



Appendix F

Supporting Technical Reports

F.2 BLRT Traffic Operations Technical Memorandum



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METRO Blue Line LRT Extension (BLRT)

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Date: November 12, 2015

Subject: BLRT Traffic Operations Technical Memorandum

1.0 Introduction

The Blue Line Light Rail Transit Extension (BLRT) project is proposed to be a 13-mile LRT project with 10 or 11 new stations that will operate from downtown Minneapolis through Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. The BLRT line will serve as an extension of the METRO Blue Line (Hiawatha Corridor) and will also connect to the METRO Green Line in downtown Minneapolis.

The traffic analysis presented in this memorandum is based on the project scope as presented to the Corridor Management Committee (CMC) through September 2015, and as shown in the BLRT Municipal Consent (MC) plans.

1.1 Purpose of Memorandum

This technical memorandum has been prepared in support of the BLRT project MC design and the Final Environmental Impact Statement (Final EIS). 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 at-grade rail crossings along or near the BLRT 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 BLRT alignment is shown in **Figure 1**. The proposed BLRT guideway will be at-grade for most of its alignment and includes segments with the LRT operating in an exclusive guideway and semi-exclusive street-running operation. In the middle segments of the alignment, the LRT guideway operates adjacent to the BNSF Railway (BNSF) Monticello Subdivision, from approximately 73rd Avenue in Brooklyn Park to Trunk Highway (TH) 55 in Minneapolis. The locations of the intersections and at-grade crossings studied as part of the BLRT traffic analysis are shown in **Figures 2-6**. The analysis was broken into four segments based on the characteristics of the roadway and BLRT alignment, as shown in **Figure 1** and described below:

- Operations and Maintenance Facility (OMF) to TH 610 in Brooklyn Park – BLRT alignment side-running along County State Aid Highway (CSAH) 103 (West Broadway Avenue) and Oak Grove Parkway.



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- TH 610 to CSAH 81 (Bottineau Boulevard)/73rd Avenue N intersection in Brooklyn Park – BLRT alignment generally center-running along CSAH 103 (West Broadway Avenue).
- CSAH 81 (Bottineau Boulevard)/73rd Avenue N intersection in Brooklyn Park to TH 55 (Olson Memorial Highway) in Minneapolis –BLRT alignment adjacent to the BNSF Monticello Subdivision freight rail alignment.
- TH 55 (Olson Memorial Highway) to Target Field Station in Minneapolis – BLRT alignment generally center-running along TH 55 (Olson Memorial Highway).

The alignment between 41st Avenue N in Robbinsdale and TH 55 (Olson Memorial Highway) in Minneapolis included only one intersection (Golden Valley Road/Theodore Wirth Parkway) in the traffic analysis because the BLRT alignment is generally grade separated from the roadway network through this area. The BLRT alignment crosses only one low-volume roadway (39 ½ Avenue N), and the crossing on 39 ½ Avenue N is a gated crossing with no nearby all-way stop or signalized intersections. The Golden Valley Road/Theodore Wirth Parkway intersection was included in the analysis based on the potential traffic impacts due to the proposed park-and-ride facility at the Golden Valley Road Station.

1.3 Data Collection

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

- 13-hour weekday counts at intersections including passenger vehicles, heavy vehicles, pedestrians, and bicycles
- Freight rail train lengths and crossing times
- On-site field survey to collect the following information:
 - Existing intersection geometry
 - Lane widths
 - Lane utilizations
 - Approximate peak hour queue lengths
 - Storage bay lengths to the nearest 10-ft increment
 - Approach speed limits
 - Traffic signal infrastructure, including emergency vehicle preemption
 - Relevant signage and pavement markings
- 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.

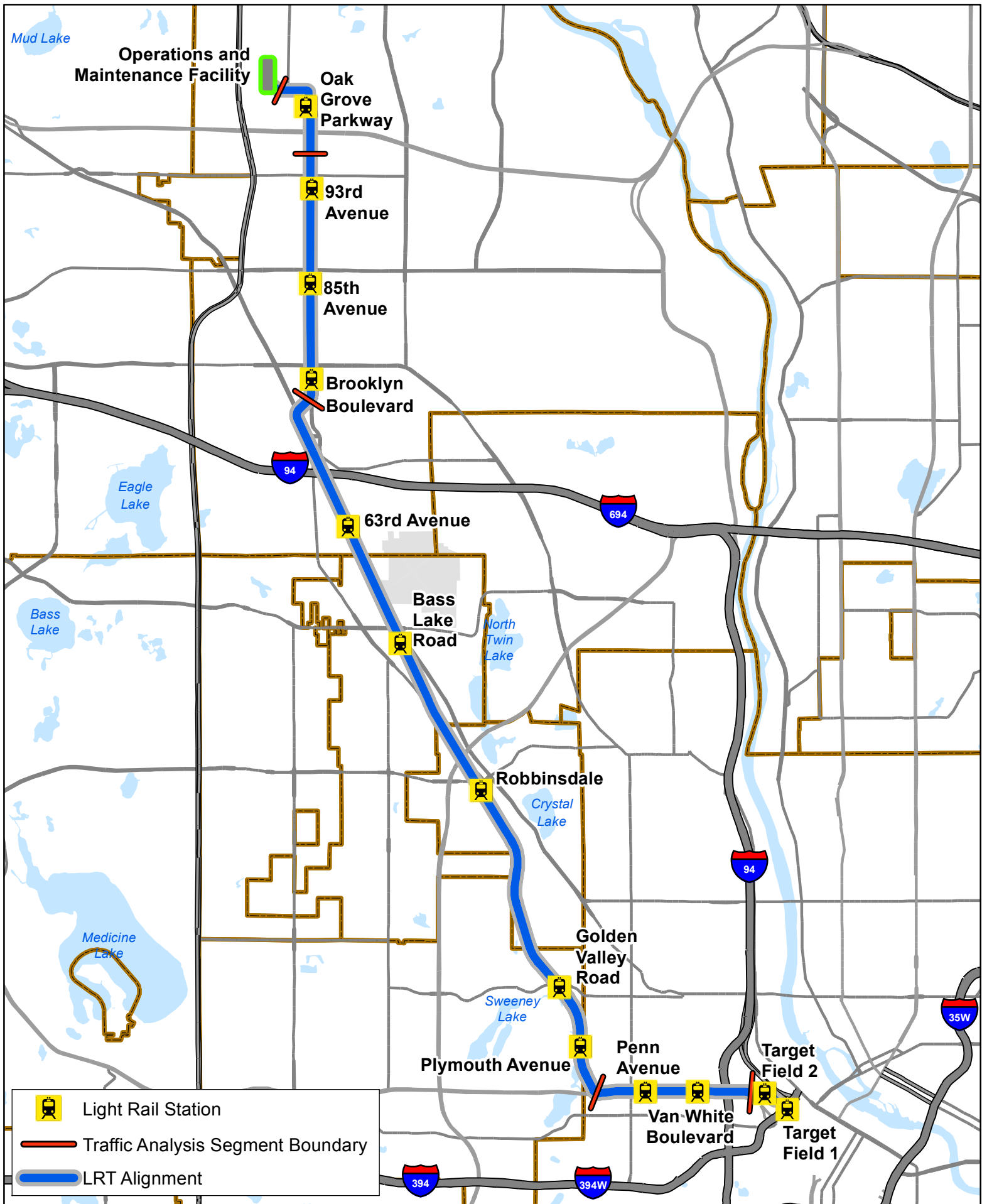


Figure 1. BLRT Project Study Area

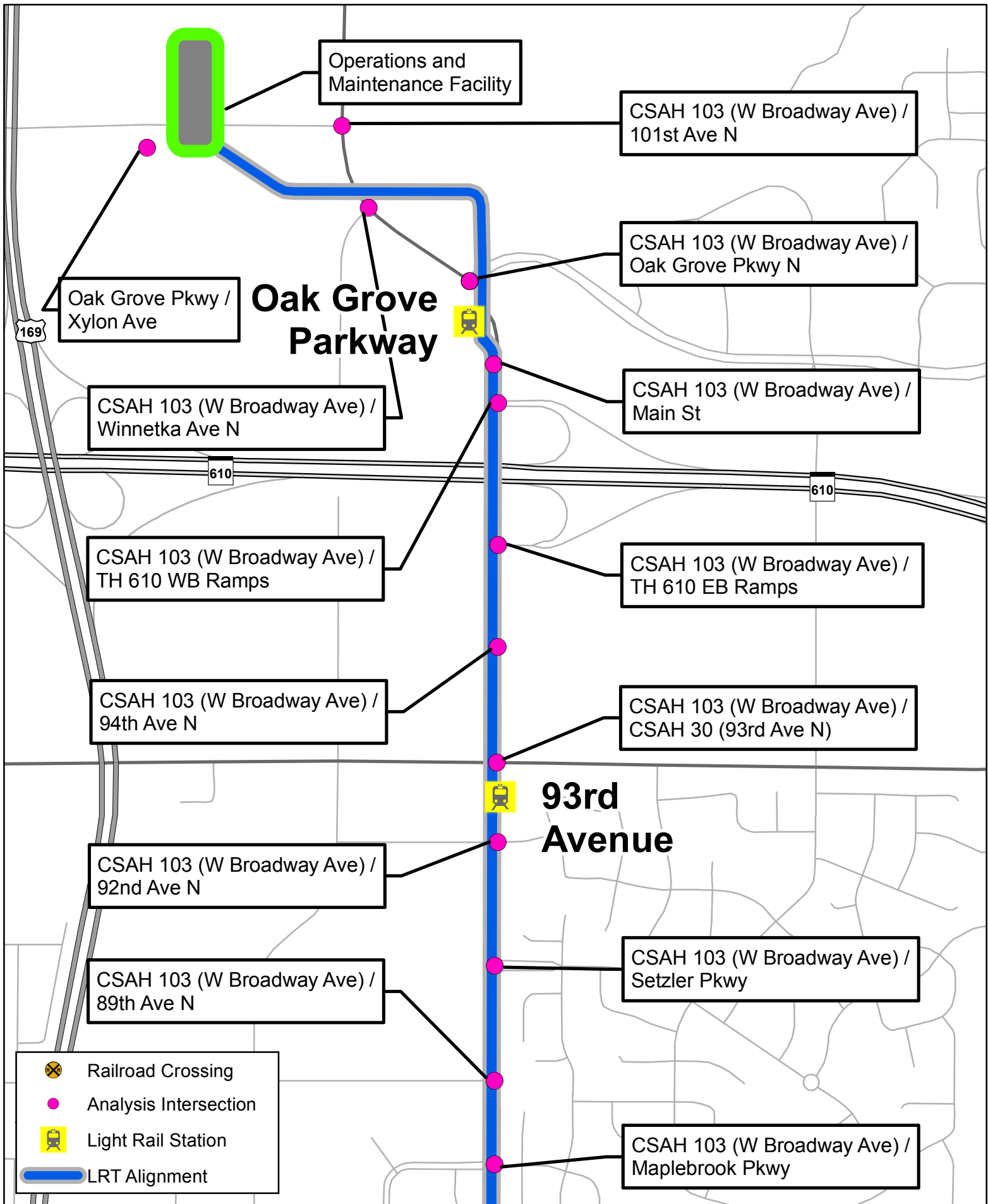
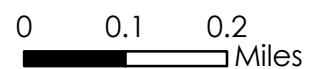


Figure 2. BLRT Traffic Analysis Intersections



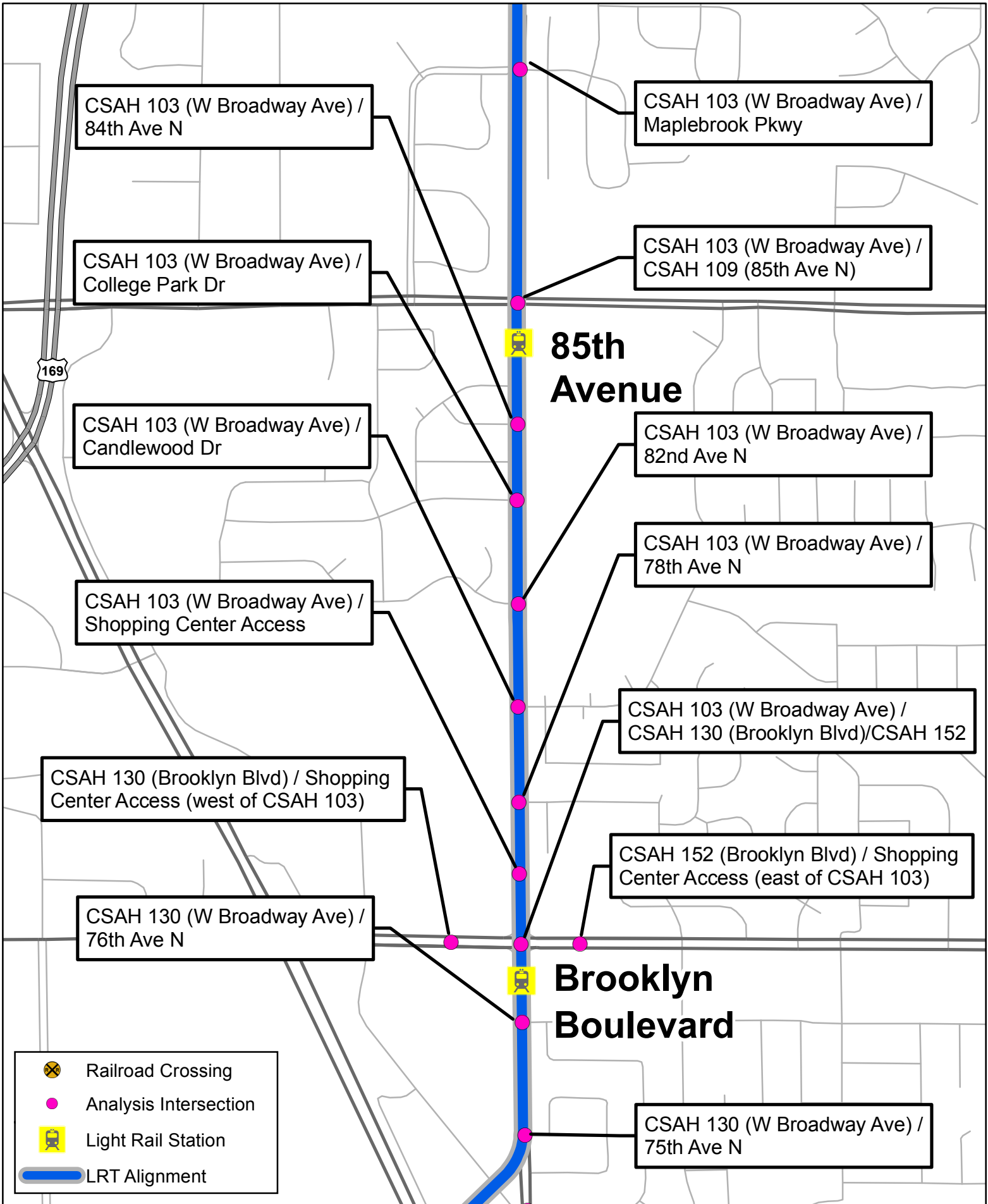
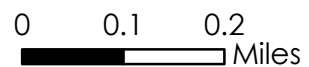


Figure 3. BLRT Traffic Analysis Intersections



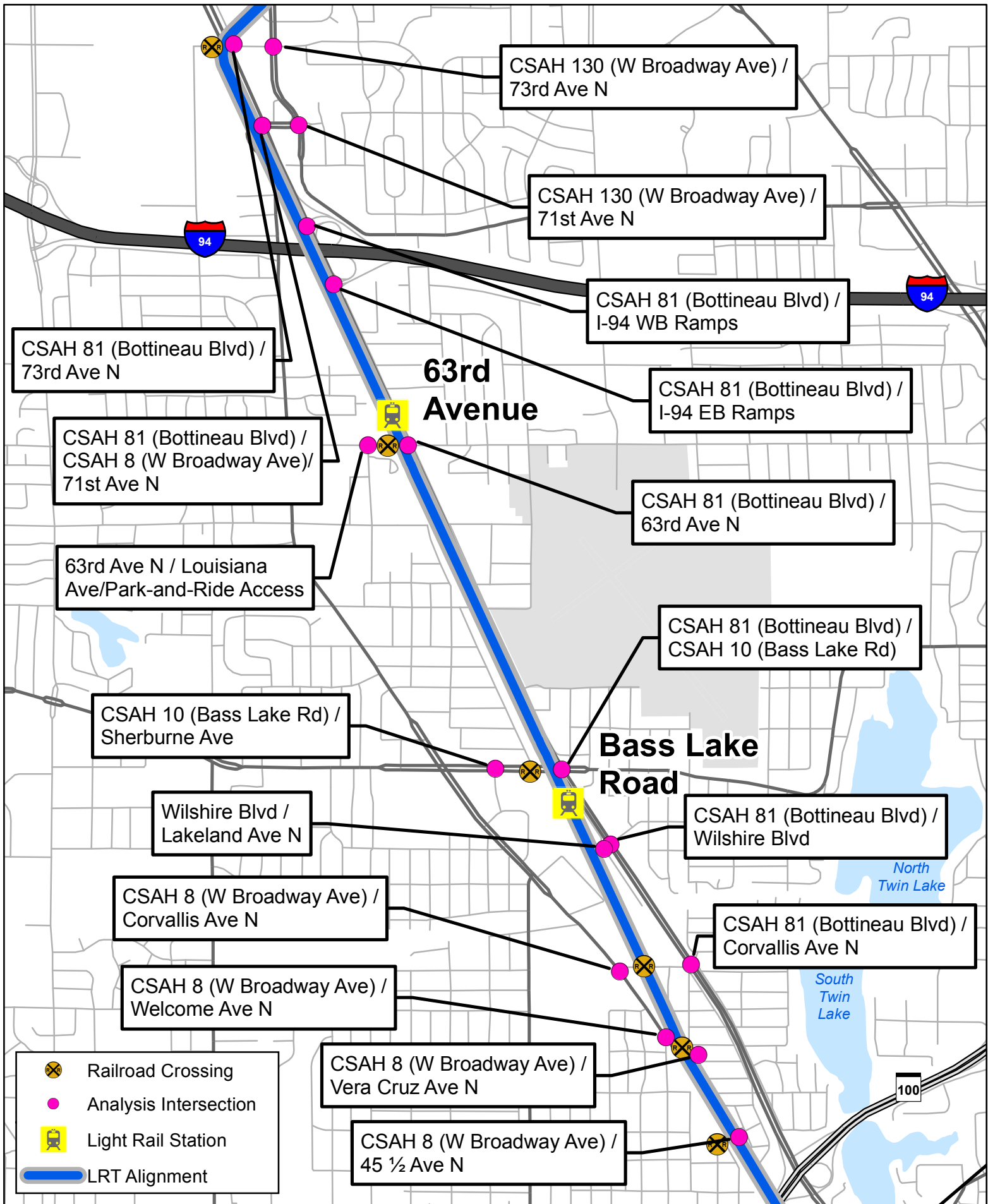
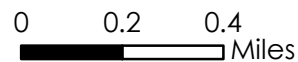


Figure 4. BLRT Traffic Analysis Intersections



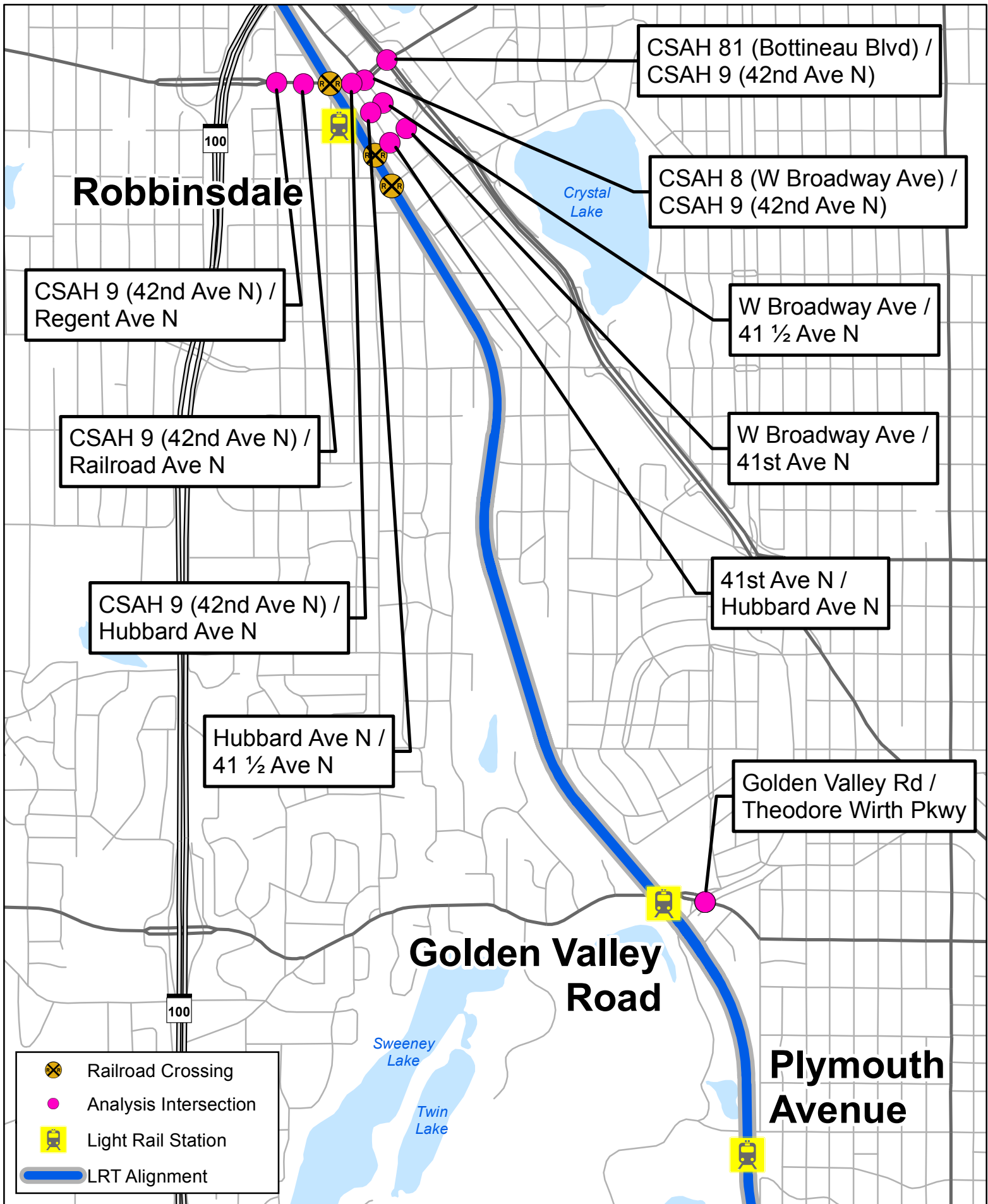


Figure 5. BLRT Traffic Analysis Intersections

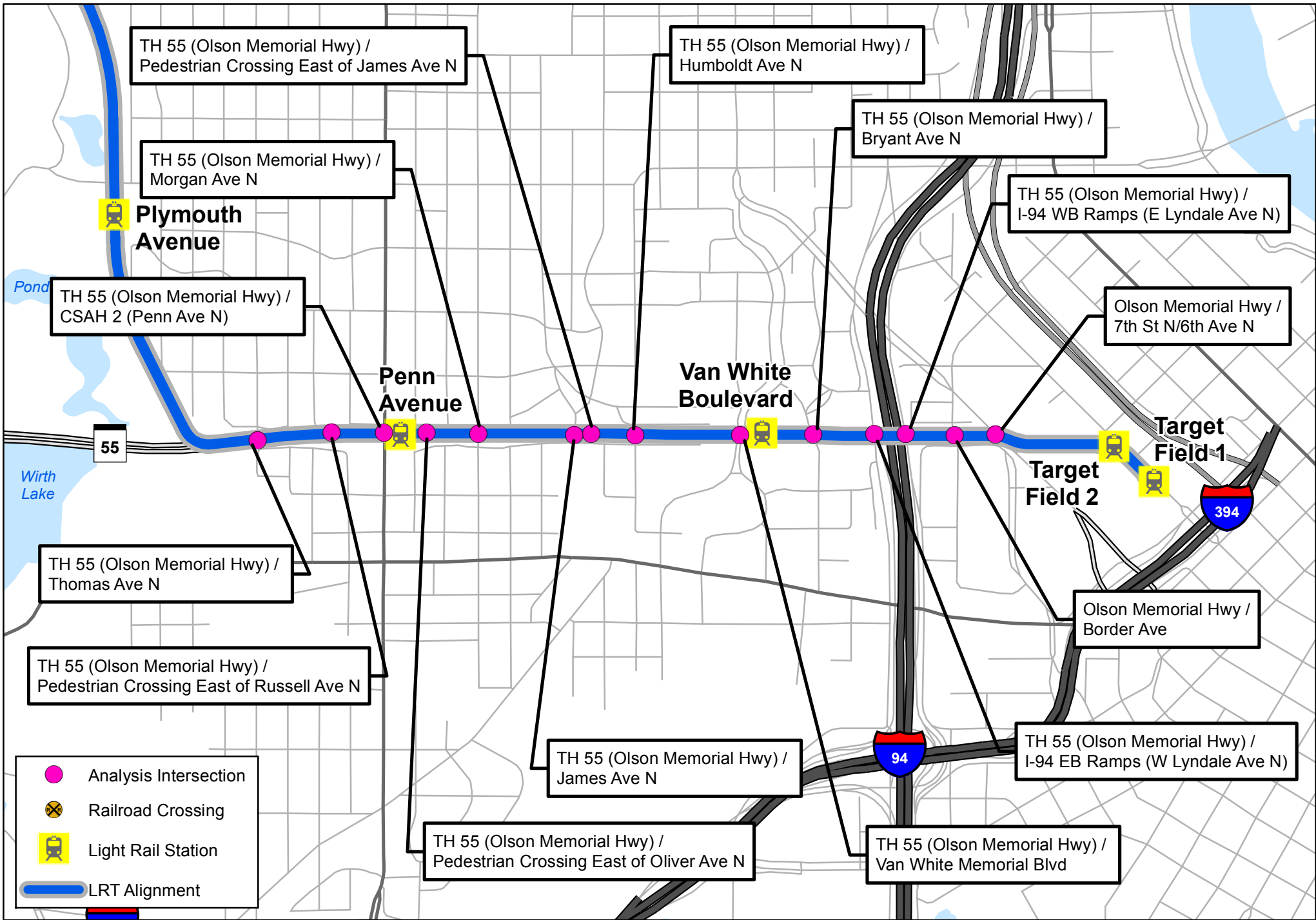
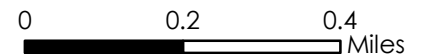


Figure 6. BLRT Traffic Analysis Intersections





2.0 Methodology

2.1 Key Intersections and At-Grade Crossings

To determine the impacts of the BLRT project on the local roadway network, a traffic operations analysis was conducted for signalized and unsignalized intersections within the vicinity of the new BLRT alignment or for intersections that would be expected to have increased traffic due to the BLRT stations, such as near park-and-ride facilities. The analysis area included signalized intersections with an LRT crossing in the intersection, the closest signalized or unsignalized intersections on both sides of an at-grade mid-block LRT crossing, and the intersections that provide access to a LRT station park-and-ride facility. At least two intersections were analyzed for each at-grade LRT crossing or park-and-ride facility. Additional intersections were analyzed based on their proximity to the crossing or park-and-ride facility and the potential for interaction with the crossing or park-and-ride facility. Grade separated crossings were not modeled because the LRT does not interact with pedestrian, bicycle, or vehicle traffic at these locations.

2.2 Forecast Traffic Volumes

The development of future year traffic forecasts for use in the simulation modeling was based on the preliminary 2040 socioeconomic data prepared by local communities and consistent with the Metropolitan Council's Thrive MSP 2040. This data was used as input to the Metropolitan Council's Regional Travel Demand Model. The outputs from the 2040 Regional Travel Demand Model were then compared to existing and historic traffic counts. This information, combined with the expected changes in land use and density, was utilized at a localized level to develop future year forecasts for each roadway segment within the project area. The traffic forecasting process is described in more detail in the *BLRT Traffic and Park-and-Ride Forecast Technical Memorandum* (2015).

2.3 Traffic Analysis Methodology

The approach to the traffic operations analysis is derived from the established methodologies documented in the 2010 *Highway Capacity Manual* (HCM). The HCM contains a series of analysis techniques for evaluating the operations of transportation facilities under specified conditions. The models for the BLRT 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 2.1**. 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 hour of 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 8:30 AM and PM peak hours were generally identified as occurring between 4:30 PM and 5:45 PM.



Table 2.1. Intersection Level of Service Definitions

| Level of Service | Signalized Intersection Delay (seconds per vehicle) | Unsignalized Intersection Delay (seconds per vehicle) |
|------------------|---|---|
| A | ≤10 | ≤10 |
| B | >10-20 | >10-15 |
| C | >20-35 | >15-25 |
| D | >35-55 | >25-35 |
| E | >55-80 | >35-50 |
| F | >80 | >50 |

Source: *Highway Capacity Manual 2010*

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 and/or controlled with automatic gates to provide safe movement of LRT and vehicles. All at-grade roadway/LRT crossings where LRT operates in the freight corridor were assumed to have automatic gates in accordance with the guidance and standards contained in the 2009 edition of the *Minnesota Manual on Uniform Traffic Control Devices (MMUTCD)*. The operation of automatic gates was also based on the standards in the *MUTCD*, which includes:

- gate arms start lowering a minimum of 3 seconds after the flashing-light signals start to operate;
- gate arms shall reach the horizontal position at least 5 seconds before the arrival of the rail traffic;
- gate arms shall remain in the down position as long as the rail traffic occupies the grade crossing; and
- gate arms should ascend to the upright position in 12 seconds or less, once the rail traffic leaves the grade crossing.

For a typical LRT crossing, the time from the gates being activated until they return to the upright position is approximately 45 to 50 seconds.

Signalized intersections within 200 feet of an at-grade rail crossing were identified for interconnection to the rail crossing. At these locations, the signal is proposed to be preempted by the rail crossing, in order to provide for clearance of vehicle queues from the tracks prior to the gate arms being lowered.

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



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:
 - Average back-of-queue exceeds storage length
 - 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. Where the need for queue mitigation was identified based on these criteria, improvements were added to the Build modeling and have been incorporated into the BLRT project. These improvements are listed in Section 5.1, along with all improvements that have been identified to be built as part of the BLRT 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 2014 when the data collection was completed. The existing peak hour traffic volumes, which are based on the counts conducted in 2014, are provided in **Appendix A**. The geometrics and intersection control for the existing conditions are shown in the intersection layout tables provided in **Appendix B**.

The AM peak hour was calculated to be the highest volume hour between 7:00 AM and 8:30 AM and the PM peak hour was calculated to be the highest volume hour between 4:30 PM and 5:45 PM for all intersections, based on the turning movement data collected within the study area.

Existing information collected along the freight rail corridor shows 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 corridor in the AM peak hour, between 7:30 and 8:00 AM. No freight trains have been observed during the PM peak hour.

3.2 Existing Conditions Traffic Modeling Results

The existing operations results are presented for each of the four modeling areas in the following sections.

3.2.1 OMF to TH 610

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. All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 3.1** below.



No queuing issues were identified in the Existing conditions.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 3.1. OMF to TH 610 – Existing Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | |
|---|--|-------------|
| | AM Existing | PM Existing |
| CSAH 103 (W Broadway Ave)/ 101 st Ave N* | 0.3 A | 3.1 A |
| CSAH 103 (W Broadway Ave)/ Winnetka Ave N* | 0.2 A | 0.9 A |
| CSAH 103 (W Broadway Ave)/ Oak Grove Pkwy | 10.0 A | 18.9 B |
| CSAH 103 (W Broadway Ave)/ TH 610 WB Ramps | 14.5 B | 19.6 B |
| CSAH 103 (W Broadway Ave)/ TH 610 EB Ramps | 11.7 B | 13.5 B |

*Side street stop-controlled intersection

3.2.2 TH 610 to CSAH 81 (Bottineau Boulevard)/73rd Avenue N

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. All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 3.2** below.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- CSAH 103 (West Broadway Avenue)/CSAH 30 (93rd Avenue N) – Eastbound left-turn

The queuing issue at CSAH 103 (West Broadway Avenue)/CSAH 30 (93rd Avenue N) is due to heavy demand for that movement in the PM peak and the single through lanes on the eastbound, westbound, and northbound approaches that limit the green time available for the eastbound left-turn movement.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 3.2. TH 610 to CSAH 81/73rd Avenue N – Existing Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | |
|--|--|-------------|
| | AM Existing | PM Existing |
| CSAH 103 (W Broadway Ave)/ 94 th Ave N* | 1.8 A | 1.8 A |
| CSAH 103 (W Broadway Ave)/ | 29.8 | 52.4 |



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| Intersection | Overall Intersection | |
|--|---|----------------|
| | Average Delay (seconds/vehicle) and LOS | |
| | AM Existing | PM Existing |
| CSAH 30 (93 rd Ave N) | C | D |
| CSAH 103 (W Broadway Ave)/ 92 nd Ave N* | 1.9 A | 7.1 A |
| CSAH 103 (W Broadway Ave)/ Setzler Pkwy* | 1.7 A | 1.5 A |
| CSAH 103 (W Broadway Ave)/ 89 th Ave N* | 2.4 A | 1.3 A |
| CSAH 103 (W Broadway Ave)/ Maplebrook Pkwy* | 2.3 A | 3.4 A |
| CSAH 103 (W Broadway Ave)/ CSAH 109 (85 th Ave N) | 31.1 C | 26.6 C |
| CSAH 103 (W Broadway Ave)/ 84 th Ave N | 11.0 B | 8.8 A |
| CSAH 103 (W Broadway Ave)/ College Park Dr* | 0.6 A | 0.5 A |
| CSAH 103 (W Broadway Ave)/ 82 nd Ave N* | 0.5 A | 0.5 A |
| CSAH 103 (W Broadway Ave)/ Candlewood Dr* | 1.8 A | 2.3 A |
| CSAH 103 (W Broadway Ave)/ 78 th Ave N* | 0.3 A | 0.7 A |
| CSAH 103 (W Broadway Ave)/ Shopping Center Access | 5.2 A | 13.0 B |
| CSAH 103 (W Broadway Ave)/ CSAH 130 (Brooklyn Blvd)/ CSAH 152 | 25.3 C | 27.7 C |
| CSAH 130 (Brooklyn Blvd)/ Shopping Center Access (west of CSAH 103) | 4.6 A | 15.3 B |
| CSAH 152 (Brooklyn Blvd)/ Shopping Center Access (east of CSAH 103)* | 0.9 A | 1.7 A |
| CSAH 130 (W Broadway Ave)/ 76 th Ave N | 6.0 A | 14.5 B |
| CSAH 130 (W Broadway Ave)/ 75 th Ave N* | 0.9 A | 1.2 A |
| CSAH 130 (W Broadway Ave)/ 74 th Ave N* | 1.1 A | 1.4 A |
| CSAH 130 (W Broadway Ave)/ 73 rd Ave N | 5.2 A | 7.2 A |

*Side street stop-controlled intersection



3.2.3 CSAH 81 (Bottineau Boulevard)/73rd Avenue N to TH 55 (Olson Memorial Highway)

The location and control of the existing freight rail crossings on the BNSF Monticello Subdivision within the BLRT project area are summarized in **Table 3.3** below.

Table 3.3. Existing Conditions Rail Crossing Treatments

| Crossing Location | Existing Crossing Control |
|--|--|
| 73 rd Ave N | Flashers; preemption of CSAH 81 (Bottineau Blvd)/73 rd Ave N traffic signal |
| 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 |
| I-94/I-694 | Grade separated under I-94/I-694 |
| 63 rd Ave N | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/63 rd Ave N traffic signal |
| CSAH 10 (Bass Lake Rd) | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 10 (Bass Lake Rd) traffic signal |
| Corvallis Ave N | Flashers |
| CSAH 8 (W Broadway Ave) | Flashers |
| 45½ Ave N | Flashers |
| TH 100 | Grade separated over TH 100 |
| CSAH 9 (42 nd Ave N) | Flashers |
| 41 st Ave N | Flashers and automatic gates |
| 39½ Ave N | Flashers and automatic gates |

The data collected along the BNSF Monticello Subdivision in 2014 showed that trains typically travel through the corridor in the AM peak hour, between 7:30 and 8:00 AM. No freight trains have been observed during the PM peak hour. Therefore, the AM peak hour analysis was conducted both with and without a freight event. The assumed freight event was approximately one minute in duration, which is consistent with the existing freight activity in the corridor. No freight events were analyzed for the PM peak hour.

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 Golden Valley Road/Theodore Wirth Parkway intersection was modeled in Synchro/SimTraffic because it does not have any nearby at-grade crossings with freight rail or proposed crossings with light rail transit (LRT). All other intersections were modeled in VISSIM based on the existing freight crossings and proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 3.4** below.

No queuing issues were identified in the Existing conditions.

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**.



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Table 3.4. CSAH 81/73rd Avenue N to TH 55 (Olson Memorial Highway) – Existing Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | |
|---|--|---------------------------------|----------------|
| | AM Existing No Freight Event | AM Existing Freight Event | PM Existing |
| CSAH 81 (Bottineau Blvd)/ 73 rd Ave N | 9.5 A | 10.0 A | 18.1 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 8 (W Broadway Ave)/ 71 st Ave N | 21.6 C | 22.9 C | 26.1 C |
| CSAH 130 (W Broadway Ave)/ 71 st Ave N | 7.6 A | 7.5 A | 15.6 B |
| CSAH 81 (Bottineau Blvd)/ I-94 WB Ramps | 6.4 A | 6.4 A | 6.5 A |
| CSAH 81 (Bottineau Blvd)/ I-94 EB Ramps | 26.9 C | 26.9 C | 35.1 D |
| CSAH 81 (Bottineau Blvd)/ 63 rd Ave N | 30.9 C | 31.2 C | 31.2 C |
| 63 rd Ave N/Louisiana Ave/ Park-and-Ride Access | 1.7 A | 1.7 A | 1.9 A |
| CSAH 81 (Bottineau Blvd)/ CSAH 10 (Bass Lake Rd) | 23.4 C | 24.2 C | 36.0 D |
| CSAH 10 (Bass Lake Rd)/ Sherburne Ave | 6.1 A | 6.0 A | 17.4 B |
| CSAH 81 (Bottineau Blvd)/ Wilshire Blvd | 10.7 B | 11.8 B | 13.8 B |
| Wilshire Blvd/Lakeland Ave N | 2.1 A | 2.1 A | 5.5 A |
| CSAH 81 (Bottineau Blvd)/ Corvallis Ave N | 11.9 B | 13.0 B | 16.2 B |
| CSAH 8 (W Broadway Ave)/ Corvallis Ave N* | 2.3 A | 2.6 A | 3.5 A |
| CSAH 8 (W Broadway Ave)/ Welcome Ave N* | 0.6 A | 1.1 A | 1.3 A |
| CSAH 8 (W Broadway Ave)/ Vera Cruz Ave N* | 0.4 A | 0.7 A | 0.8 A |
| CSAH 8 (W Broadway Ave)/ 45 ½ Ave N | 0.9 A | 1.0 A | 1.0 A |
| CSAH 8 (W Broadway Ave)/ CSAH 9 (42 nd Ave N) | 14.8 B | 14.8 B | 19.7 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 9 (42 nd Ave N) | 23.0 C | 22.9 C | 26.5 C |
| CSAH 9 (42 nd Ave N)/ Hubbard Ave*,1 | 0.6 A | 0.7 A | 1.4 A |
| CSAH 9 (42 nd Ave N)/ Railroad Ave N | 0.7 A | 1.1 A | 0.9 A |



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| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | |
|--|--|---------------------------------|----------------|
| | AM Existing No Freight Event | AM Existing Freight Event | PM Existing |
| CSAH 9 (42 nd Ave N)/ Regent Ave N | 2.1 A | 2.1 A | 1.7 A |
| W Broadway Ave/ 41 1/2 Ave N* | 8.8 A | 8.8 A | 12.3 B |
| Hubbard Ave/ 41 1/2 Ave N* | 3.6 A | 3.7 A | 3.1 A |
| Hubbard Ave/ 41 st Ave N* | 7.9 A | 8.0 A | 8.5 A |
| W Broadway Ave/ 41 st Ave N* | 7.8 A | 7.8 A | 10.0 A |
| Golden Valley Rd/ Theodore Wirth Pkwy** | 8.8 A | N/A | 16.0 C |

*Side street stop-controlled intersection

** All-way stop-controlled intersection

¹ Left-turn movements limited to emergency vehicles and buses only.

3.2.4 TH 55 (Olson Memorial Highway) to Target Field Station

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:

- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) in the PM peak

All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 3.5** on the following page.

The poor LOS at the TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) intersection is due to the high traffic volumes and the current split phasing of the northbound and southbound approaches, which leads to inefficiencies at the intersection.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- TH 55 (Olson Memorial Highway)/Thomas Avenue N – Southbound approach
- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) – Eastbound through and right-turn movements
- TH 55 (Olson Memorial Highway)/Morgan Avenue N – Southbound approach
- TH 55 (Olson Memorial Highway)/Humboldt Avenue N – Northbound approach
- TH 55 (Olson Memorial Highway)/Van White Memorial Boulevard – Northbound through and right-turn movements
- TH 55 (Olson Memorial Highway)/Bryant Avenue N – Northbound approach
- TH 55 (Olson Memorial Highway)/I-94 EB Ramps (W Lyndale Avenue N) – Southbound right-turn movement



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The queuing issues on Thomas Avenue N, Morgan Avenue N, Humboldt Avenue N, Van White Memorial Boulevard, and Bryant Avenue N are all due to the location of the frontage road zero to 50 feet from the intersection with TH 55 (Olson Memorial Highway). This means that one to two vehicles queued at the stop bar would exceed the storage distance. However, these queues are not considered to be operational deficiencies because the approach volumes are generally low and do not cause operational or safety issues upstream.

The queues on TH 55 (Olson Memorial Highway) at CSAH 2 (Penn Avenue N) and on I-94 EB Ramps (W Lyndale Avenue N) at TH 55 (Olson Memorial Highway) are due to high volumes of traffic demand in peak hours. The queue on TH 55 (Olson Memorial Highway) at CSAH 2 (Penn Avenue N) has the potential to cause operational and safety issues due to the volume and speed of traffic on this approach. The queue on the southbound approach of TH 55 (Olson Memorial Highway)/I-94 EB Ramps (W Lyndale Avenue N) is a significant distance from the I-94 exit and in a lower-speed, signalized roadway segment (30 mph).

The full table of existing conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 3.5. TH 55 (Olson Memorial Highway) to Target Field Station – Existing Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | |
|---|---|-----------|
| | AM | PM |
| | Existing | Existing |
| TH 55 (Olson Memorial Hwy)/ Thomas Ave N* | 2.8 A | 8.3 A |
| TH 55 (Olson Memorial Hwy)/ CSAH 2 (Penn Ave N) | 43.7 D | 82.0 F |
| TH 55 (Olson Memorial Hwy)/ Morgan Ave N | 7.2 A | 7.8 A |
| TH 55 (Olson Memorial Hwy)/ James Ave N* | 4.9 A | 4.2 A |
| TH 55 (Olson Memorial Hwy)/ Humboldt Ave N | 9.1 A | 7.2 A |
| TH 55 (Olson Memorial Hwy)/ Van White Memorial Blvd | 15.3 B | 10.6 B |
| TH 55 (Olson Memorial Hwy)/ Bryant Ave N | 8.6 A | 8.1 A |
| TH 55 (Olson Memorial Hwy)/ I-94 EB Ramps (W Lyndale Ave N) | 25.3 C | 21.5 C |
| TH 55 (Olson Memorial Hwy)/ I-94 WB Ramps (E Lyndale Ave N) | 23.8 C | 28.9 C |
| Olson Memorial Hwy)/ Border Ave N | 11.5 B | 21.9 C |
| Olson Memorial Hwy)/ 7 th St N/ 6 th Ave N | 27.2 C | 30.5 C |

*Side street 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, with the following exception:

- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) in the PM peak

The poor LOS at the TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) intersection is due to the high traffic volumes and the current split phasing of the northbound and southbound approaches, which leads to inefficiencies at the intersection.

4.0 No Build Analysis

The No Build modeling was conducted to identify the expected traffic operations at the Opening Year of the BLRT project (2021) and for the forecast horizon year (2040). The assumptions, methodology, and results of the No Build conditions analysis are presented in the following sections.

4.1 No Build Conditions Assumptions

Opening Year and 2040 forecast peak hour volumes were based on the forecast No Build daily traffic volumes developed for key roadway segments within the study area, as described in Section 2.2. The Opening Year forecast daily traffic volumes were developed assuming a constant rate of growth between the Existing and 2040 conditions. The turning movement volumes for No Build AM and PM peak in the Opening Year and 2040 conditions are provided in **Appendix A**.

The No Build analysis was based on the future year No Build traffic volumes, existing roadway geometrics and rail crossing treatments, and existing signal operations. Geometric improvements assumed in the No Build analysis are shown in the intersection layouts provided in **Appendix B**, and were based on projects that were completed since 2014 or are currently programmed:

- CSAH 81 (Bottineau Boulevard) from TH 100 to Wilshire Boulevard restriped from a four-lane roadway to a six-lane roadway, completed in 2015 by Hennepin County.
- C-Line arterial bus rapid transit (BRT) construction on CSAH 2 (Penn Avenue N) and TH 55 (Olson Memorial Highway) currently planned for 2017 by the Metropolitan Council.
- CSAH 81 (Bottineau Boulevard) reconstruction from a four-lane to a six-lane roadway from 63rd Avenue N to CSAH 8 (West Broadway Avenue)/71st Avenue N, currently planned for 2016-2018 by Hennepin County.
- CSAH 81 (Bottineau Boulevard) reconstruction from a four-lane to a six-lane roadway from CSAH 8 (W Broadway Avenue)/71st Avenue N to TH 169, currently planned for 2019 by Hennepin County.
- CSAH 103 (West Broadway Avenue) reconstruction from a two-lane to a four-lane roadway from 78th Avenue N to CSAH 30 (93rd Avenue N) currently planned for 2018-2020 by Hennepin County.

Hennepin County and the City of Brooklyn Park have not yet determined if a new traffic signal will be constructed at the CSAH 103 (West Broadway Avenue)/Maplebrook Parkway intersection as part of the CSAH 103 (West Broadway Avenue) reconstruction project. Therefore, scenarios have been modeled with the intersection as an unsignalized right-in/right-out intersection or a signalized full-access intersection.



The City of Brooklyn Park has been studying a new interchange at TH 169/101st Avenue N and this project is currently in the preliminary design phase. However, the new interchange has not been programmed and is not shown in the Metropolitan Council 2040 Transportation Policy Plan (TPP). Due to the significant impacts that this interchange will have on roadway capacity and traffic flow in the area north of TH 610 and to better capture the expected impacts of the BLRT project, 2040 scenarios have been analyzed both with and without the new interchange.

For other regional improvements that were assumed in the regional travel demand model and the forecasting process, refer to *BLRT Traffic and Park-and-Ride Forecast Technical Memorandum (2015)*.

No improvements were assumed at any of the existing rail crossings. Signal timing was assumed to be optimized in the Opening Year (2021) and 2040 analysis. The signal timings were optimized as part of the VISSIM simulation models. The CSAH 103 (West Broadway Avenue), CSAH 81 (Bottineau Boulevard), and TH 55 (Olson Memorial Highway) corridors were all assumed to operate with coordinated and interconnected signals. Pedestrian crossings of TH 55 (Olson Memorial Highway) were assumed to be timed for one-stage crossings similar to the existing operations.

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

4.2 No Build Conditions Traffic Modeling Results

The same four 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 OMF to TH 610

The results of the Opening Year AM and PM peak hour analysis showed that all intersections would be expected to operate at overall LOS D or better in the No Build scenarios. The results of the 2040 AM and PM peak hour analysis showed that all intersections, which are listed below, would be expected to operate at overall LOS E or F in the No Build scenarios.

- CSAH 103 (West Broadway Avenue)/101st Avenue N in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/Winnetka Avenue N in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/Oak Grove Parkway in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/TH 610 WB Ramps in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/TH 610 EB Ramps in the 2040 AM and PM peaks

All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 4.1** and **Table 4.2** below.

Movements for which queuing issues were identified in one or more of the 2040 scenarios were as follows:

- CSAH 103 (West Broadway Avenue)/Winnetka Avenue N – Northbound left-turn and through movements
- CSAH 103 (West Broadway Avenue)/Oak Grove Parkway – Northbound through movement; southbound left-turn and through movements; westbound left-turn and right-turn movements
- CSAH 103 (West Broadway Avenue)/TH 610 WB Ramps – Northbound through movement; southbound left-turn movement; westbound left-turn and right-turn movements



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The poor operations (delay and queuing) in the 2040 No Build scenarios are due to the intense development planned to occur in this area by 2040. Queues spill back between all intersections north of TH 610 and roadway capacity improvements would be needed to accommodate the forecast growth in traffic. However, there are not currently roadway improvement projects programmed in this area.

The full table of No Build conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 4.1. OMF to TH 610 – Opening Year No Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | |
|--|--|--------------------------------------|
| | Opening Year AM | Opening Year PM |
| | No Build Scenario 01 ¹ | No Build Scenario 01 ¹ |
| CSAH 103 (W Broadway Ave)/ 101 st Ave N* | 0.6 A | 5.4 A |
| CSAH 103 (W Broadway Ave)/ Winnetka Ave N* | 0.3 A | 0.9 A |
| CSAH 103 (W Broadway Ave)/ Oak Grove Pkwy | 20.6 C | 27.9 C |
| CSAH 103 (W Broadway Ave)/ TH 610 WB Ramps | 23.1 C | 43.5 D |
| CSAH 103 (W Broadway Ave)/ TH 610 EB Ramps | 18.7 B | 17.5 B |

* Side street stop-controlled intersection

¹ No Build Scenario 01 assumes no interchange at TH 169/101st Avenue N.

Table 4.2. OMF to TH 610 – 2040 No Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | | |
|--|---|--------------------------------------|--------------------------------------|--------------------------------------|
| | 2040 AM | 2040 AM | 2040 PM | 2040 PM |
| | No Build Scenario 01 ¹ | No Build Scenario 02 ² | No Build Scenario 01 ¹ | No Build Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ 101 st Ave N* | 73.5 F | 72.1 F | 193.9 F | 156.2 F |
| CSAH 103 (W Broadway Ave)/ Winnetka Ave N* | 133.8 F | 125.8 F | 162.1 F | 149.5 F |
| CSAH 103 (W Broadway Ave)/ Oak Grove Pkwy | 152.0 F | 128.1 F | 200+ F | 200+ F |
| CSAH 103 (W Broadway Ave)/ TH 610 WB Ramps | 200+ F | 200+ F | 200+ F | 200+ F |
| CSAH 103 (W Broadway Ave)/ TH 610 EB Ramps | 105.2 F | 80.7 F | 188.6 F | 184.8 F |

* Side street stop-controlled intersection

¹ No Build Scenario 01 assumes no interchange at TH 169/101st Avenue N.

² No Build Scenario 02 assumes a new full access interchange at TH 169/101st Avenue N.



4.2.2 TH 610 to CSAH 81 (Bottineau Boulevard)/73rd Avenue N

The results of the Opening Year and 2040 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 103 (West Broadway Avenue)/CSAH 109 (85th Avenue N) in the 2040 PM peak

The poor LOS at the CSAH 103 (West Broadway Avenue)/CSAH 109 (85th Avenue N) in the 2040 PM peak was due to increased southbound u-turn traffic in Scenario 1 with a right-in/right-out access at Maplebrook Parkway.

Several of the intersections along CSAH 103 (West Broadway Avenue) south of TH 610 had better operations in the No Build conditions than in the Existing conditions, due to the planned CSAH 103 (W Broadway Avenue) roadway reconstruction.

All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 4.3** and **Table 4.4** below.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- CSAH 103 (West Broadway Avenue)/ CSAH 130 (Brooklyn Boulevard)/CSAH 152 – Eastbound left-turn movement

The eastbound left-turn queuing at CSAH 103 (West Broadway Avenue)/CSAH 130 (Brooklyn Boulevard)/CSAH 152 occurs in the 2040 No Build PM peak was due to high vehicle traffic demand and protected-only phasing.

The full table of No Build conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 4.3. TH 610 to CSAH 81/73rd Avenue N – Opening Year No Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | | |
|--|---|--------------------------|--------------------------|--------------------------|
| | Opening Year AM | Opening Year AM | Opening Year PM | Opening Year PM |
| | No Build | No Build | No Build | No Build |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ 94 th Ave N* | 2.0 A | 2.0 A | 1.9 A | 2.0 A |
| CSAH 103 (W Broadway Ave)/ CSAH 30 (93 rd Ave N) | 27.0 C | 26.6 C | 31.6 C | 32.0 C |
| CSAH 103 (W Broadway Ave)/ 92 nd Ave N* | 1.3 A | 1.4 A | 1.0 A | 1.1 A |
| CSAH 103 (W Broadway Ave)/ Setzler Pkwy | 14.2 B | 10.0 A | 13.9 B | 18.0 B |
| CSAH 103 (W Broadway Ave)/ 89 th Ave N* | 0.6 A | 0.8 A | 0.7 A | 0.7 A |
| CSAH 103 (W Broadway Ave)/ Maplebrook Pkwy ^{1,2} | 1.0 A | 7.6 A | 1.0 A | 8.8 A |
| CSAH 103 (W Broadway Ave)/ | 34.1 | 33.2 | 45.9 | 39.8 |



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| Intersection | Overall Intersection | | | |
|--|---|-----------------------------------|-----------------------------------|-----------------------------------|
| | Average Delay (seconds/vehicle) and LOS | | | |
| | Opening Year AM | Opening Year AM | Opening Year PM | Opening Year PM |
| | No Build Scenario 01 ¹ | No Build Scenario 02 ² | No Build Scenario 01 ¹ | No Build Scenario 02 ² |
| CSAH 109 (85 th Ave N) | C | C | D | D |
| CSAH 103 (W Broadway Ave)/ 84 th Ave N* | 0.6 A | 0.6 A | 1.3 A | 1.2 A |
| CSAH 103 (W Broadway Ave)/ College Park Dr | 7.7 A | 6.6 A | 13.7 B | 13.4 B |
| CSAH 103 (W Broadway Ave)/ 82 nd Ave N* | 0.6 A | 0.7 A | 0.9 A | 0.5 A |
| CSAH 103 (W Broadway Ave)/ Candlewood Dr | 6.1 A | 6.2 A | 9.1 A | 9.3 A |
| CSAH 103 (W Broadway Ave)/ 78 th Ave N* | 0.4 A | 0.5 A | 0.9 A | 0.9 A |
| CSAH 103 (W Broadway Ave)/ Shopping Center Access | 8.4 A | 7.9 A | 16.8 B | 16.1 B |
| CSAH 103 (W Broadway Ave)/ CSAH 130 (Brooklyn Blvd)/ CSAH 152 | 25.2 C | 23.8 C | 35.3 D | 42.5 D |
| CSAH 130 (Brooklyn Blvd)/ Shopping Center Access (west of CSAH 103) | 8.9 A | 7.8 A | 20.6 C | 20.2 C |
| CSAH 152 (Brooklyn Blvd)/ Shopping Center Access (east of CSAH 103)* | 0.9 A | 0.9 A | 2.1 A | 2.1 A |
| CSAH 130 (W Broadway Ave)/ 76 th Ave N | 13.6 B | 13.0 B | 25.4 C | 22.4 C |
| CSAH 130 (W Broadway Ave)/ 75 th Ave N* | 1.4 A | 1.2 A | 1.8 A | 1.4 A |
| CSAH 130 (W Broadway Ave)/ 74 th Ave N* | 1.6 A | 1.3 A | 1.6 A | 1.6 A |
| CSAH 130 (W Broadway Ave)/ 73 rd Ave N | 10.6 B | 11.5 B | 10.8 B | 10.8 B |

*Side street stop-controlled intersection

¹ Scenario 01 assumes right-in/right-out access with side street stop control at CSAH 103 (W Broadway Avenue)/Maplebrook Parkway.

² Scenario 02 assumes a full-access signalized intersection at CSAH 103 (W Broadway Avenue)/Maplebrook Parkway.



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Table 4.4. TH 610 to CSAH 81/73rd Avenue N – 2040 No Build Conditions Results

| Intersection | Overall Intersection | | | |
|--|---|--------------------------|--------------------------|--------------------------|
| | Average Delay (seconds/vehicle) and LOS | | | |
| | 2040 | 2040 | 2040 | 2040 |
| | AM | AM | PM | PM |
| | No Build | No Build | No Build | No Build |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ 94 th Ave N* | 2.7 A | 2.6 A | 2.7 A | 2.8 A |
| CSAH 103 (W Broadway Ave)/ CSAH 30 (93 rd Ave N) | 32.6 C | 32.1 C | 37.4 D | 37.3 D |
| CSAH 103 (W Broadway Ave)/ 92 nd Ave N* | 1.6 A | 1.7 A | 1.1 A | 1.2 A |
| CSAH 103 (W Broadway Ave)/ Setzler Pkwy | 15.9 B | 10.4 B | 13.9 B | 18.8 B |
| CSAH 103 (W Broadway Ave)/ 89 th Ave N* | 0.9 A | 0.9 A | 0.8 A | 0.8 A |
| CSAH 103 (W Broadway Ave)/ Maplebrook Pkwy ^{1,2} | 1.1 A | 8.5 A | 1.2 A | 9.6 A |
| CSAH 103 (W Broadway Ave)/ CSAH 109 (85 th Ave N) | 36.2 D | 35.9 D | 55.4 E | 43.2 D |
| CSAH 103 (W Broadway Ave)/ 84 th Ave N* | 0.7 A | 0.7 A | 1.4 A | 1.2 A |
| CSAH 103 (W Broadway Ave)/ College Park Dr | 6.9 A | 6.7 A | 13.6 B | 13.3 B |
| CSAH 103 (W Broadway Ave)/ 82 nd Ave N* | 0.7 A | 0.7 A | 0.8 A | 0.6 A |
| CSAH 103 (W Broadway Ave)/ Candlewood Dr | 6.2 A | 6.3 A | 9.0 A | 8.8 A |
| CSAH 103 (W Broadway Ave)/ 78 th Ave N* | 0.6 A | 0.6 A | 0.9 A | 0.9 A |
| CSAH 103 (W Broadway Ave)/ Shopping Center Access | 8.5 A | 8.3 A | 17.0 B | 16.7 B |
| CSAH 103 (W Broadway Ave)/ CSAH 130 (Brooklyn Blvd)/ CSAH 152 | 25.3 C | 25.5 C | 39.5 D | 46.9 D |
| CSAH 130 (Brooklyn Blvd)/ Shopping Center Access (west of CSAH 103) | 9.0 A | 7.9 A | 29.7 C | 27.0 C |
| CSAH 152 (Brooklyn Blvd)/ Shopping Center Access (east of CSAH 103)* | 0.9 A | 0.9 A | 2.3 A | 2.3 A |
| CSAH 130 (W Broadway Ave)/ 76 th Ave N | 14.6 B | 14.2 B | 27.0 C | 23.7 C |
| CSAH 130 (W Broadway Ave)/ 75 th Ave N* | 1.5 A | 1.4 A | 2.1 A | 1.6 A |
| CSAH 130 (W Broadway Ave)/ 74 th Ave N* | 1.6 A | 1.5 A | 1.9 A | 1.9 A |
| CSAH 130 (W Broadway Ave)/ | 13.0 | 13.0 | 13.0 | 12.6 |



| Intersection | Overall Intersection | | | |
|------------------------|---|--------------------------|--------------------------|--------------------------|
| | Average Delay (seconds/vehicle) and LOS | | | |
| | 2040 | 2040 | 2040 | 2040 |
| | AM | AM | PM | PM |
| | No Build | | | |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| 73 rd Ave N | B | B | B | B |

*Side street stop-controlled intersection

¹ Scenario 01 assumes right-in/right-out access with side street stop control at CSAH 103 (W Broadway Avenue)/Maplebrook Parkway.

² Scenario 02 assumes a full-access signalized intersection at CSAH 103 (W Broadway Avenue)/Maplebrook Parkway.

4.2.3 CSAH 81 (Bottineau Boulevard)/73rd Avenue N to TH 55 (Olson Memorial Highway)

The results of the Opening Year and 2040 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, including a 20-car (approximately one minute) freight event in the AM peak hour, with the following exceptions:

- Golden Valley Road/Theodore Wirth Parkway in the 2040 PM Peak

The Golden Valley Road/Theodore Wirth Parkway intersection was modeled in Synchro/SimTraffic because it does not have any nearby at-grade crossings with freight rail or proposed crossings with LRT. All other intersections were modeled in VISSIM based on the existing freight crossings and proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 4.5** and **Table 4.6** below.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- Golden Valley Road/Theodore Wirth Parkway – Eastbound approach queues exceeded 500 feet

Many of the intersections along CSAH 81 (Bottineau Boulevard) had better operations in the No Build conditions than in the Existing conditions, due to the planned reconstruction projects from 63rd Avenue N to TH 169, planned to occur prior to Opening Year, and the six-lane restriping from TH 100 to Wilshire Boulevard that occurred in 2015.

The all-way stop control at the Golden Valley Road/Theodore Wirth Parkway would be expected to operate poorly in the 2040 PM peak due to the forecast growth in area traffic volumes and the inefficiency of the all-way stop control. There are no improvements currently planned or programmed for this intersection.

The full table of No Build conditions LOS and queuing analysis results can be found in **Appendix C**.



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Table 4.5. CSAH 81/73rd Avenue N to TH 55 (Olson Memorial Highway) – Opening Year No Build Conditions Results

| Intersection | Overall Intersection Average Delay and LOS | | |
|---|--|--|--------------------------|
| | Opening Year AM No Build No Freight Event | Opening Year AM No Build Freight Event | Opening Year PM No Build |
| CSAH 81 (Bottineau Blvd)/ 73 rd Ave N | 9.6 A | 10.2 B | 14.8 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 8 (W Broadway Ave)/ 71 st Ave N | 20.8 C | 22.0 C | 21.4 C |
| CSAH 130 (W Broadway Ave)/ 71 st Ave N | 7.6 A | 7.3 A | 15.8 B |
| CSAH 81 (Bottineau Blvd)/ I-94 WB Ramps | 9.8 A | 9.6 A | 8.1 A |
| CSAH 81 (Bottineau Blvd)/ I-94 EB Ramps | 21.6 C | 21.2 C | 26.7 C |
| CSAH 81 (Bottineau Blvd)/ 63 rd Ave N | 31.1 C | 31.6 C | 32.6 C |
| 63 rd Ave N/Louisiana Ave/ Park-and-Ride Access | 1.6 A | 1.6 A | 2.0 A |
| CSAH 81 (Bottineau Blvd)/ CSAH 10 (Bass Lake Rd) | 23.1 C | 24.7 C | 37.5 D |
| CSAH 10 (Bass Lake Rd)/ Sherburne Ave | 6.0 A | 6.1 A | 18.4 B |
| CSAH 81 (Bottineau Blvd)/ Wilshire Blvd | 11.0 B | 11.8 B | 14.7 B |
| Wilshire Blvd/Lakeland Ave N | 1.8 A | 1.9 A | 4.7 A |
| CSAH 81 (Bottineau Blvd)/ Corvallis Ave N | 8.5 A | 9.0 A | 13.9 B |
| CSAH 8 (W Broadway Ave)/ Corvallis Ave N* | 2.3 A | 2.7 A | 3.7 A |
| CSAH 8 (W Broadway Ave)/ Welcome Ave N* | 0.6 A | 1.1 A | 1.4 A |
| CSAH 8 (W Broadway Ave)/ Vera Cruz Ave N* | 0.4 A | 0.6 A | 0.6 A |
| CSAH 8 (W Broadway Ave)/ 45 1/2 Ave N | 1.0 A | 1.0 A | 1.0 A |
| CSAH 8 (W Broadway Ave)/ CSAH 9 (42 nd Ave N) | 15.2 B | 15.2 B | 20.8 C |
| CSAH 81 (Bottineau Blvd)/ CSAH 9 (42 nd Ave N) | 23.5 C | 23.4 C | 26.7 C |
| CSAH 9 (42 nd Ave N)/ Hubbard Ave*,1 | 0.7 A | 0.8 A | 1.7 A |



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| Intersection | Overall Intersection Average Delay and LOS | | |
|---|--|--|--------------------------|
| | Opening Year AM No Build No Freight Event | Opening Year AM No Build Freight Event | Opening Year PM No Build |
| CSAH 9 (42 nd Ave N)/ Railroad Ave N | 0.8 A | 1.2 A | 1.0 A |
| CSAH 9 (42 nd Ave N)/ Regent Ave N | 2.4 A | 2.5 A | 1.8 A |
| W Broadway Ave/ 41 1/2 Ave N* | 8.9 A | 9.1 A | 13.4 B |
| Hubbard Ave/ 41 1/2 Ave N* | 4.3 A | 4.3 A | 3.8 A |
| Hubbard Ave/ 41 st Ave N* | 8.0 A | 8.0 A | 8.5 A |
| W Broadway Ave/ 41 st Ave N* | 7.9 A | 8.1 A | 10.3 B |
| Golden Valley Rd/ Theodore Wirth Pkwy** | 9.4 A | N/A | 15.2 B |

*Side street stop-controlled intersection

** All-way stop-controlled intersection

¹ Left-turn movements limited to emergency vehicles and buses only.

Table 4.6. CSAH 81/73rd Avenue N to TH 55 (Olson Memorial Highway) – 2040 No Build Conditions Results

| Intersection | Overall Intersection Average Delay and LOS | | |
|---|--|--------------------------------|------------------|
| | 2040 AM No Build No Freight Event | 2040 AM No Build Freight Event | 2040 PM No Build |
| CSAH 81 (Bottineau Blvd)/ 73 rd Ave N | 11.0 B | 11.6 B | 18.2 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 8 (W Broadway Ave)/ 71 st Ave N | 20.2 C | 21.6 C | 22.3 C |
| CSAH 130 (W Broadway Ave)/ 71 st Ave N | 8.2 A | 8.0 A | 15.9 B |
| CSAH 81 (Bottineau Blvd)/ I-94 WB Ramps | 9.5 A | 9.4 A | 8.0 A |
| CSAH 81 (Bottineau Blvd)/ I-94 EB Ramps | 22.3 C | 22.0 C | 27.8 C |
| CSAH 81 (Bottineau Blvd)/ 63 rd Ave N | 33.2 C | 33.5 C | 34.2 C |
| 63 rd Ave N/Louisiana Ave/ Park-and-Ride Access | 1.9 A | 1.9 A | 2.3 A |



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| Intersection | Overall Intersection Average Delay and LOS | | |
|---|--|--------------------------------------|---------------------|
| | 2040 AM No Build No Freight Event | 2040 AM No Build Freight Event | 2040 PM No Build |
| CSAH 81 (Bottineau Blvd)/ CSAH 10 (Bass Lake Rd) | 24.9 C | 26.1 C | 41.9 D |
| CSAH 10 (Bass Lake Rd)/ Sherburne Ave | 7.1 A | 7.2 A | 22.6 C |
| CSAH 81 (Bottineau Blvd)/ Wilshire Blvd | 11.9 B | 12.6 B | 15.1 B |
| Wilshire Blvd/Lakeland Ave N | 2.3 A | 2.3 A | 3.8 A |
| CSAH 81 (Bottineau Blvd)/ Corvallis Ave N | 9.4 A | 9.7 A | 14.6 B |
| CSAH 8 (W Broadway Ave)/ Corvallis Ave N* | 2.4 A | 2.7 A | 3.9 A |
| CSAH 8 (W Broadway Ave)/ Welcome Ave N* | 0.8 A | 1.3 A | 1.5 A |
| CSAH 8 (W Broadway Ave)/ Vera Cruz Ave N* | 0.5 A | 0.7 A | 0.6 A |
| CSAH 8 (W Broadway Ave)/ 45 1/2 Ave N | 1.0 A | 1.1 A | 1.2 A |
| CSAH 8 (W Broadway Ave)/ CSAH 9 (42nd Ave N) | 15.7 B | 16.0 B | 22.1 C |
| CSAH 81 (Bottineau Blvd)/ CSAH 9 (42nd Ave N) | 25.0 C | 24.9 C | 28.2 C |
| CSAH 9 (42nd Ave N)/ Hubbard Ave*, ¹ | 0.9 A | 1.1 A | 2.4 A |
| CSAH 9 (42nd Ave N)/ Railroad Ave N | 0.9 A | 1.3 A | 1.4 A |
| CSAH 9 (42nd Ave N)/ Regent Ave N | 2.5 A | 2.5 A | 2.3 A |
| W Broadway Ave/ 41 1/2 Ave N* | 9.3 A | 9.4 A | 14.5 B |
| Hubbard Ave/ 41 1/2 Ave N* | 4.2 A | 4.2 A | 3.5 A |
| Hubbard Ave/ 41st Ave N* | 7.9 A | 7.9 A | 8.7 A |
| W Broadway Ave/ 41st Ave N* | 8.2 A | 8.2 A | 11.4 B |
| Golden Valley Rd/ Theodore Wirth Pkwy** | 10.5 B | N/A | 42.0 E |

*Side street stop-controlled intersection

** All-way stop-controlled intersection

¹ Left-turn movements limited to emergency vehicles and buses only.



4.2.4 TH 55 (Olson Memorial Highway) to Target Field Station

The results of the Opening Year and 2040 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:

- TH 55 (Olson Memorial Highway)/Thomas Avenue N in the 2040 AM and 2040 PM peaks
- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) in the Opening Year PM, 2040 AM, and 2040 PM peaks
- TH 55 (Olson Memorial Highway)/Morgan Avenue N in the 2040 PM peak

All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 4.7** below.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- TH 55 (Olson Memorial Highway)/Thomas Avenue N – Southbound approach
- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) – Eastbound approach
- TH 55 (Olson Memorial Highway)/Morgan Avenue N – Southbound approach
- TH 55 (Olson Memorial Highway)/Humboldt Avenue N – Northbound approach
- TH 55 (Olson Memorial Highway)/Van White Memorial Boulevard – Northbound through and right-turn movements
- TH 55 (Olson Memorial Highway)/Bryant Avenue N – Northbound approach
- TH 55 (Olson Memorial Highway)/I-94 EB Ramps (W Lyndale Avenue N) – Southbound approach

The poor LOS at the TH 55 (Olson Memorial Highway)/Thomas Avenue N, TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N), and TH 55 (Olson Memorial Highway)/Morgan Avenue N intersections is due to the high traffic volumes and capacity constraints at the TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) intersection, which result in queues that spill back and cause delays at the upstream intersections in each direction on TH 55 (Olson Memorial Highway).

The queuing issues on Thomas Avenue N, Morgan Avenue N, Humboldt Avenue N, Van White Memorial Boulevard, and Bryant Avenue N are all due to the location of the frontage road zero to 50 feet from the intersection with TH 55 (Olson Memorial Highway). One to two vehicles queued at the stop bar would exceed the storage distance for these approaches. These issues were also noted in the Existing conditions analysis.

The queues on TH 55 (Olson Memorial Highway) at CSAH 2 (Penn Avenue N) and on I-94 EB Ramps (W Lyndale Avenue N) at TH 55 (Olson Memorial Highway) are due to high volumes of traffic demand in peak hours. The queue on eastbound TH 55 (Olson Memorial Highway) has the potential to cause operational and safety issues due to the volume and speed of traffic on this approach. The queue on the southbound approach of TH 55 (Olson Memorial Highway)/I-94 EB Ramps (W Lyndale Avenue N) is due to the high volume of traffic, but is a significant distance from the I-94 exit and in a lower speed roadway segment (30 mph). These issues were also noted in the Existing conditions analysis.

The full table of No Build conditions LOS and queuing analysis results can be found in **Appendix C**.



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Table 4.7. TH 55 (Olson Memorial Highway) to Target Field Station – Opening Year and 2040 No Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | | |
|---|---|---------------------|-----------------------------------|---------------------|
| | Opening Year AM No Build | 2040 AM No Build | Opening Year PM No Build | 2040 PM No Build |
| | TH 55 (Olson Memorial Hwy)/ Thomas Ave N* | 6.5 A | 91.1 F | 33.7 D |
| TH 55 (Olson Memorial Hwy)/ CSAH 2 (Penn Ave N) | 52.3 D | 80.6 F | 102.1 F | 130.8 F |
| TH 55 (Olson Memorial Hwy)/ Morgan Ave N | 6.5 A | 5.7 A | 20.1 C | 57.2 E |
| TH 55 (Olson Memorial Hwy)/ James Ave N* | 5.2 A | 3.7 A | 4.2 A | 4.2 A |
| TH 55 (Olson Memorial Hwy)/ Humboldt Ave N | 10.8 B | 14.0 B | 8.5 A | 19.2 B |
| TH 55 (Olson Memorial Hwy)/ Van White Memorial Blvd | 14.5 B | 12.1 B | 9.3 A | 13.9 B |
| TH 55 (Olson Memorial Hwy)/ Bryant Ave N | 12.0 B | 10.2 B | 8.0 A | 9.0 A |
| TH 55 (Olson Memorial Hwy)/ I-94 EB Ramps (W Lyndale Ave N) | 34.8 C | 43.3 D | 21.1 C | 24.6 C |
| TH 55 (Olson Memorial Hwy)/ I-94 WB Ramps (E Lyndale Ave N) | 32.4 C | 28.4 C | 33.1 C | 31.4 C |
| Olson Memorial Hwy)/ Border Ave N | 17.0 B | 11.7 B | 24.4 C | 33.1 C |
| Olson Memorial Hwy)/ 7 th St N/ 6 th Ave N | 28.2 C | 23.1 C | 32.4 C | 36.0 D |

*Side street stop-controlled intersection

4.3 No Build Conditions Traffic Modeling Summary

All intersections would be expected to operate at overall LOS D or better in the Opening Year and 2040 No Build AM and PM peak conditions, with the following exceptions:

- CSAH 103 (West Broadway Avenue)/101st Avenue N in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/Winnetka Avenue N in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/Oak Grove Parkway in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/TH 610 WB Ramps in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/TH 610 EB Ramps in the 2040 AM and PM peaks
- CSAH 103 (West Broadway Avenue)/CSAH 109 (85th Avenue N) in the 2040 PM peak scenario with no signal at Maplebrook Parkway
- Golden Valley Road/Theodore Wirth Parkway in the 2040 PM peak
- TH 55 (Olson Memorial Highway)/Thomas Avenue N in the 2040 AM and PM peaks



- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) in the Opening Year PM, 2040 AM, and 2040 PM peaks
- TH 55 (Olson Memorial Highway)/Morgan Avenue N in the 2040 PM peak

The poor operations (delay and queuing) in the area north of TH 610 in the 2040 No Build scenarios is due to the intense development planned to occur in this area by 2040. However, there have been no roadway improvement projects programmed to improve the roadway network in this area, and therefore the intersections are expected to operate over capacity.

The all-way stop control at the Golden Valley Road/Theodore Wirth Parkway would be expected to operate poorly in the 2040 PM peak due to the forecast growth in area traffic volumes and the inefficiency of the existing all-way stop control.

The poor LOS at the TH 55 (Olson Memorial Highway)/Thomas Avenue N, TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N), and TH 55 (Olson Memorial Highway)/Morgan Avenue N intersections is due to the high traffic volumes and capacity constraints at the TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) intersection, which results in queues that spill back and cause delays at the upstream intersections in each direction on TH 55 (Olson Memorial Highway).

Many of the intersections along CSAH 103 (West Broadway Avenue) and CSAH 81 (Bottineau Boulevard) had better operations in the No Build conditions than in the Existing conditions, due to the planned and already implemented corridor improvement projects.

5.0 Build Analysis

The Build modeling was conducted to identify the expected traffic operations at the Opening Year of the BLRT project (2021) and for the forecast horizon year (2040), with the 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 based on the same growth forecasts as the No Build conditions. At LRT stations, additional pedestrian volumes were incorporated into the modeling. 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 Opening Year (2021) and 2040 conditions are provided in **Appendix A**.

The location and size of park-and-ride facilities included in the traffic modeling are summarized in **Table 5.1**. The traffic analysis represents the total park-and-ride demand expected in 2040, as identified in the *BLRT Traffic and Park-and-Ride Forecast Technical Memorandum* (2015). The traffic analysis assumed the full 2040 demand for parking spaces in order to capture the full potential parking capacity of the site and produce a conservative analysis of the park-and-ride traffic impacts. The traffic analysis at the 63rd Avenue Station included an increased number of parking spaces, compared to what is currently proposed by the BLRT project, in order to model the expected traffic operations if the existing parking facility were to be expanded in the future to the site's full parking capacity.



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Table 5.1. Park-and-Ride Facility Summary

| Location | Number of Park-and-Ride Spaces Proposed | Number of Park-and-Ride Spaces Analyzed |
|---------------------------------|---|---|
| Oak Grove Station | 850 | 850 |
| 63 rd Avenue Station | 565 | 725 |
| Bass Lake Road Station | 170 | 170 |
| Robbinsdale Station | 550 | 550 |
| Golden Valley Road Station | 100 | 100 |

The control of each of the LRT crossings was identified based on the proximity to the freight rail alignment and adjacent signalized intersections. **Table 5.2** below displays the existing and proposed control of the freight and LRT crossings along the BLRT alignment.

Table 5.2. Build Conditions Rail Crossing Treatments

| 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)/ Main St | | LRT controlled by traffic signal with transit signal priority |
| TH 610 | | LRT grade separated over TH 610 |
| CSAH 103 (W Broadway Ave)/ 94 th Ave N | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ CSAH 30 (93 rd Ave N) | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ Setzler Pkwy | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ Maplebrook Pkwy ¹ | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ CSAH 109 (85 th Ave N) | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ College Park Dr | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ Candlewood Dr | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 103 (W Broadway Ave)/ CSAH 130 (Brooklyn Blvd)/ CSAH 152 | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 130 (W Broadway Ave)/ 76 th Ave N | | LRT controlled by traffic signal with traffic signal priority |
| CSAH 130 (W Broadway Ave)/ 75 th Ave N | | LRT controlled by traffic signal with traffic signal priority |



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| Crossing Location | Existing Freight Crossing Control | Proposed LRT and/or Freight Crossing Control |
|---|---|---|
| 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 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 | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 8 (W Broadway Ave)/ 71 st Ave N traffic signal |
| I-94/I-694 | Grade separated under I-94/I-694 | Grade separated under I-94/I-694 |
| 63 rd Ave N | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/63 rd Ave N traffic signal | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/63 rd Ave N traffic signal |
| CSAH 10 (Bass Lake Rd) | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 10 (Bass Lake Rd) traffic signal | Flashers and automatic gates; preemption of CSAH 81 (Bottineau Blvd)/CSAH 10 (Bass Lake Rd) traffic signal |
| Corvallis Ave N | Flashers | Flashers and automatic gates |
| CSAH 8 (W Broadway Ave) | Flashers | Flashers and automatic gates |
| 45½ Ave N | Flashers | Flashers and automatic gates |
| TH 100 | Grade separated over TH 100 | Grade separated over TH 100 |
| CSAH 9 (42 nd Ave N) | Flashers | Flashers and automatic gates |
| 41 st Ave N | Flashers and automatic gates | Flashers and automatic gates |
| 39½ Ave N | Flashers and automatic gates | Flashers and automatic gates |
| TH 55 (Olson Memorial Hwy)/ Thomas Ave N | N/A – no freight crossings | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ Pedestrian Crossing East of Russell Ave N | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ CSAH 2 (Penn Ave N) | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ Pedestrian Crossing East of Oliver Ave N | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ Morgan Ave N | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ Pedestrian Crosswalk East of James Ave N | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ Humboldt Ave N | | LRT controlled by traffic signal with traffic signal priority |



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| Crossing Location | Existing Freight Crossing Control | Proposed LRT and/or Freight Crossing Control |
|--|-----------------------------------|---|
| TH 55 (Olson Memorial Hwy)/ Van White Memorial Blvd | N/A – no freight crossings | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ Bryant Ave N | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ I-94 EB Ramps (W Lyndale Ave N) | | LRT controlled by traffic signal with traffic signal priority |
| TH 55 (Olson Memorial Hwy)/ I-94 WB Ramps (E Lyndale Ave N) | | LRT controlled by traffic signal with traffic signal priority |
| Olson Memorial Hwy/ Border Ave | | LRT controlled by traffic signal with traffic signal priority |
| Olson Memorial Hwy/ 7 th St N/6 th Ave N | | LRT controlled by traffic signal with traffic signal priority |

¹ LRT crossing only if intersection is signalized.

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

- Reconstruct 101st Avenue N and Oak Grove Parkway to accommodate the needs of the BLRT OMF site.
- Reconstruct CSAH 103 (West Broadway Avenue) from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the LRT alignment, station location, and park-and-ride parking structure.
- Install a new traffic signal at CSAH 103 (West Broadway Avenue)/Main Street 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.
- Install a new traffic signal at CSAH 103 (West Broadway Avenue)/75th Avenue N to allow LRT to transition from side-running to center-running.
- 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.
- Reconfigure the CSAH 8 (West Broadway Avenue)/Vera Cruz Avenue N intersection to a roundabout, to continue to provide full access to the surrounding neighborhood, along with additional gates and medians at the rail crossing.
- Install a new traffic signal at TH 55 (Olson Memorial Highway)/Thomas Avenue N to maintain neighborhood access.
- Install new traffic signals on TH 55 (Olson Memorial Highway) at the proposed pedestrian crossings east of Russell Avenue N, east of Oliver Avenue N, and east of James Avenue N to maintain neighborhood pedestrian access. These pedestrian signals are assumed to operate as two-stage crossings due to the u-shaped geometry of the walkway as it crosses the LRT guideway.

Several new intersections were added to the analysis north of TH 610 for the Build conditions. The Oak Grove Parkway/Xylon Avenue intersection will provide access to the OMF and is proposed to operate with stop control on Xylon Avenue. The CSAH 103 (West Broadway Avenue)/Main Street intersection will provide access to the Oak Grove Station park-and-ride facility and is proposed to operate with signalized control. Due to the roadway reconfiguration in this area, the CSAH 103 (West Broadway



Avenue)/101st Avenue N and CSAH 103 (West Broadway Avenue)/Winnetka Avenue N intersections would no longer exist, and therefore were not included in the Build analysis. The CSAH 103 (West Broadway Avenue)/Oak Grove Parkway intersection has a non-revenue LRT crossing, which would include LRT movements only in and out of the OMF site. These movements would be limited in volumes and would occur outside of the peak hour periods.

In addition, some improvements were also identified as part of the Build project in order to provide overall LOS D or better operations at all intersections in the Build conditions. These project improvements included:

- Modify left-turn phasing on CSAH 130 (Brooklyn Boulevard)/CSAH 152 at CSAH 103 (West Broadway Avenue) from protected-only to protected/permissive.
- Modify signal phasing at CSAH 81 (Bottineau Boulevard)/CSAH 10 (Bass Lake Road) to provide a right-turn overlap phase on eastbound CSAH 10 (Bass Lake Road).
- Restripe Wilshire Boulevard at CSAH 81 (Bottineau Boulevard) to provide dual eastbound left-turn lanes and modify signal timing to accommodate park-and-ride traffic.
- Restripe CSAH 8 (West Broadway Avenue) at CSAH 9 (42nd Avenue N) to provide northbound and southbound left-turn lanes and modify the traffic signal to provide northbound, southbound, and westbound protected/permissive left-turn phasing to accommodate park-and-ride traffic.
- Modify CSAH 2 (Penn Avenue N) lane geometrics at TH 55 (Olson Memorial Highway) to better accommodate vehicle traffic.
- Modify southbound W Lyndale Avenue N geometrics to better accommodate vehicle traffic flow.

Hennepin County and the City of Brooklyn Park have not yet determined if a new traffic signal will be constructed at the CSAH 103 (West Broadway Avenue)/Maplebrook Parkway intersection as part of the CSAH 103 (West Broadway Avenue) reconstruction project. Therefore, scenarios have been modeled with the intersection as an unsignalized right-in/right-out intersection or a signalized full-access intersection.

The City of Brooklyn Park has been studying a new interchange at TH 169/101st Avenue N and this project is currently in the preliminary design phase. However, the new interchange has not been programmed and is not shown in the Metropolitan Council 2040 *Transportation Policy Plan* (TPP). Due to the significant impacts that this interchange will have on roadway capacity and traffic flow in the area north of TH 610 and to better capture the expected impacts of the BLRT project, 2040 scenarios have been analyzed both with and without the new interchange.

Signal timing was assumed to be optimized in the Opening Year (2021) and 2040 Build analysis. The signal timings were optimized as part of the VISSIM and Synchro simulation models. The CSAH 103 (West Broadway Avenue), CSAH 81 (Bottineau Boulevard), and TH 55 (Olson Memorial Highway) corridors were all assumed to operate with coordinated and interconnected signals. Pedestrian crossings of TH 55 (Olson Memorial Highway) were assumed to be timed for one-stage crossings similar to the existing operations, with the exception of the three new pedestrian signals as noted previously.

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

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 OMF to TH 610

The results of the Opening Year and 2040 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:

- Oak Grove Parkway/Xylon Avenue in the 2040 AM peak in the scenario with an interchange at TH 169/101st Avenue N and in the 2040 PM peak for both scenarios
- CSAH 103 (West Broadway Avenue)/Oak Grove Parkway in the 2040 PM peak in the scenario with no interchange at TH 169/101st Avenue N
- CSAH 103 (West Broadway Avenue)/Main Street in the 2040 PM peak in the scenario with no interchange at TH 169/101st Avenue N

The Oak Grove Parkway/Xylon Avenue intersection was modeled in Synchro/SimTraffic because it does not have any nearby at-grade crossings with LRT. All other intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 5.3** and **Table 5.4** below.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- Oak Grove Parkway/Xylon Avenue – Northbound left-turn movement; southbound left-turn movement
- CSAH 103 (West Broadway Avenue)/Oak Grove Parkway – Eastbound right-turn movement; Westbound left-turn and right-turn movements (scenario with no interchange at TH 169/101st Avenue N)
- CSAH 103 (West Broadway Avenue)/Main Street – Eastbound through and right-turn movements (scenario with no interchange at TH 169/101st Avenue N)

All the intersections had better operations (delay and queuing) in the Build conditions than in the No Build conditions, due to the planned roadway construction completed as part of the BLRT project.

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) at the same time as the TH 169/101st Avenue N interchange or as development traffic warrants. The signal is not needed for the BLRT project or for LRT operations, and therefore is not proposed to be constructed as part of the BLRT project.

The poor operations (delay and queuing) at the CSAH 103 (West Broadway Avenue)/Oak Grove Parkway and CSAH 103 (West Broadway Avenue)/Main Street intersections in the 2040 Build PM peak scenario without the TH 169/101st Avenue N interchange was due to the high traffic volumes, generated by future development, that all access the TH 610 interchange. The planned future interchange at TH 169/101st Avenue N would distribute this traffic demand between two interchanges and result in all intersections operating at overall LOS D or better during the peak periods. The operations issues noted in the Build conditions also occur in the No Build conditions to a greater degree, therefore no mitigation has been proposed.

The full table of Build conditions LOS and queuing analysis results can be found in **Appendix C**.



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Table 5.3. OMF to TH 610 – Opening Year Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | |
|---|--|--------------------------|
| | Opening Year AM Build | Opening Year PM Build |
| | Scenario 01 ¹ | Scenario 01 ¹ |
| Oak Grove Pkwy/Xylon Ave* | 1.8 A | 1.6 A |
| CSAH 103 (W Broadway Ave)/ Oak Grove Pkwy | 27.6 C | 38.0 D |
| CSAH 103 (W Broadway Ave)/ Main St | 18.7 B | 12.5 B |
| CSAH 103 (W Broadway Ave)/ TH 610 WB Ramps | 18.5 B | 21.6 C |
| CSAH 103 (W Broadway Ave)/ TH 610 EB Ramps | 16.7 B | 16.0 B |

* Side street stop-controlled intersection

¹ Build Scenario 01 assumes no interchange at TH 169/101st Avenue N.

Table 5.4. OMF to TH 610 – 2040 Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | | |
|---|--|--------------------------|--------------------------|--------------------------|
| | 2040 AM Build | 2040 AM Build | 2040 PM Build | 2040 PM Build |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| Oak Grove Pkwy/Xylon Ave* | 22.0 C | 85.7 F | 74.9 E | 91.5 F |
| CSAH 103 (W Broadway Ave)/ Oak Grove Pkwy | 41.9 D | 40.6 D | 95.9 F | 47.2 D |
| CSAH 103 (W Broadway Ave)/ Main St | 41.2 D | 38.7 C | 62.6 E | 34.5 C |
| CSAH 103 (W Broadway Ave)/ TH 610 WB Ramps | 32.3 C | 22.5 C | 38.8 D | 26.3 C |
| CSAH 103 (W Broadway Ave)/ TH 610 EB Ramps | 24.3 C | 21.0 C | 28.2 C | 26.1 C |

* Side street stop-controlled intersection

¹ Build Scenario 01 assumes no interchange at TH 169/101st Avenue N.

² Build Scenario 02 assumes a new full access interchange at TH 169/101st Avenue N.

5.2.2 TH 610 to CSAH 81 (Bottineau Boulevard)/73rd Avenue N

The results of the Opening Year and 2040 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. All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 5.5** and **Table 5.6** below.



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Movements for which queuing issues were identified in one or more scenarios were as follows:

- CSAH 103 (West Broadway Avenue)/Shopping Center Access – Eastbound right-turn movement
- CSAH 103 (West Broadway Avenue)/CSAH 130 (Brooklyn Boulevard)/CSAH 152 – Southbound left-turn movement

The two queuing issues identified are related, and are due to vehicle traffic demands and access control along CSAH 103 (West Broadway Avenue) in the 2040 Build PM peak. The conversion of the CSAH 103 (West Broadway Avenue)/Shopping Center Access to right-in/right-out in the Build conditions is expected to result in increased u-turn movements at the CSAH 103 (West Broadway Avenue)/CSAH 130 (Brooklyn Boulevard)/CSAH 152 intersection. The southbound left-turn lane at the CSAH 103 (West Broadway Avenue)/CSAH 130 (Brooklyn Boulevard)/CSAH 152 intersection will need to be designed with sufficient storage to accommodate these movements and limit or avoid impacts to the CSAH 103 (West Broadway Avenue)/Shopping Center Access intersection.

The full table of Build conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 5.5. TH 610 to CSAH 81/73rd Avenue N – Opening Year Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | | |
|---|---|--------------------------|--------------------------|--------------------------|
| | Opening | Opening | Opening | Opening |
| | Year | Year | Year | Year |
| | AM | AM | PM | PM |
| | Build | Build | Build | Build |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ 94 th Ave N | 10.8 B | 10.8 B | 9.5 A | 9.9 A |
| CSAH 103 (W Broadway Ave)/ CSAH 30 (93 rd Ave N) | 39.4 D | 38.4 D | 37.2 D | 35.8 D |
| CSAH 103 (W Broadway Ave)/ 92 nd Ave N* | 0.8 A | 0.8 A | 1.0 A | 1.0 A |
| CSAH 103 (W Broadway Ave)/ Setzler Pkwy | 14.4 B | 10.4 B | 20.1 C | 18.8 B |
| CSAH 103 (W Broadway Ave)/ 89 th Ave N* | 0.7 A | 0.7 A | 0.7 A | 0.8 A |
| CSAH 103 (W Broadway Ave)/ Maplebrook Pkwy ^{1,2} | 0.9 A | 8.0 A | 1.0 A | 10.0 A |
| CSAH 103 (W Broadway Ave)/ CSAH 109 (85 th Ave N) | 36.1 D | 34.8 C | 45.8 D | 41.6 D |
| CSAH 103 (W Broadway Ave)/ 84 th Ave N* | 0.6 A | 1.5 A | 1.0 A | 1.2 A |
| CSAH 103 (W Broadway Ave)/ College Park Dr | 9.2 A | 13.0 B | 14.9 B | 14.4 B |
| CSAH 103 (W Broadway Ave)/ 82 nd Ave N* | 0.7 A | 0.8 A | 0.6 A | 0.6 A |
| CSAH 103 (W Broadway Ave)/ Candlewood Dr | 9.2 A | 9.3 A | 13.7 B | 13.7 B |
| CSAH 103 (W Broadway Ave)/ 78 th Ave N* | 0.4 A | 0.4 A | 0.6 A | 0.6 A |



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| Intersection | Overall Intersection | | | |
|--|---|--------------------------|--------------------------|--------------------------|
| | Average Delay (seconds/vehicle) and LOS | | | |
| | Opening | Opening | Opening | Opening |
| | Year | Year | Year | Year |
| | AM | AM | PM | PM |
| Build | Build | Build | Build | |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ Shopping Center Access* | 1.7 A | 1.4 A | 4.1 A | 3.8 A |
| CSAH 103 (W Broadway Ave)/ CSAH 130 (Brooklyn Blvd)/ CSAH 152 | 26.7 C | 25.4 C | 43.5 D | 43.4 D |
| CSAH 130 (Brooklyn Blvd)/ Shopping Center Access (west of CSAH 103) | 7.5 A | 7.7 A | 19.1 B | 19.1 B |
| CSAH 152 (Brooklyn Blvd)/ Shopping Center Access (east of CSAH 103)* | 0.7 A | 0.7 A | 2.2 A | 2.3 A |
| CSAH 130 (W Broadway Ave)/ 76 th Ave N | 13.7 B | 13.6 B | 31.1 C | 31.5 C |
| CSAH 130 (W Broadway Ave)/ 75 th Ave N | 15.1 B | 14.4 B | 24.3 C | 24.8 C |
| CSAH 130 (W Broadway Ave)/ 74 th Ave N* | 0.7 A | 0.8 A | 0.9 A | 0.9 A |
| CSAH 130 (W Broadway Ave)/ 73 rd Ave N | 10.5 B | 10.6 B | 9.8 A | 9.8 A |

*Side street stop-controlled intersection

¹ Scenario 01 assumes right-in/right-out access with side street stop control at CSAH 103 (W Broadway Avenue)/Maplebrook Parkway.

² Scenario 02 assumes a full-access signalized intersection at CSAH 103 (W Broadway Avenue)/Maplebrook Parkway.

Table 5.6. TH 610 to CSAH 81/73rd Avenue N – 2040 Build Conditions Results

| Intersection | Overall Intersection | | | |
|--|---|--------------------------|--------------------------|--------------------------|
| | Average Delay (seconds/vehicle) and LOS | | | |
| | 2040 | 2040 | 2040 | 2040 |
| | AM | AM | PM | PM |
| | Build | Build | Build | Build |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ 94 th Ave N | 15.6 B | 15.4 B | 11.8 B | 11.3 B |
| CSAH 103 (W Broadway Ave)/ CSAH 30 (93 rd Ave N) | 49.4 D | 49.8 D | 47.7 D | 48.1 D |
| CSAH 103 (W Broadway Ave)/ 92 nd Ave N* | 0.9 A | 1.0 A | 1.4 A | 1.2 A |
| CSAH 103 (W Broadway Ave)/ Setzler Pkwy | 17.3 B | 10.4 B | 23.8 C | 20.5 C |
| CSAH 103 (W Broadway Ave)/ 89 th Ave N* | 0.7 A | 0.8 A | 0.9 A | 0.9 A |



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| Intersection | Overall Intersection | | | |
|--|---|--------------------------|--------------------------|--------------------------|
| | Average Delay (seconds/vehicle) and LOS | | | |
| | 2040 | 2040 | 2040 | 2040 |
| | AM | AM | PM | PM |
| Build | Build | Build | Build | |
| | Scenario 01 ¹ | Scenario 02 ² | Scenario 01 ¹ | Scenario 02 ² |
| CSAH 103 (W Broadway Ave)/ Maplebrook Pkwy ^{1,2} | 1.1 A | 8.4 A | 1.3 A | 11.4 B |
| CSAH 103 (W Broadway Ave)/ CSAH 109 (85 th Ave N) | 37.6 D | 36.0 D | 50.1 D | 44.3 D |
| CSAH 103 (W Broadway Ave)/ 84 th Ave N* | 0.7 A | 0.8 A | 1.4 A | 1.5 A |
| CSAH 103 (W Broadway Ave)/ College Park Dr | 7.3 A | 8.0 A | 15.7 B | 16.2 B |
| CSAH 103 (W Broadway Ave)/ 82 nd Ave N* | 0.7 A | 0.7 A | 0.7 A | 0.8 A |
| CSAH 103 (W Broadway Ave)/ Candlewood Dr | 9.5 A | 9.8 A | 14.2 B | 14.0 B |
| CSAH 103 (W Broadway Ave)/ 78 th Ave N* | 0.4 A | 0.4 A | 1.3 A | 1.6 A |
| CSAH 103 (W Broadway Ave)/ Shopping Center Access* | 1.6 A | 1.6 A | 15.0 C | 19.8 C |
| CSAH 103 (W Broadway Ave)/ CSAH 130 (Brooklyn Blvd)/ CSAH 152 | 30.5 C | 30.7 C | 51.1 D | 49.9 D |
| CSAH 130 (Brooklyn Blvd)/ Shopping Center Access (west of CSAH 103) | 8.2 A | 7.9 A | 16.8 B | 16.9 B |
| CSAH 152 (Brooklyn Blvd)/ Shopping Center Access (east of CSAH 103)* | 0.8 A | 0.8 A | 2.5 A | 2.6 A |
| CSAH 130 (W Broadway Ave)/ 76 th Ave N | 15.2 B | 14.8 B | 34.3 C | 32.1 C |
| CSAH 130 (W Broadway Ave)/ 75 th Ave N | 16.4 B | 15.3 B | 25.2 C | 25.4 C |
| CSAH 130 (W Broadway Ave)/ 74 th Ave N* | 1.0 A | 1.0 A | 1.2 A | 1.3 A |
| CSAH 130 (W Broadway Ave)/ 73 rd Ave N | 12.2 B | 12.4 B | 12.2 B | 11.8 B |

*Side street stop-controlled intersection

¹ Scenario 01 assumes right-in/right-out access with side street stop control at CSAH 103 (West Broadway Avenue)/Maplebrook Parkway.

² Scenario 02 assumes a full-access signalized intersection at CSAH 103 (West Broadway Avenue)/Maplebrook Parkway.

5.2.3 CSAH 81 (Bottineau Boulevard)/73rd Avenue N to TH 55 (Olson Memorial Highway)

The results of the Opening Year and 2040 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, including a 20-car freight event in the AM peak hour, with the following exceptions:



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- Golden Valley Road/Theodore Wirth Parkway in the 2040 PM peak

The Golden Valley Road/Theodore Wirth Parkway intersection was modeled in Synchro/SimTraffic because it does not have any nearby at-grade crossings with freight rail or proposed crossings with LRT. All other intersections were modeled in VISSIM based on the existing freight crossings and proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 5.7** and **Table 5.8** below.

Movements for which queuing issues were identified in one or more scenarios were as follows:

- CSAH 81 (Bottineau Boulevard)/Wilshire Boulevard – Eastbound left-turn movement
- Golden Valley Road/Theodore Wirth Parkway – Eastbound approach queue exceeded 500 feet

Many of the intersections along CSAH 81 (Bottineau Boulevard) had better operations in the Build conditions than in the Existing conditions, due to the planned reconstruction projects from 63rd Avenue N to TH 169, planned to occur before Opening Year, and the six-lane restriping from TH 100 to Wilshire Boulevard, which occurred in 2015.

The storage distance on Wilshire Boulevard between CSAH 81 (Bottineau Boulevard) and Lakeland Avenue N is limited to approximately 45 feet due to the location of the frontage road (Lakeland Avenue N). As a result, during the PM peak in the Build conditions, vehicles exiting the park-and-ride cause the eastbound left-turn queue to exceed this limited storage. Lakeland Avenue N is a dead end street north and south of Wilshire Boulevard and has very low traffic volumes, so the queues are not a concern relative to traffic operations or safety. However, to address concerns for access to the properties along Lakeland Avenue, the capacity of the eastbound left-turn movement is proposed to be improved through a combination of signal timing and lane restriping.

The all-way stop control at the Golden Valley Road/Theodore Wirth Parkway would be expected to operate poorly in the 2040 PM peak due to the forecast growth in area traffic volumes and the inefficiency of the existing all-way stop control. The operations issues noted in the Build conditions also occur in the No Build conditions to the same degree, and the park-and-ride would be expected to contribute two percent or less of the 2040 peak hour volumes. Therefore, no mitigation has been proposed for this intersection.

The full table of Build conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 5.7. CSAH 81/73rd Avenue N to TH 55 (Olson Memorial Highway) – Opening Year Build Conditions Results

| Intersection | Overall Intersection | | |
|---|---|------------------------------|-------------------|
| | Average Delay (seconds/vehicle) and LOS | | |
| | Opening Year | Opening Year | Opening Year |
| | AM Build No Freight Event | AM Build Freight Event | AM Build PM |
| CSAH 81 (Bottineau Blvd)/ 73 rd Ave N | 14.3B | 14.9 B | 17.8 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 8 (W Broadway Ave)/ 71 st Ave N | 30.0 C | 31.6 C | 31.4 C |
| CSAH 130 (W Broadway Ave)/ | 7.6 | 7.5 | 15.9 |



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| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | |
|---|---|--|-----------------------------|
| | Opening Year AM Build No Freight Event | Opening Year AM Build Freight Event | Opening Year PM Build |
| 71 st Ave N | A | A | B |
| CSAH 81 (Bottineau Blvd)/ I-94 WB Ramps | 11.1 B | 10.5 B | 8.6 A |
| CSAH 81 (Bottineau Blvd)/ I-94 EB Ramps | 24.5 C | 23.9 C | 30.4 C |
| CSAH 81 (Bottineau Blvd)/ 63 rd Ave N | 35.8 D | 36.6 D | 35.4 D |
| 63 rd Ave N/Louisiana Ave/ Park-and-Ride Access | 6.4 A | 6.5 A | 13.1 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 10 (Bass Lake Rd) | 30.4 C | 33.2 C | 45.2 D |
| CSAH 10 (Bass Lake Rd)/ Sherburne Ave | 6.6 A | 6.7 A | 20.6 C |
| CSAH 81 (Bottineau Blvd)/ Wilshire Blvd | 12.6 B | 13.7 B | 14.9 B |
| Wilshire Blvd/Lakeland Ave N | 5.8 A | 5.8 A | 28.7 D |
| CSAH 81 (Bottineau Blvd)/ Corvallis Ave N | 9.0 A | 9.4 A | 13.3 B |
| CSAH 8 (W Broadway Ave)/ Corvallis Ave N* | 2.6 A | 3.0 A | 4.4 A |
| CSAH 8 (W Broadway Ave)/ Welcome Ave N* | 2.0 A | 2.6 A | 2.0 A |
| CSAH 8 (W Broadway Ave)/ Vera Cruz Ave N* | 0.6 A | 0.7 A | 2.9 A |
| CSAH 8 (W Broadway Ave)/ 45 1/2 Ave N | 1.5 A | 1.5 A | 1.4 A |
| CSAH 8 (W Broadway Ave)/ CSAH 9 (42 nd Ave N) | 18.6 B | 18.6 B | 18.5 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 9 (42 nd Ave N) | 24.4 C | 24.3 C | 30.0 C |
| CSAH 9 (42 nd Ave N)/ Hubbard Ave*,1 | 3.2 A | 3.4 A | 9.7 A |
| CSAH 9 (42 nd Ave N)/ Railroad Ave N | 1.7 A | 2.4 A | 1.9 A |
| CSAH 9 (42 nd Ave N)/ Regent Ave N | 2.4 A | 2.4 A | 2.0 A |
| W Broadway Ave/ 41 1/2 Ave N* | 10.1 B | 10.2 B | 18.9 C |
| Hubbard Ave/ 41 1/2 Ave N* | 5.7 A | 5.8 A | 26.4 D |
| Hubbard Ave/ 41 st Ave N* | 7.5 | 7.5 | 17.2 |



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| Intersection | Overall Intersection | | |
|--|---|------------------------|--------------|
| | Average Delay (seconds/vehicle) and LOS | | |
| | Opening Year | Opening Year | Opening Year |
| | AM Build No Freight Event | AM Build Freight Event | PM Build |
| W Broadway Ave/ 41 st Ave N* | A 8.4 | A 8.6 | C 16.3 |
| Golden Valley Rd/ Theodore Wirth Pkwy** | 11.5 B | N/A | 19.4 C |

*Side street stop-controlled intersection

** All-way stop-controlled intersection

¹ Left-turn movements limited to emergency vehicles and buses only.

Table 5.8. CSAH 81/73rd Avenue N to TH 55 (Olson Memorial Highway) – 2040 Build Conditions Results

| Intersection | Overall Intersection | | |
|---|---|---------------------|-----------|
| | Average Delay (seconds/vehicle) and LOS | | |
| | 2040 AM | 2040 AM | 2040 PM |
| | Build No Freight Event | Build Freight Event | Build |
| CSAH 81 (Bottineau Blvd)/ 73 rd Ave N | 17.5 B | 18.0 B | 19.8 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 8 (W Broadway Ave)/ 71 st Ave N | 31.5 C | 31.6 C | 33.4 C |
| CSAH 130 (W Broadway Ave)/ 71 st Ave N | 8.5 A | 8.2 A | 16.5 B |
| CSAH 81 (Bottineau Blvd)/ I-94 WB Ramps | 11.0 B | 10.6 B | 8.7 A |
| CSAH 81 (Bottineau Blvd)/ I-94 EB Ramps | 26.5 C | 25.9 C | 33.6 C |
| CSAH 81 (Bottineau Blvd)/ 63 rd Ave N | 37.2 D | 38.9 D | 36.6 D |
| 63 rd Ave N/Louisiana Ave/ Park-and-Ride Access | 6.9 A | 7.0 A | 13.5 B |
| CSAH 81 (Bottineau Blvd)/ CSAH 10 (Bass Lake Rd) | 32.4 C | 33.9 C | 53.7 D |
| CSAH 10 (Bass Lake Rd)/ Sherburne Ave | 7.8 A | 7.9 A | 24.8 C |
| CSAH 81 (Bottineau Blvd)/ Wilshire Blvd | 14.1 B | 14.8 B | 16.2 B |
| Wilshire Blvd/Lakeland Ave | 5.8 A | 5.8 A | 29.3 D |
| CSAH 81 (Bottineau Blvd)/ Corvallis Ave N | 9.8 A | 9.7 A | 14.6 B |



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| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | |
|--|---|-----------------------------------|---------------|
| | 2040 AM Build No Freight Event | 2040 AM Build Freight Event | 2040 PM Build |
| | CSAH 8 (W Broadway Ave)/ Corvallis Ave N* | 2.7 A | 3.0 A |
| CSAH 8 (W Broadway Ave)/ Welcome Ave N* | 2.0 A | 2.6 A | 2.2 A |
| CSAH 8 (W Broadway Ave)/ Vera Cruz Ave N* | 0.7 A | 0.8 A | 3.1 A |
| CSAH 8 (W Broadway Ave)/ 45 ½ Ave N | 1.6 A | 1.7 A | 1.6 A |
| CSAH 8 (W Broadway Ave)/ CSAH 9 (42 nd Ave N) | 19.8 B | 19.8 B | 20.5 C |
| CSAH 81 (Bottineau Blvd)/ CSAH 9 (42 nd Ave N) | 25.3 C | 25.2 C | 32.0 C |
| CSAH 9 (42 nd Ave N)/ Hubbard Ave*, ¹ | 3.5 A | 3.8 A | 10.8 B |
| CSAH 9 (42 nd Ave N)/ Railroad Ave N | 2.0 A | 2.7 A | 2.1 A |
| CSAH 9 (42 nd Ave N)/ Regent Ave N | 2.6 A | 2.6 A | 2.5 A |
| W Broadway Ave/ 41 ½ Ave N* | 10.6 B | 10.7 B | 23.8 C |
| Hubbard Ave/ 41 ½ Ave N* | 5.9 A | 5.9 A | 26.8 D |
| Hubbard Ave/ 41 st Ave N* | 8.1 A | 8.1 A | 17.1 C |
| W Broadway Ave/ 41 st Ave N* | 8.7 A | 8.6 A | 17.1 C |
| Golden Valley Rd/ Theodore Wirth Pkwy** | 12.8 B | N/A | 42.5 E |

*Side street stop-controlled intersection

** All-way stop-controlled intersection

¹ Left-turn movements limited to emergency vehicles and buses only.

5.2.4 TH 55 (Olson Memorial Highway) to Target Field Station

The results of the Opening Year and 2040 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:

- TH 55 (Olson Memorial Highway)/Thomas Avenue N in the 2040 AM peak
- Olson Memorial Highway)/7th Street N/6th Avenue N in the 2040 PM peak

All intersections were modeled in VISSIM based on the proposed future at-grade LRT crossings. The overall intersection results are shown in **Table 5.9** below.



Movements for which queuing issues were identified in one or more scenarios were as follows:

- TH 55 (Olson Memorial Highway)/Thomas Avenue N – Southbound approach
- TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) – Southbound left-turn movement
- TH 55 (Olson Memorial Highway)/Morgan Avenue N – Southbound approach
- TH 55 (Olson Memorial Highway)/Humboldt Avenue N – Northbound approach
- TH 55 (Olson Memorial Highway)/Van White Memorial Boulevard – Northbound through and right-turn movements
- TH 55 (Olson Memorial Highway)/Bryant Avenue N – Northbound approach
- TH 55 (Olson Memorial Highway)/I-94 EB Ramps (W Lyndale Avenue N) – Southbound approach

The poor LOS at the TH 55 (Olson Memorial Highway)/Thomas Avenue N intersections is due to the high traffic volumes at the TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) intersection. During the AM peak when eastbound traffic volumes are heaviest, queues can spill back on TH 55 (Olson Memorial Highway) and impact the upstream intersection at TH 55 (Olson Memorial Highway)/Thomas Avenue N. The queues and delays on TH 55 (Olson Memorial Highway) are less severe in the Build conditions than in the No Build conditions due to intersection and signal timing improvements associated with the BLRT project, therefore no additional improvements are proposed.

The LOS E operations at the Olson Memorial Highway/7th Street N/6th Avenue N intersection in the 2040 PM peak is due to growth in traffic volumes at the intersection, the LRT alignment through the intersection that results in complex traffic signal phasing, and the roadway geometrics at the intersection. The intersection has many competing needs: C-Line arterial BRT stations; bus access to the adjacent Metro Transit Heywood Garage; pedestrian access to the adjacent Target Field Station; City of Minneapolis planned future protected bikeway on 7th Street N; and buildings immediately adjacent to the right-of-way in two quadrants. During the design development process, several roadway improvements including additional left-turn and through lanes were identified and modeled, and these roadway improvements would maintain LOS D or better operations at the intersection in 2040 peak hours in the Build conditions. However, these roadway improvements would result in longer crossings for pedestrians and bicyclists, were perceived to make the intersection less friendly for transit users, and would reduce the available space for the planned protected bikeway on 7th Street N. The BLRT project stakeholders, including the City of Minneapolis, Metro Transit, and Hennepin County, evaluated the competing needs of all modes at the intersection and recommended that roadway capacity improvements not be implemented at the intersection due to the negative impacts on other modes. Therefore roadway improvements are not proposed to maintain LOS D or better operations at this intersection in the 2040 Build PM peak conditions.

The southbound left-turn queue at TH 55 (Olson Memorial Highway)/CSAH 2 (Penn Avenue N) occurs in the 2040 Build PM peak only and is due to the relatively short 100-foot turn lane. The length of the turn lane was limited to 100 feet in order to minimize impacts to on-street parking and adjacent boulevard space. The queue would be accommodated within the taper distance of the turn lane, and therefore this is not considered to be an issue that is in need of further improvements.

The queuing issues on Thomas Avenue N, Morgan Avenue N, Humboldt Avenue N, Van White Memorial Boulevard, and Bryant Avenue N are all due to the location of the frontage road zero to 50 feet from the intersection with TH 55 (Olson Memorial Highway). One to two vehicles queued at the stop bar would exceed the storage distance for these approaches. These issues were also noted in the Existing and No Build conditions analysis and occur on low volume approaches. Therefore, no mitigation is proposed to address these queues.



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The queue on the southbound approach of the TH 55 (Olson Memorial Highway)/I-94 EB Ramps (W Lyndale Avenue N) intersection is due to the high volume of traffic, but is a significant distance from the I-94 exit and in a lower speed roadway segment (30 mph). This issue was noted in the Existing and No Build conditions analysis also, and does not change significantly in the Build conditions. Therefore no additional improvements are proposed.

The full table of Build conditions LOS and queuing analysis results can be found in **Appendix C**.

Table 5.9. TH 55 (Olson Memorial Highway) to Target Field Station – Opening Year and 2040 Build Conditions Results

| Intersection | Overall Intersection Average Delay (seconds/vehicle) and LOS | | | |
|---|---|------------------|--------------------------------|------------------|
| | Opening Year AM Build | 2040 AM Build | Opening Year PM Build | 2040 PM Build |
| TH 55 (Olson Memorial Hwy)/ Thomas Ave N | 12.0 B | 65.3 E | 10.9 B | 21.8 C |
| TH 55 (Olson Memorial Hwy)/ Pedestrian Crossing East of Russell Ave N | 9.5 A | 22.4 C | 4.6 A | 11.5 B |
| TH 55 (Olson Memorial Hwy)/ CSAH 2 (Penn Ave N) | 44.3 D | 50.4 D | 43.1 D | 51.1 D |
| TH 55 (Olson Memorial Hwy)/ Pedestrian Crossing East of Oliver Ave N | 6.5 A | 6.5 A | 7.3 A | 8.0 A |
| TH 55 (Olson Memorial Hwy)/ Morgan Ave N | 13.3 B | 13.5 B | 16.4 B | 22.9 C |
| TH 55 (Olson Memorial Hwy)/ James Ave N* | 6.1 A | 6.6 A | 5.2 A | 3.6 A |
| TH 55 (Olson Memorial Hwy)/ Pedestrian Crossing East of James Ave N | 1.3 A | 1.3 A | 1.2 A | 1.2 A |
| TH 55 (Olson Memorial Hwy)/ Humboldt Ave N | 22.6 C | 24.5 C | 22.6 C | 20.3 C |
| TH 55 (Olson Memorial Hwy)/ Van White Memorial Blvd | 26.5 C | 31.5 C | 33.3 C | 36.3 D |
| TH 55 (Olson Memorial Hwy)/ Bryant Ave N | 17.4 B | 19.2 B | 17.3 B | 22.8 C |
| TH 55 (Olson Memorial Hwy)/ I-94 EB Ramps (W Lyndale Ave N) | 34.1 C | 54.9 D | 29.1 C | 32.3 C |
| TH 55 (Olson Memorial Hwy)/ I-94 WB Ramps (E Lyndale Ave N) | 37.1 D | 42.2 D | 39.4 C | 46.7 D |
| Olson Memorial Hwy)/ Border Ave N | 23.6 C | 24.0 C | 32.3 C | 34.4 C |
| Olson Memorial Hwy)/ 7 th St N/ 6 th Ave N | 45.0 D | 46.6 D | 43.6 D | 64.8 E |



*Side street stop-controlled intersection

5.3 Build Conditions Traffic Modeling Summary

Several improvements were identified as part of the scope of the project in order to provide control of the LRT at intersections and to provide adequate infrastructure to accommodate buses, pedestrians, and park-and-ride traffic near stations. These project elements were incorporated into the Build conditions modeling and included:

- Reconstruct 101st Avenue N and Oak Grove Parkway to accommodate the needs of the BLRT OMF site.
- Reconstruct CSAH 103 (West Broadway Avenue) from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the LRT alignment, station location, and park-and-ride parking structure.
- Install a new traffic signal at CSAH 103 (West Broadway Avenue)/Main Street 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.
- Install a new traffic signal at CSAH 103 (West Broadway Avenue)/75th Avenue N to allow LRT to transition from side-running to center-running.
- 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.
- Reconfigure the CSAH 8 (West Broadway Avenue)/Vera Cruz Avenue N intersection to a roundabout, to continue to provide full access to the surrounding neighborhood, along with additional gates and medians at the rail crossing.
- Install a new traffic signal at TH 55 (Olson Memorial Highway)/Thomas Avenue N to maintain neighborhood access.
- Install new traffic signals on TH 55 (Olson Memorial Highway) at the proposed pedestrian crossings east of Russell Avenue N, east of Oliver Avenue N, and east of James Avenue N to maintain neighborhood pedestrian access. These pedestrian signals are assumed to operate as two-stage crossings due to the u-shaped geometry of the walkway as it crosses the LRT guideway.

In addition, some improvements were also identified as part of the Build project in order to provide overall LOS D or better operations or to manage park-and-ride queuing at all intersections in the Build conditions. These project improvements included:

- Modify left-turn phasing on CSAH 130 (Brooklyn Boulevard)/CSAH 152 at CSAH 103 (West Broadway Avenue) from protected-only to protected/permissive.
- Modify signal phasing at CSAH 81 (Bottineau Boulevard)/CSAH 10 (Bass Lake Road) to provide a right-turn overlap phase on eastbound CSAH 10 (Bass Lake Road).
- Restripe Wilshire Boulevard at CSAH 81 (Bottineau Boulevard) to provide dual eastbound left-turn lanes and modify signal timing to accommodate park-and-ride traffic.
- Restripe CSAH 8 (West Broadway Avenue) at CSAH 9 (42nd Avenue N) to provide northbound and southbound left-turn lanes and modify the traffic signal to provide northbound, southbound, and westbound protected/permissive left-turn phasing to accommodate park-and-ride traffic.
- Modify CSAH 2 (Penn Avenue N) lane geometrics at TH 55 (Olson Memorial Highway) to better accommodate vehicle traffic.
- Modify southbound W Lyndale Avenue N geometrics to better accommodate vehicle traffic flow.



Signal timings in the Build conditions were optimized as part of the VISSIM simulation models. The CSAH 103 (West Broadway Avenue), CSAH 81 (Bottineau Boulevard), and TH 55 (Olson Memorial Highway) corridors were all assumed to operate with coordinated and interconnected signals. Pedestrian crossings of TH 55 (Olson Memorial Highway) were assumed to be timed for one-stage crossings similar to the existing operations, with the exception of the three new pedestrian signals as noted previously.

With these improvements, all intersections would be expected to operate at overall LOS D or better in the Opening Year and 2040 Build AM and PM peak conditions, with the following exceptions:

- Oak Grove Parkway/Xylon Avenue in the 2040 AM and PM peak
- CSAH 103 (West Broadway Avenue)/Oak Grove Parkway in the 2040 PM peak in the scenario with no interchange at TH 169/101st Avenue N
- CSAH 103 (West Broadway Avenue)/Main Street in the 2040 PM peak in the scenario with no interchange at TH 169/101st Avenue N
- Golden Valley Road/Theodore Wirth Parkway in 2040 PM peak
- TH 55 (Olson Memorial Highway)/Thomas Avenue N in the 2040 AM peak
- Olson Memorial Highway)/7th Street N/6th Avenue N in the 2040 PM peak

A future traffic signal is expected to be needed at the Oak Grove Parkway/Xylon Avenue intersection to accommodate 2040 development-generated traffic volumes. The traffic signal is recommended to be constructed (by others) at the same time as the TH 169/101st Avenue N interchange or as development traffic warrants.

The poor operations (delay and queuing) at the CSAH 103 (West Broadway Avenue)/Oak Grove Parkway and CSAH 103 (West Broadway Avenue)/Main Street intersections in the 2040 Build PM peak scenarios without the TH 169/101st Avenue N interchange are due to the high development-generated traffic volumes all accessing the TH 610 interchange. The planned future interchange at TH 169/101st Avenue N would distribute this traffic demand between two interchanges and result in all intersections operating at overall LOS D or better during the peak periods. The operations issues noted in the Build conditions also occurred in the No Build conditions to a greater degree, therefore no mitigation has been proposed as part of the BLRT project.

The all-way stop control at the Golden Valley Road/Theodore Wirth Parkway would be expected to operate poorly in the 2040 PM peak due to the forecast growth in area traffic volumes and the inefficiency of the existing all-way stop control. The operations issues noted in the Build conditions also occur in the No Build conditions to the same degree, and the park-and-ride would be expected to contribute two percent or less of the 2040 peak hour volumes. Therefore, no mitigation has been proposed for this intersection.

The poor LOS at the TH 55 (Olson Memorial Highway)/Thomas Avenue N intersections is due to the high eastbound traffic volumes in the AM peak. The operations in the 2040 Build conditions are expected to be better than in the 2040 No Build conditions due to the improvements associated with the BLRT project, therefore no additional improvements are proposed.

The LOS E operations at the Olson Memorial Highway)/7th Street N/6th Avenue N intersection in the 2040 PM peak is due to growth in traffic volumes at the intersection, the LRT alignment through the intersection that results in changes to the traffic signal phasing, and the roadway geometrics at the intersection. The BLRT stakeholders, in evaluating the competing needs of all modes at the intersection, recommended that roadway capacity improvements not be implemented at the intersection due to the corresponding negative impacts on other modes, including pedestrians, bicyclists, and buses.



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Overall, there are fewer failing intersections in the Build conditions than in the No Build conditions due to the improvements made as part of the BLRT project. In addition, all the intersections with LOS E or F were due to an issue that also existed in the No Build conditions, or stakeholders determined that the traffic mitigation measures would have significant negative impacts on other modes. Therefore, no traffic mitigation measures, other than those described above, are proposed for the BLRT project.

Appendix A: Peak Hour Traffic Volumes

2014 AM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| CSAH 103 / 101st Ave N | 3 | 99 | - | - | 577 | 1 | 8 | - | 6 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | 3 | 101 | - | - | 582 | 1 | 1 | - | 5 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | - | 89 | 542 | 88 | 499 | - | - | - | - | 35 | - | 15 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | - | 454 | 66 | 38 | 496 | - | - | - | - | 512 | - | 177 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | - | 142 | 190 | 167 | 841 | - | - | - | - | 132 | - | 378 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 63 | 282 | - | - | 842 | 131 | 50 | - | 94 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 54 | 190 | 25 | 27 | 599 | 310 | 114 | 152 | 26 | 72 | 244 | 41 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | 11 | 242 | 0 | 4 | 611 | 82 | 5 | 1 | 4 | 12 | 3 | 22 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 15 | 200 | 15 | 20 | 580 | 27 | 5 | 0 | 4 | 62 | 0 | 48 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | 5 | 219 | - | - | 598 | 48 | 11 | - | 8 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 5 | 175 | 9 | 3 | 589 | 14 | 34 | 3 | 17 | 46 | 5 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 54 | 117 | 60 | 65 | 491 | 96 | 39 | 305 | 115 | 181 | 415 | 33 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | 2 | 220 | 57 | 139 | 647 | 1 | 3 | 0 | 5 | 15 | 0 | 8 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 8 | 277 | - | - | 661 | 6 | 2 | - | 40 | - | - | - |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | 11 | 357 | - | - | 696 | 5 | 3 | - | 38 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | - | 345 | 22 | 16 | 718 | - | - | - | - | 87 | - | 23 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | 0 | 341 | 3 | 11 | 793 | 1 | 0 | 0 | 1 | 7 | 0 | 26 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | 21 | 311 | 14 | 10 | 775 | 16 | 22 | 0 | 7 | 11 | 0 | 11 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 33 | 144 | 38 | 61 | 454 | 278 | 111 | 246 | 20 | 65 | 342 | 91 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 39 | 4 | 47 | 7 | 0 | 7 | 16 | 323 | 47 | 28 | 610 | 16 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 5 | 0 | 1 | 4 | 0 | 8 | 10 | 320 | 6 | 3 | 479 | 13 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 26 | 168 | 16 | 26 | 442 | 79 | 15 | 5 | 12 | 13 | 19 | 32 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 17 | 201 | 8 | 4 | 462 | 1 | 1 | 3 | 14 | 33 | 7 | 8 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | 32 | 221 | 2 | 0 | 503 | 6 | 4 | 3 | 59 | 10 | 1 | 1 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 16 | 200 | 9 | 10 | 501 | 61 | 36 | 11 | 10 | 17 | 29 | 19 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 39 | 697 | 26 | 10 | 1251 | 68 | 16 | 18 | 26 | 33 | 46 | 22 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 65 | 669 | 141 | 47 | 1130 | 133 | 66 | 77 | 33 | 349 | 200 | 27 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 125 | 65 | 1 | 9 | 72 | 425 | 151 | 9 | 105 | 0 | 26 | 2 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 470 | 210 | 118 | 1395 | - | - | - | - | 116 | - | 406 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 622 | 141 | 470 | 1041 | - | - | - | - | 357 | - | 58 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 47 | 524 | 69 | 104 | 1218 | 76 | 77 | 124 | 116 | 232 | 204 | 162 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 4 | 0 | 73 | 3 | 0 | 1 | 9 | 241 | 4 | 62 | 261 | 4 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 177 | 523 | 31 | 59 | 1284 | 224 | 66 | 172 | 294 | 113 | 290 | 52 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 6 | 1 | 68 | 0 | 1 | 0 | 0 | 463 | 11 | 83 | 606 | 1 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 17 | 663 | 79 | 63 | 1605 | 24 | 10 | 5 | 17 | 218 | 20 | 59 |
| Wilshire Blvd / Lakeland Ave N | - | 0 | 16 | 16 | 0 | - | - | - | - | 31 | - | 30 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 56 | 704 | 7 | 8 | 1777 | 56 | 30 | 8 | 112 | 32 | 22 | 26 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 80 | 26 | 124 | 134 | - | - | - | - | 34 | - | 100 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 14 | 95 | - | - | 153 | 15 | 11 | - | 11 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | - | - | - | 9 | - | 8 | 5 | 159 | - | - | 102 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 7 | 93 | - | - | 160 | 8 | 14 | - | 23 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 68 | 51 | 20 | 73 | 70 | 40 | 28 | 339 | 70 | 31 | 303 | 21 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 150 | 405 | 17 | 47 | 682 | 75 | 65 | 149 | 163 | 29 | 130 | 47 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 8 ¹ | 0 ¹ | 11 | 1 ¹ | 0 ¹ | 8 | 1 ¹ | 425 | 23 | 2 ¹ | 408 | 1 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | 8 | 1 | 5 | 5 | 1 | 6 | 11 | 447 | 10 | 2 | 422 | 18 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 113 | 1 | 32 | 8 | 0 | 13 | 6 | 414 | 48 | 17 | 398 | 1 |
| W Broadway Ave / 41 1/2 Ave N | 5 | 139 | - | - | 153 | 18 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 14 | - | - | 21 | - | - | - | - | 18 | - | 5 |
| 41st Ave N / Hubbard Ave | 6 | 9 | 17 | 22 | 24 | 10 | 8 | 60 | 1 | 13 | 65 | 14 |
| W Broadway Ave / 41st Ave N | 8 | 101 | 22 | 11 | 108 | 34 | 28 | 51 | 20 | 22 | 50 | 10 |
| Golden Valley Rd / Theodore Wirth Pkwy | 16 | 57 | 6 | 37 | 262 | 361 | 127 | 180 | 131 | 6 | 128 | 18 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 45 | - | 43 | 29 | 2007 | - | - | 889 | 12 |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 39 | 128 | 60 | 99 | 104 | 83 | 132 | 1814 | 106 | 75 | 779 | 122 |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 10 | 2 | 30 | 27 | 19 | 13 | 6 | 1948 | 19 | 50 | 953 | 2 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | 50 | - | 50 | 34 | 1971 | - | - | 955 | 51 |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 14 | 19 | 27 | 40 | 6 | 10 | 31 | 1972 | 18 | 82 | 982 | 57 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 14 | 19 | 20 | 71 | 22 | 36 | 24 | 1955 | 60 | 19 | 1071 | 14 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 4 | 2 | 32 | 5 | 4 | 27 | 6 | 2019 | 21 | 65 | 1073 | 22 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 286 | 374 | 410 | - | 1219 | 837 | 145 | 750 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 572 | 386 | 264 | - | - | - | 179 | 1109 | - | - | 323 | 22 |
| Olson Memorial Hwy / Border Ave | 22 | 29 | 37 | 3 | 106 | 129 | 265 | 988 | 120 | 4 | 194 | 6 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 76 | 182 | 64 | 49 | 802 | 8 | - | 419 | 609 | 40 | 120 | 40 |

¹ Movement allowed by buses and emergency vehicles only

2014 PM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|-----------------|----------------|-------|----------------|----------------|-------|-----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| CSAH 103 / 101st Ave N | 3 | 592 | - | - | 204 | 1 | 163 | - | 15 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | 5 | 594 | - | - | 218 | 1 | 1 | - | 8 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | - | 480 | 175 | 40 | 186 | - | - | - | - | 582 | - | 119 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | - | 493 | 162 | 333 | 435 | - | - | - | - | 281 | - | 162 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | - | 444 | 545 | 168 | 548 | - | - | - | - | 113 | - | 211 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 65 | 878 | - | - | 579 | 82 | 110 | - | 91 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 26 | 577 | 74 | 78 | 383 | 209 | 298 | 222 | 47 | 53 | 132 | 68 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | 8 | 609 | 5 | 17 | 455 | 11 | 64 | 0 | 32 | 4 | 0 | 4 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 2 | 572 | 58 | 44 | 445 | 2 | 26 | 1 | 10 | 26 | 0 | 24 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | 8 | 582 | - | - | 462 | 19 | 50 | - | 29 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 14 | 554 | 51 | 12 | 446 | 33 | 26 | 6 | 9 | 24 | 2 | 10 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 131 | 437 | 338 | 70 | 310 | 99 | 138 | 707 | 160 | 142 | 393 | 44 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | 6 | 809 | 47 | 87 | 521 | 4 | 6 | 0 | 4 | 72 | 2 | 91 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 52 | 855 | - | - | 592 | 5 | 7 | - | 33 | - | - | - |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | 32 | 939 | - | - | 622 | 3 | 7 | - | 19 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | - | 951 | 113 | 27 | 614 | - | - | - | - | 63 | - | 20 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | 11 | 1033 | 15 | 31 | 638 | 8 | 3 | 0 | 5 | 8 | 1 | 28 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | 55 | 885 | 77 | 35 | 543 | 73 | 100 | 12 | 44 | 46 | 12 | 74 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 85 | 491 | 157 | 121 | 312 | 200 | 371 | 532 | 58 | 135 | 582 | 155 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 81 | 26 | 146 | 43 | 22 | 55 | 65 | 772 | 116 | 129 | 693 | 45 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 8 | 0 | 11 | 41 | 0 | 39 | 30 | 760 | 20 | 11 | 825 | 38 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 63 | 526 | 84 | 88 | 311 | 161 | 141 | 43 | 50 | 43 | 58 | 66 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 56 | 655 | 29 | 16 | 385 | 3 | 2 | 9 | 60 | 14 | 7 | 16 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | 64 | 731 | 7 | 4 | 449 | 6 | 6 | 3 | 140 | 4 | 3 | 3 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 37 | 682 | 33 | 40 | 492 | 61 | 92 | 25 | 19 | 17 | 30 | 28 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 50 | 1523 | 55 | 21 | 651 | 43 | 117 | 57 | 72 | 50 | 42 | 36 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 48 | 1380 | 409 | 48 | 636 | 90 | 183 | 240 | 55 | 274 | 144 | 66 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 178 | 199 | 5 | 18 | 224 | 289 | 528 | 19 | 150 | 2 | 17 | 10 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 1239 | 495 | 122 | 845 | - | - | - | - | 150 | - | 600 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 1579 | 220 | 369 | 626 | - | - | - | - | 216 | - | 155 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 73 | 1452 | 253 | 129 | 637 | 76 | 127 | 249 | 63 | 164 | 221 | 220 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 3 | 0 | 112 | 5 | 0 | 9 | 3 | 322 | 12 | 82 | 284 | 4 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 332 | 1401 | 129 | 70 | 622 | 172 | 300 | 471 | 318 | 90 | 342 | 77 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 11 | 0 | 207 | 28 | 4 | 17 | 23 | 853 | 19 | 70 | 760 | 15 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 26 | 1723 | 260 | 77 | 920 | 36 | 37 | 7 | 29 | 115 | 7 | 105 |
| Wilshire Blvd / Lakeland Ave N | - | 0 | 37 | 36 | 0 | - | - | - | - | 35 | - | 34 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 142 | 1917 | 23 | 26 | 976 | 62 | 75 | 25 | 85 | 11 | 12 | 17 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 252 | 38 | 147 | 219 | - | - | - | - | 52 | - | 164 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 55 | 237 | - | - | 198 | 73 | 53 | - | 27 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | - | - | - | 20 | - | 6 | 14 | 211 | - | - | 286 | 14 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 19 | 284 | - | - | 217 | 14 | 16 | - | 9 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 104 | 150 | 42 | 40 | 142 | 44 | 63 | 470 | 114 | 38 | 335 | 90 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 274 | 779 | 51 | 94 | 580 | 69 | 103 | 275 | 225 | 22 | 120 | 72 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 13 ¹ | 0 ¹ | 25 | 0 ¹ | 0 ¹ | 7 | 40 ¹ | 622 | 40 | 2 ¹ | 475 | 6 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | 5 | 2 | 6 | 9 | 2 | 6 | 9 | 665 | 18 | 13 | 504 | 11 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 69 | 3 | 19 | 9 | 2 | 19 | 11 | 649 | 95 | 24 | 458 | 9 |
| W Broadway Ave / 41 1/2 Ave N | 15 | 296 | - | - | 275 | 19 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 18 | - | - | 42 | - | - | - | - | 14 | - | 20 |
| 41st Ave N / Hubbard Ave | 6 | 4 | 10 | 28 | 24 | 10 | 17 | 130 | 5 | 10 | 85 | 17 |
| W Broadway Ave / 41st Ave N | 11 | 182 | 33 | 48 | 192 | 35 | 63 | 85 | 20 | 37 | 66 | 51 |
| Golden Valley Rd / Theodore Wirth Pkwy | 95 | 189 | 10 | 22 | 92 | 187 | 321 | 171 | 33 | 2 | 189 | 39 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 42 | - | 34 | 74 | 1738 | - | - | 1380 | 34 |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 89 | 201 | 66 | 111 | 143 | 114 | 196 | 1458 | 126 | 87 | 1211 | 159 |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 25 | 14 | 35 | 22 | 34 | 9 | 18 | 1601 | 16 | 49 | 1423 | 3 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | 38 | - | 43 | 37 | 1621 | - | - | 1432 | 4 |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 14 | 16 | 42 | 27 | 19 | 17 | 26 | 1617 | 16 | 33 | 1405 | 18 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 28 | 39 | 25 | 71 | 38 | 53 | 66 | 1560 | 60 | 32 | 1375 | 7 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 32 | 13 | 64 | 12 | 6 | 20 | 19 | 1608 | 29 | 45 | 1362 | 29 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 183 | 371 | 223 | - | 909 | 775 | 253 | 1213 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 375 | 694 | 127 | - | - | - | 262 | 718 | - | - | 1091 | 81 |
| Olson Memorial Hwy / Border Ave | 146 | 82 | 12 | 9 | 91 | 290 | 255 | 542 | 48 | 13 | 736 | 15 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 319 | 468 | 42 | 47 | 262 | 27 | - | 336 | 225 | 52 | 418 | 49 |

¹ Movement allowed by buses and emergency vehicles only

2021 No Build AM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|-----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| CSAH 103 / 101st Ave N | 15 | 120 | - | - | 665 | 5 | 10 | - | 20 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | 5 | 135 | - | - | 685 | 5 | 5 | - | 5 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | - | 120 | 685 | 115 | 575 | - | - | - | - | 45 | - | 20 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | - | 580 | 95 | 50 | 640 | - | - | - | - | 540 | - | 225 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | - | 180 | 210 | 240 | 940 | - | - | - | - | 140 | - | 495 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 70 | 335 | - | - | 930 | 150 | 55 | - | 95 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 80 | 210 | 30 | 50 | 640 | 335 | 120 | 180 | 25 | 80 | 280 | 70 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 285 | 5 | - | 675 | 100 | - | - | 10 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 20 | 225 | 15 | 35 | 625 | 30 | 5 | 5 | 30 | 65 | 5 | 50 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 260 | - | - | 645 | 55 | - | - | 20 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 5 | 200 | 10 | 15 | 635 | 15 | 35 | 5 | 20 | 50 | 5 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 55 | 135 | 60 | 70 | 535 | 105 | 40 | 310 | 115 | 185 | 425 | 35 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 245 | 60 | - | 840 | 5 | - | - | 5 | - | - | 10 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 20 | 300 | 75 | 145 | 695 | 5 | 5 | 5 | 40 | 15 | 5 | 5 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 395 | - | - | 745 | 15 | - | - | 40 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 5 ¹ | 365 | 20 | 20 | 765 | - | - | - | - | 90 | - | 25 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 365 | 15 | - | 850 | 5 | - | - | 5 | - | - | 35 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | 20 | 335 | 15 | 20 | 825 | 15 | 20 | 5 | 5 | 10 | 5 | 10 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 30 | 155 | 40 | 65 | 485 | 295 | 115 | 250 | 20 | 65 | 345 | 95 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 40 | 5 | 45 | 5 | 5 | 5 | 15 | 335 | 50 | 30 | 630 | 15 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 5 | 5 | 5 | 5 | 5 | 10 | 15 | 340 | 5 | 5 | 490 | 15 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 30 | 180 | 20 | 25 | 460 | 80 | 15 | 5 | 10 | 15 | 20 | 35 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 15 | 220 | 10 | 5 | 490 | 5 | 5 | 5 | 15 | 35 | 5 | 10 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | 35 | 240 | 5 | 5 | 530 | 5 | 5 | 5 | 60 | 10 | 5 | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 20 | 215 | 10 | 10 | 530 | 65 | 40 | 10 | 10 | 20 | 30 | 20 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 45 | 770 | 30 | 10 | 1350 | 65 | 15 | 20 | 30 | 40 | 50 | 25 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 65 | 740 | 150 | 55 | 1225 | 140 | 75 | 80 | 30 | 370 | 210 | 35 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 130 | 70 | 5 | 10 | 75 | 455 | 165 | 10 | 110 | 5 | 25 | 5 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 535 | 225 | 120 | 1505 | - | - | - | - | 120 | - | 420 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 700 | 150 | 485 | 1140 | - | - | - | - | 375 | - | 60 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 50 | 585 | 75 | 115 | 1315 | 85 | 85 | 130 | 120 | 240 | 210 | 180 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 75 | 5 | 5 | 5 | 10 | 250 | 5 | 65 | 270 | 5 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 180 | 575 | 30 | 65 | 1360 | 245 | 75 | 180 | 305 | 115 | 300 | 55 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 5 | 5 | 75 | 5 | 5 | 5 | 5 | 485 | 10 | 90 | 635 | 5 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 20 | 715 | 85 | 65 | 1690 | 25 | 10 | 5 | 20 | 225 | 20 | 60 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 15 | 15 | 5 | - | - | - | - | 30 | - | 30 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 55 | 755 | 10 | 10 | 1860 | 60 | 35 | 10 | 115 | 30 | 25 | 30 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 90 | 30 | 130 | 140 | - | - | - | - | 35 | - | 105 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 10 | 110 | - | - | 160 | 15 | 10 | - | 10 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | - | - | - | 10 | - | 10 | 5 | 165 | - | - | 110 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 10 | 100 | - | - | 165 | 10 | 15 | - | 25 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 70 | 55 | 20 | 80 | 75 | 40 | 30 | 355 | 70 | 35 | 320 | 25 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 160 | 420 | 15 | 50 | 700 | 80 | 70 | 155 | 170 | 30 | 135 | 50 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 10 ² | 0 ² | 10 | 5 ² | 0 ² | 10 | 5 ² | 440 | 25 | 5 ² | 425 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | 10 | 5 | 5 | 5 | 5 | 5 | 10 | 465 | 10 | 5 | 440 | 20 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 115 | 5 | 35 | 10 | 5 | 15 | 5 | 430 | 50 | 20 | 415 | 5 |
| W Broadway Ave / 41 1/2 Ave N | 5 | 145 | - | - | 160 | 20 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 15 | - | - | 20 | - | - | - | - | 20 | - | 5 |
| 41st Ave N / Hubbard Ave | 5 | 10 | 20 | 25 | 25 | 10 | 10 | 60 | 5 | 15 | 65 | 15 |
| W Broadway Ave / 41st Ave N | 10 | 110 | 25 | 10 | 110 | 35 | 30 | 55 | 20 | 25 | 50 | 10 |
| Golden Valley Rd / Theodore Wirth Pkwy | 15 | 60 | 5 | 40 | 270 | 370 | 130 | 185 | 135 | 5 | 130 | 20 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 45 | - | 45 | 30 | 2085 | - | - | 935 | 15 |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 40 | 135 | 65 | 105 | 110 | 85 | 135 | 1880 | 110 | 80 | 820 | 125 |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 10 | 5 | 30 | 30 | 20 | 15 | 5 | 2020 | 20 | 50 | 1000 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | 50 | - | 50 | 35 | 2045 | - | - | 1005 | 55 |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 20 | 25 | 30 | 45 | 10 | 15 | 45 | 2030 | 25 | 90 | 1020 | 60 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 15 | 20 | 20 | 75 | 25 | 35 | 25 | 2015 | 60 | 20 | 1120 | 15 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 5 | 5 | 35 | 5 | 5 | 30 | 5 | 2085 | 20 | 70 | 1120 | 25 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 305 | 390 | 420 | - | 1280 | 845 | 160 | 795 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 590 | 400 | 290 | - | - | - | 180 | 1175 | - | - | 365 | 25 |
| Olson Memorial Hwy / Border Ave | 25 | 30 | 40 | 5 | 115 | 135 | 270 | 1070 | 125 | 5 | 230 | 5 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 80 | 190 | 70 | 60 | 825 | 10 | - | 480 | 635 | 45 | 155 | 50 |

¹ U-turn volume

² Movement allowed by buses and emergency vehicles only

2021 No Build PM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|-----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| CSAH 103 / 101st Ave N | 5 | 680 | - | - | 235 | 5 | 190 | - | 35 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | 5 | 690 | - | - | 270 | 5 | 5 | - | 10 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | - | 555 | 220 | 50 | 230 | - | - | - | - | 730 | - | 140 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | - | 650 | 175 | 420 | 600 | - | - | - | - | 295 | - | 200 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | - | 545 | 540 | 260 | 640 | - | - | - | - | 120 | - | 280 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 70 | 970 | - | - | 665 | 95 | 115 | - | 95 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 40 | 615 | 85 | 120 | 415 | 230 | 320 | 250 | 45 | 60 | 155 | 105 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 730 | 25 | - | 515 | 20 | - | - | 100 | - | - | 10 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 55 | 615 | 60 | 135 | 480 | 5 | 25 | 5 | 10 | 30 | 5 | 25 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 720 | - | - | 545 | 25 | - | - | 85 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 15 | 595 | 55 | 10 | 490 | 35 | 25 | 5 | 10 | 30 | 5 | 10 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 135 | 470 | 350 | 75 | 345 | 105 | 145 | 720 | 165 | 150 | 400 | 45 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 885 | 50 | - | 660 | 5 | - | - | 5 | - | - | 80 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 95 | 910 | 35 | 90 | 570 | 5 | 15 | 5 | 35 | 75 | 5 | 15 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 1035 | - | - | 675 | 35 | - | - | 25 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 20 ¹ | 1005 | 120 | 35 | 665 | - | - | - | - | 65 | - | 20 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 1110 | 45 | - | 700 | 20 | - | - | 10 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | 55 | 940 | 80 | 70 | 590 | 75 | 105 | 10 | 45 | 45 | 10 | 75 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 90 | 520 | 175 | 130 | 340 | 215 | 390 | 540 | 60 | 145 | 595 | 165 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 80 | 25 | 150 | 45 | 25 | 55 | 65 | 800 | 120 | 130 | 720 | 50 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 10 | 5 | 10 | 40 | 5 | 40 | 30 | 790 | 20 | 10 | 855 | 40 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 65 | 565 | 85 | 90 | 340 | 170 | 150 | 45 | 50 | 45 | 60 | 70 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 60 | 700 | 30 | 15 | 415 | 5 | 5 | 10 | 60 | 15 | 5 | 15 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | 70 | 780 | 10 | 5 | 485 | 5 | 5 | 5 | 145 | 5 | 5 | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 45 | 725 | 35 | 40 | 525 | 70 | 105 | 25 | 20 | 20 | 35 | 30 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 55 | 1635 | 65 | 20 | 725 | 45 | 120 | 60 | 80 | 60 | 45 | 40 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 50 | 1480 | 425 | 60 | 705 | 100 | 195 | 250 | 55 | 290 | 150 | 75 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 180 | 210 | 5 | 20 | 240 | 315 | 565 | 20 | 150 | 5 | 15 | 10 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 1340 | 520 | 125 | 925 | - | - | - | - | 160 | - | 615 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 1700 | 230 | 380 | 705 | - | - | - | - | 230 | - | 160 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 80 | 1555 | 265 | 145 | 710 | 85 | 135 | 255 | 65 | 170 | 230 | 240 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 115 | 5 | 5 | 10 | 5 | 335 | 10 | 90 | 295 | 5 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 340 | 1495 | 135 | 75 | 680 | 190 | 325 | 485 | 330 | 95 | 355 | 80 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 10 | 5 | 225 | 30 | 5 | 20 | 25 | 885 | 20 | 80 | 790 | 15 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 25 | 1820 | 270 | 80 | 990 | 35 | 40 | 5 | 30 | 120 | 5 | 110 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 40 | 35 | 5 | - | - | - | - | 35 | - | 35 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 145 | 2020 | 25 | 30 | 1045 | 70 | 80 | 25 | 85 | 10 | 15 | 20 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 265 | 40 | 150 | 230 | - | - | - | - | 55 | - | 170 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 55 | 250 | - | - | 210 | 75 | 55 | - | 30 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | - | - | - | 15 | - | 5 | 15 | 225 | - | - | 300 | 15 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 20 | 295 | - | - | 225 | 15 | 15 | - | 10 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 105 | 155 | 45 | 45 | 150 | 45 | 65 | 495 | 115 | 40 | 355 | 95 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 290 | 800 | 50 | 95 | 600 | 75 | 110 | 285 | 235 | 25 | 130 | 75 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 15 ² | 0 ² | 25 | 0 ² | 0 ² | 10 | 5 ² | 645 | 40 | 5 ² | 495 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | 5 | 5 | 5 | 10 | 5 | 5 | 10 | 690 | 20 | 15 | 525 | 10 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 70 | 5 | 20 | 10 | 5 | 20 | 10 | 670 | 100 | 25 | 475 | 10 |
| W Broadway Ave / 41 1/2 Ave N | 15 | 305 | - | - | 285 | 20 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 20 | - | - | 45 | - | - | - | - | 15 | - | 20 |
| 41st Ave N / Hubbard Ave | 5 | 5 | 10 | 35 | 30 | 15 | 20 | 135 | 5 | 10 | 90 | 20 |
| W Broadway Ave / 41st Ave N | 10 | 200 | 35 | 50 | 200 | 35 | 70 | 90 | 20 | 40 | 70 | 55 |
| Golden Valley Rd / Theodore Wirth Pkwy | 100 | 195 | 10 | 20 | 95 | 190 | 330 | 175 | 35 | 5 | 195 | 40 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 45 | - | 35 | 75 | 1810 | - | - | 1450 | 35 |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 95 | 210 | 70 | 115 | 150 | 125 | 200 | 1520 | 130 | 90 | 1270 | 165 |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 25 | 15 | 35 | 25 | 35 | 10 | 15 | 1670 | 20 | 50 | 1490 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | 40 | - | 45 | 40 | 1690 | - | - | 1500 | 5 |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 20 | 20 | 45 | 30 | 25 | 25 | 35 | 1675 | 25 | 25 | 1460 | 20 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 30 | 40 | 25 | 75 | 40 | 55 | 65 | 1615 | 65 | 30 | 1425 | 10 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 35 | 15 | 65 | 15 | 5 | 20 | 20 | 1665 | 35 | 45 | 1410 | 30 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 195 | 390 | 225 | - | 960 | 785 | 275 | 1260 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 375 | 725 | 145 | - | - | - | 270 | 765 | - | - | 1165 | 100 |
| Olson Memorial Hwy / Border Ave | 150 | 90 | 15 | 10 | 100 | 295 | 255 | 605 | 50 | 15 | 815 | 20 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 330 | 485 | 45 | 55 | 270 | 30 | - | 395 | 235 | 60 | 485 | 55 |

¹ U-turn volume

² Movement allowed by buses and emergency vehicles only

2040 No Build AM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|-----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| CSAH 103 / 101st Ave N (No Build01) ¹ | 340 | 265 | - | - | 965 | 115 | 105 | - | 335 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N (No Build01) ¹ | 575 | 380 | - | - | 1085 | 215 | 225 | - | 815 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (No Build01) ¹ | - | 815 | 770 | 385 | 1515 | - | - | - | - | 120 | - | 140 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (No Build01) ¹ | - | 1065 | 80 | 595 | 1040 | - | - | - | - | 610 | - | 520 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (No Build01) ¹ | - | 345 | 200 | 500 | 1150 | - | - | - | - | 210 | - | 800 |
| CSAH 103 / 101st Ave N (No Build02) ² | 395 | 195 | - | - | 810 | 115 | 75 | - | 400 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N (No Build02) ² | 520 | 435 | - | - | 1020 | 190 | 155 | - | 650 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (No Build02) ² | - | 815 | 770 | 385 | 1285 | - | - | - | - | 120 | - | 140 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (No Build02) ² | - | 1065 | 80 | 435 | 970 | - | - | - | - | 610 | - | 520 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (No Build02) ² | - | 345 | 200 | 430 | 1150 | - | - | - | - | 210 | - | 800 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 80 | 475 | - | - | 1160 | 200 | 70 | - | 100 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 85 | 270 | 45 | 110 | 750 | 405 | 140 | 255 | 25 | 105 | 380 | 145 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 360 | 10 | - | 800 | 115 | - | - | 15 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 20 | 290 | 20 | 45 | 740 | 30 | 5 | 5 | 30 | 70 | 5 | 60 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 335 | - | - | 765 | 55 | - | - | 30 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 5 | 270 | 10 | 15 | 765 | 15 | 40 | 5 | 30 | 70 | 10 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 60 | 190 | 70 | 80 | 660 | 125 | 50 | 330 | 130 | 200 | 445 | 45 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 315 | 65 | - | 990 | 5 | - | - | 5 | - | - | 5 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 25 | 370 | 70 | 155 | 830 | 10 | 5 | 5 | 45 | 20 | 5 | 5 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 465 | - | - | 880 | 20 | - | - | 45 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 10 ³ | 435 | 25 | 20 | 905 | - | - | - | - | 95 | - | 25 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 430 | 15 | - | 1005 | 5 | - | - | 5 | - | - | 35 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | 20 | 400 | 15 | 50 | 965 | 20 | 20 | 5 | 5 | 10 | 5 | 10 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 35 | 195 | 45 | 80 | 560 | 340 | 130 | 265 | 20 | 70 | 355 | 115 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 40 | 5 | 45 | 10 | 5 | 10 | 20 | 360 | 55 | 25 | 680 | 20 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 5 | 5 | 10 | 10 | 5 | 10 | 15 | 370 | 5 | 5 | 520 | 15 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 35 | 215 | 30 | 30 | 525 | 90 | 20 | 10 | 15 | 15 | 25 | 35 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 20 | 270 | 10 | 5 | 570 | 5 | 5 | 5 | 15 | 35 | 5 | 10 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | 40 | 300 | 5 | 5 | 615 | 5 | 5 | 5 | 70 | 15 | 5 | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 25 | 265 | 10 | 10 | 610 | 80 | 55 | 15 | 15 | 20 | 35 | 20 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 60 | 955 | 45 | 10 | 1605 | 65 | 15 | 25 | 40 | 55 | 55 | 25 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 55 | 925 | 165 | 80 | 1450 | 165 | 90 | 90 | 20 | 405 | 225 | 50 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 130 | 85 | 5 | 10 | 90 | 525 | 210 | 10 | 115 | 5 | 30 | 5 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 690 | 265 | 125 | 1755 | - | - | - | - | 140 | - | 460 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 885 | 180 | 520 | 1375 | - | - | - | - | 425 | - | 70 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 65 | 740 | 90 | 145 | 1550 | 100 | 105 | 145 | 130 | 255 | 230 | 220 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 85 | 10 | 5 | 5 | 15 | 285 | 5 | 75 | 315 | 10 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 200 | 720 | 35 | 70 | 1570 | 295 | 105 | 205 | 330 | 115 | 325 | 70 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 10 | 5 | 95 | 5 | 5 | 5 | 5 | 545 | 15 | 110 | 705 | 5 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 25 | 875 | 100 | 75 | 1915 | 25 | 10 | 5 | 20 | 245 | 20 | 70 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 20 | 20 | 5 | - | - | - | - | 35 | - | 35 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 55 | 915 | 10 | 10 | 2095 | 75 | 45 | 10 | 120 | 35 | 25 | 40 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 95 | 35 | 140 | 155 | - | - | - | - | 45 | - | 115 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 15 | 115 | - | - | 185 | 15 | 15 | - | 5 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | - | - | - | 5 | - | 10 | 5 | 195 | - | - | 125 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 10 | 110 | - | - | 180 | 10 | 15 | - | 30 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 70 | 60 | 25 | 90 | 80 | 40 | 30 | 390 | 75 | 40 | 360 | 30 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 180 | 455 | 20 | 50 | 750 | 90 | 80 | 175 | 190 | 30 | 155 | 50 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 10 ⁴ | 0 ⁴ | 10 | 5 ⁴ | 0 ⁴ | 10 | 5 ⁴ | 485 | 25 | 5 ⁴ | 470 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | 10 | 5 | 5 | 5 | 5 | 5 | 10 | 510 | 10 | 5 | 485 | 20 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 125 | 5 | 40 | 10 | 5 | 15 | 5 | 470 | 55 | 20 | 455 | 5 |
| W Broadway Ave / 41 1/2 Ave N | 5 | 160 | - | - | 175 | 20 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 15 | - | - | 25 | - | - | - | - | 20 | - | 5 |
| 41st Ave N / Hubbard Ave | 5 | 10 | 20 | 25 | 25 | 10 | 10 | 70 | 5 | 15 | 75 | 15 |
| W Broadway Ave / 41st Ave N | 10 | 115 | 25 | 15 | 125 | 40 | 30 | 60 | 25 | 25 | 55 | 10 |
| Golden Valley Rd / Theodore Wirth Pkwy | 20 | 65 | 5 | 40 | 290 | 400 | 140 | 200 | 145 | 5 | 145 | 20 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 50 | - | 55 | 35 | 2290 | - | - | 1065 | 15 |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 45 | 145 | 70 | 115 | 120 | 100 | 150 | 2060 | 125 | 85 | 935 | 140 |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 10 | 5 | 35 | 30 | 20 | 15 | 5 | 2220 | 20 | 60 | 1130 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | 60 | - | 55 | 35 | 2250 | - | - | 1135 | 60 |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 35 | 45 | 30 | 55 | 20 | 30 | 75 | 2185 | 50 | 105 | 1130 | 65 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 15 | 25 | 25 | 85 | 25 | 35 | 25 | 2180 | 65 | 25 | 1245 | 20 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 5 | 5 | 40 | 5 | 5 | 30 | 5 | 2265 | 20 | 75 | 1255 | 25 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 350 | 440 | 440 | - | 1445 | 865 | 195 | 915 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 630 | 440 | 355 | - | - | - | 185 | 1350 | - | - | 480 | 35 |
| Olson Memorial Hwy / Border Ave | 30 | 35 | 55 | 5 | 125 | 155 | 280 | 1290 | 135 | 10 | 335 | 10 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 95 | 210 | 90 | 80 | 895 | 10 | - | 650 | 700 | 60 | 245 | 75 |

¹ No Build01 assumes no interchange at TH 169/101st Avenue N

² No Build02 assumes a full access interchange at TH 169/101st Avenue N

³ U-turn volume

⁴ Movement allowed by buses and emergency vehicles only

2040 No Build PM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|-----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| CSAH 103 / 101st Ave N (No Build01) ¹ | 390 | 845 | - | - | 390 | 135 | 235 | - | 550 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N (No Build01) ¹ | 715 | 950 | - | - | 700 | 240 | 285 | - | 1000 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (No Build01) ¹ | - | 1330 | 320 | 350 | 1350 | - | - | - | - | 935 | - | 335 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (No Build01) ¹ | - | 1140 | 165 | 1275 | 1010 | - | - | - | - | 285 | - | 510 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (No Build01) ¹ | - | 605 | 750 | 570 | 725 | - | - | - | - | 300 | - | 700 |
| CSAH 103 / 101st Ave N (No Build02) ² | 405 | 825 | - | - | 370 | 135 | 215 | - | 500 | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N (No Build02) ² | 640 | 1000 | - | - | 655 | 215 | 230 | - | 800 | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (No Build02) ² | - | 1255 | 320 | 350 | 1105 | - | - | - | - | 880 | - | 385 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (No Build02) ² | - | 1065 | 165 | 995 | 990 | - | - | - | - | 285 | - | 510 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (No Build02) ² | - | 605 | 750 | 550 | 725 | - | - | - | - | 300 | - | 625 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 75 | 1225 | - | - | 900 | 125 | 130 | - | 110 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 40 | 715 | 105 | 225 | 500 | 285 | 380 | 335 | 45 | 85 | 215 | 205 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 855 | 25 | - | 625 | 25 | - | - | 110 | - | - | 10 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 80 | 725 | 65 | 150 | 580 | 5 | 30 | 5 | 5 | 30 | 5 | 30 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 870 | - | - | 670 | 30 | - | - | 100 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 20 | 705 | 60 | 60 | 610 | 35 | 30 | 10 | 15 | 35 | 5 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 155 | 570 | 385 | 85 | 450 | 130 | 165 | 745 | 190 | 170 | 425 | 50 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 1060 | 50 | - | 805 | 5 | - | - | 5 | - | - | 50 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 105 | 1050 | 30 | 100 | 700 | 10 | 15 | 5 | 30 | 80 | 5 | 50 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 1185 | - | - | 810 | 40 | - | - | 30 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 25 ³ | 1160 | 130 | 40 | 800 | - | - | - | - | 75 | - | 20 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 1275 | 50 | - | 875 | 25 | - | - | 10 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | 60 | 1095 | 80 | 80 | 725 | 85 | 110 | 10 | 45 | 50 | 10 | 85 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 105 | 595 | 215 | 155 | 410 | 250 | 445 | 565 | 60 | 165 | 625 | 195 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 80 | 25 | 165 | 50 | 25 | 65 | 75 | 855 | 125 | 140 | 775 | 65 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 10 | 5 | 15 | 45 | 5 | 35 | 35 | 880 | 25 | 15 | 935 | 45 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 70 | 670 | 95 | 105 | 340 | 190 | 165 | 45 | 60 | 50 | 60 | 80 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 70 | 820 | 40 | 15 | 500 | 5 | 5 | 10 | 70 | 20 | 5 | 15 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | 80 | 915 | 10 | 5 | 580 | 5 | 5 | 5 | 160 | 5 | 5 | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 60 | 845 | 40 | 40 | 625 | 85 | 135 | 35 | 30 | 20 | 40 | 30 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 70 | 1935 | 90 | 25 | 970 | 40 | 15 | 25 | 40 | 95 | 55 | 45 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 45 | 1760 | 475 | 85 | 900 | 125 | 225 | 270 | 50 | 325 | 165 | 110 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 190 | 245 | 5 | 20 | 280 | 395 | 660 | 20 | 145 | 5 | 20 | 15 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 1615 | 590 | 130 | 1145 | - | - | - | - | 195 | - | 665 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 2035 | 255 | 420 | 920 | - | - | - | - | 265 | - | 165 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 90 | 1835 | 300 | 185 | 900 | 105 | 165 | 280 | 75 | 195 | 250 | 290 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 130 | 10 | 5 | 15 | 5 | 375 | 10 | 105 | 330 | 10 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 370 | 1745 | 150 | 95 | 845 | 230 | 385 | 530 | 365 | 110 | 395 | 95 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 15 | 5 | 275 | 35 | 5 | 20 | 30 | 970 | 25 | 100 | 870 | 20 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 30 | 2095 | 290 | 90 | 1185 | 40 | 40 | 5 | 35 | 135 | 5 | 125 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 40 | 40 | 5 | - | - | - | - | 40 | - | 40 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 145 | 2295 | 25 | 35 | 1230 | 85 | 100 | 30 | 90 | 15 | 15 | 25 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 285 | 50 | 165 | 260 | - | - | - | - | 65 | - | 180 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 60 | 275 | - | - | 240 | 85 | 60 | - | 30 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | - | - | - | 20 | - | 5 | 15 | 255 | - | - | 330 | 15 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 25 | 325 | - | - | 255 | 20 | 20 | - | 15 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 105 | 175 | 55 | 50 | 170 | 50 | 65 | 555 | 115 | 50 | 405 | 110 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 330 | 865 | 55 | 105 | 655 | 85 | 120 | 315 | 260 | 25 | 150 | 85 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 15 ⁴ | 0 ⁴ | 25 | 0 ⁴ | 0 ⁴ | 10 | 5 ⁴ | 705 | 40 | 5 ⁴ | 550 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | 5 | 5 | 5 | 10 | 5 | 5 | 10 | 760 | 20 | 15 | 585 | 10 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 80 | 5 | 25 | 10 | 5 | 20 | 10 | 735 | 105 | 30 | 530 | 10 |
| W Broadway Ave / 41 1/2 Ave N | 15 | 335 | - | - | 305 | 25 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 20 | - | - | 50 | - | - | - | - | 15 | - | 25 |
| 41st Ave N / Hubbard Ave | 5 | 5 | 10 | 40 | 30 | 15 | 20 | 150 | 5 | 10 | 95 | 20 |
| W Broadway Ave / 41st Ave N | 15 | 220 | 40 | 55 | 210 | 40 | 70 | 105 | 25 | 40 | 75 | 60 |
| Golden Valley Rd / Theodore Wirth Pkwy | 105 | 210 | 10 | 25 | 100 | 205 | 360 | 190 | 35 | 5 | 215 | 45 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 45 | - | 45 | 90 | 2000 | - | - | 1635 | 35 |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 105 | 230 | 75 | 130 | 165 | 145 | 215 | 1685 | 145 | 100 | 1420 | 180 |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 30 | 15 | 40 | 25 | 40 | 10 | 20 | 1855 | 20 | 55 | 1660 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | 45 | - | 45 | 45 | 1880 | - | - | 1675 | 10 |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 35 | 35 | 50 | 30 | 40 | 40 | 55 | 1825 | 40 | 30 | 1610 | 20 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 30 | 50 | 30 | 85 | 45 | 55 | 75 | 1765 | 70 | 40 | 1570 | 10 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 35 | 15 | 75 | 15 | 5 | 20 | 20 | 1825 | 35 | 50 | 1560 | 35 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 230 | 435 | 230 | - | 1110 | 805 | 340 | 1415 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 375 | 805 | 190 | - | - | - | 295 | 915 | - | - | 1380 | 135 |
| Olson Memorial Hwy / Border Ave | 165 | 110 | 20 | 15 | 125 | 310 | 265 | 785 | 55 | 20 | 1040 | 25 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 360 | 525 | 60 | 80 | 295 | 35 | - | 560 | 265 | 75 | 690 | 80 |

¹ No Build01 assumes no interchange at TH 169/101st Avenue N
² No Build02 assumes a full access interchange at TH 169/101st Avenue N
³ U-turn volume
⁴ Movement allowed by buses and emergency vehicles only

2021 Build AM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|-----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Oak Grove Pkwy / Xylon Ave | 10 | 5 | 5 | 30 | 5 | 50 | 80 | 245 | 15 | 5 | 125 | 40 |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | 50 | 100 | 655 | 55 | 580 | 45 | 10 | 55 | 25 | 25 | 20 | 10 |
| CSAH 103 (W Broadway Ave) / Main St | 55 | 800 | 30 | 5 | 605 | 35 | 5 | 5 | 5 | 20 | 10 | 5 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | - | 645 | 95 | 50 | 640 | - | - | - | - | 540 | - | 240 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | - | 190 | 210 | 240 | 940 | - | - | - | - | 140 | - | 550 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 70 | 345 | - | - | 930 | 150 | 55 | - | 95 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 80 | 215 | 30 | 50 | 640 | 335 | 130 | 180 | 25 | 85 | 280 | 70 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 290 | 10 | - | 665 | 100 | - | - | 10 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 20 | 225 | 15 | 40 | 625 | 30 | 5 | 5 | 5 | 65 | 5 | 55 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 260 | - | - | 645 | 55 | - | - | 20 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 5 | 200 | 10 | 15 | 635 | 15 | 35 | 5 | 20 | 50 | 10 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 55 | 135 | 60 | 70 | 535 | 105 | 40 | 310 | 115 | 185 | 425 | 35 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 240 | 60 | - | 835 | 5 | - | - | 5 | - | - | 10 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 20 | 295 | 20 | 145 | 705 | 5 | 5 | 5 | 40 | 5 | 5 | 5 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 390 | - | - | 745 | 15 | - | - | 40 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 40 ¹ | 365 | 25 | 20 | 765 | - | - | - | - | 95 | - | 20 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 395 | 15 | - | 890 | 5 | - | - | 5 | - | - | 35 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | - | 400 | 25 | - | 850 | 40 | - | - | 30 | - | - | 20 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 30 | 160 | 40 | 110 | 490 | 290 | 115 | 250 | 15 | 70 | 345 | 95 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 40 | 5 | 40 | 5 | 5 | 5 | 15 | 335 | 50 | 25 | 630 | 20 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 5 | 5 | 5 | 5 | 5 | 10 | 15 | 335 | 5 | 5 | 490 | 15 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 30 | 180 | 20 | 25 | 480 | 80 | 15 | 5 | 10 | 15 | 20 | 35 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 55 | 215 | 10 | 5 | 490 | 10 | 5 | 5 | 80 | 35 | 10 | 10 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | - | 270 | 5 | 5 | 600 | - | - | - | - | 20 | - | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 20 | 215 | 10 | 10 | 535 | 70 | 40 | 15 | 10 | 20 | 35 | 20 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 45 | 685 | 35 | 10 | 1200 | 70 | 20 | 25 | 45 | 40 | 50 | 30 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 65 | 655 | 155 | 55 | 1100 | 130 | 75 | 70 | 40 | 395 | 205 | 30 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 130 | 80 | 5 | 10 | 85 | 475 | 165 | 10 | 105 | 5 | 25 | 5 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 545 | 235 | 120 | 1575 | - | - | - | - | 145 | - | 420 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 720 | 150 | 485 | 1235 | - | - | - | - | 460 | - | 60 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 60 | 585 | 75 | 115 | 1315 | 265 | 105 | 140 | 120 | 240 | 275 | 180 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 75 | 35 | 5 | 20 | 120 | 250 | 5 | 65 | 270 | 260 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 190 | 575 | 30 | 65 | 1365 | 245 | 75 | 180 | 375 | 120 | 300 | 55 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 5 | 5 | 85 | 5 | 5 | 5 | 5 | 545 | 10 | 90 | 645 | 5 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 20 | 715 | 85 | 65 | 1690 | 105 | 20 | 5 | 20 | 225 | 20 | 60 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 15 | 25 | 5 | - | - | - | - | 30 | - | 110 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 55 | 755 | 10 | 10 | 1860 | 60 | 35 | 10 | 115 | 30 | 25 | 30 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 90 | 30 | 130 | 140 | - | - | - | - | 35 | - | 105 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 10 | 110 | - | - | 160 | 15 | 10 | - | 10 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | 110 | 5 | 5 | 5 | 10 | 10 | 5 | 5 | 165 | 5 | 5 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 10 | 100 | - | - | 165 | 10 | 15 | - | 35 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 85 | 55 | 20 | 80 | 85 | 40 | 30 | 365 | 70 | 95 | 320 | 25 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 160 | 420 | 15 | 50 | 700 | 105 | 75 | 160 | 170 | 30 | 170 | 50 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 10 ² | 0 ² | 10 | 5 ² | 0 ² | 10 | 5 ² | 440 | 25 | 5 ² | 425 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | - | - | 5 | - | - | 5 | - | 595 | 10 | - | 455 | 20 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 115 | 5 | 35 | 10 | 5 | 15 | 5 | 560 | 50 | 20 | 430 | 5 |
| W Broadway Ave / 41 1/2 Ave N | 40 | 160 | - | - | 160 | 90 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 50 | - | - | 40 | - | - | - | - | 20 | - | 110 |
| 41st Ave N / Hubbard Ave | 5 | 10 | 20 | 40 | 25 | 15 | 45 | 60 | 5 | 15 | 65 | 15 |
| W Broadway Ave / 41st Ave N | 10 | 145 | 25 | 10 | 110 | 35 | 45 | 55 | 25 | 25 | 50 | 10 |
| Golden Valley Rd / Theodore Wirth Pkwy | 30 | 60 | 5 | 40 | 270 | 375 | 130 | 185 | 135 | 5 | 140 | 20 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 45 | - | 45 | 30 | 2085 | - | - | 935 | 15 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave N | - | - | - | - | - | - | - | 2130 | - | - | 950 | - |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 40 | 135 | 65 | 105 | 110 | 85 | 135 | 1880 | 110 | 80 | 820 | 125 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | - | - | - | - | - | - | - | 2050 | - | - | 1025 | - |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 10 | 5 | 30 | 30 | 20 | 15 | 5 | 2020 | 20 | 50 | 1000 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | - | - | 50 | - | 2080 | - | - | 1005 | 55 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave N | - | - | - | - | - | - | - | 2080 | - | - | 1060 | - |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 20 | 25 | 30 | 95 | 10 | 15 | 75 | 1980 | 25 | 90 | 1020 | 60 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 15 | 20 | 20 | 75 | 25 | 35 | 25 | 2015 | 60 | 20 | 1120 | 15 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 5 | 5 | 35 | 5 | 5 | 30 | 5 | 2085 | 20 | 70 | 1120 | 25 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 305 | 390 | 420 | - | 1280 | 845 | 160 | 795 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 590 | 400 | 290 | - | - | - | 180 | 1175 | - | - | 365 | 25 |
| Olson Memorial Hwy / Border Ave | 25 | 30 | 40 | 5 | 115 | 135 | 270 | 1070 | 125 | 5 | 230 | 5 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 80 | 190 | 70 | 60 | 825 | 10 | - | 480 | 635 | 45 | 155 | 50 |

¹ U-turn volume

² Movement allowed by buses and emergency vehicles only

2021 Build PM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|------------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Oak Grove Pkwy / Xylon Ave | 10 | 5 | 5 | 25 | 10 | 55 | 45 | 200 | 10 | 10 | 205 | 50 |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | 10 | 570 | 215 | 25 | 190 | 5 | 230 | 30 | 45 | 700 | 70 | 65 |
| CSAH 103 (W Broadway Ave) / Main St | 5 | 770 | 10 | 5 | 955 | 5 | 20 | 5 | 50 | 30 | 5 | 5 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | - | 655 | 175 | 475 | 620 | - | - | - | - | 295 | - | 205 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | - | 545 | 540 | 255 | 650 | - | - | - | - | 120 | - | 285 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 70 | 970 | - | - | 675 | 95 | 115 | - | 95 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 40 | 615 | 85 | 120 | 420 | 235 | 320 | 250 | 45 | 65 | 150 | 105 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 730 | 25 | - | 520 | 20 | - | - | 100 | - | - | 10 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 10 | 615 | 60 | 140 | 480 | 5 | 25 | 5 | 10 | 30 | 5 | 25 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 685 | - | - | 500 | 25 | - | - | 85 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 15 | 595 | 55 | 60 | 490 | 35 | 25 | 5 | 10 | 30 | 5 | 10 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 135 | 470 | 350 | 75 | 345 | 105 | 145 | 720 | 165 | 145 | 400 | 45 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 880 | 50 | - | 655 | 5 | - | - | 5 | - | - | 80 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 95 | 905 | 35 | 90 | 565 | 5 | 15 | 5 | 35 | 75 | 5 | 15 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 1025 | - | - | 665 | 35 | - | - | 20 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 135 ¹ | 1010 | 120 | 35 | 660 | - | - | - | - | 65 | - | 15 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 1220 | 45 | - | 815 | 20 | - | - | 10 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | - | 1180 | 125 | - | 660 | 145 | - | - | 160 | - | - | 135 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 85 | 530 | 175 | 315 | 345 | 205 | 390 | 535 | 60 | 145 | 590 | 165 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 80 | 25 | 145 | 45 | 25 | 55 | 65 | 800 | 120 | 120 | 720 | 50 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 15 | 5 | 15 | 45 | 5 | 40 | 35 | 800 | 25 | 25 | 845 | 40 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 65 | 565 | 85 | 90 | 340 | 170 | 150 | 45 | 50 | 45 | 60 | 70 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 135 | 700 | 35 | 15 | 410 | 10 | 10 | 10 | 210 | 15 | 10 | 15 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | - | 850 | 10 | 5 | 630 | - | - | - | - | 15 | - | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 45 | 725 | 35 | 40 | 525 | 70 | 105 | 30 | 20 | 20 | 35 | 30 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 50 | 1650 | 65 | 25 | 785 | 45 | 120 | 60 | 80 | 60 | 45 | 40 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 55 | 1500 | 445 | 60 | 770 | 95 | 195 | 235 | 55 | 285 | 150 | 75 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 175 | 225 | 10 | 15 | 235 | 315 | 575 | 20 | 145 | 5 | 25 | 10 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 1405 | 600 | 125 | 935 | - | - | - | - | 165 | - | 615 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 1845 | 245 | 380 | 720 | - | - | - | - | 245 | - | 160 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 80 | 1555 | 265 | 145 | 710 | 115 | 295 | 310 | 70 | 170 | 240 | 240 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 115 | 225 | 5 | 110 | 25 | 335 | 10 | 90 | 295 | 45 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 400 | 1500 | 140 | 75 | 680 | 190 | 325 | 485 | 340 | 95 | 355 | 80 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 10 | 5 | 225 | 30 | 5 | 20 | 25 | 895 | 20 | 90 | 840 | 15 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 25 | 1820 | 270 | 80 | 990 | 45 | 110 | 5 | 30 | 120 | 5 | 110 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 40 | 105 | 5 | - | - | - | - | 35 | - | 45 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 145 | 2020 | 25 | 30 | 1045 | 70 | 80 | 25 | 85 | 10 | 15 | 20 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 265 | 40 | 150 | 230 | - | - | - | - | 55 | - | 170 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 55 | 250 | - | - | 210 | 75 | 55 | - | 30 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | 300 | 15 | 5 | 5 | 15 | 5 | 15 | 5 | 225 | 5 | 5 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 30 | 295 | - | - | 225 | 15 | 15 | - | 10 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 220 | 155 | 45 | 45 | 150 | 45 | 75 | 545 | 115 | 50 | 355 | 95 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 290 | 800 | 50 | 95 | 600 | 80 | 130 | 315 | 235 | 25 | 135 | 75 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 15 ² | 0 ² | 25 | 0 ² | 0 ² | 10 | 5 ² | 645 | 40 | 5 ² | 610 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | - | - | 5 | - | - | 5 | - | 710 | 20 | - | 640 | 10 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 70 | 5 | 20 | 10 | 5 | 20 | 10 | 690 | 100 | 25 | 590 | 10 |
| W Broadway Ave / 41 1/2 Ave N | 20 | 420 | - | - | 285 | 30 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 25 | - | - | 220 | - | - | - | - | 15 | - | 35 |
| 41st Ave N / Hubbard Ave | 5 | 5 | 10 | 180 | 30 | 45 | 25 | 135 | 5 | 10 | 90 | 20 |
| W Broadway Ave / 41st Ave N | 10 | 205 | 35 | 50 | 200 | 35 | 185 | 90 | 50 | 40 | 70 | 55 |
| Golden Valley Rd / Theodore Wirth Pkwy | 100 | 195 | 10 | 20 | 95 | 190 | 335 | 185 | 50 | 5 | 195 | 40 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 45 | - | 35 | 75 | 1810 | - | - | 1450 | 35 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave N | - | - | - | - | - | - | - | 1855 | - | - | 1485 | - |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 95 | 210 | 70 | 115 | 150 | 125 | 200 | 1520 | 130 | 90 | 1270 | 165 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | - | - | - | - | - | - | - | 1705 | - | - | 1525 | - |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 25 | 15 | 35 | 25 | 35 | 10 | 15 | 1670 | 20 | 50 | 1490 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | - | - | 45 | - | 1730 | - | - | 1500 | 5 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave N | - | - | - | - | - | - | - | 1730 | - | - | 1505 | - |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 20 | 20 | 45 | 70 | 25 | 25 | 70 | 1635 | 25 | 25 | 1460 | 20 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 30 | 40 | 25 | 75 | 40 | 55 | 65 | 1615 | 65 | 30 | 1425 | 10 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 35 | 15 | 65 | 15 | 5 | 20 | 20 | 1665 | 35 | 45 | 1410 | 30 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 195 | 390 | 225 | - | 960 | 785 | 275 | 1260 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 375 | 725 | 145 | - | - | - | 270 | 765 | - | - | 1165 | 100 |
| Olson Memorial Hwy / Border Ave | 150 | 90 | 15 | 10 | 100 | 295 | 255 | 605 | 50 | 15 | 815 | 20 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 330 | 485 | 45 | 55 | 270 | 30 | - | 395 | 235 | 60 | 485 | 55 |

¹ U-turn volume

² Movement allowed by buses and emergency vehicles only

2040 Build AM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|-----------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Oak Grove Pkwy / Xylon Ave (Build01) ¹ | 85 | 50 | 45 | 70 | 25 | 130 | 195 | 410 | 140 | 70 | 205 | 100 |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (Build01) ¹ | 455 | 110 | 750 | 50 | 765 | 115 | 35 | 165 | 485 | 40 | 155 | 10 |
| CSAH 103 (W Broadway Ave) / Main St (Build01) ¹ | 285 | 1265 | 85 | 5 | 1185 | 105 | 45 | 155 | 365 | 55 | 145 | 5 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (Build01) ¹ | - | 1005 | 80 | 535 | 1070 | - | - | - | - | 575 | - | 630 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (Build01) ¹ | - | 250 | 310 | 465 | 1185 | - | - | - | - | 180 | - | 835 |
| Oak Grove Pkwy / Xylon Ave (Build02) ² | 265 | 55 | 70 | 55 | 30 | 195 | 205 | 545 | 465 | 105 | 265 | 80 |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (Build02) ² | 415 | 110 | 750 | 50 | 765 | 115 | 35 | 80 | 360 | 40 | 75 | 10 |
| CSAH 103 (W Broadway Ave) / Main St (Build02) ² | 195 | 1225 | 85 | 5 | 1060 | 105 | 45 | 155 | 95 | 55 | 145 | 0 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (Build02) ² | - | 970 | 80 | 140 | 1070 | - | - | - | - | 575 | - | 535 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (Build02) ² | - | 250 | 310 | 465 | 1185 | - | - | - | - | 180 | - | 800 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 80 | 490 | - | - | 1165 | 200 | 70 | - | 100 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 85 | 275 | 45 | 110 | 750 | 405 | 150 | 255 | 25 | 110 | 380 | 145 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 365 | 15 | - | 790 | 115 | - | - | 15 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 20 | 290 | 20 | 50 | 740 | 30 | 5 | 5 | 5 | 70 | 5 | 60 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 335 | - | - | 765 | 55 | - | - | 30 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 5 | 270 | 10 | 15 | 765 | 15 | 40 | 5 | 30 | 70 | 10 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 60 | 190 | 70 | 80 | 660 | 125 | 50 | 330 | 125 | 200 | 445 | 45 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 310 | 65 | - | 990 | 5 | - | - | 5 | - | - | 5 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 25 | 365 | 70 | 155 | 830 | 10 | 5 | 5 | 45 | 20 | 5 | 5 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 455 | - | - | 885 | 20 | - | - | 45 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 40 ³ | 435 | 25 | 20 | 905 | - | - | - | - | 100 | - | 25 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 465 | 15 | - | 1040 | 5 | - | - | 5 | - | - | 35 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | - | 470 | 25 | - | 995 | 40 | - | - | 30 | - | - | 20 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 30 | 195 | 45 | 130 | 570 | 335 | 130 | 260 | 15 | 70 | 355 | 115 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 40 | 5 | 40 | 10 | 5 | 10 | 20 | 360 | 55 | 20 | 680 | 20 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 5 | 5 | 10 | 10 | 5 | 10 | 15 | 370 | 5 | 5 | 520 | 15 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 35 | 215 | 30 | 30 | 560 | 90 | 20 | 10 | 15 | 15 | 25 | 35 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 65 | 270 | 10 | 5 | 570 | 10 | 5 | 5 | 90 | 40 | 10 | 10 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | - | 335 | 10 | 5 | 695 | - | - | - | - | 20 | - | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 25 | 265 | 10 | 10 | 615 | 80 | 55 | 15 | 15 | 20 | 40 | 20 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 60 | 845 | 50 | 10 | 1415 | 70 | 20 | 25 | 60 | 55 | 55 | 30 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 65 | 820 | 170 | 75 | 1300 | 155 | 90 | 80 | 40 | 445 | 225 | 45 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 135 | 95 | 5 | 10 | 95 | 550 | 205 | 10 | 115 | 5 | 30 | 5 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 700 | 275 | 125 | 1825 | - | - | - | - | 165 | - | 460 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 905 | 180 | 520 | 1470 | - | - | - | - | 510 | - | 70 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 65 | 740 | 90 | 145 | 1550 | 280 | 125 | 155 | 130 | 255 | 295 | 220 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 85 | 40 | 5 | 20 | 125 | 285 | 5 | 75 | 315 | 265 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 200 | 720 | 35 | 70 | 1575 | 295 | 105 | 205 | 400 | 120 | 325 | 70 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 10 | 5 | 105 | 5 | 5 | 5 | 5 | 605 | 15 | 110 | 715 | 5 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 25 | 875 | 100 | 75 | 1915 | 105 | 20 | 5 | 20 | 245 | 20 | 70 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 20 | 30 | 5 | - | - | - | - | 35 | - | 115 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 55 | 915 | 10 | 10 | 2095 | 75 | 45 | 10 | 120 | 35 | 25 | 40 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 95 | 35 | 140 | 155 | - | - | - | - | 45 | - | 115 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 15 | 115 | - | - | 185 | 15 | 15 | - | 5 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | 125 | 5 | 5 | 5 | 5 | 10 | 5 | 5 | 195 | 5 | 5 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 10 | 110 | - | - | 180 | 10 | 15 | - | 40 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 85 | 60 | 25 | 90 | 90 | 40 | 30 | 400 | 75 | 100 | 360 | 30 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 180 | 455 | 20 | 50 | 750 | 115 | 85 | 180 | 190 | 30 | 190 | 50 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 10 ⁴ | 0 ⁴ | 10 | 5 ⁴ | 0 ⁴ | 10 | 5 ⁴ | 485 | 25 | 5 ⁴ | 470 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | - | - | 5 | - | - | 5 | - | 640 | 10 | - | 500 | 20 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 125 | 5 | 40 | 10 | 5 | 15 | 5 | 600 | 55 | 20 | 470 | 5 |
| W Broadway Ave / 41 1/2 Ave N | 40 | 175 | - | - | 175 | 90 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 50 | - | - | 45 | - | - | - | - | 20 | - | 110 |
| 41st Ave N / Hubbard Ave | 5 | 10 | 20 | 40 | 25 | 15 | 45 | 70 | 5 | 15 | 75 | 15 |
| W Broadway Ave / 41st Ave N | 10 | 150 | 25 | 15 | 125 | 40 | 45 | 60 | 30 | 25 | 55 | 10 |
| Golden Valley Rd / Theodore Wirth Pkwy | 30 | 65 | 5 | 40 | 290 | 405 | 145 | 205 | 150 | 5 | 155 | 20 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 55 | - | 55 | 40 | 2500 | - | - | 1230 | 20 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave N | - | - | - | - | - | - | - | 2555 | - | - | 1250 | - |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 70 | 165 | 60 | 100 | 130 | 145 | 205 | 2190 | 160 | 75 | 1035 | 125 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | - | - | - | - | - | - | - | 2350 | - | - | 1235 | - |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 10 | 5 | 35 | 30 | 20 | 15 | 10 | 2315 | 25 | 60 | 1210 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | - | - | 65 | - | 2380 | - | - | 1210 | 65 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave N | - | - | - | - | - | - | - | 2380 | - | - | 1275 | - |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 20 | 25 | 30 | 100 | 10 | 15 | 85 | 2270 | 25 | 90 | 1240 | 65 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 15 | 25 | 20 | 80 | 25 | 45 | 30 | 2300 | 70 | 20 | 1335 | 15 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 10 | 5 | 35 | 5 | 5 | 35 | 15 | 2345 | 40 | 65 | 1325 | 25 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 320 | 410 | 485 | - | 1440 | 945 | 165 | 930 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 650 | 420 | 285 | - | - | - | 210 | 1310 | - | - | 445 | 30 |
| Olson Memorial Hwy / Border Ave | 25 | 30 | 45 | 5 | 115 | 145 | 280 | 1195 | 120 | 5 | 305 | 10 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 125 | 230 | 90 | 55 | 885 | 10 | - | 505 | 740 | 50 | 185 | 45 |

¹ Build01 assumes no interchange at TH 169/101st Avenue N.

² Build02 assumes a full access interchange is constructed at TH 169/101st Avenue N.

³ U-turn volume

⁴ Movement allowed by buses and emergency vehicles only

2040 Build PM Peak Hour Volumes

| Intersection | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|--|------------------|----------------|-------|----------------|----------------|-------|----------------|------|-------|----------------|------|-------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Oak Grove Pkwy / Xylon Ave (Build01) ¹ | 115 | 65 | 60 | 90 | 35 | 175 | 155 | 330 | 110 | 120 | 340 | 170 |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (Build01) ¹ | 485 | 730 | 235 | 25 | 250 | 60 | 135 | 220 | 580 | 780 | 205 | 70 |
| CSAH 103 (W Broadway Ave) / Main St (Build01) ¹ | 215 | 1350 | 25 | 5 | 1615 | 45 | 95 | 205 | 580 | 85 | 225 | 5 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (Build01) ¹ | - | 1140 | 210 | 1335 | 945 | - | - | - | - | 280 | - | 450 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (Build01) ¹ | - | 615 | 740 | 380 | 820 | - | - | - | - | 215 | - | 735 |
| Oak Grove Pkwy / Xylon Ave (Build02) ² | 355 | 70 | 95 | 70 | 40 | 260 | 160 | 435 | 370 | 175 | 445 | 135 |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy (Build02) ² | 430 | 730 | 235 | 25 | 250 | 60 | 135 | 115 | 420 | 780 | 100 | 70 |
| CSAH 103 (W Broadway Ave) / Main St (Build02) ² | 95 | 1295 | 25 | 5 | 1455 | 45 | 95 | 205 | 220 | 85 | 225 | 5 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps (Build02) ² | - | 965 | 210 | 815 | 945 | - | - | - | - | 280 | - | 450 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps (Build02) ² | - | 615 | 740 | 380 | 820 | - | - | - | - | 215 | - | 560 |
| CSAH 103 (W Broadway Ave) / 94th Ave N | 75 | 1225 | - | - | 910 | 125 | 130 | - | 110 | - | - | - |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93rd Ave N) | 40 | 715 | 105 | 225 | 505 | 290 | 385 | 335 | 45 | 90 | 215 | 205 |
| CSAH 103 (W Broadway Ave) / 92nd Ave N | - | 855 | 30 | - | 630 | 25 | - | - | 110 | - | - | 10 |
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | 10 | 725 | 65 | 160 | 580 | 5 | 30 | 5 | 10 | 30 | 5 | 30 |
| CSAH 103 (W Broadway Ave) / 89th Ave N | - | 805 | - | - | 605 | 30 | - | - | 100 | - | - | - |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | 20 | 705 | 60 | 60 | 610 | 35 | 30 | 10 | 15 | 35 | 10 | 15 |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85th Ave N) | 150 | 570 | 385 | 85 | 450 | 130 | 165 | 745 | 190 | 165 | 425 | 50 |
| CSAH 103 (W Broadway Ave) / 84th Ave N | - | 1060 | 50 | - | 800 | 5 | - | - | 5 | - | - | 50 |
| CSAH 103 (W Broadway Ave) / College Park Dr | 105 | 1050 | 30 | 100 | 700 | 10 | 15 | 5 | 30 | 80 | 5 | 50 |
| CSAH 103 (W Broadway Ave) / 82nd Ave N | - | 1180 | - | - | 805 | 40 | - | - | 20 | - | - | - |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | 140 ³ | 1160 | 135 | 40 | 800 | - | - | - | - | 75 | - | 15 |
| CSAH 103 (W Broadway Ave) / 78th Ave N | - | 1390 | 50 | - | 965 | 25 | - | - | 10 | - | - | 40 |
| CSAH 103 (W Broadway Ave) / Shopping Center Access | - | 1350 | 135 | - | 805 | 155 | - | - | 165 | - | - | 145 |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | 100 | 605 | 220 | 360 | 415 | 245 | 440 | 565 | 60 | 165 | 620 | 195 |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | 80 | 30 | 155 | 50 | 30 | 65 | 75 | 855 | 125 | 125 | 775 | 65 |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | 15 | 5 | 20 | 50 | 5 | 35 | 45 | 895 | 35 | 30 | 925 | 45 |
| CSAH 130 (W Broadway Ave) / 76th Ave N | 70 | 675 | 95 | 105 | 415 | 190 | 165 | 45 | 60 | 50 | 60 | 80 |
| CSAH 130 (W Broadway Ave) / 75th Ave N | 155 | 820 | 40 | 15 | 495 | 10 | 10 | 10 | 235 | 20 | 10 | 15 |
| CSAH 130 (W Broadway Ave) / 74th Ave N | - | 1000 | 15 | 5 | 740 | - | - | - | - | 15 | - | 5 |
| CSAH 130 (W Broadway Ave) / 73rd Ave N | 60 | 845 | 40 | 40 | 620 | 85 | 135 | 35 | 30 | 20 | 40 | 30 |
| CSAH 81 (Bottineau Blvd) / 73rd Ave N | 65 | 1945 | 90 | 30 | 985 | 50 | 120 | 75 | 105 | 85 | 55 | 45 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave)/71st Ave N | 55 | 1775 | 495 | 85 | 965 | 120 | 225 | 255 | 55 | 320 | 160 | 105 |
| CSAH 130 (W Broadway Ave) / 71st Ave N | 180 | 265 | 10 | 20 | 275 | 380 | 670 | 20 | 145 | 5 | 25 | 10 |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | - | 1680 | 670 | 130 | 1155 | - | - | - | - | 200 | - | 665 |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | - | 2180 | 270 | 420 | 935 | - | - | - | - | 280 | - | 165 |
| CSAH 81 (Bottineau Blvd) / 63rd Ave N | 90 | 1835 | 300 | 185 | 900 | 135 | 325 | 335 | 80 | 195 | 260 | 290 |
| 63rd Ave N / Louisiana Ave/Park-and-Ride Access | 5 | 5 | 130 | 230 | 5 | 115 | 25 | 375 | 10 | 105 | 330 | 50 |
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) | 430 | 1750 | 155 | 95 | 845 | 230 | 385 | 530 | 375 | 110 | 395 | 95 |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave | 15 | 5 | 275 | 35 | 5 | 20 | 30 | 980 | 25 | 110 | 920 | 20 |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd | 30 | 2095 | 290 | 90 | 1185 | 50 | 110 | 5 | 35 | 135 | 5 | 125 |
| Wilshire Blvd / Lakeland Ave N | - | 5 | 40 | 110 | 5 | - | - | - | - | 40 | - | 50 |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N | 145 | 2295 | 25 | 35 | 1230 | 85 | 100 | 30 | 90 | 15 | 15 | 25 |
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | - | 285 | 50 | 165 | 260 | - | - | - | - | 65 | - | 180 |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | 60 | 275 | - | - | 240 | 85 | 60 | - | 30 | - | - | - |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | 330 | 15 | 5 | 5 | 20 | 5 | 15 | 5 | 255 | 5 | 5 | 5 |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | 35 | 325 | - | - | 255 | 20 | 20 | - | 15 | - | - | - |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | 220 | 175 | 55 | 50 | 170 | 50 | 75 | 605 | 115 | 60 | 405 | 110 |
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42nd Ave N) | 330 | 865 | 55 | 105 | 655 | 90 | 140 | 345 | 260 | 25 | 155 | 85 |
| CSAH 9 (42nd Ave N) / Hubbard Ave | 15 ⁴ | 0 ⁴ | 25 | 0 ⁴ | 0 ⁴ | 10 | 5 ⁴ | 705 | 40 | 5 ⁴ | 665 | 5 |
| CSAH 9 (42nd Ave N) / Railroad Ave N | - | - | 5 | - | - | 5 | - | 780 | 20 | - | 700 | 10 |
| CSAH 9 (42nd Ave N) / Regent Ave N | 80 | 5 | 25 | 10 | 5 | 20 | 10 | 755 | 105 | 30 | 645 | 10 |
| W Broadway Ave / 41 1/2 Ave N | 20 | 450 | - | - | 305 | 35 | - | - | - | - | - | - |
| Hubbard Ave / 41 1/2 Ave N | - | 25 | - | - | 225 | - | - | - | - | 15 | - | 40 |
| 41st Ave N / Hubbard Ave | 5 | 5 | 10 | 185 | 30 | 45 | 25 | 150 | 5 | 10 | 95 | 20 |
| W Broadway Ave / 41st Ave N | 15 | 225 | 40 | 55 | 210 | 40 | 185 | 105 | 55 | 40 | 75 | 60 |
| Golden Valley Rd / Theodore Wirth Pkwy | 110 | 210 | 10 | 25 | 100 | 205 | 365 | 200 | 50 | 5 | 215 | 45 |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | - | - | - | 60 | - | 50 | 105 | 2220 | - | - | 1820 | 40 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave N | - | - | - | - | - | - | - | 2280 | - | - | 1860 | - |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | 145 | 250 | 70 | 115 | 185 | 190 | 295 | 1795 | 190 | 90 | 1525 | 155 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | - | - | - | - | - | - | - | 1980 | - | - | 1770 | - |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | 30 | 15 | 40 | 25 | 40 | 10 | 40 | 1920 | 20 | 60 | 1730 | 5 |
| TH 55 (Olson Memorial Hwy) / James Ave N | - | - | - | - | - | 55 | - | 1985 | - | - | 1740 | 5 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave N | - | - | - | - | - | - | - | 1985 | - | - | 1745 | - |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | 20 | 20 | 45 | 75 | 25 | 25 | 75 | 1895 | 15 | 40 | 1700 | 20 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | 35 | 45 | 25 | 80 | 45 | 65 | 90 | 1865 | 60 | 40 | 1660 | 10 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | 50 | 15 | 65 | 15 | 10 | 30 | 30 | 1895 | 45 | 50 | 1630 | 35 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | - | - | - | 209 | 411 | 270 | - | 1105 | 870 | 285 | 1445 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | 420 | 760 | 140 | - | - | - | 310 | 880 | - | - | 1310 | 100 |
| Olson Memorial Hwy / Border Ave | 150 | 90 | 15 | 10 | 100 | 315 | 275 | 695 | 50 | 20 | 945 | 20 |
| Olson Memorial Hwy / 7th St N/6th Ave N | 405 | 520 | 55 | 55 | 300 | 30 | - | 440 | 280 | 70 | 550 | 55 |

¹ Build01 assumes no interchange at TH 169/101st Avenue N

² Build02 assumes a full access interchange at TH 169/101st Avenue N

³ U-turn volume

⁴ Movement allowed by buses and emergency vehicles only

Appendix B: Intersection Layout Tables

BLRT Intersection Layout Table

| Intersection | Existing | No Build | Build | Notes |
|---|------------------------|------------------------|---------------------------------|---|
| Oak Grove Pkwy / Xylon Ave | N/A | N/A | | *Additional lanes and movements in 2040 only |
| CSAH 103 (W Broadway Ave) / 101 st Ave N | | | N/A | |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | | | N/A | |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | <p>S Prot / W Perm</p> | <p>S Prot / W Perm</p> | <p>N-S Prot / E-W Prot+Perm</p> | Non-revenue crossing NTOR only when LRT approaching *Second NB LT lane in 2040 only |
| CSAH 103 (W Broadway Ave) / Main St | N/A | N/A | <p>N-S Prot / E-W Perm</p> | *Second NB LT lane in 2040 only |

Legend

Traffic Signal

Stop Control

N = NB Approach

S = SB Approach

E = EB Approach

W = WB Approach

Lane Use

Lane Use Change

No Turn on Red **NTOR**

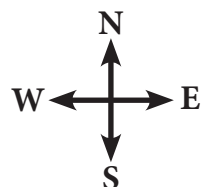
Perm = Permissive Left-Turn Phase

LRT

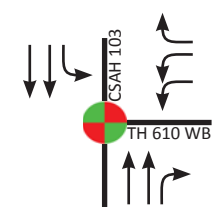
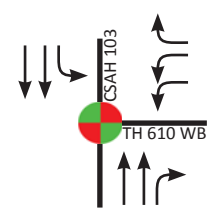
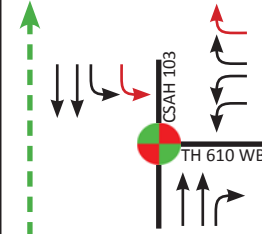
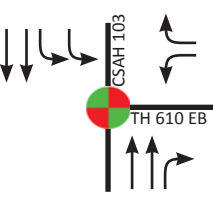
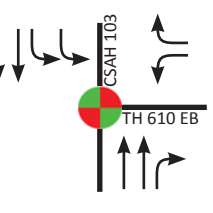
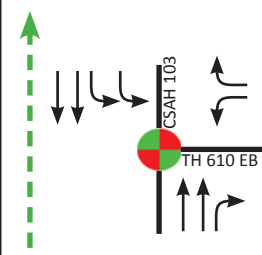
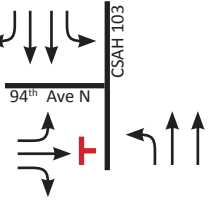
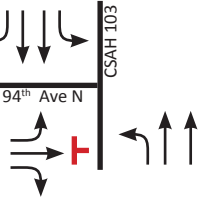
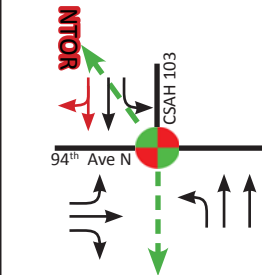
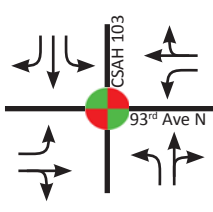
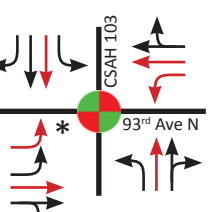
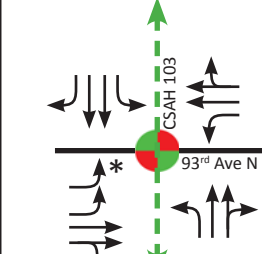
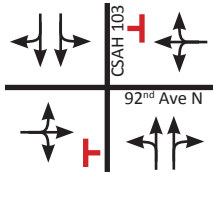
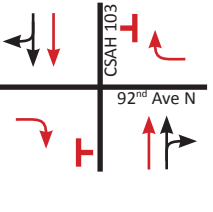
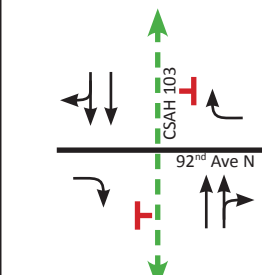
Freight Rail

Prot = Protected Left-Turn Phase



Prot+Perm = Protected/Permissive Left-Turn Phase






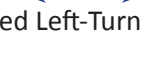
BLRT Intersection Layout Table

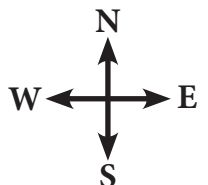
| Intersection | Existing | No Build | Build | Notes |
|--|--|--|---|---------------------------------|
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps |  S Prot / W Perm |  S Prot / W Perm |  S Prot / W Perm | |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps |  S Prot / W Perm |  S Prot / W Perm |  S Prot / W Perm | |
| CSAH 103 (W Broadway Ave) / 94 th Ave N |  N-S Prot / E-W Prot |  N-S Prot / E-W Prot |  N-S Prot / E-W Prot | NTOR only when LRT approaching |
| CSAH 103 (W Broadway Ave) / CSAH 30 (93 rd Ave N) |  N-S Prot / E-W Prot |  N-S Prot / E-W Prot |  N-S Prot / E-W Prot | *Second EB LT lane in 2040 only |
| CSAH 103 (W Broadway Ave) / 92 nd Ave N |  N-S Prot / E-W Prot |  N-S Prot / E-W Prot |  N-S Prot / E-W Prot | |

Legend

Traffic Signal 
 Stop Control 
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use 
 Lane Use Change 
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase

LRT 
 Freight Rail 
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

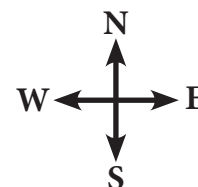
| Intersection | Existing | No Build | Build | Notes |
|---|----------|----------|-------|--------------------------------------|
| CSAH 103 (W Broadway Ave) / Setzler Pkwy | | | | |
| CSAH 103 (W Broadway Ave) / 89 th Ave N | | | | |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | | | | No Build 01 Build 01 Scenarios |
| CSAH 103 (W Broadway Ave) / Maplebrook Pkwy | | | | No Build 02 Build 02 Scenarios |
| CSAH 103 (W Broadway Ave) / CSAH 109 (85 th Ave N) | | | | |

Legend

Traffic Signal
 Stop Control
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use
 Lane Use Change
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase



LRT
 Freight Rail
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase







BLRT Intersection Layout Table

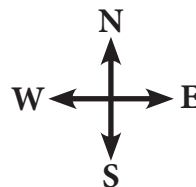
| Intersection | Existing | No Build | Build | Notes |
|--|----------------------------|----------------------------|----------------------------|-------|
| CSAH 103 (W Broadway Ave) / 84 th Ave N | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | |
| CSAH 103 (W Broadway Ave) / College Park Dr | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | |
| CSAH 103 (W Broadway Ave) / 82 nd Ave N | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | |
| CSAH 103 (W Broadway Ave) / Candlewood Dr | <p>N-S Prot / W Perm</p> | <p>N-S Prot / W Perm</p> | <p>N-S Prot / W Perm</p> | |
| CSAH 103 (W Broadway Ave) / 78 th Ave N | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | <p>N-S Prot / E-W Perm</p> | |

Legend

Traffic Signal 
 Stop Control 
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use 
 Lane Use Change 
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase

LRT 
 Freight Rail 
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

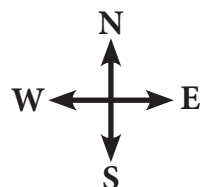
| Intersection | Existing | No Build | Build | Notes |
|--|-------------------------|-------------------------|--------------------------------|---------------------------------|
| CSAH 103 (W Broadway Ave) / Shopping Center Access | N-S Prot / E-W Perm | N-S Prot / E-W Perm | N-S Prot / E-W Perm | |
| CSAH 103 (W Broadway Ave) / CSAH 130 (Brooklyn Blvd)/CSAH 152 | N-S Prot / E-W Prot | N-S Prot / E-W Prot | N-S Prot / E-W Prot + Perm | *Second EB LT lane in 2040 only |
| CSAH 130 (Brooklyn Blvd) / Shopping Center Access (west of CSAH 103) | N-S Perm / E-W Prot | N-S Perm / E-W Prot | N-S Perm / E-W Prot | |
| CSAH 152 (Brooklyn Blvd) / Shopping Center Access (east of CSAH 103) | N-S Perm / E-W Prot | N-S Perm / E-W Prot | N-S Perm / E-W Prot | |
| CSAH 130 (W Broadway Ave) / 76th Ave N | N-S Prot / E-W Perm | N-S Prot / E-W Perm | N-S Prot / E-W Perm | |

Legend

Traffic Signal
 Stop Control
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use
 Lane Use Change
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase

LRT
 Freight Rail
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

| Intersection | Existing | No Build | Build | Notes |
|---|----------|----------|-------|----------------------------------|
| CSAH 130 (W Broadway Ave) / 75 th Ave N | | | | NTOR only when LRT approaching |
| CSAH 130 (W Broadway Ave) / 74 th Ave N | | | | |
| CSAH 130 (W Broadway Ave) / 73 rd Ave N | | | | |
| CSAH 81 (Bottineau Blvd) / 73 rd Ave N | | | | LRT grade separated over CSAH 81 |
| CSAH 81 (Bottineau Blvd) / CSAH 8 (W Broadway Ave) / 71 st Ave N | | | | |

Legend

Traffic Signal

Stop Control

N = NB Approach

S = SB Approach

E = EB Approach

W = WB Approach

Lane Use

Lane Use Change

No Turn on Red **NTOR**

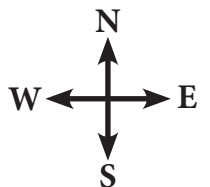
Perm = Permissive Left-Turn Phase

LRT

Freight Rail

Prot = Protected Left-Turn Phase

Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

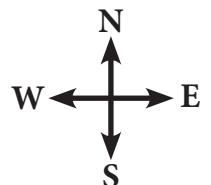
| Intersection | Existing | No Build | Build | Notes |
|---|--|--|--|-------|
| CSAH 130 (W Broadway Ave) / 71 st Ave N | N Prot + Perm / S Perm W Perm/ E Prot | N Prot + Perm / S Perm W Perm/ E Prot | N Prot + Perm / S Perm W Perm/ E Prot | |
| CSAH 81 (Bottineau Blvd) / I-94 WB Ramps | S Prot / W Perm | S Prot / W Perm | S Prot / W Perm | |
| CSAH 81 (Bottineau Blvd) / I-94 EB Ramps | S Prot / W Perm | S Prot / W Perm | S Prot / W Perm | |
| CSAH 81 (Bottineau Blvd) / 63 rd Ave N | N-S Prot / E-W Prot | N-S Prot / E-W Prot | N-S Prot / E-W Prot | |
| 63 rd Ave N / Louisiana Ave/ Park-and-Ride Access | N-S Prot / E-W Prot | N-S Prot / E-W Prot | N-S Perm / E-W Perm | |

Legend

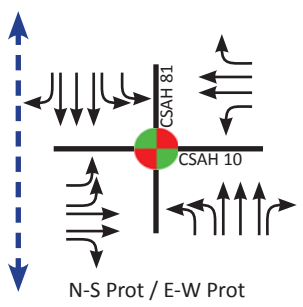
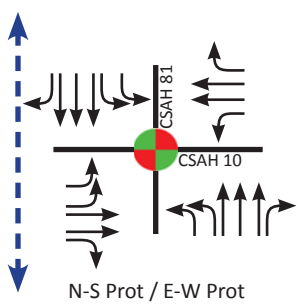
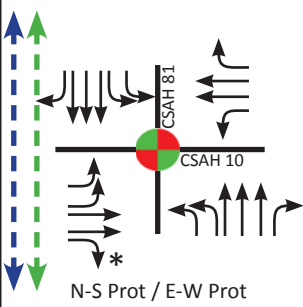
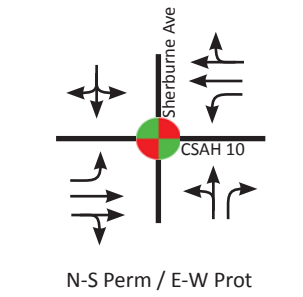
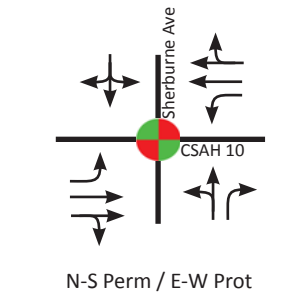
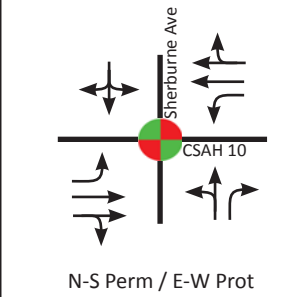
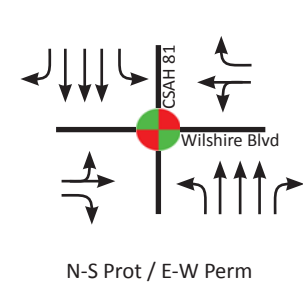
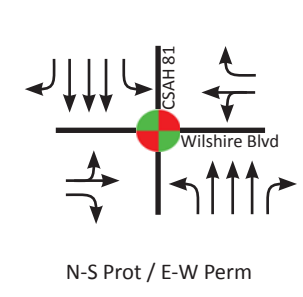
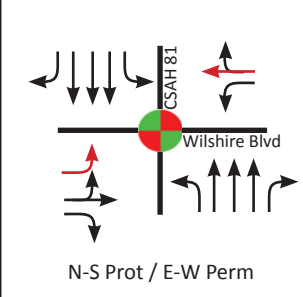
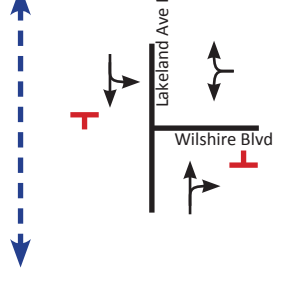
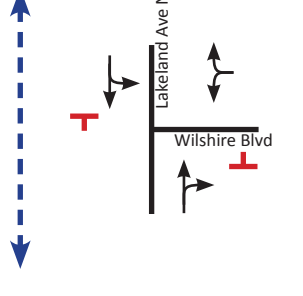
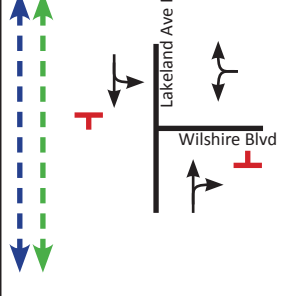
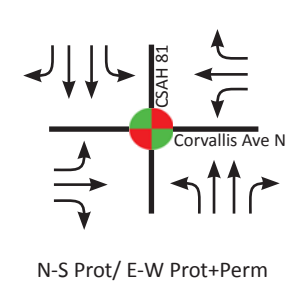
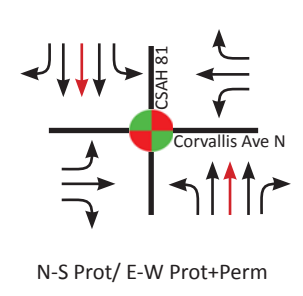
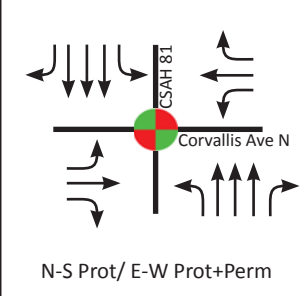
Traffic Signal
 Stop Control
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use
 Lane Use Change
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase



LRT
 Freight Rail
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase






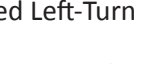
BLRT Intersection Layout Table

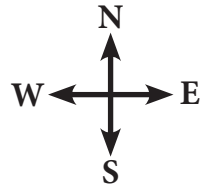
| Intersection | Existing | No Build | Build | Notes |
|---|---|---|--|----------------------|
| CSAH 81 (Bottineau Blvd) / CSAH 10 (Bass Lake Rd) |  <p>N-S Prot / E-W Prot</p> |  <p>N-S Prot / E-W Prot</p> |  <p>N-S Prot / E-W Prot</p> | *EB RT overlap phase |
| CSAH 10 (Bass Lake Rd) / Sherburne Ave |  <p>N-S Perm / E-W Prot</p> |  <p>N-S Perm / E-W Prot</p> |  <p>N-S Perm / E-W Prot</p> | |
| CSAH 81 (Bottineau Blvd) / Wilshire Blvd |  <p>N-S Prot / E-W Perm</p> |  <p>N-S Prot / E-W Perm</p> |  <p>N-S Prot / E-W Perm</p> | |
| Wilshire Blvd / Lakeland Ave N |  <p>N-S Prot / E-W Perm</p> |  <p>N-S Prot / E-W Perm</p> |  <p>N-S Prot / E-W Perm</p> | |
| CSAH 81 (Bottineau Blvd) / Corvallis Ave N |  <p>N-S Prot / E-W Prot+Perm</p> |  <p>N-S Prot / E-W Prot+Perm</p> |  <p>N-S Prot / E-W Prot+Perm</p> | |

Legend

Traffic Signal 
 Stop Control 
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use 
 Lane Use Change 
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase

LRT 
 Freight Rail 
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

| Intersection | Existing | No Build | Build | Notes |
|---|----------|----------|-------|--|
| CSAH 8 (W Broadway Ave) / Corvallis Ave N | | | | |
| CSAH 8 (W Broadway Ave) / Welcome Ave N | | | | |
| CSAH 8 (W Broadway Ave) / Vera Cruz Ave N | | | | Intersection converted to a roundabout in Build conditions |
| CSAH 8 (W Broadway Ave) / 45 1/2 Ave N | | | | |
| CSAH 8 (W Broadway Ave) / CSAH 9 (42nd Ave N) | | | | |

Legend

Traffic Signal

Stop Control

N = NB Approach

S = SB Approach

E = EB Approach

W = WB Approach

Lane Use

Lane Use Change

No Turn on Red **NTOR**

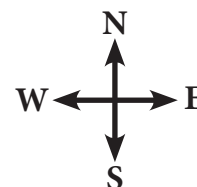
Perm = Permissive Left-Turn Phase

LRT

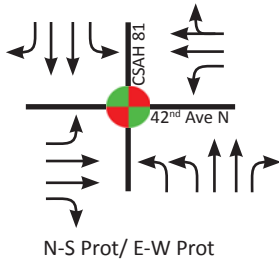
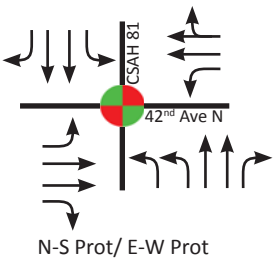
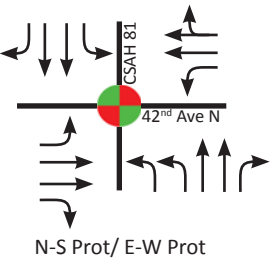
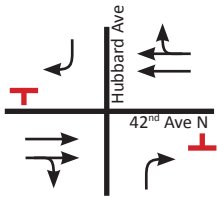
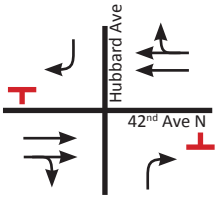
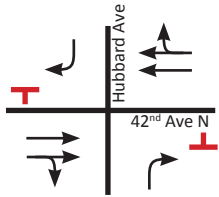
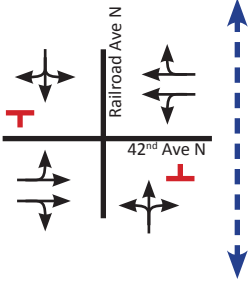
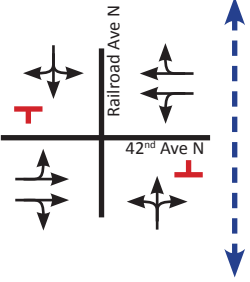
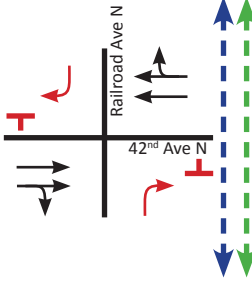
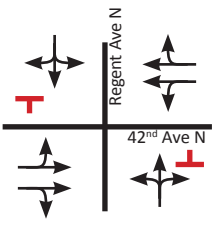
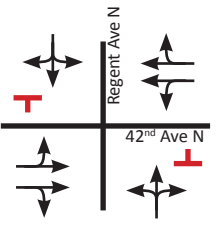
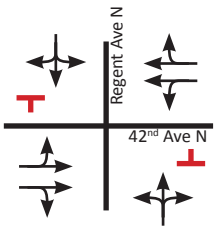
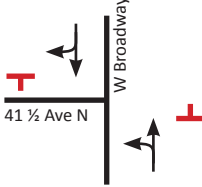
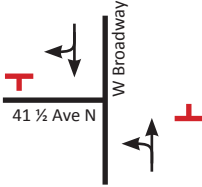
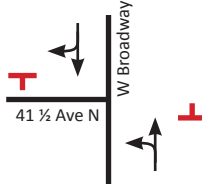
Freight Rail

Prot = Protected Left-Turn Phase



Prot+Perm = Protected/Permissive Left-Turn Phase








BLRT Intersection Layout Table

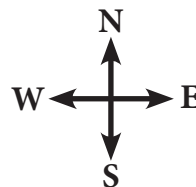
| Intersection | Existing | No Build | Build | Notes |
|--|---|---|---|--|
| CSAH 81 (Bottineau Blvd) / CSAH 9 (42 nd Ave N) |  N-S Prot/ E-W Prot |  N-S Prot/ E-W Prot |  N-S Prot/ E-W Prot | |
| CSAH 9 (42 nd Ave N) / Hubbard Ave |  * |  * |  * | *Left turns allowed by buses and emergency vehicles only |
| CSAH 9 (42 nd Ave N) / Railroad Ave N |  * |  * |  * | |
| CSAH 9 (42 nd Ave N) / Regent Ave N |  * |  * |  * | |
| W Broadway Ave / 41 ½ Ave N |  * |  * |  * | |

Legend

Traffic Signal 
 Stop Control 
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use 
 Lane Use Change 
 No Turn on Red **NTOR** 
 Perm = Permissive Left-Turn Phase

LRT 
 Freight Rail 
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

| Intersection | Existing | No Build | Build | Notes |
|---|----------|----------|-------|--------|
| Hubbard Ave / 41 ½ Ave N | | | | |
| 41 st Ave N / Hubbard Ave | | | | |
| W Broadway Ave / 41 st Ave N | | | | |
| Golden Valley Rd / Theodore Wirth Pkwy | | | | |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | | | | E Prot |

Legend

Traffic Signal

Stop Control

N = NB Approach

S = SB Approach

E = EB Approach

W = WB Approach

Lane Use

Lane Use Change

No Turn on Red **NTOR**

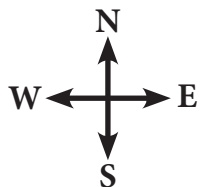
Perm = Permissive Left-Turn Phase

LRT

Freight Rail

Prot = Protected Left-Turn Phase

Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

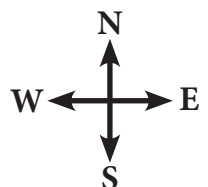
| Intersection | Existing | No Build | Build | Notes |
|--|----------|----------|-------|-------|
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave N | N/A | N/A | | |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | | | | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | N/A | N/A | | |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | | | | |
| TH 55 (Olson Memorial Hwy) / James Ave N | | | | |

Legend

Traffic Signal
 Stop Control
 N = NB Approach
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 E = EB Approach
 W = WB Approach

Lane Use
 Lane Use Change
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase

LRT
 Freight Rail
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

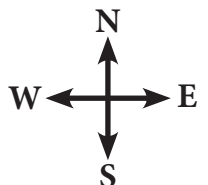
| Intersection | Existing | No Build | Build | Notes |
|--|----------|----------|-------|-------|
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave N | N/A | N/A | | |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | | | | |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | | | | |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | | | | |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | | | | |

Legend

Traffic Signal
 Stop Control
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use
 Lane Use Change
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase

LRT
 Freight Rail
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



BLRT Intersection Layout Table

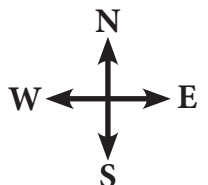
| Intersection | Existing | No Build | Build | Notes |
|---|-----------------------------------|-----------------------------------|-----------------------------------|--------------------------------|
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | N Perm / E Prot+Perm | N Perm / E Prot+Perm | N Perm / E Prot | |
| Olson Memorial Hwy / Border Ave | N-S Perm / E-W Prot+Perm | N-S Perm / E-W Prot+Perm | N-S Perm / E-W Prot | |
| Olson Memorial Hwy / 7 th St N / 6 th Ave N | N Prot+Perm / S Perm / W Perm | N Prot+Perm / S Perm / W Perm | N Prot+Perm / S Perm / W Perm | NTOR only when LRT approaching |

Legend

Traffic Signal
 Stop Control
 N = NB Approach
 S = SB Approach
 E = EB Approach
 W = WB Approach

Lane Use
 Lane Use Change
 No Turn on Red **NTOR**
 Perm = Permissive Left-Turn Phase

LRT Freight Rail
 Prot = Protected Left-Turn Phase
 Prot+Perm = Protected/Permissive Left-Turn Phase



Appendix C: Traffic Analysis Detailed Results

AM Level of Service and Intersection Delay

| Scenario | 2014 | | | Opening Year 2021 | | | | | | | | | 2040 | | | | | | | | |
|---|--------------------|-----------|-----------|----------------------|---------|-----------|----------------------|-----------|---------|----------------------|-----------|-----------|----------------------|---------|-----------|----------------------|-----------|---------|----------------------|-----------|-----------|
| | Existing Condition | | | No Build01 | | | Build01 | | | No Build01 | | | No Build02 | | | Build01 | | | Build02 | | |
| | Appr | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | |
| by Appr | | by Inters | by Inters | | by Appr | by Inters | | by Inters | by Appr | | by Inters | by Inters | | by Appr | by Inters | | by Inters | by Appr | | by Inters | by Inters |
| Oak Grove Pkwy / Xylon Ave | NB | -- | -- | -- | -- | -- | A | A | 1.8 | -- | -- | -- | -- | -- | -- | F | C | 22.0 | F | F | 85.7 |
| | EB | -- | -- | -- | -- | -- | A | A | | -- | -- | -- | -- | -- | -- | A | C | | A | F | |
| | SB | -- | -- | -- | -- | -- | A | A | | -- | -- | -- | -- | -- | -- | C | C | | F | | |
| | WB | -- | -- | -- | -- | -- | A | A | | -- | -- | -- | -- | -- | -- | A | C | | A | | |
| CSAH 103 (W Broadway Ave) / 101st Ave N | NB | A | A | 0.3 | A | A | 0.6 | -- | -- | -- | C | F | 73.5 | C | F | 72.1 | -- | -- | -- | -- | -- |
| | EB | A | A | | A | A | | -- | -- | -- | F | F | | F | F | | -- | -- | -- | -- | -- |
| | SB | A | A | | A | A | | -- | -- | -- | A | F | | A | F | | -- | -- | -- | -- | -- |
| | WB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | NB | A | A | 0.2 | A | A | 0.3 | -- | -- | -- | F | F | 133.8 | F | F | 125.8 | -- | -- | -- | -- | -- |
| | EB | A | A | | A | A | | -- | -- | -- | F | F | | F | F | | -- | -- | -- | -- | -- |
| | SB | A | A | | A | A | | -- | -- | -- | A | F | | A | F | | -- | -- | -- | -- | -- |
| | WB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | NB | B | B | 10.0 | C | C | 20.6 | C | C | 27.6 | F | F | 152.0 | F | F | 128.1 | D | D | 41.9 | D | 40.6 |
| | EB | -- | -- | -- | -- | -- | -- | C | C | | -- | -- | | C | F | | C | C | | C | |
| | SB | A | B | | B | C | | C | C | | C | F | | C | F | | D | D | | D | |
| | WB | C | | | D | | | D | D | | F | F | | F | F | | D | D | | D | |
| CSAH 103 (W Broadway Ave) / Main St | NB | -- | -- | -- | -- | -- | B | B | 18.7 | -- | -- | -- | -- | -- | -- | -- | D | D | 41.2 | D | 38.7 |
| | EB | -- | -- | -- | -- | -- | D | B | | -- | -- | -- | -- | -- | -- | -- | D | D | | D | |
| | SB | -- | -- | -- | -- | -- | C | | | -- | -- | -- | -- | -- | -- | -- | D | D | | C | |
| | WB | -- | -- | -- | -- | -- | E | | | -- | -- | -- | -- | -- | -- | E | | E | | E | |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | NB | B | B | 14.5 | C | C | 23.1 | A | B | 18.5 | F | F | 288.6 | F | F | 207.7 | D | C | 32.3 | B | 22.5 |
| | EB | -- | -- | -- | -- | -- | -- | B | B | | -- | -- | | -- | -- | | -- | -- | | -- | |
| | SB | B | B | | B | C | | B | B | | E | F | | D | F | | C | C | | B | |
| | WB | B | B | | C | | | C | B | | F | F | | F | F | | C | C | | C | |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | NB | A | B | 11.7 | A | B | 18.7 | B | B | 16.7 | C | F | 105.2 | B | F | 80.7 | B | C | 24.3 | B | 21.0 |
| | EB | -- | -- | -- | -- | -- | -- | -- | B | | -- | -- | | -- | -- | | -- | -- | | -- | |
| | SB | B | B | | B | | | -- | B | | C | F | | C | F | | C | C | | C | |
| | WB | B | B | | C | | | B | B | | F | F | | F | F | | C | C | | C | |

Analysis Notes:
 No Build01/Build01: Assumes no interchange at Hwy 169 and 101st Ave N
 No Build02/Build02: Assumes a full access interchange at Hwy 169 and 101st Ave N

AM Level of Service and Intersection Delay

| Scenario | 2014 | | | Opening Year 2021 | | | | | | 2040 | | | | | | | |
|---|---------------------|------|----------|----------------------|---------|----------------------|----------|----------------------|----------|----------------------|---------|----------------------|----------|------|---|---|------|
| | Existing Conditions | | | No Build | | Build | | | No Build | | Build | | | | | | |
| | Intersection | Appr | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | | | | | |
| by Appr | | | by Inter | by Inter | by Appr | by Inter | by Inter | by Appr | by Inter | by Inter | by Appr | by Inter | by Inter | | | | |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | EB | A | A | 2.8 | A | A | 6.5 | B | D | B | 12.0 | F | F | 91.1 | F | E | 65.3 |
| | SB | C | A | | F | A | | D | D | B | | F | F | | D | B | |
| | WB | A | | | A | | | B | A | A | 9.5 | A | | | C | C | 22.4 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave | EB | - | - | - | - | - | - | B | A | A | 9.5 | - | - | - | C | C | 22.4 |
| | WB | - | - | - | - | - | - | A | | | | - | - | - | A | | |
| | NB | D | | | D | | | D | | | | D | | | E | | |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | EB | D | D | 43.7 | E | D | 52.3 | D | D | D | 44.3 | F | F | 80.6 | D | D | 50.4 |
| | SB | D | | | D | | | D | D | D | | D | | | D | D | |
| | WB | C | | | C | | | D | D | D | | D | | | D | D | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | EB | - | - | - | - | - | - | A | A | A | 6.5 | - | - | - | A | A | 6.5 |
| | WB | - | - | - | - | - | - | A | | | | - | - | - | A | | |
| | NB | C | | | D | | | C | | | | C | | | D | | |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | EB | A | A | 7.2 | A | A | 6.5 | B | D | B | 13.3 | A | A | 5.7 | B | B | 13.5 |
| | SB | D | | | D | | | D | D | B | | D | | | D | | |
| | WB | B | | | A | | | B | | | | A | | | B | | |
| TH 55 (Olson Memorial Hwy) / James Ave N | EB | A | A | 4.9 | A | A | 5.2 | - | A | A | 6.1 | A | A | 3.7 | - | A | 6.6 |
| | SB | C | | | C | | | A | A | A | | C | A | | A | | |
| | WB | A | | | A | | | A | A | A | | A | | | A | | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave | EB | - | - | - | - | - | - | A | A | A | 1.3 | - | - | - | A | A | 1.3 |
| | WB | - | - | - | - | - | - | A | | | | - | - | - | A | | |
| | NB | D | | | D | | | D | | | | D | | | D | | |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | EB | A | A | 9.1 | B | B | 10.8 | C | D | C | 22.6 | A | B | 14.0 | C | C | 24.5 |
| | SB | D | | | D | | | D | D | B | | D | | | D | | |
| | WB | A | | | A | | | B | | | | B | | | C | | |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | EB | B | B | 15.3 | B | B | 14.5 | C | D | C | 26.5 | B | B | 12.1 | D | C | 31.5 |
| | SB | D | | | D | | | D | D | B | | D | | | D | | |
| | WB | A | | | A | | | B | | | | A | | | B | | |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | EB | A | A | 8.6 | C | B | 12.0 | D | B | B | 17.4 | C | B | 10.2 | D | B | 19.2 |
| | SB | C | | | B | | | B | C | | | B | | | C | | |
| | WB | A | | | A | | | B | | | | A | | | B | | |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | EB | A | C | 25.3 | E | C | 34.8 | C | D | C | 34.1 | F | D | 43.3 | F | D | 54.9 |
| | SB | E | | | E | | | D | | | | F | | | F | | |
| | WB | B | | | B | | | B | | | | B | | | B | | |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | EB | D | C | 23.8 | C | C | 32.4 | E | B | D | 37.1 | C | C | 28.4 | E | D | 42.2 |
| | SB | B | | | C | | | B | | | | B | | | B | | |
| | WB | C | | | D | | | D | | | | E | | | D | | |
| Olson Memorial Hwy / Border Ave | EB | A | B | 11.5 | B | B | 17.0 | C | C | C | 23.6 | A | B | 11.7 | C | C | 24.0 |
| | SB | C | | | C | | | C | | | | C | | | C | | |
| | WB | B | | | B | | | B | | | | A | | | B | | |
| Olson Memorial Hwy / 7th St N/6th Ave N | EB | B | C | 27.2 | C | C | 28.2 | D | B | D | 45.0 | C | C | 23.1 | D | D | 46.6 |
| | SB | D | | | D | | | D | | | | C | | | D | | |
| | WB | C | | | C | | | D | | | | D | | | D | | |

PM Level of Service and Intersection Delay

| Scenario | 2014 | | | Opening Year 2021 | | | | | | 2040 | | | | | | | | | | | | |
|---|--------------------|------|-----------|----------------------|---------|----------------------|-----------|----------------------|-----------|----------------------|---------|----------------------|------------|----------------------|-----------|----------------------|---------|----------------------|-----------|----------------------|-----------|-----------|
| | Existing Condition | | | No Build01 | | | Build01 | | | No Build01 | | | No Build02 | | | Build01 | | | Build02 | | | |
| | Intersection | Appr | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | LOS | Avg. Delay (sec/veh) | | |
| by Appr | | | by Inters | by Inters | by Appr | by Inters | by Inters | by Appr | by Inters | by Inters | by Appr | by Inters | by Inters | by Appr | by Inters | by Inters | by Appr | by Inters | by Inters | by Appr | by Inters | by Inters |
| Oak Grove Pkwy / Xylon Ave | NB | -- | -- | -- | -- | -- | A | A | 1.6 | -- | -- | -- | -- | -- | -- | F | F | 91.5 | F | F | 74.9 | |
| | EB | -- | -- | -- | -- | -- | A | A | A | -- | -- | -- | -- | -- | -- | A | A | -- | A | A | -- | |
| | SB | -- | -- | -- | -- | -- | A | A | A | -- | -- | -- | -- | -- | -- | F | F | -- | F | F | -- | |
| | WB | -- | -- | -- | -- | -- | A | A | A | -- | -- | -- | -- | -- | -- | A | A | -- | A | A | -- | |
| CSAH 103 (W Broadway Ave) / 101st Ave N | NB | A | A | 3.1 | A | A | 5.4 | -- | -- | -- | F | F | 193.9 | F | F | 156.2 | -- | -- | -- | -- | -- | |
| | EB | B | A | -- | D | A | -- | -- | -- | F | F | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | SB | A | -- | -- | A | -- | -- | -- | -- | F | F | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | WB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | NB | A | A | 0.9 | A | A | 0.9 | -- | -- | -- | F | F | 162.1 | F | F | 149.5 | -- | -- | -- | -- | -- | |
| | EB | A | -- | -- | A | -- | -- | -- | -- | F | F | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | SB | A | -- | -- | A | -- | -- | -- | -- | F | F | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | WB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | NB | B | B | 18.9 | B | C | 27.9 | C | D | 38.0 | F | F | 234.2 | F | F | 213.1 | E | F | 95.9 | D | D | 47.2 |
| | EB | -- | B | -- | C | C | -- | D | D | -- | F | F | -- | F | F | -- | E | F | -- | C | D | -- |
| | SB | B | -- | -- | C | C | -- | D | D | -- | F | F | -- | F | F | -- | E | F | -- | C | D | -- |
| | WB | C | -- | -- | D | C | -- | D | D | -- | F | F | -- | F | F | -- | E | F | -- | D | D | -- |
| CSAH 103 (W Broadway Ave) / Main St | NB | -- | -- | -- | -- | -- | A | B | 12.5 | -- | -- | -- | -- | -- | -- | F | E | 62.6 | E | C | C | 34.5 |
| | EB | -- | -- | -- | -- | -- | D | B | -- | -- | -- | -- | -- | -- | -- | F | E | -- | E | C | C | -- |
| | SB | -- | -- | -- | -- | -- | B | -- | -- | -- | -- | -- | -- | -- | -- | F | E | -- | E | C | C | -- |
| | WB | -- | -- | -- | -- | -- | E | -- | -- | -- | -- | -- | -- | -- | -- | F | E | -- | E | C | C | -- |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | NB | B | B | 19.6 | C | D | 43.5 | C | C | 21.6 | F | F | 284.7 | F | F | 286.6 | D | D | 38.8 | C | C | 26.3 |
| | EB | -- | B | -- | E | D | -- | B | C | -- | F | F | -- | F | F | -- | D | D | -- | B | C | -- |
| | SB | C | -- | -- | D | -- | -- | B | -- | -- | F | F | -- | F | F | -- | D | D | -- | B | C | -- |
| | WB | C | -- | -- | D | -- | -- | C | -- | -- | F | F | -- | F | F | -- | D | D | -- | B | C | -- |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | NB | B | B | 13.5 | B | B | 17.5 | B | B | 16.0 | F | F | 188.6 | F | F | 184.8 | C | C | 28.2 | C | C | 26.1 |
| | EB | -- | B | -- | B | B | -- | B | B | -- | F | F | -- | F | F | -- | C | C | -- | C | C | -- |
| | SB | B | -- | -- | B | B | -- | B | B | -- | F | F | -- | F | F | -- | C | C | -- | C | C | -- |
| | WB | B | -- | -- | C | B | -- | B | B | -- | F | F | -- | F | F | -- | C | C | -- | C | C | -- |

Analysis Notes:
 No Build01/Build01: Assumes no interchange at Hwy 169 and 101st Ave N
 No Build02/Build02: Assumes a full access interchange at Hwy 169 and 101st Ave N

PM Level of Service and Intersection Delay

| Scenario | 2014 | | | Opening Year 2021 | | | | | | 2040 | | | | | | |
|---|---------------------|----------|----------|----------------------|---------|----------|----------------------|----------|----------|----------------------|---------|----------|----------------------|---|------|------|
| | Existing Conditions | | | No Build | | Build | | No Build | | | Build | | | | | |
| | Appr | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | LOS | | Avg. Delay (sec/veh) | | | |
| by Appr | | by Inter | by Inter | | by Appr | by Inter | | by Appr | by Inter | | by Appr | by Inter | | | | |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | EB | A | | F | D | 33.7 | A | B | 10.9 | F | F | 88.8 | C | | 21.8 | |
| | SB | F | A | F | D | | D | B | | F | F | | E | C | | |
| | WB | A | | A | | | B | | | A | | | B | | | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave | EB | - | - | - | - | - | A | A | 4.6 | - | - | - | A | B | 11.5 | |
| | WB | - | - | - | - | - | A | A | | - | - | | A | B | | |
| | NB | D | | D | | | E | | | E | | | E | | | |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | EB | F | F | 82.0 | F | F | 102.1 | D | D | 43.1 | F | F | 130.8 | D | 51.1 | |
| | SB | D | | D | | | D | | | E | | | E | | | |
| | WB | E | | F | | | D | | | F | | | D | | | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | EB | - | - | - | - | - | A | A | 7.3 | - | - | - | A | A | 8.0 | |
| | WB | - | - | - | - | - | A | A | | - | - | | A | A | | |
| | NB | D | | D | | | D | | | E | | | D | | | |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | EB | A | A | 7.8 | A | C | 20.1 | A | B | 16.4 | A | E | 57.2 | B | C | 22.9 |
| | SB | D | | E | | | D | | | E | | | D | | | |
| | WB | B | | D | | | C | | | F | | | C | | | |
| TH 55 (Olson Memorial Hwy) / James Ave N | EB | A | A | 4.2 | A | A | 4.2 | A | A | 5.2 | A | A | 4.2 | A | A | 3.6 |
| | SB | B | | C | | | A | | | D | | | B | | | |
| | WB | A | | A | | | A | | | E | | | A | | | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave | EB | - | - | - | - | - | A | A | 1.2 | - | - | - | A | A | 1.2 | |
| | WB | - | - | - | - | - | A | A | | - | - | | A | A | | |
| | NB | D | | D | | | D | | | D | | | D | | | |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | EB | A | A | 7.2 | B | A | 8.5 | C | C | 22.6 | A | B | 19.2 | C | 20.3 | |
| | SB | D | | D | | | D | | | D | | | D | | | |
| | WB | A | | A | | | B | | | C | | | B | | | |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | EB | B | B | 10.6 | A | A | 9.3 | D | C | 33.3 | B | B | 13.9 | D | 36.3 | |
| | SB | D | | D | | | D | | | D | | | D | | | |
| | WB | A | | A | | | C | | | A | | | B | | | |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | EB | A | A | 8.1 | A | A | 8.0 | B | B | 17.3 | B | A | 9.0 | C | C | 22.8 |
| | SB | C | | D | | | D | | | C | | | D | | | |
| | WB | A | | A | | | B | | | A | | | B | | | |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | EB | C | C | 21.5 | B | C | 21.1 | C | C | 29.1 | C | C | 24.6 | D | C | 32.3 |
| | SB | D | | D | | | E | | | B | | | D | | | |
| | WB | B | | B | | | B | | | A | | | B | | | |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | EB | D | C | 28.9 | B | C | 33.1 | E | D | 39.4 | D | C | 31.4 | F | D | 46.7 |
| | SB | B | | B | | | B | | | B | | | B | | | |
| | WB | C | | C | | | C | | | D | | | D | | | |
| Olson Memorial Hwy / Border Ave | EB | E | | E | | | E | | | E | | | F | | | |
| | SB | A | C | 21.9 | B | C | 24.4 | C | C | 32.3 | C | C | 33.1 | D | C | 34.4 |
| | WB | C | | C | | | C | | | C | | | C | | | |
| Olson Memorial Hwy / 7th St N/6th Ave N | EB | B | C | 30.5 | D | C | 32.4 | E | D | 43.6 | D | D | 36.0 | E | E | 64.8 |
| | SB | E | | E | | | E | | | E | | | E | | | |
| | WB | C | | C | | | D | | | D | | | E | | | |

Storage Length

| Scenario | Appr | 2014 | | | Opening Year 2021 | | | | | | 2040 | | | | | | | | | | | |
|---|------|-----------------------------------|------|------|-----------------------------------|------|------|-----------------------------------|------|------|-----------------------------------|------|------|-----------------------------------|------|------|-----------------------------------|------|------|-----------------------------------|------|------|
| | | Existing Condition | | | No Build01 | | | Build01 | | | No Build01 | | | No Build02 | | | Build01 | | | Build02 | | |
| | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | |
| Intersection | LT | Th | RT | LT | Th | RT | LT | Th | RT | LT | Th | RT | LT | Th | RT | LT | Th | RT | LT | Th | RT | |
| Oak Grove Pkwy / Xylon Ave | NB | - | - | - | - | - | - | 250 | 1000 | 1000 | - | - | - | - | - | - | 250 | 1000 | 1000 | 250 | 1000 | 1000 |
| | EB | - | - | - | - | - | - | 1250 | 1250 | 1250 | - | - | - | - | - | - | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 |
| | SB | - | - | - | - | - | - | 250 | 400 | 400 | - | - | - | - | - | - | 250 | 400 | 400 | 250 | 400 | 400 |
| | WB | - | - | - | - | - | - | 1400 | 1400 | 1400 | - | - | - | - | - | - | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |
| CSAH 103 (W Broadway Ave) / 101st Ave N | NB | 725 | 725 | - | 725 | 725 | - | - | - | - | 725 | 725 | - | 725 | 725 | - | - | - | - | - | - | - |
| | EB | 2600 | - | 2600 | 2600 | - | 2600 | - | - | - | 2600 | - | 2600 | 2600 | - | 2600 | - | 2600 | - | - | - | - |
| | SB | - | 2400 | 2400 | - | 2400 | 2400 | - | - | - | - | 2400 | 2400 | - | 2400 | 2400 | - | - | - | - | - | - |
| | WB | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | NB | 900 | 900 | - | 900 | 900 | - | - | - | - | 900 | 900 | - | 900 | 900 | - | - | - | - | - | - | - |
| | EB | 3000 | - | 3000 | 3000 | - | 3000 | - | - | - | 3000 | - | 3000 | 3000 | - | 3000 | - | 3000 | - | - | - | - |
| | SB | - | 725 | - | - | 725 | - | - | - | - | - | 725 | - | - | 725 | - | - | - | - | - | - | - |
| | WB | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | NB | - | 950 | 350 | - | 950 | 350 | 340 | 700 | 700 | - | 950 | 350 | - | 950 | 350 | 340 | 700 | 700 | 340 | 700 | 700 |
| | EB | - | - | - | - | - | - | 320 | 450 | 300 | - | - | - | - | - | - | 320 | 450 | 300 | 320 | 450 | 300 |
| | SB | 250 | 900 | - | 250 | 900 | - | 310 | 950 | 950 | 250 | 900 | - | 250 | 900 | - | 310 | 950 | 950 | 310 | 950 | 950 |
| | WB | 315 | - | 720 | 315 | - | 720 | 350 | 720 | 720 | 315 | - | 720 | 315 | - | 720 | 350 | 720 | 720 | 350 | 720 | 720 |
| CSAH 103 (W Broadway Ave) / Main St | NB | - | - | - | - | - | - | 410 | 830 | 320 | - | - | - | - | - | - | 410 | 830 | 320 | 410 | 830 | 320 |
| | EB | - | - | - | - | - | - | 210 | 380 | 380 | - | - | - | - | - | - | 210 | 380 | 380 | 210 | 380 | 380 |
| | SB | - | - | - | - | - | - | 370 | 700 | 370 | - | - | - | - | - | - | 370 | 700 | 370 | 370 | 700 | 370 |
| | WB | - | - | - | - | - | - | 205 | 650 | 650 | - | - | - | - | - | - | 205 | 650 | 650 | 205 | 650 | 650 |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | NB | - | 800 | 375 | - | 800 | 375 | - | 800 | 375 | - | 800 | 375 | - | 800 | 375 | - | 800 | 375 | - | 800 | 375 |
| | EB | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | SB | 460 | 1045 | - | 460 | 1045 | - | 460 | 1045 | - | 460 | 1045 | - | 460 | 1045 | - | 460 | 1045 | - | 460 | 1045 | - |
| | WB | 560 | - | 560 | 560 | - | 560 | 560 | - | 560 | - | 560 | 560 | - | 560 | - | 560 | - | 560 | 560 | - | 560 |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | NB | 350 | 785 | - | 350 | 785 | - | 350 | 785 | - | 350 | 785 | - | 350 | 785 | - | 350 | 785 | - | 350 | 785 | - |
| | EB | 80 | - | 65 | 80 | - | 65 | 80 | - | 65 | 80 | - | 65 | 80 | - | 65 | 80 | - | 65 | 80 | - | 65 |
| | SB | - | 800 | 380 | - | 800 | 380 | - | 800 | 380 | - | 800 | 380 | - | 800 | 380 | - | 800 | 380 | - | 800 | 380 |
| | WB | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Analysis Notes:

No Build01/Build01: Assumes no interchange at Hwy 169 and 101st Ave N

No Build02/Build02: Assumes a full access interchange at Hwy 169 and 101st Ave N

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

Storage Length

| Scenario | Appr | 2014 | | | Opening Year 2021 | | | | | | 2040 | | | | | |
|--|------|-----------------------------------|------|-----|-----------------------------------|------|-----|-----------------------------------|------|------|-----------------------------------|------|-----|-----------------------------------|------|------|
| | | Existing Conditions | | | No Build | | | Build | | | No Build | | | Build | | |
| | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | | Effective Storage Distance (feet) | | |
| Intersection | LT | Th | RT | LT | Th | RT | LT | Th | RT | LT | Th | RT | LT | Th | RT | |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | EB | 225 | 3785 | - | 225 | 3785 | - | 225 | 3785 | - | 225 | 3785 | - | 225 | 3785 | - |
| | SB | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| | WB | - | 280 | 280 | - | 280 | 280 | - | 280 | 280 | - | 280 | 280 | - | 280 | 280 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave | EB | - | - | - | - | - | - | 620 | - | - | - | - | - | 620 | - | - |
| | WB | - | - | - | - | - | - | 630 | - | - | - | - | - | 630 | - | - |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | NB | 510 | 510 | 115 | 510 | 510 | 115 | 135 | 510 | 115 | 510 | 510 | 115 | 135 | 510 | 115 |
| | EB | 260 | 605 | 605 | 260 | 605 | 605 | 320 | 605 | 605 | 260 | 605 | 605 | 320 | 605 | 605 |
| | SB | 490 | 490 | 75 | 490 | 490 | 75 | 95 | 490 | 75 | 490 | 490 | 75 | 95 | 490 | 75 |
| | WB | 280 | 885 | 885 | 280 | 885 | 885 | 305 | 885 | 885 | 280 | 885 | 885 | 305 | 885 | 885 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave | EB | - | - | - | - | - | - | 450 | - | - | - | - | - | 450 | - | - |
| | WB | - | - | - | - | - | - | 440 | - | - | - | - | - | 440 | - | - |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | NB | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | EB | 240 | 880 | 880 | 240 | 880 | 880 | 255 | 880 | 880 | 240 | 880 | 880 | 255 | 880 | 880 |
| | SB | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | WB | 265 | 935 | 935 | 265 | 935 | 935 | 305 | 1545 | 1545 | 265 | 935 | 935 | 305 | 1545 | 1545 |
| TH 55 (Olson Memorial Hwy) / James Ave N | NB | 270 | 925 | - | 270 | 925 | - | - | - | - | 270 | 925 | - | - | - | - |
| | EB | 270 | 925 | - | 270 | 925 | - | - | - | - | 270 | 925 | - | - | - | - |
| | WB | - | 565 | 565 | - | 565 | 565 | - | 565 | 565 | - | 565 | 565 | - | 565 | 565 |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave | EB | - | - | - | - | - | - | 1005 | - | - | - | - | - | 1005 | - | - |
| | WB | - | - | - | - | - | - | 530 | - | - | - | - | - | 530 | - | - |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | NB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | EB | 245 | 560 | 560 | 245 | 560 | 560 | 305 | 1540 | 1540 | 245 | 560 | 560 | 305 | 1540 | 1540 |
| | SB | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 |
| | WB | 270 | 970 | 970 | 270 | 970 | 970 | 295 | 970 | 970 | 270 | 970 | 970 | 295 | 970 | 970 |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | NB | 90 | 0 | 0 | 90 | 0 | 0 | 90 | 0 | 0 | 90 | 0 | 0 | 90 | 0 | 0 |
| | EB | 265 | 965 | 965 | 265 | 965 | 965 | 300 | 965 | 965 | 265 | 965 | 965 | 300 | 965 | 965 |
| | SB | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 |
| | WB | 200 | 610 | 610 | 200 | 610 | 610 | 200 | 610 | 610 | 200 | 610 | 610 | 200 | 610 | 610 |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | NB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | EB | 205 | 615 | 615 | 205 | 615 | 615 | 105 | 615 | 615 | 205 | 615 | 615 | 105 | 615 | 615 |
| | SB | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
| | WB | 275 | 535 | 535 | 275 | 535 | 535 | 100 | 535 | 535 | 275 | 535 | 535 | 100 | 535 | 535 |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | EB | - | 505 | 365 | - | 505 | 365 | - | 505 | 260 | - | 505 | 365 | - | 505 | 260 |
| | SB | 380 | 380 | 235 | 380 | 380 | 235 | 380 | 380 | 235 | 380 | 380 | 235 | 380 | 380 | 235 |
| | WB | 165 | 205 | - | 165 | 205 | - | 220 | 220 | - | 165 | 205 | - | 220 | 220 | - |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | NB | 375 | 790 | 790 | 375 | 790 | 790 | 375 | 790 | 790 | 375 | 790 | 790 | 375 | 790 | 790 |
| | EB | 185 | 200 | - | 185 | 200 | - | 225 | 200 | - | 185 | 200 | - | 225 | 200 | - |
| | WB | - | 425 | 120 | - | 425 | 120 | - | 425 | 165 | - | 425 | 120 | - | 425 | 165 |
| Olson Memorial Hwy / Border Ave | NB | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 | 865 |
| | EB | 110 | 425 | 130 | 110 | 425 | 130 | 405 | 425 | 215 | 110 | 425 | 130 | 405 | 425 | 215 |
| | SB | 335 | 335 | 45 | 335 | 335 | 45 | 335 | 335 | 45 | 335 | 335 | 45 | 335 | 335 | 45 |
| | WB | 165 | 300 | 115 | 165 | 300 | 115 | 140 | 300 | 115 | 165 | 300 | 115 | 140 | 300 | 115 |
| Olson Memorial Hwy / 7th St N/6th Ave N | NB | 235 | 565 | 90 | 235 | 565 | 90 | 460 | 565 | - | 235 | 565 | 90 | 460 | 565 | - |
| | EB | - | 330 | 340 | - | 330 | 340 | - | 305 | 310 | - | 330 | 340 | - | 305 | 310 |
| | SB | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 |
| | WB | 1075 | 1075 | 115 | 1075 | 1075 | 115 | 1075 | 1075 | - | 1075 | 1075 | 115 | 1075 | 1075 | - |

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

Queuing Issues

| Intersection | Appr | Movement | Peak Period | Scenario(s) with 95th Percentile Queue > Storage | | | | | | Identified as Issue? | Mitigation Proposed? | | | |
|---|------|------------------------|-------------|--|------------|---------|------------|---------|------------|----------------------|----------------------|---|----|--|
| | | | | Existing Conditions | 2014 | | 2021 | | 2040 | | | | | |
| | | | | | No Build01 | Build01 | No Build01 | Build01 | No Build02 | | | Build02 | | |
| Oak Grove Pkwy / Xylon Ave | NB | Left-Turn | AM | | | | | | X | X | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | A traffic signal should be built in conjunction with the interchange or with future development, when warranted. Need for the signal is due to future development traffic. |
| | PM | | | | | | | | X | X | - | - | - | - |
| | EB | - | | | | | | | | | - | - | - | - |
| | SB | Left-Turn | AM | | | | | | | X | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | A traffic signal should be built in conjunction with the interchange or with future development, when warranted. Need for the signal is due to future development traffic. |
| PM | | | | | | | | X | X | - | - | - | - | |
| CSAH 103 (W Broadway Ave) / 101st Ave N | WB | - | | | | | | | | | - | - | - | - |
| | NB | - | | | | | | | | | - | - | - | - |
| | EB | - | | | | | | | | | - | - | - | - |
| | SB | - | | | | | | | | | - | - | - | - |
| CSAH 103 (W Broadway Ave) / Winnetka Ave N | NB | Left-Turn / Through | AM | | | | | X | X | | Yes | Queues spill back through upstream intersections. | No | The proposed Build roadway network will accommodate the expected future traffic volumes. |
| | PM | | | | | | | | | - | - | - | - | |
| | EB | - | | | | | | | | | - | - | - | - |
| | SB | - | | | | | | | | | - | - | - | - |
| CSAH 103 (W Broadway Ave) / Oak Grove Pkwy | WB | - | | | | | | | | | - | - | - | - |
| | NB | Through | AM | | | | | X | X | | Yes | Queues spill back through upstream intersections. | No | The proposed Build roadway network will accommodate the expected future traffic volumes. |
| | PM | | | | | | | | | - | - | - | - | |
| | EB | Right-Turn | AM | | | | | | | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Queues are due to future development traffic. Queues would be reduced with construction of the interchange at TH 169/101st Avenue N. |
| PM | | | | | | | | X | - | - | - | - | | |
| CSAH 103 (W Broadway Ave) / Main St | SB | Left-Turn / Through | AM | | | | | X | X | | Yes | Queues spill back through upstream intersections. | No | The proposed Build roadway network will accommodate the expected future traffic volumes. |
| | PM | | | | | | | | | - | - | - | - | |
| | WB | Left-Turn / Right-Turn | AM | | | | | X | X | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Issue occurred in No Build conditions. Build conditions are improved compared to No Build conditions. |
| | PM | | | | | | X | X | X | - | - | - | - | |
| CSAH 103 (W Broadway Ave) / TH 610 WB Ramps | NB | Through | AM | | | | | X | X | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | The proposed Build roadway network will accommodate the expected future traffic volumes. |
| | PM | | | | | | X | X | | - | - | - | - | |
| | EB | - | | | | | | | | | - | - | - | - |
| | SB | Left-Turn | AM | | | | | | | | No | Queues spill back through upstream intersections. | No | The proposed Build roadway network will accommodate the expected future traffic volumes. |
| PM | | | | | | X | X | | - | - | - | - | | |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | WB | Left-Turn / Right-Turn | AM | | | | | X | X | | No | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | The proposed Build roadway network will accommodate the expected future traffic volumes. |
| | PM | | | | | | X | X | | - | - | - | - | |
| | NB | - | | | | | | | | | - | - | - | - |
| | EB | - | | | | | | | | | - | - | - | - |
| CSAH 103 (W Broadway Ave) / TH 610 EB Ramps | SB | - | | | | | | | | | - | - | - | - |
| | WB | - | | | | | | | | | - | - | - | - |

Analysis Notes:

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

Queuing Issues

| Intersection | Appr | Movement | Peak Period | Scenario(s) with 95th Percentile Queue > Storage | | | | | Identified as Issue? | Mitigation Proposed? | | | |
|---|------|------------------------------|-------------|--|----------|-------|---------------------|----------|----------------------|----------------------|---|----|---|
| | | | | 2014 | 2021 | 2040 | Existing Conditions | No Build | | | Build | | |
| | | | | Existing Conditions | No Build | Build | | | | | | | |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | EB | - | - | - | - | - | - | - | - | - | | | |
| TH 55 (Olson Memorial Hwy) / Thomas Ave N | SB | Left-Turn/Right-Turn | AM | | X | | X | | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Issue occurs in Existing and No Build conditions, and the Build conditions do not cause a significant change. |
| | | | PM | X | X | | X | X | | | | | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Russell Ave | WB | - | - | - | - | - | - | - | - | - | - | - | |
| TH 55 (Olson Memorial Hwy) / CSAH 2 (Penn Ave N) | EB | Left-Turn | AM | | | | | | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Issue occurs only in Existing and No Build conditions. Build project improvements reduce the queuing. |
| | | | PM | | X | | X | | | | | | |
| | EB | Through/Right-turn | AM | | X | | X | | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | |
| | | | PM | X | X | | X | X | | | | | |
| | SB | Left-Turn | AM | | | | | | | Yes | Movement operates at LOS E or worse but average back of queue does not exceed storage length. | No | Build project includes creation of a left-turn lane. Length of the turn lane has been limited to minimize impacts on parking and adjacent property. |
| | | | PM | | | | | | | | | X | |
| WB | - | - | - | - | - | - | - | - | - | - | - | - | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of Oliver Ave N | EB | - | - | - | - | - | - | - | - | - | - | - | |
| TH 55 (Olson Memorial Hwy) / Morgan Ave N | SB | Left-turn/Through/Right-Turn | AM | X | X | X | X | X | X | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Issue occurs in Existing and No Build conditions, and the Build conditions do not cause a significant change. |
| | | | PM | X | X | X | X | X | X | | | | |
| TH 55 (Olson Memorial Hwy) / James Ave N | WB | - | - | - | - | - | - | - | - | - | - | - | |
| TH 55 (Olson Memorial Hwy) / Pedestrian Crossing East of James Ave | WB | Left-turn/Through/Right-Turn | AM | X | X | X | X | X | X | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Issue occurs in Existing and No Build conditions, and the Build conditions do not cause a significant change. |
| | | | PM | X | X | X | X | X | X | | | | |
| TH 55 (Olson Memorial Hwy) / Humboldt Ave N | EB | - | - | - | - | - | - | - | - | - | - | - | |
| TH 55 (Olson Memorial Hwy) / Van White Memorial Blvd | NB | Through/Right-turn | AM | X | X | X | X | X | X | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | Issue occurs in Existing and No Build conditions, and the Build conditions do not cause a significant change. |
| | | | PM | X | X | X | X | X | X | | | | |
| TH 55 (Olson Memorial Hwy) / Bryant Ave N | WB | - | - | - | - | - | - | - | - | - | - | - | |
| TH 55 (Olson Memorial Hwy) / I-94 EB Ramps (W Lyndale Ave N) | NB | Left-Turn | AM | | X | | | X | | Yes | Average back of queue does not exceed storage length but movement operates at LOS E or worse. | No | Issue occurs in Existing and No Build conditions, and the Build conditions do not cause a significant change. |
| | | | PM | | | | | | | | | | |
| | SB | Through | AM | | X | | X | X | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | |
| | | | PM | | | | | | | | | | |
| | SB | Right-Turn | AM | X | X | | X | X | | Yes | Average back of queue exceeds storage length and movement operates at LOS E or worse. | No | |
| | | | PM | | | | | | | | | | |
| WB | - | - | - | - | - | - | - | - | - | - | - | | |
| TH 55 (Olson Memorial Hwy) / I-94 WB Ramps (E Lyndale Ave N) | EB | - | - | - | - | - | - | - | - | - | - | - | |
| Olson Memorial Hwy / Border Ave | WB | - | - | - | - | - | - | - | - | - | - | - | |
| | EB | - | - | - | - | - | - | - | - | - | - | - | |
| | SB | - | - | - | - | - | - | - | - | - | - | - | |
| Olson Memorial Hwy / 7th St N/6th Ave N | WB | - | - | - | - | - | - | - | - | - | - | - | |
| | EB | - | - | - | - | - | - | - | - | - | - | - | |
| | SB | - | - | - | - | - | - | - | - | - | - | - | |

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