave	* De facto right turn lane assumed due to larger approach width (bus stop/ bicycle lane

Legend	Traffic Signal	-	No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	Τ.	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	r	LRT	>	Prot	Protected Left-Turn Phase
	Lane Use Change	1	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
96	CSAH 152 (N Washington Ave) / N 8th Ave	N Sth Ave	N Bth Ave	N Sth Ave	
97	N 10th Ave / N 3rd St	N 10th Ave		→ →	N 10th Avenue closed in 2050 Build conditions between N 5th Street and CSAH 152.
98	N 10th Ave / N 4th St	N 10th Ave		N Ath 3	N 10th Avenue closed in 2050 Build conditions between N 5th Street and CSAH 152.
99	N 10th Ave / N 5th St	St uses N 10th Ave	N 10th Ave	N 10th Ave	N 10th Avenue closed east of N 5th Street in 2050 Build conditions
100	N 8th Ave / N 5th St	N Sth Ave	N Sth Ave		N 8th Avenue connection com- pleted in 2050 Build conditions between N 5th Street and CSAH 152

Legend	Traffic Signal		No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	Τ.	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	r	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	1	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
101	N 9th Ave / N 5th St	N/A	N/A	N 9th Ave	N 9th Avenue constructed in 2050 Build condi- tions to provide access to 4th Street N.
102	N 8th Ave / N Oak Lake Ave		N Sth Ave	N Bth Ave	
103	N 7th St / W Lyndale Ave	N Perm / E Perm	N Perm / E Perm	N Perm / E Perm	
104	N 7th St / E Lyndale Ave	N 7 th St N 7 th St S Perm / W Perm	S Perm/W Perm	N7 [*] St N7 [*] St	*Eastbound through lanes reduced from two to one lane downstream of intersection
105	N 7th St / N Oak Lake Ave	N-S Perm / E-W Perm	S-E-W Perm /N Perm (AM); Prot + Perm (PM)	N-S Perm / E-W Perm	

Legend	Traffic Signal		No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	H	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	₹	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	<	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

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#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
106	TH 55 (Olson Memorial Hwy) /N 7th St / N 6th Ave	N Perm / S Prot + Perm /	N Perm / S Prot + Perm /	N Prot / S Prot + Perm / E Perm	
107	TH 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	TH 33 N-S Perm / E-W Prot + Perm	TH 33 N-S Perm / E-W Prot + Perm	N-S Perm / E-W Prot + Perm	
108	N 6th Ave / N 5th St	N 6th Ave	N-S Perm / E-W Perm	N-S Perm / E-W Perm	
109	N 6th Ave / N 3rd St		N 6th Ave		
110	CSAH 152 (N Washington Ave) / N 6th Ave	N-S Perm / E-W Perm	N-S Perm / E-W Perm	N-S Perm / E-W Perm	* De facto right turn lane assumed due to larger approach width (bus stop/ bicycle lane)

Legend	Traffic Signal		No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	H	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	r	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	1	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

#	Intersection	Existing Conditions	No Build Conditions	Build Conditions	Notes
111	N 5th Ave / N 3rd St				
112	N 5th Ave / CSAH 152 (N Washington Ave)	N-S Prot + Perm / E-W Perm	N-S Prot + Perm / E-W Perm	N-S Prot + Perm / E-W Perm	
113	N 5th Ave / N 2nd St				

Legend	Traffic Signal		No Turn on Red	NTOR	Perm	Permissive Left-Turn Phase
	Stop Control	-	Freight Rail	>	Prot+Perm	Protected/Permissive Left-Turn Phase
	Lane Use	r	LRT	>	Prot	Protected Left-Turn Phase
NOT TO SCALE	Lane Use Change	1	Channelized Right-Turn		FYA	Flashing Yellow Arrow Left-Turn Phase

Appendix C: Traffic Analysis Detailed Results

	AM Level of Service and Scenario			sting Con	2	23 Existing + Freight Event		No Bui	d	No Build + Freigh	it Event		2050 Build		Build +	Mitigated Build																
	Intersection	Appr		os	Avg. Delay	Avg. LOS Delay	u	os	Avg. Delay	LOS	Avg. Delay	L	os	Avg. Delay	Freight Event Avg. LOS Delay	Avg. LOS Delay																
1	Oak Grove Pkwy / Xylon Ave	NB EB SB WB		not exist i Conditio	(sec/veh) n Existing ns	(sec/veh) Does not exist in Existing Conditions	Does n	ot exist i Build	(sec/veh) n 2050 No	Does not exist in 2 Build	ec/veh) 2050 No	B C A C	с	(sec/veh) 21.0	(sec/veh) Not Applicable	(sec/veh)																
2	CSAH 103 (W Broadway Ave) / 101st Ave N	NB EB SB WB	A A A	A	2.0		A B A	A	5.4			Does	not exist Build	in 2050	Does not exist in 2050 Build																	
3	CSAH 103 (W Broadway Ave) / Winnetka Ave N	NB	A A A	۸	0.2	Not Applicable	A F A	D	32.8	Not Applicat	ole	Does	not exist Build	in 2050	Does not exist in 2050 Build																	
4	CSAH 103 (W Broadway Ave) / Oak Grove Pkwy	NB EB SB WB	A - A C	A	7.8		A - A C	A	7.9			C C B D	с	23.5																		
5	CSAH 103 (W Broadway Ave) / 99th Ave N	NB EB SB WB	Doesn	not exist i Conditio	n Existing ns	Does not exist in Existing Conditions	Does n	ot exist i Build	n 2050 No	Does not exist in 2 Build	2050 No	B E B D	c	23.1																		
6	CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	NB EB SB WB	B - B A	в	13.0		С - С В	в	16.7			С - С В	в	17.9																		
7	CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	NB EB SB WB	A - A B	A	9.9		B - C C	с	26.2			В - В В	в	15.7																		
8	CSAH 103 (W Broadway Ave) / 94th Ave N	NB EB SB WB	A A A A	A	1.9		D E F	F	83.7			B E C	с	32.3																		
9	CSAH 103 (W Broadway Ave)/ CSAH 30 (93rd Ave N)	NB EB SB WB	0000	D	36.5		8 8 8	F	>100			D		83.1																		
10	CSAH 103 (W Broadway Ave) / 92nd Ave N	NB EB SB WB	~ ~ ~	A	1.9		D A E	E	49.8			~ ~ ~	A	2.6																		
n	CSAH 103 (W Broadway Ave) / Setzler Pkwy	NB EB SB WB	A A A	A	2.8		A	F	77.3			B D A B	в	13.3		Not Applicable																
12	CSAH 103 (W Broadway Ave)/ 89th Ave N	NB EB SB WB	A A -	A	2.1		A -	F	68.6			A A -	A	1.2																		
13	CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	NB EB SB WB	A A A	۸	2.2	Not Applicable	3 Not Applicable	BC	E	38.4			A A B	A	5.3	Not Applicable																
14	CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	NB EB SB WB NB	0000	с	28.3			9	Not Applica bie	Not Applicable		D	36.1	Not Applicat	sie	D D E D	D	51.0														
15	CSAH 103 (W Broadway Ave) / 84th Ave N	EB SB WB NB	A D A B	^	5.9									-	A A A A A A	*	0.4				A	0.6										
16	CSAH 103 (W Broadway Ave) / College Park Dr	EB SB WB NB	A A -	A	0.3							A	A	0.3			A E A -	A	8.5													
17	CSAH 103 (W Broadway Ave) / 82nd Ave N	EB SB WB	A A -	A	0.5									A A -	A	0.5			A A -	A	0.5											
18	CSAH 103 (W Broadway Ave) / Candlewood Dr	NB EB SB WB	A - - B	۸	4.6	5			6		.6			6		5	5			A - A B	*	5.4				A	5.7					
19	CSAH 103 (W Broadway Ave) / 78th Ave N	NB EB SB WB	A A A A	A	0.7		A A A A A	A	1.2			A A A A	A	0.5																		
20	CSAH 103 (W Broadway Ave) / Shopping Center Access	SB WB	A B C	A	1.6	_		6			5								5	5			A B A C	*	2.3			~ ~ ~ ~	A	0.6		
21	CSAH 103 (W Broadway Ave) / CSAH 130 (Brocklyn Blvd) / CSAH 152	SB WB	ССВС	с	24.7							ССВСС	с	24.1				D	35.7													
22	CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	NB EB SB WB	C A D A	A	9.6		C B D A	в	14.5			C B D B	в	17.6																		

	AM Level of Service and	Inte	rsecti	on De																		
	Scenario		Exi	sting Cor		023 Existin	ıg + Frei	ight Event		No Bui	ы	No Bui	ld + Fre	ight Event		2050 Build			Build + reight B		Mitigates	d Build
	Intersection	Appr	L	05	Avg. Delay (sec/veh)	u	05	Avg. Delay (sec/veh)		os	Avg. Delay (sec/veh)	u	05	Avg. Delay (sec/veh)	U	05	Avg. Delay (sec/veh)		35	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
23	CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	NB EB SB WB	A A A A		0.4				A A A A	*	0.6				* * *		0.7					
24	CSAH 130 (W Broadway Ave) / 76th Ave N	NB EB SB WB	A C A B	A	6.4				A C A B	*	8.9	Ī			B D A D	в	16.0					
25	N	NB EB SB WB	AAAA	*	1.2		iot Appli	cable	A A A A	*	1.4	•	lot Appli	cable	B B B D	в	16.1	N	ot Applik	able		
26		NB EB SB WB	A A A A	A	1.2				A A A A	*	0.5				A . A .	A	2.0					
27	(SAH 130 (W Broadway Ave) / 73rd Ave N	NB	A C A C	A	4.8				A C A C	A	6.0				A D A D	в	11.4					
28	CSAH 81 (Bottineau Blvd) / 73rd Ave N	NB EB SB WB	A C B C	*	9.9	A C B D	в	10.3	A C B D	в	13.9	A C B D	в	14.1	A D B D	в	16.7	A D C D	в	17.7		
29	Broadway Ave) / 71st Ave N	NB EB SB WB	B D B D	c	20.4	B D B D	в	18.0	B D B D	c	21.2	B D B D	c	21.0	C C E	c	32.9	C E C E	с	32.4		
30	(SAH 130 (W Broadway Ave) / 71st Ave N	NB EB SB WB	A B A B	*	8.7	A B A B	*	0.0	B A C	в	10.6	B A C	в	10.8	B A C	в	11.9	B A C	в	11.9		
31	CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	NB EB SB WB	A A B	*	9.7	B - A B	в	11.6	8 - 8 8	в	12.2	B - A B	в	12.1	A B C	в	11.1	A B C	в	11.1		
32	CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps	NB EB SB WB	B B D	в	18.8	B B D	в	19.6	8 - 8 C	в	18.0	B B C	в	18.7	B C D	c	24.4	B - C D	с	24.5		
33	CSAH 81 (Bottineau Blvd) / 63rd Ave N	NB EB SB WB	0000	c	28.5	C C C D	c	30.8	C C C D	c	29.1	C C D	c	29.6	D D E E	ε	59.9	D D E E	E	57.9	Not App	licable
34	63rd Ave N / Louisiana Ave N / Park and Ride Access	NB EB SB WB	A C A	A	1.7	A C A	A	1.8	A A B A	*	2.3	A A B A	*	2.4	B A D A	A	8.3	B A D A	A	8.3		
35	CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road)	NB EB SB WB	C C D	c	26.6	C C D	c	30.4	C C D	c	29.4	C C D	c	30.6	A C A D	в	13.5	A C A D	в	13.9		
36	CSAH 10 (Bass Lake Road) / Sherburne Ave	NB EB SB WB	A D B	*	9.2	A A A A	*	8.1	A A C A	*	8.8	A A C B	*	9.0	A D B	A	9.5	A D B	*	9.6		
37	CSAH 10 (Bass Lake Road) / Adair Ave N	NB EB SB WB	AAAA	*	1.1	A A A A	*	0.9	B A A	*	1.0	A A A A	*	0.9	C A B	A	7.0	B A A B	A	7.1		
38	CSAH 81 (Bottineau Blvd) / Wilshire Blvd	NB EB SB WB NB	A B A C	*	9.5	A B C	в	10.6	A B C	в	11.3	A B C	в	11.1	A B C	в	15.1	A C B C	в	14.8		
39		EB SB WB	B - A A	*	1.2	C . B .	*	5.5	С - В А	*	2.6	C B A	*	2.6	С А	*	6.7	C - E A	*	6.7		
40	CSAH 81 (Bottineau Blvd) / Corvallis Ave N	SB WB	A B C	в	12.6	B B C	в	14.0	B B C	в	15.7	B B C	в	16.3	B C E C	D	42.7	B C D C	D	40.4		
41	CSAH 81 (Bottineau Blvd) / 47th Ave N	NB EB SB WB NB	A A D	*	8.4	A A D	*	9.2	A B D	в	14.7	A B D	в	15.3	A B D	в	13.0	A B D	в	13.2		
42	CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps	EB SB WB NB	A C B	*	7.3	A C B	*	7.6	A C B	*	5.3	A C B	*	5.3	A C B	*	4.7	A C B	*	4.7		
43	CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	EB SB WB NB	D A A	в	12.0	D A A	в	11.5	D A A	в	12.4	D A A	в	12.6	D B A	в	12.0	D B A	В	12.1		
44	CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)			*	0.2	- - -	*	0.2	-	*	0.2		A	0.2		A	0.4	- - -	A	0.8		

	Scenario		Ed.	ning Cor		23 Existi	ng + Evel	ight Event		No Bui	ild	No Bui	ld + Ere	ight Event		2050 Build			Build		Mition	ted Build								
	Intersection	Appr		os	Avg. Delay		105	Avg. Delay		05	Avg. Delay		05	Avg. Delay		8011	Avg. Delay		treight E	Avg. Delay	LOS	Avg. Delay								
_		NB	C		(sec/veh)	C		(sec/veh)	c		(sec/veh)	C		(sec/veh)	C		(sec/veh)	c		(sec/veh)		(sec/veh)								
45	CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	E8 58 W8	D B D	с	26.7	D B D	с	26.7	D B D	с	26.8	D B D	c	26.8	D C D	D	35.3	D C D	D	35.4										
46	(SAH 9 (42nd Ave N) / (SAH 8 (W Broadway Ave)	NB EB SB WB	B B C	в	11.6	B B A	в	11.7	BBA	в	12.1	8 8 8	в	12.0	B B B	в	12.7	8 8 8	8	12.7										
47	CSAH 81 (Bottineau Blvd) / 41st Ave N	NB EB SB WB	A D A C	A	6.2				A D A C	A	6.1				B C B C	в	13.5													
48	CSAH 81 (Bottineau Bivd) / 40th Ave N	NB EB SB WB	A A C	A	7.2				A E A C	A	6.9				B D B C	в	13.3													
49	CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	NB	A - -	*	0.3				- -	*	0.3				A - -		0.4													
50	CSAH 81 (Bottineau Blvd) / 36th Ave N	NB EB SB WB	BCAD	в	17.4				BCA	в	17.7				C C C D	c	28.9													
51	CSAH 81 (Bottineau Bivd) / 35th Ave N	NB EB SB WB	A C A	*	4.3				A C A	*	4.4				A D A A	A	5.0													
52	CSAH 81 (Bottineau Blvd) / Abbott Ave N	NB EB SB WB	A C A	в	10.4				A C A	в	10.7				A C B A	в	15.2													
53	CSAH 81 (W Broadway Ave) / N Oakdale Ave	NB EB SB WB	A A A A	A	0.9				A A A	A	14					*	13				Not A	pplicable								
54	CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	NB EB SB WB	A A A A	*	7.4				A B A A	*	8.7				C C B B	в	19.0													
55	CSAH 153 (N Lowry Ave) / N Washburn Ave	NB EB SB WB		A	0.4				A A A A	A	0.4				C A A A	*	13													
56	CSAH 81 (W Broadway Ave) S8 Ramps / Theodore Wirth Pkwy	NB EB SB WB		A	0.8				A A A A	A	13				* * * *	*	5.4													
57	CSAH 81 (W Broadway Ave) / N 29th Ave	NB EB SB WB	A D A D	в	10.5		Not Appli	Cable	A C A C	в	12.1		ot Appli	Cable	B B C	в	18.4		lot Appli	Cable										
58	CSAH 81 (W Broadway Ave) / N 26th Ave	NB EB SB WB	BCAB	A	9.9													в	16.0				C D C D	c	33.6					
59	CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	NB NE EB SB WB	C C D	c	34.1							с	33.5				C . D D	D	38.3											
60	CSAH 81 (W Broadway Ave) / N Logan Ave	NB EB SB WB	A A C A	A	3.8			A A C A	A	4.2				B D A	в	13.7														
61	(SAH 81 (W Broadway Ave) / N Knox Ave	NB EB SB WB	B A C A	*	7.4				B A C A	*	7.1				* * * *	A	1.8													
62	CSAH 81 (W Broadway Ave) / N James Ave	NB EB SB WB	A A A A	A	0.9				A A A A	A	0.9				B B B	в	11.7				A B B	3 11.3								
63	N Hillside Ave / N 21st Ave / N Irving Ave	NB EB SB WB		*	2.4				A A A A	*	2.3				A B A	*	6.1				<u></u>	5.9								
64	CSAH 81 (W Broadway Ave) / N Irving Ave	NB EB SB WB	DADA	*	6.9				D A D A	*	6.7				D A C A	в	10.8				D A C A	3 10.6								
65	N 21st Ave / N Girard Ave	NB EB SB WB	A A A -	A	0.5					A	0.7				A - A -	A	0.9				A	0.8								

	AM Level of Service and Scenario			sting Con	20	23 Existing + Freight Event		No Bui	ы	No Build + Freight Eve		205 Buil		Build 4			itigated I	kild								
	Intersection	Appr		05	Avg. Delay	Avg. LOS Delay	L	05	Avg. Delay	LOS Delay		1.05	Avg. Delay	Freight Ex	Avg. Delay		05	Avg. Delay								
66	CSAH 81 (W Broadway Ave) / N Girard Ave	NB EB SB WB	C A C	A	(sec/veh) 6.7	(sec/veh)	С А С	*	(sec/veh) 6.9	(sec/ve		A	(sec/veh) 9.7		(sec/veh)	C 🔺 D	A	(sec/veh) 9.9								
67		WB NB EB S8 WB	A - - A A	A	1.5		- - - -	*	1.9			^	3.0			A 	A	3.1								
68		NB EB SB WB	B C C	в	19.7		B C C	c	20.2			с	24.3				с	24.7								
69		NB EB SB WB	A - -	A	2.2		A 	*	2.6			A	1.4			A	A	1.4								
70	CSAH 81 (W Broadway Ave) / N Emerson Ave	NB EB SB WB NB	C A	*	9.7		C A	в	10.7		C B - A C	в	16.8			C B - A C	в	16.9								
71	Ave	EB SB WB NB	A B B	A	9.3		A B B	^	8.3		B	в	16.9			B C B	в	17.3								
72	N 21% Ave / N Dryant Ave	EB SB WB NB	A	A	4.1	Not Applicable	A	*	4.9	Not Applicable	A	A	1.5				A	1.5								
73	N 213LAVE / N AUDED AVE	EB SB WB NB	A A B	A	3.4		A A A C	^	3.7		A	^	13			A B	A	1.2								
74	Ave	EB SB WB NB	A D A	A	6.5		A D A	^	7.2		C C B	c	20.8			C C B	с	21.2								
75	N 21st Ave / N Lyndaie Ave	EB SB WB NB	A A C	A	2.5		A A B D	*	3.2		- B - D	в	10.9			B D	В	11.0								
76	Ave	EB SB WB NB	A D C	c	21.2		A D C	c	23.6		B D C	c	31.9			B D C	с	31.9								
n		EB SB WB NB	A A C	A	2.5			A A B	^	2.2		A A C	^	7.9	Not Applic	able .	A A C	A	7.5							
78	CSAH 81 (W Broadway Ave) / N 4th St	EB SB WB NB EB	B C A	B	10.7	Does not exist in Existing	A C A		9.8 n 2050 No	Does not exist in 2050 N	B C B - D	в	15.4			В С В С	В	16.2								
79	N 21st Ave / 1-94 Eb Ramps	SB WB NB EB		conditio	ns	conditions	Å	Build		Build	0 D C	D	37.6			с С В	D	35.2								
80	Ramps	SB WB NB EB	C D A	c	25.7		C D A	c	29.1		B	c	21.2			B C B D	c	20.8								
81	Ave	SB WB NB EB	A A B A	A	1.5		A A B A	^	15		C C A B	c	27.3			C D A B	c	27.7								
82	N 2200 AVE / N 200 S	SB WB NB EB	A B A	^	10.0		B B A A	в	11.0		A B A B	A	2.9			A B A B	A	2.9								
83	N 21st Ave / N 2nd St	SB WB NB	A B C B	A C	2.5					Not Applicable					A B C B	A c	2.8	Net Analise bis	A B D B	A D	35.6			A B D B	A C	33.9
84	(N Washington Ave)	SB WB NB EB	B C C A	в	12.1	Not Applicable		в	21.8	Not Applicable	C C B	в	19.5			D C B	в	18.5								
	(SAH 81 (W Broadway Ave) / W River Rd	SB WB NB	C B C A	р А	5.8	-	C B C A		5.5		C C A	A	8.6	_		C B C A	A	8.5								
87	CSAH 152 (N Washington Ave) / N 17th	WB NB EB	D A B B	В	17.0		D A B B	A A 5.5 A B			A C C	c	32.2			D A C C	с с	32.6								
		SB WB	B C		2.4		B				D E					D C	-	32.0								

	AM Level of Service and	Inter	secti	on De		123						2050						
	Scenario		Edi	ning Cor		Existing + Freight Event		No Bui	ы	No Build + Freight Event		Build		Build + Freight Ev			Higsted I	Build
-	Intersection	Appr	u	05	Avg. Delay (sec/veh)	Avg. LOS Delay (sec/veh)	L	05	Avg. Delay (sec/veh)	LOS Delay (sec/veb	Ľ	05	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	u	26	Avg. Delay (sec/veh)
88	N 17th Ave / N 2nd St	NB EB SB WB	A B A B	*	7.9		A C A A		9.2		A C A A	в	13.4			A C B A	в	14.1
89	CSAH 152 (N Washington Ave) / N 15th Ave	NB EB SB WB	A A A A	A	1.1		A A A A	*	1.2		B D C E	c	28.8			B D C D	с	29.8
90	N 15th Ave / N 2nd St	NB EB SB WB	A A A	A	1.0		A	*	0.9		A A A	*	1.7			A A A	A	1.6
91	N Lyndaie Ave / N Plymouth Ave	NB EB SB WB	B B C	в	18.6		B C B D	с	26.2		C C D	D	45.0				с	29.2
92	CSAH 152 (N Washington Ave) / N Plymouth Ave	NB EB SB WB	B C D	D	35.7		B	E	75.2		F F C		82.8			E D C	E	60.3
93	N Plymouth Ave / N 2nd St	NB EB SB WB	B C C D	D	36.6		C C C	F	>100		C B E	E	65.9			B C C E	D	50.0
94	CSAH 152 (N Washington Ave) / N 10th Ave	NB EB SB WB	C B C B	с	25.0	Not Applicable	C C C B	с	25.5	Not Applicable	B - B E	в	18.1			B - A - E	в	16.5
95	N 10th Ave / N 2nd St	NB EB SB WB	8 8 A	в	11.6	Hot Approache	8 8 8	в	13.9	Hot Applicable	B B -	в	12.3			8 8 4 ·	в	11.8
96	CSAH 152 (N Washington Ave) / N 8th Ave	NB EB SB WB	A B A B	*	3.6		A B A B	*	3.5		D D B C	c	28.9			рсвс	с	27.2
97	N 10th Ave / N 3rd St	NB EB SB WB	B B A	A	4.1		8 4 8 4	*	4.4		B - B -	в	10.9			B 	в	10.9
98	N 10th Ave / N 4th St	NB EB SB WB	A - -	*	1.4			*	1.6		Not	analyzed Build				Notana	lyzed in 1	2050 Build
99	N 10th Ave / N 5th St	NB EB SB WB	A B A	*	3.0		A A B A	*	3.0		A C A	*	8.5	Not Applic	able	A C A	A	8.4
100	N 8th Ave / N 5th St	NB EB SB WB	A A A -	*	2.7			*	2.3		B A A A	*	4.4			8 4 4	A	5.1
101	N 9th Ave / N 5th St	NB EB SB WB		ot exist i conditio	in Existing Ins	Does not exist in Existing conditions		ot exist i Build	n 2050 No	Does not exist in 2050 No Build	A	*	1.9			A . A A	A	1.8
102	N 8th Ave / N Oak Lake Ave	NB EB SB WB	A B A A	A	1.9		A C A A	*	5.1		B C B E	c	28.6			B E C	E	79.0
103	N 7th St / W Lyndale Ave	NB EB SB WB	B B C	в	17.5		c	÷	>100		· F C	•	>100			· · ·	F	>100
104	N /01 St/ E Lyndaie Ave	NB EB SB WB	8 8 - 8	в	14.5		B - -	E	72.4		C .	E	57.5			C	D	53.1
105		NB EB SB WB	B C C C	c	20.7		D B C	E	58.3		D E C B	D	48.8			е е е	E	57.0
106		NB EB SB WB NB	C B D D	c	28.3	Not Applicable	C D D	c	34.4	Not Applicable	E D C F	E	56.1			E D E D	D	54.0
107		EB SB WB NB	8 8 8 8	в	18.4		C 8 8	c	29.8		D D C B	•	>100			C D B B	c	32.1
108		EB SB WB NB	B A B	в	13.2		8 A 8	в	13.1		B B B B	в	12.0			8 8 8	В	12.1
109		EB SB WB		A	2.1			*	3.1		A A A	*	43			A A A	A	4.6

					20	<u>78</u>							2050						
	Scenario		Exis	ting Co	ndition	Existing + Freight Eve		No Bui	ы	No Build + Fre	äght Event		Build		Build · Freight E		M	itigated	Build
-	Intersection	Appr	LC)5	Avg. Delay (sec/veh)	Avg. LOS Delay (sec/ve		.05	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	L	DS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	L	35	Avg. Delay (sec/veh)
110	CSAH 152 (N Washington Ave) / N 6th Ave	NB EB SB WB	A B A C	A	8.8		A C A C	A	8.6			A D A C	в	14.9			A D A C	в	13.7
111	N 5th Ave / N 3rd St	NB EB SB WB	A A A A	A	2.3		A A A A	A	2.3			A A A A	A	3.2			A A A A	A	3.2
112	CSAH 152 (N Washington Ave) / N 5th Ave	NB EB SB WB	8 0 8 0	в	12.9	Not Applicable	B C B C	в	13.5	Not Appi	icable	B C A D	в	14.4	Not Appli	cable	0 a 0 a	в	15.9
113	N 5th Ave / N 2nd St	NB EB SB WB	А А В	A	9.7		A A B	A	9.8			8 A 8	в	10.7			8 A 8	в	10.8

	PM Level of Service and Inte	rsec	tion I	Delay						2050			
	Scenarie		Ed	eting Co			No Bel	ы		Build		Mitigated B	wild
•	Intersection	Appr	u	05	Avg. Delay (sec/veh)	L	05	Arg. Delay (sec/veh)	u	05	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
1	Oak Grove Pkwy / Xylon Ave	NB EB SB WB	Does	ot exist Conditio	In Existing	Does r	ot exist i Build	n 2050 No	8 C 4 C	c	24.3		
2	CSAH 103 (W Broedway Ave) / 101st Ave N	NB EB SB WB	A C A	*	6.7	A A -	ł.	54.8	Does	not exis Build	t in 2050		
3	CSAH 103 (W Broadway Ave) / Winnetka Ave N	NB EB SB WB		*	0.5	8 A -		52.8		not exis Build	t in 2050		
4	CSAH 103 (W Broadway Ave) / Oak Grove Plwy	NB EB SB WB	8 - 6 C	в	14.6	8 - A C	в	15.4	C C B D	c	25.8		
5	CSAH 103 (W Broedway Ave) / 99th Ave N	NB EB SB WB		ot exist Conditio	In Existing		not exist i Build	n 2050 No	B C D	D	52.9		
6	CSAH 103 (W Broadway Ave) / TH 610 WB Ramps	NB EB SB WB	8 - - 	в	14.2	с - 8 8	в	18.8	с - с в	с	21.8		
7	CSAH 103 (W Broadway Ave) / TH 610 EB Ramps	NB EB SB WB	A - B B	в	10.1	8 - - 	8	18.8	с - с в	c	21.3		
8	CSAH 103 (W Broadway Ave) / 94th Ave N	NB EB SB WB	* * *	*	2.1	* * * *	•	1.9	A B D	c	20.3		
9	CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	SB WB	E D E	ε	69.5	D	Ľ,	>100		•	>100	ł	
10	CSAH 103 (W Broadway Ave) / 92nd Ave N	EB SB WB		*	2.7	C A C	•	70.9	*	*	4.1		
n	CSAH 105 (W Broadway Ave) / Setzler Pkwy	NB EB SB WB	A A B	*	1.9	E A	ł	>100	A A C	в	10.3	Not applic	able
12	CSAH 103 (W Broadway Ave) / 89th Ave N	NB EB SB WB	A	*	2.0	A -	Ľ	>100	* * *	*	0.7		
13	CSAH 103 (W Broadway Ave) / Maplebrook Pkwy	NB EB SB WB	A B A A C	*	2.9	c	1	>100	A A C	*	0.6		
14	CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)	NB EB SB WB NB	D D C	c	32.5	C B	e.	>100		÷	>100		
15	CSAH 103 (W Broadway Ave) / 84th Ave N	EB SB WB NB	DACA	*	6.8	E A C	в	10.6	A	D	28.0		
16	CSAH 103 (W Broadway Ave) / College Park Dr		Â	*	0.5	B A -	*	3.1	A	E	65.8		
17	CSAH 103 (W Broadway Ave) / 82nd Ave N	EB SB WB NB		^	0.7	8 A -	*	1.8	A A -	E	48.8		
18	(SAH 103 (W Broadway Ave) / Candlewood Dr	ER.		*	4.9	A B A	*	8.5	E A D	D	40.5		
19	CSAH 103 (W Broadway Ave) / 78th Ave N	EB SB WB NB	8 A A	*	1.1	C A B	*	15	A	с	24.7		
20	CSAH 103 (W Broadway Ave) / Shopping Center Access	EB SB WB NB	B A B C	*	9.3	8 8 8 0	8	12.3	A A E	с	17.5		
n	CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd) / CSAH 152	EB SB WB	0000	c	27.9		c	32.1	E D D	E	68.2		
22	CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	EB SB WB	C B C A	в	13.8	C C A	c	26.0	c	ł	81.3		

	PM Level of Service and Inte	rsec	tion I	Delay 2021						2050		
	Scenario		Bai	2023 Inting Col			No Bel	ы		2050 Build	I	Mitigated Build
•	Intersection	Appr	·	05	Avg. Delay (sec/veh)	u	05	Avg. Delay (sec/veh)	L	05	Avg. Delay (sec/veh)	Avg. LOS Delay (sec/ve)
23	CSAH 130 (W Brooklyn Blvd) / Shopping Center Access (east of CSAH 103)	NB EB SB WB			1.1	~ ~ ~ ~	*	1.4	C A D D	в	14.8	
24	CSAH 130 (W Broadway Ave) / 76th Ave N	NB EB SB WB	A B A B		9.3	ССВД	c	27.0	D D C	D	43.2	
25	CSAH 130 (W Broadway Ave) / 75th Ave N	NB EB SB WB	A A A B	A	1.8		*	4.5	BCCD	с	22.2	
26	CSAH 130 (W Broadway Ave) / 74th Ave N	NB EB SB WB		A	1.6		*	1.0	A - A D	*	5.0	
27	CSAH 130 (W Broadway Ave) / 73rd Ave N	NB EB SB WB	A C A B	A	6.4	A C A B	*	8.3	B D B C	в	16.1	
28	CSAH 81 (Bottineau Blvd) / 73rd Ave N	NB EB SB WB	A C C D	в	13.5	4 U U D	в	17.7	B C B D	в	18.3	
29	CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71st Ave N	NB EB SB WB	8 0 4 0	в	18.7	8	c	33.8	c c	D	50.9	
30	CSAH 130 (W Broadway Ave) / 71st Ave N	NB EB SB WB	C 4 8 D	в	17.7	0 8 0 0	c	20.8	0000	c	26.2	
31	CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	NB EB SB WB	A - A C	в	10.4	8 - A C	в	14.5	8 - C E	c	29.3	
32	CSAH 81 (Bottineau Bivd) / I-94 / I-694 EB Ramps	NB EB SB WB	А - В D	в	14.1	A B D	в	14.7	с - - - -	с	33.1	
33	CSAH 81 (Bottineau Bivd) / 63rd Ave N	NB EB SB WB	C D B D	с	29.6	8 8 8	D	51.9	E E E	ł	90.2	Not applicable
34	63rd Ave N / Louisiana Ave N / Park and Ride Access	SB WB		*	1.6		*	2.8	8 0 8	c	20.8	
35	CSAH 81 (Bottine au Bivd) / CSAH 10 (Bass Lake Road)	NB EB SB WB	C C D D	D	35.2	C D D	D	42.1	B D A D	c	20.3	
36	CSAH 10 (Bess Lake Road) / Sherburne Ave	NB EB SB WB	B C A	в	10.4	8 6 4	8	12.2	B C B	в	12.4	
37	CSAH 10 (Bass Lake Road) / Adair Ave N	NB EB SB WB	B A A B	*	1.2	8 4 4 4	^	1.1	8 A A 8	*	5.9	
38	CSAH 81 (Bottineau Blvd) / Wilshire Blvd	NB EB SB WB	B B	в	10.9	B B C	8	12.7	D C B C	c	34.9	
39	Wibhire Blvd / Lakeland Ave N	NB EB SB WB		*	4.9	A - B A B	^	5.8	A - -	ε	61.9	
40	CSAH 81 (Bottineau Blvd) / Corvallis Ave N	NB EB SB WB	BCCD	в	16.3	C C D	в	17.0	B C B C	в	19.8	
41	CSAH 81 (Bottineau Blvd) / 47th Ave N	NB EB SB WB	B	*	9.3	A B D	в	10.3	B B E	в	14.9	
42	CSAH 81 (Bottineau Blvd) / TH 100 58 Ramps	NB EB SB WB	A - A D	*	6.6	A - A D	^	6.5	A - A D	в	10.8	
43	CSAH 81 (Bottineau Bivd) / TH 100 NB Ramps	NB EB SB WB	A A A	*	6.5	A <u>E</u> A A	^	7.1	B D B A	в	11.6	
44	CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	NB EB SB WB	A - - -	*	0.2	A A	*	0.3	A - - E	в	12.0	

	PM Level of Service and Infe	sec	non i			_								
	Scenario		6.6	2023 rting Co			No Bel	u I		2050 Build		M	ligated	Belld
•	Intersection	Appr	u	os	Avg. Delay (sec/veh)	u	05	Avg. Delay (sec/veh)	u	15	Avg. Delay (sec/veh)	u	8	Avg. Delay (sec/veh)
45	CSAH 81 (Bottineau Bivd) / CSAH 9 (42nd Ave N)	NB EB SB WB	0 0 0 0	с	32.1	D C C D	с	34.6	D D E D	D	52.2			
46	CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	NB EB SB WB	B C B C	c	28.9	B D B D	c	33.3	8 C 8 8	с	20.5			
47	CSAH 81 (Bottineau Blvd) / 41st Ave N	NB EB SB WB	4 D 4 C	A	9.8	A D A C	*	9.8	C C B C	с	20.5			
48	CSAH 81 (Bottineau Blvd) / 40th Ave N	NB EB SB WB	4 <mark>2</mark> 4 D	в	11.6	A E A D	в	11.6	1 1 0 0	D	46.2			
49	CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	NB EB SB WB	A · · A	A	0.2	A A	*	0.3	A · · A	A	1.3			
50	CSAH 81 (Bottineau Blvd) / Söth Ave N	NB EB SB WB	C C B D	c	25.7	0000	с	26.8	0004	с	34.8			
51	CSAH 81 (Bottineau Bivd) / S5th Ave N	NB EB SB WB	4 D 4 4	*	8.9	A D A A	^	9.7		в	13.0			
52	CSAH 81 (Bottineau Blvd) / Abbott Ave N	NB EB SB WB	B D B A	с	21.8	8 D 8 A	c	23.5	8 D 8 4	в	18.3			
53	(SAH B1 (W Broadway Ave) / N Oakdale Ave	NB EB SB WB	* * *	A	2.0	* * *	*	2.5	A A B A	*	3.4	N	ot appli	able
54	CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	NB EB SB WB	* * * *	*	7.6	A B A A	*	9.3	D C B C	c	30.8			
55	CSAH 153 (N Lowry Ave) / N Washburn Ave	NB EB SB WB	8 4 4	*	0.3	B A A A	*	0.4	8 4 4 4	*	1.0			
56	CSAH 81 (W Broadway Ave) S8 Ramps / Theodore Wirth Pkwy	NB EB SB WB	* * *	*	1.4	A A A B	*	2.1	* * * *	*	5.2			
57	CSAH 81 (W Broadway Ave) / N 29th Ave	NB EB SB WB	A D B C	в	14.1	A D B C	в	14.1	C D C C	с	33.7			
58	CSAH 81 (W Broadway Ave) / N 26th Ave	NB EB SB WB	8 C C C	c	21.4	8 0 0 0	c	21.2	0 0 0 0	D	39.6			
50	CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) / McNair Ave	NB EB SB WB	D E D D	£	55.6	D E	E	60.8	е - - Е	E	65.8			
60	CSAH 81 (W Broadway Ave) / N Logan Ave	NB EB SB WB	A A C A	A	4.4	A A C A	٨	5.1		٨	5.9			
61	CSAH 81 (W Broadway Ave) / N Knox Ave	NB EB SB WB	C	A	8.5	C A C A	*	9.1		A	2.0			
62	CSAH 81 (W Broadway Ave) / N James Ave	NB EB SB WB	8 4 8 4	A	1.5	8 A 8 A	*	1.8	8 8 8 C	в	17.4	8 8 8 0	в	16.7
63	N Hillside Ave / N 21st Ave / N Irving Ave	NB EB SB WB	* * * *	A	3.1	~ ~ ~ ~	*	3.2	KUK	A	9.7	« U « 1	в	10.3
64	CSAH 81 (W Broadway Ave) / N Irving Ave	NB EB SB WB		A	8.7	D B C A	٨	9.9		в	11.5		в	10.9
65	N 21st Ave / N Girard Ave	NB EB SB WB		*	1.1		٨	1.6		*	1.9		*	2.0

	PM Level of Service and Inte	rsec	tion I	Delay						2050				
	Scenario		E.	ating Co			No Bell	ы		Build		M	ligated	luiki
•	Intersection	Appr	L	os	Avg. Delay (sec/veh)	U	05	Avg. Delay (sec/veh)	u	25	Avg. Delay (sec/veh)	u	25	Aug. Delay (sec/veh)
66	CSAH 81 (W Broedway Ave) / N Girard Ave	NB EB SB WB	8 8 D 4	в	13.5	8 U D 4	в	16.3		в	12.1		в	11.8
67	N 21st Ave / N Fremont Ave	NB EB SB WB		A	1.9		*	2.1		A	4.4		*	4.8
68	CSAH 81 (W Broadway Ave) / N Fremont Ave	NB EB SB WB	- в с с	с	21.5		в	19.2	- B C B	с	21.8	- 8 C 8	c	22.1
69	N 21st Ave / N Emerson Ave	NB EB SB WB	A	A	2.5	A	٨	3.2		A	3.3	•	٨	3.0
70	CSAH 81 (W Broadway Ave) / N Emerson Ave	NB EB SB WB	C A I A	в	12.5		в	11.5	D 8 - 8	c	20.1	D 8 - 8	в	19.8
n	CSAH 81 (W Broedway Ave) / N Dupont Ave	NB EB SB WB	5 4 5 5	A	8.7	8 4 U 8	*	9.9	C A C B	в	10.5		в	10.9
72	N 21st Ave / N Bryant Ave	NB EB SB WB	~ ~ ~ ~	*	3.8	* * * *	*	4.5		A	2.9		٨	2.3
73	N 21st Ave / N Aldrich Ave	NB EB SB WB		^	3.4		*	3.9		*	3.7		^	3.8
74	CSAH 81 (W Broadway Ave) / N Aldrich Ave	NB EB SB WB		*	9.9	D B D A	в	15.0	D B E A	c	21.2	E E A	c	21.3
75	N 21st Ave / N Lyndale Ave	NB EB SB WB	A B A B	*	6.5		*	6.4	4 C	c	22.6	А В -	в	15.0
76	CSAH 81 (W Broedway Ave) / N Lyndale Ave	NB EB SB WB	C C D B	c	25.0	0000	c	31.5	E B E C	D	38.3	B D C	D	35.8
77	N 21st Ave / N 4th St	NB EB SB WB		*	3.6	A A A B (*	5.5	A - B B	в	11.5	ж · в в	в	13.6
78	CSAH 81 (W Broadway Ave) / N 4th 5t	NB EB SB WB	0 0 8	в	19.6	C C E B	c	22.4	D C B	с	24.8	D C B	с	26.5
79	N 21st Ave / 1-94 EB Ramps	NB EB SB WB	Does r	conditio	in Existing ons	Does n	ot exist in Build	2050 No	- D C D	D	39.0	- D C D	D	37.1
80	CSAH 81 (W Broedway Ave) / I-94 EB Ramps	NB EB SB WB NB	B C C	c	24.0	- B C C A	c	26.2	8 D C 8	c	29.3	8 D D C	c	29.4
81	CSAH 152 (N Washington Ave) / N 21st Ave	EB SB WB NB		*	2.0	(· • 8 8	*	2.1	E D A	D	37.8	0 D D A	D	35.2
82	N 22nd Ave / N 2nd St	EB SB WB NB	С А А В А	в	10.2	5 4 B B 4	в	11.6	С В 4 С В	*	8.0	(B 4 U 4	^	7.3
83	N 21st Ave / N 2nd St	EB SB WB NB	A	*	1.4		*	1.6	е С.	в	18.7	с в	*	4.9
84	CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	EB SB WB NB	0 0 0 0	D	37.4		D	46.1	D E D	D	46.6	0 0 0 0	D	47.2
85	CSAH 81 (W Broadway Ave) / N 2nd St	EB SB WB NB	с в с с о о	c	24.2	8 U D D	c	31.6	B E D	E	56.4		c	31.0
86	CSAH 81 (W Broadway Ave) / W River Rd	EB SB WB NB	A D A B	в	10.9	- D B D	в	14.7	8 C E	D	36.3	8 C 8	c	20.3
87	CSAH 152 (N Washington Ave) / N 17th Ave / i 94 WB Ramp	EB SB WB	B B E	с	20.9	D D 8	D	37.6		÷	>100	000	D	46.8

1	PM Level of Service and Inte	sec	Ion I	2023			_			2050		_		
	Scenario		Ext	rting Co			No Beli	ы		Buik		м	tigated I	beld
•	Intersection	Appr	u	05	Avg. Delay (sec/veh)	u	05	Avg. Delay (sec/veh)	u	25	Avg. Delay (sec/veh)	u	25	Arg. Delay (sec/veh)
88	N 17th Ave / N 2nd St	NB EB SB WB	A C A C	в	14.3	A E B E	с	26.5		÷	>100	A E B B	c	21.2
89	CSAH 152 (N Washington Ave) / N 15th Ave	NB EB SB WB	A 8 A 8	A	1.6	A 8 A 8	*	1.7	8 8 8	в	15.3	8 8 8	в	13.7
90	N 15th Ave / N 2nd St	NB EB SB WB	A A A A	*	1.6	A A A	*	1.7	E E B	с	30.2	* *	A	4.3
91	N Lyndaie Ave / N Plymouth Ave	NB EB SB WB	C B C C	с	24.1	E C B	E	57.7	D	÷	>100	D E C	E	59.3
92	CSAH 152 (N Weshington Ave) / N Plymouth Ave	NB EB SB WB	0000	с	24.5	0 0 0	E	60.4	E D C	÷	>100	D	E	74.2
93	N Plymouth Ave / N 2nd St	NB EB SB WB	B C E	с	35.0	B B C	E	74.3		÷	>100	C A	E	64.7
94	CSAH 152 (N Washington Ave) / N 10th Ave	NB EB SB WB	0000	c	31.6	D D C C	D	35.3	8 - 8 D	в	18.4	8 - 8 D	в	19.0
95	N 10th Ave / N 2nd St	NB EB SB WB	8 8 4	в	13.0	8 8 4	в	13.2	С В А	в	16.9	8 8 4	в	14.5
96	CSAH 152 (N Washington Ave) / N 8th Ave	NB EB SB WB		A	5.9		٨	5.6	C D B D	с	26.2	с ссс с	с	27.7
97	N 10th Ave / N 3rd St	NB EB SB WB	C A B A	*	6.6	с с с ж	в	10.8	A - B -	*	10.0	A	*	9.3
98	N 10th Ave / N 4th 5t	NB EB SB WB	84.4	*	2.6	B A - A	*	4.7	Not ana	lyzed in	2050 Build	Notana	lyzed in :	2050 Build
99	N 10th Ave / N 5th St	NB EB SB WB	8 4 8 4	*	4.4	8 A 8 A	*	7.3	A C A -	*	8.7	A (*	7.2
100	N 8th Ave / N 5th St	NB EB SB WB		*	3.7		*	3.6	A E A	с	25.4	A B A	A	8.4
101	N 9th Ave / N 5th St	NB EB SB WB		ot exist i conditio	in Existing	Does n	ot exist in Build	n 2050 No	A - B D	в	10.3	A - A A	*	1.6
102	N 8th Ave / N Oak Lake Ave	NB EB SB WB		*	2.0	A U U U	*	9.2	8 C D	ε	77.1	B C C	D	46.6
103	N 7th St / W Lyndale Ave	NB EB SB WB		в	17.1	- 8 8 C	в	19.2	- 8 8 C	в	17.0	с в с	в	18.4
104	N 7th St / E Lyndale Ave	NB EB SB WB	8 8 - 8	в	15.5	8 D - C	с	26.8	С В - В	с	23.2	С В - В	c	23.0
105	N 7th St / N Oak Lake Ave	NB EB SB WB	0008	c	23.7	C D C	D	45,4	<mark>н</mark> 0 0 0	D	36.8	D D D C	D	42.8
106	TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave	NB EB SB WB	0 0 0 0	c	26.8	D B E	E	69.5	D C	ε	72.8	E D E	E	71.9
107	TH 55 (Olson Memorial Hwy) / N Oek Lake Ave / Border Ave	NB EB SB WB	0 8 8 8	в	18.9	0888	c	22.4	0000	D	40.4	D C C	D	42.9
108	N 6th Ave / N 5th St	NB EB SB WB	8 8 8	в	17.2	C B B B	в	18.3	8 C 8 8	с	20.6	8 C A B	с	20.5
109	N 6th Ave / N 3rd St	NB EB SB WB		*	3.5		*	4.2	С С В А	в	12.8	С В А А	в	10.7

				2023						2050)			
	Scenario		Exi	sting Co	ndition		No Bui	Id		Build	1	M	itigated	Build
#	Intersection	Appr	L	OS	Avg. Delay (sec/veh)		OS	Avg. Delay (sec/veh)	L	DS	Avg. Delay (sec/veh)	L	OS	Avg. Delay (sec/veh)
110	CSAH 152 (N Washington Ave) / N 6th Ave	NB EB SB WB	A D A D	В	12.6	A D A D	В	13.5	A D B C	с	20.3	B D B C	с	20.5
111	N 5th Ave / N 3rd St	NB EB SB WB	A A B A	A	4.0	B A B A	A	4.2	B A A A	A	3.7	B A A A	A	4.0
112	CSAH 152 (N Washington Ave) / N 5th Ave	NB EB SB WB	B D B C	В	16.0	B D B C	В	17.2	D D B D	с	32.1	D D B D	с	34.7
113	N 5th Ave / N 2nd St	NB EB SB WB	B B B	В	11.8	B B B	В	12.0	B D C -	с	20.1	B D C	с	20.5

	Slorage Lengin			2023				20	50		
	Scenario		Exis	sting Co	ndition		No Bui	d		Build	
#	Intersection	Appr	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)		Effectiv	e Storag (feet)	
			LT .	Th	RT	LT	Th	RT	LT	Th	RT
		NB							-	200	- '
1	Oak Grove Pkwy /	EB	Does n		in Existing	Does n		n Existing	300	865	-
	Xylon Ave	SB	ł	Conditio	ons		Conditio	ins	-	325	-
		WB NB	690	690	-	690	690	_	315	1615	-
	CSAH 103 (W Broadway Ave) /	EB	1225	- 050	1225	1225		1225	Does	not exist	in 2050
2	101st Ave N	SB	-	2405	410	-	2405	410		Build	
		WB	- 1	-	-	-	-	-			
		NB	920	920	-	920	920	-			
3	CSAH 103 (W Broadway Ave) /	EB	2855	-	2855	2855	-	2855	Does	not exist	in 2050
	Winnetka Ave N	SB	-	690	690	-	690	690		Build	
		WB	-	-	-	-	-	-			
		NB	-	930	390	-	930	390	400	700	700
4	CSAH 103 (W Broadway Ave) /	EB	-	-	-	-	-	-	350	375	350
	Oak Grove Pkwy	SB	295	915	-	295	915	-	580	1050	370
		WB NB	725	-	725	725	-	725	400 500	550 795	550 375
	CSAH 103 (W Broadway Ave) /	EB	Doesn	ot exist i	in Existing	Doesn	ot exist i	n Existing	185	320	225
5	99th Ave N	SB	1 000311	Conditio	-	Docsn	Conditio	-	415	700	415
		WB	ł	contaite			contaitere		230	570	570
		NB	-	1035	355	-	1035	355	-	1300	355
6	CSAH 103 (W Broadway Ave) /	EB	1 -	-	-	-	-	-	-	-	-
6	TH 610 WB Ramps	SB	350	895	-	350	895	-	450	815	-
		WB	2255	-	750	2255	-	750	2255	-	750
		NB	-	790	470	-	790	470	-	750	380
7	CSAH 103 (W Broadway Ave) /	EB		-	-	-	-	-	-	-	-
	TH 610 EB Ramps	SB	635	1035	-	635	1035	-	635	1035	-
		WB	565	-	1485	565	-	1485	565	-	1485
	CSAH 103 (W Broadway Ave) /	NB EB	460 100	765 225	765 225	460 100	765 225	765 225	400 75	750 180	750 180
8	94th Ave N	SB	475	790	475	475	790	475	350	750	750
		WB	75	75	75	75	75	75	265	300	300
		NB	260	590	590	260	590	590	390	1530	1530
9	CSAH 103 (W Broadway Ave) /	EB	330	1225	1225	330	1225	1225	400	1150	1150
9	CSAH 30 (93rd Ave N)	SB	475	765	765	475	765	765	400	750	400
		WB	330	1185	1185	330	1185	1185	315	1185	1185
		NB	970	970	310	970	970	310	-	915	915
10	CSAH 103 (W Broadway Ave) /	EB	1225	1225	1225	1225	1225	1225	-	-	1185
	92nd Ave N	SB	590	590	200	590	590	200	-	515	515
		WB	410	410	410	410	410	410	-	-	360

	Storage Lengin			2023				20	50		
	Scenario		Exis	ting Cor	ndition		No Bui	d		Build	
#	Intersection	Appr	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)	e Distance
			LT	Th	RT	LT	Th	RT	LT	Th	RT
		NB	235	875	465	235	875	465	260	1525	1525
11	CSAH 103 (W Broadway Ave) /	EB	260	770	770	260	770	770	245	245	245
	Setzler Pkwy	SB	265	960	375	265	960	375	285	1510	1510
		WB	480	480	480	480	480	480	450	450	450
		NB	645	645	-	645	645	-	-	615	-
12	CSAH 103 (W Broadway Ave) /	EB	1895	-	1895	1895	-	1895	-	-	1865
	89th Ave N	SB WB		875	875	-	875	875		850	850
		NB	1110	- 1110	1110	1110	- 1110	1110	240	1745	1745
	CSAH 103 (W Broadway Ave) /	EB	240	240	240	240	240	240	135	205	205
13	Maplebrook Pkwy	SB	645	645	200	645	645	200	225	1500	1500
		WB	160	160	160	160	160	160	100	140	140
		NB	230	925	320	230	925	320	345	1485	1485
	CSAH 103 (W Broadway Ave) /	EB	520	775	440	520	775	440	500	735	735
14	CSAH 109 (85th Ave N)	SB	410	645	75	410	645	75	370	1750	1750
		WB	545	990	815	545	990	815	460	945	945
		NB	185	235	235	185	235	235	-	550	-
15	CSAH 103 (W Broadway Ave) /	EB	625	625	625	625	625	625	-	-	600
15	84th Ave N	SB	435	925	925	435	925	925	-	890	890
		WB	150	150	150	150	150	150	-	-	90
		NB	805	805	-	805	805	-	285	1600	1600
16	CSAH 103 (W Broadway Ave) /	EB	750	750	750	750	750	750	85	720	720
	College Park Dr	SB		265	265	-	265	265	335	1485	1485
		WB	-	-	-	-	-	-	140	140	140
		NB	810	810	-	810	810	-	-	795	-
17	CSAH 103 (W Broadway Ave) /	EB	290	-	290	290	-	290	-	-	260
	82nd Ave N	SB	-	805	805	-	805	805	-	730	730
		WB	-	-	-	-	- 710	-	- 200	- 1775	1775
	CSAH 103 (W Broadway Ave) /	NB EB	-	710	710	-	710	710	300 160	1775 400	1775 400
18	Candlewood Dr	SB	810	810	-	810	- 810	-	285	400	400 1575
	Candlewood Dr	WB	145		145	145		145	140	1575	1575
		NB	375	540	245	375	540	245	- 140	1025	1025
	CSAH 103 (W Broadway Ave) /	EB	475	475	475	475	475	475			435
19	78th Ave N	SB	240	710	710	240	710	710	-	700	700
		WB	175	175	175	175	175	175	-	-	150
		NB	275	450	450	275	450	450	-	400	400
	CSAH 103 (W Broadway Ave) /	EB	45	45	45	45	45	45	-	-	45
20	Shopping Center Access	SB	280	540	540	280	540	540	-	1300	1300
		WB	90	90	90	90	90	90	-	-	70

	Storage Length			2023				20	50		
	Scenario		Exis	ting Cor	ndition		No Buil	d		Build	
#	Intersection	Appr	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)	
			LT	Th	RT	LT	Th	RT	LT	Th	RT
	CSAH 103 (W Broadway Ave) /	NB	465	570	530	465	570	530	310	500	500
21	CSAH 105 (W Broadway AVe) / CSAH 130 (Brooklyn Blvd) / CSAH	EB	415	480	455	415	480	455	350	445	445
	152	SB	295	540	535	295	540	535	365	1800	1800
		WB	405	520	425	405	520	425	330	465	465
	CSAH 130 (Brooklyn Blvd) /	NB	225	225	225	225	225	225	225	225	225
22	Shopping Center Access (west of	EB	300	585	300	300	585	300	300	585	300
	CSAH 103)	SB	215	215	215	215	215	215	215	215	215
		WB	180 55	480 55	480 55	180 55	480 55	480 55	180 55	450	450 55
	CSAH 130 (W Brooklyn Blvd) /	NB EB	215	520	520	215	520	520	240	55 460	460
23	Shopping Center Access (east of	SB	145	145	145	145	145	145	145	145	145
	CSAH 103)	WB	370	655	655	370	655	655	370	655	655
		NB	305	885	885	305	885	885	345	790	790
	CSAH 130 (W Broadway Ave) /	EB	190	190	190	190	190	190	150	150	150
24	76th Ave N	SB	220	570	540	220	570	540	260	490	490
		WB	1250	1250	1250	1250	1250	1250	110	1230	1230
		NB	265	265	265	265	265	265	200	520	520
	CSAH 130 (W Broadway Ave) /	EB	205	205	205	205	205	205	160	205	205
25	75th Ave N	SB	880	880	880	880	880	880	275	810	810
		WB	150	150	150	150	150	150	135	135	135
		NB	355	355	355	355	355	355	-	315	315
26	CSAH 130 (W Broadway Ave) /	EB	1325	1325	1325	1325	1325	1325	-	-	-
20	74th Ave N	SB	255	255	255	255	255	255	215	530	-
		WB	905	905	905	905	905	905	885	-	885
		NB	1325	1325	1325	1325	1325	1325	300	1270	1270
27	CSAH 130 (W Broadway Ave) /	EB	650	650	405	650	650	405	275	640	640
27	73rd Ave N	SB	355	355	355	355	355	355	135	315	315
		WB	485	485	485	485	485	485	95	470	470
		NB	590	1230	490	590	1230	490	570	1230	570
28	CSAH 81 (Bottineau Blvd) / 73rd	EB	275	430	275	275	430	275	260	390	260
	Ave N	SB	610	2730	565	610	2730	565	610	2730	565
		WB	325	650	650	325	650	650	325	650	650
	CSAH 81 (Bottineau Blvd) / CSAH	NB	500	1690	645	500	1690	645	500	1690	600
29	8 (W Broadway Ave) / 71st Ave	EB	330	1235	1235	330	1235	1235	350	1235	1235
	N	SB	500	1230	485	500	1230	485	435	1230	435
		WB	420	495	420	420 565	495 565	420	420	495	420 565
	CSAH 130 (W Broadway Ave) /	EB	565 495	565 455	565 455	495	455	565 455	230 465	565 465	465
30	71st Ave N	SB	1 1	455 1325	455 90	1325	455	455 90	290	465 1295	465 90
	/ ISCAVE IV		1325								
		WB	335	335	335	335	335	335	335	335	335

	Storage sengin			2023				20	50		
	Scenario		Exis	sting Cor	dition		No Bui	4		Build	
#	Intersection	Appr	Effectiv	e Storag (feet)		Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)	
			LT	Th	RT	LT	Th	RT	LT	Th	RT
		NB	-	960	835	-	960	835	-	960	835
31	CSAH 81 (Bottineau Blvd) / I-94 /	EB	- 1	-	-	-	-	-	-	-	-
	I-694 WB Ramps	SB	630	1690	-	630	1690	-	615	1690	-
		WB	360	-	1790	360	-	1790	360	-	1790
		NB		2700	405	-	2700	405	-	2700	405
32	CSAH 81 (Bottineau Blvd) / I-94 /	EB	-	-	-	-	-	-	-	-	-
	I-694 EB Ramps	SB	790	960	- 1065	790 335	960	- 1065	630	960	-
		WB NB	335 510	- 5705	485	510	- 5705	485	335 360	- 5135	1065 475
	CSAH 81 (Bottineau Blvd) / 63rd	EB	470	540	520	470	540	520	425	550	475
33	Ave N	SB	570	2700	510	570	2700	510	930	2700	460
		WB	465	510	425	465	510	425	465	510	425
		NB	135	135	135	135	135	135	135	135	135
	63rd Ave N / Louisiana Ave N /	EB	150	1245	1245	150	1245	1245	150	1245	1245
34	Park and Ride Access	SB	530	530	90	530	530	90	530	530	90
		WB	270	540	540	270	540	540	270	550	550
		NB	665	1300	370	665	1300	370	1000	1000	950
	CSAH 81 (Bottineau Blvd) / CSAH	EB	385	385	420	385	385	420	440	440	440
35	10 (Bass Lake Road)	SB	545	5705	530	545	5705	530	780	780	750
		WB	325	380	325	325	380	325	240	300	240
		NB	640	640	55	640	640	55	640	640	55
36	CSAH 10 (Bass Lake Road) /	EB	270	715	715	270	715	715	270	715	715
- 30	Sherburne Ave	SB	115	115	115	115	115	115	115	115	115
		WB	385	505	505	385	505	505	385	505	505
		NB	350	350	350	350	350	350	350	350	350
37	CSAH 10 (Bass Lake Road) / Adair	EB	115	380	380	115	380	380	100	285	285
37	Ave N	SB	160	160	160	160	160	160	160	160	160
		WB	140	200	200	140	200	200	140	200	200
		NB	505	2255	430	505	2255	430	335	2255	310
38	CSAH 81 (Bottineau Blvd) /	EB	40	40	60	40	40	60	40	40	45
	Wilshire Blvd	SB	430	1300	210	430	1300	210	320	530	530
		WB	265	265	265	265	265	265	265	265	265
		NB		1015	1015	-	1015	1015	-	1015	1015
39	Wilshire Blvd / Lakeland Ave N	EB	-	30	-	-	30	-	-	-	-
		SB	900	900	900	900	900	900	530	530	-
		WB	40	40	40	40	40	40	40	-	40
	CSAH 81 (Bottineau Blvd) /	NB EB	620	2310	310	620	2310 260	310	485	2310	350
40	Corvallis Ave N	EB	260	260	260	260 490		260	260	260	260
	COLVAINS AVE IN	SB	490	2255	490		2255	490	425	2255	415
		WB	85	85	85	85	85	85	85	85	85

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41 CSAH 81 (Bottineau Blvd) / 47th Ave N EB SB 50 <th>50 250 50 580 - -</th>	50 250 50 580 - -
41 Ave N SB 470 2310 460 470 2310 460 450 2310 42 CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps NB - 580 580 - 580 580 - 580 580 - 580 580 - 580 580 - 1085 - - - - - - - -	250 50 580 - -
Ave N SB 470 2310 460 470 2310 460 450 2310 WB 80 80 80 50 80 80 50 80 80 50 80 80 50 80 80 50 80 80 80 42 CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps NB - 580 580 - - - - - - - - - - - 1085 - - 1085 - - 1085 - - 1085 - - 1085 - - 1085 - - 1085 - - 1085 - - 1085 - - 10870 1870 <t< th=""><th>50 580 - -</th></t<>	50 580 - -
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42 100 SB Ramps SB - 1085 - - 1085 - - 1085 43 CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps NB - 570 460 - 570 460 - 570 460 - 570 460 - 570 460 - 570 460 - 570 460 - 570 460 - 570 460 - 570 460 - 570 1870	
WB 970 - 535 970 - 535 970 - 43 CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps NB - 570 460 - 570 460 - 570 460 - 570 187	
A3 CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps NB - 570 460 - 570 460 - 570 44 100 NB Ramps SB 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - 365 580 - - - 1435 - - 000 130 - 1000 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30	
43 CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps EB SB 1870 365 1870 580 1870 1870 365 1870 1000 1000	535
43 100 NB Ramps SB 365 580 - 365 580 30	460
WB - 1435 - - 1435 - - 44 CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North) NB - 1000 130 - 1000 130 30	1870
44 CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North) NB - 1000 130 - 1000 130 - 1000 44 CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North) EB 30 <th>1435</th>	1435
44 CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North) EB 30	1435
44 Lakeland Ave N (North) SB 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 - 370 1000 -<	30
WB ·	-
NB 510 725 260 510 725 160	-
45 CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) EB 150 335 150 150 335 150 150 335 46 CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave) EB 540	260
45 9 (42nd Ave N) SB 225 1400 140 225 1400 140 225 1400 WB 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 200 1655 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1665 225 220 1655 205 200 1655 205 200 1655 205 206 360 800 800 800 800 800 800 800 540 540 540 540 540 540 540 540 540 540 540 <t< th=""><th>150</th></t<>	150
NB 800 800 800 800 800 800 800 800 800 500 500 500 500 500 500 500 500 500 500 500 500 500 500 540	140
46 CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave) EB 540	225
46 (W Broadway Ave) SB 380 380 380 380 380 380 290 380 WB 315 <td< th=""><th>800</th></td<>	800
(W Broadway Ave) SB 380 380 380 380 380 290 380 WB 315 <t< th=""><th>540</th></t<>	540
	380
	315
NB 410 885 445 410 885 445 140 885	445
47 CSAH 81 (Bottineau Blvd) / 41st EB 320 32	320
Ave N SB 270 725 725 270 725 725 270 725	725
WB 185 185 185 185 185 185 185 185 185	185
NB 320 3330 65 320 3330 65 320 3330	65
48 CSAH 81 (Bottineau Blvd) / 40th EB 145 295 295 145 295 295 145 295 145 295	295
Ave N SB 335 875 265 335 875 265 180 875 M/R 160 525 200 160 525 200 160 525	265
WB 160 525 200 160 525 200 160 525	200
NB - 1160 200 - 1160 200 - 1160 CSAH 81 (Bottineau Blvd) / EB 50 - 50 50 - 50 50 - 1160	125
49 CSAH 81 (Bottineau Blvd) / EB 50 - 50 50 - 50 50 - 49 Lakeland Ave N (South) SB 250 2150 - 250 2150 - 210 2150	50
Cakeland Ave N (south) 3B 250 2150 - 250 2150 - 210 210 210 WB -	-
NB 440 530 380 440 530 380 280 530	380
CSAH 81 (Bottineau Blvd) / 36th FB 220 270 220 270 220 270 220 270	220
50 Ave N SB 330 3300 425 330 3300 425 330 3300	
WB 130 1130 130 1130 1130 1130 1130 1130 1130 1130	425

	storage sengin			2023		2050						
	Scenario		Exis	sting Cor	ndition		No Bui	ld	Build			
#	Intersection	Appr	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)		Effectiv	e Storag (feet)		
			LT	Th	RT	LT	Th	RT	LT	Th	RT	
		NB	425	1240	-	425	1240	-	325	1240	-	
51	CSAH 81 (Bottineau Blvd) / 35th	EB	160	-	160	160	-	160	160	-	160	
51	Ave N	SB	-	1250	385	-	1250	385	-	1250	270	
		WB	-	-	-	-	-	-	-	-	-	
		NB	550	2860	-	550	2860	-	300	2860	-	
52	52 CSAH 81 (Bottineau Blvd) /	EB	160	-	160	160	-	160	160	-	160	
Abbott Ave N	SB	-	1250	385	-	1250	385	-	1250	385		
		WB	-	-	-	-	-	-	-	-	-	
	CSAH 81 /W/ Broadway Ava) / N	NB	-	- 100								
53	53 CSAH 81 (W Broadway Ave) / N Oakdale Ave	EB SB	230 430	100	- 430	230 430	100	- 430	230 430	100	- 430	
Oakdale Ave	WB	-	370	75		370	75	-	370	75		
		NB	305	610	610	305	610	610	580	580	580	
	54 CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	EB	120	250	250	120	250	250	80	235	235	
54		SB	560	560	185	560	560	185	1100	1100	100	
		WB	120	370	370	120	370	370	160	380	380	
	CSAH 153 (N Lowry Ave) / N	NB	480	-	480	480	-	480	480	-	480	
		EB	1 -	270	-	-	270	-	-	185	-	
55	Washburn Ave	SB	1 -	-	-	-	-	-	-	-	-	
		WB	1 -	270	-	-	270	-	-	270	-	
		NB	-	835	835	-	835	835	-	835	100	
56	CSAH 81 (W Broadway Ave) SB	EB	-	-	-	-	-	-	-	-	-	
50	Ramps / Theodore Wirth Pkwy	SB	205	630	-	205	630	-	150	580	-	
		WB	165	-	245	165	-	245	-	-	-	
		NB	600	1525	1525	600	1525	1525	120	1525	1525	
57	CSAH 81 (W Broadway Ave) / N	EB	445	445	445	445	445	445	445	445	445	
	29th Ave	SB	90	800	800	90	800	800	90	800	800	
		WB	345	345	345	345	345	345	345	345	345	
	COAL OF (M December 2011)	NB	600	1000	1000	600	1000	1000	180	1000	1000	
58	CSAH 81 (W Broadway Ave) / N	EB	1000	1000	1000	1000	1000	1000	1000	1000	1000	
	26th Ave	SB WB	600	1505	1505	600	1505	1505	140	1505	1505	
		NB	430 150	430 415	430 415	430 150	430 415	430 415	430 115	430 415	430 415	
	CSAH 81 (W Broadway Ave) /	NEB	310	310	310	310	310	310	-	415	415	
59	CSAH 2 (N Penn Ave) / McNair	EB	600	1055	1055	600	1055	1055	600	1055	1055	
	Ave	SB	180	655	655	180	655	655	140	655	655	
		WB	600	765	765	600	765	765	600	765	765	
		NB	-	-	-	-	-	-	-	-	-	
	CSAH 81 (W Broadway Ave) / N	EB	480	480	-	480	480	-	480	480	-	
60	Logan Ave	SB	300	-	300	300	-	300	300	-	300	
		WB	-	1520	1520	-	1520	1520	-	1520	1520	

	Slorage Lengin		2023		2050						
	Scenario		Exis	sting Cor	ndition		No Bui	d	Build		
#	Intersection	Appr	Effectiv	e Storag (feet)		Effectiv	e Storag (feet)		Effective Storage Distance (feet)		
			LT	Th	RT	LT	Th	RT	LT	Th	RT
1	1	NB	180	180	180	180	180	180	-	-	180
61	CSAH 81 (W Broadway Ave) / N	EB	90	1520	-	90	1520	-	-	300	-
	Knox Ave	SB	-	-	-	-	-	-	-	-	-
		WB	-	250	250	- 225	250 225	250	-	- 225	-
	CSAH 81 (W Broadway Ave) / N	NB EB	225 265	225 265	225	225	225	225	225 135	1900	225
62	James Ave	SB	790	- 205	790	790	- 205	790	790	- 1500	790
	James Ave	WB	-	380	380	-	380	380	-	380	380
		NB	225	225	225	225	225	225	225	225	-
63	N Hillside Ave / N 21st Ave / N	EB	1235	1235	1235	1235	1235	1235	1235	-	1235
05	Irving Ave	SB	425	425	425	425	425	425	425	425	425
		WB	385	385	385	385	385	385	-	-	-
		NB	225	225	225	225	225	225	225	225	225
64	CSAH 81 (W Broadway Ave) / N	EB	175	340	340	175	340	340	125	340	340
	Irving Ave	SB	215	215	215	215	215	215	215	215	215
		WB NB	210 335	410 335	410	210 335	410 335	410	125	410 335	410
		EB	390		390	390		390		335	-
65	N 21st Ave / N Girard Ave	SB		415	415	- 350	415	415		415	-
		WB	-	-	-	-	-	-	-		
		NB	80	80	80	80	80	80	80	80	80
	CSAH 81 (W Broadway Ave) / N	EB	200	440	440	200	440	440	125	440	440
66	Girard Ave	SB	330	330	330	330	330	330	330	330	330
		WB	130	320	320	130	320	320	125	320	320
		NB	-	-	-	-	-	-	-	-	-
67	N 21st Ave / N Fremont Ave	EB	-	-	-	-	-	-	-	-	-
		SB	420	420		420	420		-	420	-
		WB NB	345	-	-	345	-	-	-	-	-
	CSAH 81 (W Broadway Ave) / N	EB		- 320	320	-	- 320	320	-	- 320	320
68	Fremont Ave	SB	90	325	325	90	325	325	115	325	325
		WB	310	310	-	310	310	-	125	310	-
		NB	335	335	335	335	335	335	-	335	-
69	N 21st Ave / N Emerson Ave	EB	345	345	-	345	345	-	-	-	-
05	AVE / N LINEISON AVE	SB	- [-	-	-	-	-	-	-	-
		WB	-	350	350	-	350	350	-	-	-
		NB	90	555	555	90	565	565	115	565	565
70	CSAH 81 (W Broadway Ave) / N	EB	310	310	-	310	310	-	125	310	-
	Emerson Ave	SB	-	- 215	215	-	- 215	- 215	-	- 215	215
		WB	-	315	315	-	315	315	-	315	315

	Slorage Lengin			2023		2050						
	Scenario		Exis	sting Cor	ndition		No Build			Build		
#	Intersection	Intersection Appr		Effectiv	e Storag (feet)		Effectiv	e Storag (feet)		Effective Storage Distance (feet)		
			ιτ	Th	RT	ιт	Th	RT	ιτ	Th	RT	
		NB	555	555	555	555	555	555	555	555	555	
71	CSAH 81 (W Broadway Ave) / N	EB	305	305	305	305	305	305	125	305	305	
1	71 Dupont Ave	SB	140	140	140	140	140	140	140	140	140	
		WB	320	320	320	320	320	320	125	320	320	
		NB	335	335	335	335	335	335	-	335	-	
72	72 N 21st Ave / N Bryant Ave	EB	350	350	350	350	350	350	-	-	-	
		SB	410	410	410	410	410	410	-	410	-	
		WB	345	345	345	345	345	345	-	-	-	
	73 N 21st Ave / N Aldrich Ave	NB EB	335 345	335 345	335 345	335 345	335 345	335 345	-	335	-	
73		SB	410	545 410	410	410	545 410	545 410	-	410	-	
		WB	345	345	345	345	345	345	-	410	-	
		NB	600	600	600	600	600	600	600	600	600	
	CSAH 81 (W Broadway Ave) / N	EB	110	320	320	110	320	320	125	320	320	
74	Aldrich Ave	SB	325	325	325	325	325	325	325	325	325	
		WB	145	310	310	145	310	310	125	310	310	
		NB	160	320	320	160	320	320	-	320	-	
		EB	345	345	345	345	345	345	-	-	-	
75	N 21st Ave / N Lyndale Ave	SB	410	410	410	410	410	410	-	410	-	
		WB	345	345	345	345	345	345	-	-	-	
		NB	115	335	335	115	335	335	115	335	335	
76	CSAH 81 (W Broadway Ave) / N	EB	150	305	305	95	305	305	125	305	100	
76	Lyndale Ave	SB	160	315	315	160	315	315	160	315	315	
		WB	105	700	700	105	700	700	135	700	700	
		NB	330	330	330	330	330	330	-	330	330	
77	N 21st Ave / N 4th St	EB	345	345	345	345	345	345	-	-	-	
		SB	410	410	410	420	420	420	420	420	-	
		WB	130	130	130	130	130	130	295	-	295	
		NB	150	150	150	150	150	150	150	150	150	
78	CSAH 81 (W Broadway Ave) / N	EB	115	115	115	115	115	115	115	115	115	
	4th St	SB	345	345	345	345	345	345	345	345	345	
		WB	165	165	165	165	165	165	165	165	165	
		NB	Deres	-	- Evicting	David		2050 1	-	-	-	
79	N 21st Ave / I-94 EB Ramps	EB	Does n		n Existing	Does n		n 2050 No	- 250	330	330	
		SB	+	conditio	ins		Build		350	3120	3120	
		WB						-	320	320	-	
	CSAH 81 (W Broadway Ave) / I-	EB] -	190	- 70	-	- 190	70		100	70	
80	94 EB Ramps	SB	300	3500	600	300	3500	600	325	190 325	325	
	54 co Namps		•						325			
		WB	415	415	-	415	415	-	220	415	-	

			2023			2050						
	Scenario		Existing Condition				No Bui	Ы	Build			
#	Intersection	Appr	Effectiv	e Storag (feet)	e Distance	Effectiv	e Storag (feet)		Effectiv	e Storag (feet)		
			ιτ	Th	RT	г	Th	RT	ו ד	Th	RT	
		NB	-	305	305	-	305	305	305	305	305	
81	CSAH 152 (N Washington Ave) /	EB	- [-	-	-	-	-	355	355	355	
01	N 21st Ave	SB	375	375	-	375	375	-	375	375	375	
		WB	340	-	340	340	-	340	340	340	340	
	82 N 22nd Ave / N 2nd St	NB	400	400	400	400	400	400	400	400	400	
82		EB	315	315	315	315	315	315	315	315	315	
		SB	340	340	340	340	340	340	340	340	340	
		WB	850	850	850	850	850	850	850	850	850	
		NB	330	330	330	330	330	330	330	330	330	
83	83 N 21st Ave / N 2nd St	EB	340	340	340	340	340	340	340	340	340	
		SB	390	390	390	390	390	390	390	390	390	
		WB	180	180	180	180	180	180	180	180	180	
		NB	340	520	520	340	520	520	400	920	920	
84 CSAH 81 (W Broadway CSAH 152 (N Washingto	CSAH 81 (W Broadway Ave) /	EB	170	455	455	170	455	455	170	455	455	
	CSAH 152 (N Washington Ave)	SB	220	305	255	225	305	305	225	305	225	
		WB	110	305	305	110	305	125	125	305	305*	
	CSAH 81 (W Broadway Ave) / N	NB	530	530	260	530	530	260	530	530	50	
85		EB	140	295	295	140	295	295	140	295	295	
	2nd St	SB	320	320	320	320	320	320	320	320	320	
		WB	165	580	580	165	580	580	165	580	580	
	CSAH 81 (W Broadway Ave) / W	NB	920	920	920	920	920	920	920	920	920	
86	River Rd	EB SB	95 120	575 830	575 830	95 120	575 830	575 830	95	575	575	
	Niver Nu	WB	70						120	830	830	
		NB		2050 310	2050 310	70	2050 310	2050	70	2050	2050	
	CSAH 152 (N Washington Ave) /	EB	685	1480	475	685		310	685	675	675 475*	
87	N 17th Ave / I-94 WB Ramp	SB	190	330	- 4/5	190	1480 330	475	275	1480 915	475	
	, is the many	WB	330	-	330	330		330	330	515	330	
		NB	345	345	345	345	345	345	345	345	345	
		EB	330	330	330	330	330	330	330	330	330	
88	N 17th Ave / N 2nd St	SB	335	335	335	335	335	335	335	335	335	
		WB	725	725	725	725	725	725	725	725	725	
		NB	350	350	350	350	350	350	205	720	720	
	CSAH 152 (N Washington Ave) /	EB	915	915	915	915	915	915	915	915	915	
89	N 15th Ave	SB	350	350	350	350	350	350	115	675	675	
		WB	335	335	335	335	335	335	335	335	335	
		NB	340	340	340	340	340	340	340	340	340	
		EB	335	335	335	335	335	335	335	335	335	
90	N 15th Ave / N 2nd St	SB	340	340	340	340	340	340	340	340	340	
		WB	100	100	100	100	100	100	100	100	100	

	Sloruge Lengin			2023		2050						
	Scenario		Exis	ting Cor	ndition	No Build			Build			
#	Intersection	Appr	Effective Storage Distance (feet)			Effectiv	e Storag (feet)		Effective Storage Distance (feet)			
			ιτ	Th	RT	LT	Th	RT	ιτ	Th	RT	
	1	NB	890	890	890	890	890	890	890	890	890*	
01	N. Lundala Ave (N. Dhumouth Ave)	EB	120	305	305	120	305	305	120	305	305	
91 N Lyndale Ave / N Plymouth Ave - -	SB	120	335	335	120	335	335	120	335	335		
	WB	250	1210	1210	250	1210	1210	250	1210	1210		
		NB	155	310	310	155	310	310	450	500	500	
92	92 CSAH 152 (N Washington Ave) / N Plymouth Ave	EB	150	295	90	150	295	90	150	295	90	
		SB	105	315	315	105	315	315	105	720	720	
		WB	150	310	95	150	310	95	150	310	95	
		NB EB	260 305	260	260	260	260	260	260 305*	260	260	
93 N Plymouth Ave / N 2nd St	SB	330	305 330	305 330	305 330	305 330	305 330	330*	305 330	305 330		
	WB	1040	1040	1040	1040	1040	1040	1040*	1040	1040		
		NB	1040	250	250	115	250	250	- 1040	620	620	
	CSAH 152 (N Washington Ave) /	EB	350	350	350	350	350	350		020	020	
94	N 10th Ave	SB	90	175	175	90	175	175	550	550	_	
		WB	310	310	310	310	310	310	100	-	310	
		NB	210	210	-	210	210	-	800	800	-	
95 N 10th Ave / N 2nd St		EB	150	-	300	150	-	300	150	-	300	
	N 10th Ave / N 2nd St	SB		300	300	-	300	300	-	300	300	
		WB		-	-	-	-	-	-	-	-	
		NB	670	670	670	670	670	670	870	870	870	
	CSAH 152 (N Washington Ave) /	EB	400	400	400	400	400	400	400	400	400	
96	N 8th Ave	SB	330	330	330	330	330	330	330	330	330	
		WB	100	100	100	100	100	100	100	100	100	
		NB	260	260	260	260	260	260	-	260	-	
97	N 10th Ave / N 3rd St	EB	370	370	370	370	370	370	-	-	-	
97	N IOUI AVE / N SIU SU	SB	215	215	215	215	215	215	-	215	-	
		WB	355	355	355	355	355	355	-	-	-	
		NB	1410	-	1410	1410	-	1410				
98	N 10th Ave / N 4th St	EB	-	360	360	-	360	360	Not ana	lvzed in 3	2050 Build	
		SB		-	-	-	-	-	and and	,	of the stand	
		WB	370	370	-	370	370	-	_			
		NB	695	695	695	695	695	695	695	695	-	
99	N 10th Ave / N 5th St	EB	600	600	600	600	600	600	600	-	600	
		SB	340	340	340	340	340	340	-	380	380	
	I	WB	350	350	350	350	350	350	-	-	-	
		NB	890	890	-	890	890	-	890	890	890	
100	N 8th Ave / N 5th St	EB	855	-	855	855	-	855	780	780	780	
		SB	-	680	680	-	680	680	380	380	380	
		WB	-	-	-	-	-	-	350	350	350	

	Sloruge Lengin			2023		2050						
	Scenario		Exis	ting Cor	ndition		No Bui	d	Build			
#	Intersection	Appr		(feet)			(feet)			(feet)		
			LT	Th	RT	LT	Th	RT	LT	Th	RT	
		NB]						-	380	380	
101	N 9th Ave / N 5th St	EB	Does not exist in Existing			Does no		n 2050 No	-	-	-	
		SB		conditio	ns		Build		165	165	-	
		WB							350	-	350	
	102 N 8th Ave / N Oak Lake Ave	NB	185	185	185	185	185	185	185	185	185	
102		EB	1440	1440	1440	1440	1440	1440	1440	1440	1440	
		SB	625	625	625	625	625	625	625	625	625	
		WB	810	810	810	810	810	810	780	780	780	
	103 N 7th St / W Lyndale Ave	NB EB	-	- 490	490	-	- 490	490		490	490	
103		SB	3200	3200	1250	3200	3200	1250	1250	1250	1250	
		WB	2200	440	-	2200	440	-	220	440	- 12.50	
		NB	740	890	890	740	890	890	740	890	890	
		EB	210	400	-	210	400	-	210	400	-	
104	N 7th St / E Lyndale Ave	SB	-	-	-	-	-	-	-	-	-	
		WB	-	745	285	-	745	745	-	745	745	
		NB	100	100	100	100	100	100	100	100	100	
		EB	730	730	730	105	730	730	105	730	730	
105	N 7th St / N Oak Lake Ave	SB	160	150	150	160	150	150	150	150	150	
		WB	535	535	535	150	535	535	150	535	535	
		NB	350	540	520	350	540	540	350	540	290	
	TH 55 (Olson Memorial Hwy) / N	EB	-	335	345	-	335	345	-	335	345	
106	7th St / N 6th Ave	SB	460	460	460	250	460	460	250	460	460	
		WB	600	600	600	200	600	600	200	600	600	
		NB	675	890	890	675	890	890	675	890	890	
107	TH 55 (Olson Memorial Hwy) / N	EB	130	420	275	130	420	275	130	420	275	
107	Oak Lake Ave / Border Ave	SB	250	250	80	250	250	80	250	250	80	
		WB	195	300	100	195	300	300	195	300	300	
		NB	305	305	305	305	305	305	305	305	305	
108	N 6th Ave / N 5th St	EB	395	395	395	395	395	395	395	395	395	
100	N OUT AVE / N SUI SU	SB	880	880	880	880	880	880	1015	1015	1015	
		WB	335	335	335	335	335	335	335	335	335	
		NB	345	345	345	345	345	345	345	345	345	
109	N 6th Ave / N 3rd St	EB	360	360	360	390	390	390	360	360	360	
200		SB	230	230	230	230	230	230	230	230	230	
		WB	340	340	340	340	340	340	340	340	340	
		NB	150	310	310	150	310	310	150	310	310	
110	CSAH 152 (N Washington Ave) /	EB	345	345	345	345	345	345	345	345	345	
	N 6th Ave	SB	105	210	210	105	210	210	105	210	210	
		WB	145	145	145	145	145	145	340	340	340	

	Jeres and the second	2023 2050									
	Scenario	Existing Condition				No Bui	d	Build			
#	Intersection	Appr	Effectiv	e Storag (feet)		Effectiv	e Storag (feet)		Effective Storage Distance (feet)		
			LT	Th	RT	LT	Th	RT	LT	Th	RT
		NB	200	200	200	200	200	200	200	200	200
111	N 5th Ave / N 3rd St	EB	310	310	310	310	310	310	310	310	310
111	N Stir AVC / N SIG SC	SB	340	340	340	340	340	340	340	340	340
		WB	350	350	350	350	350	350	350	350	350
		NB	180	720	720	180	720	720	180	720	720
112	CSAH 152 (N Washington Ave) /	EB	335	335	335	335	335	335	335	335	335
112	N 5th Ave	SB	150	310	310	150	310	310	150	310	310
		WB	350	350	350	350	350	350	350	350	350
		NB	770	770	-	770	770	-	380	380	-
113	N 5th Ave / N 2nd St	EB	350	-	350	350	-	350	350	-	350
115	N SULAVE / N ZILU SU	SB	-	340	340	-	340	340	-	340	340
		WB	-	-	-	-	-	-	-	-	-

Analysis Notes:

Storage Length for through lanes is measured to the nearest upstream full access public intersection.

* Storage length modified under Mitigated Build conditions as detailed in Section 6.1.
| | | | | | Scenari | o(s) with | Queuin | g Issue | | | | |
|--|------|--------------------|-------------|------------------------|--------------------------------|-----------|--------------------------------|----------|-----------------------------|--|---|--|
| Intersection | | Movement | Peak Period | 20 | 023 | | 20 | 050 | | Reasoning for Queuing Issue | | Mitigation Proposed? |
| intersection | Appr | Movement | Feak Ferioa | Existing
Conditions | AM Existing +
Freight Event | No Build | AM No Build +
Freight Event | Build | AM Build +
Freight Event | (In Build Conditions) | | mingarion Proposed : |
| | NB | - | | | | | | | | | | |
| Oak Grove Pkwy / | EB | - | | | | | 1 | | | | | |
| Xylon Ave | SB | | | | | | | | | | | |
| | WB | - | | | | | | | | | | |
| | NB | - | | | | | | | | | | |
| CSAH 103 (W Broadway Ave) / | EB | Left/Right | PM | | | X | | | | | | |
| 101st Ave N | SB | - | | | | | | | | | | |
| | WB | - | | | | | | | | | | |
| | NB | - | | | | | | | | | | |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | EB | Left/Right | AM
PM | | - | X | - | <u> </u> | | | | |
| | SB | - | | | | | | | | | | |
| | WB | | | | | | | | | | | |
| | NB | - | | | | | | | | | | |
| CSAH 103 (W Broadway Ave) / | EB | - | | |] | | | | | | | |
| Oak Grove Pkwy | SB | | | | | | | | | | | |
| | WB | - | | | | | | | | | | |
| | NB | - | | | | | | | | | | |
| CSAH 103 (W Broadway Ave) / | EB | - | | | | | | | | | | |
| 99th Ave N | SB | - | | | | | | | | | | |
| | WB | - | | | | | | | | | | |
| | NB | | | | | | | | | | | |
| CSAH 103 (W Broadway Ave) / | EB | - | | | | | | | | | | |
| TH 610 WB Ramps | SB | - | | | | | | | | | | |
| | WB | | | | | | | | | | - | |
| | NB | | | | - | <u> </u> | - | | | | | |
| CSAH 103 (W Broadway Ave) / | EB | - | | | - | <u> </u> | - | | | | - | |
| TH 610 EB Ramps | SB | - | | | | <u> </u> | | | | | | |
| | WB | | | | - | <u> </u> | - | L | | | | |
| | NB | - | | | - | <u> </u> | - | | | | | |
| | EB | Left | AM | | | | | x | | Movement operates at LOS E or worse
Average back-of-queue exceeds storage length, | | Movement does not impact upstream intersections
Movement does not impact upstream intersections |
| | | | | | - | | - | | | movement operates at LOS E or worse | | |
| | SB | Through | AM | | - | X | | | | | | |
| | WB | Left/Through/Right | AM | | | Х | | | | | | |

					Scenario	o(s) with	Quevin	g Issue				
				2	023		2	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	Through/Right	AM			X						
	IND	Throughy Kight	PM]	х]]			
	EB	Left	PM	x				x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Median spacing allows for expansion to dual lefts when needed Monitor intersection operations until needed
65 NJ 102 (NJ December 2011) / 65 NJ 20 (2014 2011)	ED	Through/Right	PM	x				x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Median spacing allows for expansion to dual lefts when needed which will allow for more time allocated to through/right Monitor intersection operations until needed
CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N)	SB	Left	PM					Х		Movement operates at LOS E or worse	No	Movement does not impact upstream intersections
		Through	AM			X						
			AM			x		x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse	No	lssue exists under no build conditions
	WB	Left	PM			x		x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Issue exists under no build conditions. Median spacing allows for expansion to dual lefts when needed which will allow for more time allocated to through/right Monitor intersection operations until needed
		Through/Right	PM					x		95th percentile queue exceeds storage length, movement operates at LOS E or worse	No	Movement does not impact upstream intersections
		Left/Through	AM]	X]]			
	NB	certy model	PM			X						
		Right	AM		4	X	4					
CSAH 103 (W Broadway Ave) / 92nd Ave N		-	PM		-	X						
	EB	-			-						<u> </u>	
	SB WB	-			-	<u> </u>		<u> </u>	-			
	WB	-	AM		-	x	-	<u> </u>	-		-	
	NB	Through	PM			X		<u> </u>				
CSAH 103 (W Broadway Ave) / Setzler Pkwy	EB	-	r ivi	-		<u> </u>		<u> </u>			+	
	SB	-		1			1		1		<u> </u>	
	WB	-			1		1		1		1	
			AM			x	1				1	
	NB	Left/Through	PM			X	1		1			
CSAH 103 (W Broadway Ave) / 89th Ave N	EB	Left/Right	PM			x			1			
	SB											
	WB	-										
		Left	AM			х						
	NB	Left/Through	PM			X						
		Through/Right	PM			X						
CSAH 103 (W Broadway Ave) / Maplebrook Pkwy		Right	AM			X					L	
	EB	-			-	<u> </u>		<u> </u>			<u> </u>	
	SB	-			-			<u> </u>	-		<u> </u>	
	WB	Left/Through/Right	PM			X						

					Scenario	o(s) with	1 Quevin	ıg Issue				
				2	023		2	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
			AM			х						
	NB	Left	РМ			x		x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Issues exists under 2050 No Build conditions
		Through	PM			X						
		Through/Right	РМ					x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Accomodations for pedestrians restricts expansion for northbound lanes
CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N)		Left	PM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E or worse	No	Median spacing allows for expansion to dual lefts when needed Monitor intersection operations until needed
CSAH 105 (W Broadway Ave) / CSAH 105 (85th Ave IV)		Through	PM		1	X]					
	EB	Through/Right	РМ					x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Median spacing allows for expansion to dual lefts when needed which will allow for more time allocated to through/right Monitor intersection operations until needed
	SB	Left	PM]			x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse	No	Movement does not impact upstream intersections
	WB	Left	РМ			x		x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse, and 95th percentile queue exceeds storage length	No	Median spacing allows for expansion to dual lefts when needed Monitor intersection operations until needed
		Right	PM			X	1					
	NB	Through/Right	PM			х						
CSAH 103 (W Broadway Ave) / 84th Ave N	EB	-			_							
	SB	-			-		-	<u> </u>				
	WB NB	-					-	<u> </u>				
	EB	-				<u> </u>					-	
CSAH 103 (W Broadway Ave) / College Park Dr	SB	-										
	WB	-										
	NB	-										
CSAH 103 (W Broadway Ave) / 82nd Ave N	EB	-										
Costi 105 (W broadway Aver/ 62110 Ave W	SB	-			-							
	WB	-										
	NB	-					-					
CSAH 103 (W Broadway Ave) / Candlewood Dr	EB SB	-				<u> </u>	-	<u> </u>			<u> </u>	
	SB WB	-				<u> </u>	-					
	NB	-										
	EB	-				<u> </u>	1					
CSAH 103 (W Broadway Ave) / 78th Ave N	SB	-										
	WB	-										
	NB	-										
CSAH 103 (W Broadway Ave) / Shopping Center Access	EB	Left/Through/Right	PM			X						
, , , , , , , , , ,	SAH 103 (W Broadway Ave) / Snopping Center Access SB	-										
	WB	-										

					Scenario	o(s) will	1 Queuin	g Issue				
				2	023		2	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Condifions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Miligalion Proposed?
	NB	-										
CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Bivd) / CSAH 152	EB	Left	PM]	x		x		95th percentile queue exceeds storage length, movement operates at LOS E or worse	No	Median spacing allows for expansion to dual lefts when needed Monitor intersection operations until needed
Bivuj / CSAR 152	SB	-]					
	WB	Through	PM		4		4	X		Movement operates at LOS E or worse	No	Movement does not impact upstream intersections
CCAU 120 (Breakly a Blud) (Chausing Courts 1	NB	-			-	<u> </u>	-			N		Provide the second s
CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103)	EB SB	Through Left	PM PM		-	<u> </u>	1	X		Movement operates at LOS E or worse		Poor LOS due to operations at downstream intersections
(West of CoAn 105)	WB		FIVI		1	<u> </u>	1	-		Movement operates at LOS E or worse		Poor LOS due to operations at downstream intersections
	NB					\vdash					-	
CSAH 130 (W Brooklyn Blvd) / Shopping Center Access		-										
(east of CSAH 103)	SB	-			1		1					
· · ·	WB	-			1		1					
	NB	-]					
CSAH 130 (W Broadway Ave) / 76th Ave N	EB	Left	PM					X		Movement operates at LOS E or worse	No	Movement does not impact upstream intersections
	SB	-			4		4					
	WB	Left	PM		-	L	-	X		Movement operates at LOS E or worse	No	Movement does not impact upstream intersections
	NB	-			4	L	4	<u> </u>			<u> </u>	
CSAH 130 (W Broadway Ave) / 75th Ave N	EB SB	-		-	-	<u> </u>	-	<u> </u>			-	
	WB			-		L	1	<u> </u>			-	
	NB				1		1					
	EB	-		<u> </u>	1	<u> </u>	1					
CSAH 130 (W Broadway Ave) / 74th Ave N	SB	-			1		1					
	WB	-										
	NB	-										
CSAH 130 (W Broadway Ave) / 73rd Ave N	EB	-										
	SB	-			-	L	4				<u> </u>	
	WB NB	-				<u> </u>					<u> </u>	
	EB	-		-		-	-				-	
CSAH 81 (Bottineau Blvd) / 73rd Ave N	SB	-				-					-	
	WB					<u> </u>	<u> </u>				<u> </u>	
	NB	-									<u> </u>	
CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) /		Left	PM					x		Average back-of-queue exceeds storage length, movement operates at LOS E or worse	No	Movement does not impact upstream intersections
71st Ave N	SB	-								·		
	WB	-										
	NB	-										
CSAH 130 (W Broadway Ave) / 71st Ave N	EB	-										
	SB	-										
	WB	-									<u> </u>	
	NB EB	-				<u> </u>		<u> </u>			<u> </u>	
CSAH 81 (Bottineau Blvd) / I-94 / I-694 WB Ramps	SB	-				-					-	
	WB	-		-	-	-	-				-	
	NB			-	-	-	<u> </u>				-	
	EB	-									<u> </u>	
CSAH 81 (Bottineau Blvd) / I-94 / I-694 EB Ramps	SB	-										
	WB	-										

					Scenari	o(s) witl	h Quevin	g Issue				
				20	023		2	050		Reasoning for Queuing Issue		
Intersection	Аррг	Movement	Peak Period	Existing Condifions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Miligation Proposed?
	NB	Through	PM					х		Movement operates at LOS E or worse	No	Pedestrian operations prioritized based on direction from stakeholders
	EB	Left	PM					Х		Movement operates at LOS E or worse	No	Movement does not impact upstream intersections
	SB	Left	PM					X		Movement operates at LOS E or worse	No	
CSAH 81 (Bottineau Blvd) / 63rd Ave N			AM					x	x	95th queue blocks upstream full-access intersection		Pedestrian operations prioritized based on direction from stakeholders
	WB	Right	PM					x		Movement operates at LOS E or worse and 95th queue blocks upstream full-access intersection	No	Pedestrian operations prioritized based on direction from stakeholders
	NB	-										
	EB	-										
63rd Ave N / Louisiana Ave N / Park and Ride Access	SB	-										
	WB	-					-					
	NB											
	EB	Left	PM			X						
CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Road)	SB						-					
	WB			<u> </u>					<u> </u>			
	NB			-	-	-	-					
	EB			-			-					
CSAH 10 (Bass Lake Road) / Sherburne Ave	SB			<u> </u>		-	-					
	WB	-							<u> </u>			
	NB	-				-	-					
	EB				<u> </u>	<u> </u>						
	SB					-	-					
CSAH 10 (Bass Lake Road) / Adair Ave N	WB	Right	AM					x	x	95th queue blocks upstream full-access intersection	No	Queuing due to transit stop in turn lane
		Ngrit	PM					x		95th queue blocks upstream full-access intersection	No	Queuing due to transit stop in turn lane
	NB	-						<u> </u>				
CSAH 81 (Bottineau Blvd) / Wilshire Blvd	EB	Left	PM					x		95th queue blocks upstream full-access intersection	No	Intersection spacing less than 100'
	SB	-						-				
	WB	-						-	<u> </u>			
	NB	-						-				
Wilshire Blvd / Lakeland Ave N	EB	-						-				
	SB	-				L		-				
	WB	-		-	-	-	-					
	NB	-						-				
CSAH 81 (Bottineau Blvd) / Corvallis Ave N	EB	-				L		L				
	SB	-						-				
	WB	-										

					Scenario	o(s) with	Queuin	g Issue				
		. .		2(023		2	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	E xisting Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Miligation Proposed?
	NB	-					L					
		Right	АМ	x		x		x	x	Movement operates at LOS E or worse and 95th queue blocks upstream full-access intersection	No	Poor LOS due to no right turn on red in place for safety and intersection spacing less than 100'
		Bur	РМ	×		x		x		Movement operates at LOS E or worse and 95th queue blocks upstream full-access intersection	No	lssues exists under no build conditions and intersection spacing less than 100'
	EB	Through	АМ					x	x	Movement operates at LOS E or worse and 95th queue blocks upstream full-access intersection	No	Intersection spacing less than 100'
CSAH 81 (Bottineau Blvd) / 47th Ave N		inrougn	РМ					x		Movement operates at LOS E or worse and 95th queue blocks upstream full-access intersection	No	Intersection spacing less than 100'
			AM					x	x	95th queue blocks upstream full-access intersection	No	Intersection spacing less than 100'
		Left	РМ					x		Movement operates at LOS E or worse and 95th queue blocks upstream full-access intersection	No	Intersection spacing less than 100'
	SB	-										
	WB	-										
	NB	-										
CSAH 81 (Bottineau Blvd) / TH 100 SB Ramps	EB	-					<u> </u>					
	SB WB	-			<u> </u>		<u> </u>					
	NB	-					-					
	EB	-					-					
CSAH 81 (Bottineau Blvd) / TH 100 NB Ramps	SB	-					<u> </u>					
	WB	-										
	NB	-					-					
CCALL 01 (Demission Divid) (Lebelsed Ave N (News)	EB	-										
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (North)	SB	-										
	WB	-										
	NB	-										
			AM	X	X							
CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N)	EB	Left	PM			x		x		95th percentile queue exceeds storage length	No	Average back of queue does not exceed storage length and movement operates at LOS D or better
	SB WB	-										
	NB	-										
	EB	-										
CSAH 9 (42nd Ave N) / CSAH 8 (W Broadway Ave)	SB	-					<u> </u>					
	WB						-					
	110		PM			x						
CSAH 81 (Bottineau Blvd) / 41st Ave N	NB	IB Left Right	PM					x		95th percentile queue exceeds storage length	No	Average back of queue does not exceed storage length and movement operates at LOS D or better
court of footment pixel 1 415t MAE IN	EB	-										
	SB	-										
	WB	-										

					Scenario	o(s) with	Queuin	g Issue				
				2	023		2	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freigh Event	(In Build Conditions)		Miligation Proposed?
		Left	PM			x		x		95th percentile queue exceeds storage length	No	Issue already exists in 2050 No Build conditions
	NB	Right	AM	x				x		95th percentile queue exceeds storage length	No	Issue already exists in Existing conditions
CSAH 81 (Bottineau Blvd) / 40th Ave N		Ngitt	PM	x				x		95th percentile queue exceeds storage length	No	Issue already exists in Existing and 2050 No Build conditions
	EB	Left	PM			X]					
	SB	Left	PM			X						
	WB	Left	PM			X						
		Right	PM			X						
	NB	-										
CSAH 81 (Bottineau Blvd) / Lakeland Ave N (South)	EB	-										
control (obtailed bird) / cateland Ave N (South)	SB	-										
	WB	-]					
	NB	-]					
CSAH 81 (Bottineau Blvd) / 36th Ave N	EB	Left	PM			x		x		95th percentile queue exceeds storage length	No	Issue already exists in 2050 No Build conditions
	SB				1		1					
	WB	-		-	1		1					
	NB	-			1		1					
	EB	-			1		1				-	
CSAH 81 (Bottineau Blvd) / 35th Ave N	SB			<u> </u>	1		1					
	WB	-			1		1					
	NB	-		-	1	<u> </u>	1				-	
		Left	PM	x	1	x	1	x		95th percentile queue exceeds storage length	No	Issue already exists in Existing and 2050 No Build conditions
CSAH 81 (Bottineau Blvd) / Abbott Ave N	EB	Right	PM	x		x	1	x		95th percentile queue exceeds storage length	No	Issue already exists in Existing and 2050 No Build conditions
	SB	-					1					
	WB	-										
	NB				1		1					
	EB	-			1		1					
CSAH 81 (W Broadway Ave) / N Oakdale Ave	SB				1		1					
	WB	-			1		1					
	NB	-					1					
	EB				1		1					
CSAH 153 (N Lowry Ave) / Theodore Wirth Pkwy	SB	-			1		1					
	WB	-					1					
	NB	-		-			1					
	EB	-		-			1					
CSAH 153 (N Lowry Ave) / N Washburn Ave	SB	-					1					
	WB	-					1					
	NB			1	1	<u> </u>	1				-	
CSAH 81 (W Broadway Ave) SB Ramps / Theodore	EB											
Wirth Pkwy	SB					<u> </u>						
WII ULFRWY	WB	-			1	<u> </u>	1				<u> </u>	
	NB	-			1	<u> </u>	1	\vdash			<u> </u>	
	EB			-		<u> </u>					-	
CSAH 81 (W Broadway Ave) / N 29th Ave		-		-	-	<u> </u>	1	\vdash			-	
	SB				-	<u> </u>	-	\vdash			<u> </u>	
	WB	-				L				L		

					Scenario	o(s) with	Quevin	ıg Issue				
				2	023		2	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Condifions	AM Existing + Freigh Event	No Build	AM No Build + Freight Event	Build	AM Build + Freigh Event	(In Build Conditions)		Mitigation Proposed?
	NB	-										
	EB	-			-		-					
CSAH 81 (W Broadway Ave) / N 26th Ave	SB	Left	PM					x		95th percentile queue exceeds storage length	No	Tum lane already extended to maximum length without significant right-of-way impacts
	WB	-										ngne-oi-way impacts
		Left	PM	x		x]	x		95th percentile queue exceeds storage length	No	Issue already exists in Existing and 2050 No Build conditions
	NB	Through	PM					x		95th percentile queue exceeds storage length	No	Average back of queue does not block upstream intersection
		Right	PM		-			x		95th percentile queue exceeds storage length	No	Average back of queue does not block upstream intersection
CSAH 81 (W Broadway Ave) / CSAH 2 (N Penn Ave) /	NEB	- Through	PM	x		<u> </u>	-					
McNair Ave	EB	Right	PM	X	-	<u> </u>	-					
		Left	PM	~	1	X						
	SB	Through	PM					x		95th percentile queue exceeds storage length	No	Average back of queue does not block upstream intersection
		Right	PM					x		95th percentile queue exceeds storage length	No	Turn lane length is constrained by upstream intersection
	WB	-				<u> </u>						
	NB EB	-			4	<u> </u>	-					
CSAH 81 (W Broadway Ave) / N Logan Ave	SB	-			1		1					
	WB	-										
	NB	-			1		1					
CSAH 81 (W Broadway Ave) / N Knox Ave	EB	-										
	SB											
	WB	-			-	<u> </u>	-					
	NB EB	-				<u> </u>	-				-	
	SB	-				<u> </u>						
CSAH 81 (W Broadway Ave) / N James Ave	WB	Through/Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-										
N Hillside Ave / N 21st Ave / N Irving Ave	EB	-										
it inside five / it 21st five / it it villig five	SB	-										
	WB	-			-		-					
	NB	- Three h /Disht			-		-					
CSAH 81 (W Broadway Ave) / N Irving Ave	EB SB	Through/Right	PM	X		X					-	
	WB	-				<u> </u>	-	<u> </u>				
	NB	-		<u> </u>								
	EB	-										
N 21st Ave / N Girard Ave	SB	-										
	WB	-										

					Scenario	o(s) with	Queuin	g Issue				
				20	023		2	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freigh Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Miligation Proposed?
		Left/Through	АМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
CSAH 81 (W Broadway Ave) / N Girard Ave	NB		PM AM		-	x	-	x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
		Right	РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	EB SB	Through/Right	PM		-	X	-				<u> </u>	
	WB	-			1	<u> </u>					-	
	NB	-			1		1					
N 21st Ave / N Fremont Ave	EB				1		1					
WZISCAVE/ WHEmonicave	SB	-										
	WB	-										
	NB EB	- Through/Right	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
			РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
CSAH 81 (W Broadway Ave) / N Fremont Ave	SB -	Left	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	30	Through/Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		Devent	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
	WB	Through	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-										
N 21st Ave / N Emerson Ave	EB	-										
	SB	-			-						<u> </u>	
	WB	-								I		

					Scenario	o(s) will	h Quevin	g Issue				
				20	023		2	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freigh Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Miligation Proposed?
	NB	-										
	EB	Through	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
CSAH 81 (W Broadway Ave) / N Emerson Ave		nicigi	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	SB	-					_					
	WB	Through/Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-]				1			
	EB	Through/Right	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
			PM					x		95th percentile queue exceeds storage length		back of quede does not exceed storage length
CSAH 81 (W Broadway Ave) / N Dupont Ave	SB	Left/Through/Right	РМ					x	-	95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	WB	Through/Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-							-			
N 21st Ave / N Bryant Ave	EB	-				<u> </u>	-		-			
	SB WB	-				<u> </u>	-	⊢	-			
	NB	-			-	<u> </u>	-	⊢	-			
	EB	-				<u> </u>	-				-	
N 21st Ave / N Aldrich Ave	SB	-				<u> </u>						
	WB	-			1				1			

					Scenario	o(s) with	Quevin	g Issue				
				2(023		2	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freigh Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	-			-		-					
	EB	Through/Right	АМ		-		-	x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
CSAH 81 (W Broadway Ave) / N Aldrich Ave			PM		_			x				
	SB	-			-	⊢	4	<u> </u>				
	WB	Through/Right	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
		moogiynigit	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-										
N 21st Ave / N Lyndale Ave	EB	-			-	<u> </u>	-	<u> </u>				
N 21St Ave / N Lyndale Ave	SB	Through	PM					x		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
	WB	-					1					
		Left	PM					x		95th percentile queue exceeds storage length,	No	Intersection improvements already planned by
	NB	Through/Right	PM		-	x		x		movement operates at LOS E 95th percentile queue exceeds storage length, movements operate at LOS E	No	Hennepin County to prioritize safety Queuing issue occurs in 2050 No Build and intersection improvements already planned by Hennepin County to prioritize safety
		Through	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
	EB	Through	РМ			x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		Right	AM]		-	X		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
CSAH 81 (W Broadway Ave) / N Lyndale Ave SB		Left	PM AM		-	X	-	x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being
	SR -		PM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Queuing issue occurs in 2050 No Build and Intersection improvements already planned by Hennepin County to prioritize safety
	50	Through/Right	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
			РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue occurs in 2050 No Build and Intersection improvements already planned by Hennepin County to prioritize safety
	WB	-								ļ		

					Scenario	o(s) with	Queuin	g Issue				
				2	023		2	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	-										
N 21st Ave / N 4th St	EB	-			-	<u> </u>	-					
	SB WB	-			-	<u> </u>	-					
	NB	-			1	<u> </u>		\vdash				
			AM	x		x		x				
	EB	Left/Through/Right	PM	X		X		х		95th percentile queue exceeds storage length	No	Movements operates at LOS D or better
	SB				1							
CSAH 81 (W Broadway Ave) / N 4th St	WB	Left/Through/Right	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
	WB Let	cere in order repre	РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-			1		1					
	EB	-			-							
	SB	-			ł	<u> </u>	-					
N 21st Ave / I-94 EB Ramps	WB	Left/Through	PM					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-										
		Through	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
	EB	niougn	РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		Right	AM					x		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
			PM	x		x		x		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
CSAH 81 (W Broadway Ave) / I-94 EB Ramps	SB	Left	PM					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	30	Through/Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	WB	Left	АМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
	100	Len	PM	x		x		x		95th percentile queue exceeds storage length		Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length

					Scenari	o(s) with	Queuin	g Issue					
				2(023		2	050		Reasoning for Queving Issue			
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?	
		Through	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length	
	NB	mough	РМ					×		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length	
		Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length	
		Left/Through/Right	АМ					x		95th percentile queue exceeds storage length		Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length	
CSAH 152 (N Washington Ave) / N 21st Ave	EB		РМ					x		95th percentile queue exceeds storage length, movements operate at LOS E	No	It is not anticipated to have a significant impact on the N 21st Ave/I- 94 intersection (all movements at that intersection operate at LOS D or better and the off-ramp 95th percentile queues are only ~400 ft	
			AM		Ī		1	x]	95th percentile queue exceeds storage length			
		Left	PM		İ		1	x		95th percentile queue exceeds storage length, movement operates at LOS F	Yes	Implement protected-permissive left phase	
		Through	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length	
	SB		PM					x		95th percentile queue exceeds storage length			
	SB	SB	Right	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length
		NEIN	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length	
	WB	-							1				
	NB	3 -							-				
N 22nd Ave / N 2nd St	EB	EB -					-		-		-		
	SB WB	•			-	<u> </u>	-	<u> </u>	-		-		
	NB						1				+		
	EB												
N 21st Ave / N 2nd St	SB	-			1		1						
	WB												

					Scenario	o(s) with	Queuin	g Issue						
				20	023		2	050		Reasoning for Queving Issue				
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?		
		Left	PM	X		X								
	ļ	Through	PM	x	4	x	4							
	NB	Right	PM	x		x		x		95th percentile queue exceeds storage length	No	Intersection operates at LOS D; capacity is already being increased by adding westbound right turn lane at the intersection; adding more lanes may negatively impact pedestrian operation		
	EB	Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Intersection operates at LOS D; capacity is already being increased by adding westbound right turn lane at the intersection; adding more lanes may negatively impact pedestrian operation		
			AM					x				Intersection operates at LOS D; capacity is already being increased		
		Left	РМ		-		1	x		95th percentile queue exceeds storage length, movement operates at LOS F	No	by adding westbound right turn lane at the intersection Adding more lanes may negatively impact pedestrian operation		
CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave)	SB	Through	РМ					x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Intersection operates at LOS D; capacity is already being increased by adding westbound right turn lane at the intersection; adding more lanes may negatively impact pedestrian operation		
	Γ		AM		1			x	1			Queuing issue was due to distance to upstream intersection being		
		Right	PM		+			x		95th percentile queue exceeds storage length	No	less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length		
		Thomas	АМ	x				x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft; movement operates at LOS D or better, and average back of queue does not exceed storage length		
	WB	Through	PM	×		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length		
			AM	x				x		95th percentile queue exceeds storage length				
		Right	PM	x		x	1	x		95th percentile queue exceeds storage length	Yes	Provide right turn lane at this approach		
		Left	PM					x		95th percentile queue exceeds storage length,		Mitigation at CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington		
	NB	Through	PM		+			x		movement operates at LOS F 95th percentile queue exceeds storage length, movement operates at LOS F	No	Ave) is expected to have a positive impact to this movement (anticipated to operate at LOS D)		
	NB	NB	NB	Right	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F	No	Mitigation at CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave) is expected to have a positive impact to this movement (anticipated to operate at LOS C)
CSAH 81 (W Broadway Ave) / N 2nd St EB	EB	Through/Right	РМ	×				x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length		
		Left	PM		I			x		95th percentile queue exceeds storage length,				
	SB —	Through/Right	PM		-			x		movement operates at LOS F 95th percentile queue exceeds storage length, movement operates at LOS F	No	Mitigation at CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave) is expected to have a positive impact to this movement		
	WB	Through/Right	PM		1	x		x		95th percentile queue exceeds storage length,	1	(anticipated to operate at LOS D)		
								Â		movement operates at LOS F				

					Scenario	o(s) witl	l Queuii	ig Issue				
			Peak Period	20	023		1	050		Reasoning for Queuing Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Buik	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	-										
	EB	-										
CSAH 81 (W Broadway Ave) / W River Rd	SB	-										
Control (* Clouding Ave) / W River Ru	WB	Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Mitigation at CSAH 81 (W Broadway Ave) / CSAH 152 (N Washington Ave) is expected to have a positive impact to this movement (anticipated to operate at LOS C)
		Through	PM		1	х			1			
	NB	Right	PM			x		x		95th percentile queue exceeds storage length, movement operates at LOS F		
	EB	-					_				1	
CSAH 152 (N Washington Ave) / 17th Ave / I-94 WB Ramp	SB	Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F	Yes	Modify ramp lane configuration and signal phasing
	WB	Left	PM			x		x		95th percentile queue exceeds storage length, movement operates at LOS F		
		Right	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F		
	NB	Left/Through	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F		
N 2nd St / N 17th Ave	EB	Left/Through/Right	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F	Yes	Convert to an all-way stop control
	SB	Left/Through/Right	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F		
	WB	-									1	
	NB	-										
CSAH 152 (N Washington Ave) / N 15th Ave	EB	-										
CSAH 152 (N Washington Ave) / N 15th Ave Si	SB											
	WB	-				<u> </u>	-	<u> </u>	-		<u> </u>	
	NB	-				<u> </u>	-	<u> </u>				<u> </u>
N 15th Ave / N 2nd St	EB	-				<u> </u>	-	<u> </u>	4		<u> </u>	
	SB	-			-		-	<u> </u>	-			<u> </u>
	WB	-								I		

					Scenari	o(s) with	Queuin	g Issue				
				20	023		2	050	_	Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F		Provide right turn lane at this approach
	ND	Through/Right	PM		1			x	1	95th percentile queue exceeds storage length, movement operates at LOS F	Yes	Provide right turn lane at this approach
			AM		1	x]			
		Through	PM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Already an issue under No Build conditions
	EB	Right	АМ			x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
			PM		I	x		x]	95th percentile queue exceeds storage length	No	Already an issue under No Build conditions
		Left	АМ					x		95th percentile queue length exceeds storage length and intersection operates at LOS E	Yes	Implement protected-permissive left phase
N Lyndale Ave / N Plymouth Ave		Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS F		
	SB	Through	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
			PM]	x		x]	95th percentile queue exceeds storage length, movement operates at LOS F	No	Already an issue under No Build conditions
		Dight	AM					x		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
		Right	PM			x		x		95th percentile queue exceeds storage length, movement operates at LOS F	No	Already an issue under No Build conditions
	WB	3 Left	АМ			x		x		95th percentile queue length exceeds storage length and intersection operates at LOS F	Yes	Implement protected-permissive left phase
			PM					x		95th percentile queue exceeds storage length, movement operates at LOS E		

					Scenario	o(s) with	Queuing	g Issue	:			
				20	023		20	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	Left	РМ					x		95th percentile queue exceeds storage length, movement operates at LOS F	No	Already an issue under No Build conditions; overall intersection operates at LOS E under 2050 No Build and 2050 Mitigated Build conditions; eastbound approach delay improves compared to 2050 No Build conditions
		Through/Right	PM	х	I	х] [
			AM			х						
		Left	PM			×		x		95th percentile queue exceeds storage length, movement operates at LOS F		
			AM	x	Ī	x] [x]	95th percentile queue exceeds storage length, movement operates at LOS F]	
	EB	Through	PM	x	1	x		x	1	95th percentile queue exceeds storage length, movement operates at LOS F	Yes	Implement protected-permissive left phase
	-	Dieba	АМ		Ī	x		x	1	95th percentile queue exceeds storage length, movement operates at LOS F	1	
CSAH 152 (N Washington Ave) / N Plymouth Ave		Right	PM		Ī			x	1	95th percentile queue exceeds storage length, movement operates at LOS F		
	SB	Left	АМ			x		x		95th percentile queue exceeds storage length, movement operates at LOS F	No	Already an issue under No Build conditions; overall intersection delay expected to improve from 2050 No Build conditions; queuing issue not expected to have significant impact on upstream study intersection of CSAH 152 (N Washington Ave) / N 15th Ave (operates at LOS A in 2050 Mitigated Build Conditions)
		Through	AM		1	х						
		Right	AM			х						
w8.		Left	АМ	x		×		x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Average delay of movement is within 2 seconds of LOS D/E threshold; queuing issue anticipated in No Build conditions with movement expected to operate at LOS F
	Through	AM	x	-	x		x	-	95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average	
			PM	x		×		x				back of queue does not exceed storage length

NP NP Interface NP NP Interface NP <th></th> <th></th> <th></th> <th></th> <th></th> <th>Scenario</th> <th>o(s) with</th> <th>Queuin</th> <th>g Issue</th> <th></th> <th></th> <th></th> <th></th>						Scenario	o(s) with	Queuin	g Issue				
NP MP MP X	Line of a				2	023		2	050		Reasoning for Queving Issue		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event			Miligation Proposed?
$ \begin{tabular}{ c c c c c c } \hline N P ymouth Ave / N 2nd St \\ C SAH 132 (N Washington Ave / N 10th Ave / N 2nd St \\ \hline N P ymouth Ave / N 10th Ave / N 10th Ave / N 10th Ave / N 2nd St \\ \hline N P ymouth Ave / N 10th Ave / N 10th Ave / N 10th Ave / N 2nd St \\ \hline N P ymouth Ave / N 10th Ave / N 1$			Left/Through	PM			x		x			No	The overall intersection operations improved from 2050 No Build
N Plymouth Ave / N 2nd St AM X X X X X X X N No decision of better, and serves basic of output on the serves basic output on		IND	Right	PM					x	1			
N Plymouth Ave / N 2nd St Left/Through PM X X X X Nerge back of queue does not exceed storage length, movement operates at LOS P Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) Vest length Provide Soft Not existioned effection (4, movement operates at LOS P) <th< td=""><td></td><td></td><td></td><td>АМ</td><td>x</td><td></td><td>x</td><td></td><td>x</td><td></td><td>movement operates at LOS D or better, and average back of queue does not exceed storage</td><td></td><td></td></th<>				АМ	x		x		x		movement operates at LOS D or better, and average back of queue does not exceed storage		
Neymount ave / N 2 hasts Se Left / introgen PAN C X No		EB	Lett/ Inrough	PM			x		x		Distance to upstream intersection < 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage	Yes	Provide 50 ft of eastbound left turn lane at this approach
No	N Plymouth Ave / N 2nd St		Left/Through	PM		1		1	x				
Left AM X <td></td> <td>58</td> <td>Right</td> <td>PM</td> <td></td> <td></td> <td></td> <td>1</td> <td>x</td> <td>1</td> <td>95th percentile queue exceeds storage length,</td> <td>Yes</td> <td>Modify the approach geometry to L / TR</td>		58	Right	PM				1	x	1	95th percentile queue exceeds storage length,	Yes	Modify the approach geometry to L / TR
WB PM X X Sth percentile queue exceeds storage length, movement operates at LOS F Yes Provide 100 ft of westbound left turn lane at this approx NB -			laft	AM			x]	x		95th percentile queue exceeds storage length,		
We AM X X X N Power operates at LOS F Yes Provide 100 H of Westbound left turn lane at this approx NB Right PM X X X N State of the constraint operates at LOS F State of the constraintoperates at LOS F State of the constrai				PM			x		x		movement operates at LOS F		
K X X X Sh percentiq queue scceds storage length, movement operates at LOS F Sh percentiq queue scceds storage length, movement operates at LOS F NB AM C X X X X Sh percentiq queue scceds storage length, movement operates at LOS F D NB Left AM C X X D D FB Left/Through/Right PM X X D D D FB Left/Through/Right PM X X D D D FB Left/Through/Right PM X X D D D D FB Left/Through/Right PM X X Z D		WB	Through	АМ			x		x			Yes	Provide 100 ft of westbound left turn lane at this approach
Right PM C X movement operates at LOS F C NB Left AM C X C				PM			x		x		movement operates at LOS F		
$ \begin{tabular}{ c c c c c } \hline K & K & K & K & K & K & K & K & K & K$			Right						x				
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			Left			-		-	<u> </u>	-		<u> </u>	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		NB				-		-	<u> </u>	1			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			Through		x	-							
CSAH 152 (N Washington Ave) / N 10th Ave Left AM X <td></td> <td></td> <td>Right</td> <td></td> <td></td> <td>1</td> <td></td> <td>1</td> <td></td> <td>1</td> <td></td> <td></td> <td></td>			Right			1		1		1			
Marcol AM X </td <td></td> <td>EB</td> <td></td> <td>PM</td> <td>X</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		EB		PM	X		X						
SB Through PM X X X Right AM X	CSAH 152 (N Washington Ave) / N 10th Ave		Left										
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			Through		-	4				-			
Right PM X X Image: Constraint of the second		SB				-		-	<u> </u>	-		 	
			Right			-		-	<u> </u>	-			
		WB	-	PINI		1		1		-			
		NB				-		1	<u> </u>				
			-							1		1	
N 10th Ave / N 2nd St 58 -	N 10th Ave / N 2nd St		-							1			
WB			-										
NB IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII													
		EB	-			4		-		-			
CSAH 152 (N Washington Ave) / N 8th Ave SB Left/Through/Right AM X	CSAH 152 (N Washington Ave) / N 8th Ave	SB	Left/Through/Right			-	<u> </u>			-			
PM X 95th percentile queue exceeds storage length No Movement operates at LOS D or better.	36				-	<u> </u>	-		-	95th percentile queue exceeds storage length	No	Movement operates at LOS D or better.	
WB Left/Through/Right PM X NB -			Left/Through/Right	PM		-	<u> </u>	-	×	-			
			-				<u> </u>	-	<u> </u>	-			
	N 10th Ave / N 3rd St						<u> </u>		<u> </u>				
30		SB										1	

					Scenari	o(s) with	Queuin	g Issue				
				20	023		2	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Miligation Proposed?
	NB	-										
N 10th Ave / N 4th St	EB	-			1]					
A LOUI AVE / A 401 St	SB	-										
	WB	-										
	NB											
N 10th Ave / N 5th St	EB	-									<u> </u>	
	SB	-										
	WB	-										
	NB	-			ļ		4					
N 8th Ave / N 5th St	EB	-			4		4	<u> </u>				
	SB	-			4	L	4				<u> </u>	
	WB	-			4	<u> </u>	4	<u> </u>				
	NB	•			-	<u> </u>	-	<u> </u>			-	
N 9th Ave / N 5th St SB	EB	-			-	<u> </u>	-	<u> </u>				
		-						└──				
	NB	Left/Through/Right	АМ		-			x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
N 8th Ave / N Oak Lake Ave			РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	EB	-			4		4					
	SB WB	- Left/Through/Right	PM		-	\vdash		×		95th percentile queue exceeds storage length, movement operates at LOS F	No	Minor diversion to alternative routes in the area expected to eliminate queuing issue
	NB					<u> </u>					1	annual daman (P. 1994).
		Through	AM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E/F	No	Already an issue under No Build conditions with movement operating at LOS F
N 7th St / W Lyndale Ave		Right	AM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E/F	No	Already an issue under No Build conditions with movement operating at LOS F
	SB	-									<u> </u>	
	WB	-				<u> </u>	-				<u> </u>	
N 7th St / E Lyndale Ave	EB	- Through	АМ		Ţ	x		x		95th percentile queue exceeds storage length, movement operates at LOS F	No	Already an issue under No Build conditions with movement operating at LOS F
			PM			x						
		-										
	WB	-										

					Scenario	o(s) with	Queuin	g Issue				
				20)23		20	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	PING ON	AM No Build + Freight Event	Plina	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
		Left/Through	AM	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB		PM	x		x		x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Already an issue under Existing and No Build conditions
		Right	AM PM	x		x		x		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
	EB	Left	AM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Already an issue under No Build conditions with overall intersection operating at LOS E
	EB	Through	AM			x		x		95th percentile queue exceeds storage length, movement operates at LOS E		Already an issue under No Build conditions with overall intersection
		Right	AM		Ī	x		x		95th percentile queue exceeds storage length, movement operates at LOS E	No	operating at LOS E
N 7th St / Oak Lake Ave N		Left	АМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		Leit	РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
58	30	Through (night	АМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		Through/Right	РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	WB	Through/Right	PM			x		x		95th percentile queue exceeds storage length	No	Queuing issue is already anticipated to develop under the 2050 No Build conditions with the movement delay improving during the 2050 Mitigated Build conditions

					Scenari	o(s) witl	h Queuini	g Issue				
Intersection		Movement	Peak Period	20	023		20	050		Reasoning for Queving Issue		Mitigation Proposed?
	Appr	MOVEMENT	Peak Pelioa	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		mingunon rroposeo:
		Left	AM					x		95th percentile queue exceeds storage length, movement operates at LOS F		
	NB	Len	PM		1			х		95th percentile queue exceeds storage length, movement operates at LOS F	No	Approach delays anticipated to be similar or better compared to 2050 No Build conditions
		Through/Right	PM		t	x	1	x	1	95th percentile queue exceeds storage length,	1	
		Through	АМ		-	x		x		movement operates at LOS F 95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
			PM		†		1	x	1	95th percentile queue exceeds storage length, movement operates at LOS E	Yes	Implement eastbound right overlap phase
	ЕВ	Right	АМ			x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave		Kignt	РМ			x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
			AM	x	†	x	1	x		95th percentile queue exceeds storage length, movement operates at LOS E		
		Left	PM		t			x	1	95th percentile queue exceeds storage length, movement operates at LOS E	1	
		-	AM	x	†	x		x	1	95th percentile queue exceeds storage length		Mitigations in adjacent or nearby intersections are expected to have a positive impact to the operation of the overall intersection
	SB	Through	PM		1	x	1	x	1	95th percentile queue exceeds storage length	No	improving from LOS E under Base Build conditions to LOS D under Mitigated Build conditions
			AM	x		x		x		95th percentile queue exceeds storage length]	
		Right	PM		Ī	x		x		95th percentile queue exceeds storage length	1	
	WB	, Left -	AM		Ī	x		x		95th percentile queue exceeds storage length, movement operates at LOS F	Vor	
								x		95th percentile queue exceeds storage length, movement operates at LOS F	Tes	Implement protected-permissive left phase
		Right	PM			X						

						Scenario	(s) with	Queuin	g Issue				
					20	23		2	050		Reasoning for Queving Issue		
	Intersection	Appr	Movement	Peak Period	Existing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	-	NB	-					-					
				AM			x		x		95th percentile queue exceeds storage length, movement operates at LOS F		Mitigation at TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave is
			Left -	PM					x		95th percentile queue exceeds storage length, movement operates at LOS E	No	expected to have a postive impact to these movements Under Mitigated Build conditions, they are anticipated to operate at LOS D
		EB	-	AM			x		x		95th percentile queue exceeds storage length, movement operates at LOS F		or better
			Through	РМ					x		95th percentile queue exceeds storage length	No	Mitigation at TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave is expected to help minimize the delay; eastbound through movement operates within 5 sec of LOS D/E threshold
THE COLOR		r SB	Left	АМ					x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Mitigation at TH 55 (Olson Memorial Hwy) / N 7th St / N 6th Ave is expected to improve the movement's operation to LOS D or better
TH 55 (Olson	H 55 (Olson Memorial Hwy) / N Oak Lake Ave / Border Ave	SB	Thomas	PM					x]	95th percentile queue exceeds storage length		Movement operates at LOS D or better
			Through	АМ					×		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
				PM					x		95th percentile queue exceeds storage length	No	Movement operates at LOS D or better
			Through	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		WB		AM			X]			
			Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	-	NB	-										
		FR .	Left	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	N 6th Ave / N 5th St EB		Through	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
		SB	-]			
		WB	-										
		NB	-					-	L	-			
	N 6th Ave / N 3rd St	EB SB	-					-	<u> </u>				
		WB -	-						L			+	

					Scenario	o(s) with	Queuin	g Issue				
				2	023		2	050		Reasoning for Queving Issue		
Intersection	Appr	Movement	Peak Period	Exisfing Conditions	AM Existing + Freight Event	No Build	AM No Build + Freight Event	Build	AM Build + Freight Event	(In Build Conditions)		Mitigation Proposed?
	NB	-			-		-					
		Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS E		Minor adjustments to signal timing improve the operation of this
		Through	PM		1			x		95th percentile queue exceeds storage length, movement operates at LOS E	No	movement from LOS E to LOS D or better under Mitigated Build conditions
	EB	5	АМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
CSAH 152 (N Washington Ave) / N 6th Ave		Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
-	SB	Through -	АМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average
			РМ		_	x		x				back of queue does not exceed storage length
	WB NB				+		-	<u> </u>			<u> </u>	
	EB	-			1		1					
N 5th Ave / N 3rd St	SB	-			1							
	WB	-			4		-					
	NB	Through/Right	PM					x		95th percentile queue exceeds storage length	No	Movements operate at LOS D or better
	EB	- Through / Nicht	АМ	x	-	x	-	x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
CSAH 152 (N Washington Ave) / N 5th Ave	30	Through/Right	РМ	x		x		x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
wB	Left	PM					x		95th percentile queue exceeds storage length, movement operates at LOS E	No	Minor adjustments to signal timing improve the operation of this movement from LOS E to LOS D or better under Mitigated Build conditions	
	WB	Through/Right	РМ					x		95th percentile queue exceeds storage length	No	Queuing issue was due to distance to upstream intersection being less than 400 ft, movement operates at LOS D or better, and average back of queue does not exceed storage length
	NB	-			1							
N 5th Ave / N 2nd St	EB	-			+		-				<u> </u>	
	SB WB	SB -			+	<u> </u>	-	<u> </u>			<u> </u>	
Analysis Notes:	WD	•										

Analysis Notes:

For the purposes of defining queuing issues, a queue within 25 feet of the noted storage length is considered to be exceeding storage length to account for variability in measurements.