



# 1<sup>st</sup> Street Two-Way Conversion Study

Duluth, MN

**Prepared For:**

City of Duluth  
411 W 1<sup>st</sup> Street  
Duluth, MN 55802

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**ALLIANT**

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## **1.0 Introduction**

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The City of Duluth hired Alliant Engineering to study the potential conversion of 1<sup>st</sup> Street from a one-way roadway to a two-way roadway from 24<sup>th</sup> Avenue E to Mesaba Avenue. Currently, the majority of the segment is a one-way westbound, and there are two segments that are two-way: 8<sup>th</sup> Avenue E to 3<sup>rd</sup> Avenue E, and 6<sup>th</sup> Avenue W to Mesaba Avenue (see **Figure 1**).

Cities across the country are undertaking two-way conversions. These conversions are popular because two-way streets offer a number of benefits when compared to one-way streets including traffic calming, convenience and ease of mobility and access, and economic benefits.

One-way streets were designed to accommodate large traffic flows which is why they work best in heavily congested areas. One-way streets with multiple lanes result in higher traffic speeds due to the open feel of the roadway and motorists' ability to pass a slower vehicle, much like operations on large arterial roadways or expressways. This can lead to an unsafe environment for local roadway users in residential neighborhoods and downtown central business districts. Two-way streets result in lower traffic speeds, reduced number of pedestrian crashes, less severe injury crashes, and reduced driver confusion. Through proper design and traffic control changes, some two-way street conversions have resulted in reduced vehicle crashes.

Two-way streets are intuitive and easy to navigate, which reduces travel times. This is a notable benefit for emergency response services. Two-way streets improve business access and visibility. Traffic no longer has to make "loops" around one-way streets, and can take the shortest, more direct route to a destination, which creates an economic benefit for local businesses and is why two-way operation is the typical roadway configuration in residential neighborhoods.

### **1.1 Purpose and Need**

The goal of the traffic study is to evaluate the feasibility of converting the street to two-way, and to recommend corridor wide lane configurations and traffic controls if the roadway were to be converted. Understanding this, the City of Duluth desires a facility which accomplishes the following goals:

- Addresses vehicular demands on the corridor
- Addresses needs of business owners and others utilizing parking areas
- Allows for safe access for all users (including pedestrians, bicyclists, and transit riders)
- Allows for convenient access for all users (including pedestrians, bicyclists, and transit riders)

To support the City of Duluth in identifying appropriate improvements that meet the above stated goals, this report accomplishes the following:

- Documents the existing geometric characteristics, traffic operations, and curb side uses
- Documents existing traffic volume and horizon year 2045 traffic forecasts based upon study area historical traffic volumes and expected population growth

- Develops and evaluates high-level conceptual alternatives that will affect corridor operation characteristics to a varying degree
- Identifies a preferred corridor alternative

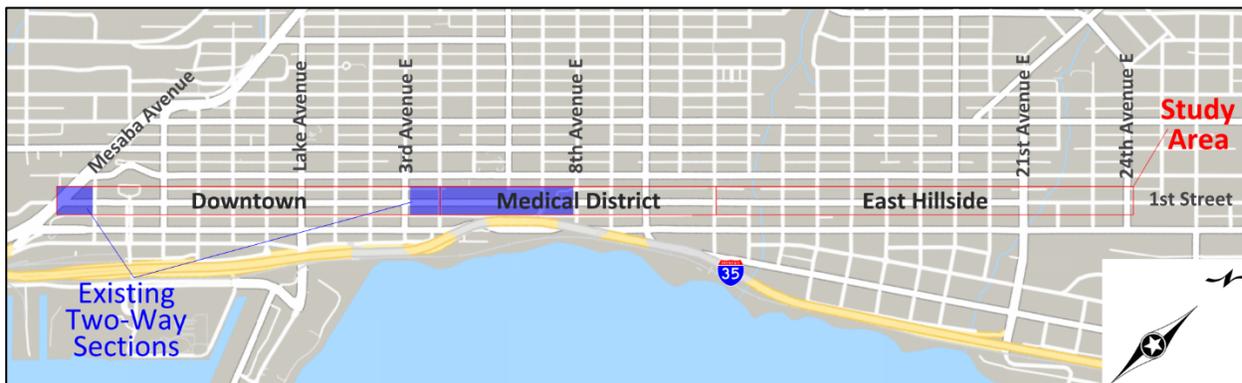
## 1.2 Background

The City of Duluth recently converted multiple one-way roadways to two-way roadways. In 2016, Alliant conducted a two-way conversion analysis for 1<sup>st</sup> Avenue W, 2<sup>nd</sup> Avenue W, and 3<sup>rd</sup> Avenue W through downtown. The conclusion of the study was that a conversion for each avenue was functional and several signals were recommended for removal. The conversions were implemented in 2017 along with traffic control changes, and a follow-up study indicated that the corridors were functioning well. Since the conversion, access in downtown has been improved. In the summer of 2018, the City converted W Michigan Street from 18<sup>th</sup> Avenue W to 21<sup>st</sup> Avenue W. In the fall of 2019, the City converted a portion of 1<sup>st</sup> Street on the western end of the city, from 22<sup>nd</sup> Avenue W to 30<sup>th</sup> Avenue W.

## 1.3 Description of Location

The subject of this traffic study is the 1<sup>st</sup> Street Corridor between 24<sup>th</sup> Avenue E and Mesaba Avenue in Duluth, MN. The estimated year 2018 population of Duluth was 85,884<sup>1</sup>. Due to its proximity to Lake Superior, the Duluth street grid is at an angle. 1<sup>st</sup> Street runs northeast/southwest. For simplicity in this document, 1<sup>st</sup> Street will be considered and referred to as an east/west corridor.

The surrounding area varies along the corridor. At the eastern end is the East Hillside neighborhood, which is primarily medium- and low-density residential, with driveways and neighborhood access roads along the study corridor. At the western end is Downtown Duluth, with driveways to parking garages and businesses, as well as access to other collector roads. Overlapping both the Downtown and East Hillside areas, the St. Luke's and Essentia campuses create a medical district through the middle section of the corridor.



**Figure 1. Project Location**

<sup>1</sup> <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

## 1.4 Stakeholder and Public Involvement

A key part of the study was the stakeholder and public involvement process. The City of Duluth held public meetings for the 1<sup>st</sup> Street corridor in June and July 2019, while the project was in its initial planning stages. The first was for the Downtown segment between Mesaba Avenue and 6<sup>th</sup> Avenue E, and the second was for the Medical District and East Hillside segment between 6<sup>th</sup> Avenue E and 24<sup>th</sup> Avenue E. Following these meetings, there was review and discussion on comments received with City of Duluth.

Comments received at the Downtown meeting included:

- The conversion would be helpful for operations at Essentia's Emergency Room
- The conversion would improve pedestrian safety on the St. Luke's campus
- Concerns about operations at the Holiday Center ramp (particularly lack of queueing space for incoming vehicles)

Comments received at the East Hillside meeting included:

- Concerns about where 1<sup>st</sup> Street narrows east of 21<sup>st</sup> Avenue E
- Residents' desire for loading space
- Residents noting that it is safer for drivers to exit vehicles when parked on the left side of the road
- A need to maintain existing amount of parking
- Desire for crosswalks for pedestrian safety
- Questions about operations at 1<sup>st</sup> Street & 21<sup>st</sup> Avenue E
- Request for striping indicating limits of parking near intersections
- Parking on the uphill side is preferable to the downhill side for sight distance reasons
- Property values increase on a two-way street

A public open house was held in October 2019 for the whole corridor, which provided an overview of the conversion study, the findings, and preliminary conclusions regarding the feasibility of a potential two-way conversion along the 1<sup>st</sup> Street corridor. Alliant presented at this meeting. Members of the community attended, and input was gathered to refine the final study report. See **Appendix A** for the presentation, meeting sign-in sheet, and documentation of all comments received at the meeting.

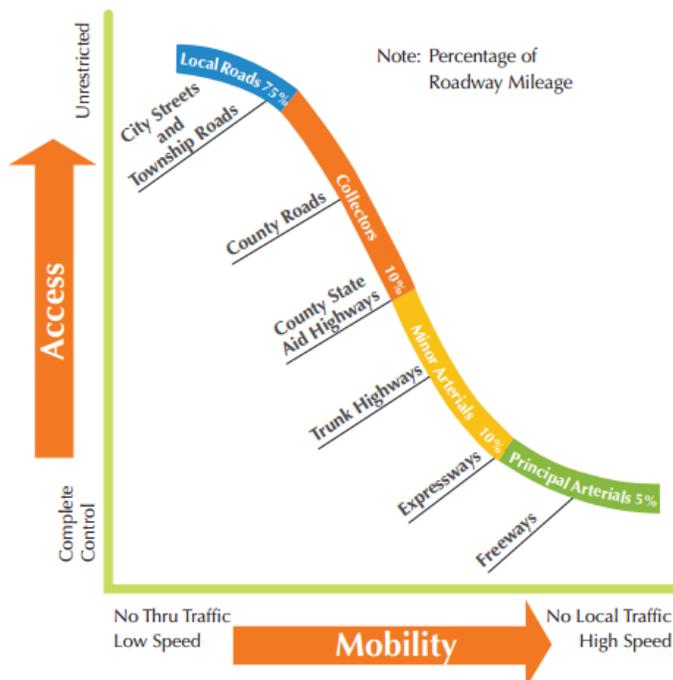
The City continued to receive comments throughout the timeframe of this study. In general, the comments reflect a recognition of the benefits of a two-way street, such as improved access, safety, and economic development, while sharing key property owner needs related to parking and loading. As this is an ongoing City project, comments and information will continue to be collected.

## 2.0 Existing Conditions

Key components of the existing conditions analysis for the conversion study include roadway and traffic control characteristics, land use, curbside uses, parking demand, and vehicular and pedestrian volumes. The following sections define the key existing corridor characteristics.

### 2.1 Existing Roadway and Traffic Control Characteristics

Roadways serve two major functions: access and mobility. The function of a roadway is dependent on its classification. Interstates and other principal arterials provide the highest degree of mobility but are limited in providing land access. Local streets provide a high degree of land access with less mobility. **Figure 2** shows a comparison of the different functional classifications relating access to mobility.



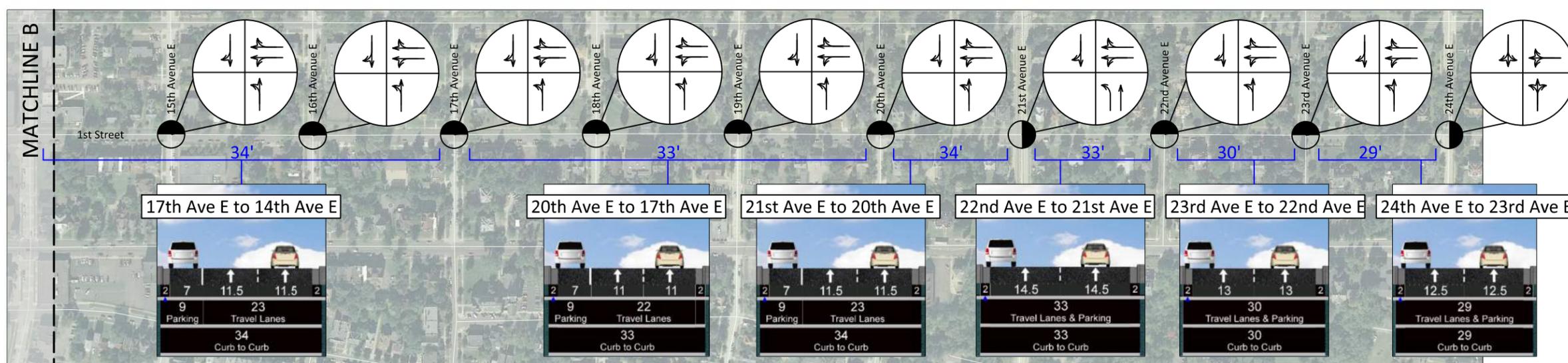
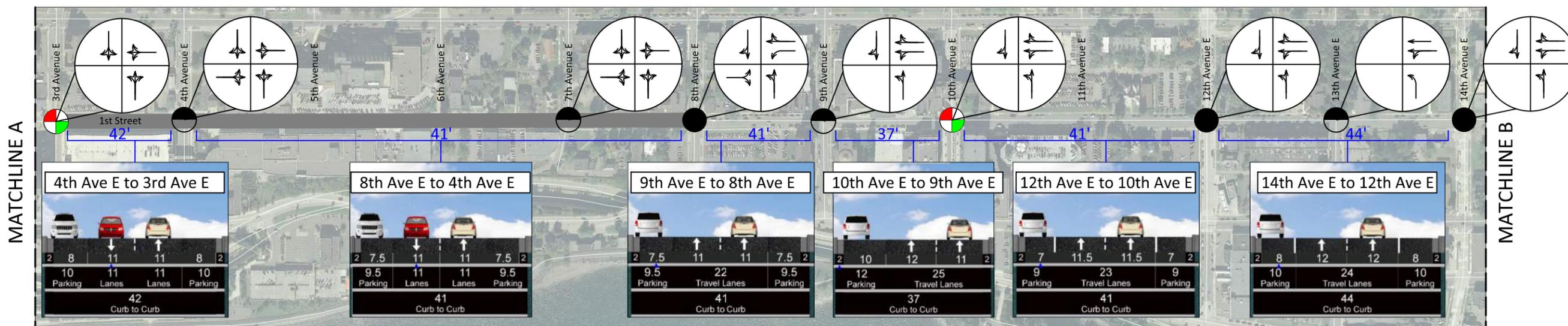
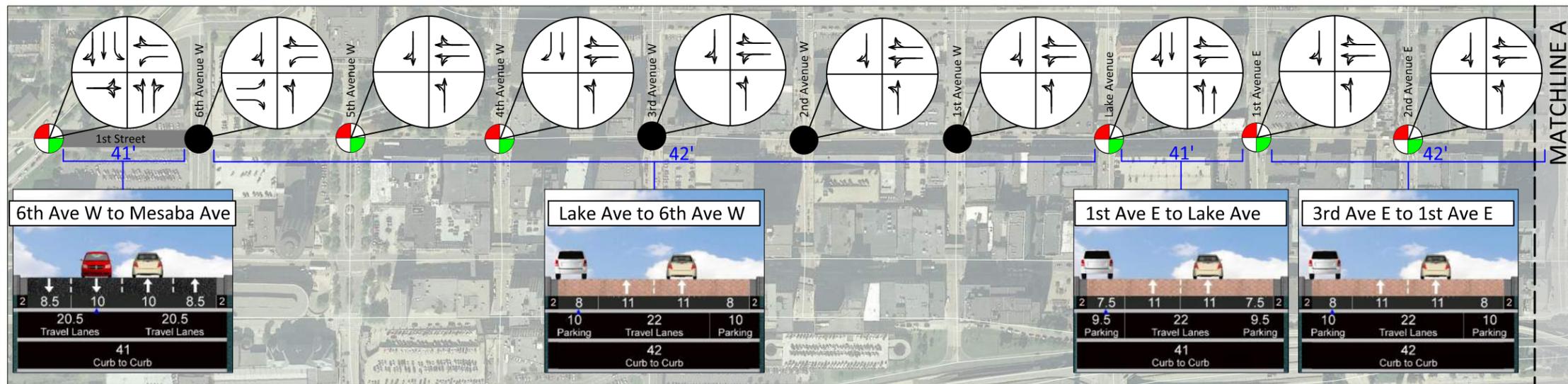
**Figure 2. Access and Mobility Relationship to Functional Classification**

It should be noted that the 1<sup>st</sup> Street corridor is defined as a Minor Collector from Mesaba Avenue to 21<sup>st</sup> Avenue E. It is defined as a Local Route from 21<sup>st</sup> Avenue E to 24<sup>th</sup> Avenue E. The corridor is, however, a municipal state-aid route along the entire study segment.

The majority of the 1<sup>st</sup> Street corridor is a one-way street westbound, with a speed limit of 30 mph. There are two existing two-way segments: 8<sup>th</sup> Avenue E to 3<sup>rd</sup> Avenue E, and 6<sup>th</sup> Avenue W to Mesaba Avenue. There is a sidewalk along both sides of the entire corridor. There are also a number of driveways with access to 1<sup>st</sup> Street located throughout the corridor. The corridor can be broken down into the following segments:

- **24<sup>th</sup> Avenue E to 21<sup>st</sup> Avenue E** – All intersections are two-way stop-controlled (TWSC), with 1<sup>st</sup> Street being the through street, except at 24<sup>th</sup> Avenue E and at 21<sup>st</sup> Avenue E. The roadway is 29 to 33 feet wide, with two travel lanes. Parking/loading is allowed on one side, with the side alternating each week.
- **21<sup>st</sup> Avenue E to 14<sup>th</sup> Avenue E** – All intersections are TWSC, with 1<sup>st</sup> Street being the through street, except at 21<sup>st</sup> Avenue E where the avenue is the through street, and at 14<sup>th</sup> Street where the intersection is all-way stop-controlled (AWSC). The roadway is 33 to 34 feet wide, with two travel lanes and parking/loading on the south side, separated by a solid white line.
- **14<sup>th</sup> Avenue E to 12<sup>th</sup> Avenue E** – The 14<sup>th</sup> Avenue E and 12<sup>th</sup> Avenue E intersections are AWSC, and 13<sup>th</sup> Avenue E intersection is TWSC with 1<sup>st</sup> Street being the through street. The roadway is 44 feet wide, with two travel lanes and parking/loading on both sides, separated by a solid white line.
- **12<sup>th</sup> Avenue E to 8<sup>th</sup> Avenue E** – The intersections at 12<sup>th</sup> Avenue E and 8<sup>th</sup> Avenue E are AWSC. The intersection at 10<sup>th</sup> Avenue E is signalized, and the intersection at 9<sup>th</sup> Avenue E is TWSC with 1<sup>st</sup> Street being the through street. The roadway is 41 feet wide, with two travel lanes and parking/loading on both sides. The parking/loading is separated by a solid white line from 12<sup>th</sup> Avenue E to 10<sup>th</sup> Avenue E. There is no striping between the travel lanes and parking/loading lanes from 10<sup>th</sup> Avenue E to 8<sup>th</sup> Avenue E.
  - **10<sup>th</sup> Avenue E to 9<sup>th</sup> Avenue E** – This block differs slightly from the rest of the blocks around it. It follows the same geometry except that there is no parking/loading on the north side. The curb extends into the roadway (creating a 37-foot width) to accommodate an area for ambulances.
- **8<sup>th</sup> Avenue E to 3<sup>rd</sup> Avenue E** – This is a two-way segment. The intersections at 4<sup>th</sup> Avenue E and 7<sup>th</sup> Avenue E are TWSC, with 1<sup>st</sup> Street being the through street. The intersection at 8<sup>th</sup> Avenue E is AWSC, and the intersection at 3<sup>rd</sup> Avenue E is signalized. The roadway is 41 to 42 feet wide, with two travel lanes (one in each direction) and parking/loading on both sides. There is no striping between the travel lanes and parking/loading lanes.
- **3<sup>rd</sup> Avenue E to 6<sup>th</sup> Ave W** – Six of the intersections are signalized (3<sup>rd</sup> Avenue E, 2<sup>nd</sup> Avenue E, 1<sup>st</sup> Avenue E, Lake Avenue, 4<sup>th</sup> Avenue W, and 5<sup>th</sup> Avenue W.) The rest are AWSC. The roadway is 41 to 42 feet wide, with two travel lanes and parking/loading on both sides. There is no striping between the travel lanes and parking/loading lanes
- **6<sup>th</sup> Avenue W to Mesaba Avenue** – This is a two-way segment. The intersection at 6<sup>th</sup> Avenue W is AWSC, and the Mesaba Avenue intersection is signalized. The roadway is 41 feet wide, with four travel lanes (two in each direction) and no parking/loading allowed.

Existing corridor geometry, typical sections, and traffic control are illustrated in **Figure 3**.



LEGEND	
	Turning Movement
	Roadway Width
	Two-Way Section

## 2.2 Land Use

The character of the corridor and the land use around it changes vastly from one end to the other. To the east of 13<sup>th</sup> Avenue E, the study area primarily consists of low-density residential land uses. Between 13<sup>th</sup> Avenue E and 4<sup>th</sup> Avenue E, there are two medical campuses (Essentia and St. Luke's) which define the character of the area. There are also some low-to-medium density residential land uses and businesses. To the west of 4<sup>th</sup> Avenue E, the corridor traverses through the heart of downtown, where the land use is primarily office and commercial.

## 2.3 Curbside Uses

Every block within the 1<sup>st</sup> Street study corridor has on-street parking and/or loading zones provided. To the east of 12<sup>th</sup> Avenue E, all parking is free. There are two disability parking zones on the south side, one between 19<sup>th</sup> Avenue E and 20<sup>th</sup> Avenue E, and one between 14<sup>th</sup> Avenue E and 13<sup>th</sup> Avenue E. There are no designated loading zones. West of 12<sup>th</sup> Avenue E, the majority of the parking is metered – with meters only in effect during the daytime hours. Parking is free between 8<sup>th</sup> Avenue E and 6<sup>th</sup> Avenue E, and on the north side of the block between 9<sup>th</sup> Avenue E and 8<sup>th</sup> Avenue E. There are also several designated loading zones and disability parking spots on both sides of the street in this area.

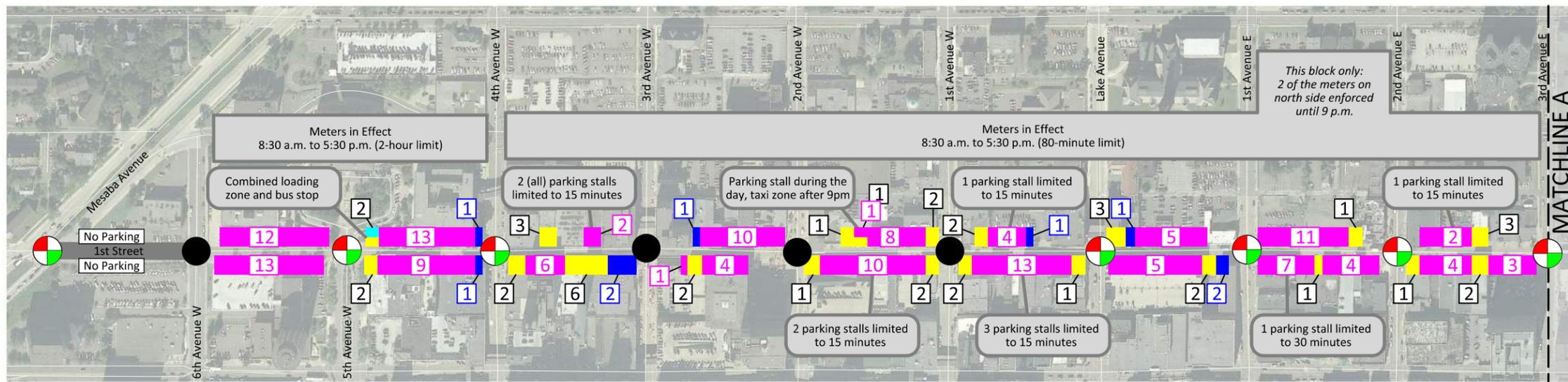
There are bus stops at the following locations:

- **8<sup>th</sup> Avenue E** – Northeast quadrant
- **7<sup>th</sup> Avenue E** – Northeast quadrant
- **6<sup>th</sup> Avenue E** – Mid-block on north side (note that there is no intersection at 6<sup>th</sup> Ave E – bus stops where intersection would be if 6<sup>th</sup> Ave E intersected 1<sup>st</sup> Street)
- **5<sup>th</sup> Avenue E** – Mid-block on north side (note that there is no intersection at 5<sup>th</sup> Ave E – bus and trolleys stop where intersection would be if 5<sup>th</sup> Ave E intersected 1<sup>st</sup> Street)
- **4<sup>th</sup> Avenue E** – Northeast quadrant
- **5<sup>th</sup> Avenue W** – Northeast quadrant

Existing curbside uses are illustrated in **Figure 4**.

## 2.4 Parking Demand

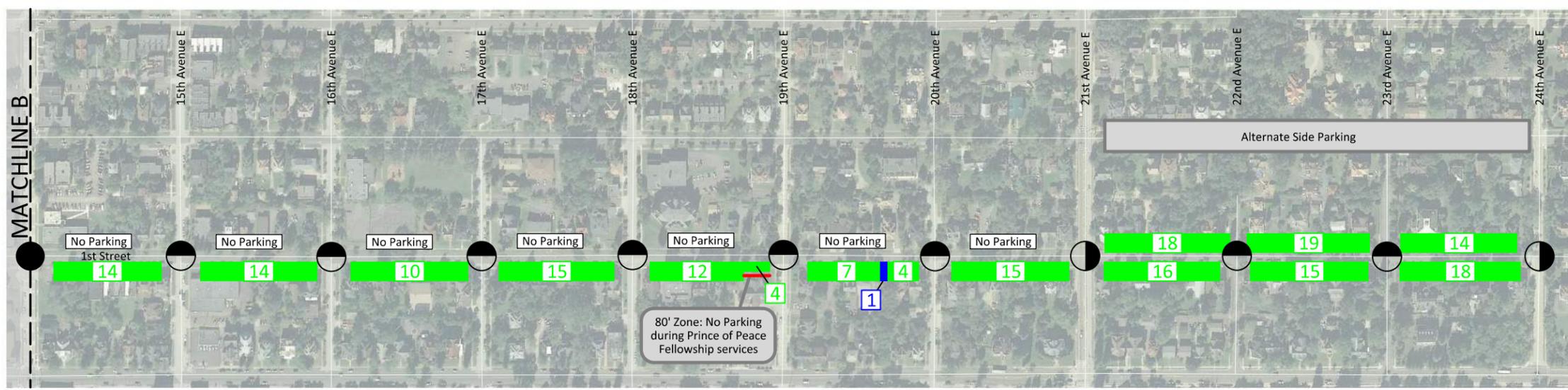
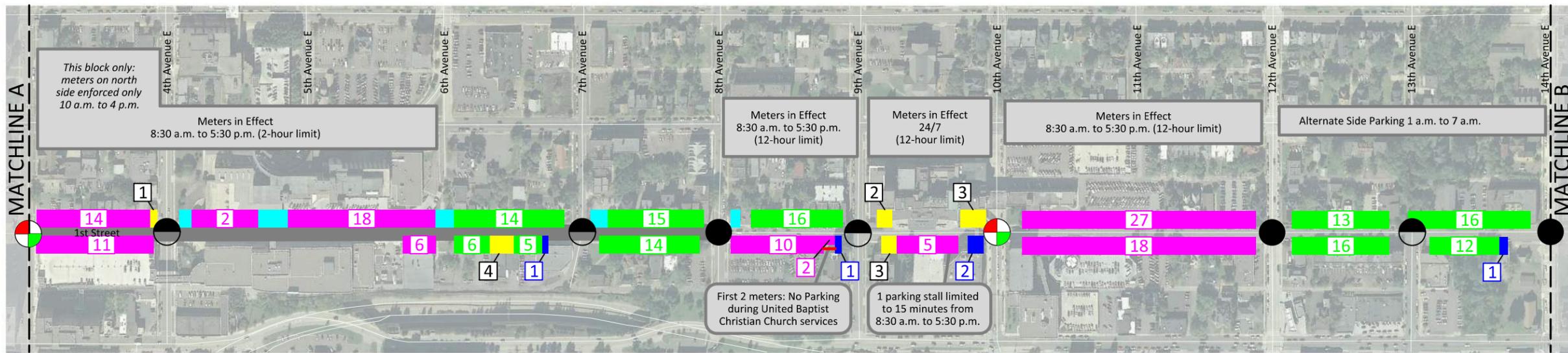
To understand the existing parking demand, the occupancy of each block was collected in April 2019. Counts were done on a typical weekday every two hours between 8 a.m. and 6 p.m. Any vehicle stopped in a parking/loading area was counted – in order to simplify the counts, there was not a distinction made between vehicles that were “parked” versus vehicles that were utilizing space for loading/unloading only. This analysis provides an understanding of what parking can look like on a typical day; however, care should be exercised with the results as the data was only collected on one day. Comments from the public and businesses confirm that the trends observed were typical, but a more thorough analysis would be needed to completely understand parking needs. Existing parking demand as observed in April 2019 is illustrated in **Figure 5**.



**Notes**

**Alternate Side Parking:** Unless posted otherwise, parking on all city streets is allowed on one side only. The side in which parking is allowed switches weekly.

**Disability parking at all meters:** motorists with a disability permit may park at any meter on the corridor for free for up to 4 hours.

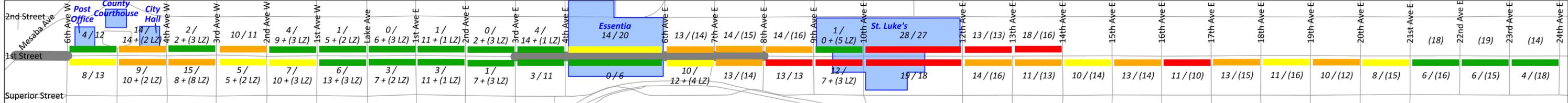


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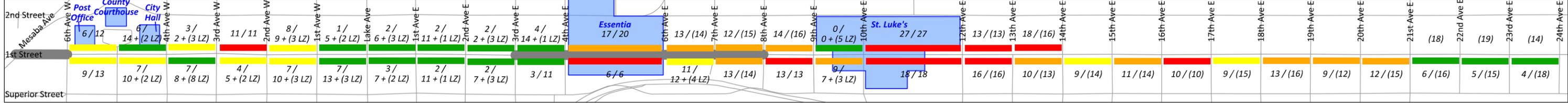
- Signalized
- Two-Way Stop
- All-Way Stop
- Two-Way Section
- Metered Parking
- Number of Metered Stalls
- Free Parking
- Calculated Parking Supply
- Disability Parking (Free)
- Number of Disability Stalls
- Loading or Dropoff Zone
- Number of Loading/Dropoff Stalls
- Bus Stop

8:00 a.m.

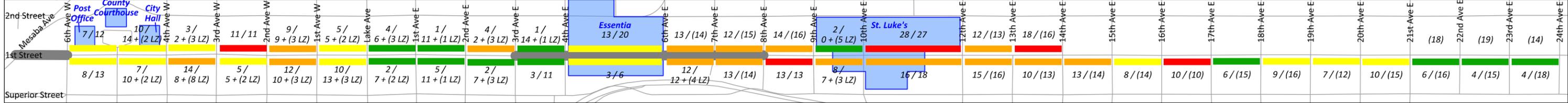
Note: Parking demand data was collected on Tuesday, 4/2/2019



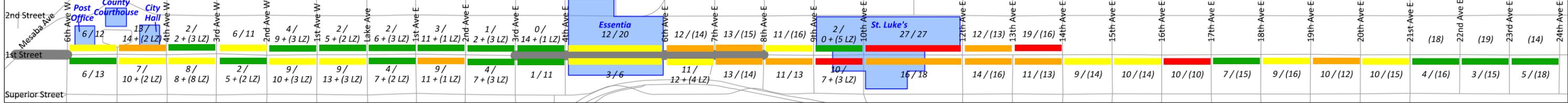
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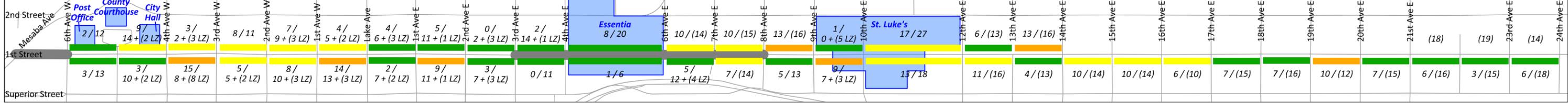
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LEGEND

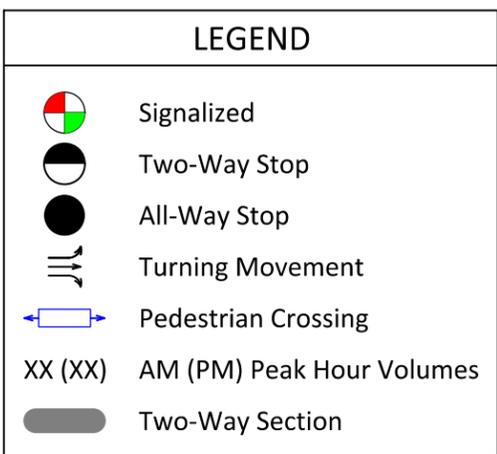
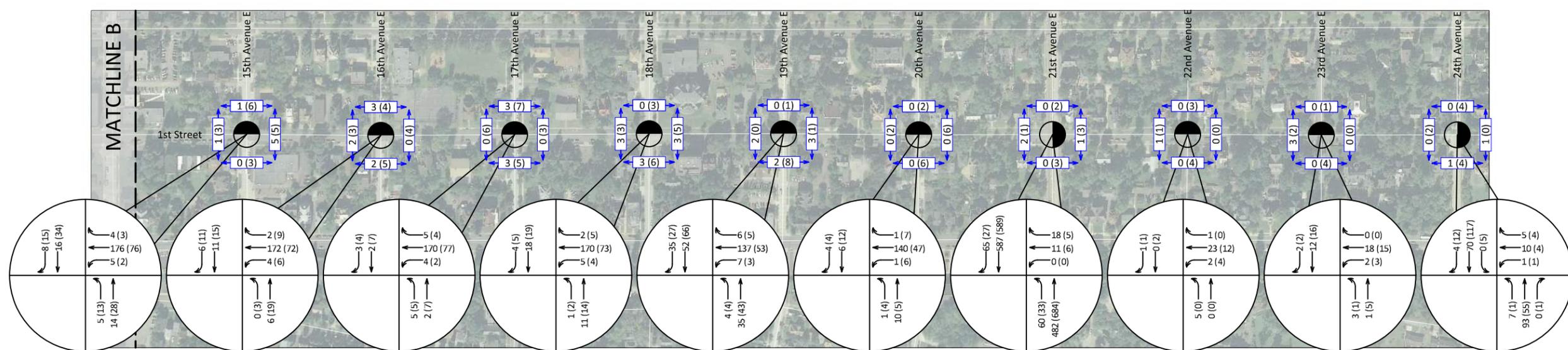
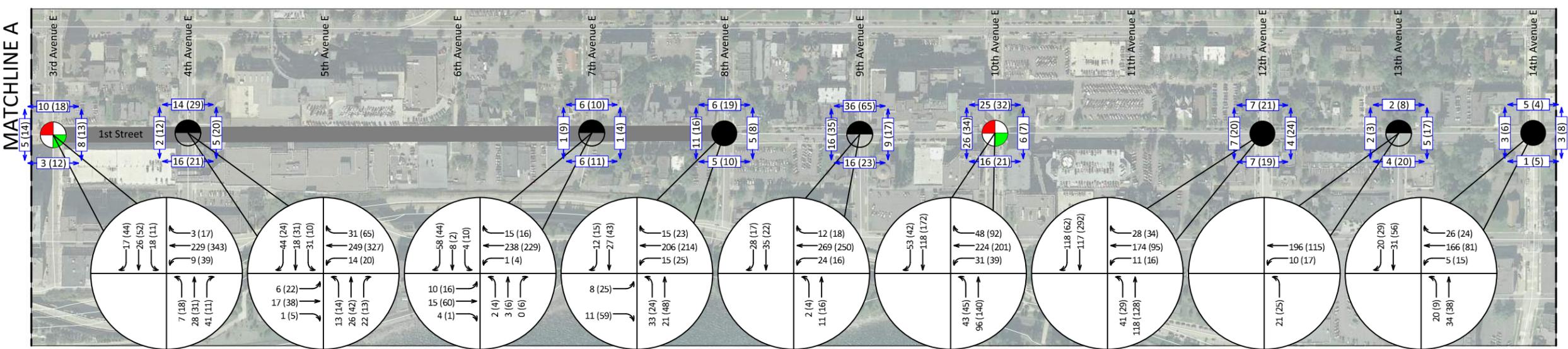
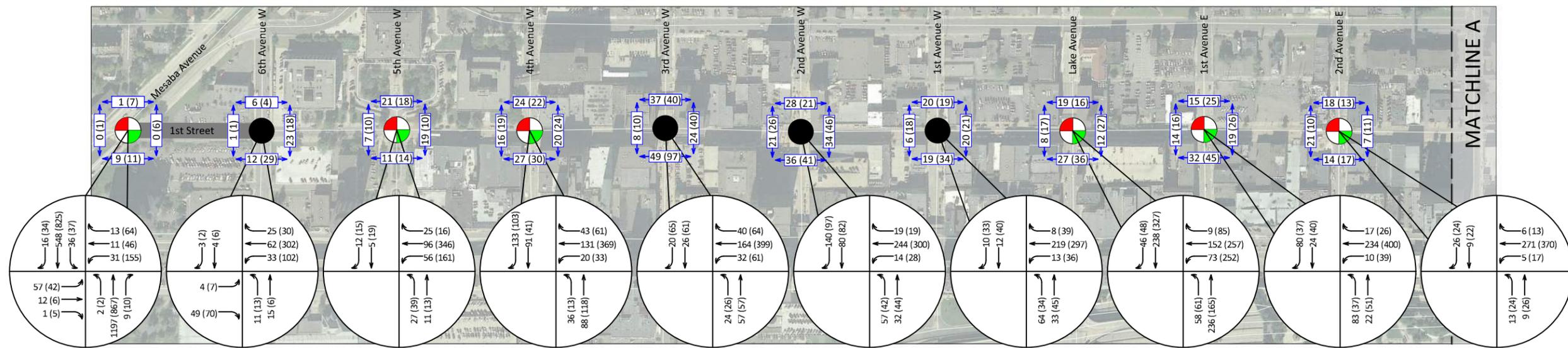
- x/x Vehicles Observed / Parking Supply
- (x) Parking Supply Calculated
- (x LZ) Loading Zone Supply Calculated
- Under 50% Utilization
- 50% to 74% Utilization
- 75% to 99% Utilization
- 100% Utilization
- Two-Way Section
- Landmark



Figure 5  
Parking Demand and Supply

## **2.5 Existing Volumes**

Existing motor vehicle turning movement counts and pedestrian crossing counts were collected in Spring 2019, utilizing video collected during the last week of March 2019 and first week of April 2019. The a.m. and p.m. volumes are illustrated in **Figure 6**. Three-hour a.m. and three-hour p.m. counts were collected for each intersection to determine when the peak hours on the corridor occur. Additional mid-day, early a.m., and late p.m. counts were collected at intersections identified for MnMUTCD warrant analysis.



1st Street Two-Way Conversion Study



Figure 6 Existing Traffic Volumes

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## 3.0 Traffic Volume Forecasts

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With the assistance of a sub-consultant, HFTE, traffic forecasts were developed for the two-way conversion. In addition to determining a growth rate and forecasting nearby development trips, a diversion analysis was completed for the corridor and surrounding areas.

### 3.1 2045 and Two-Way Conversion Base Traffic Forecasts

Utilizing the Duluth-Superior Metropolitan Interstate Council (DSMIC) regional model and existing volume data, HFTE developed traffic forecasts for a two-way conversion. A technical memorandum summarizing the full analysis of the two-way conversion forecasts (which does not include near term developments) can be found in **Appendix B**.

#### 3.1.1 2045 Growth Rate

To forecast 2045 volumes, the Metropolitan Interstate Council (MIC) travel demand model was referenced. The model forecasted no major changes in land use from existing conditions to 2045, as well as limited traffic growth in the study area. In fact, some segments were expected to decrease in traffic volumes.

A historical analysis was also conducted to ensure the validity of the MIC model. Most roadway segments showed a trend with declining traffic volumes, though the volumes did vary.

Based on the analysis using the MIC model and historical data, it was concluded that a zero growth rate would be applied for 2045 traffic forecasts.

#### 3.1.2 Conversion Volumes

To forecast the base volumes under a two-way conversion, the MIC model network was modified to reflect the two-way conversion on 1<sup>st</sup> Street and was re-run. Some volume balancing was completed, as the diversion rates varied slightly at each intersection. The model showed a diversion to alternate routes (Superior Street or 3<sup>rd</sup> Street) between 10% and 20% depending on the intersection. Because traffic volumes are low, high diversion rates are not expected. One lane for the westbound direction is sufficient capacity for the existing volumes, so a more conservative rate of 5% was used.

### 3.2 Traffic Forecasts with Developments

Although the DSMIC model was updated in April 2019, it did not include near-term planned developments. The following near-term developments are expected to impact the corridor:

- **Lakeview** – A multifamily housing complex with retail
- **Essentia Health** – The existing campus will be expanding
- **St. Luke's** – The existing campus will be expanding

**3.2.1 Planned Development Trips**

The Lakeview development is a multifamily housing complex with retail on the lower level, located at Superior Street and 4<sup>th</sup> Avenue E. This building will be replacing the existing Voyageur Lakewalk Inn. The following is known:

- 200 residential units
- 20,000 SF commercial
  - 17,000 grocery
  - 3,000 general offices
- Parking in existing ramp
  - Access on 1<sup>st</sup> Street
  - Located between 3<sup>rd</sup> Avenue E & 4<sup>th</sup> Avenue E

A trip generation analysis was completed of these developments and is shown in **Table 1**. (A detailed trip generation summary is shown in **Appendix C**.) All trips are expected to use the designated parking ramp off of 1<sup>st</sup> Street, with 75% coming from/heading to the west.

**Table 1. Lakeview Trip Generation**

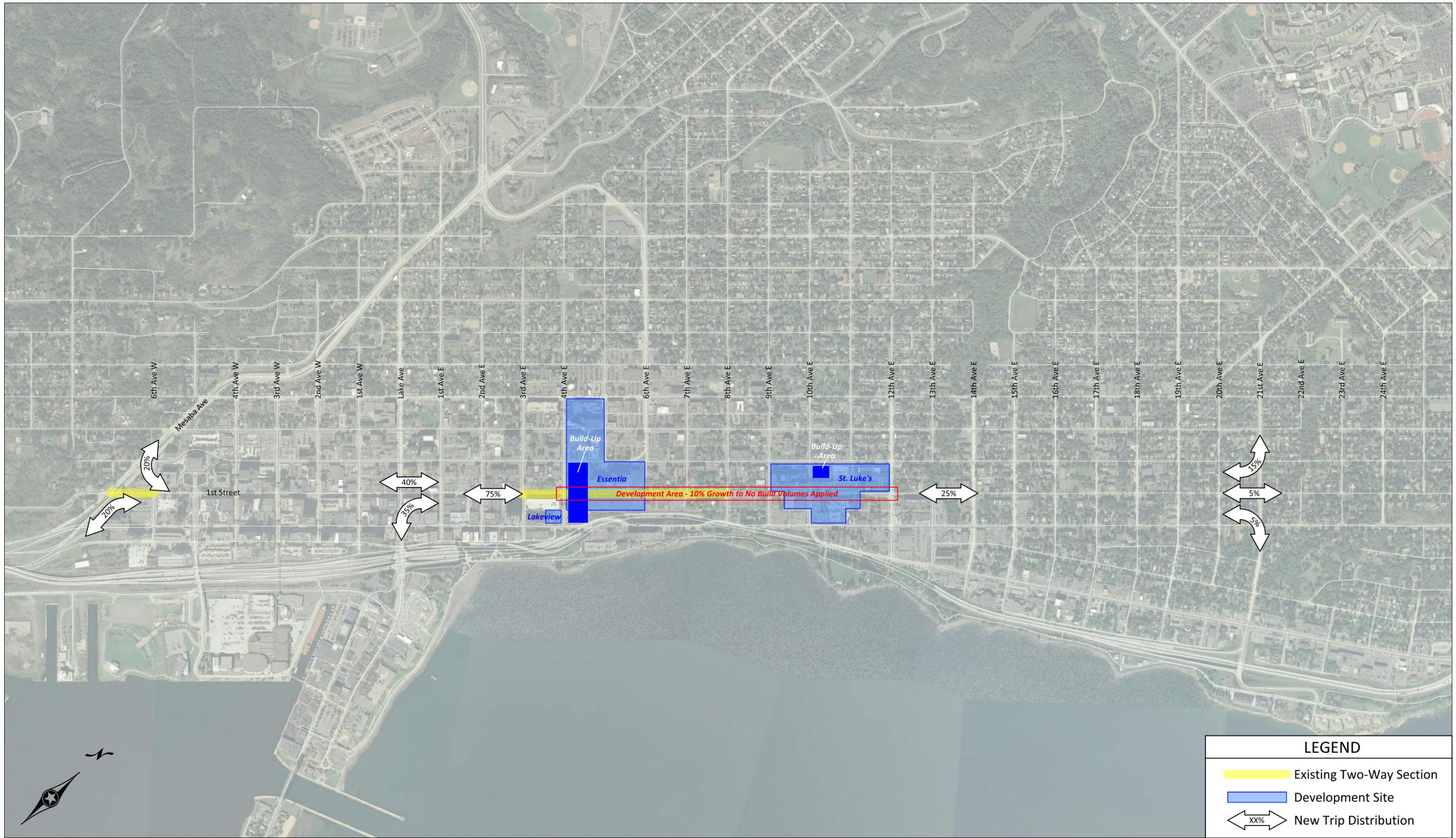
Land Use <sup>1</sup> (ITE Code)		AM Peak Hour <sup>2</sup> Trips			PM Peak Hour <sup>2</sup> Trips		
		Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips
Trips Lost (Voyageur)	Motel (321)	-4	-6	-10	-6	-5	-11
Trips Gained (Lakeview)	Multifamily Housing (Mid-Rise) (221)	19	53	72	34	25	59
	Supermarket (850)	14	10	24	26	20	46
	Small Office Building (712)	5	1	6	1	4	5
<b>Net Vehicle Trips</b>		<b>34</b>	<b>58</b>	<b>92</b>	<b>55</b>	<b>44</b>	<b>99</b>

1. Per the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition

2. Peak Hour of adjacent street traffic was used

3. Number of motel rooms is an estimate based on Google Earth images captured September 2018

Less specific development information is known about the Essentia Health and St Luke’s developments. However, since these campuses are in the heart of the corridor, it was important to factor in additional development generated trips. A conservative increase of 10% was used, modeled off the growth rate applied in the *Draft Traffic Analysis – Essentia Vision Northland* (Kimley Horn and Associates, January 2019) traffic study. This growth was added to each intersection in the medical district (between 4<sup>th</sup> Avenue E and 12<sup>th</sup> Avenue E) and was then distributed to the rest of the corridor. The development trip distribution is detailed in **Figure 7**.



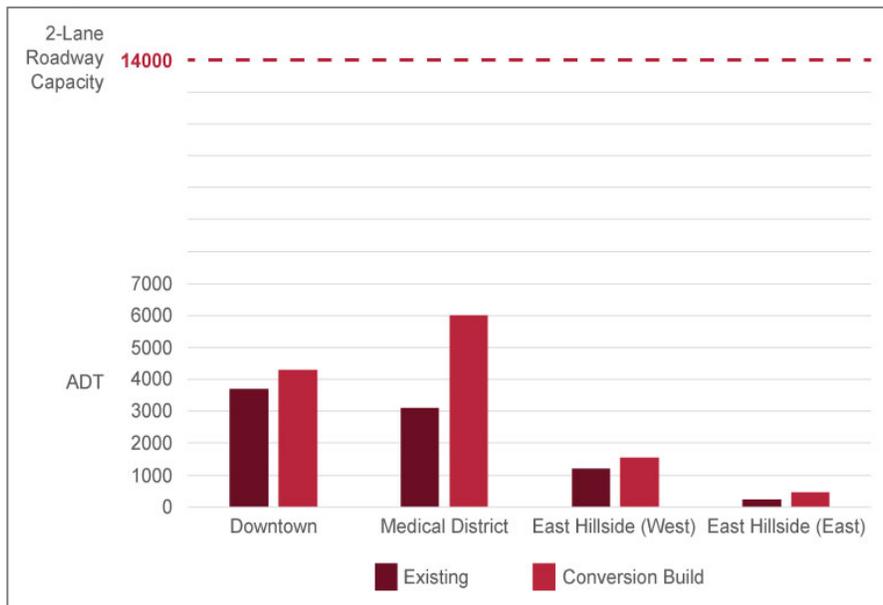
**Figure 7**  
New Development Trip Distribution

**3.2.2 Development No Build Volumes**

The Development No Build scenario serves as a baseline for future conditions. This scenario assumes existing lane configurations and year 2045 forecast volume after the development discussed in the previous section has occurred. The Development No Build Volumes are detailed in **Figure 9**.

**3.2.3 Conversion Build Volumes**

The Conversion Build scenario is the condition where 1<sup>st</sup> Street is converted to a two-way roadway. **Figure 8** below shows existing and forecasted average daily traffic volumes. A two-lane roadway has a capacity of approximately 14,000 ADT. Our analysis indicates that while the proposed eastbound 1<sup>st</sup> Street traffic flow will attract some traffic from 2<sup>nd</sup> Street and Superior Street, the roadway will remain far under capacity. The analysis was completed using projected year 2045 forecast volumes after development in the area has occurred. The Conversion Build volumes are shown in **Figure 10**.



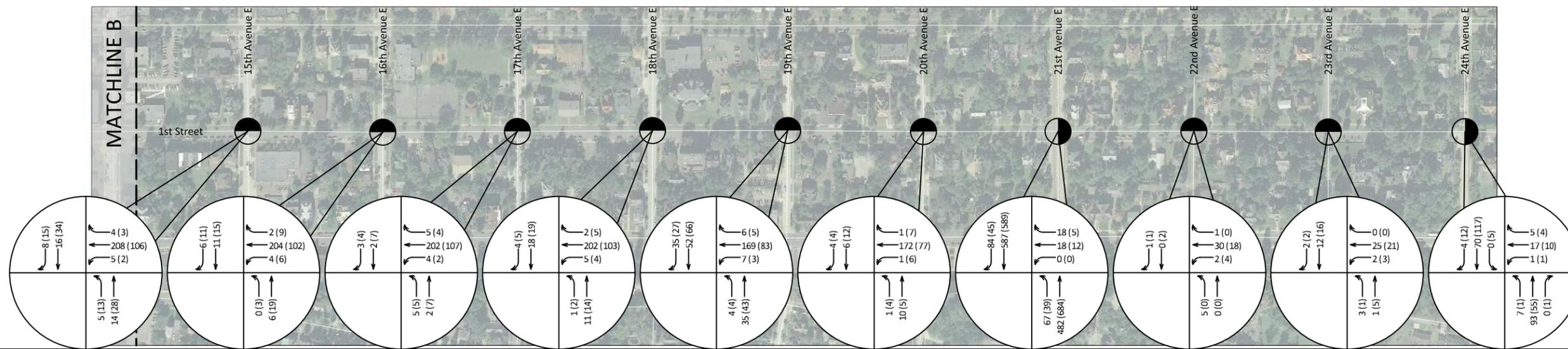
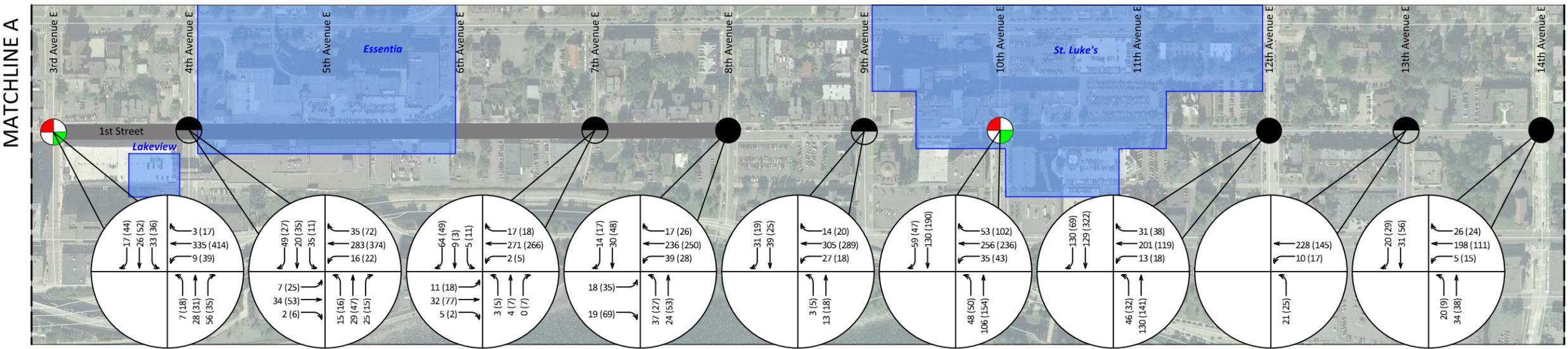
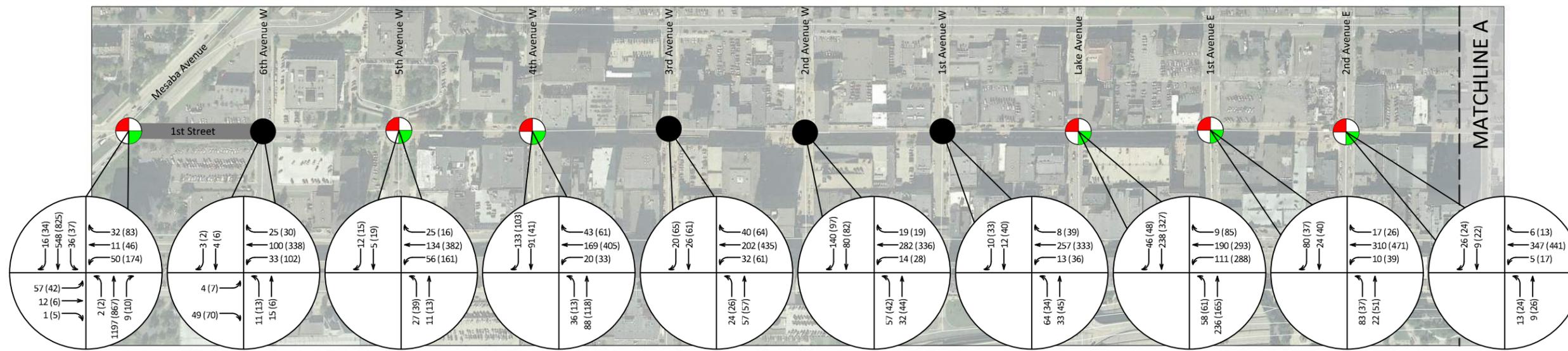
**Figure 8. Two-Lane Roadway Capacity Comparison**

**3.3 Sensitivity Analysis**

Since exact development details (including parking ramp location) are unknown for the Essentia Health and St. Luke’s developments, a sensitivity analysis was completed using Synchro/SimTraffic software—this software and methodology is detailed further in **Section 6.0**.

The percentage of volume added to the medical district was incrementally increased to determine the breaking point. Using the 2045 Conversion Build Volumes as a base, the corridor operations start to break down significantly when 100% of the volume is added, or the volume is doubled. Since a 100% increase in traffic is unlikely, the corridor is expected to function adequately into the foreseeable future. Specific traffic studies should be completed for the Essentia Health and St. Luke’s expansions. The corridor should be monitored as the expansions become fully occupied.





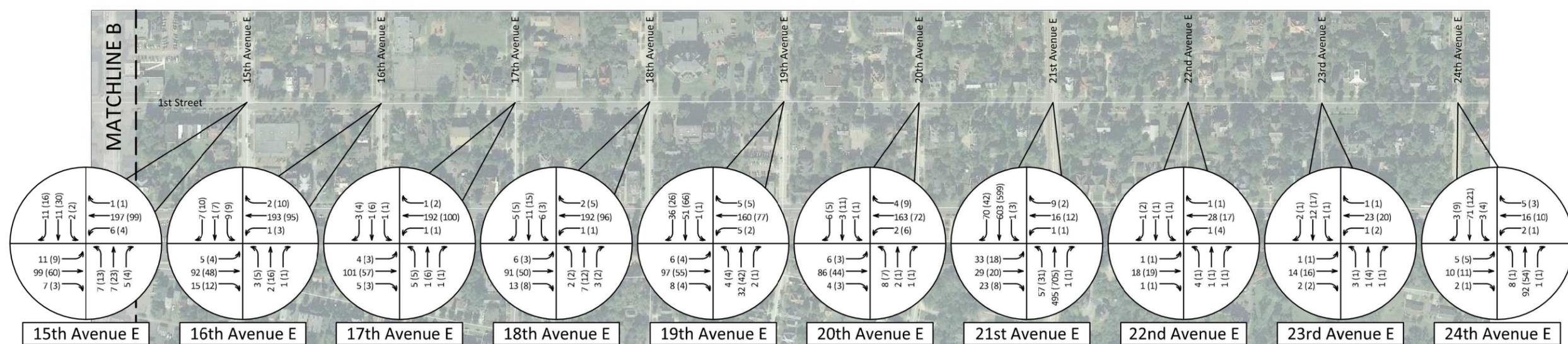
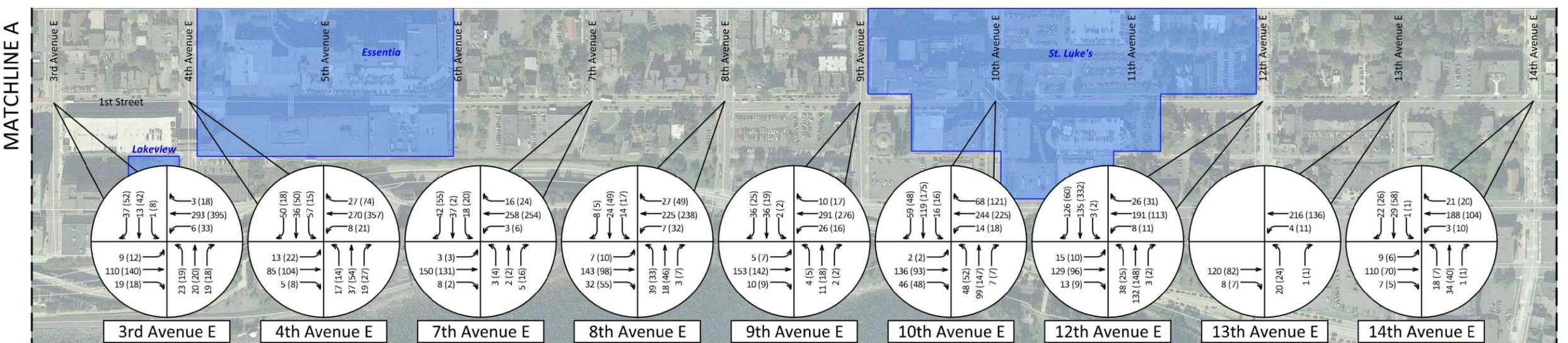
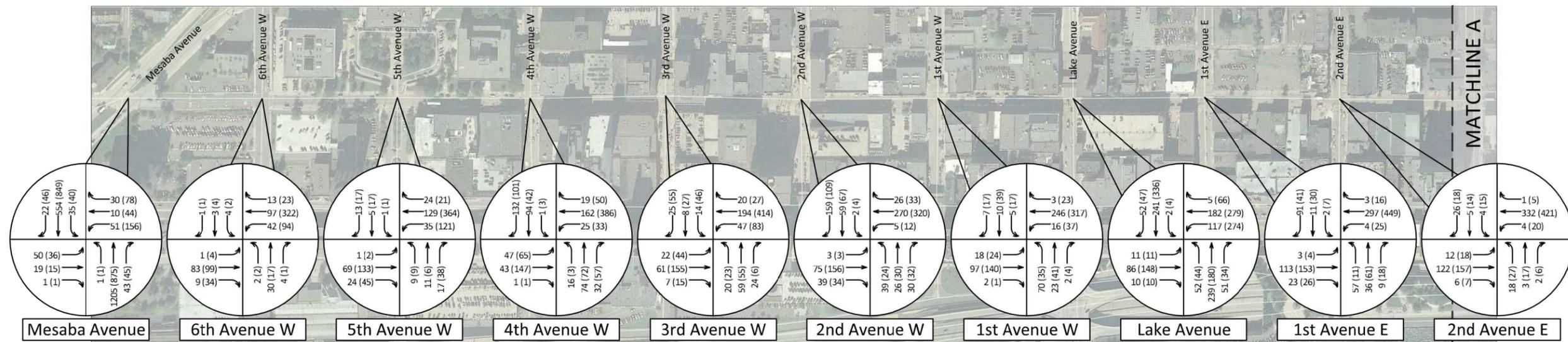
**LEGEND**

- Development Area
- Signalized
- Two-Way Stop
- All-Way Stop
- Turning Movement
- XX (XX) AM (PM) Peak Hour Volumes
- Two-Way Section

1st Street Two-Way Conversion Study



**Figure 9**  
Development No Build Volumes



**LEGEND**

- Development Area
- Turning Movement
- XX (XX) AM (PM) Peak Hour Volumes

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## 4.0 Key Conversion Considerations

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There are many different types of roadway users that must be considered when converting a roadway to two-way. In addition to the vehicles that travel along 1<sup>st</sup> Street, there are motorists that park and access nearby businesses/residences, trucks making deliveries, transit, and pedestrians. The following considerations were taken into account as part of the traffic study:

- Intersection traffic control
- Traffic operations
- On-street parking and truck loading/unloading
- Business access
- Pedestrian and transit activity

### 4.1 Intersection Traffic Control

Existing traffic controls (i.e., signals and stop signs) were evaluated and recommendations were made as to whether or not traffic control changes would be needed based on forecasted volumes and a two-way conversion. This analysis is summarized in **Section 5.0**.

### 4.2 Traffic Operations

A traffic model was created based on a two-way conversion with the proposed traffic controls and forecasted volumes. This analysis was compared to existing conditions and is summarized in **Section 6.0**.

### 4.3 On-Street Parking and Loading

A high demand for on-street parking and loading along much of the corridor was documented in **Section 2.4**. Impacts to these curbside uses were considered and are documented in **Section 7.0**.

### 4.4 Business Access

There are many parking lots along the corridor, some of which were designed explicitly to function on a one-way street. Impacts to businesses were considered and are documented in **Section 8.0**.

### 4.5 Pedestrian Activity

Pedestrian safety and mobility must also be considered. Impacts to pedestrians were considered and are documented in **Section 9.0**.

### 4.6 Transit Activity

First Street is a multi-modal corridor. Impacts to transit were considered and are documented in **Section 10.0**.

## 5.0 Intersection Traffic Control Analysis

An analysis of two-way operations brings the opportunity to adjust existing traffic control methods to better match projected corridor needs. A signal warrant analysis was completed for several intersections—all intersections with existing signals, as well as at 21<sup>st</sup> Avenue E which is currently two-way stop-controlled (TWSC). In addition, an all-way stop-control (AWSC) warrant was completed for several intersections with existing AWSC or TWSC. A detailed warrants analysis is presented in **Appendix D**.

The warrant analysis was conducted in accordance with the *Minnesota Manual on Uniform Traffic Control Devices* (MnMUTCD). The purpose of a warrants analysis is to determine if intersection characteristics exceed standard thresholds for the installation of a traffic control device such as a traffic signal or all-way stop control.

### 5.1 Traffic Signal Control Warrants

A traffic signal warrant analysis was completed for the following intersections:

- 1<sup>st</sup> Street and 5<sup>th</sup> Avenue W
- 1<sup>st</sup> Street and 4<sup>th</sup> Avenue W
- 1<sup>st</sup> Street and Lake Avenue
- 1<sup>st</sup> Street and 1<sup>st</sup> Avenue E
- 1<sup>st</sup> Street and 2<sup>nd</sup> Avenue E
- 1<sup>st</sup> Street and 3<sup>rd</sup> Avenue E
- 1<sup>st</sup> Street and 10<sup>th</sup> Avenue E
- 1<sup>st</sup> Street and 21<sup>st</sup> Avenue E

There are 9 different warrants based on different intersection characteristics, and in general only one warrant must be met for a traffic signal to be warranted. The following MnMUTCD signal warrants were considered:

- W1 – Eight-Hour Vehicular Volumes
- W2 – Four-Hour Vehicular Volumes
- W3 – Peak Hour Vehicular Volumes
- W4 – Pedestrian Volume
- W5 – School Crossing
- W6 – Coordinated Signal System
- W7 – Crash Experience
- W8 – Roadway Network
- W9 – Intersection Near a Grade Crossing

Warrant 1, Warrant 2, and Warrant 3 were reviewed utilizing the Conversion Build volumes. Per the MnMUTCD, if any existing signalized intersections do not exceed 60% warrant volume thresholds, the signal is not warranted and removal is recommended. Because all of the intersections analyzed are signalized, this 60% metric was considered at each location. The

remaining traffic signal warrants were not applicable at the study intersections. Results are shown in **Table 2**.

**Table 2. Summary of Traffic Signal Warrant Analysis**

Intersection	Existing Control	Warrant 1 (8-Hour)			Warrant 2 (4-Hour)	Warrant 3 (1-Hour)	60% Existing Signal Warrant 1 <sup>1</sup>		Other Warrants
		1A	1B	1C			1A	1B	
1st St & 5th Ave W	Signal	0	0	0	0	0	0	1	None Met
1st St & 4th Ave W	Signal	0	0	0	0	0	2	4	None Met
1st St & Lake Ave	Signal	1	0	0	<u>5</u>	<u>2</u>	<u>11</u>	3	N/A - Volume Warrants Met
1st St & 1st Ave E	Signal	0	0	0	0	0	2	3	None Met
1st St & 2nd Ave E	Signal	0	0	0	0	0	0	1	None Met
1st St & 3rd Ave E	Signal	0	0	0	0	0	1	3	None Met
1st St & 10th Ave E	Signal	1	0	0	0	0	<u>10</u>	2	None Met
1st St & 21st Ave E	TWSC	0	1	0	0	0	--	--	None Met

<sup>1</sup> Per MnMUTCD, signal removal should be considered if 60% volume thresholds of Warrant 1 are not met.

Results of the signal warrant analysis indicate that the Lake Avenue intersection meets Warrants 2 and 3, as well as the 60% Existing Signal Warrant 1. The 10<sup>th</sup> Avenue E intersection also meets the 60% Existing Signal Warrant 1 but does not meet any others. All other intersections did not meet signal warrants.

## 5.2 All-Way Stop Control Warrants

An AWSC warrant analysis was completed for the following intersections, which have existing AWSC:

- 1<sup>st</sup> Street and 6<sup>th</sup> Avenue W
- 1<sup>st</sup> Street and 3<sup>rd</sup> Avenue W
- 1<sup>st</sup> Street and 2<sup>nd</sup> Avenue W
- 1<sup>st</sup> Street and 1<sup>st</sup> Avenue W
- 1<sup>st</sup> Street and 8<sup>th</sup> Avenue E
- 1<sup>st</sup> Street and 12<sup>th</sup> Avenue E
- 1<sup>st</sup> Street and 14<sup>th</sup> Avenue E

An AWSC warrant analysis was completed for the following intersections, which have existing TWSC:

- 1<sup>st</sup> Street and 4<sup>th</sup> Avenue E
- 1<sup>st</sup> Street and 19<sup>th</sup> Avenue E
- 1<sup>st</sup> Street and 21<sup>st</sup> Avenue E
- 1<sup>st</sup> Street and 24<sup>th</sup> Avenue E

Criteria C (Volume) was reviewed utilizing the Conversion Build volumes. **Table 3** details the results of the AWSC warrants analysis. Results of the AWSC warrants analysis indicate that 3<sup>rd</sup> Avenue W and 2<sup>nd</sup> Avenue W were the only intersections considered that met warrants. The 4<sup>th</sup> Avenue E intersection could meet warrants if there is a sufficient crash issue.

**Table 3. Summary of Traffic Signal Warrant Analysis**

Intersection	Existing Control	AWSC Warrant C1 & C2	80% AWSC Warrant B, C1, C2 <sup>2</sup>	Signal Warrants
1st Street & 6th Ave W	AWSC	0	0	None Met
1st Street & 3rd Ave W	AWSC	8	N/A	None Met
1st Street & 2nd Ave W	AWSC	2	N/A	None Met
1st Street & 1st Ave W	AWSC	2	6	None Met
1st Street & 4th Ave E	TWSC	3	8	None Met
1st Street & 8th Ave E	AWSC	0	2	None Met
1st Street & 12th Ave E	AWSC	2	5	None Met
1st Street & 14th Ave E	AWSC	0	0	None Met
1st Street & 19th Ave E	TWSC	0	0	None Met
1st Street & 21st Ave E	TWSC	0	0	None Met
1st Street & 24th Ave E	TWSC	0	0	None Met

<sup>2</sup> Per MnMUTCD, if AWSC criteria A, B, or C are not met, then 80% values of criteria B, C1, and C2 can be used.

<sup>3</sup> Review Crash History.

### 5.3 Traffic Control Recommendations

In addition to the warrants analysis, engineering judgement and location context were used when considering changes to existing traffic control. It was deemed that in order for the downtown area to operate acceptably and provide a high level of comfort for users, particularly pedestrians, downtown intersections should generally be either signalized or AWSC. In contrast, TWSC intersections are generally acceptable in the East Hillside neighborhood where volumes are lower and more restrictive control is not warranted. In the medical district, the existing balance between traffic control device types was determined to be the best alternative.

**Table 4** summarizes proposed traffic control recommendations and reasoning for all intersections along the corridor.

Special consideration should be given to the 1<sup>st</sup> Street & 21<sup>st</sup> Avenue E intersection as traffic volume grows with the St. Luke’s and Essentia Health expansions. Signalized traffic control was not found to be warranted under forecasted conditions and existing two-way stop control is expected to continue operating acceptably if 1<sup>st</sup> Street is converted to two-way. Additional analysis should be performed as the medical developments build out and the new space is fully occupied.

**Table 4. Traffic Control Recommendations**

Intersection	Existing TCD	MnMUTCD Warrants Analysis results	Recommended Control	Reasoning
1st St & Mesaba Ave	Traffic Signal 	<i>none considered</i>	Traffic Signal 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 6th Ave W	All-Way Stop 	<b>AWSC Warrant Not Met</b>	Two-Way Stop 	AWSC warrants are not met. This intersection is on the far end of downtown and AWSC was not deemed necessary.
1st St & 5th Ave W	Traffic Signal 	<b>Signal Warrants Not Met</b> <b>AWSC Warrants Not Met</b>	All-Way Stop 	Signal warrants are not met. AWSC is the most appropriate traffic control due to the downtown location.
1st St & 4th Ave W	Traffic Signal 	<b>Signal Warrant Not Met</b> <i>80% AWSC Warrant Met contingent on Crash History</i>	All-Way Stop 	Signal warrants are not met. AWSC is the most appropriate traffic control due to the downtown location.
1st St & 3rd Ave W	All-Way Stop 	<b>AWSC Warrant Met</b>	All-Way Stop 	AWSC warrants are met.
1st St & 2nd Ave W	All-Way Stop 	<b>AWSC Warrant Met</b>	All-Way Stop 	AWSC warrants are met.
1st St & 1st Ave W	All-Way Stop 	<b>AWSC Warrant Not Met</b>	All-Way Stop 	AWSC warrants are not met; however, AWSC is the most appropriate traffic control due to the downtown location.
1st St & Lake Ave	Traffic Signal 	<b>Signal Warrants 2 and 3 Met</b>	Traffic Signal 	Signal warrants are met.
1st St & 1st Ave E	Traffic Signal 	<b>Signal Warrants Not Met</b> <b>AWSC Warrants Not Met</b>	All-Way Stop 	Signal and AWSC warrants are not met; however, AWSC is the most appropriate traffic control due to the downtown location.
1st St & 2nd Ave E	Traffic Signal 	<b>Signal Warrants Not Met</b> <b>AWSC Warrants Not Met</b>	All-Way Stop 	Signal and AWSC warrants are not met; however, AWSC is the most appropriate traffic control due to the downtown location.
1st St & 3rd Ave E	Traffic Signal 	<b>Signal Warrants Not Met</b> <b>AWSC Warrants Not Met</b>	Traffic Signal 	Signal and AWSC warrants are not met; however, signalized control is necessary for transit operations and future ITS improvements are expected.

Table 4. Traffic Control Recommendations, *Continued*

Intersection	Existing TCD	MnMUTCD Warrants Analysis results	Recommended Control	Reasoning
1st St & 4th Ave E	Two-Way Stop 	80% AWSC Warrant Met contingent on Crash History	Two-Way Stop 	AWSC warrants are not met.
1st St & 7th Ave E	Two-Way Stop 	none considered	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 8th Ave E	All-Way Stop 	AWSC Warrant Not Met	All-Way Stop 	AWSC warrants are not met; however AWSC is recommended as a measure to interrupt long uncontrolled segments of 1st Street.
1st St & 9th Ave E	Two-Way Stop 	none considered	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 10th Ave E	Traffic Signal 	60% Existing Warrant 1 Met	Traffic Signal 	Signal warrants are met.
1st St & 12th Ave E	All-Way Stop 	AWSC Warrant Not Met	All-Way Stop 	AWSC warrants are not met; however AWSC is recommended as a measure to interrupt long uncontrolled segments of 1st Street.
1st St & 13th Ave E	Two-Way Stop 	none considered	Two-Way Stop 	Understanding of Intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 14th Ave E	All-Way Stop 	AWSC Warrant Not Met	Two-Way Stop 	AWSC warrants are not met.
1st St & 15th Ave E	Two-Way Stop 	none considered	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 16th Ave E	Two-Way Stop 	none considered	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 17th Ave E	Two-Way Stop 	none considered	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.

Table 4. Traffic Control Recommendations, *Continued*

Intersection	Existing TCD	MnMUTCD Warrants Analysis results	Recommended Control	Reasoning
1st St & 18th Ave E	Two-Way Stop 	<i>none considered</i>	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 19th Ave E	Two-Way Stop 	<b>AWSC Warrant Not Met</b>	Two-Way Stop 	AWSC warrants are not met.
1st St & 20th Ave E	Two-Way Stop 	<i>none considered</i>	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 21st Ave E	Two-Way Stop 	<b>AWSC Warrant Not Met</b>	Two-Way Stop 	AWSC warrants are not met. Monitor this intersection as traffic volume increases.
1st St & 22nd Ave E	Two-Way Stop 	<i>none considered</i>	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 23rd Ave E	Two-Way Stop 	<i>none considered</i>	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.
1st St & 24th Ave E	Two-Way Stop 	<b>AWSC Warrant Not Met</b>	Two-Way Stop 	Understanding of intersection (location, volumes, etc.) and engineering judgement establish that analysis of alternatives this intersection was not necessary.

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## 6.0 Traffic Operations Analysis

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A traffic operations analysis was completed using Synchro/SimTraffic software. An analysis was done for typical a.m. and p.m. peak periods, under existing and forecast conditions. The key measures of effectiveness (MOE) evaluated include intersection and network delay.

### 6.1 Methodology

#### 6.1.1 Analysis Approach

As mentioned previously, the traffic operation analysis considers only typical day conditions. Inclement weather, lane or street closures, area road construction, on-street parking violations, traffic incidents, major events, or any other possibilities that may decrease corridor capacity or increase traffic demand on 1<sup>st</sup> Street were not evaluated.

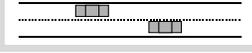
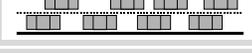
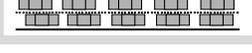
The primary variables influencing capacity along the corridor include traffic volume, traffic control, and lane configuration. The corridor was evaluated using micro-simulation traffic modeling to illustrate the impacts of lane reductions and the addition of eastbound traffic on capacity and permissive left turning ability. The traffic operation analysis was completed using SimTraffic software, utilizing the existing signal timing and operation, and a 15-minute interval volume demand distribution.

#### 6.1.2 Intersection and Arterial Level of Service

The term Level-of-Service (LOS), as taken from the HCM, refers to the ability of an intersection or arterial to process traffic volumes. Intersection LOS is defined as the delay to vehicles caused by the traffic control at the intersection, and arterial LOS is defined as the delay to vehicles represented by the actual travel speed as a percentage of base free flow speed. The results of this measure of effectiveness are typically presented in the form of a letter grade (A-F) that provides a qualitative indication of the operational effectiveness.

By definition, LOS A conditions represent high-quality operations and LOS F conditions represent very poor operations. The LOS criteria as defined by the HCM for both signalized intersections and urban arterials are shown in **Table 5**. Although traffic simulation models arrive at the average seconds of delay per vehicle differently than HCM procedures, the thresholds presented are still applicable. The LOS C/D boundary is generally considered the acceptable threshold for operating conditions in greater Minnesota.

**Table 5. Level of Service Description**

LOS	Description	Signalized Intersection	Un-Signalized Intersection	Urban Street LOS <i>(Based on Base Speed of 25 mph)</i>
		Intersection Delay (Seconds / Vehicle)	Intersection Delay (Seconds / Vehicle)	Average Travel Speed (mph)
<b>A</b>	 <b>Free Flow.</b> Low volumes and no delays.	0 - 10	0 - 10	>20
<b>B</b>	 <b>Stable Flow.</b> Speeds restricted by travel conditions, minor delays.	>10 - 20	>10 - 15	>17
<b>C</b>	 <b>Stable Flow.</b> Speeds and maneuverability closely controlled due to higher volumes.	>20 - 35	>15 - 25	>13
<b>D</b>	 <b>Stable Flow.</b> Speeds considerably affected by change in operating conditions. High density traffic restricts maneuverability, volume near capacity.	>35 - 55	>25 - 35	>10
<b>E</b>	 <b>Unstable Flow.</b> Low speeds, considerable delay, volume at or slightly over capacity.	>55 - 80	>35 - 50	>8
<b>F</b>	 <b>Forced Flow.</b> Very low speeds, volumes exceed capacity, long delays with stop and go traffic.	> 80	> 50	<=8

Source:

1. Highway Capacity Manual, 6th Edition (Published 2016), Transportation Research Board, Exhibit 18-1 for Signalized Intersections, Exhibit 19-8 for Un-Signalized Intersections, and Exhibit 16-3 for Urban Street Facilities.

2. Transportation Research Board (TRB), Highway Capacity Manual, Special Report 209

## 6.2 Analysis Scenarios

A traffic operations analysis was conducted for the following scenarios:

- Existing Conditions
  - Year 2018 Volumes
  - Existing Configuration
- Development No Build Forecast Conditions
  - Year 2045 Volumes (Includes Development Trips)
  - Existing Configuration
- Conversion Build
  - Year 2045 Volumes (Includes Development Trips)
  - Two-Way Configuration (Includes Traffic Control Device Improvements)

### 6.2.1 Existing Conditions

The purpose of this analysis was to evaluate the performance of a two-way conversion under forecasted conditions. In order to understand the significance of projected scenarios, corridor operations under Existing Conditions must be established first.

### 6.2.2 Development No Build Forecast Conditions

The Development No Build Conditions scenario serves as a baseline for future operations. This scenario evaluated how 1<sup>st</sup> Street would operate with existing lane configurations and year 2045 forecast volume after the near term planned development in the area has occurred.

**6.2.3 Conversion Build**

The Conversion Build analysis considers the scenario where 1<sup>st</sup> Street is converted to a two-way cross-section and the proposed traffic control devices are in place. The volumes in this scenario are the year 2045 forecast volumes after the near term planned development in the area has occurred.

**6.3 Analysis Results**

Table 6 and Table 7 provide a summary of the arterial operations analysis for the a.m. and p.m. peak hours for each of the scenarios analyzed. Table 8 and Table 9 provide a summary of the intersection operations analysis for the a.m. and p.m. peak hours for each of the scenarios analyzed. Detailed operations analysis results are included in Appendix E.

**Table 6. Arterial Operations Analysis Summary – AM Peak Hour**

Direction/Segment	Free Flow		Existing Conditions			Development No Build			Conversion Build		
	Speed (mph)	Travel Time	Speed (mph)	LOS	Travel Time	Speed (mph)	LOS	Travel Time	Speed (mph)	LOS	Travel Time
Westbound 24th Ave E to Mesaba Ave	25	6 min, 35 sec	17	C	9 min, 45 sec	17	C	9 min, 29 sec	16	C	9 min, 59 sec
Eastbound Mesaba Ave - 6th Ave W, 3rd Ave E - 8th Ave E (weighted)	25	1 min, 17 sec	21	A	1 min, 30 sec	24	A	1 min, 22 sec	--	--	--
Eastbound Mesaba Ave - 24th Ave E	25	6 min, 35 sec	--	--	--	--	--	--	19	B	8 min, 30 sec

**Table 7. Arterial Operations Analysis Summary – PM Peak Hour**

Direction/Segment	Free Flow		Existing Conditions			Development No Build			Conversion Build		
	Speed (mph)	Travel Time	Speed (mph)	LOS	Travel Time	Speed (mph)	LOS	Travel Time	Speed (mph)	LOS	Travel Time
Westbound 24th Ave E to Mesaba Ave	25	6 min, 35 sec	17	C	9 min, 40 sec	18	B	9 min, 18 sec	16	C	10 min, 5 sec
Eastbound Mesaba Ave - 6th Ave W, 3rd Ave E - 8th Ave E (weighted)	25	1 min, 17 sec	21	A	1 min, 32 sec	22	A	1 min, 26 sec	--	--	--
Eastbound Mesaba Ave - 24th Ave E	25	6 min, 35 sec	--	--	--	--	--	--	19	B	8 min, 41 sec

Table 8. Intersection Operations Analysis Summary – AM Peak Hour

Intersection	Existing Conditions		Development No Build		Conversion Build	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1st St & Mesaba Ave	B / E	15.2 / 76.7	B / E	17.8 / 77.3	B / E	17.9 / 75.5
1st St & 6th Ave W	A / A	3.8 / 4.1	A / A	4.0 / 4.2	A / A	1.1 / 5.7
1st St & 5th Ave W	A / D	9.8 / 42.1	A / D	8.1 / 45.1	A / A	4.7 / 5.0
1st St & 4th Ave W	C / D	22.6 / 41.0	C / D	22.8 / 41.9	A / A	7.0 / 9.8
1st St & 3rd Ave W	A / A	4.9 / 5.9	A / A	5.1 / 6.5	A / A	5.4 / 6.7
1st St & 2nd Ave W	A / A	7.4 / 10.0	A / B	7.9 / 11.5	A / B	8.9 / 14.0
1st St & 1st Ave W	A / A	5.0 / 5.1	A / A	5.2 / 6.0	A / A	5.6 / 6.4
1st St & Lake Ave	C / D	21.2 / 37.3	C / D	20.9 / 41.2	B / D	18.9 / 36.6
1st St & 1st Ave E	B / D	12.2 / 35.8	B / D	12.5 / 40.9	A / A	7.0 / 8.7
1st St & 2nd Ave E	A / D	5.6 / 39.6	A / D	4.5 / 47.3	A / A	6.8 / 7.9
1st St & 3rd Ave E	B / B	10.5 / 15.8	B / C	11.5 / 23.1	B / B	10.6 / 16.2
1st St & 4th Ave E	A / A	2.4 / 5.5	A / A	2.3 / 5.6	A / A	2.7 / 6.2
1st St & 7th Ave E	A / A	2.4 / 6.3	A / A	2.2 / 5.0	A / A	2.1 / 5.7
1st St & 8th Ave E	A / A	5.5 / 6.0	A / A	5.4 / 5.8	A / A	5.5 / 6.0
1st St & 9th Ave E	A / A	1.4 / 6.0	A / A	1.5 / 6.9	A / A	1.4 / 7.3
1st St & 10th Ave E	B / C	15.2 / 23.5	B / C	14.5 / 21.3	B / C	15.1 / 20.2
1st St & 12th Ave E	A / A	5.3 / 5.8	A / A	5.5 / 6.0	A / A	6.3 / 6.8
1st St & 13th Ave E	A / A	1.7 / 4.2	A / A	1.7 / 4.8	A / A	1.2 / 5.7
1st St & 14th Ave E	A / A	4.6 / 4.7	A / A	4.8 / 4.9	A / A	1.7 / 6.1
1st St & 15th Ave E	A / A	0.5 / 5.3	A / A	0.9 / 5.0	A / A	0.9 / 4.6
1st St & 16th Ave E	A / A	0.4 / 5.9	A / A	0.6 / 5.0	A / A	0.6 / 4.4
1st St & 17th Ave E	A / A	0.2 / 5.1	A / A	0.3 / 4.4	A / A	0.4 / 4.8
1st St & 18th Ave E	A / A	0.3 / 5.2	A / A	0.8 / 5.8	A / A	0.7 / 4.8
1st St & 19th Ave E	A / A	0.8 / 4.9	A / A	2.0 / 5.4	A / A	1.8 / 5.5
1st St & 20th Ave E	A / A	0.5 / 5.2	A / A	0.8 / 5.2	A / A	0.8 / 4.7
1st St & 21st Ave E	A / A	1.5 / 3.3	A / A	2.1 / 8.0	A / C	2.7 / 20.0
1st St & 22nd Ave E	A / A	0.8 / 4.1	A / A	0.7 / 3.8	A / A	1.2 / 3.4
1st St & 23rd Ave E	A / A	0.4 / 4.0	A / A	2.4 / 4.6	A / A	1.7 / 4.1
1st St & 24th Ave E	A / A	0.2 / 0.8	A / A	0.8 / 5.0	A / A	1.1 / 5.1

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay



Table 9. Intersection Operations Analysis Summary – PM Peak Hour

Intersection	Existing Conditions		Development No Build		Conversion Build	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1st St & Mesaba Ave	C / E	20.9 / 76.0	C / E	21.6 / 69.3	C / F	22.0 / 86.4
1st St & 6th Ave W	A / A	4.8 / 5.2	A / A	5.1 / 5.4	A / A	1.0 / 8.1
1st St & 5th Ave W	A / D	6.8 / 41.5	A / D	5.7 / 46.7	A / A	5.7 / 6.1
1st St & 4th Ave W	B / D	12.7 / 38.1	B / D	14.5 / 48.9	A / B	7.5 / 10.1
1st St & 3rd Ave W	A / A	5.9 / 8.0	A / A	6.0 / 9.0	A / B	7.6 / 10.8
1st St & 2nd Ave W	A / A	6.7 / 8.9	A / B	7.0 / 10.3	A / B	7.4 / 11.8
1st St & 1st Ave W	A / A	5.6 / 7.0	A / A	5.7 / 7.6	A / A	6.3 / 8.0
1st St & Lake Ave	B / D	16.2 / 38.1	B / D	15.9 / 39.8	B / D	16.7 / 38.0
1st St & 1st Ave E	A / D	9.0 / 37.8	A / D	8.9 / 38.7	A / A	7.3 / 8.0
1st St & 2nd Ave E	A / D	6.4 / 35.6	A / D	5.6 / 40.9	A / B	9.0 / 10.9
1st St & 3rd Ave E	B / B	11.7 / 16.5	B / B	12.3 / 16.9	B / B	11.3 / 16.0
1st St & 4th Ave E	A / A	2.5 / 6.9	A / A	2.5 / 7.8	A / A	2.7 / 8.0
1st St & 7th Ave E	A / A	2.0 / 4.5	A / A	2.1 / 5.3	A / A	1.9 / 4.6
1st St & 8th Ave E	A / A	5.1 / 5.7	A / A	5.6 / 6.4	A / A	5.8 / 6.6
1st St & 9th Ave E	A / A	1.2 / 5.9	A / A	1.2 / 5.7	A / A	1.2 / 6.4
1st St & 10th Ave E	B / B	12.8 / 19.6	B / C	15.0 / 20.0	B / B	16.1 / 19.8
1st St & 12th Ave E	A / A	6.1 / 6.8	A / A	6.3 / 7.2	A / A	6.9 / 7.8
1st St & 13th Ave E	A / A	1.6 / 4.4	A / A	1.6 / 4.2	A / A	1.4 / 4.9
1st St & 14th Ave E	A / A	4.5 / 4.9	A / A	4.6 / 4.8	A / A	2.3 / 5.7
1st St & 15th Ave E	A / A	1.0 / 4.8	A / A	2.1 / 4.9	A / A	1.8 / 5.1
1st St & 16th Ave E	A / A	0.8 / 5.3	A / A	1.4 / 4.9	A / A	1.2 / 5.0
1st St & 17th Ave E	A / A	0.5 / 4.6	A / A	0.8 / 4.7	A / A	0.8 / 4.8
1st St & 18th Ave E	A / A	0.6 / 4.5	A / A	1.3 / 5.0	A / A	1.0 / 4.5
1st St & 19th Ave E	A / A	1.2 / 5.0	A / A	3.1 / 5.0	A / A	2.5 / 5.2
1st St & 20th Ave E	A / A	0.4 / 4.3	A / A	1.3 / 4.4	A / A	1.1 / 4.2
1st St & 21st Ave E	A / A	1.4 / 4.3	A / B	1.7 / 12.8	A / C	2.0 / 20.5
1st St & 22nd Ave E	A / A	0.6 / 3.7	A / A	0.6 / 3.0	A / A	1.3 / 3.0
1st St & 23rd Ave E	A / A	0.6 / 4.1	A / A	2.5 / 4.2	A / A	2.2 / 4.7
1st St & 24th Ave E	A / A	0.1 / 1.7	A / A	0.5 / 4.6	A / A	0.8 / 4.7

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay



The following can be concluded from the operations analysis:

- During the a.m. peak hour under Existing Conditions and under the Development No Build scenario, the 4<sup>th</sup> Avenue W intersection and Lake Avenue intersection both operate at LOS C, while the rest operate at LOS B or better.
  - The LOS C operation at both intersections is related to delays on the cross streets
- During the p.m. peak hour under Existing Conditions and under the Development No Build scenario, the Mesaba Avenue intersection operates at LOS C, while the rest operate at LOS B or better.
  - Eastbound traffic at Mesaba Avenue operates at LOS E
  - Westbound traffic at Mesaba Avenue operates at LOS D
- Intersection delay is expected to increase by a negligible amount by 2045 if there is no conversion.
- Intersection delay is expected to remain constant or slightly improve under two-way operations assuming that 1<sup>st</sup> Street is converted and the recommended traffic control changes are made.

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## 7.0 On-Street Parking and Loading Impacts

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1<sup>st</sup> Street serves many functions as a corridor. The East Hillside neighborhood, Medical District, and Downtown areas each serve different needs for users of 1<sup>st</sup> Street, and each of these zones therefore has specific curbside uses that need to be accommodated. Parking and loading demand were previously described in **Section 2.4** and showed a high demand for parking and loading zones in specific areas along the corridor. A thorough analysis of specific characteristics was required to fully understand the potential impacts of a two-way conversion.

### 7.1 Existing Parking and Loading Characteristics

On the eastern end, through the East Hillside neighborhood, the majority of land uses adjacent to the corridor are residential. Some residents have alleys or garages where they can park their cars, but other residents rely on 1<sup>st</sup> Street as the place to park their vehicles. All of the parking in this area is not metered, and there are two disability parking zones on the south side.

In the Medical District there are a variety of land uses, the majority of which are medical-related. In between the campuses, there are roughly two residential blocks where parking is free. Each hospital campus has parking lots, but patients and guests also utilize metered parking on 1<sup>st</sup> Street. There are a few loading zones in the Medical District, some for patient drop-off and some for business use. There are 4 spaces reserved for disability parking (all are on the south side)—one in front of Twelve Holy Apostles Greek Orthodox Church, and 3 adjacent to the St. Luke’s campus.

All of the parking in the Downtown area is metered, following various times of enforcement and time limit. Parking is available on both sides of each block east of 6<sup>th</sup> Avenue W to serve various businesses. There are several loading zones along the corridor as well—at least one on each block east of 5<sup>th</sup> Avenue West. The majority of these loading zones are utilized by businesses for loading/unloading, but some are also used as pickup/drop-off zones for patrons.

### 7.2 Parking Demand by Corridor Zone

A deeper dive into the parking demand analysis (see **Figure 5** from **Section 2.4**) suggests that, on the days observed in April 2019, Downtown area parking is at least 50% utilized west of Lake Avenue throughout the whole day, but parking doesn’t start to get busy on the east end of Downtown until about 6 p.m. Parking was observed to be minimal east of 21<sup>st</sup> Avenue E, but the rest of the East Hillside neighborhood saw a relatively high demand.

The Medical District was observed to have the highest parking demand before 4 p.m. During the morning and afternoon time periods, parking is at capacity on several blocks.

East of 21<sup>st</sup> Avenue E, parking usage was minimal. The rest of the East Hillside neighborhood, however, saw at least 50% utilization throughout the day and a few blocks reach capacity at different times.

As stated in **Section 2.4**, it should be noted that these observations were made based on one typical day and may not exactly mirror the characteristics of the corridor every day.

### 7.3 Loading Zone Issues

1<sup>st</sup> Street is used by numerous delivery vehicles. Many business deliveries downtown are able to be facilitated in existing loading zones. For some businesses that do not have an alley, utilizing loading zones is the only way to receive shipments close to their location. Other loading zones, however, are in front of businesses that no longer have a need for a loading zone.

When there is not a convenient loading zone nearby, many drivers illegally load or unload in a travel lane, either next to a bumped-out curb or blocking in parked vehicles. During a field review of existing conditions, this was observed on several occasions, as shown in **Figure 11**. If the street is converted to a two-way, this practice must be reduced as vehicles will not be able to safely go around a truck parked in the only travel lane. Eliminating this practice improves safety on the roadway, but the curbside uses need to be carefully reviewed to assure adequate loading access for businesses.



**Figure 11. In-Lane Loading Observation**

### 7.4 Two-Way Conversion Impacts

Based on existing street widths, it has been determined that a two-way conversion on 1<sup>st</sup> Street can occur within existing curb lines. In general, the conversion should only require re-stripping, signage, and traffic control changes. Patterns in usage have made it clear, however, that some loading zones and parking zones are over-utilized while others are under-utilized. It is recommended that if 1<sup>st</sup> Street is converted, that the City work with the Greater Downtown Council, Building Owners and Managers Association, and other stakeholders to review the use of existing loading zones and potentially establish new loading zones.

## 8.0 Business Access Impacts

This section presents business access mitigation measures for potential access issues and explains the expected benefits.

### 8.1 Potential Issues and Mitigation Strategies

One issue that will need to be addressed if the roadway is converted to two-way is that a large amount of in-lane truck loading and unloading takes place, as was discussed in **Section 7.3**. Delivery companies that operate this way will need to adjust their practice and use designated loading zones, alleys, or the cross streets.

Another issue that will need to be addressed is that some parking ramps on the south side were built with ingress traffic on the left, and egress traffic on the right to facilitate left-in/left-out operations more simply. See **Figure 12** for one of these cases, the Holiday Inn ramp. The red sign above the lane on the right says “EXIT” and the green sign above the lane on the left says “ENTER.” With the addition of eastbound traffic, right turns will be allowed into and out of these parking ramps, which could lead to motorist confusion.



**Figure 12. Holiday Inn Parking Ramp**

*Source: Google Streetview*

To mitigate issues caused by the addition of right-turning traffic to these ramps with reversed ingress/egress lanes, added signage can be incorporated to more clearly direct traffic, and arrows can be painted on the pavement. These enhancements are effective for parking ramps with this type of access configuration in Minneapolis (see **Figure 13** for an example). If these mitigation measures are implemented, the ramp should function as intended.



Figure 13. Minneapolis Example – RSM Plaza Parking Ramp

## 8.2 Benefits

The addition of eastbound traffic to 1<sup>st</sup> Street is expected to be a great economic benefit to local businesses with added convenience in accessibility. Existing loading zones and parking zones can generally remain as they are (as discussed in **Section 7.0**), two-way streets are intuitive, and they are easier to navigate. Additionally, two-way streets can cut down on the time it takes to get to a destination by providing a direct route.

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## **9.0 Pedestrian Impacts**

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Pedestrian volumes are high in some areas, as shown previously in **Figure 6 (Section 2.5)**. The conversion to two-way traffic can be implemented within the existing curb-to-curb area, so existing sidewalks would not be affected. Safety for pedestrians should improve; a two-way conversion is expected to lower vehicular speeds, which reduces both the number and severity of pedestrian crashes. On-street parking and loading zones provide a buffer between pedestrians and the roadway and are expected to remain as they are. Additionally, pedestrian delay is greatly reduced when an intersection is converted to AWSC (discussed in **Section 5.0**).

It should be noted that there are no existing bike facilities. However, bicyclists that use the corridor can expect more comfortable conditions due to slower traffic speeds and ease of navigation. An on-street shared lane bike facility on 1st Street is part of the Duluth-Superior MIC Bikeways Plan between 6<sup>th</sup> Avenue West and 12<sup>th</sup> Avenue East. This does not mean that a bike facility is proposed, it just signifies that in the future this corridor could be considered for a bike facility. Since the status of this future bike facility is unknown, it was not factored into the base cross section discussed in **Section 11.0**.

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## **10.0 Transit Impacts**

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Impacts to multi-modal traffic are expected to be minimal. Currently, there are multiple bus routes that use the corridor, stopping in a travel lane for passenger boarding and alighting. Under a two-way conversion, existing bus stops can remain, and buses can stop in the lane as they do today. Transit routes and stops are not expected to change, though there would be an opportunity to add eastbound routes in the future.

Transit needs were also considered in the traffic control analysis (**Section 5.0**); for example, traffic volumes at 3<sup>rd</sup> Avenue E were low enough that a two-way stop could provide effective operations, but it was deemed that more control is necessary for transit operations, and future ITS improvements (facilitated by signal control) are expected.

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## 11.0 Typical Section Analysis

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In order to fully understand the impacts of a two-way conversion and the mitigation measures needed to ensure acceptable mobility and accessibility for all users, a typical section analysis was conducted. On many blocks, the existing curb-to-curb width will not allow for a facility that allows the existing parking and loading to remain exactly as it is, meets MSA standards, and provides a separated bike facility if the bikeways plan is implemented in the future. A pros and cons assessment was done to evaluate the trade-offs of different typical sections alternatives.

**Figure 14** details the base typical section concept along with potential alternatives as described below, and includes recommended traffic control changes as described in **Section 5.3**.

### 11.1 Base Typical Section

Because there are already two lanes of traffic on the entire corridor between Mesaba Avenue and 24<sup>th</sup> Avenue E, it can be concluded that a two-way conversion can happen within the existing curb-to-curb width.

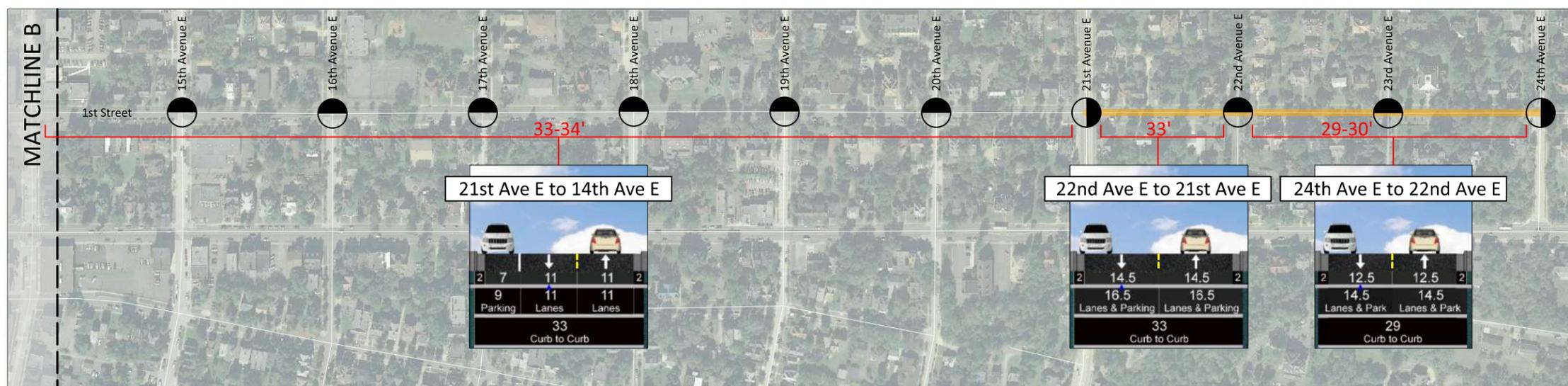
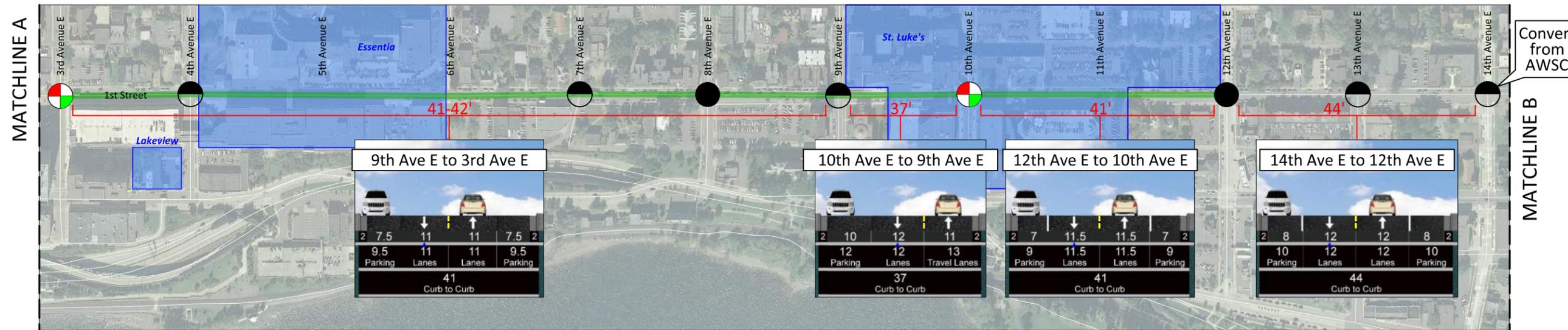
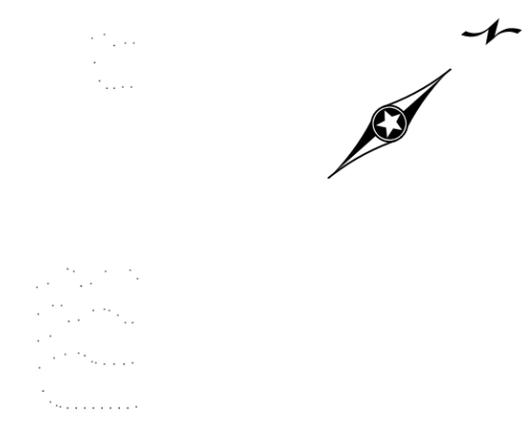
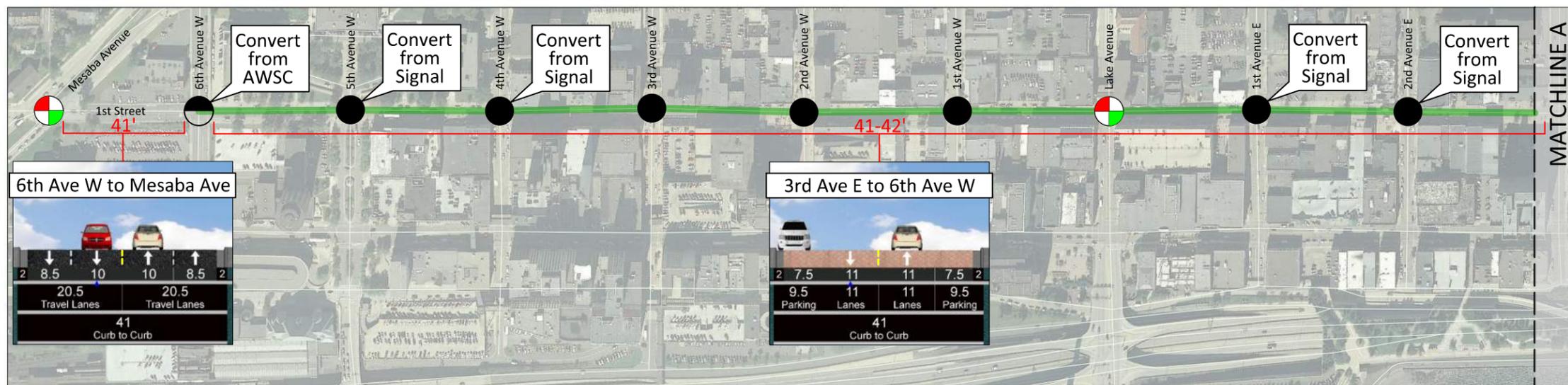
All blocks west of 21<sup>st</sup> Avenue E can maintain one westbound travel lane, one eastbound travel lanes, and existing parking and loading with re-striping. The option with simple re-striping and traffic control changes recommended in **Section 5.3** will be considered the “base” as it is the bare minimum/simplest modification needed to facilitate a two-way conversion. Additional options may be considered to better meet the needs of the corridor.

The three blocks east of 21<sup>st</sup> Avenue E cannot maintain two travel lanes in opposite directions and keep the existing alternate-side parking patterns while meeting Municipal State Aid (MSA) lane width requirements. Currently, the entire study corridor has MSA status; this designation requires an adherence to specific lane width, painted centerline, and other rules in order to receive funding from the State of Minnesota. Due to the segment’s 29’ to 33’ roadway width, there is not adequate width for a parking lane on each side of the street and two travel lanes. The base option, keeping MSA status for this segment, is to allow parking on one side only and remove alternate-side parking on that block.

### 11.2 Alternatives

The following alternatives consider ways of accommodating corridor needs that go beyond just the base option of converting one of the through lanes to allow eastbound travel:

- Alternative A: Remove 3-Block Segment from MSA Route List
- Alternative B: Install DSMIC Proposed Bikeway
- Alternative C: Narrow Travel Lanes to 10 feet



### LEGEND

- Development Area
- Signalized
- Two-Way Stop
- All-Way Stop
- Alternative A:** Remove 3-block segment from MSA Route List
- Alternative B:** Install bike facility as identified in the *DSMIC Bikeways Plan*
- Alternative C:** Narrow all travel lanes to 10 feet

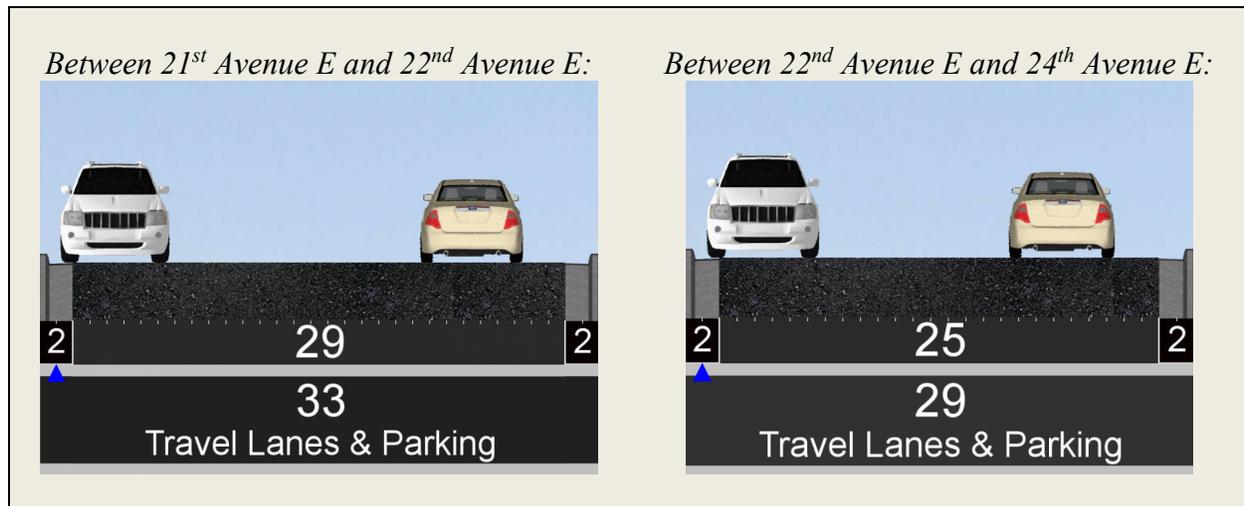
**11.2.1 Alternative A: Remove 3-Block Segment from MSA Route List**

The segment between 21<sup>st</sup> Avenue E and 24<sup>th</sup> Avenue E would be expected to operate acceptably and safely with no centerline striping—normal roadway configuration for a residential street that allows for existing parking to remain and even opens up the possibility of continuously allowing parking on both sides of the street. Implementation of this alternative would allow the segment to operate very similarly to surrounding blocks on other streets and farther east but would remove some funding from the State of Minnesota.

The pros and cons are summarized in **Table 10**, and typical sections for Alternative A are shown in **Figure 15**.

**Table 10. Pros and Cons Assessment for Alternative A**

Pros	Cons
<ul style="list-style-type: none"> <li>+ Normal configuration for a residential street</li> <li>+ No removal of parking, existing parking can remain as-is</li> <li>+ No striping maintenance</li> <li>+ Opens up the possibility of allowing parking on both sides of the street</li> </ul>	<ul style="list-style-type: none"> <li>- Would need to go through MSA removal process</li> <li>- No MSA funding for these 3 blocks</li> </ul>



**Figure 15. Typical Sections for Alternative A**

**11.2.2 Alternative B: Install DSMIC Proposed Bike Facility**

The Duluth-Superior Metropolitan Interstate Council (DSMIC) has identified 1<sup>st</sup> Street between 6<sup>th</sup> Avenue W and 12<sup>th</sup> Avenue E as a candidate for a future bike facility in the 2019 Bikeways Plan. This does not establish a plan for a bike facility; rather, it provides a suggestion for future planning.

The addition of a bike facility brings up tradeoffs with curbside uses. It is impossible to maintain existing parking and loading configurations and install a bike facility. Existing parking demands (detailed in **Section 2.4**) indicate the high utilization of parking on this segment. The alternative to install a bike facility was determined to be infeasible for current corridor needs given the existing demand for parking, and the analysis is detailed in **Appendix F**.

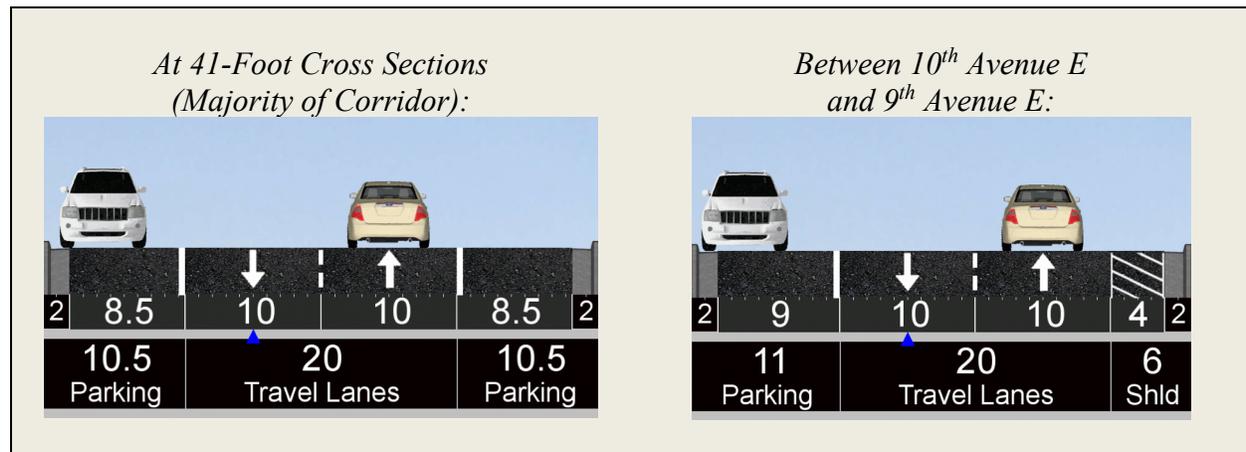
**11.2.3 Alternative C: Narrow Travel Lanes to 10 Feet**

Currently, travel lanes on 1<sup>st</sup> Street are approximately 11 feet. On most blocks, the separation between travel lanes and parking/loading lanes is not striped and can make the corridor feel very wide. Narrower travel lanes can lower traffic speeds and improve safety. MSA standards require travel lanes to be at least 10 feet wide. The alternative could be applied to segments as applicable.

The pros and cons are summarized in **Table 11**, and some typical sections for this alternative are shown in **Figure 16**.

**Table 11. Pros and Cons Assessment for Alternative C**

Pros	Cons
<ul style="list-style-type: none"> <li>+ No removal of parking or bump-outs</li> <li>+ Speed reduction/traffic calming</li> <li>+ Likely operates this way in winter</li> </ul>	<ul style="list-style-type: none"> <li>- Would require removal of existing parking lane striping</li> <li>- Would require installation and maintenance of striped parking lanes/shoulders</li> </ul>



**Figure 16. Typical Sections for Alternative C**

**11.3 Preferred Concept**

The preferred concept includes simple re-striping and recommended traffic control changes (Base), as well as the removal of three blocks from the MSA list (Alternative A). Depending on project funding, 10-foot lanes (Alternative C) may be implemented in the long-term. A bike facility (Alternative B) may also be considered in the future. The preferred concept is detailed in **Appendix G**.



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## 12.0 Conclusions/Recommendations

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The following summarizes the findings of the 1<sup>st</sup> Street Two-Way Conversion Study:

- The 1<sup>st</sup> Street corridor has a wide variety of users and fulfills many different needs (downtown, medical, residential).
- Existing curbside uses include parking, loading, and bus stops
  - Parking demand is high at certain points during the day, and some parking stalls are disability stalls
  - In-lane loading is an issue on the corridor currently
  - Buses stop in a travel lane
- Minimal overall background traffic growth is expected along the corridor. There is adequate roadway capacity for planned near term Lakeview, Essentia Health, and St. Luke's developments if 1<sup>st</sup> Street is converted to a two-way facility. The 21<sup>st</sup> Street E intersection should be carefully monitored as Essentia and St. Luke's complete development.
- The following traffic control changes are recommended based on analysis:
  - 1<sup>st</sup> Street and 6<sup>th</sup> Avenue W: convert from AWSC to TWSC
  - 1<sup>st</sup> Street and 5<sup>th</sup> Avenue W: convert from Signal to AWSC
  - 1<sup>st</sup> Street and 4<sup>th</sup> Avenue W: convert from Signal to AWSC
  - 1<sup>st</sup> Street and 1<sup>st</sup> Avenue E: convert from Signal to AWSC
  - 1<sup>st</sup> Street and 2<sup>nd</sup> Avenue E: convert from Signal to AWSC
  - 1<sup>st</sup> Street and 14<sup>th</sup> Avenue E: convert from AWSC to TWSC
- Existing traffic operations are acceptable and are expected to remain acceptable under forecast conditions and with a conversion to two-way traffic, assuming recommended traffic control changes are implemented.
- No changes to existing parking zones, loading zones, or bus stops are needed for conversion. We recommend the City work with the Greater Downtown Council, Building Owners and Managers Association, and other stakeholders to review the use of existing loading zones and potentially establish new loading zones .
- Minor mitigation measures will be needed for some business access and these measures have been successfully implemented in other locations across the country.
- Local businesses are expected to see economic benefits with having more direct, convenient access to their location.
- No changes to pedestrian or transit amenities are included in this conversion, however, all users should see an increase in safety.
- The corridor can function as a two-way street with restriping, signage, and traffic control changes.
- The preferred concept includes the conversion of the entire corridor with no changes to existing parking and loading zones, and the removal of the segment east of 21<sup>st</sup> Avenue E from the MSA list.
- As the project moves forward in the long term, narrowing travel lanes to 10 feet should be considered.

**Appendix A:**  
Public Meeting Materials

# 1<sup>st</sup> Street 2-way Conversion Study



## Outline

- Study Purpose/Scope
- Project Benefits
- Examples
- Considerations
- Proposed Concept
- Proposed Traffic Control Devices
- Next Steps



Source: Google

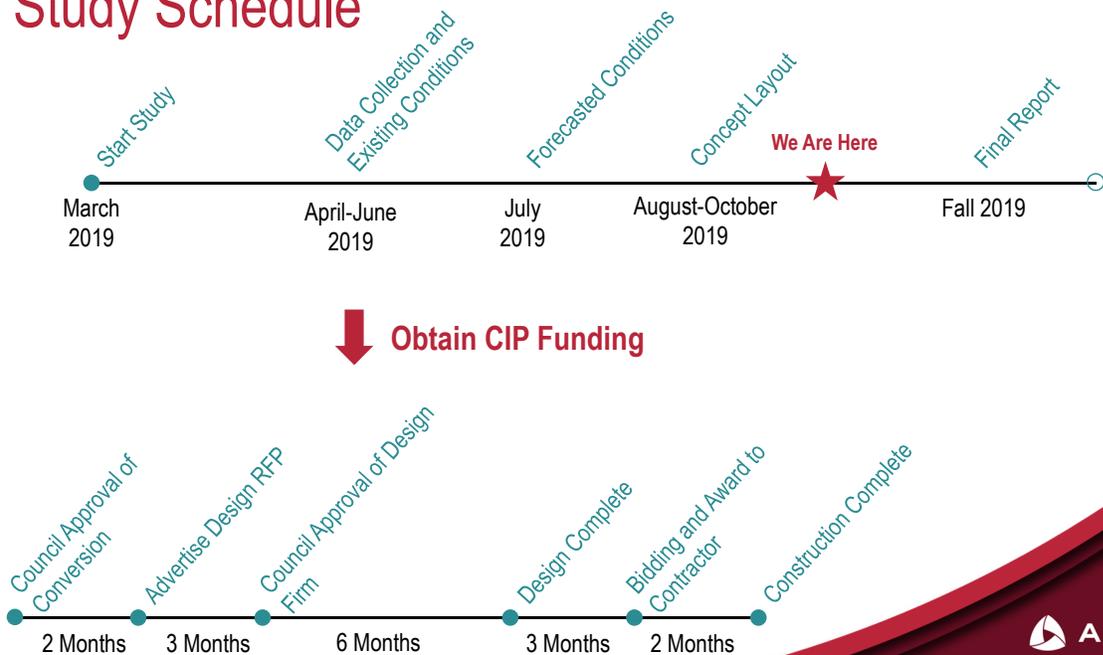
# Study Purpose/Scope



- Improve safety!
- Improve access and circulation
- Downtown is changing!
- Conversion limited to signing, marking, and traffic control changes **only**



# Study Schedule



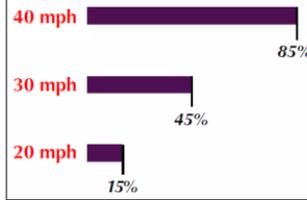
# Benefits

- Traffic Calming
- Convenience/Economics
- Traffic Mobility
- Residential Access



New Albany, IN Source: cnu.org

When a person is struck by a motor vehicle, they have the following **chances of death** according to *Killing Speed and Saving Lives*, UK Department of Transportation:



Average Roadway Speeds	
BEFORE Conversion:	30-45 mph
AFTER Conversion:	20-25 mph

"Converting One-way Streets to Two-way"  
www.preservationnation.org

Oregon Main Street Handbook: When a highway runs through it!

# Example Conversions



Cedar Rapids, IA Source: cnu.org

- 1st, 2nd, and 3rd Avenues, Duluth, MN
- Hennepin and 1st Avenues, Minneapolis, MN
- East Wells Street, Milwaukee, WI
- Downtown CBD, Cedar Rapids, IA
- East Spring Street, New Albany, IN
- Main and 2nd Streets, Ottumwa, IA
- Court and Walnut Avenues, Des Moines, IA

# Considerations



Traffic Operations / Intersection Control



Business and Truck Access



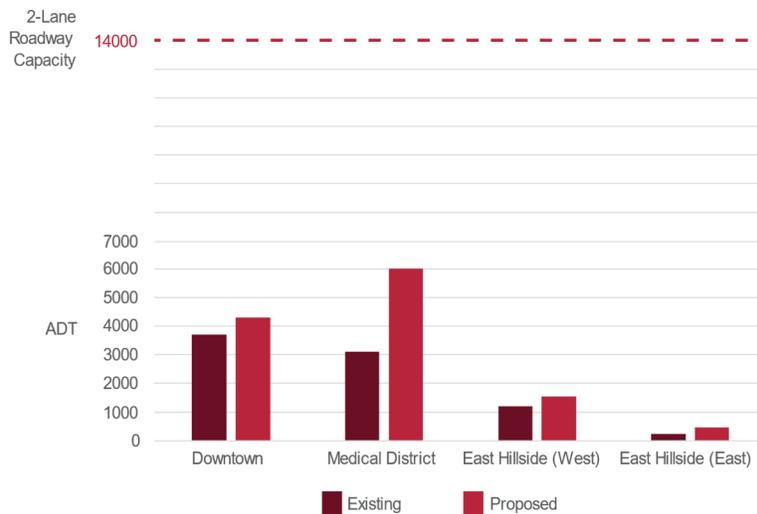
Parking Impacts



Pedestrian and Transit Impacts

## Traffic Operations / Intersection Control

- How will traffic operate under two-way conditions?
- What type of intersection traffic control will there be under two-way conditions?



### Findings

- Conversion will have acceptable levels of service along corridor
- Opportunity to revise intersection traffic controls.

## Parking Impacts



Source: Google

- How will on-street parking be impacted?
- How will off-street parking be impacted?
- Findings:
  - Conversion will not impact on-street parking or existing loading operations.
  - No property access (ingress/egress) operational changes needed

## Business and Truck Access

- How will business access be impacted?
- How will truck access be impacted?
- Findings:
  - Business access will be greatly improved with logical circulation
  - Existing loading zones remain for conversion. No Changes.
  - In-lane loading (illegal) must shift to loading zones, side streets, or alleys.



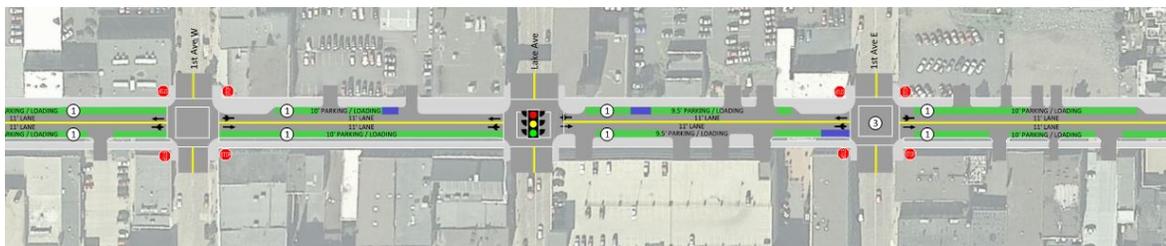
## Pedestrian and Transit Impacts

- How will pedestrians be impacted?
- How will transit be impacted?
- Findings:
  - Conversion will help lower vehicle speeds which will reduce severity of pedestrian crashes
  - On-street parking “buffer” between pedestrians and roadway will remain
  - Transit operations will not be impacted



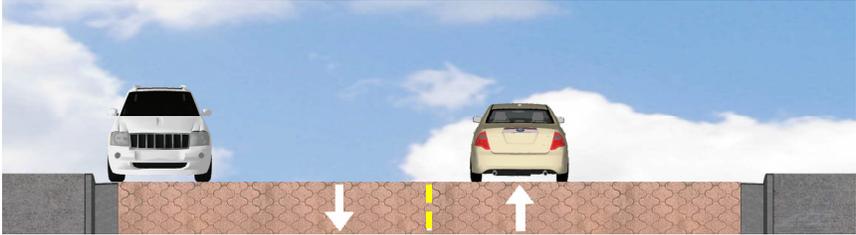
Source: Google

## Proposed Concept

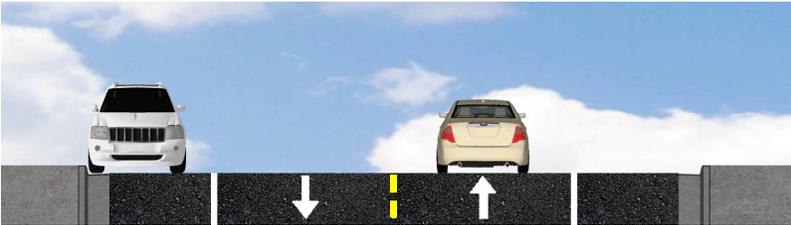


- Two travel lanes
- On street parking/loading spaces will continue on both sides of street
- Changes to traffic control devices at some intersections

# Downtown Segment (Mesaba Ave to 4<sup>th</sup> Ave E)

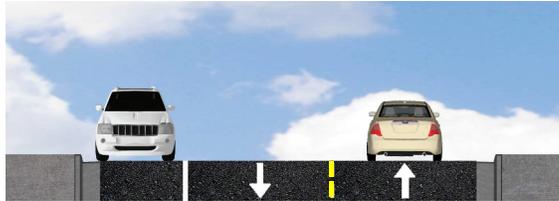


# Medical District Segment (4<sup>th</sup> Ave E to 12<sup>th</sup> Ave E)

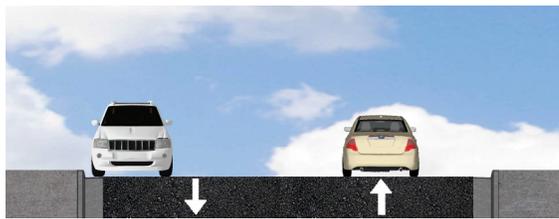


## East Hillside Segment (12<sup>th</sup> Ave E to 24<sup>th</sup> Ave E)

West of 21<sup>st</sup> Avenue E



East of 21<sup>st</sup> Avenue E



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## Traffic Control Change Benefits



Source: Google

- Traffic controls serve specific need
- State/Federal standards guide installation
- Balance standards with intersection characteristics
- Signal removal results in annual maintenance, electrical and operation savings

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**Appendix B:**  
Traffic Forecast Memorandum (HFTE)



## MEMORANDUM DRAFT

**To:** Scott Poska, PE, PTOE  
Mike Anderson, PE, PTOE  
Alliant Engineering, Inc

**From:** Haifeng Xiao, PE, PTOE  
HFTE Inc

**Date:** May 30, 2019

**Subject:** 1<sup>st</sup> Street One Way to Two-Way Traffic Conversion Study  
Traffic Forecast Memorandum

Per the request from the City of Duluth, we are conducting the 1<sup>st</sup> Street One Way to Two-Way Traffic Conversion Study between Mesaba Avenue and 24<sup>th</sup> Avenue East. The study corridor 1<sup>st</sup> Street is currently a one-way street heading southwest (subsequently assuming 1<sup>st</sup> Street as north-south corridor in this study for ease of readability and compliant with the directions defined in the operations modeling analysis) except for two segments from Mesaba to 6<sup>th</sup> Avenue West and from 3<sup>rd</sup> Avenue East to 8<sup>th</sup> Street East where they already carry two-way traffic.

The existing AM and PM peak hour turning movements (TMs) were collected for the study intersections in April 2019. A hybrid methodology was used to develop peak hour TM traffic forecasts for the study intersections under 2045 No Build and Two-way Build conditions.

### **2045 NO BUILD TRAFFIC FORECAST**

The 2045 No Build traffic growth rates were developed based on the review of the latest Duluth-Superior Metropolitan Interstate Council (MIC) travel demand model. The MIC model was recently updated in April 2019.

**Figure 1** illustrates the MIC model's Traffic Analysis Zones (TAZs) in the study area. **Table 1** summarizes the existing and 2045 land uses for the TAZs in the study area in the MIC model. **Figure 2** illustrates the daily traffic growth rates for 1<sup>st</sup> Street and major crossing streets from existing to 2045 under No Build conditions. The table shows there are no substantial changes in the land uses from the existing to 2045. They are reflected in the model outputs as well. The figure shows there is not much traffic growth in the study area. Traffic volumes on a few segments even decrease slightly from existing to 2045 due to redistributions in the model.

A historical daily traffic trend analysis was conducted for the roadways to validate the model outputs in the study area. **Table 2** summarizes the historical trend analysis results with the MIC model results included for comparison purpose. The table shows that the historical daily traffic in the study area varied significantly and most roadway segments actually have shown decline trend (growth rates are less than 1.00) in the past.

Based on the analysis, it was assumed that there would be no significant traffic growth from existing to 2045 in the study area. The existing traffic counts would be used for 2045 No Build conditions.

**Table 3A** and **Table 3B** respectively summarizes the AM and PM peak hour TMs for the study intersections under existing and thus future No Build conditions.

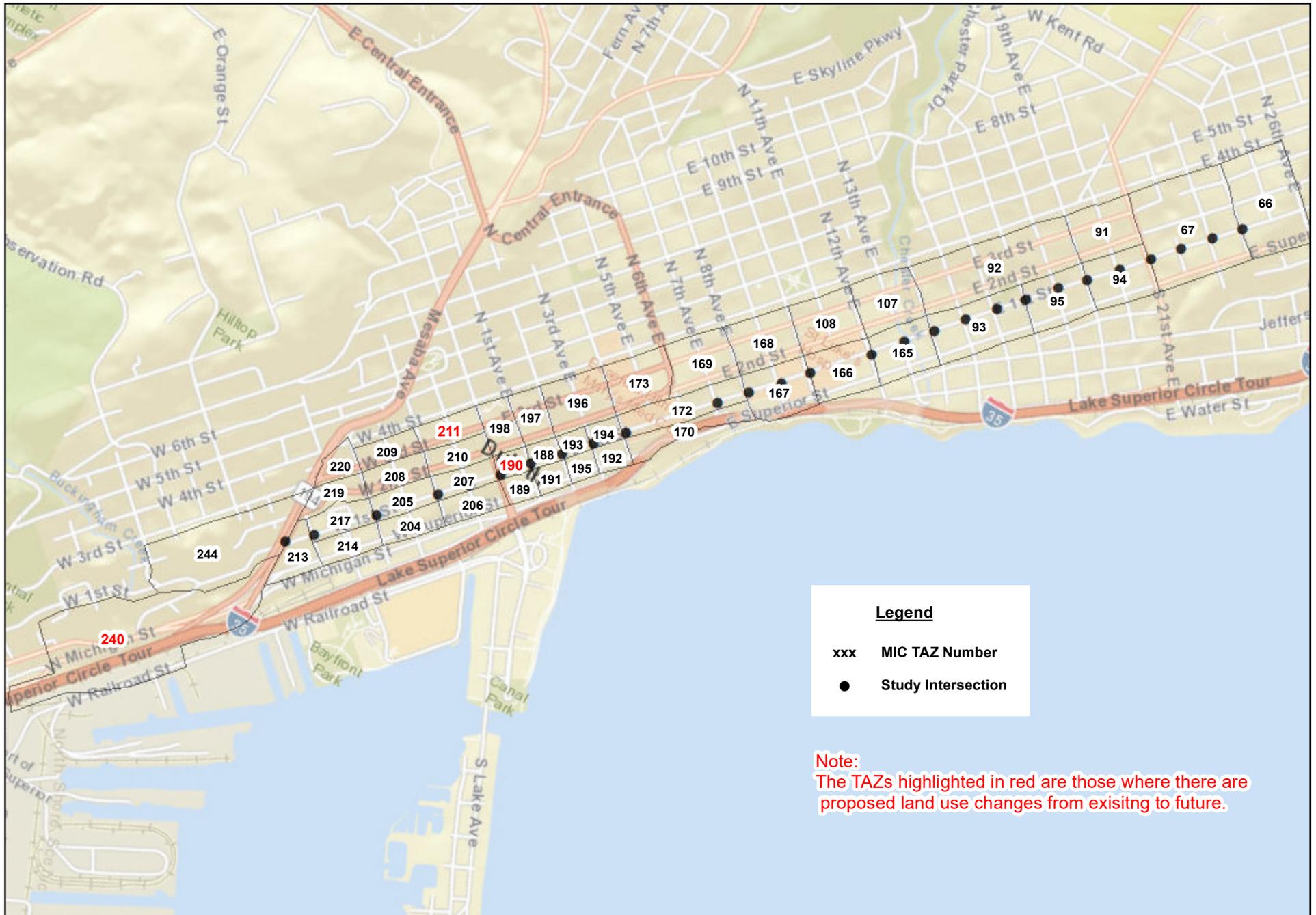
## **2045 TWO-WAY BUILD TRAFFIC FORECAST**

The traffic forecasts for the Two-Way Build scenario were developed based on the following steps:

- The 2045 MIC model network was modified to reflect the 1<sup>st</sup> Street Two-Way Conversion between Mesaba Avenue and 24<sup>th</sup> Avenue East (a two-lane one direction roadway converted to a two-way roadway with one lane for each direction). The model was rerun, and the traffic volume outputs were compared with those under No Build conditions.
- The relative changes from the model outputs at approach level for each study intersection were applied to the No Build TMs to develop the traffic forecasts for the Two-Way Build scenario. The traffic volume changes were adjusted and balanced to account for different changes from different approaches.
- It appeared that southbound traffic diversion rates at the study intersections varied in the MIC model and mostly were between 10%-20%. Considering the current traffic level is low and one lane capacity is still sufficient for the southbound traffic, it was determined that 5% of the diversion rate was applied to the southbound through movements for all the intersections to develop the final traffic forecasts. All other movements remained unchanged from the above steps. This adjustment would be conservative.

**Table 4A** and **Table 4B** respectively summarizes the final AM and PM peak hour TMs for the study intersections under 2045 Two-Way Build conditions.

It is noted that any traffic from the redeveloped land uses other than those assumed in the MIC model should be analyzed separately.

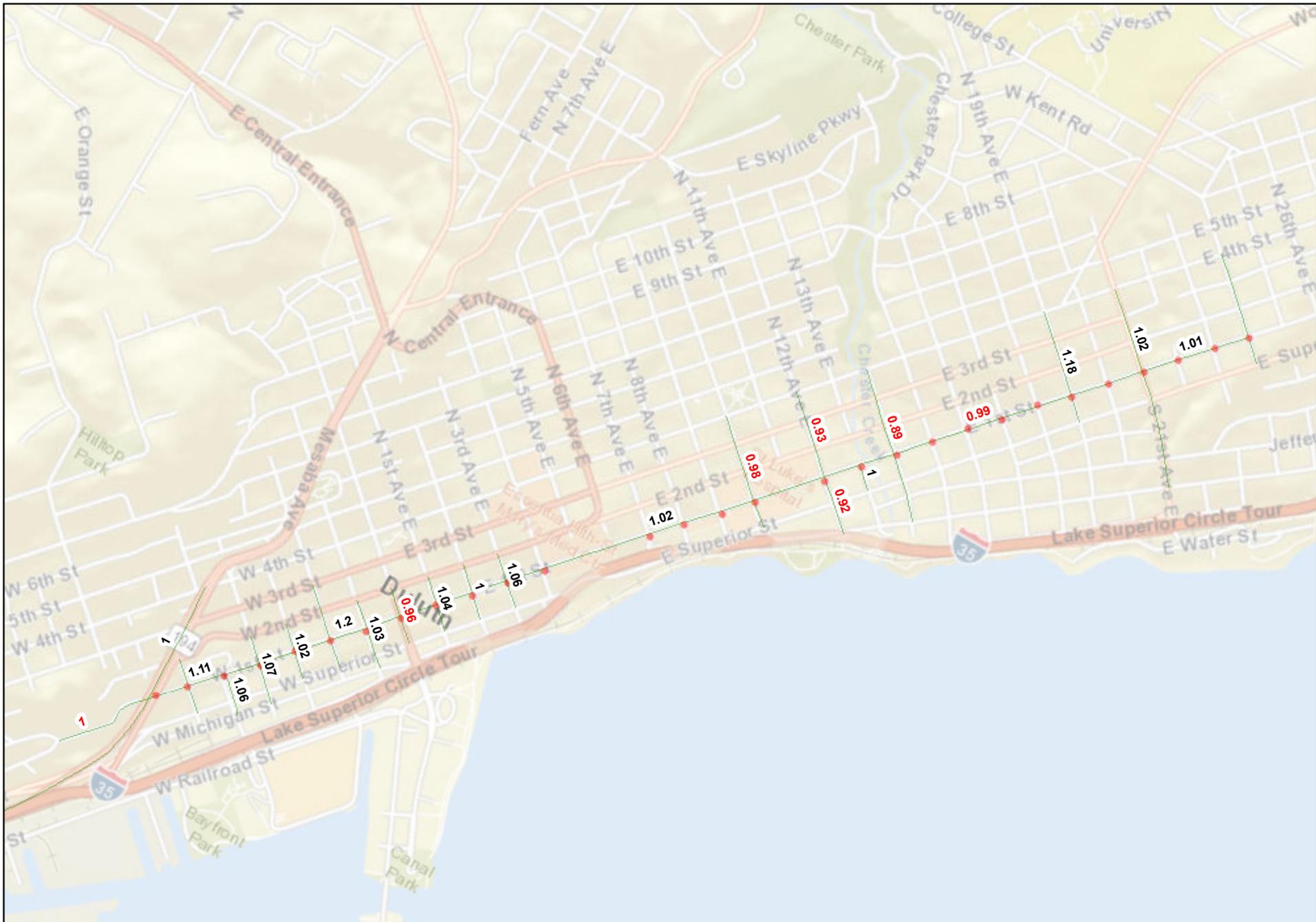


Author: :HXIAO  
Date: 5/30/2019

### Study Intersections and TAZs

1st Street Conversion Study (One Way to Two Way Traffic)  
City of Duluth, MN

Figure  
1



Author: :HXIAO  
Date: 5/30/2019

**Traffic Growth Rates (2045/Existing Ratio) on 1st Street  
and Crossing Streets in the MIC model  
1st Street Conversion Study (One Way to Two Way Traffic)  
City of Duluth, MN**

**Figure  
2**

**Table 1  
MIC Model Socio-Economic Data Summary  
(the 1st Street Conversion Study Area)**

Taz	2018									2045									2018-2045 Change								
	HH*	SERVICE	RETAIL	OTHER	TOTAL	C	H	M	E	HH	SERVICE	RETAIL	OTHER	TOTAL	C	H	M	E	HH	SERVICE	RETAIL	OTHER	TOTAL	C	H	M	E
66	81	75	0	1	76	0	0	0	0	81	75	0	1	76	0	0	0	0	0	0	0	0	0	0	0	0	0
67	190	12	0	0	12	0	0	0	0	190	12	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
91	114	163	0	0	163	0	0	0	0	114	163	0	0	163	0	0	0	0	0	0	0	0	0	0	0	0	0
92	475	1	0	0	1	0	0	0	0	475	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
93	230	354	15	58	427	0	0	0	0	230	354	15	58	427	0	0	0	0	0	0	0	0	0	0	0	0	0
94	129	1	0	0	1	0	0	0	0	129	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
95	126	155	0	0	155	0	0	0	0	126	155	0	0	155	0	0	0	0	0	0	0	0	0	0	0	0	0
107	129	0	6	0	6	0	0	0	0	129	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
108	150	51	36	0	87	0	0	0	0	150	51	36	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0
165	113	152	43	15	210	0	0	0	0	113	152	43	15	210	0	0	0	0	0	0	0	0	0	0	0	0	0
166	44	1,035	17	3	1,055	0	0	0	0	44	1,035	17	3	1,055	0	0	0	0	0	0	0	0	0	0	0	0	0
167	78	2,572	1	27	2,600	0	0	0	0	78	2,572	1	27	2,600	0	0	0	0	0	0	0	0	0	0	0	0	0
168	120	74	29	16	119	0	0	0	0	120	74	29	16	119	0	0	0	0	0	0	0	0	0	0	0	0	0
169	78	19	126	4	149	0	0	0	0	78	19	126	4	149	0	0	0	0	0	0	0	0	0	0	0	0	0
170	26	42	0	6	48	0	0	0	0	26	42	0	6	48	0	0	0	0	0	0	0	0	0	0	0	0	0
172	95	70	0	0	70	0	0	0	0	95	70	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0
173	13	6,012	20	23	6,055	0	0	0	0	13	6,012	20	23	6,055	0	0	0	0	0	0	0	0	0	0	0	0	0
188	25	18	0	0	18	0	0	0	0	25	18	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0
189	0	367	48	918	1,333	0	0	0	0	0	367	48	918	1,333	0	0	0	0	0	0	0	0	0	0	0	0	0
190	49	225	7	2	234	0	0	0	0	149	225	7	2	234	0	0	0	0	100	0	0	0	0	0	0	0	0
191	13	408	11	24	443	0	0	0	0	13	408	11	24	443	0	0	0	0	0	0	0	0	0	0	0	0	0
192	15	142	2	0	144	0	0	0	0	15	142	2	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0
193	122	29	8	75	112	0	0	0	0	122	29	8	75	112	0	0	0	0	0	0	0	0	0	0	0	0	0
194	29	2	0	0	2	0	0	0	0	29	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
195	67	150	7	2	159	0	0	0	0	67	150	7	2	159	0	0	0	0	0	0	0	0	0	0	0	0	0
196	331	141	0	0	141	0	0	0	0	331	141	0	0	141	0	0	0	0	0	0	0	0	0	0	0	0	0
197	51	51	0	40	91	0	0	0	0	51	51	0	40	91	0	0	0	0	0	0	0	0	0	0	0	0	0
198	0	141	0	0	141	0	164	0	0	0	141	0	0	141	0	164	0	0	0	0	0	0	0	0	0	0	0
204	0	723	75	36	834	0	0	0	0	0	723	75	36	834	0	0	0	0	0	0	0	0	0	0	0	0	0
205	10	1,327	20	1,253	2,600	0	0	0	0	10	1,327	20	1,253	2,600	0	0	0	0	0	0	0	0	0	0	0	0	0
206	48	1,099	45	76	1,220	0	0	0	0	48	1,099	45	76	1,220	0	0	0	0	0	0	0	0	0	0	0	0	0
207	61	405	0	5	410	0	0	0	0	61	405	0	5	410	0	0	0	0	0	0	0	0	0	0	0	0	0
208	31	183	0	35	218	0	0	0	0	31	183	0	35	218	0	0	0	0	0	0	0	0	0	0	0	0	0
209	59	53	0	0	53	0	0	0	0	59	53	0	0	53	0	0	0	0	0	0	0	0	0	0	0	0	0
210	43	269	0	29	298	0	0	0	0	43	269	0	29	298	0	0	0	0	0	0	0	0	0	0	0	0	0
211	90	5	0	0	5	0	0	0	0	186	5	0	0	5	0	0	0	0	96	0	0	0	0	0	0	0	0
213	73	36	0	0	36	0	0	0	0	73	36	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0
214	6	525	0	2	527	0	0	0	0	6	525	0	2	527	0	0	0	0	0	0	0	0	0	0	0	0	0
217	0	40	0	24	64	0	0	0	0	0	40	0	24	64	0	0	0	0	0	0	0	0	0	0	0	0	0
219	1	10	0	145	155	0	0	0	0	1	10	0	145	155	0	0	0	0	0	0	0	0	0	0	0	0	0
220	48	55	13	23	91	0	0	0	0	48	55	13	23	91	0	0	0	0	0	0	0	0	0	0	0	0	0
240	141	61	5	0	66	0	0	0	0	255	61	5	0	66	0	0	0	0	114	0	0	0	0	0	0	0	0
244	127	15	0	4	19	0	0	0	0	127	15	0	4	19	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	3,631	17,268	534	2,846	20,648	0	164	0	0	3,941	17,268	534	2,846	20,648	0	164	0	0	310	0	0	0	0	0	0	0	0
MIC Total	70,439	53,987	9,229	14,859	78,075	20,855	5,776	2,842	10,876	72,868	55,322	9,719	15,167	80,208	20,855	5,776	2,842	10,876	2,429	1,335	490	308	2,133	0	0	0	0

Note: HH (Household); Service (Service Jobs); Retail (Retail Jobs); Other (Other Jobs); Total (Total Jobs); C/H/M/E (College/High School/Middle School/Elementary School Student);  
Highlighted numbers show changes.

**Table 2**  
**Historical Daily Traffic Volumes Trend Analysis on 1st Street and Major Crossing Streets**

STREET	LOCATION	1994	1996	1998	1999	2000	2002	2003	2004	2006	2007	2009	2011	2012	2013	2014	2015	2016	2018	2045	2018-2045 Growth Rates	Growth Rates in the MIC model
S 21st Ave E	NW OF MSAS193 (LONDON RD)				14,500			16,400			14,500		9,100				9,500		8,043	-3,635	-0.45	1.02
N 6th Ave W	NW OF MSAS171 (SUPERIOR ST)										3,050		3,050			2,600			2,454	812	0.33	1.29
N 6th Ave W	SE OF MSAS130 (2nd ST)				1,100			1,000			920		650			610			464	-483	-1.04	N/A
N 2nd Ave E	SE OF MSAS129 (1st ST)				2,400			2,100			2,150		1,900			1,550			1,469	139	0.09	1.00
N Lake Ave	SE OF MSAS129 (1st ST)				10,000			13,500			11,700		11,700				11,300		11,860	12,400	1.05	0.96
N 3rd Ave E	SE OF MSAS129 (1st ST)				2,200			2,650			2,000		2,000	2,100					1,885	1,176	0.62	1.06
N 4th Ave W	SE OF MSAS130 (2nd ST)				4,800			4,800			4,800		4,800		3,450				3,779	2,001	0.53	1.07
N 1st Ave E	SE OF MSAS129 (1st ST)				2,150			2,800			2,150		2,050			2,050			1,961	1,288	0.66	1.04
N 2nd Ave W	SE OF MSAS129 (1st ST)				2,900			3,500			2,900		1,850				1,500		1,306	-1,698	-1.30	1.05
N 2nd Ave W	SE OF MSAS130 (2nd ST)				4,400			4,250			4,250		2,850			2,250			1,941	-2,059	-1.06	N/A
N 1st Ave W	SE OF MSAS129 (1st ST)				2,200			2,800			2,250		2,100				1,650		1,705	490	0.29	1.03
N 3rd Ave W	SE OF MSAS130 (2nd ST)				3,000			2,800			2,800		1,900		2,000				1,579	-602	-0.38	1.02
E 1st St	NE OF MSAS148 (10th AVE E)				3,800			4,600			3,550		3,750				4,150		3,929	3,828	0.97	1.02
E 1st St	SW OF MSAS172 (14th AVE E)				2,700			2,600			2,600		2,450				1,200		1,444	-683	-0.47	1.02
E 1st St	NE OF MSAS172 (14th AVE E)				2,300			2,300			2,000		1,950	1,750					1,586	483	0.30	0.99
E 1st St	NE OF MSAS152 (21st AVE E)				300			325			325		300	260				255	260	168	0.64	1.01
E 1st St	NE OF MSAS143 (2nd AVE E)				4,700			4,800			4,600		4,400			3,050			3,263	738	0.23	1.02
W 1st St	NE OF MSAS137 (3rd AVE W)				6,100			5,700			5,500		5,500				3,350		3,663	-185	-0.05	1.20
W 1st St	SW OF MSAS120 (6th AVE W)				5,400			4,700			3,900		4,350			3,550			3,191	325	0.10	1.11
W 1st St	SW OF TH194 (MESABA AV)				1,550			1,450			1,450		1,500				1,500		1,476	1,443	0.98	1.00
S 14th Ave E	NW OF MSAS147 (SUPERIOR ST)				2,700			2,450			2,450		2,700				1,800		1,994	948	0.48	0.89
S 13th Ave E	NW OF MSAS147 (SUPERIOR ST)				1,600			1,650			1,650		1,600				670	710	768	-784	-1.02	1.00
N 10th Ave E	SE OF MSAS130 (2nd ST)				4,400			5,100			5,200		3,250						3,399	1,138	0.33	0.98
S 12th Ave E	SE OF MSAS126 (3rd ST)				1,550			1,700			1,700		2,250		2,450				2,656	4,377	1.65	0.93
S 12th Ave E	NW OF MSAS147 (SUPERIOR ST)				3,000			3,550			2,750		3,700		3,900				3,967	5,359	1.35	0.92
N 19th Ave E	SE OF MSAS126 (3rd ST)				1,550			2,100			1,800		1,600	1,800	1,950			2,250	2,043	2,562	1.25	1.18
N 24th Ave E	SE OF CSAH9 (4th ST)				2,050			1,750			2,100		1,950	2,100				2,250	2,184	2,590	1.19	N/A
Mesaba Ave	N OF 1st ST IN DULUTH	19,700	19,900	18,100		19,500	17,900		18,500	21,900		24,900	24,400		23,600		24,400		25,448	33,932	1.33	1.00

**Table 3A**  
**Existing and 2045 No Build TMs (AM Peak Hour)**

1st Street Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
24th Ave E	0	0	0	1	10	5	0	70	4	7	93	0
23rd Ave E	0	0	0	2	18	0	0	12	2	3	1	0
22nd Ave E	0	0	0	2	23	1	0	0	1	5	0	0
21st Ave E	0	0	0	0	11	18	0	587	65	60	482	0
20th Ave E	0	0	0	1	140	1	0	6	4	1	10	0
19th Ave E	0	0	0	7	137	6	0	52	35	4	35	0
18th Ave E	0	0	0	5	170	2	0	18	4	1	11	0
17th Ave E	0	0	0	4	170	5	0	2	3	5	2	0
16th Ave E	0	0	0	4	172	2	0	11	6	0	6	0
15th Ave E	0	0	0	5	176	4	0	16	8	5	14	0
14th Ave E	0	0	0	5	166	26	0	31	20	20	34	0
13th Ave E	0	0	0	10	196	0	0	0	0	21	0	0
12th Ave E	0	0	0	11	174	28	0	117	118	41	118	0
10th Ave E	0	0	0	31	224	48	0	118	53	43	96	0
9th Ave E	0	0	0	24	269	12	0	35	28	2	11	0
8th Ave E	8	0	11	15	206	15	0	27	12	33	21	0
7th Ave E	10	15	4	1	238	15	4	8	58	2	3	0
4th Ave E	6	17	1	14	249	31	31	18	44	13	26	22
3rd Ave E	0	0	0	9	229	3	18	26	17	7	28	41
2nd Ave E	0	0	0	5	271	6	0	9	26	13	9	0
1st Ave E	0	0	0	10	234	17	0	24	80	83	22	0
Lake Ave	0	0	0	73	152	9	0	238	46	58	236	0
1st Ave W	0	0	0	13	219	8	0	12	10	64	33	0
2nd Ave W	0	0	0	14	244	19	0	80	140	57	32	0
3rd Ave W	0	0	0	32	164	40	0	26	20	24	57	0
4th Ave W	0	0	0	20	131	43	0	91	133	36	88	0
5th Ave W	0	0	0	56	96	25	0	5	12	27	11	0
6th Ave W	4	0	49	33	62	25	0	4	3	11	15	0
Mesaba Ave	57	12	1	31	11	13	36	548	16	2	1197	9

**Table 3B**  
**Existing and 2045 No Build TMs (PM Peak Hour)**

1st Street Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
24th Ave E	0	0	0	1	4	4	5	117	12	1	55	1
23rd Ave E	0	0	0	3	15	0	0	16	2	1	5	0
22nd Ave E	0	0	0	4	12	0	0	2	1	0	0	0
21st Ave E	0	0	0	0	6	5	0	589	27	33	684	0
20th Ave E	0	0	0	6	47	7	0	12	4	4	5	0
19th Ave E	0	0	0	3	53	5	0	66	27	4	43	0
18th Ave E	0	0	0	4	73	5	0	19	5	2	14	0
17th Ave E	0	0	0	2	77	4	0	7	4	5	7	0
16th Ave E	0	0	0	6	72	9	0	15	11	3	19	0
15th Ave E	0	0	0	2	76	3	0	34	15	13	28	0
14th Ave E	0	0	0	15	81	24	0	56	29	9	38	0
13th Ave E	0	0	0	17	115	0	0	0	0	25	0	0
12th Ave E	0	0	0	16	95	34	0	292	62	29	128	0
10th Ave E	0	0	0	39	201	92	0	172	42	45	140	0
9th Ave E	0	0	0	16	250	18	0	22	17	4	16	0
8th Ave E	25	0	59	25	214	23	0	43	15	24	48	0
7th Ave E	16	60	1	4	229	16	10	2	44	4	6	6
4th Ave E	22	38	5	20	327	65	10	31	24	14	42	13
3rd Ave E	0	0	0	39	343	17	11	52	44	18	31	11
2nd Ave E	0	0	0	17	370	13	0	22	24	24	26	0
1st Ave E	0	0	0	39	400	26	0	40	37	37	51	0
Lake Ave	0	0	0	252	257	85	0	327	48	61	165	0
1st Ave W	0	0	0	36	297	39	0	40	33	34	45	0
2nd Ave W	0	0	0	28	300	19	0	82	97	42	44	0
3rd Ave W	0	0	0	61	399	64	0	61	65	26	57	0
4th Ave W	0	0	0	33	369	61	0	41	103	13	118	0
5th Ave W	0	0	0	161	346	16	0	19	15	39	13	0
6th Ave W	7	0	70	102	302	30	0	6	2	13	6	0
Mesaba Ave	42	6	5	155	46	64	37	825	34	2	867	10

**Table 4A**  
**2045 Two-Way Build TMs (AM Peak Hour)**

1st Street Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
24th Ave E	5	4	2	2	10	5	3	71	3	8	92	1
23rd Ave E	1	8	2	1	17	1	1	12	2	3	1	1
22nd Ave E	1	12	1	1	22	1	1	1	1	4	1	1
21st Ave E	16	23	17	1	10	9	1	603	52	51	495	1
20th Ave E	6	58	4	2	133	4	1	3	6	8	2	1
19th Ave E	6	69	8	5	130	5	1	51	36	4	32	2
18th Ave E	6	63	13	1	162	2	6	11	5	2	7	3
17th Ave E	4	73	5	1	162	1	1	1	3	5	1	1
16th Ave E	5	64	15	1	163	2	9	1	7	3	2	1
15th Ave E	11	71	7	6	167	1	2	11	11	7	7	5
14th Ave E	9	82	7	3	158	21	1	29	22	18	34	1
13th Ave E		92	8	4	186					20		1
12th Ave E	13	133	11	7	165	23	2	122	114	34	120	2
10th Ave E	1	110	41	12	213	61	14	108	53	43	90	6
9th Ave E	4	125	9	23	256	9	1	32	32	3	10	1
8th Ave E	6	86	29	6	196	24	12	21	7	35	16	2
7th Ave E	2	112	7	2	226	14	76	3	8	2	1	4
4th Ave E	11	43	4	7	237	24	51	32	45	15	33	17
3rd Ave E	9	74	19	6	218	3	1	13	37	23	20	19
2nd Ave E	12	86	6	4	257	1	4	5	26	18	3	2
1st Ave E	3	107	23	4	222	3	2	11	91	57	36	9
Lake Ave	11	68	10	79	144	5	2	241	52	52	239	3
1st Ave W	18	79	2	16	208	3	5	10	7	70	23	2
2nd Ave W	3	107	39	5	232	26	2	59	159	39	26	22
3rd Ave W	22	43	7	47	156	20	14	8	25	20	59	2
4th Ave W	47	55	1	25	124	19	1	94	132	16	74	32
5th Ave W	1	21	24	35	91	24	1	5	13	9	11	17
6th Ave W	1	65	9	42	59	13	4	3	1	2	30	4
Mesaba Ave	50	19	1	32	10	11	26	554	22	1	1,205	33

**Table 4B**  
**2045 Two-Way Build TMs (PM Peak Hour)**

1st Street Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
24th Ave E	5	2	1	1	4	3	4	121	9	1	54	1
23rd Ave E	1	7	2	2	14	1	1	17	1	1	4	1
22nd Ave E	1	6	1	4	11	1	1	1	2	1	1	1
21st Ave E	5	25	4	1	6	2	3	599	26	25	705	1
20th Ave E	3	23	3	6	45	9	1	11	5	7	1	1
19th Ave E	4	34	4	2	50	5	1	66	26	4	42	1
18th Ave E	3	29	8	1	69	5	3	15	5	2	12	2
17th Ave E	3	36	3	1	73	2	1	6	4	5	6	1
16th Ave E	4	27	12	3	68	10	9	7	10	5	16	1
15th Ave E	9	39	3	4	72	1	2	30	16	13	23	4
14th Ave E	6	49	5	10	77	20	1	58	26	7	40	1
13th Ave E		61	7	11	109					24		1
12th Ave E	9	77	8	10	90	28	1	301	54	22	134	1
10th Ave E	1	102	43	16	191	110	14	159	43	47	133	6
9th Ave E	6	119	8	14	238	15	1	17	22	4	16	1
8th Ave E	9	79	50	29	203	44	15	44	4	30	41	6
7th Ave E	2	109	1	5	218	21	63	1	5	3	1	14
4th Ave E	20	84	7	19	311	67	48	45	16	12	49	24
3rd Ave E	12	146	18	33	326	18	8	42	52	19	20	18
2nd Ave E	18	134	7	20	352	5	15	14	18	27	17	6
1st Ave E	4	150	26	25	380	16	7	30	41	11	61	18
Lake Ave	11	121	10	239	244	66	4	336	47	44	180	8
1st Ave W	24	113	1	37	282	23	17	39	17	35	41	4
2nd Ave W	3	129	34	12	285	33	4	67	109	24	30	32
3rd Ave W	44	128	15	83	379	27	46	27	55	23	55	6
4th Ave W	65	120	1	33	351	50	3	42	101	3	72	57
5th Ave W	2	106	45	121	329	21	1	17	17	9	6	38
6th Ave W	4	72	34	94	287	23	2	4	1	2	17	1
Mesaba Ave	36	15	1	138	44	60	27	849	46	1	875	31

**Appendix C:**  
Detailed Trip Generation Summary

Detailed Trip Generation Table for Lakeview Development

Land Use <sup>1</sup> (ITE Code)	Units	Size	AM Peak Hour <sup>2</sup> Trips						PM Peak Hour <sup>2</sup> Trips					
			Rate	Entering	Exiting	Trips In	Trips Out	Total Trips	Rate	Entering	Exiting	Trips In	Trips Out	Total Trips
<b>Motel</b> (321)	Rooms <sup>3</sup>	25	0.38	37%	63%	4	6	10	0.38	54%	46%	6	5	11
<i>Trips Lost (Voyageur)</i>						4	6	10						
<b>Multifamily Housing (Mid-Rise)</b> (221)	Dwelling	200	0.36	26%	74%	19	54	73	0.44	61%	39%	54	35	89
	Multi-Use Reduction					0	-1	-1				-20	-10	-30
	<b>Land Use Gross Trips</b>					<b>19</b>	<b>53</b>	<b>72</b>				<b>34</b>	<b>25</b>	<b>59</b>
	Pass-By and Diverted					0	0	0				0	0	0
	<b>Land Use Net Trips</b>					<b>19</b>	<b>53</b>	<b>72</b>				<b>34</b>	<b>25</b>	<b>59</b>
<b>Supermarket</b> (850)	1,000 Sq. Ft. GFA	17	3.82	60%	40%	39	26	65	9.24	51%	49%	81	77	158
	Multi-Use Reduction					-1	0	-1				-9	-21	-30
	<b>Land Use Gross Trips</b>					<b>38</b>	<b>26</b>	<b>64</b>				<b>72</b>	<b>56</b>	<b>128</b>
	Pass-By and Diverted					-24	-16	-40				-46	-36	-82
	<b>Land Use Net Trips</b>					<b>14</b>	<b>10</b>	<b>24</b>				<b>26</b>	<b>20</b>	<b>46</b>
<b>Small Office Building</b> (712)	1,000 Sq. Ft. GFA	3	1.92	83%	17%	5	1	6	2.45	32%	68%	3	5	8
	Multi-Use Reduction					0	0	0				-2	-1	-3
	<b>Land Use Gross Trips</b>					<b>5</b>	<b>1</b>	<b>6</b>				<b>1</b>	<b>4</b>	<b>5</b>
	Pass-By and Diverted					0	0	0				0	0	0
	<b>Land Use Net Trips</b>					<b>5</b>	<b>1</b>	<b>6</b>				<b>1</b>	<b>4</b>	<b>5</b>
<i>Trips Gained (Lakeview)</i>						38	64	102						
<b>Net Vehicle Trips</b>						<b>34</b>	<b>58</b>	<b>92</b>						

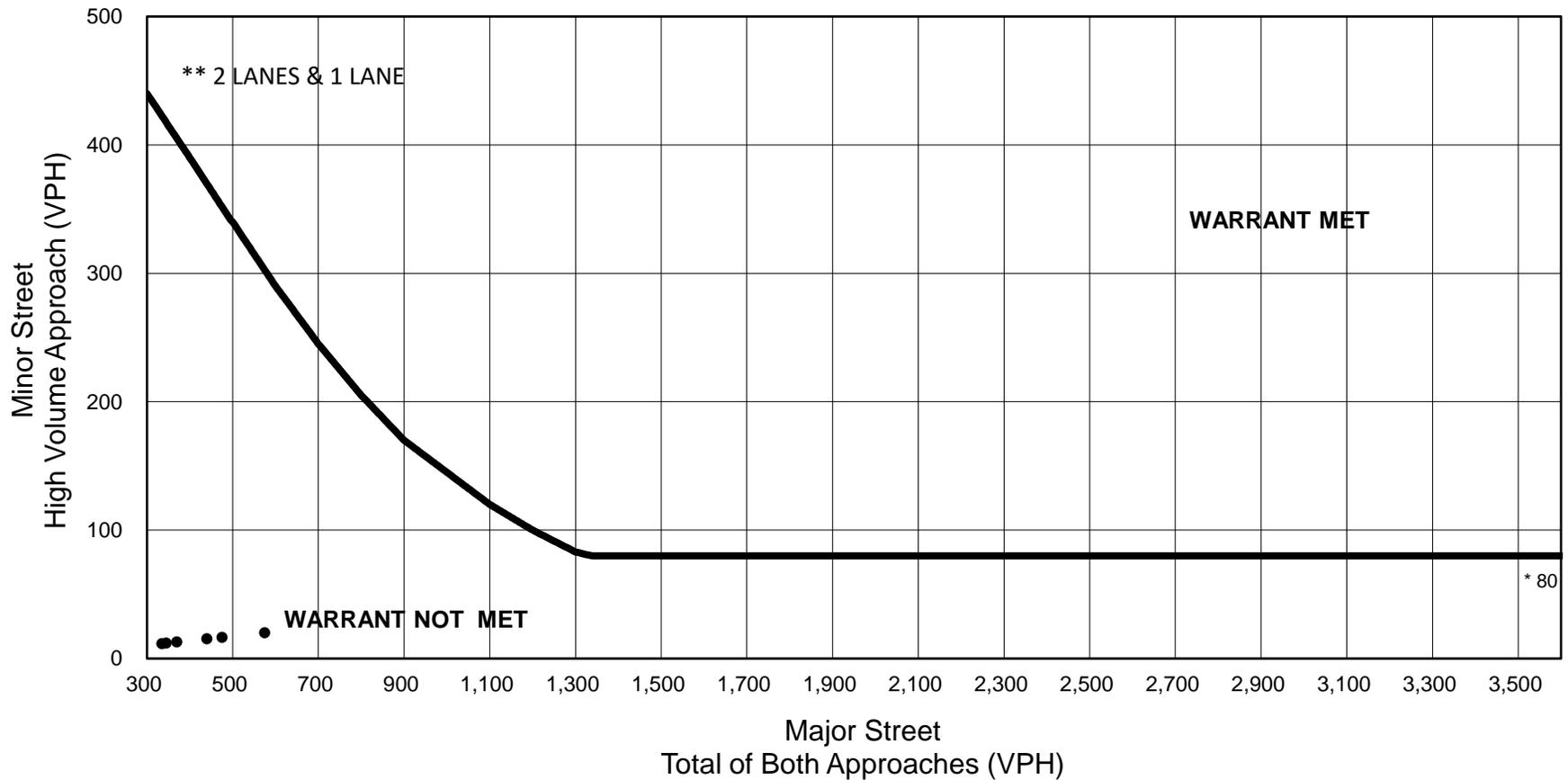
1. Per the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition

2. Peak Hour of adjacent street traffic was used

3. Number of motel rooms is an estimate based on Google Earth images captured September 2018

**Appendix D:**  
Detailed Warrants Analysis





**Four Hour Warrant  
Warrant Met for 0 Hours**

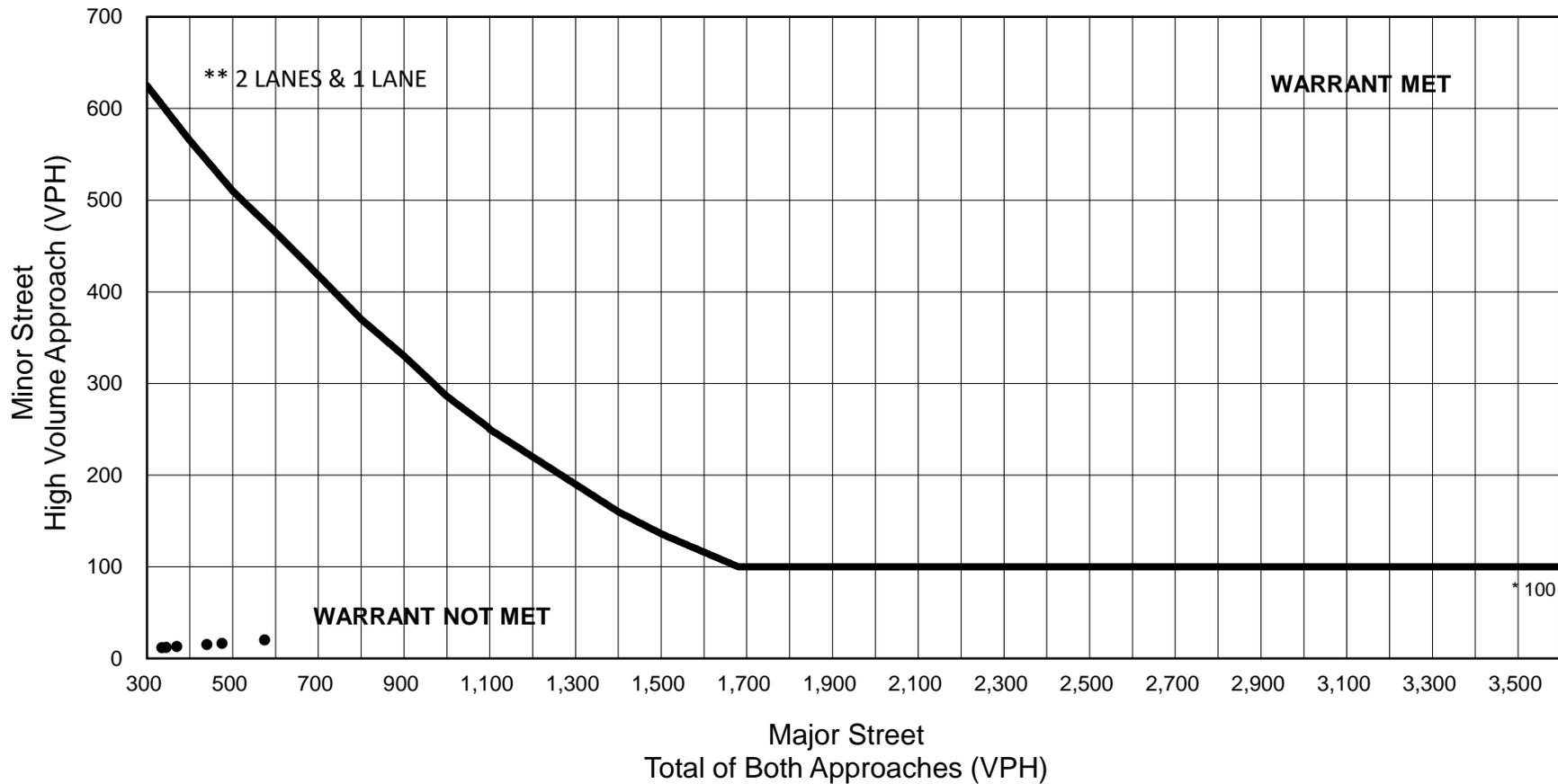
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 6th Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

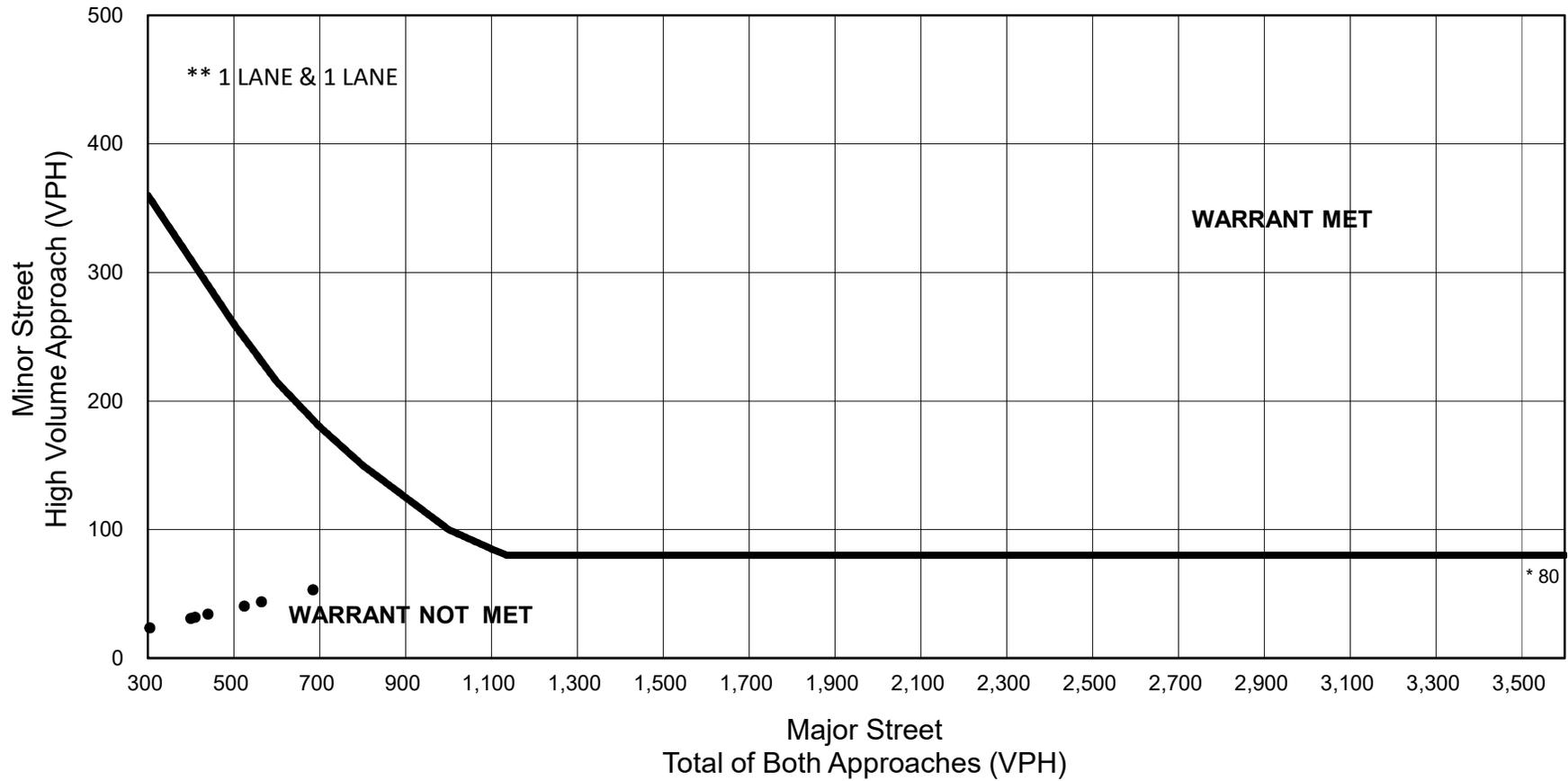
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 6th Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

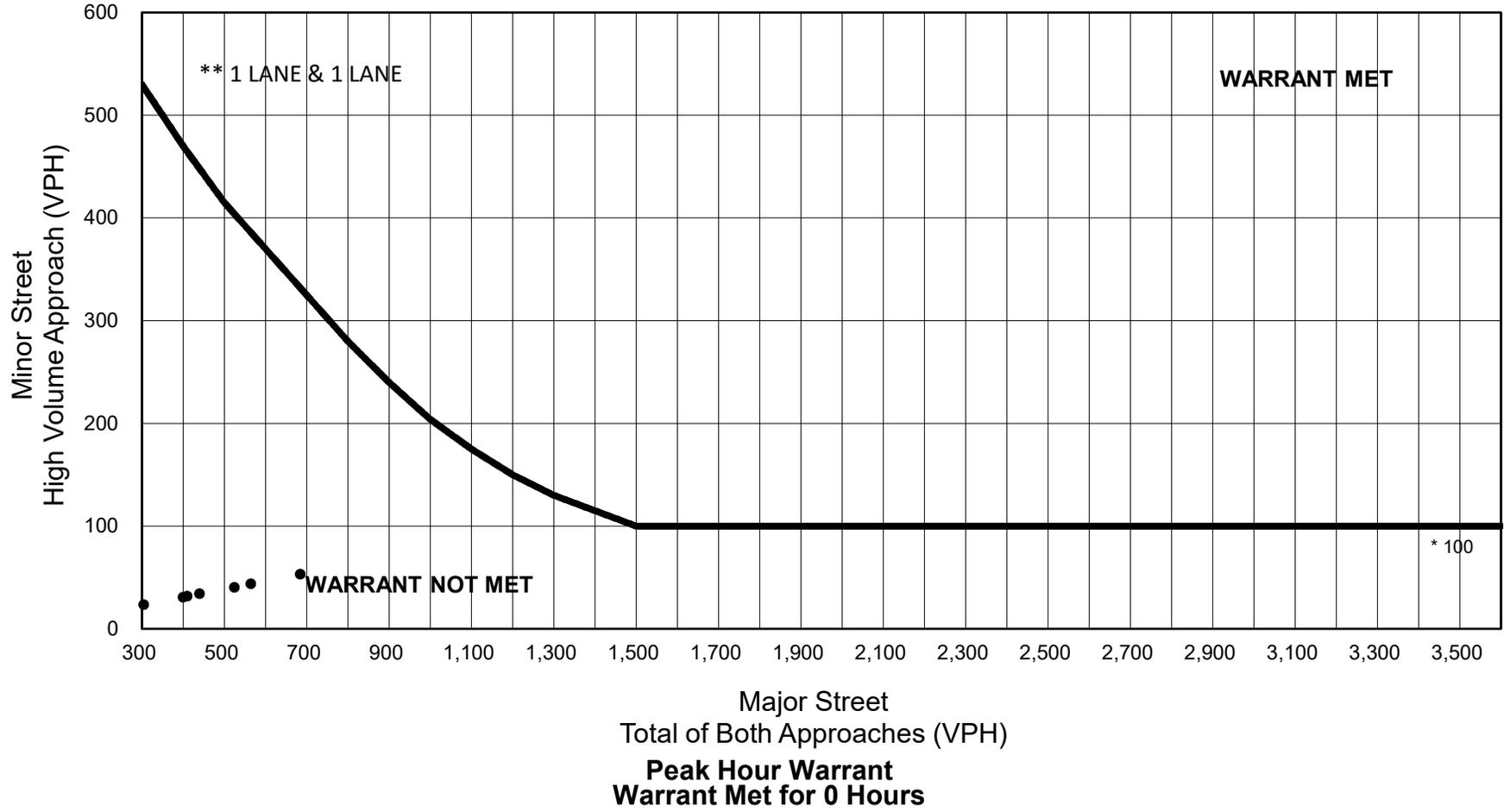
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 5th Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

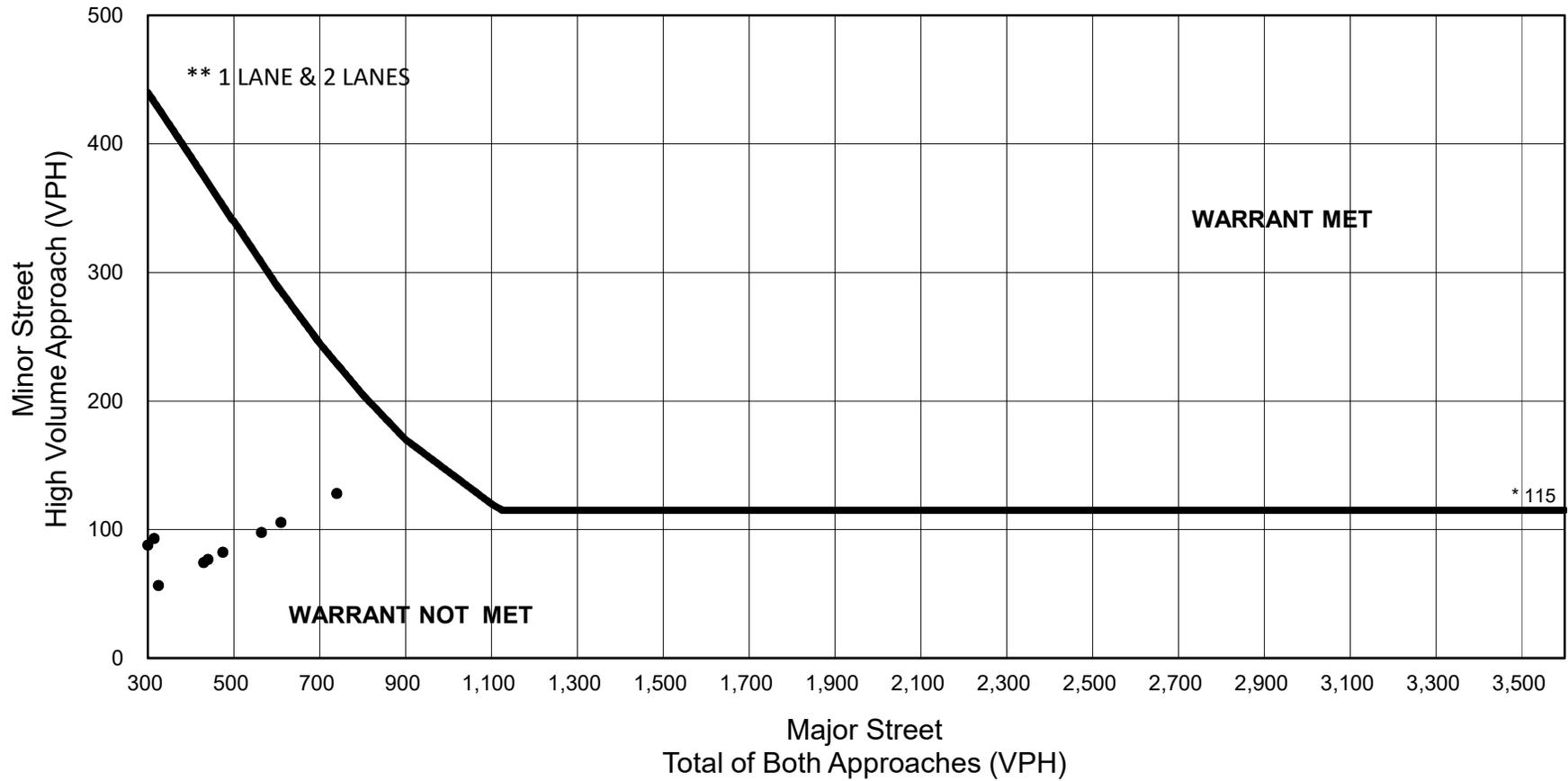
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 5th Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

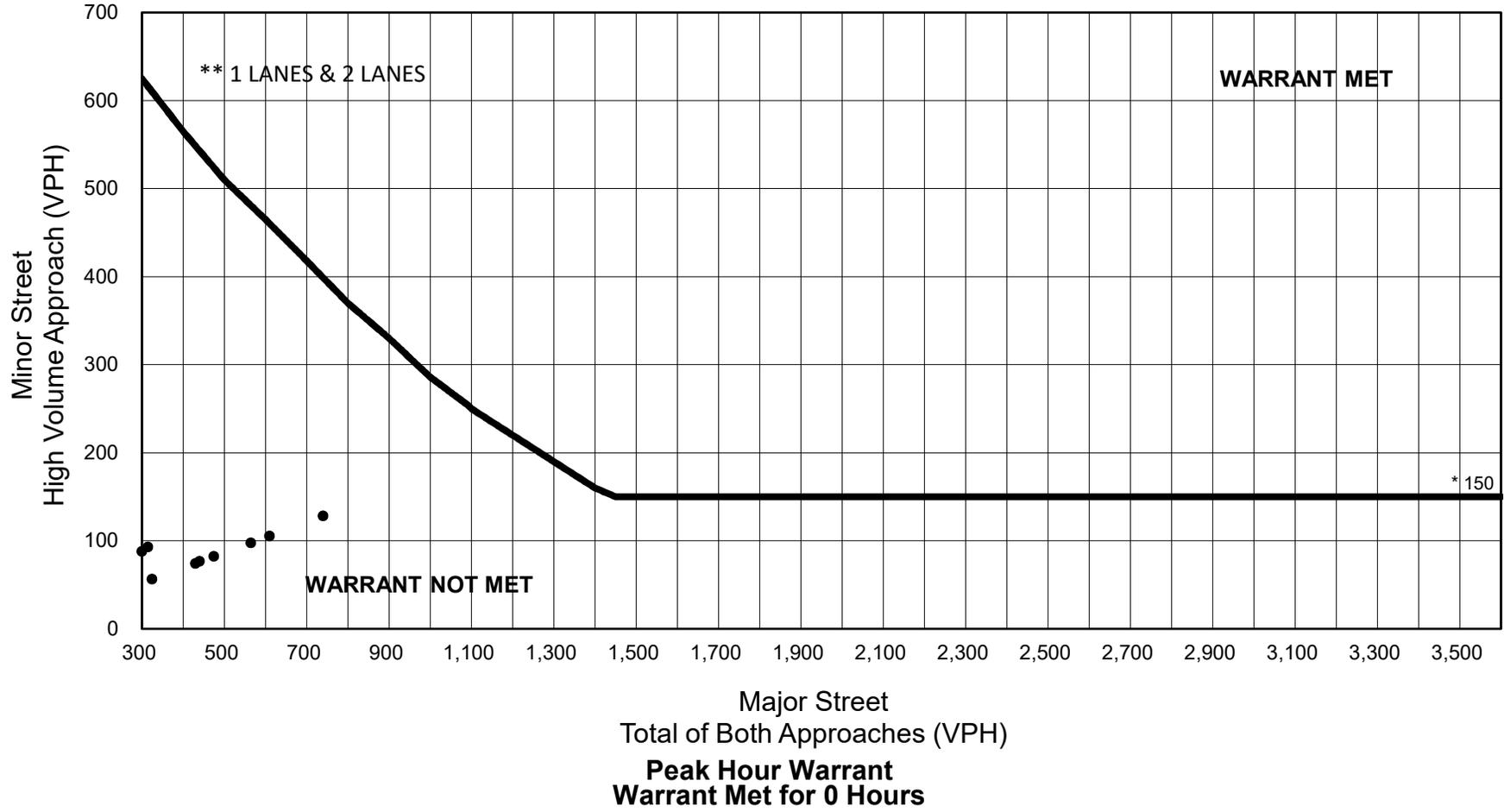
\* NOTE: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 4th Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

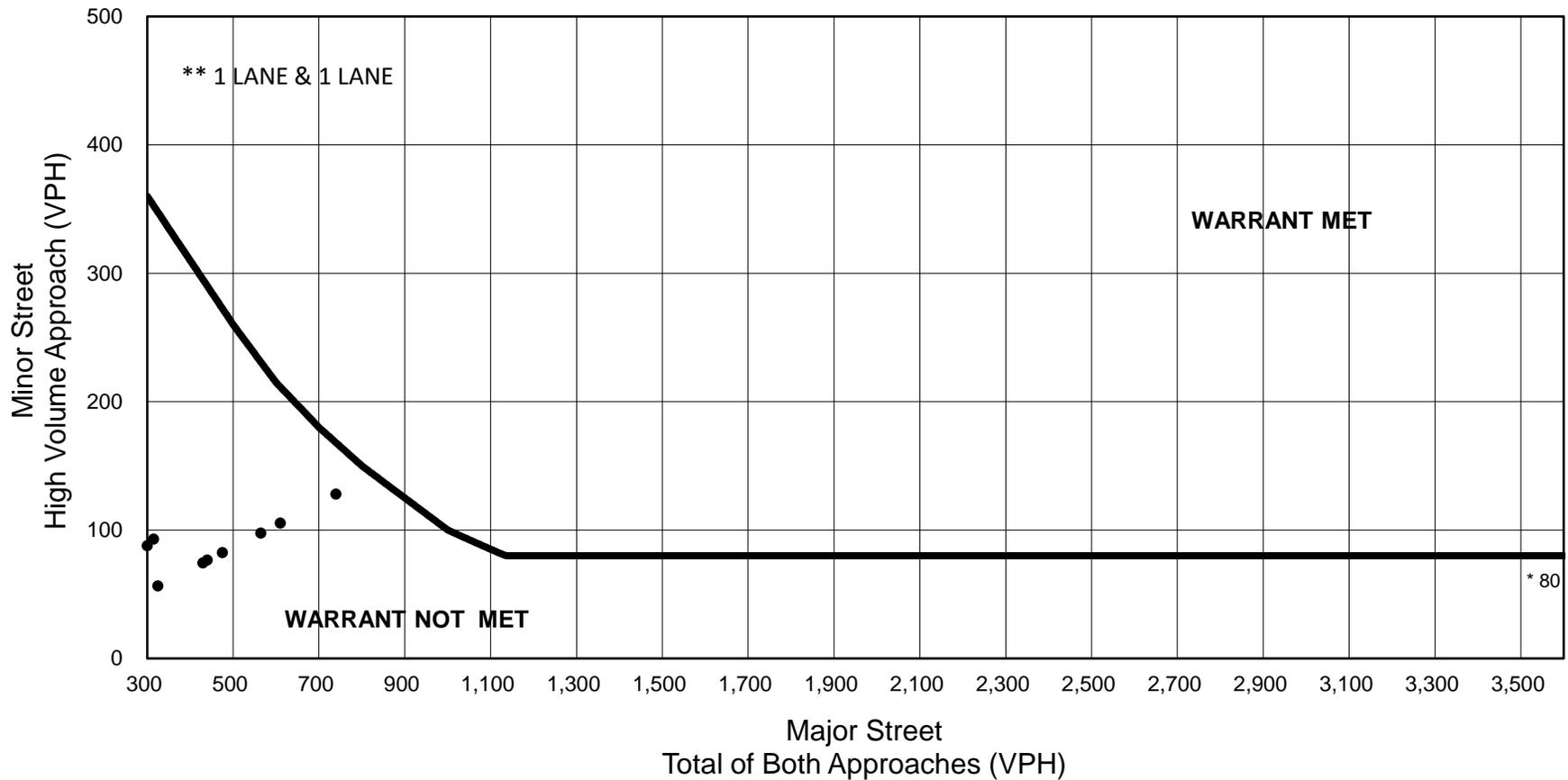
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 4th Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 1 Hour**

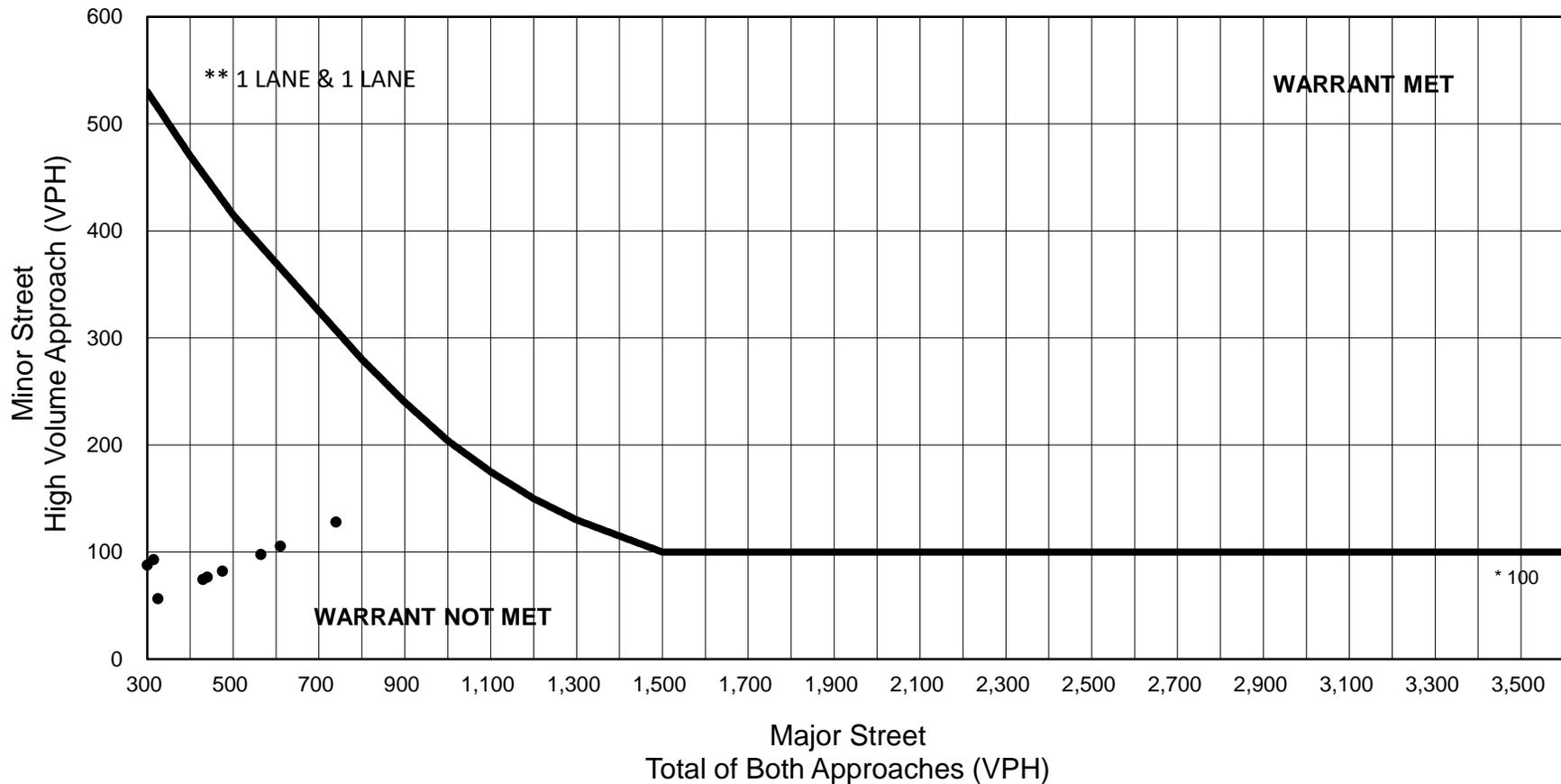
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 3rd Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

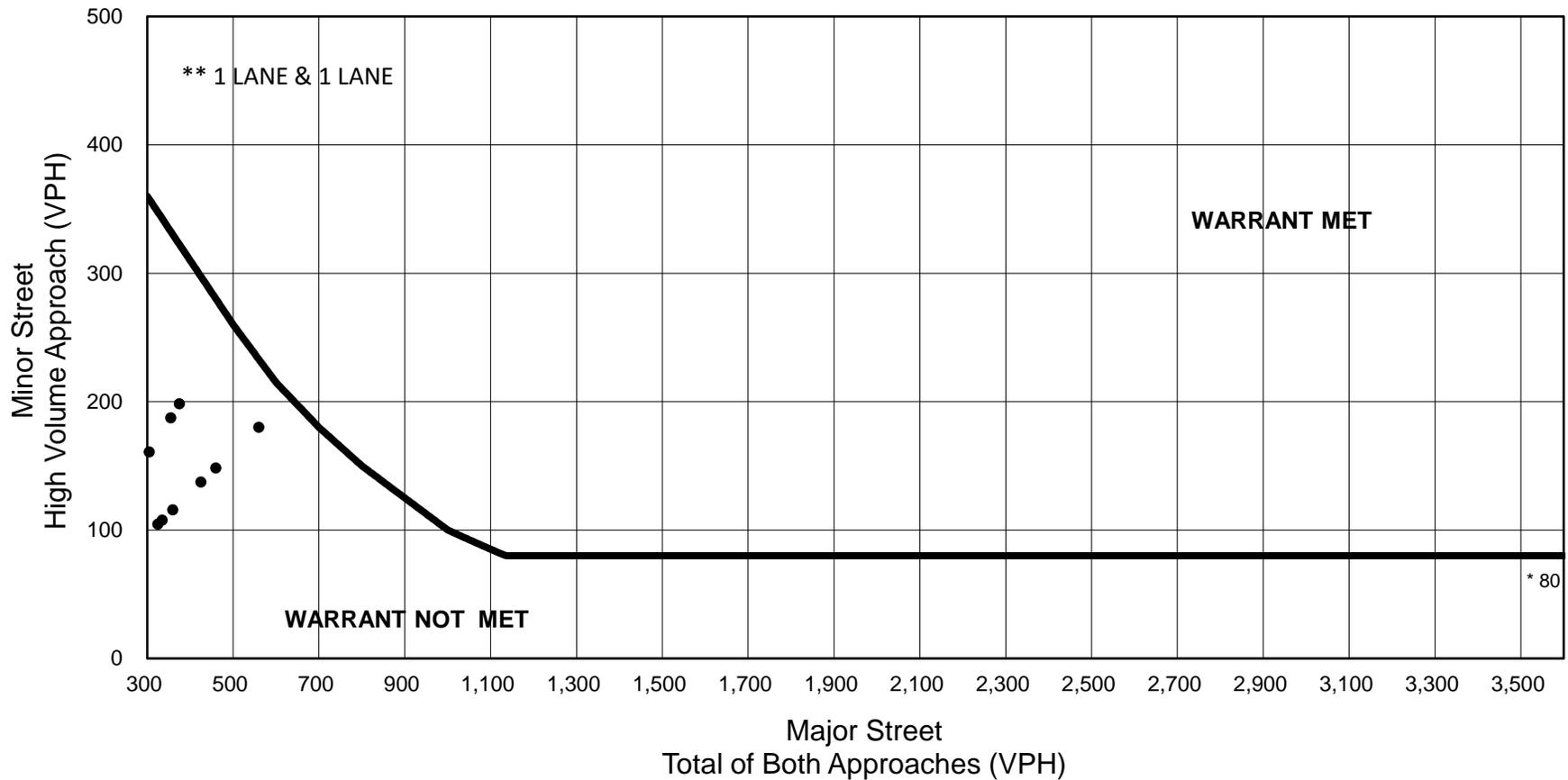
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 3rd Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 1 Hour**

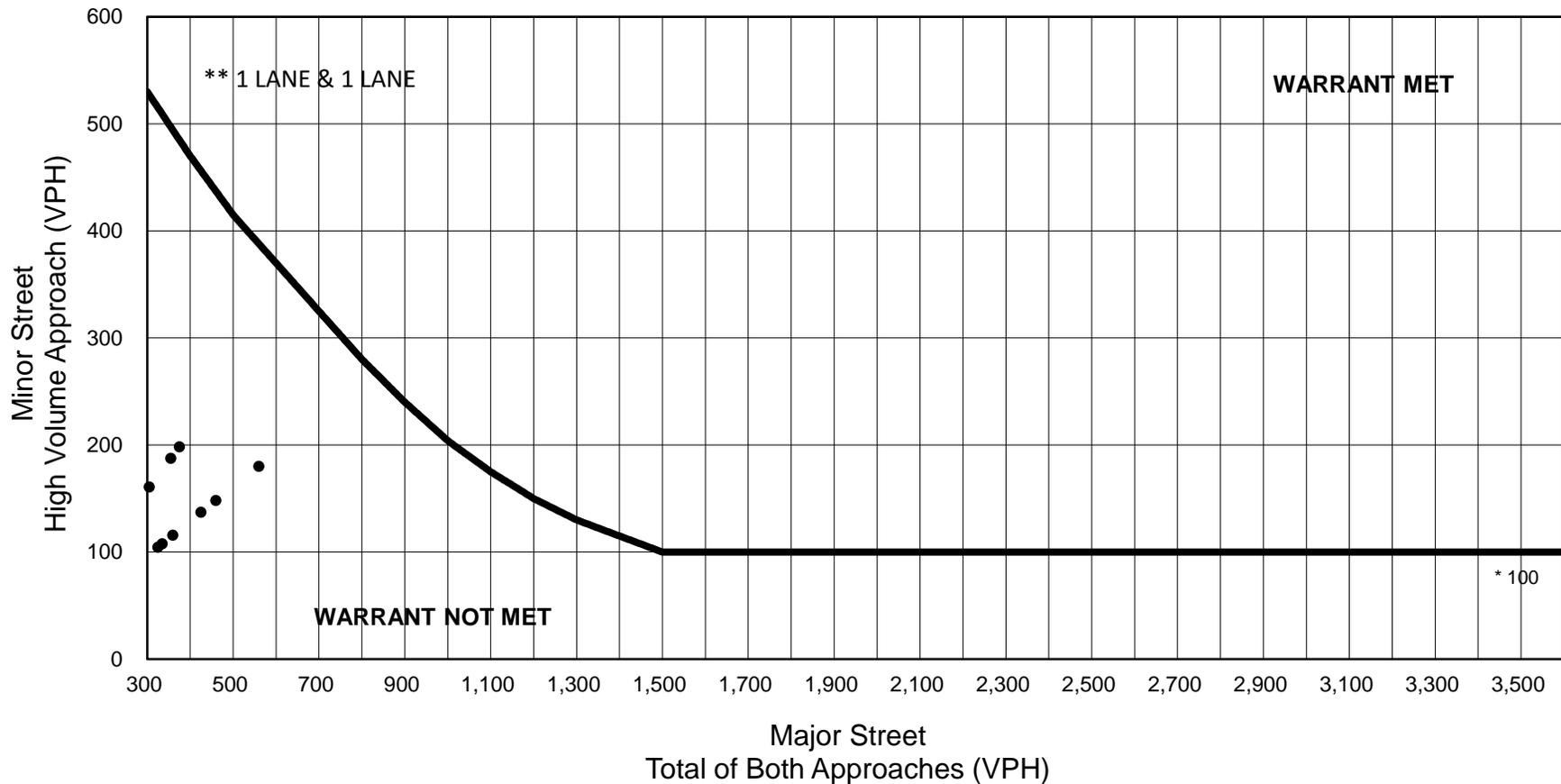
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 2nd Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

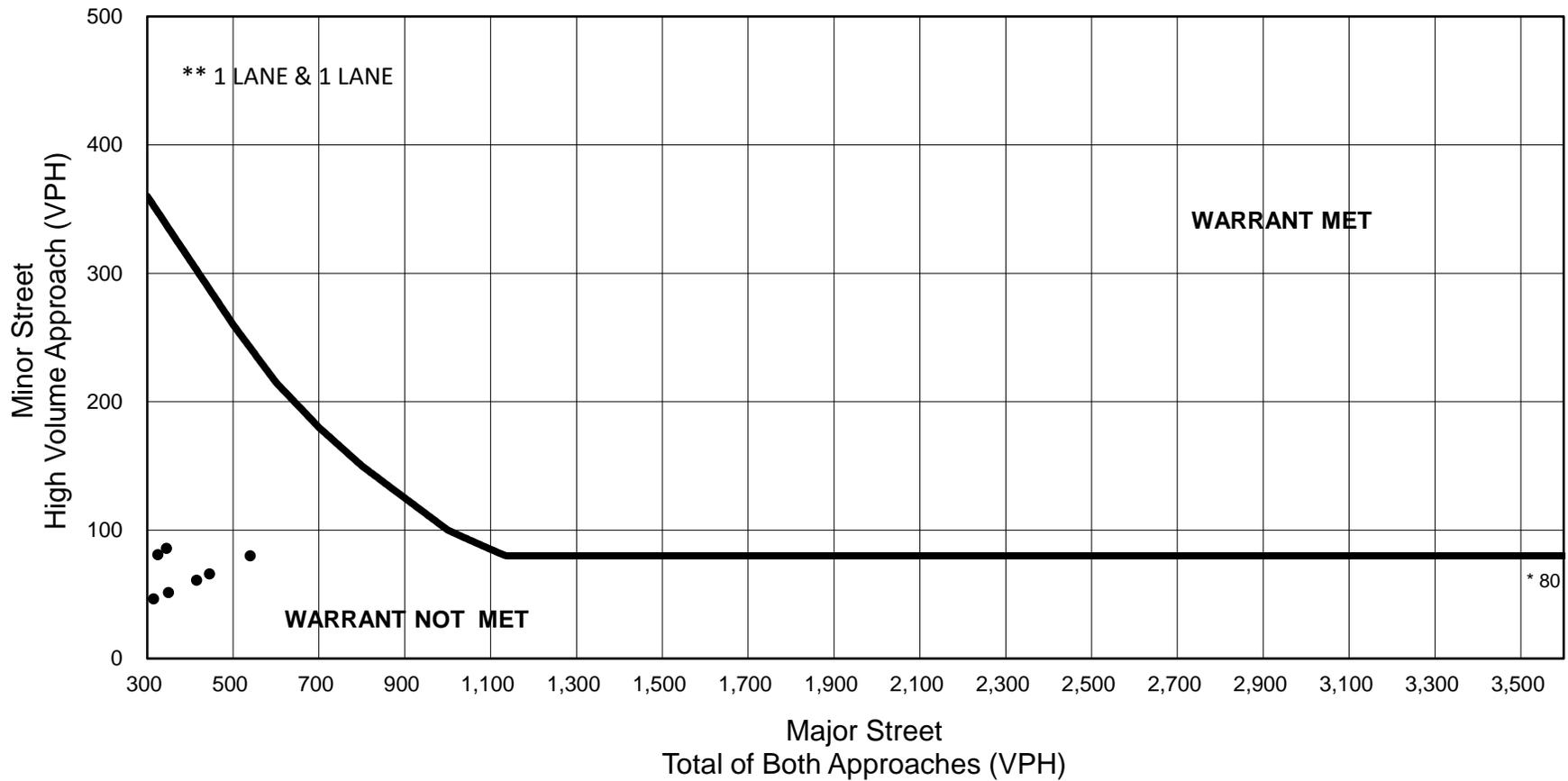
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 2nd Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

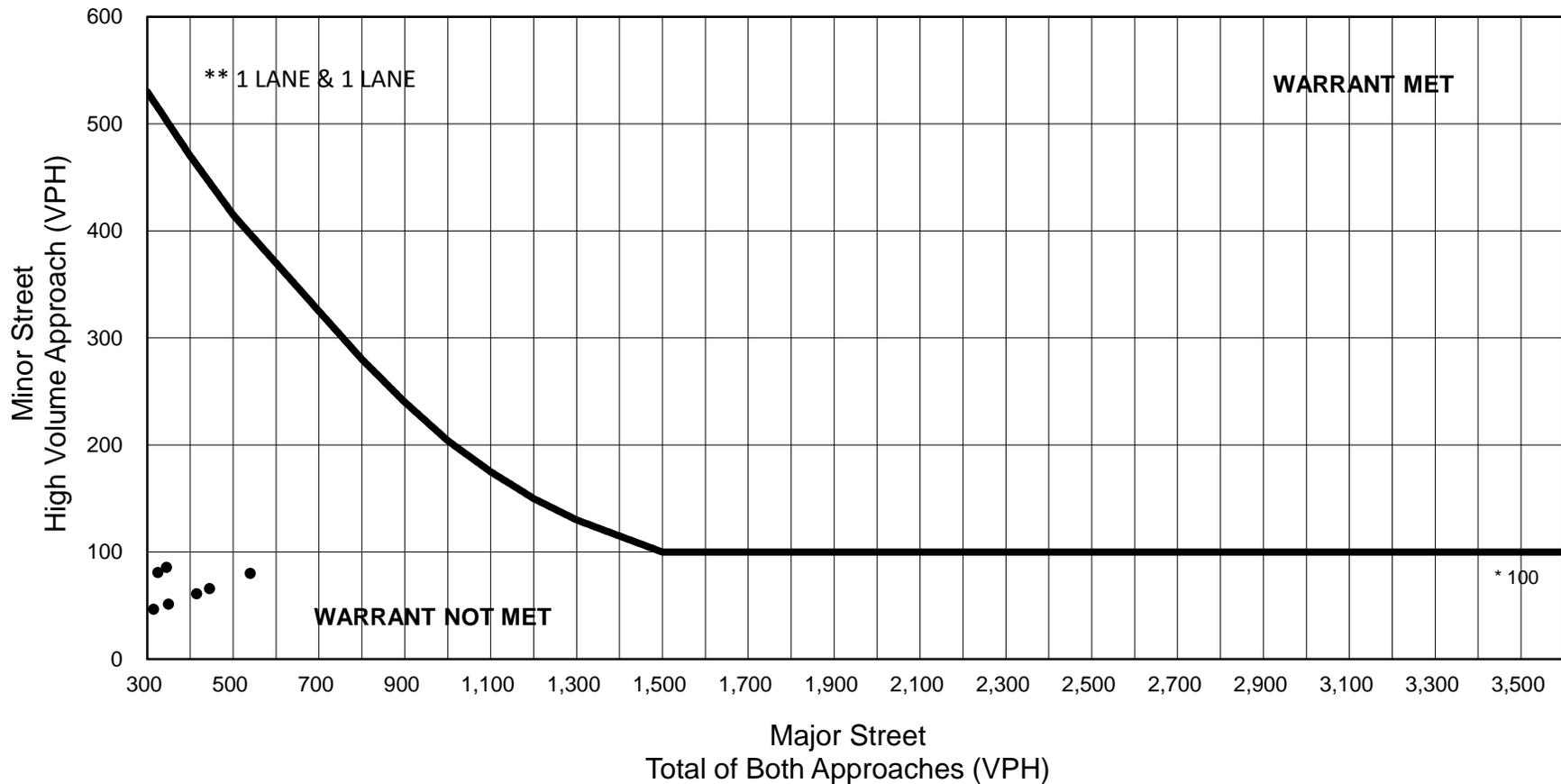
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 1st Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

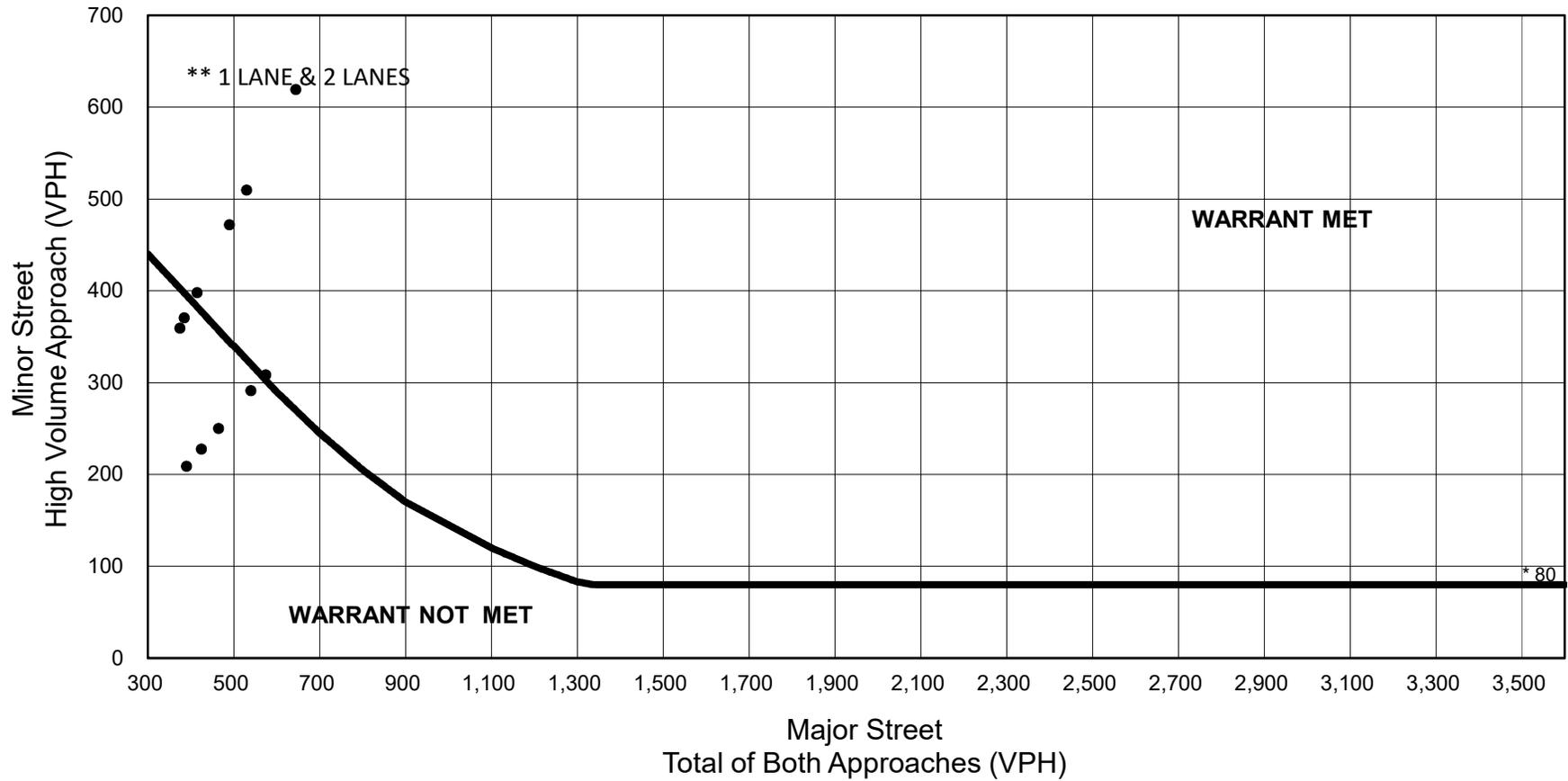
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 1st Avenue W  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 4 Hours**

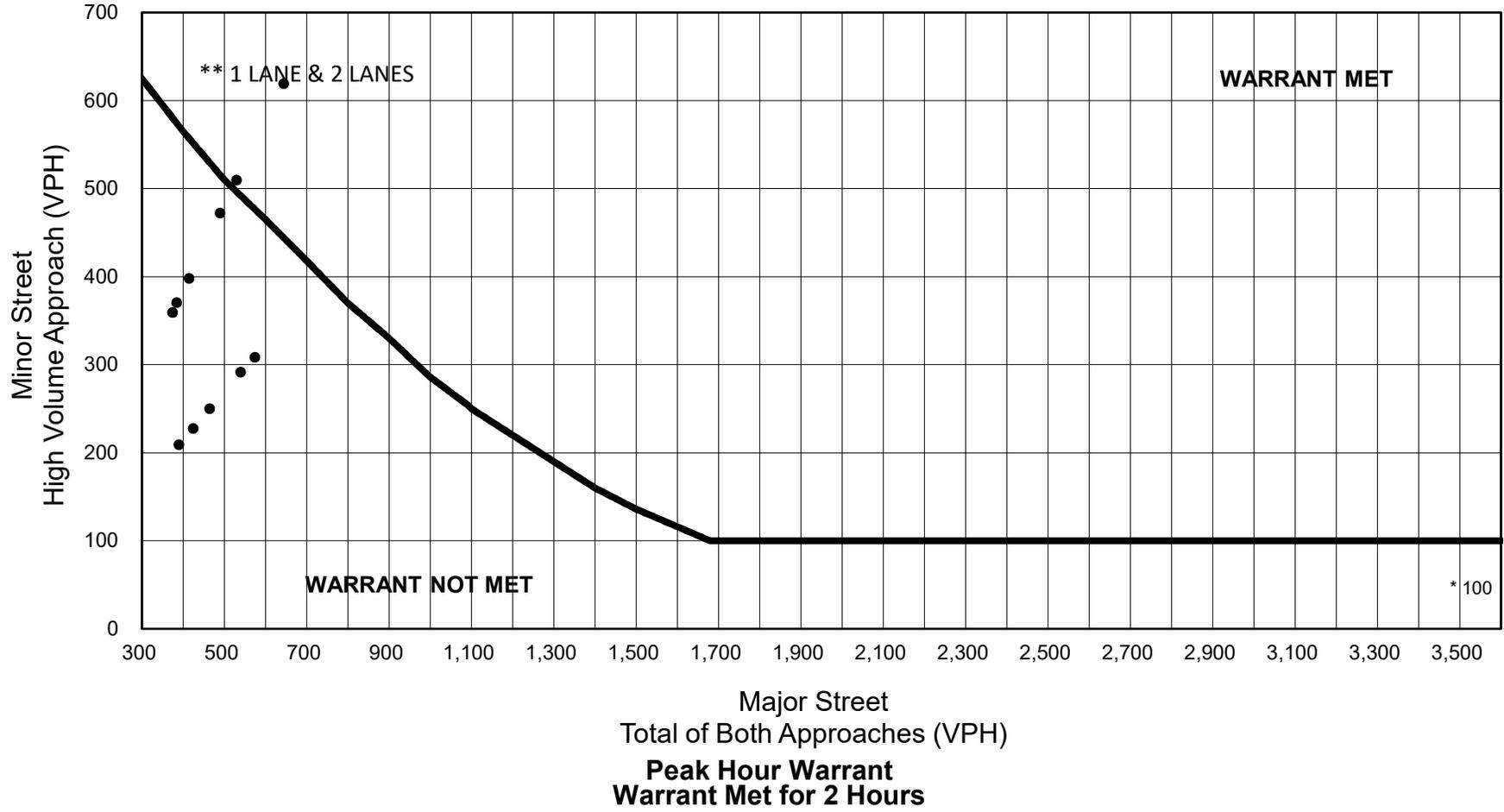
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & Lake Avenue  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

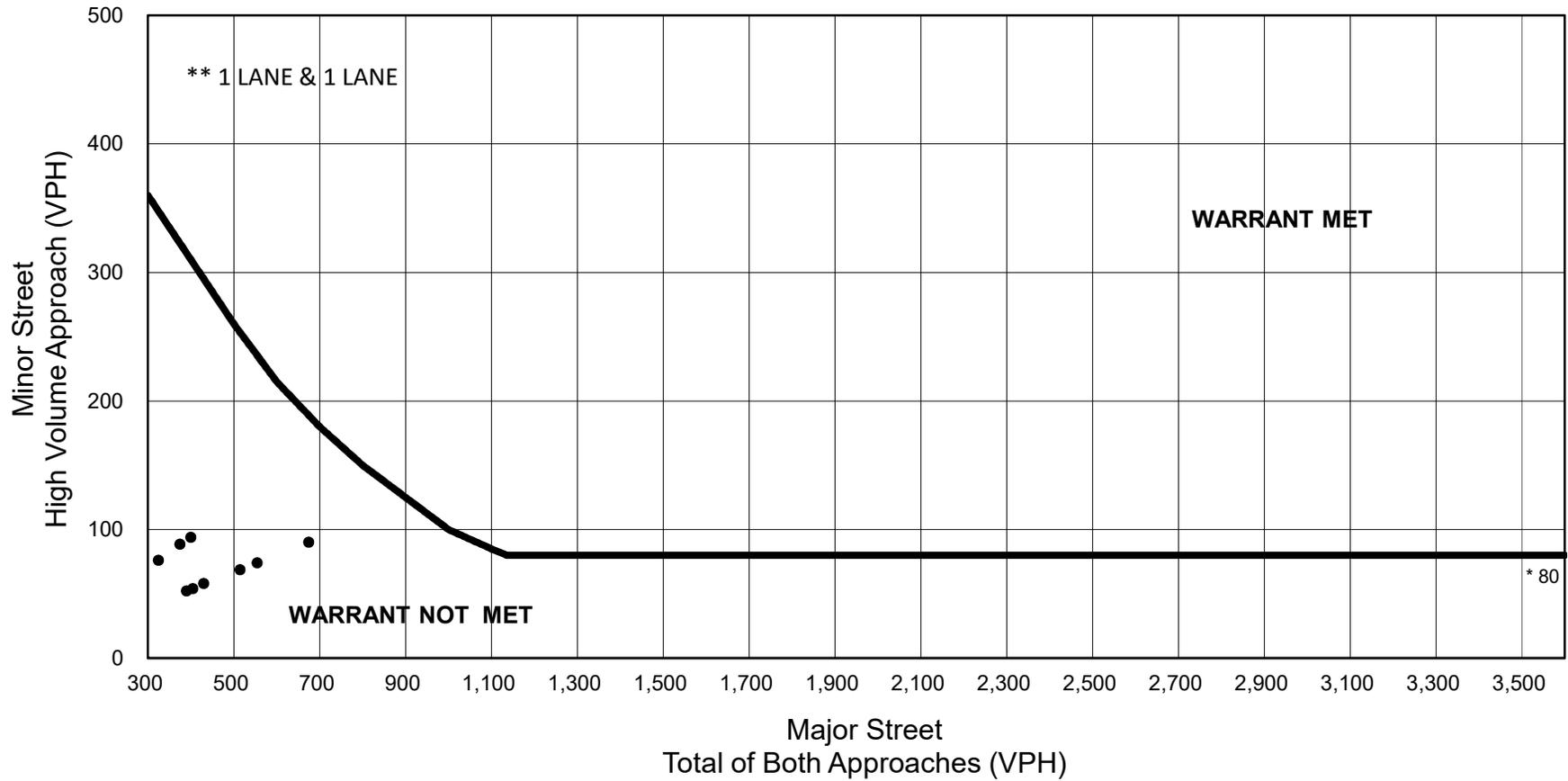
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & Lake Avenue  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

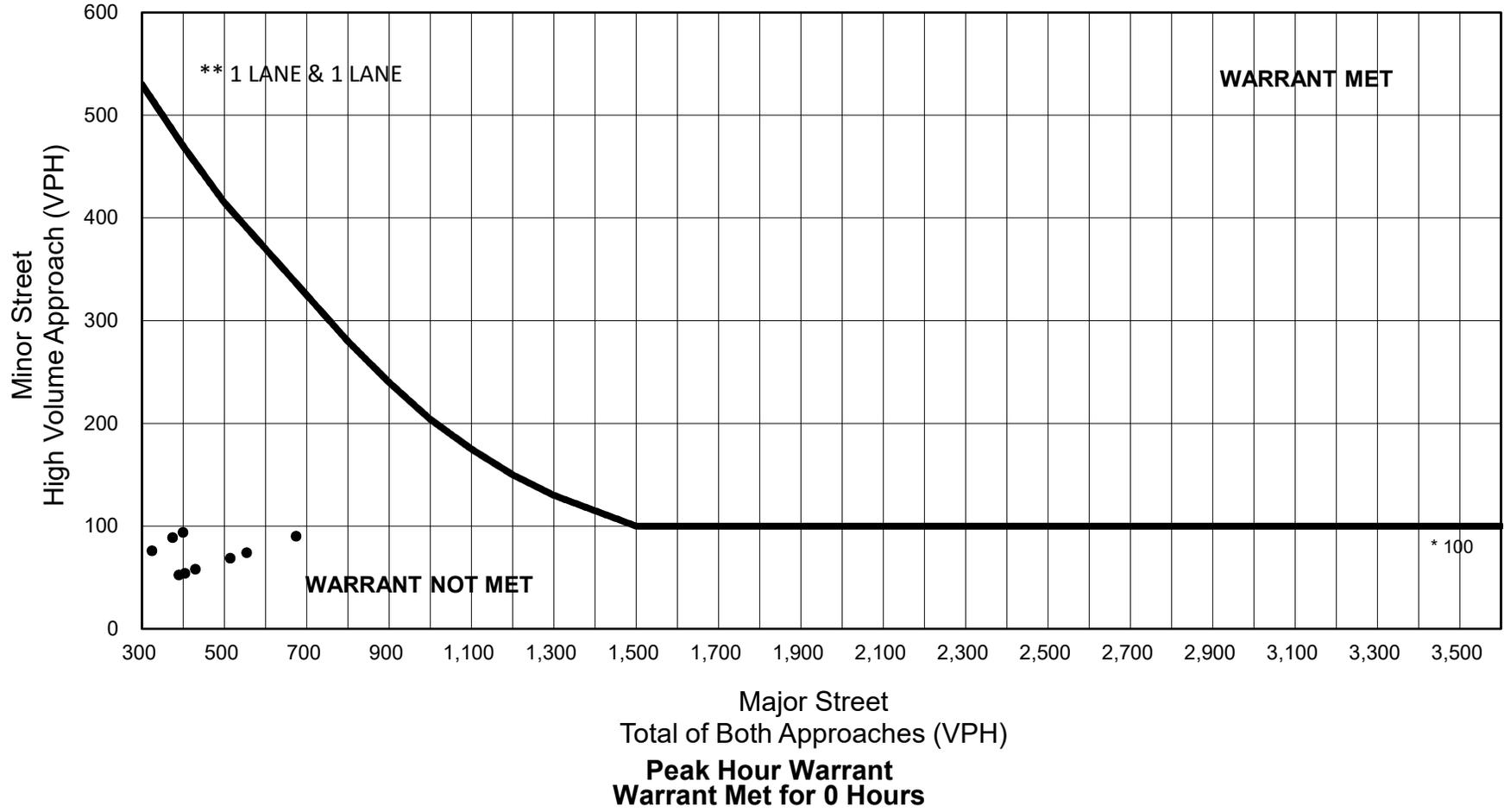
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 1st Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

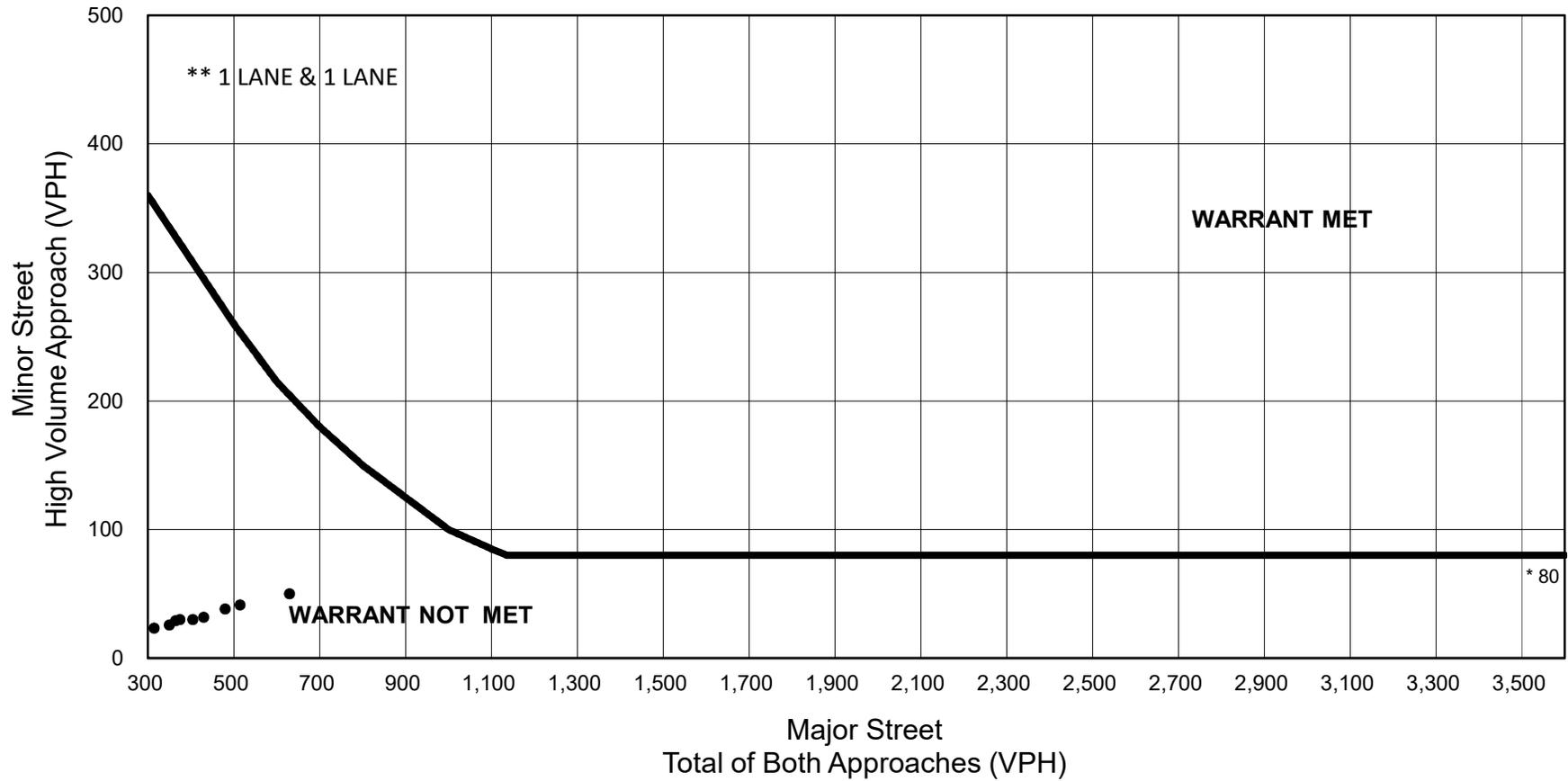
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 1st Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

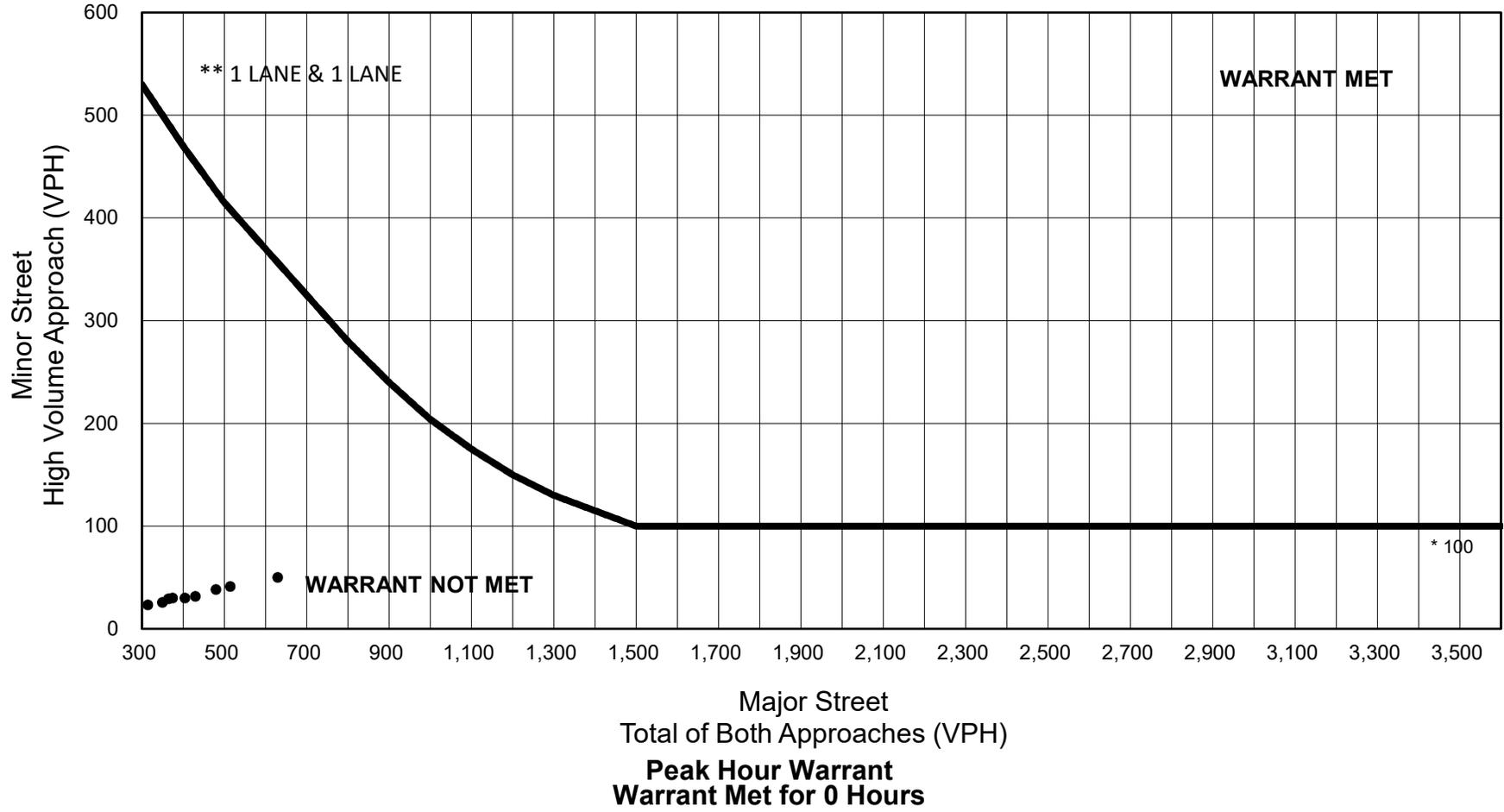
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 2nd Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

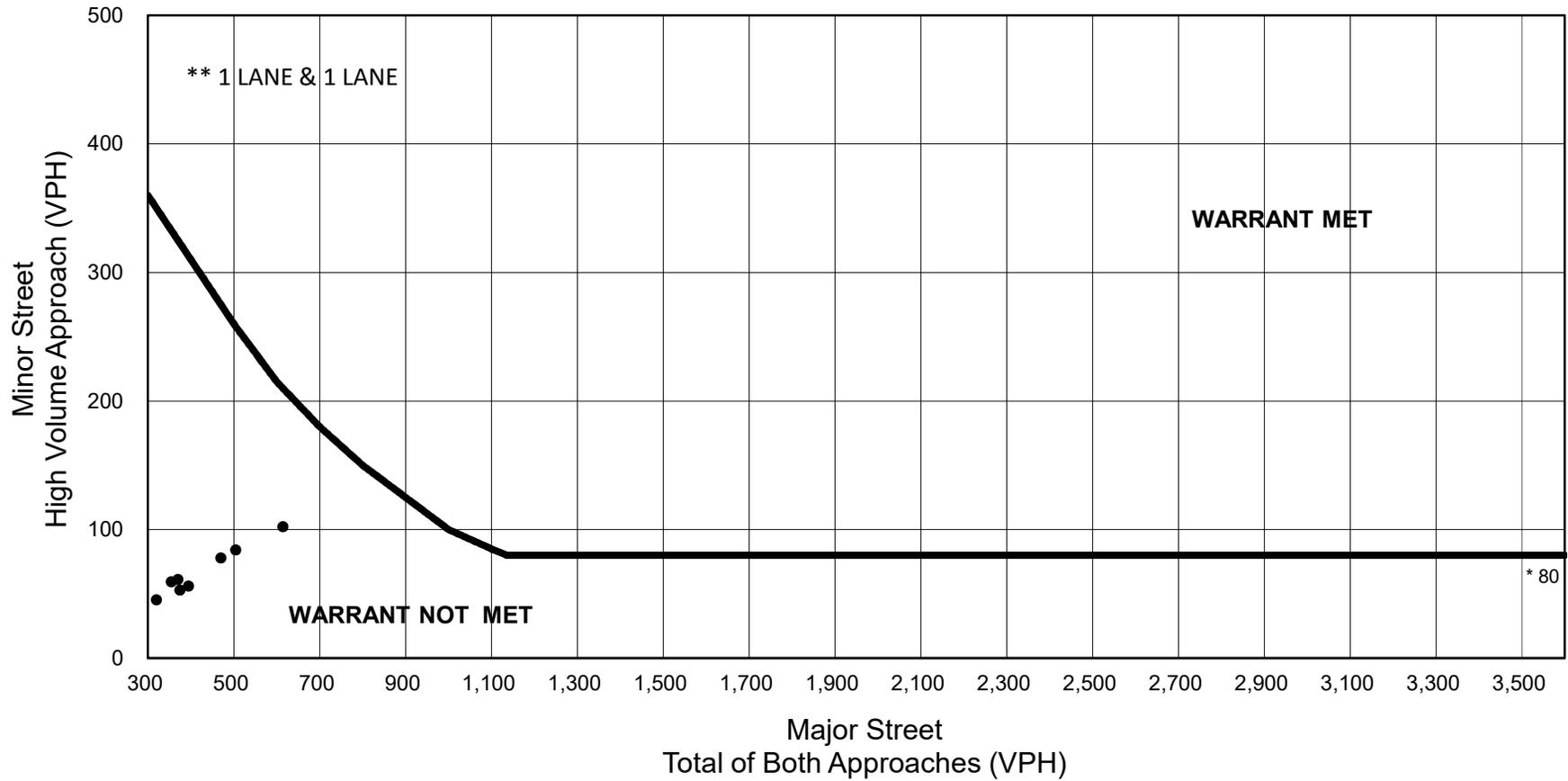
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 2nd Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 1 Hour**

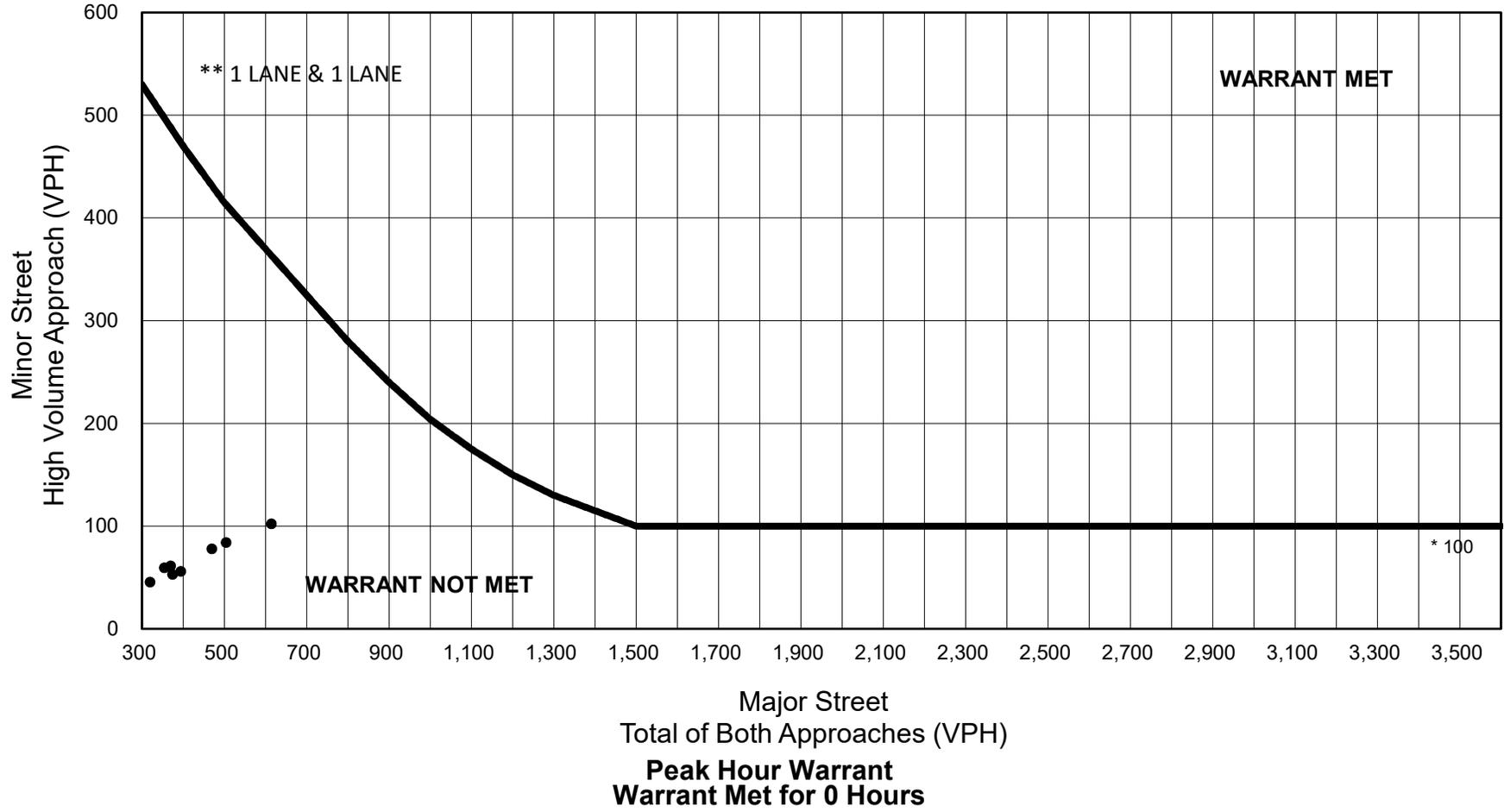
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 3rd Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

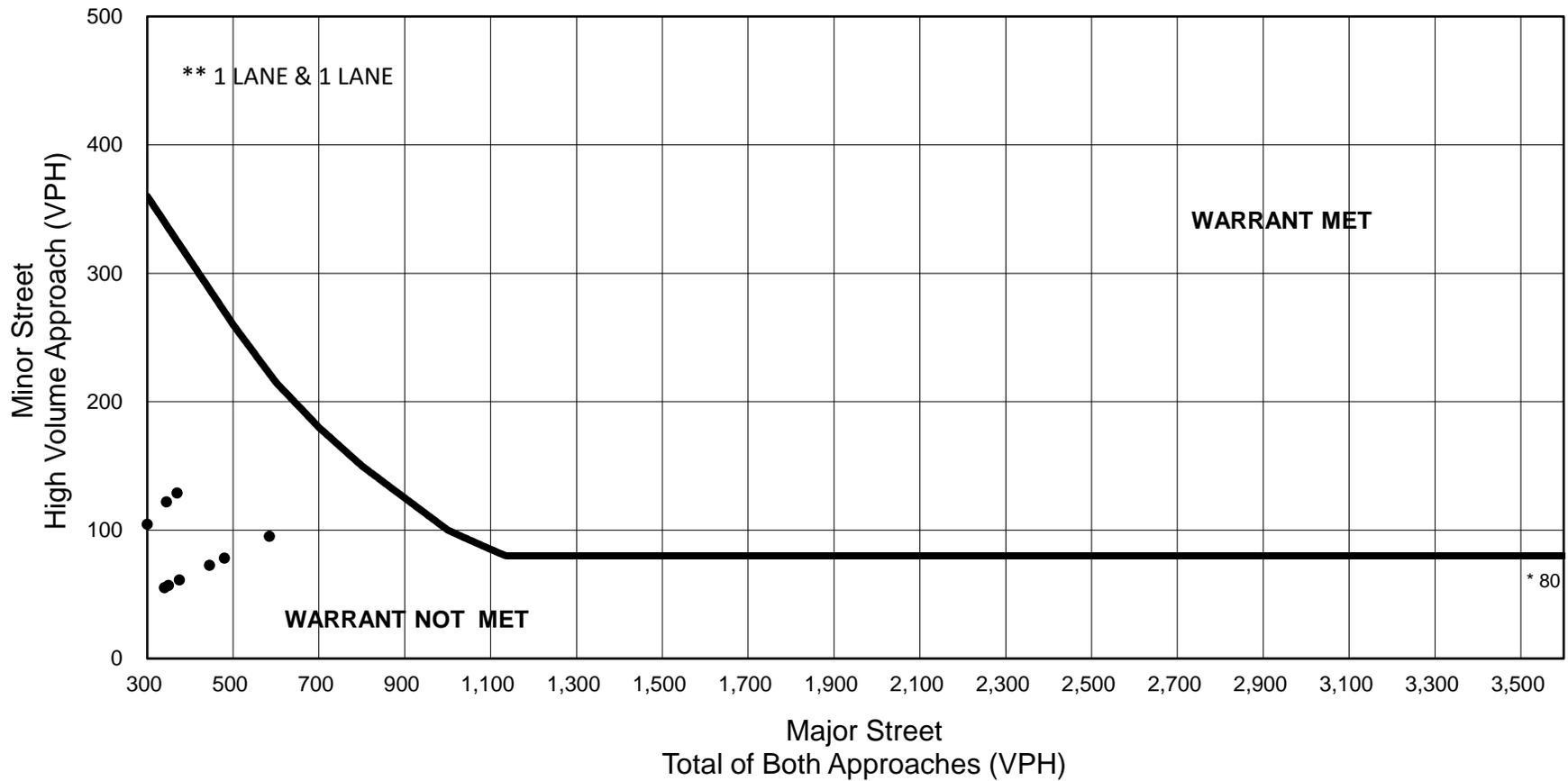
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 3rd Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 5 Hours**

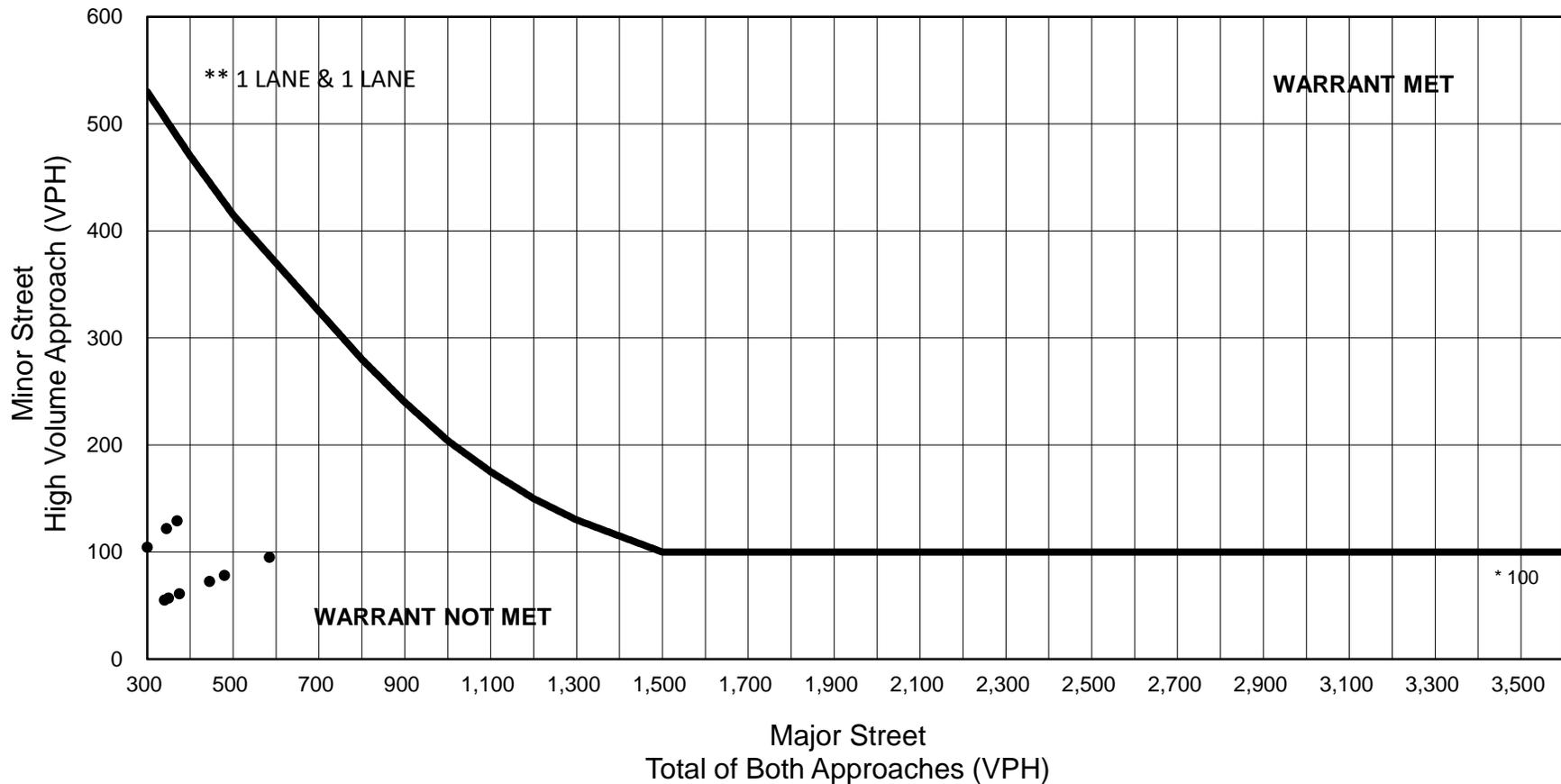
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 4th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



Major Street  
Total of Both Approaches (VPH)

**Peak Hour Warrant  
Warrant Met for 1 Hour**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

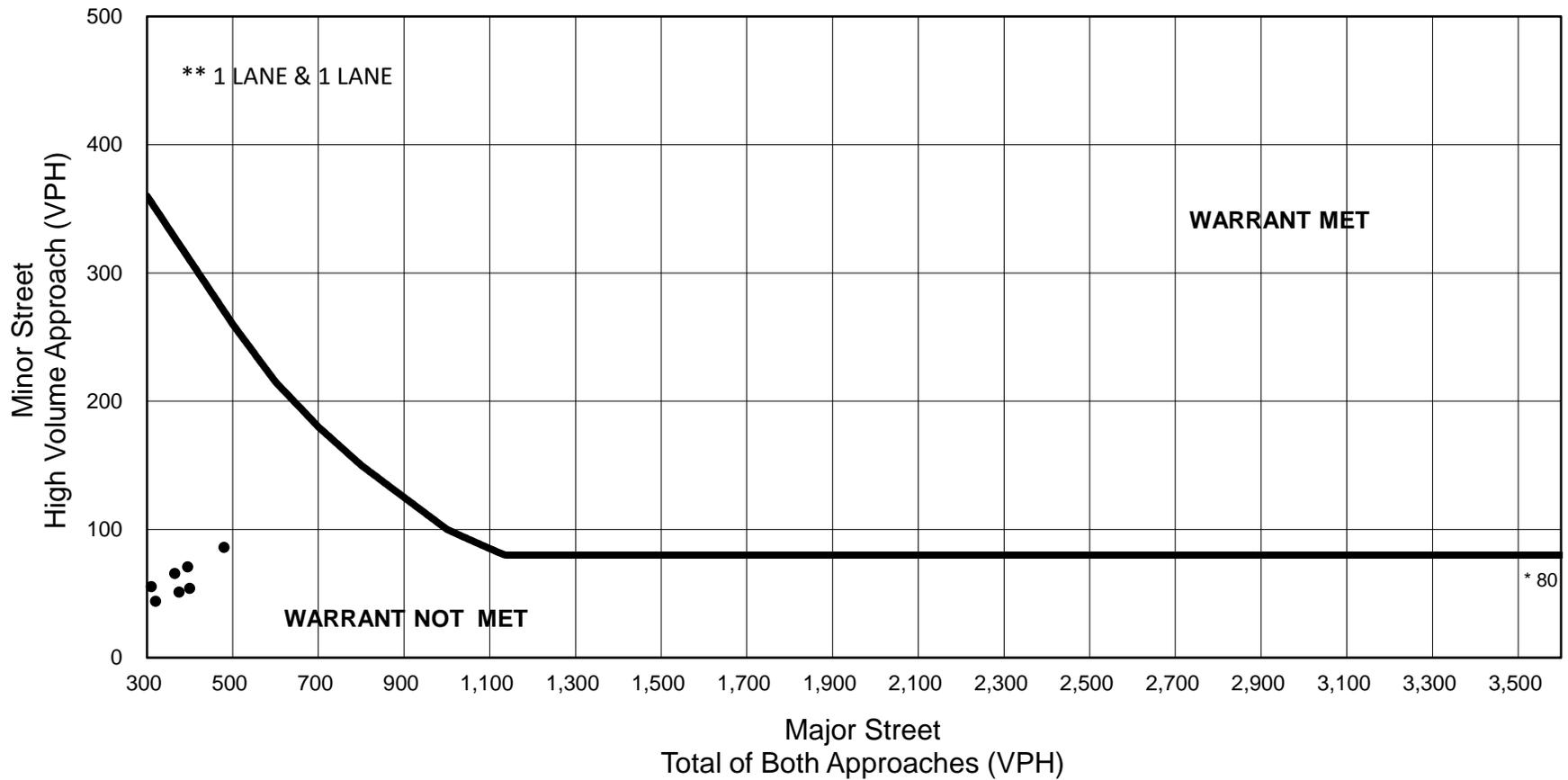
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 4th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 1 Hour**

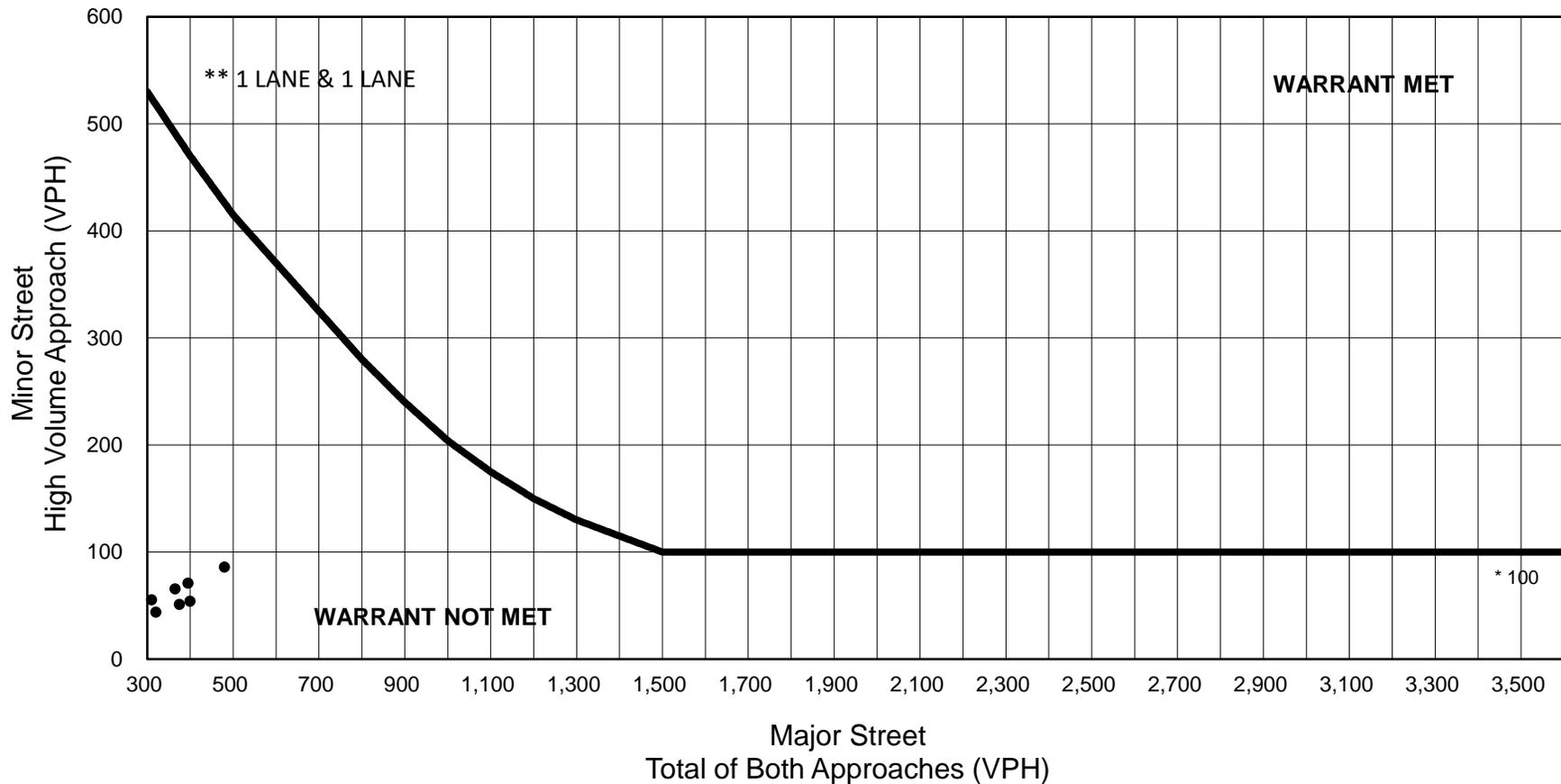
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 8th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

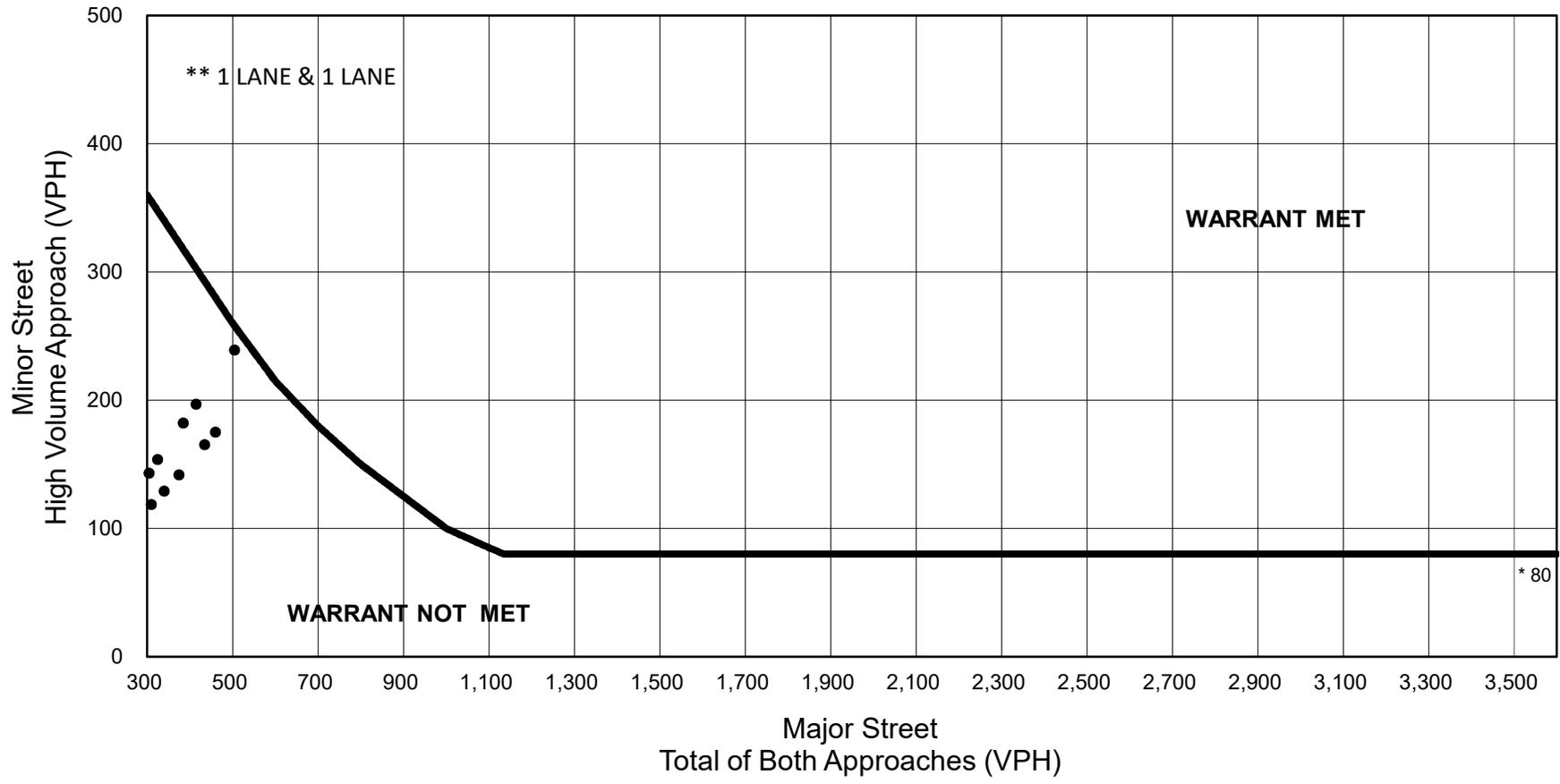
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 8th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 10 Hours**

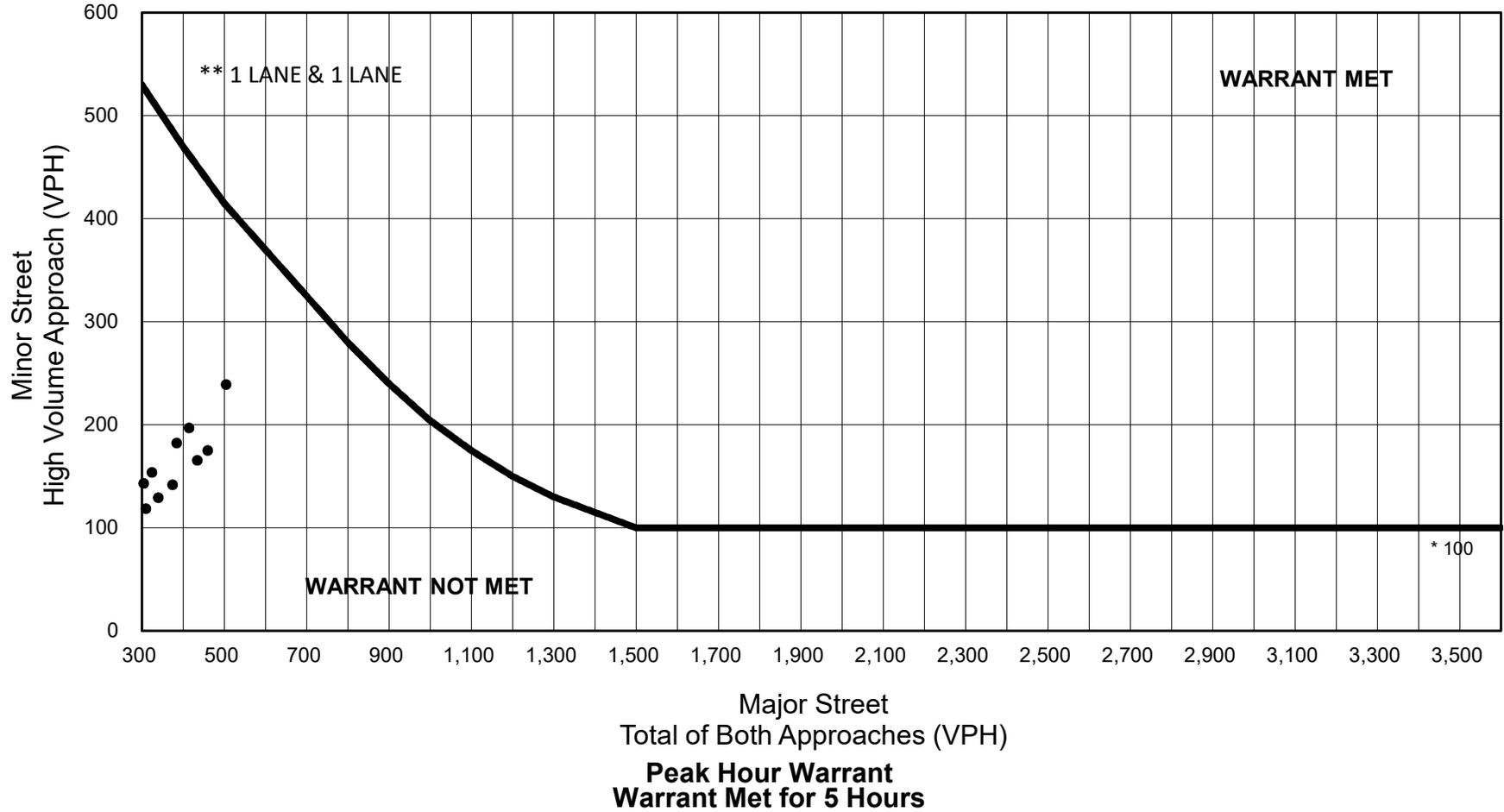
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 10th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

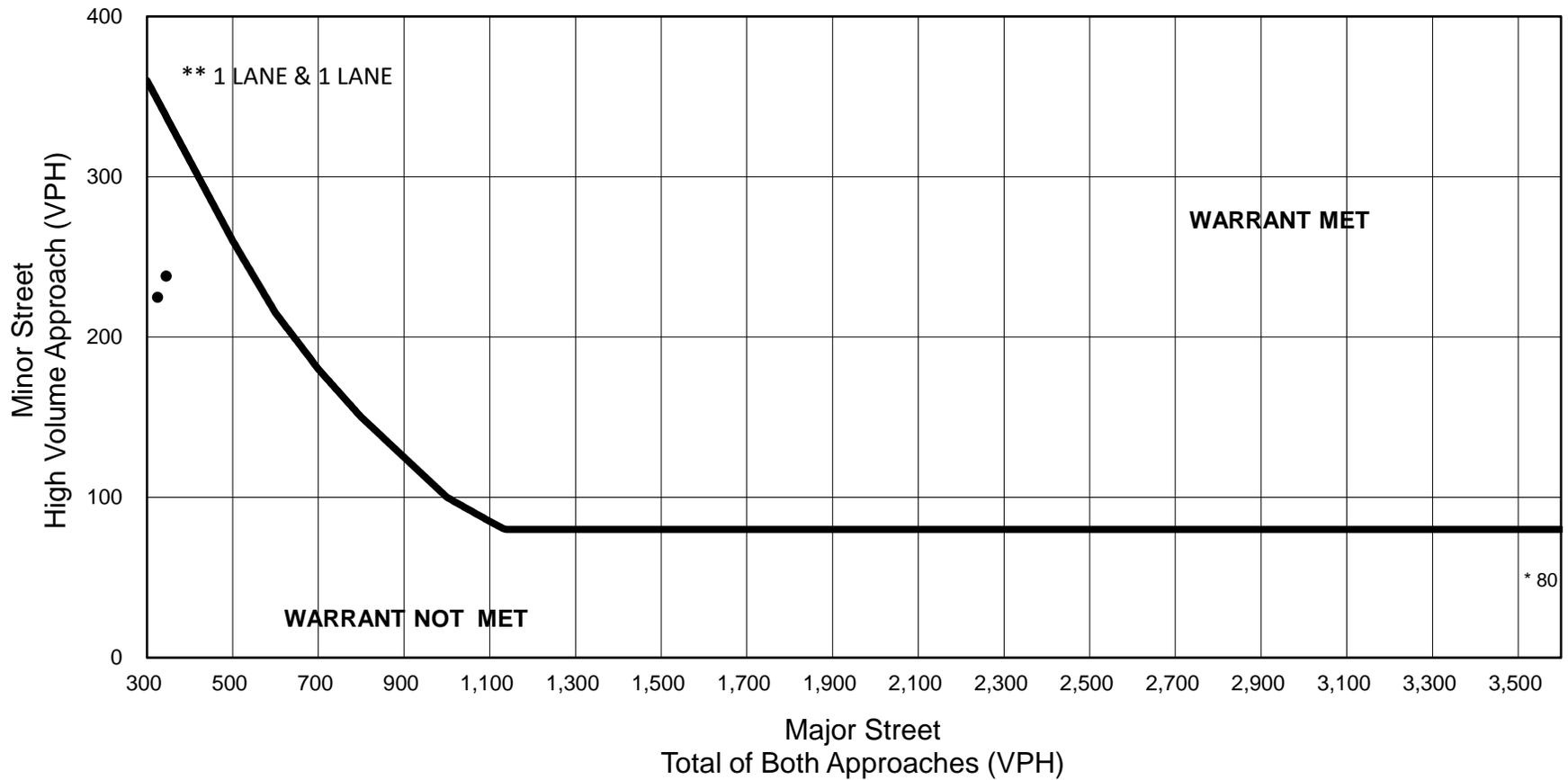
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 10th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 9 Hours**

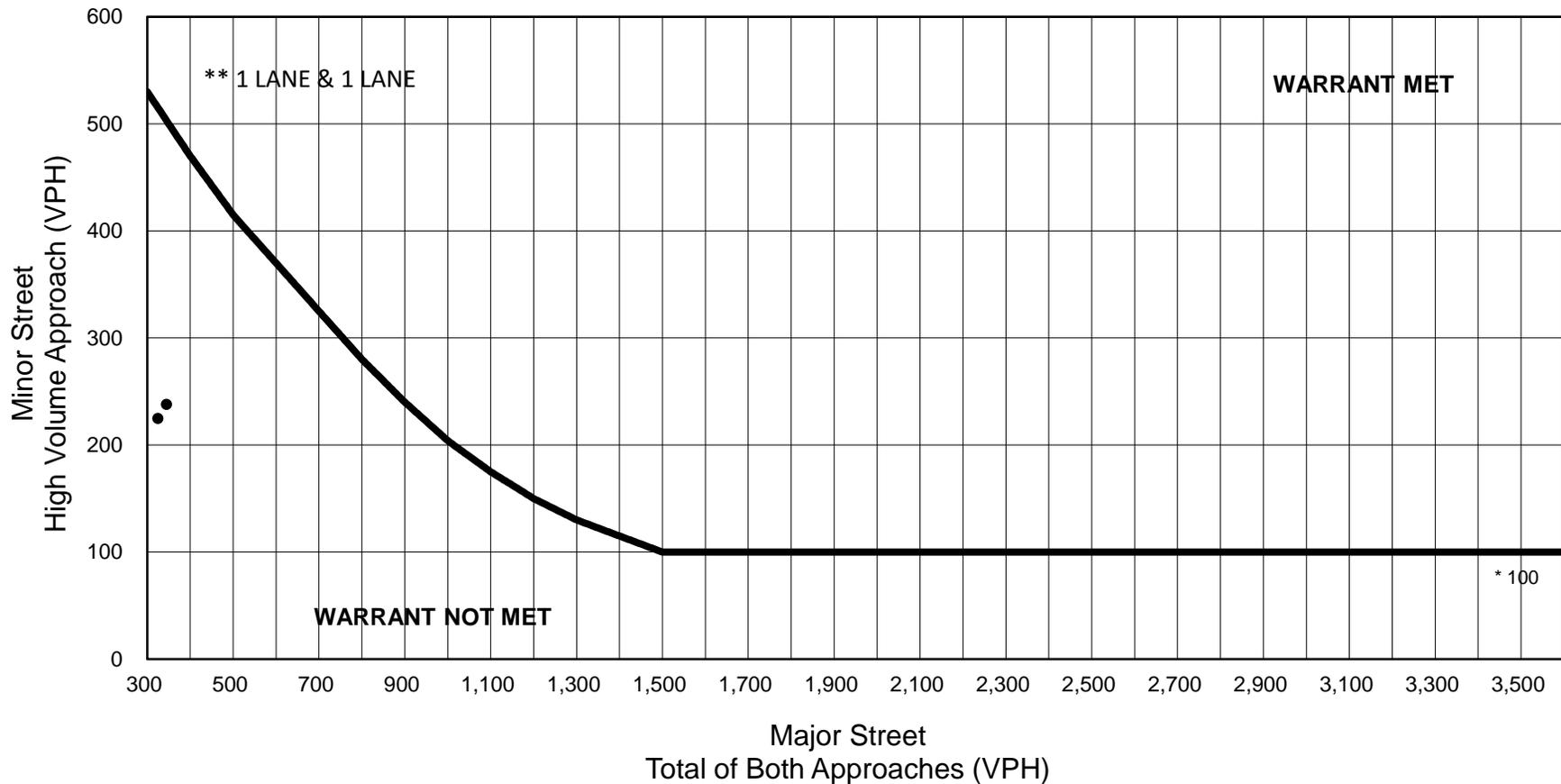
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 12th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 5 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

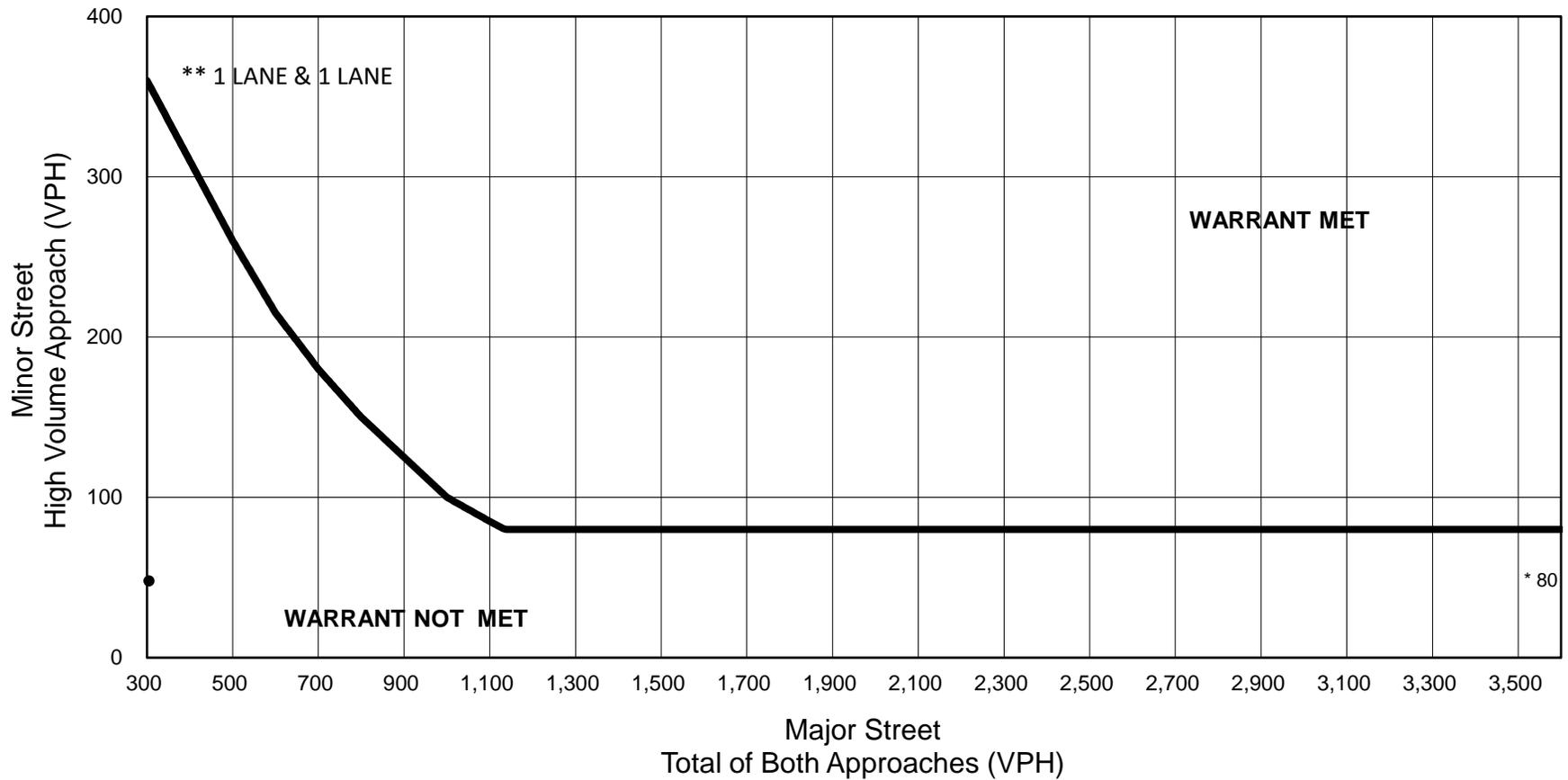
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 12th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

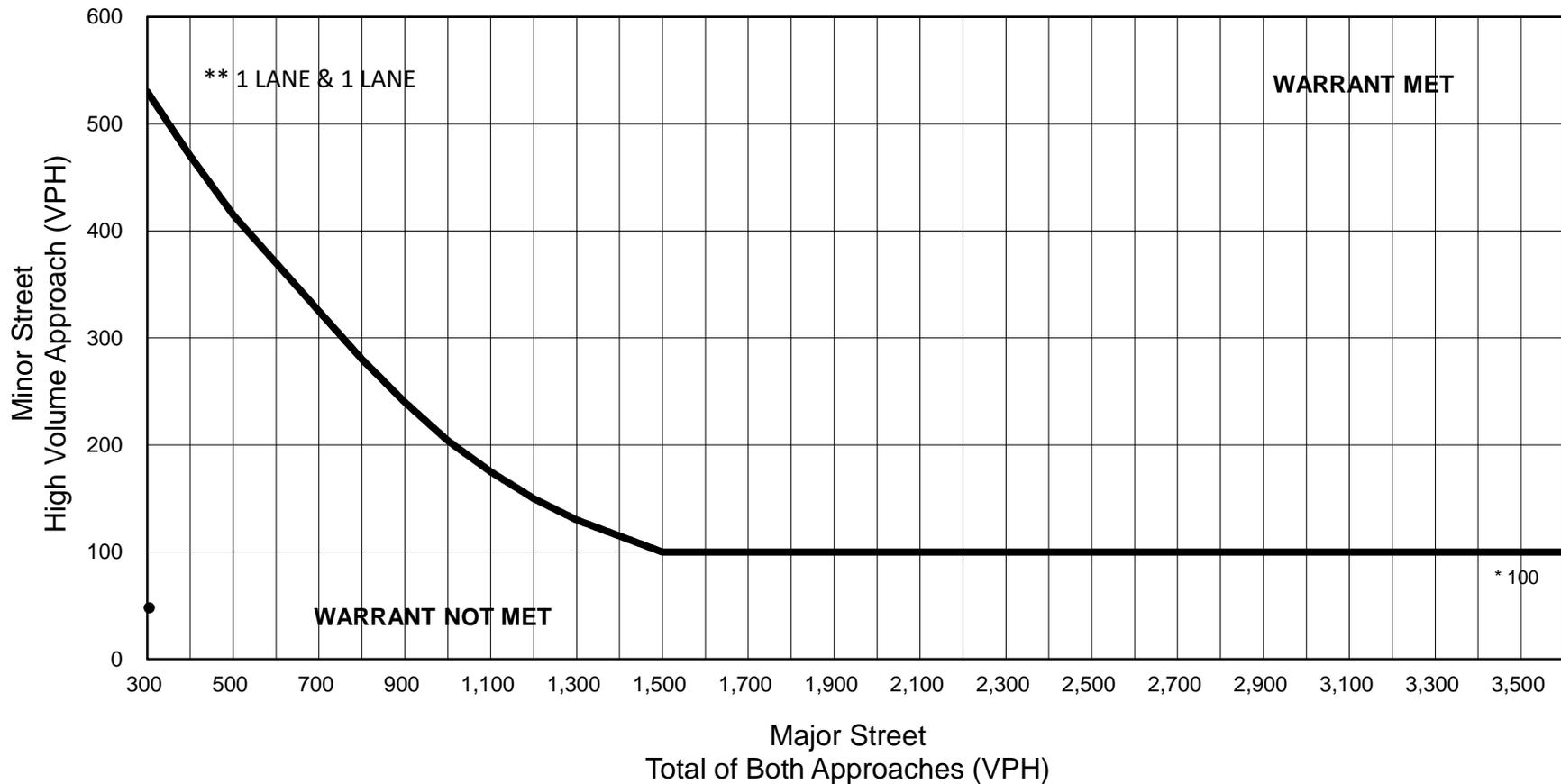
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 14th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

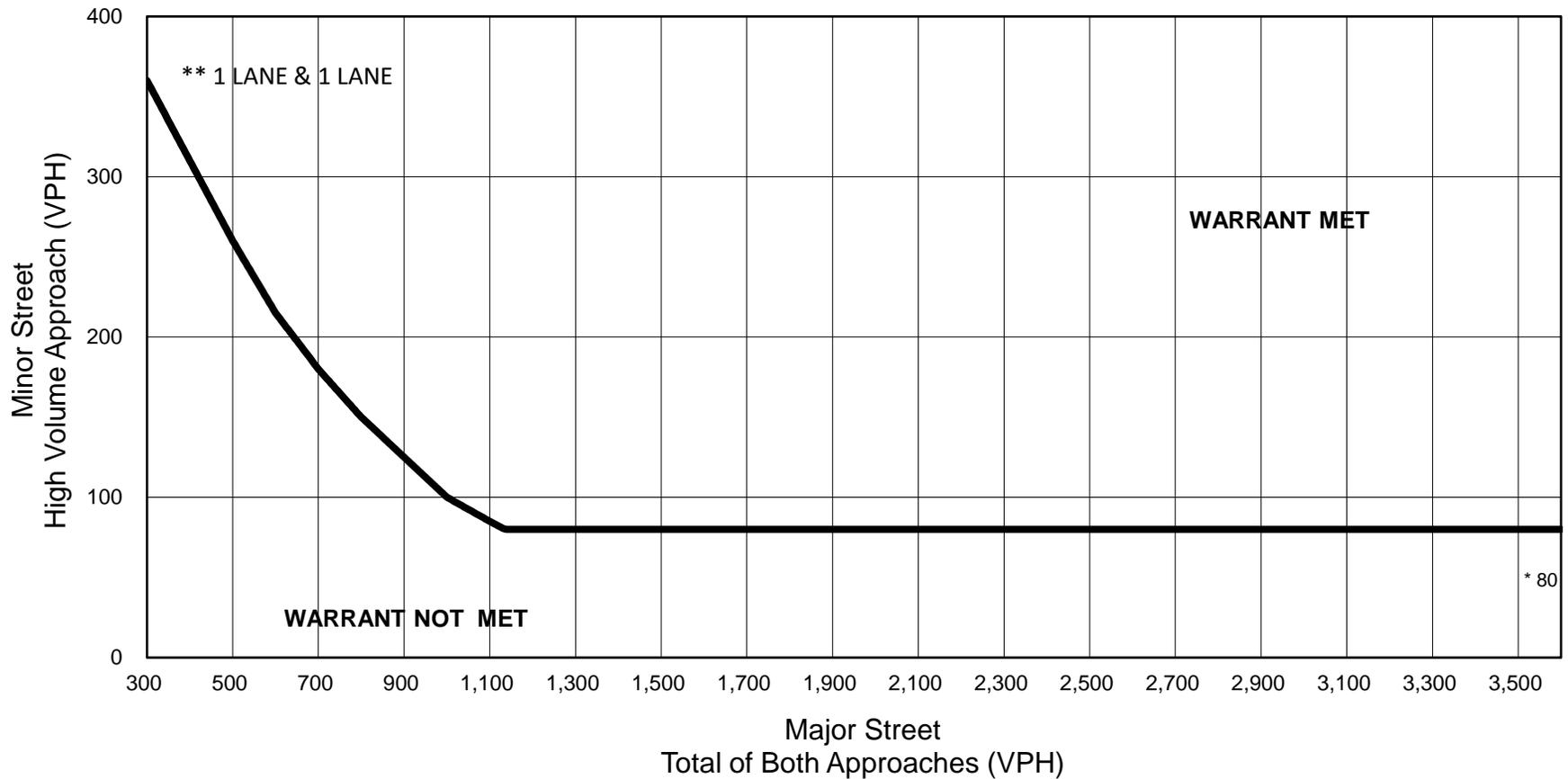
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 14th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

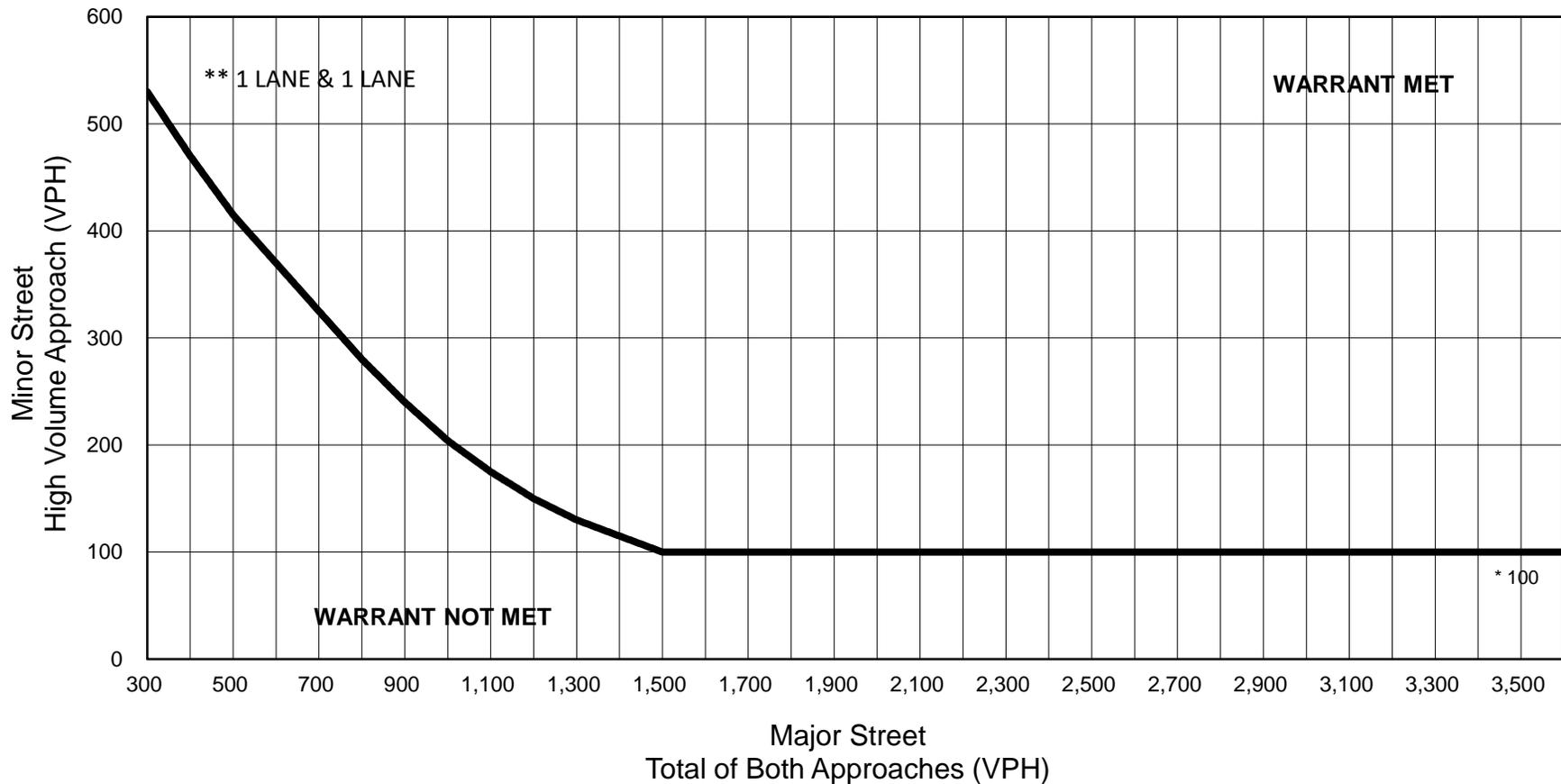
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 19th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

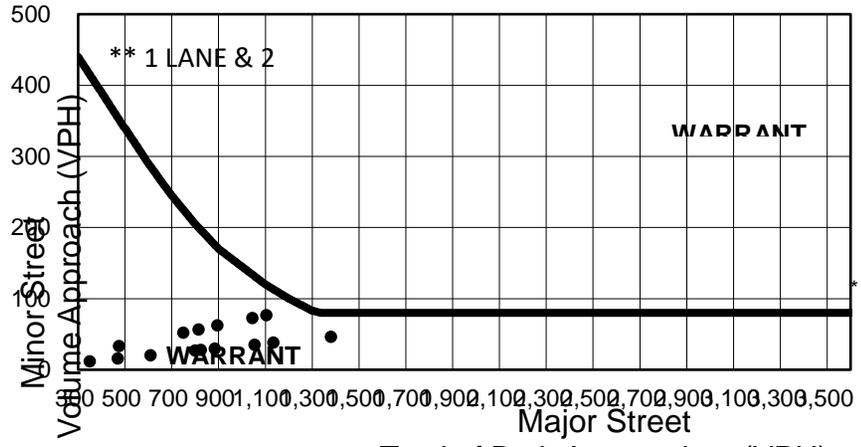
\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 19th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

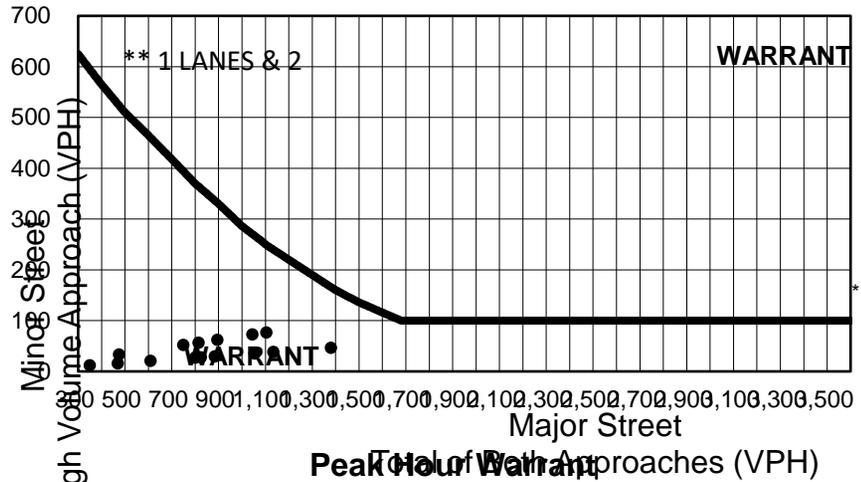
**WARRANT 3**





High Volume Approach (VPH)  
 Minor Street Volume Approach (VPH)  
 Major Street Volume Approach (VPH)  
 Total of Both Approaches (VPH)  
 \* NOTE: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

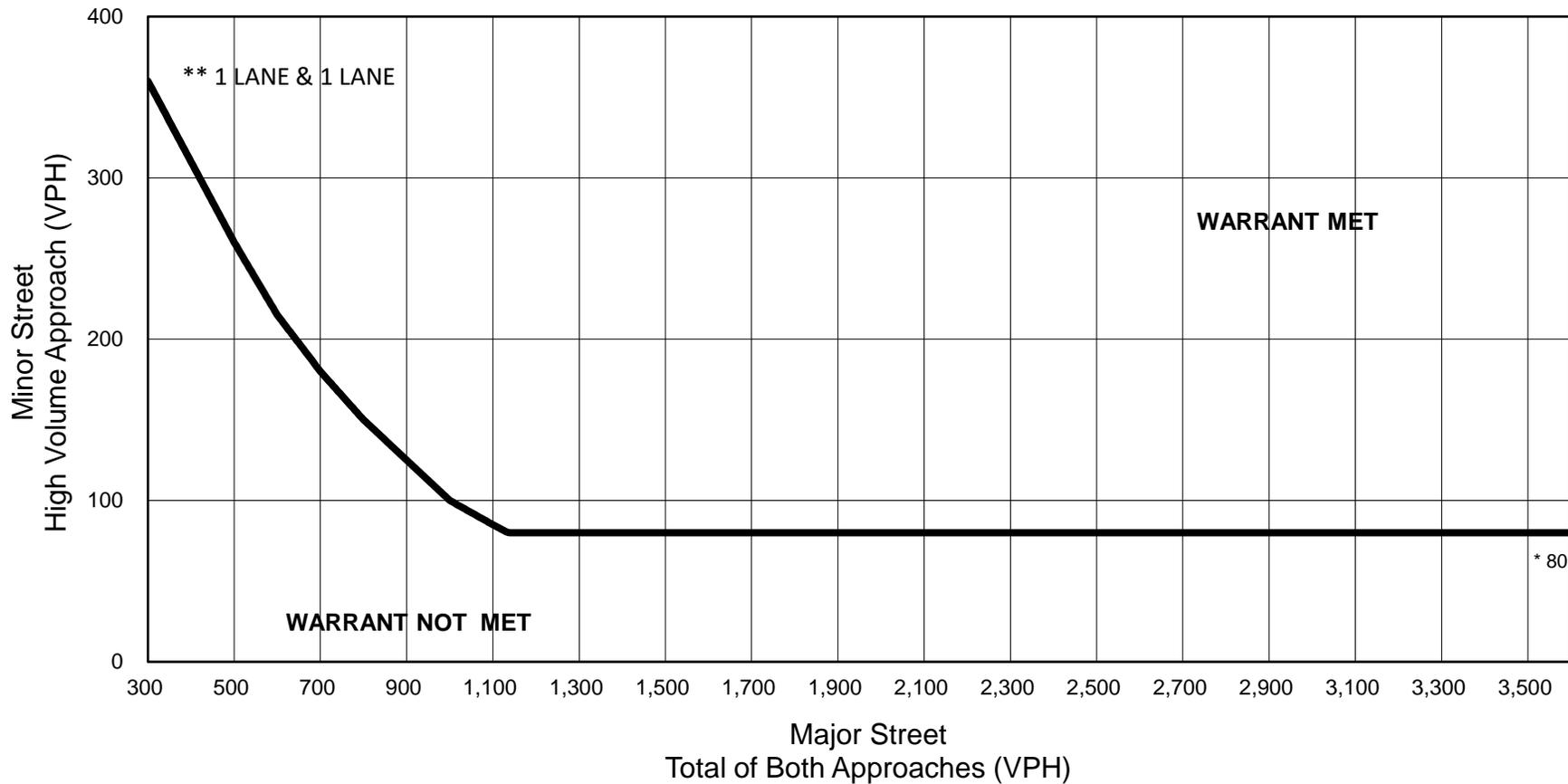
\*\* The first number refers to the number of lanes of approach on the  
**1st Street & 21st Avenue W**  
**WARRANT 2**



\* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

\*\* The first number refers to the number of lanes of approach on the 1st Street & 21st Avenue W  
**SIGNAL WARRANT ANALYSIS** **WARRANT 3**





**Four Hour Warrant  
Warrant Met for 0 Hours**

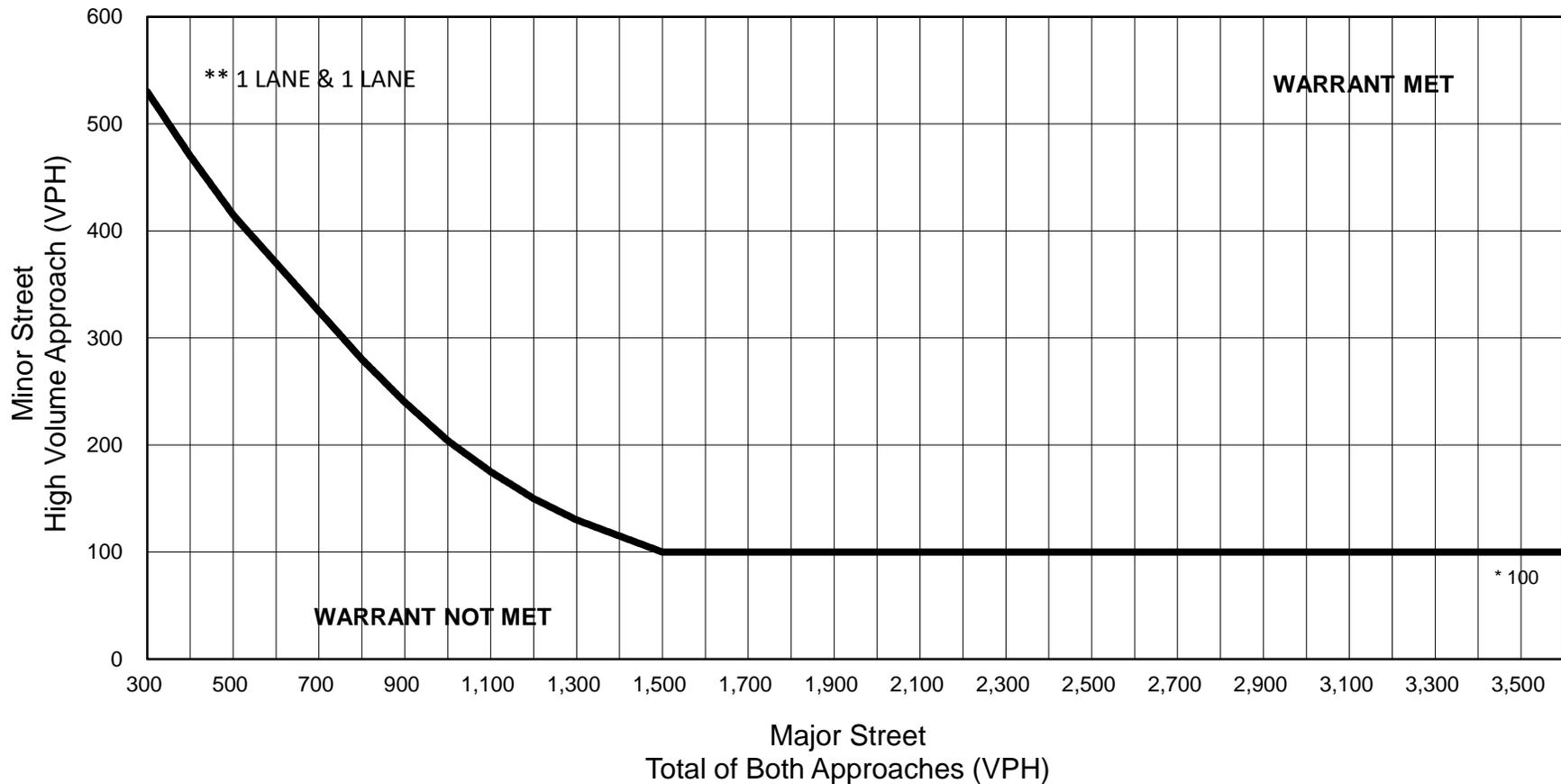
\* NOTE: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 24th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 2**



**Peak Hour Warrant  
Warrant Met for 0 Hours**

\* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two lanes or more.

\*\* The first number refers to the number of lanes of approach on the major street and the second number refers to the number of lanes of approach on the minor street.

Source: Minnesota Manual on Uniform Traffic Control Devices.

**1st Street & 24th Avenue E  
SIGNAL WARRANT ANALYSIS  
Existing Weekday Volumes**

**WARRANT 3**

**Appendix E:**  
Detailed Operations Analysis

EXISTING - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Mesaba Ave	Movement Delay (sec/veh)	78.6	79.6	4.9	81.7	73.6	25.5	23.5	13.3	10.1	24.0	7.1	5.9	15.2
	Total Delay (hr)	1.2	0.3	0.0	0.6	0.2	0.1	0.0	4.5	0.0	0.2	1.2	0.0	8.3
	Movement LOS	E	E	A	F	E	C	C	B	B	C	A	A	B
	Movement Volume	56	14	2	28	10	13	4	1197	12	35	595	14	1980
	Movement 95th Queue (ft)	121	121	14	47	50	50	304	327	350	19	61	70	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	160	0	0	
	Approach Delay (sec/veh)	76.7			65.8			13.3			8.0			
Approach LOS	E			E			B			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 6th Ave W	Movement Delay (sec/veh)	3.8	0.0	3.1	4.0	4.7	2.8	4.1	3.8	0.0	0.0	4.2	2.3	3.8
	Total Delay (hr)	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	4	0	58	34	63	23	10	22	0	0	4	3	221
	Movement 95th Queue (ft)	28	0	60	46	54	54	31	31	0	0	23	23	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.1			4.1			3.9			3.4			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 5th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	1.9	0.6	0.3	46.0	34.6	0.0	0.0	45.2	4.5	9.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.1	0.0	0.7
	Movement LOS	A	A	A	A	A	A	D	C	A	A	D	A	A
	Movement Volume	0	0	0	52	97	24	29	15	0	0	5	11	233
	Movement 95th Queue (ft)	0	0	0	28	26	24	68	40	0	0	36	36	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.9			42.1			17.2			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	3.6	2.7	1.7	44.8	39.3	0.0	0.0	44.5	10.0	22.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.5	1.1	0.0	0.0	1.5	0.4	3.6
	Movement LOS	A	A	A	A	A	A	D	D	A	A	D	A	C
	Movement Volume	0	0	0	17	123	43	42	98	0	0	123	126	572
	Movement 95th Queue (ft)	0	0	0	55	53	51	177	177	0	0	134	128	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			2.5			41.0			27.0			
Approach LOS	A			A			D			C				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.4	5.0	3.1	5.1	5.0	0.0	0.0	6.4	5.3	4.9
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	29	153	39	23	69	0	0	27	19	359
	Movement 95th Queue (ft)	0	0	0	56	56	56	62	62	0	0	63	63	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.6			5.0			5.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.6	5.4	3.1	8.4	6.4	0.0	0.0	10.3	9.8	7.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.1	0.0	0.0	0.3	0.4	1.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	B	A	A
	Movement Volume	0	0	0	11	238	22	54	50	0	0	88	135	598
	Movement 95th Queue (ft)	0	0	0	60	57	54	87	87	0	0	153	153	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.2			7.4			10.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.2	5.2	3.1	5.3	4.6	0.0	0.0	4.7	4.4	5.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.5
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	11	221	9	55	48	0	0	19	12	375
	Movement 95th Queue (ft)	0	0	0	64	60	56	57	57	0	0	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.1			5.0			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Lake Ave	Movement Delay (sec/veh)	0.0	0.0	0.0	5.9	5.0	2.3	44.8	35.6	0.0	0.0	18.4	8.8	21.2
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.2	0.0	0.7	2.6	0.0	0.0	1.4	0.1	5.1
	Movement LOS	A	A	A	A	A	A	D	D	A	A	B	A	C
	Movement Volume	0	0	0	75	153	11	60	259	0	0	263	46	867
	Movement 95th Queue (ft)	0	0	0	72	65	58	264	203	0	0	112	124	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.2			37.3			17.0			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	4.7	2.5	0.9	37.6	31.1	0.0	0.0	21.6	8.6	12.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.8	0.3	0.0	0.0	0.2	0.2	1.7
	Movement LOS	A	A	A	A	A	A	D	C	A	A	C	A	B
	Movement Volume	0	0	0	9	236	18	79	30	0	0	32	87	491
	Movement 95th Queue (ft)	0	0	0	68	57	46	121	121	0	0	59	96	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			2.5			35.8			12.1			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	3.1	1.5	1.3	47.5	30.3	0.0	0.0	23.9	5.9	5.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.6
	Movement LOS	A	A	A	A	A	A	D	C	A	A	C	A	A
	Movement Volume	0	0	0	5	280	5	14	12	0	0	15	33	364
	Movement 95th Queue (ft)	0	0	0	42	36	29	56	56	0	0	38	55	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			1.5			39.6			11.5			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	6.5	8.7	2.8	21.9	16.6	6.7	23.6	20.7	5.6	10.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.2	0.1	0.1	0.2	0.0	1.2
	Movement LOS	A	A	A	A	A	A	C	B	A	C	C	A	B
	Movement Volume	0	0	0	8	256	3	6	35	46	17	31	28	430
	Movement 95th Queue (ft)	0	0	0	31	143	143	32	76	76	38	68	68	
	Storage Bay Distance (ft)	0	0	0	25	0	0	0	25	25	25	0	0	
	Approach Delay (sec/veh)	0.0			8.6			11.7			15.8			
Approach LOS	A			A			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave E	Movement Delay (sec/veh)	2.5	0.4	0.1	1.9	0.9	0.6	5.9	7.0	3.1	6.1	7.1	4.5	2.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	6	16	1	12	249	30	11	29	23	28	18	42	465
	Movement 95th Queue (ft)	15	15	15	0	0	0	52	52	52	64	64	64	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.9			0.9			5.4			5.5			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 7th Ave E	Movement Delay (sec/veh)	2.6	0.0	0.0	4.9	1.7	1.6	8.6	4.8	0.0	7.5	5.8	4.6	2.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	9	18	4	1	240	19	2	3	0	3	6	72	377
	Movement 95th Queue (ft)	16	16	16	0	0	0	20	20	20	62	62	62	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.8			1.7			6.3			4.8			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 8th Ave E	Movement Delay (sec/veh)	4.0	0.0	3.0	4.3	6.4	3.9	4.5	5.2	0.0	0.0	5.1	3.3	5.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	11	0	16	34	200	13	33	22	0	0	25	11	365
	Movement 95th Queue (ft)	35	0	47	49	92	92	40	40	0	0	45	45	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.4			6.0			4.8			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 9th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.4	0.3	4.4	6.2	0.0	0.0	6.1	4.6	1.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	23	262	13	1	8	0	0	33	30	370
	Movement 95th Queue (ft)	0	0	0	0	0	0	27	27	0	0	57	57	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.4			6.0			5.4			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 10th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	23.7	25.2	15.8	8.4	7.4	0.0	0.0	7.5	3.9	15.2
	Total Delay (hr)	0.0	0.0	0.0	0.2	1.5	0.2	0.1	0.2	0.0	0.0	0.2	0.1	2.5
	Movement LOS	A	A	A	C	C	B	A	A	A	A	A	A	B
	Movement Volume	0	0	0	30	217	50	39	92	0	0	112	55	595
	Movement 95th Queue (ft)	0	0	0	113	137	160	88	88	0	0	94	94	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			23.5			7.7			6.3			
Approach LOS	A			C			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 12th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	4.4	5.2	3.6	5.0	6.0	0.0	0.0	6.4	4.4	5.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.0	0.0	0.2	0.2	0.9
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	11	167	29	36	122	0	0	108	125	598
	Movement 95th Queue (ft)	0	0	0	52	54	55	67	67	0	0	78	78	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.9			5.8			5.3			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 13th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	1.2	1.4	0.0	4.2	0.0	0.0	0.0	0.0	0.0	1.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	10	187	0	22	0	0	0	0	0	219
	Movement 95th Queue (ft)	0	0	0	0	0	0	42	0	0	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.4			4.2			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 14th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	3.9	5.0	3.2	4.3	4.9	0.0	0.0	4.9	3.2	4.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	154	30	20	35	0	0	29	17	289
	Movement 95th Queue (ft)	0	0	0	44	52	60	48	48	0	0	50	50	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.7			4.7			4.3			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 15th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.2	4.7	5.5	0.0	0.0	0.0	0.0	0.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	5	165	4	5	14	0	0	16	9	218
	Movement 95th Queue (ft)	0	0	0	0	0	0	41	41	0	0	43	43	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.3			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 16th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.6	0.0	5.9	0.0	0.0	5.2	0.0	0.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	164	2	0	4	0	0	12	8	194
	Movement 95th Queue (ft)	0	0	0	0	0	0	19	19	0	0	42	42	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.9			3.1			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 17th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	4.9	5.5	0.0	0.0	0.0	0.0	0.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	2	159	7	5	3	0	0	2	3	181
	Movement 95th Queue (ft)	0	0	0	0	0	0	32	32	0	0	22	22	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.1			0.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 18th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.3	4.8	5.2	0.0	0.0	0.0	0.0	0.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	3	163	3	1	10	0	0	17	3	200
	Movement 95th Queue (ft)	0	0	0	0	0	0	34	34	0	0	43	43	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.2			0.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 19th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	3.8	5.0	0.0	0.0	0.0	0.0	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	6	131	8	3	40	0	0	46	33	267
	Movement 95th Queue (ft)	0	0	0	0	0	0	50	50	0	0	58	58	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.9			0.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 20th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.0	3.5	5.3	0.0	0.0	0.0	0.0	0.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	134	0	1	14	0	0	6	4	160
	Movement 95th Queue (ft)	0	0	0	0	0	0	37	37	0	0	29	29	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.2			0.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 21st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	5.6	5.2	1.6	0.0	0.0	1.2	0.0	1.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.2	0.0	0.6
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	0	13	18	53	476	0	0	567	64	1191
	Movement 95th Queue (ft)	0	0	0	32	40	47	89	89	0	0	8	8	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			3.3			2.0			1.1			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 22nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.2	4.1	0.0	0.0	0.0	0.0	2.1	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	3	21	2	6	0	0	0	0	1	33
	Movement 95th Queue (ft)	0	0	0	0	0	0	26	26	0	0	9	9	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.1			2.1			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 23rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	4.3	3.0	0.0	0.0	0.0	0.0	0.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	3	17	1	3	1	0	0	11	3	39
	Movement 95th Queue (ft)	0	0	0	0	0	0	21	21	0	0	34	34	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.0			0.0			
	Approach LOS	A			A			A			A			



EXISTING

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Mesaba Ave	Movement Delay (sec/veh)	83.1	94.7	15.6	66.3	66.7	32.4	15.2	16.2	9.1	16.7	11.6	7.6	20.9
	Total Delay (hr)	1.0	0.2	0.0	2.7	0.8	0.9	0.0	4.0	0.0	0.2	2.8	0.1	12.7
	Movement LOS	F	F	B	E	E	C	B	B	A	B	B	A	C
	Movement Volume	41	7	7	146	42	104	2	865	5	37	859	37	2152
	Movement 95th Queue (ft)	88	88	32	163	147	147	237	244	250	16	176	185	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	160	0	0	
	Approach Delay (sec/veh)	76.0			54.3			16.2			11.6			
	Approach LOS	E			D			B			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 6th Ave W	Movement Delay (sec/veh)	4.0	1.0	3.3	4.1	5.7	3.8	4.3	3.2	0.0	0.0	5.3	2.0	4.8
	Total Delay (hr)	0.0	0.0	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	5	1	72	95	279	27	11	9	0	0	7	2	508
	Movement 95th Queue (ft)	17	0	56	51	76	76	25	25	0	0	28	28	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.3			5.2			3.8			4.6			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 5th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	1.9	0.8	0.4	44.3	36.2	0.0	0.0	45.1	14.5	6.8
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.2	0.0	0.0	0.3	0.1	1.2
	Movement LOS	A	A	A	A	A	A	D	D	A	A	D	B	A
	Movement Volume	0	0	0	149	334	13	35	19	0	0	21	15	586
	Movement 95th Queue (ft)	0	0	0	42	42	41	63	41	0	0	66	66	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.1			41.5			32.4			
	Approach LOS	A			A			D			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	2.4	1.9	2.0	44.7	37.4	0.0	0.0	35.3	9.7	12.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.2	1.4	0.0	0.0	0.7	0.3	2.8
	Movement LOS	A	A	A	A	A	A	D	D	A	A	D	A	B
	Movement Volume	0	0	0	38	343	65	13	129	0	0	67	101	756
	Movement 95th Queue (ft)	0	0	0	60	67	74	155	155	0	0	73	104	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			2.0			38.1			19.9			
	Approach LOS	A			A			D			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	5.1	5.6	3.8	5.6	6.1	0.0	0.0	8.3	7.7	5.9
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.6	0.1	0.0	0.1	0.0	0.0	0.2	0.1	1.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	57	385	69	23	63	0	0	77	63	737
	Movement 95th Queue (ft)	0	0	0	67	69	70	54	54	0	0	104	104	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.3			6.0			8.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.4	5.3	3.3	8.4	7.9	0.0	0.0	9.2	8.6	6.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.1	0.0	0.0	0.2	0.2	1.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	28	296	18	39	56	0	0	93	99	629
	Movement 95th Queue (ft)	0	0	0	56	57	58	90	90	0	0	131	131	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.1			8.1			8.9			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.9	5.4	3.5	6.4	6.3	0.0	0.0	7.7	6.0	5.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.8
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	32	300	35	30	52	0	0	42	28	519
	Movement 95th Queue (ft)	0	0	0	68	68	68	61	61	0	0	74	74	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.2			6.3			7.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Lake Ave	Movement Delay (sec/veh)	0.0	0.0	0.0	6.5	6.1	3.3	42.8	36.6	0.0	0.0	19.8	11.5	16.2
	Total Delay (hr)	0.0	0.0	0.0	0.4	0.4	0.1	0.7	1.8	0.0	0.0	1.9	0.2	5.5
	Movement LOS	A	A	A	A	A	A	D	D	A	A	B	B	B
	Movement Volume	0	0	0	232	258	93	55	177	0	0	335	48	1198
	Movement 95th Queue (ft)	0	0	0	134	117	100	186	136	0	0	125	135	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.8			38.1			18.8			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	3.3	2.1	1.0	39.6	36.6	0.0	0.0	26.1	7.6	9.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.5	0.0	0.0	0.3	0.1	1.5
	Movement LOS	A	A	A	A	A	A	D	D	A	A	C	A	A
	Movement Volume	0	0	0	36	400	29	35	53	0	0	43	34	630
	Movement 95th Queue (ft)	0	0	0	75	66	57	111	111	0	0	75	67	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			2.1			37.8			17.9			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	2.9	1.7	1.0	42.3	30.5	0.0	0.0	18.7	6.7	6.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.3	0.0	0.0	0.1	0.0	0.9
	Movement LOS	A	A	A	A	A	A	D	C	A	A	B	A	A
	Movement Volume	0	0	0	16	367	17	23	30	0	0	25	26	504
	Movement 95th Queue (ft)	0	0	0	45	40	35	82	82	0	0	58	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			1.7			35.6			12.6			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	9.7	10.9	8.7	25.4	16.8	4.7	21.8	15.9	5.7	11.7
	Total Delay (hr)	0.0	0.0	0.0	0.1	1.0	0.0	0.1	0.2	0.0	0.1	0.2	0.1	1.8
	Movement LOS	A	A	A	A	B	A	C	B	A	C	B	A	B
	Movement Volume	0	0	0	35	328	14	15	37	12	11	52	48	552
	Movement 95th Queue (ft)	0	0	0	67	177	177	38	52	52	28	88	88	
	Storage Bay Distance (ft)	0	0	0	25	0	0	0	25	25	25	0	0	
	Approach Delay (sec/veh)	0.0			10.7			16.5			12.1			
Approach LOS	A			B			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave E	Movement Delay (sec/veh)	3.3	0.3	0.1	2.0	1.3	0.9	6.3	7.9	3.7	7.4	8.0	5.2	2.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	22	36	7	18	320	63	12	45	12	10	29	22	596
	Movement 95th Queue (ft)	34	34	34	13	13	13	53	53	53	58	58	58	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.3			1.3			6.9			6.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 7th Ave E	Movement Delay (sec/veh)	2.4	0.4	0.1	3.0	1.7	1.5	4.0	5.4	3.1	6.1	11.1	4.0	2.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	B	A	A
	Movement Volume	16	60	1	3	225	10	2	8	13	10	1	42	391
	Movement 95th Queue (ft)	24	24	24	7	7	7	43	43	43	54	54	54	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.8			1.7			4.0			4.5			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 8th Ave E	Movement Delay (sec/veh)	4.5	0.0	3.5	4.2	5.9	4.8	4.7	5.2	0.0	0.0	5.3	3.7	5.1
	Total Delay (hr)	0.0	0.0	0.1	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.7
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	23	0	60	19	219	23	26	42	0	0	45	17	474
	Movement 95th Queue (ft)	45	0	62	40	87	87	38	38	0	0	51	51	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.8			5.7			5.0			4.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 9th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.4	0.3	5.4	6.0	0.0	0.0	5.4	4.1	1.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	12	245	18	4	15	0	0	20	16	330
	Movement 95th Queue (ft)	0	0	0	3	3	3	40	40	0	0	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.4			5.9			4.8			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 10th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	22.8	22.1	13.1	9.1	7.7	0.0	0.0	7.7	4.9	12.8
	Total Delay (hr)	0.0	0.0	0.0	0.2	1.2	0.3	0.1	0.3	0.0	0.0	0.4	0.1	2.6
	Movement LOS	A	A	A	C	C	B	A	A	A	A	A	A	B
	Movement Volume	0	0	0	32	191	91	44	155	0	0	169	41	723
	Movement 95th Queue (ft)	0	0	0	119	142	164	103	103	0	0	114	114	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			19.6			8.0			7.2			
Approach LOS	A			B			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 12th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	4.6	5.4	3.3	5.4	5.6	0.0	0.0	7.2	5.1	6.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.6	0.1	1.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	14	86	28	25	130	0	0	282	63	628
	Movement 95th Queue (ft)	0	0	0	48	50	51	63	63	0	0	102	102	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.9			5.6			6.8			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 13th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	1.1	1.2	0.0	4.4	0.0	0.0	0.0	0.0	0.0	1.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	21	106	0	21	0	0	0	0	0	148
	Movement 95th Queue (ft)	0	0	0	0	0	0	42	0	0	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.2			4.4			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 14th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	4.0	4.9	3.1	4.4	5.0	0.0	0.0	5.2	3.3	4.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	17	80	19	8	38	0	0	54	40	256
	Movement 95th Queue (ft)	0	0	0	51	49	47	47	47	0	0	53	53	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.5			4.9			4.4			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 15th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	4.3	5.0	0.0	0.0	0.0	0.0	1.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	84	3	11	25	0	0	32	21	177
	Movement 95th Queue (ft)	0	0	0	0	0	0	47	47	0	0	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.8			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 16th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	5.2	5.3	0.0	0.0	0.0	0.0	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	6	73	10	2	18	0	0	13	13	135
	Movement 95th Queue (ft)	0	0	0	0	0	0	41	41	0	0	44	44	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.3			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 17th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.0	3.8	5.2	0.0	0.0	0.0	0.0	0.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	74	4	5	7	0	0	7	10	108
	Movement 95th Queue (ft)	0	0	0	0	0	0	32	32	0	0	37	37	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.6			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 18th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.2	2.9	4.7	0.0	0.0	0.0	0.0	0.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	75	4	2	13	0	0	19	4	121
	Movement 95th Queue (ft)	0	0	0	0	0	0	36	36	0	0	44	44	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.5			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 19th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	4.7	5.0	0.0	0.0	0.0	0.0	1.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	56	10	4	46	0	0	67	20	207
	Movement 95th Queue (ft)	0	0	0	0	0	0	50	50	0	0	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			5.0			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 20th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.7	3.7	4.9	0.0	0.0	0.0	0.0	0.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	5	58	9	4	4	0	0	14	9	103
	Movement 95th Queue (ft)	0	0	0	0	0	0	28	28	0	0	42	42	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			4.3			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 21st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	8.5	5.5	1.6	0.0	0.0	1.0	0.0	1.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.5
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	0	8	8	32	675	0	0	579	32	1334
	Movement 95th Queue (ft)	0	0	0	13	26	38	84	84	0	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.3			1.8			0.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 22nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	2.5	0.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	3	14	2	0	0	0	0	2	2	23
	Movement 95th Queue (ft)	0	0	0	0	0	0	0	0	0	0	20	20	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			0.0			3.7			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 23rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.1	3.2	4.3	0.0	0.0	0.0	0.0	0.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	3	15	1	1	6	0	0	17	2	45
	Movement 95th Queue (ft)	0	0	0	0	0	0	27	27	0	0	39	39	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.0			4.1			0.0			
Approach LOS	A			A			A			A				



DEVELOPMENT NO BUILD - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Mesaba Ave	Movement Delay (sec/veh)	80.3	72.6	20.6	74.1	83.4	28.7	7.3	14.6	11.5	25.2	9.6	7.4	17.8
	Total Delay (hr)	1.3	0.3	0.0	1.1	0.3	0.3	0.0	5.0	0.0	0.2	1.5	0.0	10.0
	Movement LOS	F	E	C	E	F	C	A	B	B	C	A	A	B
	Movement Volume	59	13	2	51	11	32	2	1212	9	34	557	16	1998
	Movement 95th Queue (ft)	125	125	18	91	71	71	316	339	361	24	81	90	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	160	0	0	
	Approach Delay (sec/veh)	77.3			59.7			14.6			10.4			
	Approach LOS	E			E			B			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 6th Ave W	Movement Delay (sec/veh)	4.3	0.0	3.3	3.8	4.7	3.0	4.3	3.7	0.0	0.0	4.9	2.7	4.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	0	49	34	103	30	9	20	0	0	3	3	254
	Movement 95th Queue (ft)	38	0	62	47	64	64	28	28	0	0	21	21	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.4			4.2			3.9			3.8			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 5th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	1.5	0.7	0.3	49.5	33.4	0.0	0.0	43.6	5.8	8.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.1	0.0	0.6
	Movement LOS	A	A	A	A	A	A	D	C	A	A	D	A	A
	Movement Volume	0	0	0	55	143	26	29	11	0	0	5	13	282
	Movement 95th Queue (ft)	0	0	0	25	28	31	68	36	0	0	41	41	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.9			45.1			16.3			
	Approach LOS	A			A			D			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	2.9	2.2	1.3	39.8	42.7	0.0	0.0	66.3	12.7	22.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.4	1.1	0.0	0.0	1.6	0.5	3.7
	Movement LOS	A	A	A	A	A	A	D	D	A	A	E	B	C
	Movement Volume	0	0	0	20	163	48	35	91	0	0	87	137	581
	Movement 95th Queue (ft)	0	0	0	57	56	55	147	147	0	0	123	147	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			2.1			41.9			33.5			
	Approach LOS	A			A			D			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.2	4.9	3.3	5.5	6.4	0.0	0.0	7.6	5.4	5.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.5
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	27	197	42	25	60	0	0	24	24	399
	Movement 95th Queue (ft)	0	0	0	58	60	62	58	58	0	0	63	63	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.6			6.1			6.5			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.7	5.4	3.1	8.3	9.4	0.0	0.0	12.4	10.9	7.9
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.1	0.0	0.0	0.3	0.4	1.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	B	B	A
	Movement Volume	0	0	0	13	286	17	58	28	0	0	84	140	626
	Movement 95th Queue (ft)	0	0	0	72	68	63	90	90	0	0	157	157	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.2			8.7			11.5			
	Approach LOS	A			A			A			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.6	5.0	3.0	5.6	6.6	0.0	0.0	7.0	4.7	5.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.6
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	8	261	9	65	34	0	0	12	10	399
	Movement 95th Queue (ft)	0	0	0	68	62	55	64	64	0	0	47	47	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.9			5.9			6.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Lake Ave	Movement Delay (sec/veh)	0.0	0.0	0.0	6.2	5.0	2.9	45.5	40.2	0.0	0.0	17.9	10.8	20.9
	Total Delay (hr)	0.0	0.0	0.0	0.2	0.3	0.0	0.7	2.6	0.0	0.0	1.2	0.1	5.1
	Movement LOS	A	A	A	A	A	A	D	D	A	A	B	B	C
	Movement Volume	0	0	0	99	184	10	54	229	0	0	233	47	856
	Movement 95th Queue (ft)	0	0	0	84	69	53	267	176	0	0	110	119	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.3			41.2			16.7			
	Approach LOS	A			A			D			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	3.3	2.2	1.1	39.7	44.9	0.0	0.0	29.4	8.6	12.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	1.0	0.3	0.0	0.0	0.2	0.2	1.9
	Movement LOS	A	A	A	A	A	A	D	D	A	A	C	A	B
	Movement Volume	0	0	0	7	303	15	87	27	0	0	27	84	550
	Movement 95th Queue (ft)	0	0	0	66	53	39	129	129	0	0	63	93	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			2.2			40.9			13.7			
	Approach LOS	A			A			D			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	2.7	1.3	0.8	50.1	44.3	0.0	0.0	24.9	6.0	4.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.0	0.5
	Movement LOS	A	A	A	A	A	A	D	D	A	A	C	A	A
	Movement Volume	0	0	0	3	344	6	11	10	0	0	10	22	406
	Movement 95th Queue (ft)	0	0	0	38	31	24	54	54	0	0	32	50	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			1.3			47.3			11.9			
	Approach LOS	A			A			D			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	9.8	9.3	5.8	19.4	17.9	5.1	25.9	28.9	7.8	11.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.1	0.1	0.2	0.2	0.0	1.5
	Movement LOS	A	A	A	A	A	A	B	B	A	C	C	A	B
	Movement Volume	0	0	0	7	330	3	6	27	54	31	27	16	501
	Movement 95th Queue (ft)	0	0	0	31	152	152	20	65	65	55	76	76	
	Storage Bay Distance (ft)	0	0	0	25	0	0	0	25	25	25	0	0	
	Approach Delay (sec/veh)	0.0			9.3			10.1			23.1			
	Approach LOS	A			A			B			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave E	Movement Delay (sec/veh)	2.7	0.3	0.0	2.2	0.9	0.5	6.0	6.6	3.6	6.5	6.7	4.6	2.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	6	33	4	15	276	35	15	27	20	32	20	50	533
	Movement 95th Queue (ft)	14	14	14	8	8	8	54	54	54	61	61	61	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.6			0.9			5.5			5.6			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 7th Ave E	Movement Delay (sec/veh)	3.1	0.1	0.1	3.7	1.7	1.5	5.4	4.9	0.0	6.3	7.2	4.2	2.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	9	32	7	1	276	16	2	5	0	4	9	61	422
	Movement 95th Queue (ft)	18	18	18	0	0	0	24	24	24	56	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.7			1.7			5.0			4.7			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 8th Ave E	Movement Delay (sec/veh)	4.6	0.0	3.3	4.1	6.2	4.4	4.3	5.5	0.0	0.0	5.4	3.4	5.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	16	0	20	38	237	17	37	24	0	0	33	16	438
	Movement 95th Queue (ft)	37	0	52	49	100	100	40	40	0	0	52	52	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.9			5.8			4.8			4.7			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 9th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.2	0.3	0.2	7.3	6.9	0.0	0.0	6.7	4.6	1.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	28	313	12	2	17	0	0	42	30	444
	Movement 95th Queue (ft)	0	0	0	0	0	0	42	42	0	0	57	57	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.3			6.9			5.8			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 10th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	25.7	22.2	14.3	10.1	8.4	0.0	0.0	8.0	4.8	14.5
	Total Delay (hr)	0.0	0.0	0.0	0.2	1.6	0.2	0.1	0.3	0.0	0.0	0.3	0.1	2.8
	Movement LOS	A	A	A	C	C	B	B	A	A	A	A	A	B
	Movement Volume	0	0	0	34	259	53	51	109	0	0	130	64	700
	Movement 95th Queue (ft)	0	0	0	126	141	155	98	98	0	0	107	107	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			21.3			8.9			6.9			
Approach LOS	A			C			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 12th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	4.6	5.4	3.4	5.4	6.2	0.0	0.0	6.6	4.7	5.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.2	0.0	0.0	0.2	0.2	1.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	13	203	29	47	136	0	0	123	131	682
	Movement 95th Queue (ft)	0	0	0	49	54	59	71	71	0	0	85	85	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.1			6.0			5.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 13th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	1.5	1.5	0.0	4.8	0.0	0.0	0.0	0.0	0.0	1.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	10	226	0	19	0	0	0	0	0	255
	Movement 95th Queue (ft)	0	0	0	0	0	0	43	0	0	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.5			4.8			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 14th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	4.6	5.1	3.3	4.4	5.2	0.0	0.0	5.2	3.2	4.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	3	197	28	18	32	0	0	33	19	330
	Movement 95th Queue (ft)	0	0	0	50	57	64	50	50	0	0	51	51	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.9			4.9			4.5			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 15th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.2	0.3	4.6	5.1	0.0	0.0	5.2	3.3	0.9
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	207	2	5	13	0	0	16	7	254
	Movement 95th Queue (ft)	0	0	0	0	0	0	39	39	0	0	42	42	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.2			5.0			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 16th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.2	0.1	0.3	0.0	5.0	0.0	0.0	5.7	3.1	0.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	2	200	3	0	7	0	0	10	6	228
	Movement 95th Queue (ft)	0	0	0	0	0	0	29	29	0	0	37	37	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			5.0			4.7			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 17th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.3	0.1	0.0	3.9	5.7	0.0	0.0	0.0	3.5	0.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	196	6	5	2	0	0	0	5	218
	Movement 95th Queue (ft)	0	0	0	0	0	0	26	26	0	0	26	26	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			4.4			3.5			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 18th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.2	0.1	0.2	0.0	5.8	0.0	0.0	5.4	3.0	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	197	2	0	11	0	0	17	4	235
	Movement 95th Queue (ft)	0	0	0	0	0	0	34	34	0	0	42	42	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			5.8			4.9			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 19th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.1	0.0	6.0	5.3	0.0	0.0	5.4	3.5	2.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	7	170	7	3	36	0	0	49	29	301
	Movement 95th Queue (ft)	0	0	0	0	0	0	50	50	0	0	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			5.4			4.7			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 20th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.4	0.1	3.5	5.4	0.0	0.0	4.8	3.0	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	0	173	1	1	8	0	0	6	5	194
	Movement 95th Queue (ft)	0	0	0	0	0	0	31	31	0	0	33	33	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.4			5.2			4.0			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 21st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	11.8	4.8	6.2	2.1	0.0	0.0	1.4	1.0	2.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.7
	Movement LOS	A	A	A	A	B	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	0	19	23	63	501	0	0	598	90	1294
	Movement 95th Queue (ft)	0	0	0	37	42	46	121	121	0	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			8.0			2.6			1.3			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 22nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.1	0.1	3.7	0.0	0.0	0.0	0.0	3.8	0.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	2	33	1	6	0	0	0	0	1	43
	Movement 95th Queue (ft)	0	0	0	0	0	0	24	24	0	0	11	11	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			3.7			3.8			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 23rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	1.2	1.0	0.0	3.6	4.9	0.0	0.0	5.0	2.9	2.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	29	0	3	2	0	0	12	3	50
	Movement 95th Queue (ft)	0	0	0	0	0	0	23	23	0	0	39	39	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.0			4.1			4.6			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 24th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	5.5	2.9	1.7	0.2	0.0	0.0	0.1	0.0	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	0	19	5	7	90	0	0	65	4	190
	Movement 95th Queue (ft)	0	0	0	43	43	43	4	4	4	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.0			0.3			0.1			
	Approach LOS	A			A			A			A			

DEVELOPMENT NO BUILD - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Mesaba Ave	Movement Delay (sec/veh)	79.2	62.3	21.6	60.4	53.2	29.8	57.0	18.1	14.2	17.9	11.8	7.7	21.6
	Total Delay (hr)	0.8	0.1	0.0	2.9	0.9	0.6	0.0	4.4	0.0	0.2	2.7	0.1	12.7
	Movement LOS	E	E	C	E	D	C	E	B	B	B	B	A	C
	Movement Volume	38	6	7	174	60	76	1	869	10	37	815	36	2129
	Movement 95th Queue (ft)	90	90	31	162	141	141	241	257	272	44	167	177	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	160	0	0	
	Approach Delay (sec/veh)	69.3			51.5			18.1			11.9			
Approach LOS	E			D			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 6th Ave W	Movement Delay (sec/veh)	4.1	0.0	3.3	4.2	5.9	4.1	4.3	5.7	0.0	0.0	5.3	2.2	5.1
	Total Delay (hr)	0.0	0.0	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	5	0	70	102	329	32	12	7	0	0	5	2	564
	Movement 95th Queue (ft)	23	0	53	56	86	86	26	26	0	0	25	25	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.4			5.4			4.8			4.4			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 5th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	1.7	0.8	0.4	47.1	45.3	0.0	0.0	43.3	12.7	5.7
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.1	0.0	0.5	0.1	0.0	0.0	0.2	0.0	1.0
	Movement LOS	A	A	A	A	A	A	D	D	A	A	D	B	A
	Movement Volume	0	0	0	164	375	17	35	11	0	0	16	13	631
	Movement 95th Queue (ft)	0	0	0	43	44	44	70	35	0	0	61	61	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.1			46.7			29.6			
Approach LOS	A			A			D			C				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	2.9	2.0	1.2	49.4	48.9	0.0	0.0	65.0	10.9	14.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.2	1.7	0.0	0.0	0.7	0.3	3.1
	Movement LOS	A	A	A	A	A	A	D	D	A	A	E	B	B
	Movement Volume	0	0	0	30	406	61	13	124	0	0	37	95	766
	Movement 95th Queue (ft)	0	0	0	71	75	78	170	170	0	0	72	106	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			2.0			48.9			26.1			
Approach LOS	A			A			D			C				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	5.0	5.6	3.6	5.8	5.8	0.0	0.0	9.9	8.2	6.0
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.7	0.1	0.0	0.1	0.0	0.0	0.2	0.2	1.4
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	64	430	63	25	55	0	0	61	67	765
	Movement 95th Queue (ft)	0	0	0	69	71	72	53	53	0	0	105	105	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.3			5.8			9.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.4	5.2	3.0	8.5	8.3	0.0	0.0	11.3	9.3	7.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.1	0.0	0.0	0.3	0.2	1.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	B	A	A
	Movement Volume	0	0	0	24	333	20	43	48	0	0	88	96	652
	Movement 95th Queue (ft)	0	0	0	62	60	57	84	84	0	0	134	134	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.0			8.4			10.3			
Approach LOS	A			A			A			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave W	Movement Delay (sec/veh)	0.0	0.0	0.0	4.9	5.3	3.7	6.2	7.0	0.0	0.0	8.4	6.5	5.7
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.5	0.0	0.1	0.1	0.0	0.0	0.1	0.1	1.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	37	327	39	36	47	0	0	44	35	565
	Movement 95th Queue (ft)	0	0	0	71	68	65	61	61	0	0	75	75	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.1			6.7			7.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Lake Ave	Movement Delay (sec/veh)	0.0	0.0	0.0	6.9	6.6	3.7	44.2	38.2	0.0	0.0	20.2	13.3	15.9
	Total Delay (hr)	0.0	0.0	0.0	0.5	0.5	0.1	0.7	1.7	0.0	0.0	1.9	0.2	5.6
	Movement LOS	A	A	A	A	A	A	D	D	A	A	C	B	B
	Movement Volume	0	0	0	286	286	90	57	155	0	0	329	51	1254
	Movement 95th Queue (ft)	0	0	0	141	126	110	189	122	0	0	129	134	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			6.3			39.8			19.3			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	3.0	2.3	1.0	40.1	37.8	0.0	0.0	30.7	7.8	8.9
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.5	0.0	0.0	0.4	0.1	1.7
	Movement LOS	A	A	A	A	A	A	D	D	A	A	C	A	A
	Movement Volume	0	0	0	41	465	25	33	51	0	0	48	37	700
	Movement 95th Queue (ft)	0	0	0	79	70	61	108	108	0	0	76	61	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			2.3			38.7			20.7			
Approach LOS	A			A			D			C				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	2.8	1.5	1.0	39.3	42.3	0.0	0.0	17.7	6.6	5.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.3	0.0	0.0	0.1	0.0	0.9
	Movement LOS	A	A	A	A	A	A	D	D	A	A	B	A	A
	Movement Volume	0	0	0	15	443	12	22	25	0	0	20	24	561
	Movement 95th Queue (ft)	0	0	0	48	39	30	85	85	0	0	50	53	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	0.0			1.5			40.9			11.6			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	10.3	10.9	7.4	26.9	22.9	7.0	22.5	16.4	6.6	12.3
	Total Delay (hr)	0.0	0.0	0.0	0.1	1.2	0.0	0.1	0.2	0.1	0.2	0.3	0.1	2.3
	Movement LOS	A	A	A	B	B	A	C	C	A	C	B	A	B
	Movement Volume	0	0	0	41	408	16	19	33	39	35	57	44	692
	Movement 95th Queue (ft)	0	0	0	80	183	183	49	71	71	51	94	94	
	Storage Bay Distance (ft)	0	0	0	25	0	0	0	25	25	25	0	0	
	Approach Delay (sec/veh)	0.0			10.7			16.9			14.8			
Approach LOS	A			B			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave E	Movement Delay (sec/veh)	3.8	0.4	0.1	2.6	1.2	0.7	7.4	9.0	3.7	7.0	8.1	5.3	2.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	21	52	5	19	365	68	14	50	13	10	30	30	677
	Movement 95th Queue (ft)	32	32	32	20	20	20	55	55	55	56	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.3			1.2			7.8			6.7			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 7th Ave E	Movement Delay (sec/veh)	2.6	0.2	0.0	3.1	1.8	1.5	8.0	6.4	3.4	6.4	5.3	4.0	2.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	17	73	2	3	264	18	4	6	9	9	4	47	456
	Movement 95th Queue (ft)	23	23	23	0	0	0	42	42	42	53	53	53	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.6			1.8			5.3			4.4			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 8th Ave E	Movement Delay (sec/veh)	4.7	0.0	3.4	4.1	6.8	4.5	4.7	5.5	0.0	0.0	5.6	3.4	5.6
	Total Delay (hr)	0.0	0.0	0.1	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.8
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	33	0	69	27	243	25	26	56	0	0	47	17	543
	Movement 95th Queue (ft)	47	0	58	44	102	102	39	39	0	0	51	51	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	3.8			6.4			5.2			5.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 9th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.4	0.2	6.5	5.6	0.0	0.0	6.3	3.7	1.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	19	287	23	3	20	0	0	25	16	393
	Movement 95th Queue (ft)	0	0	0	0	8	8	42	42	0	0	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.4			5.7			5.3			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 10th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	21.5	21.9	15.0	15.3	10.3	0.0	0.0	10.5	6.5	15.0
	Total Delay (hr)	0.0	0.0	0.0	0.3	1.5	0.4	0.2	0.4	0.0	0.0	0.6	0.1	3.5
	Movement LOS	A	A	A	C	C	B	B	B	A	A	B	A	B
	Movement Volume	0	0	0	49	240	102	43	148	0	0	198	43	823
	Movement 95th Queue (ft)	0	0	0	132	156	180	121	121	0	0	138	138	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			20.0			11.4			9.8			
Approach LOS	A			C			B			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 12th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	5.1	5.5	3.4	5.7	5.9	0.0	0.0	7.5	5.6	6.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.0	0.0	0.7	0.1	1.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	16	130	36	32	139	0	0	324	71	748
	Movement 95th Queue (ft)	0	0	0	48	50	51	63	63	0	0	108	108	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			5.0			5.9			7.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 13th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	1.2	1.2	0.0	4.2	0.0	0.0	0.0	0.0	0.0	1.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	17	150	0	27	0	0	0	0	0	194
	Movement 95th Queue (ft)	0	0	0	0	0	0	44	0	0	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			1.2			4.2			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 14th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	3.9	5.0	3.0	4.2	4.9	0.0	0.0	5.2	3.3	4.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.4
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	13	109	25	9	42	0	0	59	33	290
	Movement 95th Queue (ft)	0	0	0	46	49	51	45	45	0	0	52	52	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.6			4.8			4.5			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 15th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.1	0.1	4.3	5.3	0.0	0.0	5.5	2.9	2.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	110	3	16	24	0	0	31	13	198
	Movement 95th Queue (ft)	0	0	0	0	0	0	49	49	0	0	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			4.9			4.7			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 16th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.2	0.2	3.6	5.1	0.0	0.0	5.0	2.8	1.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	6	100	9	3	19	0	0	14	11	162
	Movement 95th Queue (ft)	0	0	0	0	0	0	41	41	0	0	45	45	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.2			4.9			4.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 17th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.1	0.0	3.9	5.4	0.0	0.0	5.0	2.7	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	106	7	5	6	0	0	8	4	137
	Movement 95th Queue (ft)	0	0	0	0	0	0	34	34	0	0	34	34	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			4.7			4.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 18th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.2	0.1	4.6	5.0	0.0	0.0	5.1	2.7	1.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	109	5	1	12	0	0	20	5	156
	Movement 95th Queue (ft)	0	0	0	0	0	0	38	38	0	0	43	43	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.2			5.0			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 19th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	0.1	0.1	4.5	5.1	0.0	0.0	5.6	3.4	3.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	81	5	4	43	0	0	66	32	232
	Movement 95th Queue (ft)	0	0	0	0	0	0	48	48	0	0	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			5.0			4.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 20th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.3	0.5	0.5	3.5	5.1	0.0	0.0	4.7	2.8	1.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	5	79	7	3	4	0	0	13	5	116
	Movement 95th Queue (ft)	0	0	0	0	0	0	28	28	0	0	39	39	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.5			4.4			4.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 21st Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.0	15.2	6.5	5.0	1.7	0.0	0.0	1.1	0.8	1.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.7
	Movement LOS	A	A	A	A	C	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	0	16	6	37	678	0	0	580	41	1358
	Movement 95th Queue (ft)	0	0	0	24	31	37	112	112	0	0	3	3	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			12.8			1.9			1.1			
Approach LOS	A			B			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 22nd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	3.6	2.1	0.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	4	22	0	0	0	0	0	3	2	31
	Movement 95th Queue (ft)	0	0	0	0	0	0	0	0	0	0	21	21	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.1			0.0			3.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 23rd Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	0.5	0.8	0.0	2.4	4.3	0.0	0.0	4.6	2.8	2.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	2	22	0	1	6	0	0	13	4	48
	Movement 95th Queue (ft)	0	0	0	0	0	0	27	27	0	0	39	39	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			0.8			4.0			4.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 24th Ave E	Movement Delay (sec/veh)	0.0	0.0	0.0	2.8	5.3	3.0	1.2	0.1	0.5	1.9	0.2	0.3	0.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	0	0	1	10	3	1	55	1	4	115	12	202
	Movement 95th Queue (ft)	0	0	0	38	38	38	0	0	0	9	9	9	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.0			4.6			0.1			0.3			
	Approach LOS	A			A			A			A			

CONVERSION BUILD - - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Mesaba Ave	Movement Delay (sec/veh)	78.9	74.3	5.3	80.9	80.6	27.9	17.9	15.6	14.6	29.3	8.7	6.1	17.9
	Total Delay (hr)	1.1	0.4	0.0	1.2	0.2	0.2	0.0	5.3	0.2	0.3	1.4	0.0	10.3
	Movement LOS	E	E	A	F	F	C	B	B	B	C	A	A	B
	Movement Volume	48	17	2	51	8	32	2	1199	43	35	562	25	2024
	Movement 95th Queue (ft)	106	106	18	96	77	77	350	368	385	23	78	86	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	160	0	0	
	Approach Delay (sec/veh)	75.5			62.2			15.6			9.8			
	Approach LOS	E			E			B			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 6th Ave W	Movement Delay (sec/veh)	0.0	0.1	0.3	1.7	0.2	0.1	2.8	6.4	3.4	5.5	4.6	0.0	1.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	81	9	47	103	13	1	23	6	4	3	0	290
	Movement 95th Queue (ft)	0	0	10	25	25	25	35	35	35	24	24	24	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.1			0.6			5.7			5.1			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 5th Ave W	Movement Delay (sec/veh)	2.5	4.9	3.2	4.6	5.4	3.3	4.4	5.0	3.5	0.0	5.1	2.9	4.7
	Total Delay (hr)	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	1	68	26	32	139	25	11	13	16	0	5	12	348
	Movement 95th Queue (ft)	57	57	57	66	66	66	32	46	46	38	38	38	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.4			5.0			4.2			3.5			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave W	Movement Delay (sec/veh)	4.6	5.3	2.5	4.7	6.0	3.8	6.5	6.5	4.2	0.0	10.1	9.6	7.0
	Total Delay (hr)	0.1	0.1	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.3	0.3	1.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	B	A	A
	Movement Volume	43	42	1	27	165	15	14	74	32	0	91	128	632
	Movement 95th Queue (ft)	40	40	40	68	68	68	61	61	61	99	99	118	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.9			5.7			5.9			9.8			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave W	Movement Delay (sec/veh)	4.4	4.9	3.0	5.0	5.7	3.8	5.9	5.9	4.0	6.8	8.9	5.9	5.4
	Total Delay (hr)	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.6
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	24	56	7	44	197	20	17	54	20	13	8	24	484
	Movement 95th Queue (ft)	47	47	47	72	72	72	58	58	58	65	65	65	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.6			5.4			5.5			6.7			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave W	Movement Delay (sec/veh)	6.6	5.5	3.4	6.0	6.7	4.4	10.4	9.9	7.3	19.4	14.9	13.6	8.9
	Total Delay (hr)	0.0	0.1	0.0	0.0	0.5	0.0	0.1	0.1	0.1	0.0	0.2	0.6	1.7
	Movement LOS	A	A	A	A	A	A	B	A	A	C	B	B	A
	Movement Volume	2	68	36	4	268	27	39	26	31	2	60	158	721
	Movement 95th Queue (ft)	61	61	61	84	84	84	96	96	96	170	170	170	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.8			6.5			9.3			14.0			
	Approach LOS	A			A			A			B			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave W	Movement Delay (sec/veh)	4.3	5.1	2.9	5.0	5.8	3.5	5.8	6.5	3.4	5.6	7.6	5.5	5.6
	Total Delay (hr)	0.0	0.1	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	18	89	3	12	243	3	68	24	1	4	10	9	484
	Movement 95th Queue (ft)	53	53	53	76	76	76	61	61	61	48	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.9			5.7			6.0			6.4			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Lake Ave	Movement Delay (sec/veh)	6.2	4.7	2.3	7.1	5.9	6.5	44.1	42.0	6.4	31.4	15.9	8.5	18.9
	Total Delay (hr)	0.0	0.1	0.0	0.2	0.3	0.0	0.6	3.0	0.1	0.0	1.1	0.1	5.5
	Movement LOS	A	A	A	A	A	A	D	D	A	C	B	A	B
	Movement Volume	8	79	10	105	183	5	47	253	57	1	250	47	1045
	Movement 95th Queue (ft)	54	54	54	119	119	119	265	203	140	78	96	114	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.6			6.3			36.6			14.8			
Approach LOS	A			A			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave E	Movement Delay (sec/veh)	4.4	5.5	3.2	7.7	7.5	4.9	6.9	7.1	4.4	8.0	8.2	8.8	7.0
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.6	0.0	0.1	0.1	0.0	0.0	0.0	0.2	1.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	115	20	4	285	3	60	40	7	2	8	87	634
	Movement 95th Queue (ft)	54	54	54	98	98	98	65	65	65	34	34	94	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	5.1			7.5			6.8			8.7			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave E	Movement Delay (sec/veh)	4.8	4.8	2.2	6.9	7.9	9.0	5.3	6.4	4.2	5.2	5.7	5.6	6.8
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	13	117	7	3	340	1	20	3	2	3	8	23	540
	Movement 95th Queue (ft)	39	39	39	120	120	120	43	43	43	32	32	51	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	4.7			7.9			5.3			5.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave E	Movement Delay (sec/veh)	13.4	9.4	5.9	15.5	10.0	4.9	23.8	17.7	4.7	0.0	22.0	6.8	10.6
	Total Delay (hr)	0.0	0.3	0.0	0.0	0.8	0.0	0.2	0.1	0.0	0.0	0.1	0.1	1.6
	Movement LOS	B	A	A	B	A	A	C	B	A	A	C	A	B
	Movement Volume	10	99	19	6	278	3	25	19	19	0	12	40	530
	Movement 95th Queue (ft)	88	88	88	145	145	145	48	46	46	0	67	67	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	25	25	0	0	0	
	Approach Delay (sec/veh)	9.2			10.1			16.2			10.3			
Approach LOS	A			B			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave E	Movement Delay (sec/veh)	2.4	0.2	0.2	2.0	0.8	0.6	5.7	7.0	3.7	6.9	7.3	4.7	2.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.5
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	12	75	4	6	252	25	14	37	20	57	33	53	588
	Movement 95th Queue (ft)	18	18	18	9	9	9	58	58	58	68	68	68	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.5			0.8			5.8			6.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 7th Ave E	Movement Delay (sec/veh)	4.5	0.4	0.2	4.0	1.7	1.5	5.3	7.2	3.7	6.1	7.2	4.2	2.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	2	144	6	3	241	17	3	2	6	18	35	38	515
	Movement 95th Queue (ft)	13	13	13	11	11	11	35	35	35	60	60	60	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			1.7			4.8			5.7			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 8th Ave E	Movement Delay (sec/veh)	5.4	5.6	3.6	5.2	6.3	4.2	4.9	5.2	3.5	4.1	5.4	3.1	5.5
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	6	141	30	6	211	29	36	15	4	11	23	9	521
	Movement 95th Queue (ft)	69	69	69	92	92	92	54	54	54	48	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.3			6.0			4.9			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 9th Ave E	Movement Delay (sec/veh)	2.2	0.1	0.1	2.3	0.6	0.3	9.0	7.1	4.2	5.9	7.4	4.3	1.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	5	148	10	24	285	12	3	13	1	3	37	33	574
	Movement 95th Queue (ft)	11	11	11	38	38	38	42	42	42	59	59	59	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.2			0.7			7.3			5.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 10th Ave E	Movement Delay (sec/veh)	7.0	15.6	7.2	24.6	21.5	14.3	14.1	11.1	5.5	15.4	11.9	7.6	15.1
	Total Delay (hr)	0.0	0.5	0.1	0.1	1.5	0.3	0.2	0.3	0.0	0.1	0.4	0.1	3.6
	Movement LOS	A	B	A	C	C	B	B	B	A	B	B	A	B
	Movement Volume	1	124	51	16	243	66	43	98	7	15	113	56	833
	Movement 95th Queue (ft)	120	120	120	231	231	231	110	110	110	122	122	122	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	13.1			20.2			11.7			10.9			
Approach LOS	B			C			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 12th Ave E	Movement Delay (sec/veh)	7.2	7.0	4.9	5.0	6.6	4.2	6.1	6.6	4.1	5.1	6.8	5.1	6.3
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.4	0.0	0.1	0.2	0.0	0.0	0.3	0.2	1.4
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	17	110	16	9	201	26	40	132	3	3	133	128	818
	Movement 95th Queue (ft)	88	88	88	81	81	81	72	72	72	85	85	85	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	6.8			6.3			6.4			6.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 13th Ave E	Movement Delay (sec/veh)	0.0	1.8	1.7	2.0	0.5	0.0	6.0	0.0	2.5	0.0	0.0	0.0	1.2
	Total Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	104	12	4	222	0	20	0	2	0	0	0	364
	Movement 95th Queue (ft)	0	0	0	5	5	0	42	0	42	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.8			0.5			5.7			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 14th Ave E	Movement Delay (sec/veh)	1.8	0.3	0.1	1.2	0.5	0.2	5.6	6.5	2.8	2.6	6.2	3.4	1.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	7	94	6	2	191	22	16	33	2	1	27	23	424
	Movement 95th Queue (ft)	11	11	11	3	3	3	56	56	56	51	51	51	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			0.5			6.1			4.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 15th Ave E	Movement Delay (sec/veh)	2.6	0.4	0.1	1.7	0.3	0.4	5.9	4.9	2.8	5.3	5.4	3.4	0.9
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	10	84	7	5	198	1	6	6	5	2	12	10	346
	Movement 95th Queue (ft)	18	18	18	0	0	0	41	41	41	43	43	43	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.6			0.3			4.6			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 16th Ave E	Movement Delay (sec/veh)	2.7	0.4	0.3	0.0	0.3	0.0	4.4	5.2	3.1	4.7	3.9	3.2	0.6
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	78	16	0	198	2	3	3	2	7	1	8	321
	Movement 95th Queue (ft)	8	8	8	0	0	0	31	31	31	36	36	36	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.5			0.3			4.4			3.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 17th Ave E	Movement Delay (sec/veh)	2.6	0.3	0.2	3.2	0.2	0.3	5.7	4.5	2.5	0.0	4.9	3.4	0.4
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	86	5	1	198	1	5	1	2	0	2	2	306
	Movement 95th Queue (ft)	10	10	10	6	6	6	27	27	27	22	22	22	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			0.2			4.8			4.2			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 18th Ave E	Movement Delay (sec/veh)	1.6	0.3	0.1	0.0	0.2	0.0	4.6	5.1	3.1	4.7	5.6	3.5	0.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	83	9	0	197	2	1	8	3	5	11	7	329
	Movement 95th Queue (ft)	5	5	5	0	0	0	36	36	36	45	45	45	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.2			4.6			4.8			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 19th Ave E	Movement Delay (sec/veh)	2.4	0.3	0.2	2.1	0.2	0.1	4.3	5.8	3.2	0.0	6.4	3.6	1.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	5	91	7	5	165	4	3	30	2	0	50	39	401
	Movement 95th Queue (ft)	11	11	11	12	12	12	49	49	49	56	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			0.3			5.5			5.2			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 20th Ave E	Movement Delay (sec/veh)	1.7	0.3	0.2	1.4	0.5	0.6	5.0	6.2	3.0	3.7	5.9	3.4	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	5	84	4	2	161	3	8	2	3	1	3	6	282
	Movement 95th Queue (ft)	7	7	7	0	0	0	35	35	35	31	31	31	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			0.5			4.7			4.2			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 21st Ave E	Movement Delay (sec/veh)	25.9	19.4	11.6	0.0	12.1	9.8	5.7	0.9	1.3	0.0	1.3	1.0	2.7
	Total Delay (hr)	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.2	0.0	1.0
	Movement LOS	D	C	B	A	B	A	A	A	A	A	A	A	A
	Movement Volume	33	29	21	0	22	12	54	498	1	0	607	69	1346
	Movement 95th Queue (ft)	86	86	86	49	49	49	50	0	0	7	7	7	
	Storage Bay Distance (ft)	0	0	0	0	0	0	100	0	0	0	0	0	
	Approach Delay (sec/veh)	20.0			11.3			1.4			1.3			
	Approach LOS	C			B			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 22nd Ave E	Movement Delay (sec/veh)	0.0	1.8	1.1	0.0	0.1	0.1	4.2	2.9	1.9	0.0	4.1	1.7	1.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	26	1	0	29	2	4	1	2	0	1	1	67
	Movement 95th Queue (ft)	0	0	0	0	0	0	27	27	27	13	13	13	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.8			0.1			3.4			2.9			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 23rd Ave E	Movement Delay (sec/veh)	1.1	0.1	0.0	1.6	1.1	1.3	3.9	4.3	3.4	0.0	4.4	2.9	1.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	1	18	2	1	25	1	3	1	1	0	13	3	69
	Movement 95th Queue (ft)	0	0	0	0	0	0	24	24	24	40	40	40	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.1			1.1			3.9			4.1			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 24th Ave E	Movement Delay (sec/veh)	4.5	5.5	3.5	5.5	5.3	3.6	2.0	0.2	0.0	2.0	0.1	0.2	1.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	4	12	2	2	17	4	7	91	2	2	72	3	218
	Movement 95th Queue (ft)	41	41	41	42	42	42	9	9	9	5	5	5	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.1			5.0			0.3			0.2			
	Approach LOS	A			A			A			A			

CONVERSION BUILD - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Mesaba Ave	Movement Delay (sec/veh)	82.7	99.6	38.1	65.0	62.9	31.1	0.0	17.6	14.2	23.1	12.6	8.5	22.0
	Total Delay (hr)	0.9	0.4	0.0	2.6	0.9	0.9	0.0	4.2	0.2	0.3	3.0	0.1	13.5
	Movement LOS	F	F	D	E	E	C	A	B	B	C	B	A	C
	Movement Volume	40	15	1	140	49	105	0	850	44	41	850	46	2181
	Movement 95th Queue (ft)	114	114	14	158	156	156	246	268	290	37	187	199	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	160	0	0	
	Approach Delay (sec/veh)	86.4			52.5			17.4			12.9			
Approach LOS	F			D			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 6th Ave W	Movement Delay (sec/veh)	4.1	0.3	0.5	2.0	0.5	0.2	9.2	8.3	3.3	7.9	6.1	6.4	1.0
	Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	4	93	33	97	321	22	1	17	1	2	5	1	597
	Movement 95th Queue (ft)	15	15	23	43	43	43	30	30	30	26	26	26	
	Storage Bay Distance (ft)	0	0	30	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.5			0.8			8.1			6.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 5th Ave W	Movement Delay (sec/veh)	5.0	5.5	4.0	5.9	6.3	4.5	5.2	6.6	4.0	0.0	5.7	4.1	5.7
	Total Delay (hr)	0.0	0.2	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	2	134	39	119	368	21	8	5	37	0	13	19	765
	Movement 95th Queue (ft)	56	56	56	85	85	85	28	48	48	45	45	45	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.2			6.1			4.5			4.8			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave W	Movement Delay (sec/veh)	5.9	5.8	3.2	7.4	7.6	5.7	11.2	8.4	5.9	10.9	9.7	10.3	7.5
	Total Delay (hr)	0.1	0.2	0.0	0.1	0.9	0.1	0.0	0.2	0.1	0.0	0.1	0.3	2.1
	Movement LOS	A	A	A	A	A	A	B	A	A	B	A	B	A
	Movement Volume	66	145	1	29	413	49	3	80	57	2	50	101	996
	Movement 95th Queue (ft)	53	53	53	114	114	114	83	83	83	73	73	106	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.8			7.4			7.4			10.1			
Approach LOS	A			A			A			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave W	Movement Delay (sec/veh)	5.6	5.5	3.7	7.3	8.1	6.3	6.3	6.9	4.4	11.0	12.1	10.0	7.6
	Total Delay (hr)	0.1	0.2	0.0	0.2	0.9	0.0	0.0	0.1	0.0	0.1	0.1	0.2	1.9
	Movement LOS	A	A	A	A	A	A	A	A	A	B	B	A	A
	Movement Volume	47	153	12	79	416	25	19	50	7	41	28	57	934
	Movement 95th Queue (ft)	57	57	57	115	115	115	56	56	56	117	117	117	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.4			7.9			6.5			10.8			
Approach LOS	A			A			A			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave W	Movement Delay (sec/veh)	4.6	5.6	3.5	5.1	6.2	4.1	9.3	8.6	7.5	10.7	12.7	11.4	7.4
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.5	0.0	0.1	0.1	0.1	0.0	0.2	0.4	1.6
	Movement LOS	A	A	A	A	A	A	A	A	A	B	B	B	A
	Movement Volume	2	150	35	13	311	33	27	36	34	4	63	117	825
	Movement 95th Queue (ft)	56	56	56	74	74	74	88	88	88	139	139	139	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.2			6.0			8.4			11.8			
Approach LOS	A			A			A			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave W	Movement Delay (sec/veh)	5.1	5.3	3.7	5.9	6.5	4.5	6.3	7.6	5.2	7.8	8.6	6.6	6.3
	Total Delay (hr)	0.0	0.2	0.0	0.1	0.6	0.0	0.1	0.1	0.0	0.0	0.1	0.0	1.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	21	141	1	40	315	21	30	40	5	17	39	13	683
	Movement 95th Queue (ft)	53	53	53	88	88	88	62	62	62	77	77	77	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.3			6.3			6.9			8.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & Lake Ave	Movement Delay (sec/veh)	8.9	5.2	3.0	10.3	10.1	8.5	52.4	39.8	10.3	19.0	19.6	12.2	16.7
	Total Delay (hr)	0.0	0.2	0.0	0.8	0.8	0.2	0.6	2.0	0.1	0.0	1.8	0.2	6.7
	Movement LOS	A	A	A	B	B	A	D	D	B	B	B	B	B
	Movement Volume	9	147	13	275	280	66	42	177	33	2	328	47	1419
	Movement 95th Queue (ft)	84	84	84	186	186	186	205	147	89	118	121	124	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	5.2			10.0			38.0			18.7			
Approach LOS	A			B			D			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 1st Ave E	Movement Delay (sec/veh)	5.2	5.8	3.5	8.1	8.1	6.5	7.0	7.0	4.6	7.2	8.6	7.4	7.3
	Total Delay (hr)	0.0	0.2	0.0	0.0	1.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	1.5
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	153	26	22	443	18	12	62	17	6	34	40	836
	Movement 95th Queue (ft)	64	64	64	116	116	116	63	63	63	60	60	61	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	5.5			8.0			6.6			7.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 2nd Ave E	Movement Delay (sec/veh)	5.5	5.4	2.8	10.5	10.9	10.9	5.8	6.3	4.0	8.0	8.1	6.6	9.0
	Total Delay (hr)	0.0	0.2	0.0	0.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
	Movement LOS	A	A	A	B	B	B	A	A	A	A	A	A	A
	Movement Volume	16	157	6	22	430	3	25	16	6	14	12	18	725
	Movement 95th Queue (ft)	48	48	48	169	169	169	46	46	46	56	56	45	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	25	
	Approach Delay (sec/veh)	5.3			10.9			5.7			7.5			
Approach LOS	A			B			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 3rd Ave E	Movement Delay (sec/veh)	15.7	8.0	5.2	13.6	11.4	9.6	25.8	17.5	4.9	26.4	17.2	8.2	11.3
	Total Delay (hr)	0.0	0.3	0.0	0.1	1.2	0.0	0.1	0.1	0.0	0.0	0.2	0.1	2.1
	Movement LOS	B	A	A	B	B	A	C	B	A	C	B	A	B
	Movement Volume	11	148	20	32	392	16	17	22	18	6	48	48	778
	Movement 95th Queue (ft)	95	95	95	183	183	183	37	49	49	25	84	84	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	25	25	25	0	0	
	Approach Delay (sec/veh)	8.2			11.5			16.0			13.5			
Approach LOS	A			B			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 4th Ave E	Movement Delay (sec/veh)	3.3	0.4	0.5	2.8	1.3	0.9	7.5	9.9	4.7	6.9	7.7	5.0	2.7
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.3
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	22	101	7	20	353	76	10	54	29	15	45	20	752
	Movement 95th Queue (ft)	40	40	40	22	22	22	66	66	66	59	59	59	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.9			1.3			8.0			6.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 7th Ave E	Movement Delay (sec/veh)	3.2	0.4	0.2	3.5	1.7	1.7	6.5	7.3	3.5	6.2	7.5	3.9	1.9
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	2	129	3	5	254	23	4	2	16	20	1	47	506
	Movement 95th Queue (ft)	10	10	10	11	11	11	41	41	41	56	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			1.7			4.4			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 8th Ave E	Movement Delay (sec/veh)	5.0	5.4	4.0	6.7	6.9	5.2	4.8	5.4	3.2	5.0	5.5	3.2	5.8
	Total Delay (hr)	0.0	0.1	0.1	0.1	0.5	0.1	0.0	0.1	0.0	0.0	0.1	0.0	1.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	9	97	61	30	241	53	31	37	7	18	45	5	634
	Movement 95th Queue (ft)	68	68	68	105	105	105	49	49	49	48	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	4.9			6.6			4.9			5.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 9th Ave E	Movement Delay (sec/veh)	3.0	0.3	0.2	2.3	0.4	0.2	6.6	6.9	3.4	7.2	6.9	4.3	1.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	6	143	10	17	276	14	4	17	3	1	20	29	540
	Movement 95th Queue (ft)	16	16	16	34	34	34	43	43	43	54	54	54	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			0.5			6.4			5.4			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 10th Ave E	Movement Delay (sec/veh)	22.3	19.6	8.2	26.1	21.9	14.9	17.0	13.9	8.9	15.8	13.1	8.7	16.1
	Total Delay (hr)	0.0	0.5	0.1	0.1	1.4	0.5	0.3	0.6	0.0	0.1	0.7	0.1	4.4
	Movement LOS	C	B	A	C	C	B	B	B	A	B	B	A	B
	Movement Volume	1	96	48	18	222	120	55	146	9	19	182	50	966
	Movement 95th Queue (ft)	116	116	116	250	250	250	144	144	144	157	157	157	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	15.8			19.8			14.5			12.4			
Approach LOS	B			B			B			B				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 12th Ave E	Movement Delay (sec/veh)	6.9	7.0	5.8	5.3	6.0	4.1	6.4	6.0	4.5	3.9	8.0	6.6	6.9
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.7	0.1	1.5
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	9	105	7	12	118	30	22	151	2	1	328	61	846
	Movement 95th Queue (ft)	77	77	77	69	69	69	69	69	69	118	118	118	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	6.9			5.6			6.0			7.8			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 13th Ave E	Movement Delay (sec/veh)	0.0	1.8	1.6	2.1	0.3	0.0	5.0	0.0	3.5	0.0	0.0	0.0	1.4
	Total Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	0	101	7	13	137	0	24	0	2	0	0	0	284
	Movement 95th Queue (ft)	0	0	0	14	14	0	44	0	44	0	0	0	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.8			0.5			4.9			0.0			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 14th Ave E	Movement Delay (sec/veh)	2.6	0.1	0.0	2.1	0.4	0.2	5.4	5.9	3.6	0.0	5.9	3.9	2.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	6	81	5	8	103	20	8	40	3	0	56	29	359
	Movement 95th Queue (ft)	13	13	13	11	11	11	49	49	49	56	56	56	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.5			5.7			5.2			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 15th Ave E	Movement Delay (sec/veh)	1.7	0.2	0.0	1.9	0.3	0.0	4.8	5.4	4.1	5.1	5.5	3.2	1.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	12	66	4	4	104	1	11	23	4	1	30	18	278
	Movement 95th Queue (ft)	10	10	10	5	5	5	48	48	48	48	48	48	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.4			0.4			5.1			4.6			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 16th Ave E	Movement Delay (sec/veh)	1.8	0.3	0.1	1.5	0.3	0.1	5.2	5.1	3.5	4.0	5.1	3.0	1.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	4	54	14	3	96	9	4	16	1	6	8	11	226
	Movement 95th Queue (ft)	8	8	8	4	4	4	43	43	43	43	43	43	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.3			5.0			3.9			
Approach LOS	A			A			A			A				

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 17th Ave E	Movement Delay (sec/veh)	2.3	0.2	0.3	0.9	0.2	0.1	5.6	4.8	3.0	0.0	5.4	2.8	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	2	60	2	1	101	2	4	6	2	0	8	4	192
	Movement 95th Queue (ft)	5	5	5	0	0	0	35	35	35	35	35	35	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.2			4.8			4.5			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 18th Ave E	Movement Delay (sec/veh)	2.6	0.2	0.2	0.0	0.2	0.3	4.0	4.7	3.2	4.4	5.2	2.8	1.0
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	2	54	8	0	100	5	2	7	2	3	17	7	207
	Movement 95th Queue (ft)	6	6	6	0	0	0	33	33	33	45	45	45	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.2			4.3			4.5			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 19th Ave E	Movement Delay (sec/veh)	1.7	0.2	0.1	2.5	0.2	0.2	6.6	5.2	2.9	0.0	5.6	3.2	2.5
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	4	58	6	1	76	8	2	42	1	0	67	27	292
	Movement 95th Queue (ft)	0	0	0	0	0	0	48	48	48	55	55	55	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.2			5.2			4.9			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 20th Ave E	Movement Delay (sec/veh)	2.2	0.2	0.1	2.0	0.6	0.6	4.3	6.3	3.0	0.0	4.7	3.0	1.1
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	3	53	4	5	72	10	7	1	2	0	12	6	175
	Movement 95th Queue (ft)	9	9	9	5	5	5	30	30	30	40	40	40	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.3			0.7			4.2			4.1			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 21st Ave E	Movement Delay (sec/veh)	24.3	22.3	9.8	21.3	11.6	8.9	5.8	1.1	0.1	3.3	1.2	0.7	2.0
	Total Delay (hr)	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.2	0.0	0.8
	Movement LOS	C	C	A	C	B	A	A	A	A	A	A	A	A
	Movement Volume	16	20	9	1	16	2	32	683	1	4	616	43	1443
	Movement 95th Queue (ft)	64	64	64	37	37	37	43	0	0	29	29	29	
	Storage Bay Distance (ft)	0	0	0	0	0	0	100	0	0	0	0	0	
	Approach Delay (sec/veh)	20.5			11.8			1.3			1.2			
	Approach LOS	C			B			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 22nd Ave E	Movement Delay (sec/veh)	2.4	1.5	1.6	1.4	0.1	0.0	3.2	3.6	2.3	3.2	3.6	2.1	1.3
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	1	24	1	4	16	2	1	2	2	1	2	2	58
	Movement 95th Queue (ft)	0	0	0	0	0	0	20	20	20	20	20	20	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.5			0.3			3.0			2.9			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 23rd Ave E	Movement Delay (sec/veh)	0.9	0.1	0.0	2.1	0.7	0.7	4.2	4.8	1.5	2.8	4.9	3.3	2.2
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	1	19	2	2	19	1	1	5	1	1	21	2	75
	Movement 95th Queue (ft)	0	0	0	0	0	0	27	27	27	43	43	43	
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.1			0.8			4.2			4.7			
	Approach LOS	A			A			A			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1st St & 24th Ave E	Movement Delay (sec/veh)	5.3	4.6	2.8	0.0	4.9	2.6	1.8	0.2	0.0	1.5	0.2	0.3	0.8
	Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A	A
	Movement Volume	4	13	1	0	9	5	1	54	1	5	129	9	231
	Movement 95th Queue (ft)	38	38	38	37	37	37	0	0	0	0	0	0	0
	Storage Bay Distance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	0
	Approach Delay (sec/veh)	4.7			4.1			0.2			0.3			
	Approach LOS	A			A			A			A			

**Appendix F:**  
Alternative B (Bike Facility) Analysis

**Alternative B:  
Install DSMIC Proposed Bikeway**

Segment: 12th Ave E to 6th Ave W

**OPTION 1: One-Way Bike Lanes**

**OPTION 2: Two-Way Bike Lane**

**OPTION 3: One-Way Bike Lanes  
with parking as buffer**

**Pros**

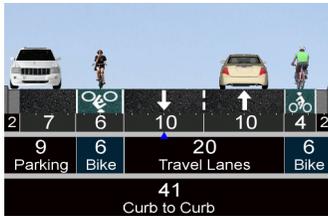
- DSMIC Bikeways Plan lists 1st street between 6th Ave W and 12th Ave E as a future bike facility

**Cons**

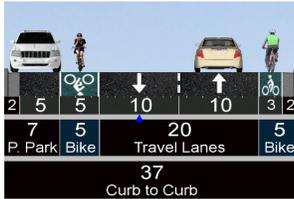
- Removal of curbside uses on one side
- Need to remove existing curb bump-outs
- Parked cars may be safety hazard to cyclists when driver or passengers exit

**Typical Sections:**

Entire Segment (Except Between 10th Ave E and 9th Ave E):



Between 10th Ave E and 9th Ave E:



**Pros**

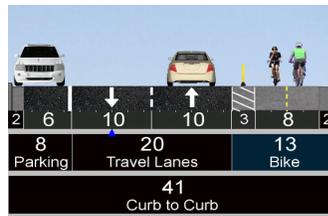
- DSMIC Bikeways Plan lists 1st street between 6th Ave W and 12th Ave E as a future bike facility
- Two-way bike facility requires less space (can have wide buffer for increased safety)

**Cons**

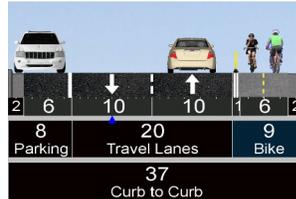
- Removal of curbside uses on one side
- Need to remove existing curb bump-outs

**Typical Sections:**

Entire Segment (Except Between 10th Ave E and 9th Ave E):



Between 10th Ave E and 9th Ave E:



**Pros**

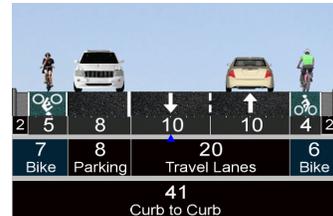
- DSMIC Bikeways Plan lists 1st street between 6th Ave W and 12th Ave E as a future bike facility
- Parked cars as buffer on one side can increase safety of cyclists

**Cons**

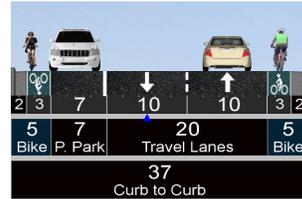
- Removal of curbside uses on one side
- Need to remove existing curb bump-outs
- Parked cars may be safety hazard to cyclists when passengers exit

**Typical Sections:**

Entire Segment (Except Between 10th Ave E and 9th Ave E):



Between 10th Ave E and 9th Ave E:



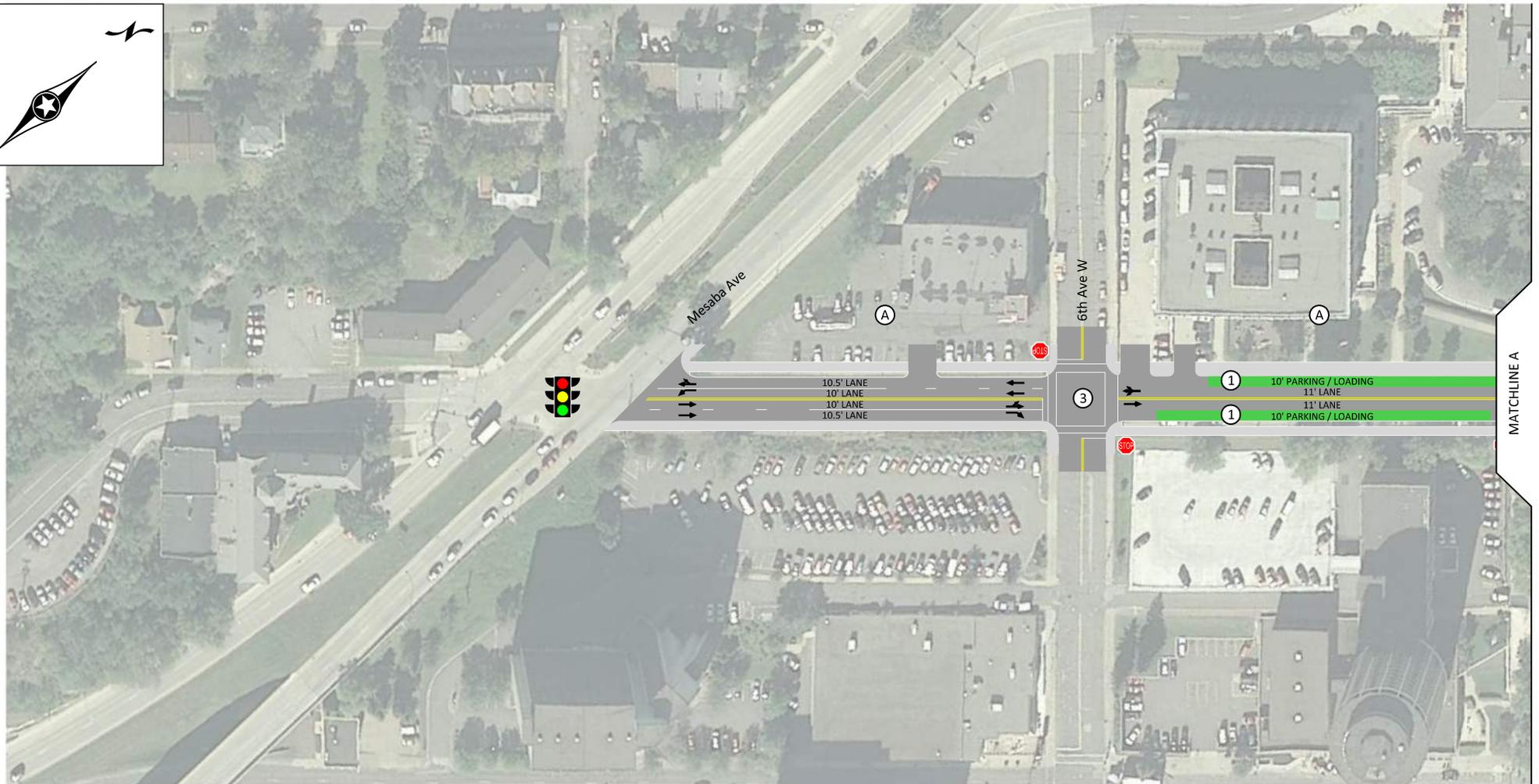
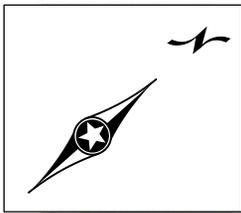
**Curbside Uses Affected:**

If bike lane replaces curbside uses on...	Number of Stalls Affected			
	Parking (Non-Disability)	Disability Parking	Loading	Transit
North Side	197	4	25	7
South Side	187	9	31	3*

\*There are 3 trolley stops on 1st Street, but the existing route follows Superior St. instead.

Note that in reality, some blocks have a curb to curb measurement 1 foot wider than displayed

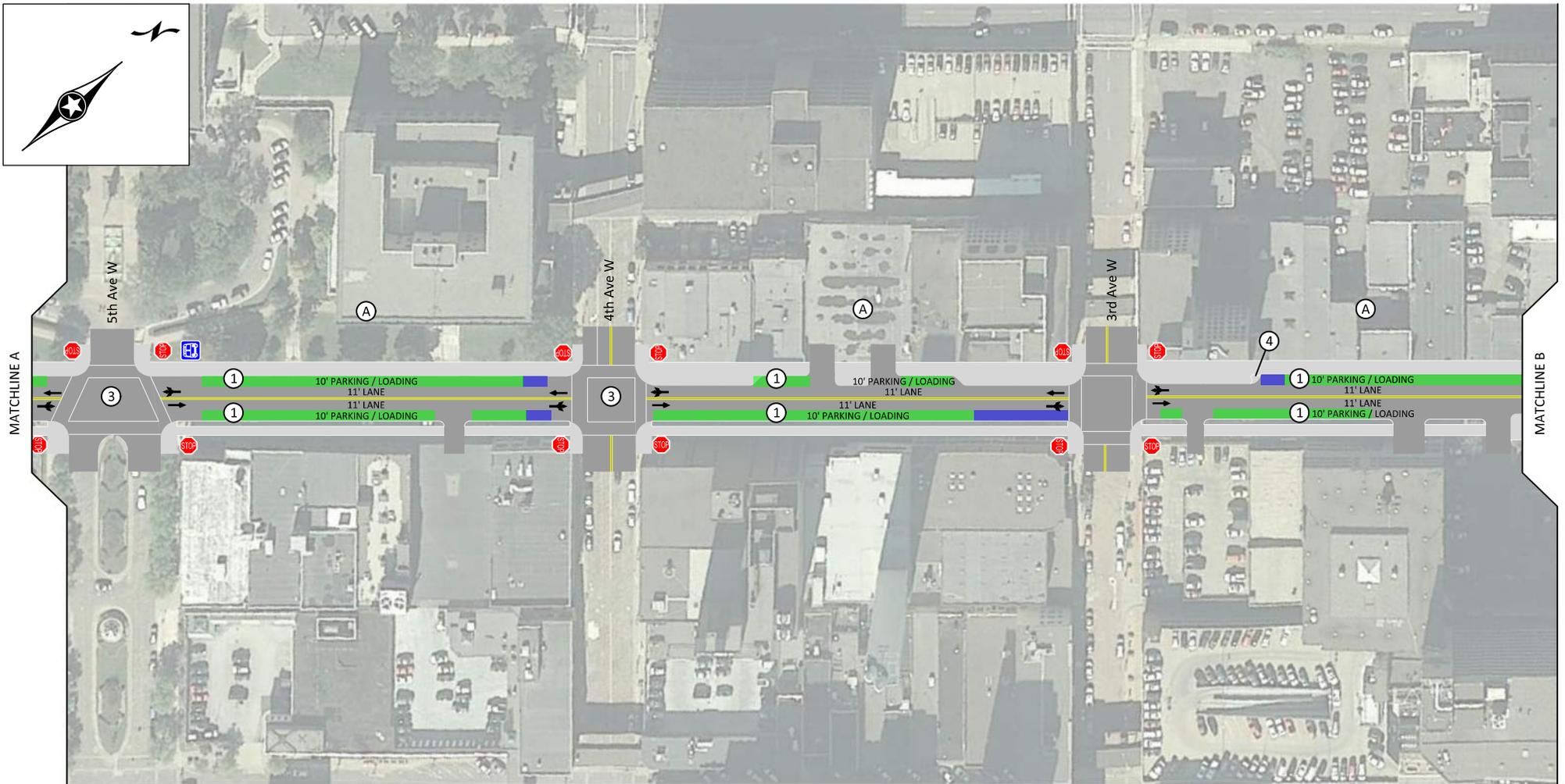
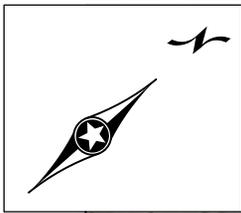
**Appendix G:**  
Preferred Concept



- Notes:
- Ⓐ Block is considered in Downtown area
  - ① All parking on this side of the block is metered
  - ③ Convert from existing traffic control

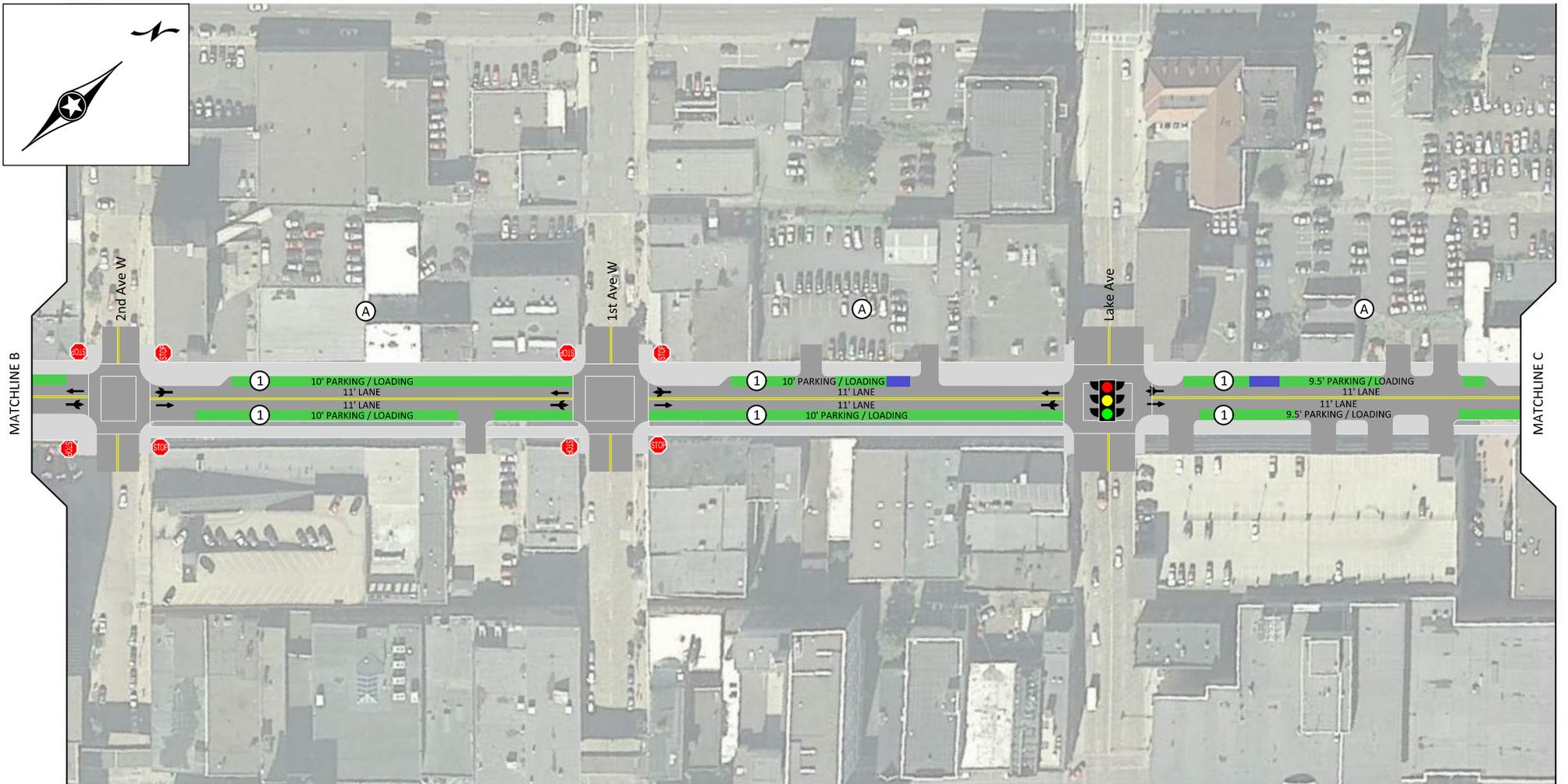
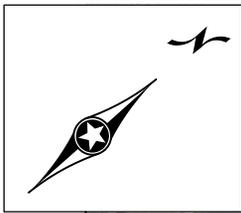
LEGEND	
<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	Parking / Loading





LEGEND	
	Parking / Loading
	Disability Parking
	Existing Bus Stop



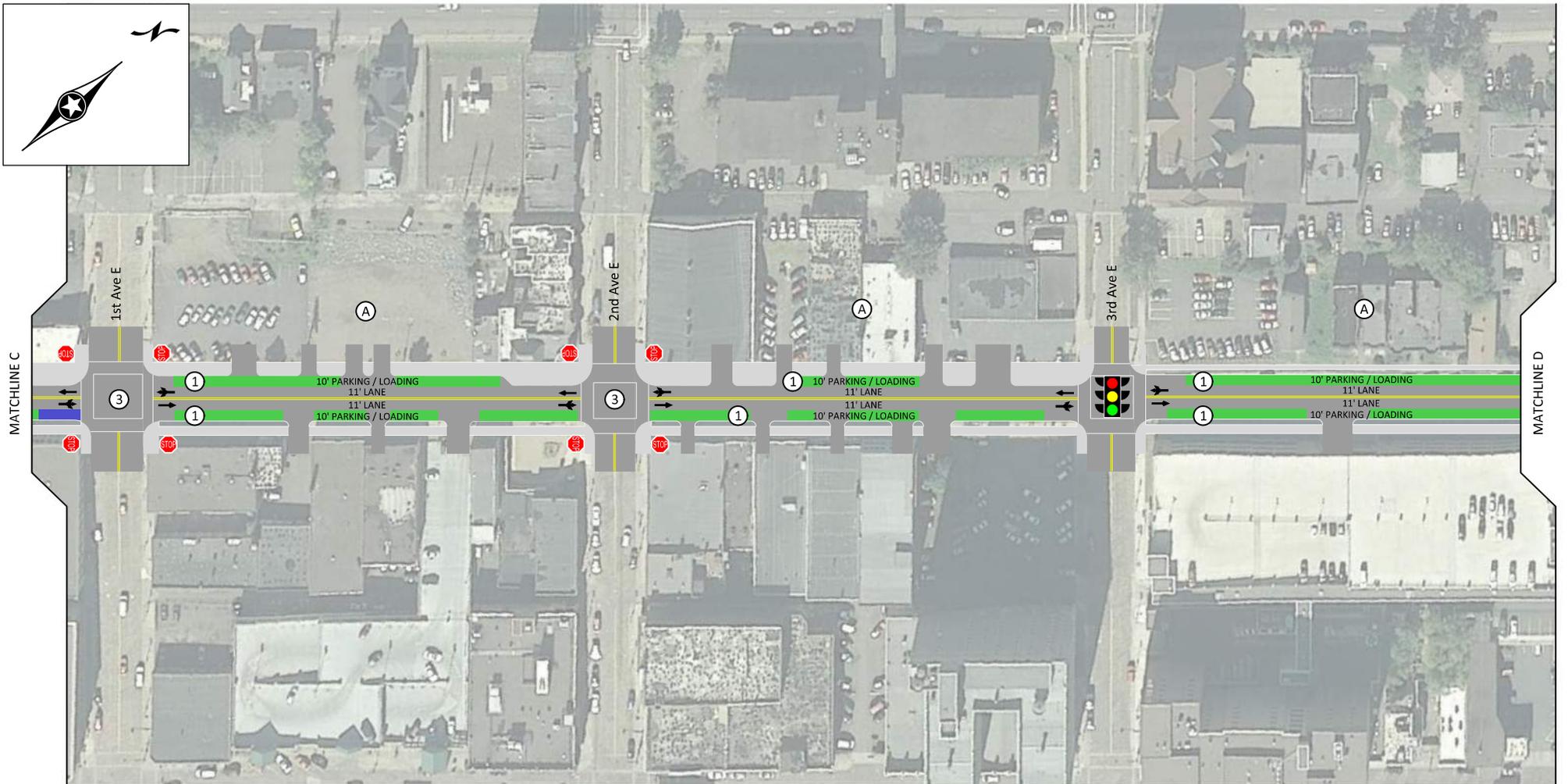
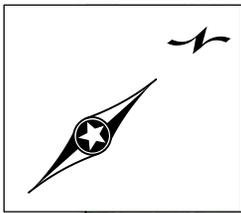


Notes:

- (A) Block is considered in Downtown area
- (1) All parking on this side of the block is metered

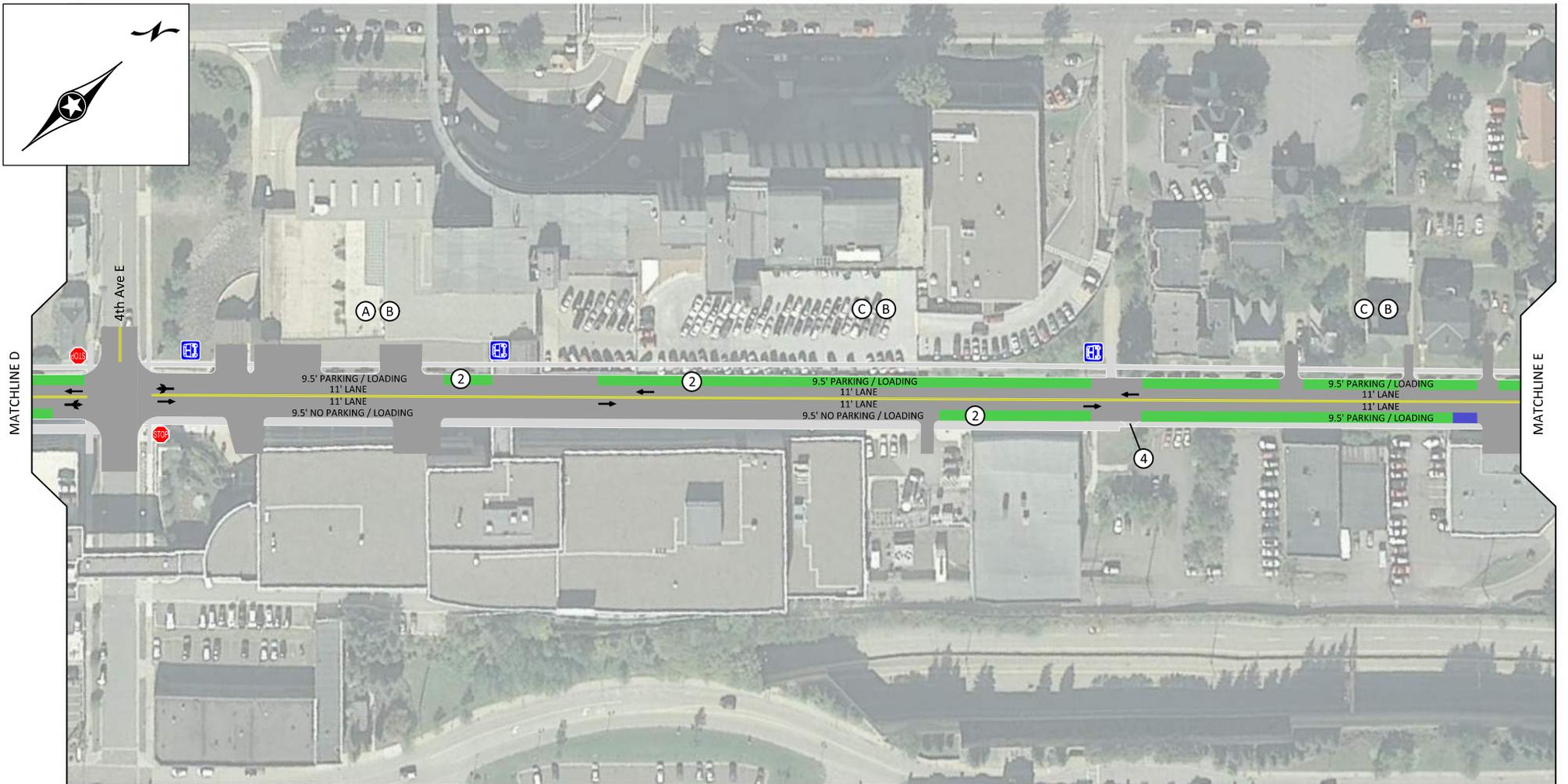
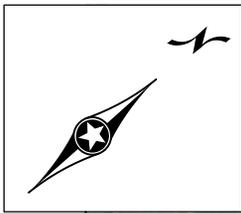
LEGEND	
<span style="display: inline-block; width: 20px; height: 10px; background-color: green; border: 1px solid black;"></span>	Parking / Loading
<span style="display: inline-block; width: 20px; height: 10px; background-color: blue; border: 1px solid black;"></span>	Disability Parking





LEGEND	
	Parking / Loading
	Disability Parking

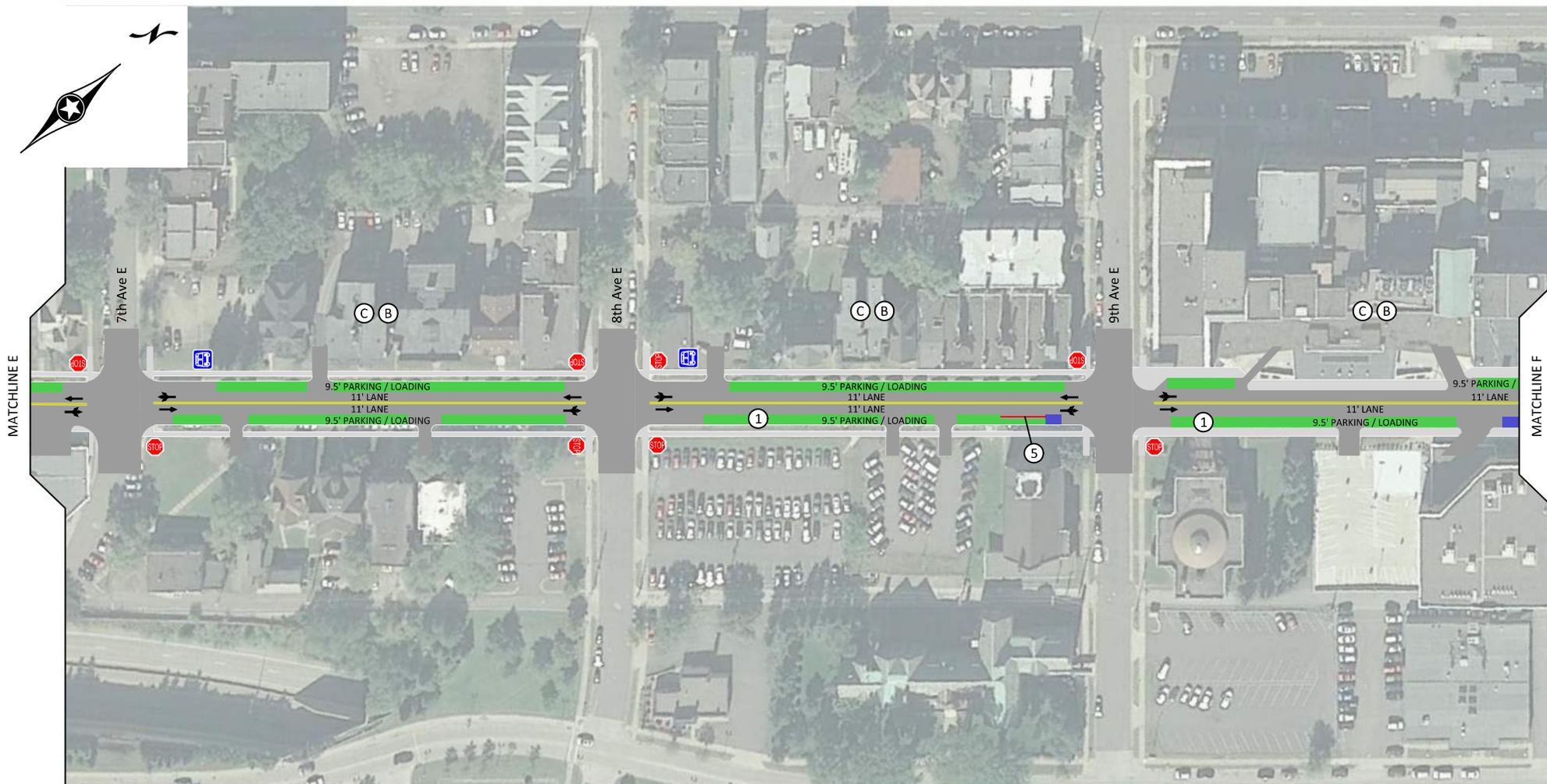




- Notes:**
- (A) Block is considered in Downtown area
  - (B) Block is considered in Medical District
  - (C) Block is considered in East Hillside Neighborhood
  - (2) Parking on this segment is metered
  - (4) Mid-block pedestrian ramp

LEGEND	
<span style="color: green;">█</span>	Parking / Loading
<span style="color: blue;">█</span>	Disability Parking
	Existing Bus Stop



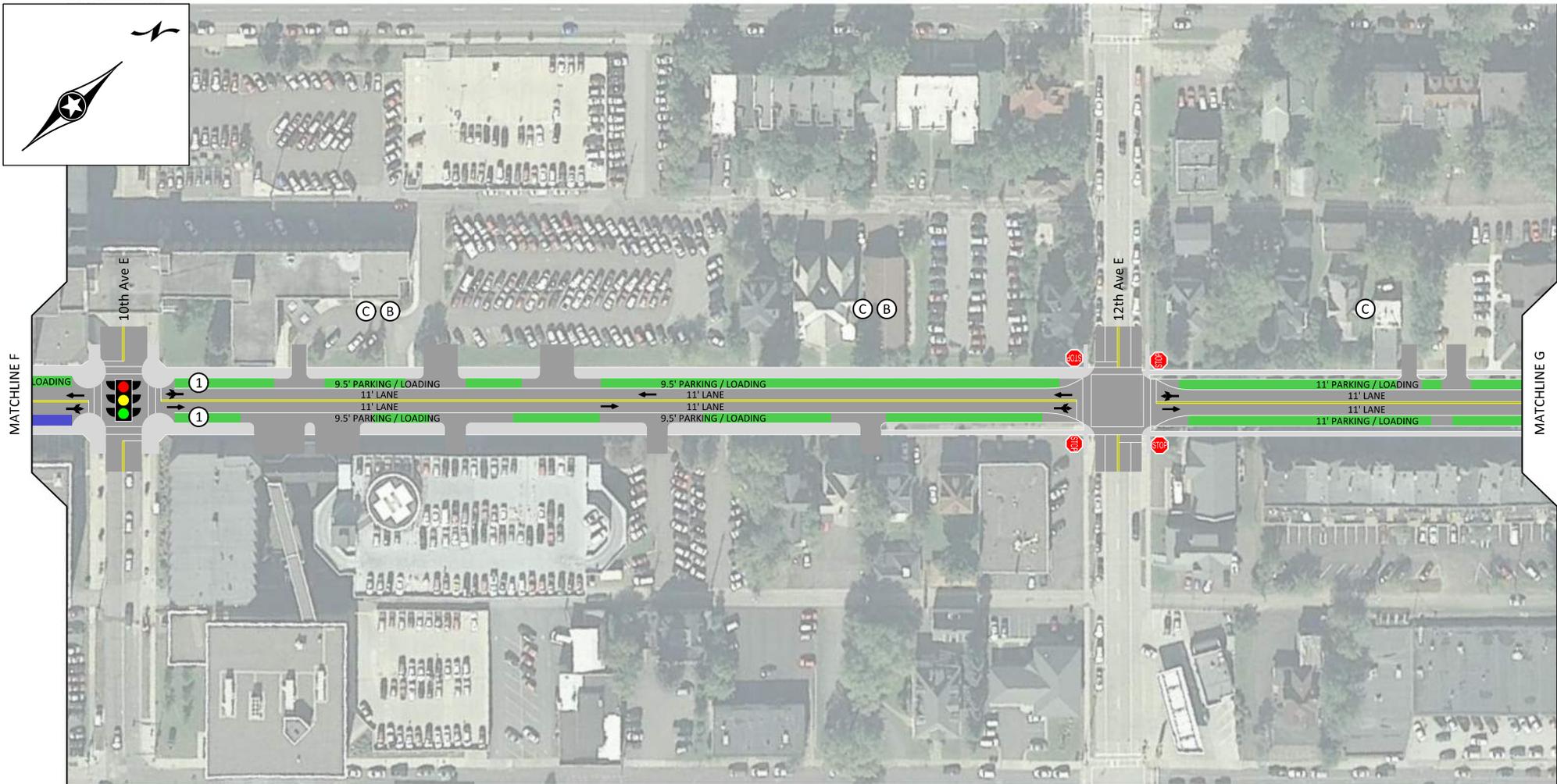
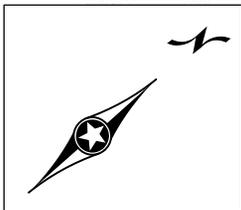


**Notes:**

- (B) Block is considered in Medical District
- (C) Block is considered in East Hillside Neighborhood
- (1) All parking on this side of the block is metered
- (5) No Parking during United Baptist Christian Church services

**LEGEND**

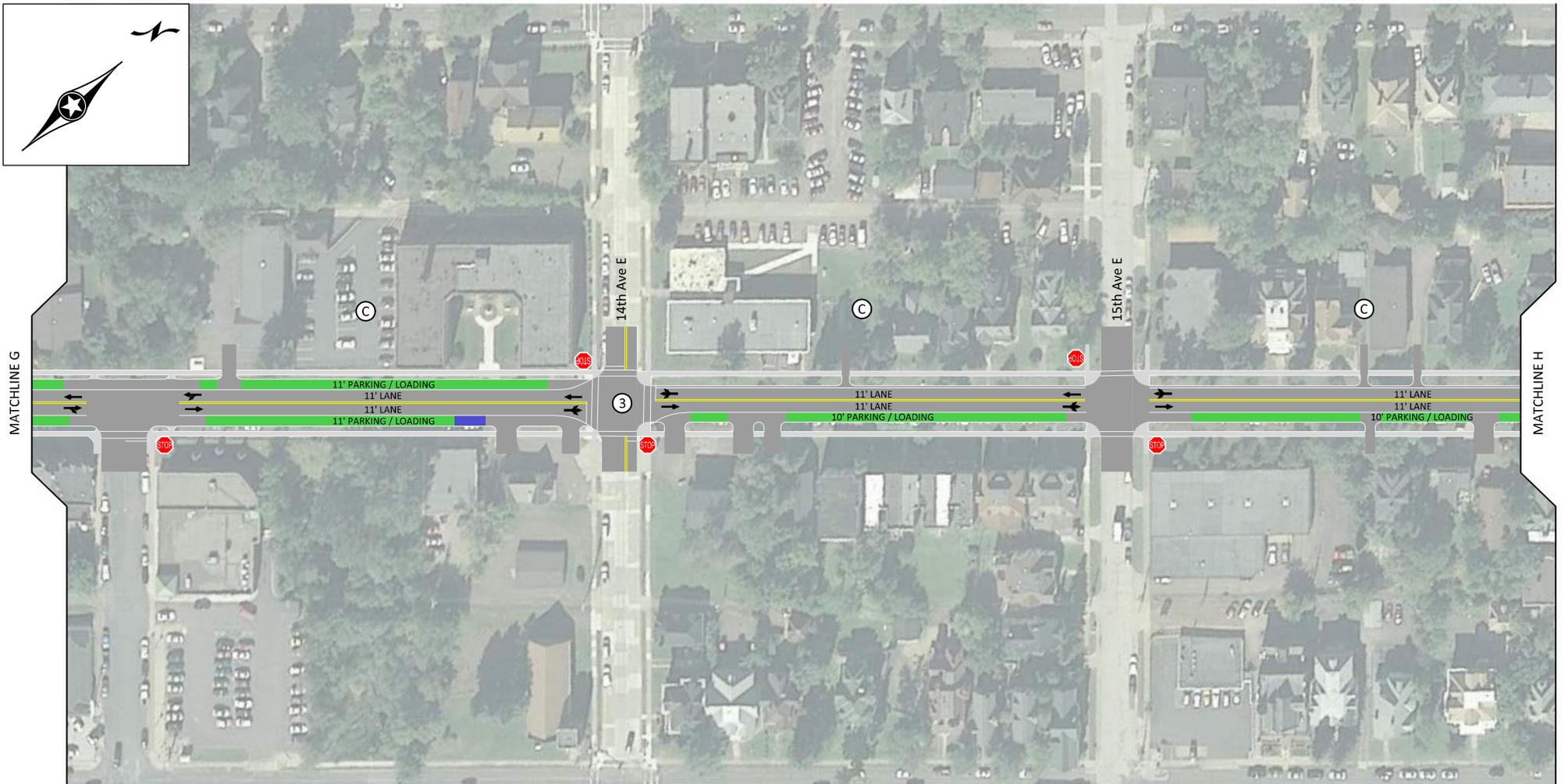
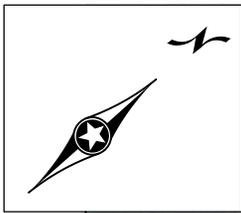
- Parking / Loading
- Disability Parking
- No Parking During Specified Times
- BUS Existing Bus Stop



- Notes:
- (B) Block is considered in Medical District
  - (C) Block is considered in East Hillside Neighborhood
  - (1) All parking on this side of the block is metered

LEGEND	
<span style="display: inline-block; width: 20px; height: 10px; background-color: #00FF00; border: 1px solid black;"></span>	Parking / Loading
<span style="display: inline-block; width: 20px; height: 10px; background-color: #0000FF; border: 1px solid black;"></span>	Disability Parking



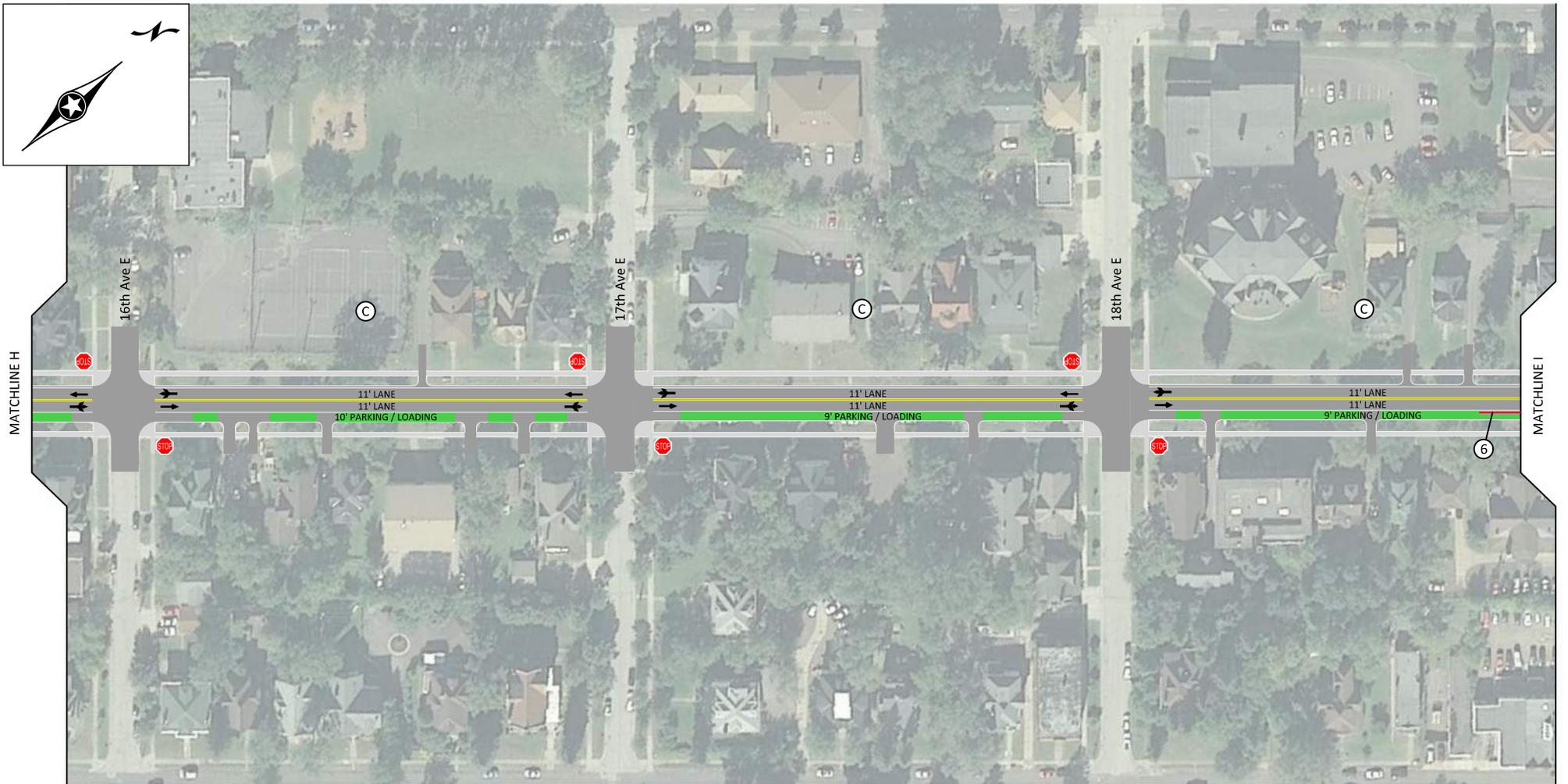
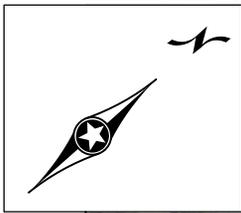


Notes:

- Ⓒ Block is considered in East Hillside Neighborhood
- ③ Convert from existing traffic control

LEGEND	
	Parking / Loading
	Disability Parking



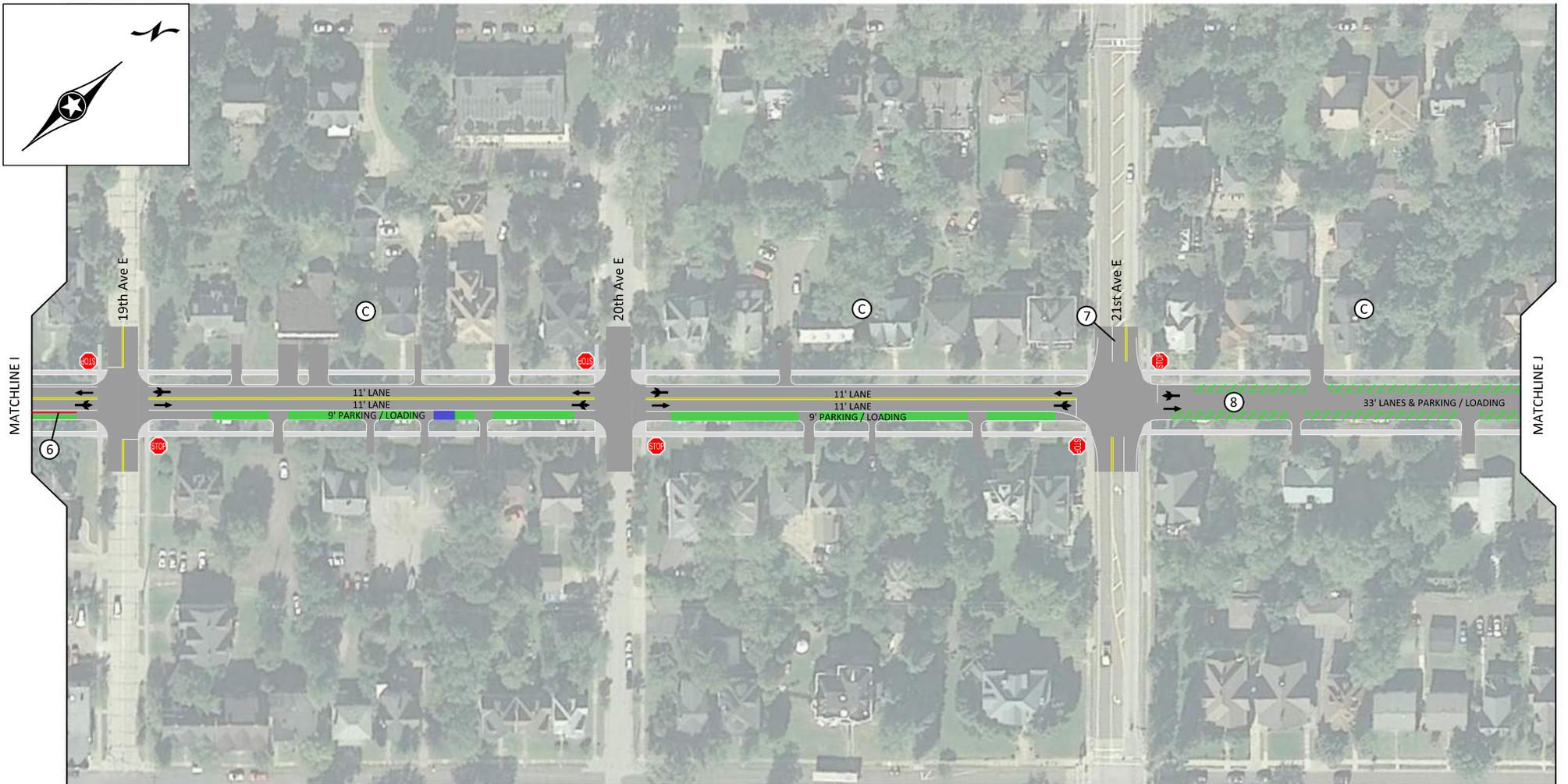
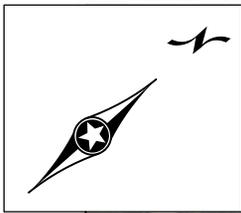


Notes:

- Ⓒ Block is considered in East Hillside Neighborhood
- Ⓔ No Parking during Prince of Peace Fellowship services

LEGEND	
<span style="color: green;">█</span>	Parking / Loading
<span style="color: blue;">█</span>	Disability Parking
<span style="color: red;">█</span>	No Parking During Specified Times

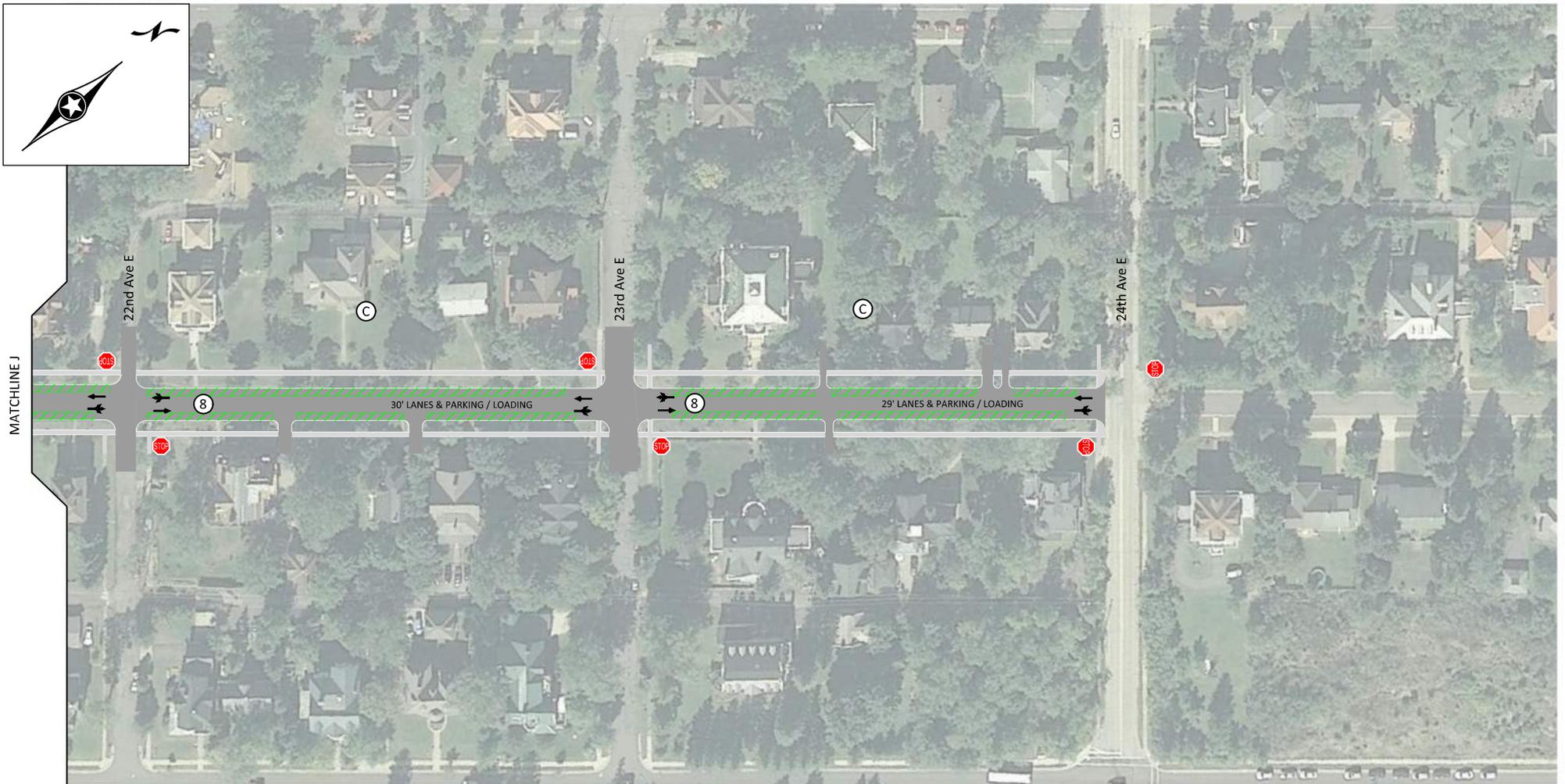
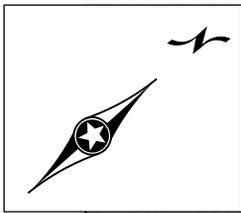




- Notes:**
- Ⓒ Block is considered in East Hillside Neighborhood
  - Ⓓ No Parking during Prince of Peace Fellowship services
  - Ⓔ Add southbound left turn lane
  - Ⓕ Street width may require MSA variance to keep existing alternate side parking or allow parking on both sides  
City may elect to remove MSA designation to keep alternate side parking or allow parking on both sides

LEGEND	
	Parking / Loading
	Alternate Side Parking
	Disability Parking
	No Parking During Specified Times





Notes:

- (C) Block is considered in East Hillside Neighborhood
- (8) Street width may require MSA variance to keep existing alternate side parking or allow parking on both sides  
City may elect to remove MSA designation to keep alternate side parking or allow parking on both sides

LEGEND	
	Parking / Loading
	Alternate Side Parking

