



Memorandum

SRF No. 13212.00

To: Bradley Estochen, PE
County Traffic Engineer
Ramsey County

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Date: June 11, 2021

Subject: County Road B2 and Fairview Avenue Traffic Study

Executive Summary

SRF has completed an analysis for the County Road B2 and Fairview Avenue corridors surrounding the Rosedale Mall in Roseville, Minnesota for. The project limits along County Road B2 extend between Fairview Avenue to the Snelling Avenue East Ramps. The limits along Fairview Avenue extend between County Road B to County Road B2. An analysis was completed for existing conditions, year 2040 no build and year 2040 build conditions. Within the build conditions, it was assumed that the proposed Rosedale Center redevelopment opportunities and ring-road conversion was completed. These analyses was completed for typical weekday p.m. peak hours, Saturday midday peak hours, 85th percentile Saturday midday peak hours, and a Black Friday peak hour, to determine the appropriate level of improvements required to fit the needs of all users. The following summary matrix provides a list of recommendations for the study intersections and a proposed timeframe in which they could be constructed.

Table 1. Improvements Summary

Intersection	Improvements	Information/Concerns	Timeframe
Fairview Avenue/TH 36 South Ramps	<ol style="list-style-type: none">1. Remove the northbound channelized right-turn island and construct a dedicated northbound right-turn lane.2. Remove the westbound channelized right-turn island and construct a dual westbound right-turn lane. The outside westbound right-turn lane would turn into a newly developed third northbound through lane.3. This westbound right turn lane would be expected to operate within a right-turn overlap phase with the southbound left-turn phase in the signal operations.	Need to include detectors on the ramp to ensure timing is adequate on peak days to prevent queuing on TH 36 mainline	MnDOT TH 36/Fairview Avenue Project

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Fairview Avenue/TH 36 North Ramps	<ol style="list-style-type: none"> 1. Remove the northbound channelized right-turn island and construct a third northbound through lane and dedicated northbound right-turn lane. 2. Remove the westbound channelized right-turn island and construct a dual westbound right-turn lane. 3. This westbound right turn lane would be expected to operate within a right-turn overlap phase with the southbound left-turn phase in the signal operations. 4. Remove the eastbound/westbound split-phasing signal operations. 5. Construct crosswalks on both the northbound and southbound approaches of the intersection. 6. Optional, if feasible in the future: Construct a dual southbound left-turn lane and additional receiving lane on the TH 36 North Ramp entrance to westbound TH 36. 	Need to include detectors on the ramp to ensure timing is adequate on peak days to prevent queuing on TH 36 mainline.	MnDOT TH 36/Fairview Avenue Project
Fairview Avenue/West Mall Entrance	<ol style="list-style-type: none"> 1. Remove the northbound channelized right-turn island and dual northbound right-turn lane into the Rosedale Center and trap the outside through lane into a dedicated single northbound right-turn lane. 2. Paint the previous outside northbound right-turn with hatching to indicate a shoulder to prevent motorists from using the lane. 	Reduces entrance lanes into the Rosedale Center, however, could be converted back, if necessary.	MnDOT TH 36/Fairview Avenue Project
Fairview Avenue/County Road B2	<ol style="list-style-type: none"> 1. Construct an eastbound right-turn lane. 2. Remove the northbound channelized right-turn island and construct a dedicated northbound right-turn lane. 	Limited ROW would require minimum width lanes and potential Metro Transit impacts	Potential Future Project
County Road B2/Northwest Mall Entrance	<ol style="list-style-type: none"> 1. Remove the eastbound channelized right-turn island and construct a single eastbound dedicated right-turn lane. 		Ramsey County Mill and Overlay Project
County Road B2/Snelling Avenue West Ramps	<ol style="list-style-type: none"> 1. Construct a dual eastbound left-turn lane within the existing median space. 2. Construct a receiving lane on the West Snelling Avenue entrance ramp to accommodate the dual eastbound left-turn maneuvers. 	Limited space to construct a receiving lane on the on-ramp	Potential Future Project

Introduction

SRF has completed an analysis for the County Road B2 and Fairview Avenue corridors surrounding the Rosedale Mall in Roseville, Minnesota (see Figure 1: Project Location). The project limits along County Road B2 extend between Fairview Avenue to the Snelling Avenue East Ramps. The limits along Fairview Avenue extend between County Road B to County Road B2. The main objectives is to review the existing traffic data and operations within the study area and evaluate potential improvements under various traffic conditions. These improvements will be developed to ensure safe and efficient operations for all transportation users. The following sections provide a detailed analysis, assumptions, and recommendations.

Existing Conditions

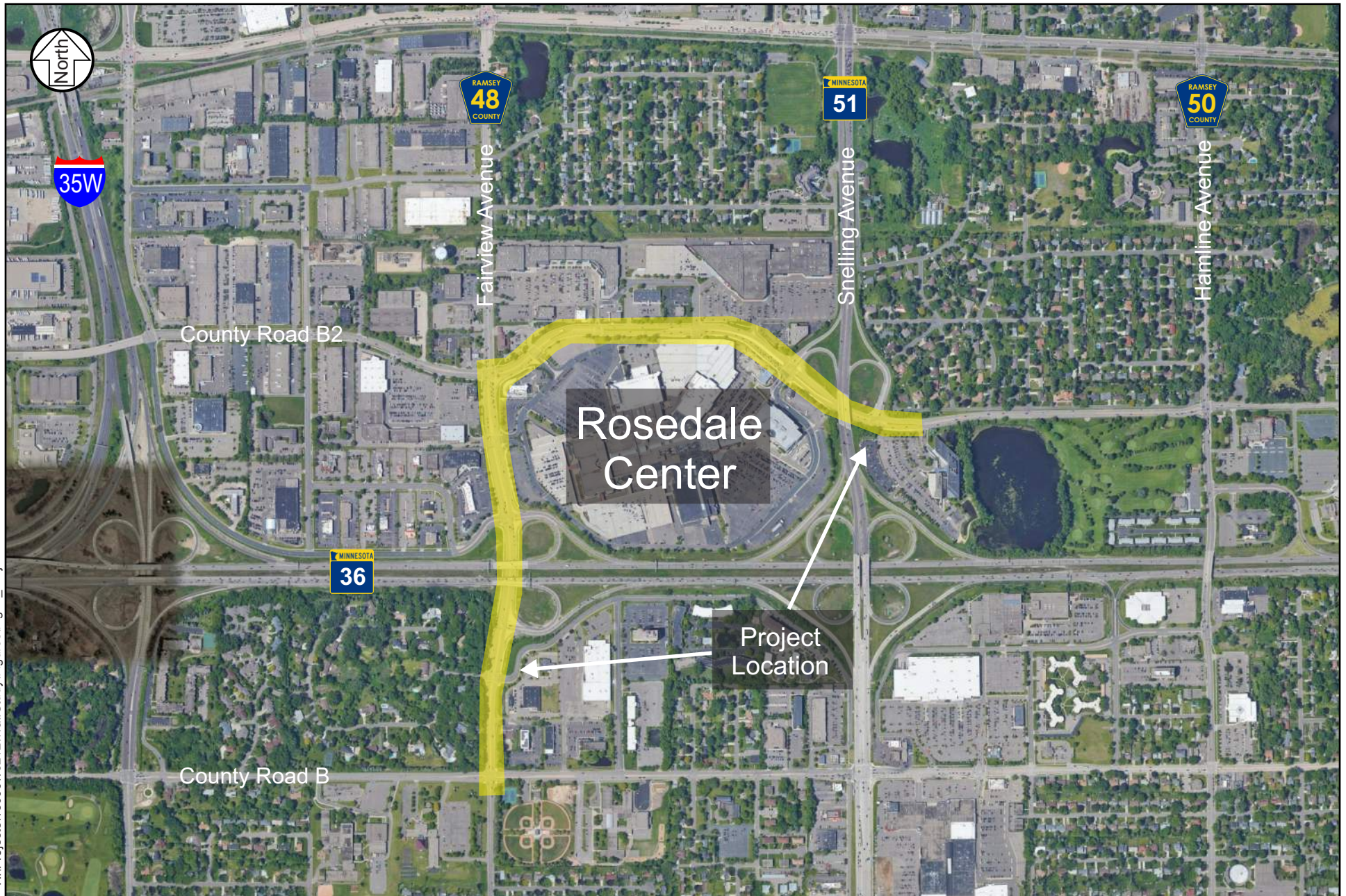
The existing conditions were reviewed to establish a baseline to compare against future impacts associated with the proposed development. The evaluation of existing conditions contains various data collection efforts, including traffic volumes, speed limits, roadway characteristics, and observations. The analysis also includes an existing intersection capacity analysis, all of which are outlined in the following sections.

Traffic Volumes

Vehicle turning movement and pedestrian/bicyclist counts were collected by Ramsey County from 6:00 a.m. to 10:00 p.m. on Thursday, Friday, and Saturday during week of October 14, 2019 at the following intersections:

- Fairview Avenue and County Road B
- Fairview Avenue and Gluek Lane/South Frontage Road
- Fairview Avenue and TH 36 South Ramps
- Fairview Avenue and TH 36 North Ramps
- Fairview Avenue and West Mall Entrance
- Fairview Avenue and County Road B2
- County Road B2 and Northwest Mall Entrance
- County Road B2 and Rosedale Commons Entrance
- County Road B2 and North Mall Entrance
- County Road B2 and Snelling Avenue West Ramps/NE Mall Entrance
- County Road B2 and Snelling Avenue East Ramps

Both a weekday p.m. peak hour and Saturday midday peak hour were identified from the turning movement counts and will be utilized to complete the intersection capacity analysis.



In addition to the counts collected in October 2019, additional turning movement counts were collected by SRF Consulting Group the weekend of Friday, November 29 (“Black Friday”) to Sunday, December 1, 2019 from 11:00 a.m. to 5:00 p.m. at the following intersections:

- Fairview Avenue and TH 36 North Ramps
- County Road B2 and Snelling Avenue West Ramps
- County Road B2 and Fairview Avenue

These counts were taken to identify the traffic volumes that represent a set of the busiest days of the year at the Rosedale Mall during Black Friday weekend. Using these volumes, the remaining intersection volumes will be modified to identify a peak Black Friday midday and Saturday midday peak hour to be used for a sensitivity test for the traffic signal optimization and future no build and build operations analysis.

Observations

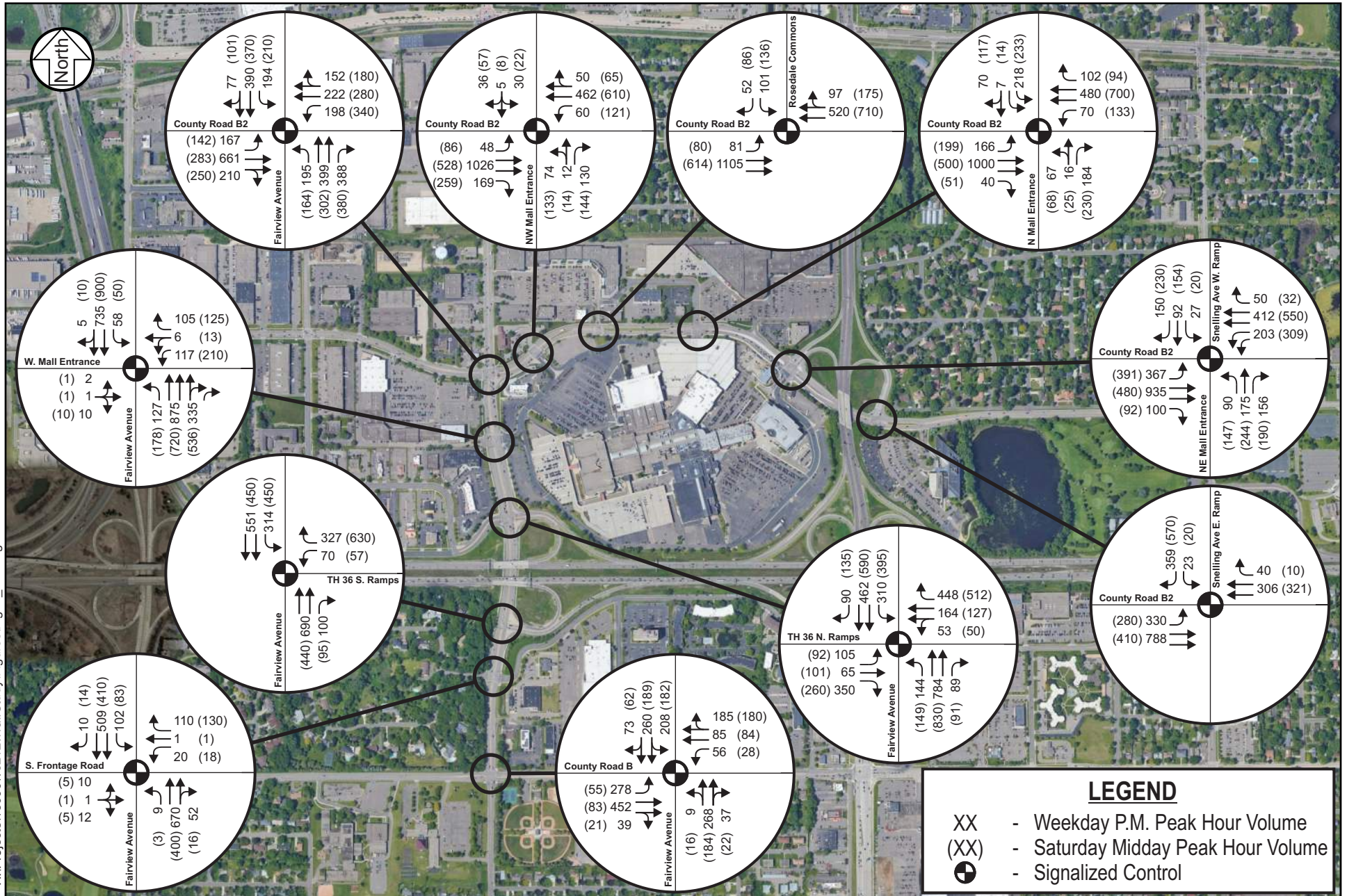
Observations were completed to identify roadway characteristics (i.e. roadway geometry, speed limits, and traffic controls) within the study area along roadways and at key intersections. Currently, both County Road B2 and Fairview Avenue are primarily four-lane divided roadways with select turn lanes and a 35-mile per hour (mph) speed limit within the study area. All study intersections are signalized within the study area. County Road B2 is functionally classified as an “A-Minor Reliever”, while Fairview Avenue is classified as “Other Arterial”. Existing geometrics, traffic controls, and volumes within the study area are shown in Figure 2. Multimodal components, include sidewalks, trails, bike facilities, and transit stops are shown in Figure 3.

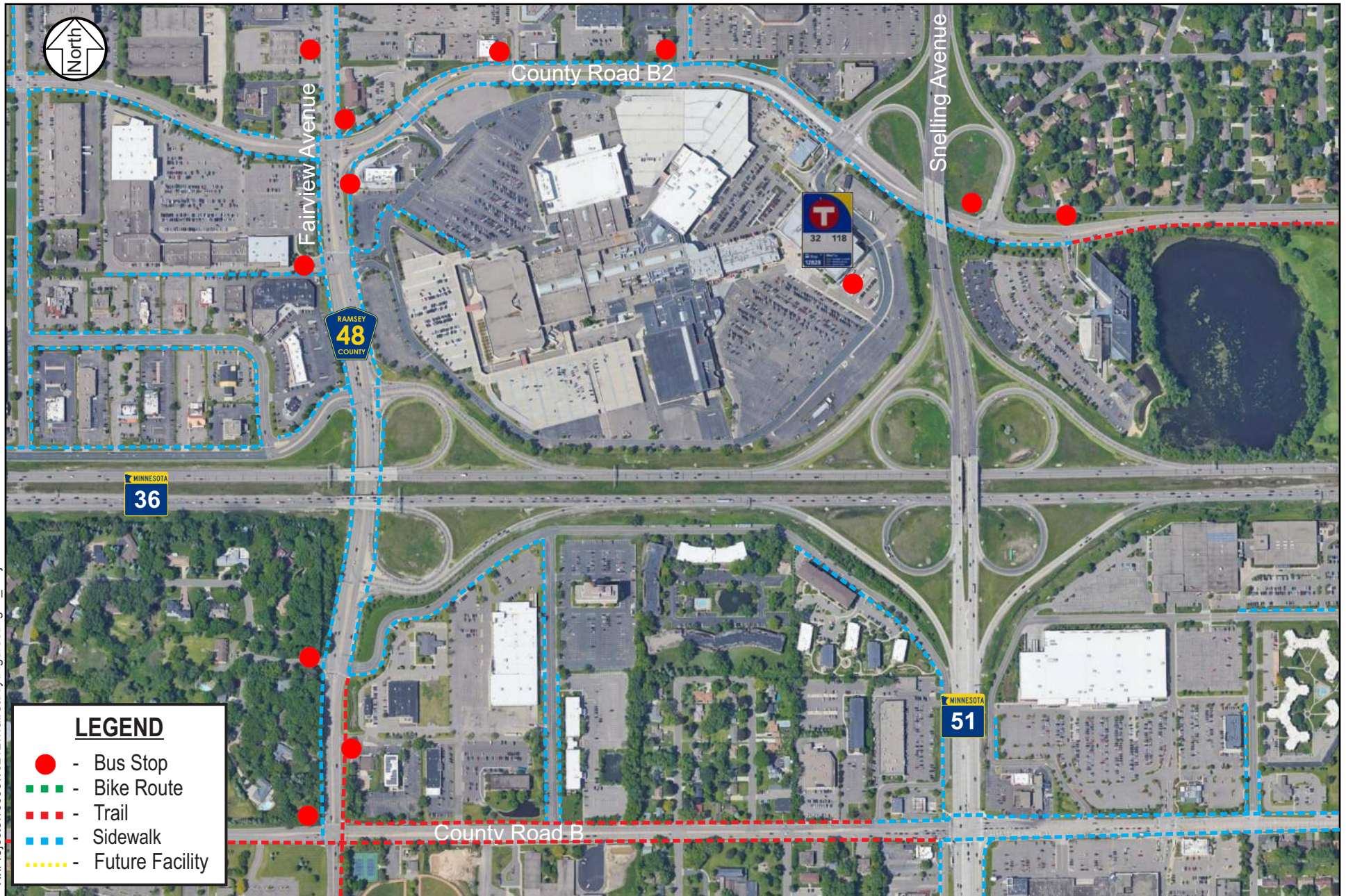
Intersection Capacity Analysis

An existing intersection capacity analysis was completed using PTV VISSIM software (V20.07) and the Highway Capacity Manual, *6th Edition* to establish a baseline condition to which future traffic operations could be compared. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are graded from LOS A through LOS F. The LOS results are based on average delay per vehicle, which correspond to the delay threshold values shown in Table 1. LOS A indicates the best traffic operation, while LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through LOS D is generally considered acceptable in the Twin Cities area.

Table 2. Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50





For side-street stop/yield-controlled intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop/yield control can be described in two ways. First, consideration is given to the overall intersection level of service. This takes into account the total number of vehicles entering the intersection and the capability of the intersection to support these volumes. Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, the majority of delay is attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high-levels of delay (i.e. poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions. Results of the existing intersection capacity analysis shown in Table 2 indicate that all study intersections currently operate at an acceptable overall LOS D or better during the weekday p.m. and Saturday midday peak hours.

Table 3. Existing Intersection Capacity Analysis

Intersection	Weekday P.M. Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay
Fairview Avenue/County Road B	C	33 sec.	C	21 sec.
Fairview Avenue/Gluek Drive-South Frontage Road	A	9 sec.	B	13 sec.
Fairview Avenue/TH 36 South Ramps	A	6 sec.	A	5 sec.
Fairview Avenue/TH 36 North Ramps	C	24 sec.	C	27 sec.
Fairview Avenue/West Mall Entrance	B	12 sec.	B	13 sec.
Fairview Avenue/County Road B2	C	31 sec.	C	26 sec.
County Road B2/Northwest Mall Entrance	B	10 sec.	B	11 sec.
County Road B2/Rosedale Commons Entrance	B	12 sec.	A	7 sec.
County Road B2/North Mall Entrance	C	32 sec.	C	26 sec.
County Road B2/Snelling Avenue West Ramps	D	38 sec.	D	36 sec.
County Road B2/Snelling Avenue East Ramps	A	7 sec.	B	12 sec.

Although the overall intersections operate acceptably, there are a few notable queues within the study area during the peak hours. During the weekday p.m. peak hour, eastbound queues were observed along County Road B2 between Fairview Avenue and the West Snelling Avenue Ramps.

- Maximum eastbound through queues at the Fairview Avenue intersection extend approximately 425 feet, blocking the Rosedale Marketplace entrance along County Road B2. Continuing further east, the maximum eastbound through queues nearly extend the full storage distance between the Northwest Mall Entrance and the North Mall Entrance.
- At the West Snelling Avenue Ramps intersection, the average eastbound left-turn queues extend beyond the available left-turn lane storage, causing vehicles to spill into the eastbound through lanes and queue beyond the available through lane storage. The through and left-turn queueing

can cause weaving for motorists trying to avoid the queues and continue to their destination leading to unpredictability and potential safety issues.

During the Saturday midday peak hour:

- Similar queuing issues occur at the County Road B2 and West Snelling Avenue Ramp intersection, with average eastbound left-turn queues exceeding the available storage. However, with a lower eastbound through volume as compared to the weekday p.m. peak hour, the impacts to eastbound through queues are lessened.
- In addition to this intersection, the northbound maximum queues at the Fairview Avenue and TH 36 North Ramps intersection extend to nearly the merge point of TH 36 South Ramps westbound right-turn. This queueing leads to weaving issues in between the two ramps with motorists looking to both enter and exit Fairview Avenue within a congested area. This same queuing issue has been also observed during the weekday p.m. peak hours. The detailed VISSIM operations analysis results are shown within the Appendix.

In addition to the key queues and intersections levels of service previously noted, a summary of turning movements with LOS D or worse operations or other notable maximum queues are shown in the following and within the PMT # 1 PowerPoint, attached in the Appendix:

Weekday P.M. Peak Hour

Fairview Avenue and County Road B

- Northbound through and left-turn – 150 feet, LOS D
- Southbound through and left-turn – 325 feet, LOS D
- Southbound right-turn – 350 feet, LOS C

Fairview Avenue and TH 36 North Ramp

- Northbound through – 375 feet, LOS D
- Southbound left-turn – 300 feet, LOS D
- Eastbound and Westbound left-turn and through – LOS D

Fairview Avenue and County Road B2

- Northbound through and right-turn – 350 feet, LOS D
- Southbound through – 275 feet, LOS D

- Eastbound through and right-turn – 425 feet, LOS C
- Westbound left-turn – 225 feet, LOS D

County Road B2 and West Snelling Avenue Ramps

- Eastbound left-turn – 600 feet, LOS F
- Eastbound through – 575 feet, LOS D
- Westbound left-turn – LOS D

Saturday Midday Peak Hour

Fairview Avenue and TH 36 North Ramp

- Northbound through – 500 feet, LOS D
- Southbound left-turn – 350 feet, LOS C
- Eastbound and Westbound left-turn and through – LOS D

Fairview Avenue and County Road B2

- Southbound through – 250 feet, LOS D

- Eastbound through and right-turn – 325 feet, LOS C
 - Westbound left-turn – 325 feet, LOS C
- County Road B2 and West Snelling Avenue Ramp**
- Eastbound left-turn – 525 feet, LOS E
 - Westbound left-turn – LOS D

As a result of these operations and observations completed, the following existing issues/findings were identified as issues that will need to be monitored/mitigated when completing any future no build or build operations:

Fairview Avenue and County Road B

- Eastbound left-turn queues exceed available turn-lane storage.
- No southbound left-turn lane.

Fairview Avenue and TH 36 North Ramp

- Northbound weaving issues between the ramps due to northbound queues and geometry.
- Channelized right-turns decrease pedestrian safety.
- High southbound left-turn volumes require significant amount of signal time.
- Side-street signal timing is limited due to mainline timing needs.

Fairview Avenue and West Mall Access

- Northbound lane continuity and weaving from the TH 36 North Ramp can result in driver confusion.

Fairview Avenue and County Road B2

- Lack of eastbound right-turn lane.
- Westbound left-turn queues exceed available turn-lane storage.
- Poor northbound to eastbound weaving from Fairview Avenue to County Road B2 due to close access spacing with the Northwest Mall Entrance and long eastbound queues along County Road B2.

County Road B2 and West Snelling Avenue Ramps

- Eastbound left-turn queues exceed available turn-lane storage and spill into the eastbound through lanes. This eastbound queue can back to the North Mall Entrance.
- Eastbound vehicle weaving between the North Mall Entrance and the West Snelling Avenue Ramps due to vehicular queues.

Public Engagement

A public online survey was developed for the Fairview Avenue and County Road B2 Traffic Study. The purpose of the survey was to gather feedback on mobility habits of people who travel in and around the Fairview Avenue and County Road B2 area. A total of 17 questions were asked about current mobility habits, areas of safety and mobility concerns, and preferences for future improvements to the Fairview Avenue and County Road B2 roadways.

Survey Period

The survey went live on Wednesday, July 8 and closed on Monday, August 5. The survey was promoted through a news item on the Ramsey County website, was featured in the newsfeed on the Ramsey County roads and transportation webpage, and was featured on the County homepage. In addition, the survey was promoted by the County's social media starting on July 9 through July 31.

Who We Heard From

- A total of 276 respondents filled out the survey.
- Slightly more than 55 percent of respondents were female.
- Nearly 45 percent of respondents were under the age of 40. Approximately 35 percent were between the ages of 40 and 60.
- Approximately 3 percent of respondents were people of color.

What We Heard

Survey respondents were asked about their mode of travel used in the study area, the locations where they experience safety issues, and, for motorists, the locations at which they experience delays. Complete survey results and the original survey are appended to this document. Notable themes from the survey are noted below.

Sense of safety

Respondents indicated feeling most unsafe near the following intersections:

- For people who walk, relative to the entire project area, Fairview Avenue was noted by most to be unsafe.
- For people who bike, nearly all areas around Rosedale Center, along both County Road B2 and Fairview Avenue, were noted as unsafe.
- For people who drive, the areas most frequently mentioned as unsafe included County Road B2 and the intersection of Fairview Avenue and TH 36.

Mobility

People driving indicated they experienced delays most frequently at the intersection of Fairview Avenue and Highway 36 and at the intersection of County Road B2 and Snelling Avenue. In addition, delays in mobility were experienced by those walking, biking, and taking transit due to limited safe crossing locations along both Fairview Avenue and County Road B2.

Walking most Frequent On-Site Transportation Mode

Respondents were asked: Once you arrive at your destination (such as a specific store at the mall), how do you travel to other nearby stores? More than 60 percent responded that they walk.

A detailed summary of the survey responses was compiled and attached within the Appendix. These responses were used to help shape the improvements in both safety and mobility along County Road B2 and Fairview Avenue

2040 No Build Conditions

The 2040 no build conditions are reviewed to understand how the study area is expected to operate, regardless of any development under a long-term condition. The future intersection capacity analyses were once again completed using PTV VISSIM software. The following sections provide an overview of the intersection capacity analysis under year 2040 no build conditions and any subsequent improvements.

Traffic Forecasts

Traffic forecasts were developed for year 2040 no build conditions using a combination of the Metropolitan Council Regional Travel Demand Model general background growth rate and available MnDOT loop detectors at the interchange ramps located at TH 36 and Fairview Avenue. The following information provides an overview of the traffic forecast development process. As part of the forecasting exercise, several volume sets will be developed. These include the following:

- Base Typical Weekday P.M. Peak Hour Conditions (50th percentile peak hourly volume condition)
- “Busy” Saturday midday Conditions (80th to 85th percentile peak hourly volume condition)
- Black Friday midday Conditions (100th percentile peak hourly volume condition)

The intent is to review each condition to determine appropriate levels of improvements to be recommended to mitigate any issues determined within each analysis. Additionally, these volume sets will assist in the signal optimization phase of the project to develop signal timing that fits the needs of specific days of the week or year.

General Background Growth and 85th Percentile Saturday Estimates

To account for general background growth in the area, an annual growth rate of one-half (0.5) percent was applied to the existing peak hour traffic volumes to develop year 2040 background forecasts. This growth rate percentage was applied on an annually compounding basis to the existing weekday p.m. peak hour and existing Black Friday midday peak hour turning movement counts to develop year 2040 no build conditions traffic forecasts. These forecasts are shown in Figure 2.

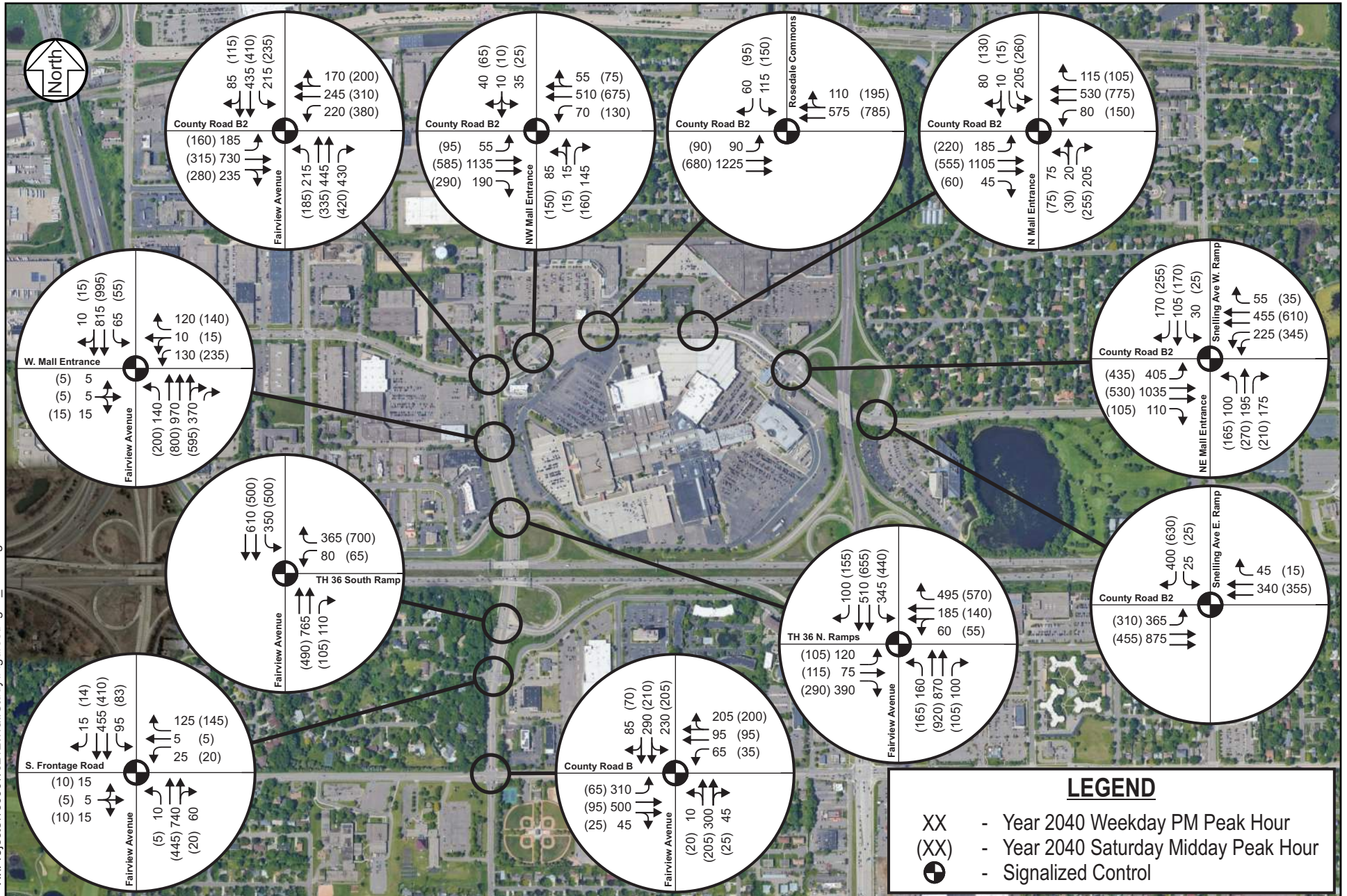
Additionally, a “busy” Saturday midday condition (8th to 10th busiest Saturday Peak Hour) was developed using a combination of the existing Saturday midday traffic count, the background growth rate, and ramp detector data provided by MnDOT for the TH 36 and Fairview Avenue interchange. The detector data was analyzed to determine the difference between the “typical” Saturday and the “busy” Saturday in terms of traffic volumes within the study area. Based on the detector data, a “busy” Saturday, representing an approximately 80 to 85th percentile volume set, has volumes approximately 10 percent higher than what was collected for the typical Saturday midday peak hour. Therefore, to develop the “busy” Saturday midday volume set, the existing Saturday midday volumes were modified to represent this 10 percent increase and then grown by the background growth percentage to year 2040 no build conditions. The year 2040 “busy” Saturday midday peak hour traffic forecasts are shown in Figure 4.

The “busy” Saturday was determined to be a necessary peak hour to review to ensure that the analysis completed and any improvements recommended will be sufficient to accommodate the majority of the retail peaks that occur with the Rosedale Center and neighboring shopping centers, while not designing recommendations for the highest one-day peak. While an analysis is planned to be completed using the Black Friday midday peak hour volumes, this is being done to plan for any additional impacts above the “busy” Saturday that may occur, rather than to design to any specific geometric improvements for it.

Year 2040 No Build Intersection Capacity Analysis

An analysis was completed for the year 2040 no build conditions using the traffic forecasts developed. As part of the analysis, the existing geometrics were assumed to remain the same, however, the traffic signal timing was updated to reflect preliminary timing optimization completed by SRF in May 2020.

Results of the year 2040 no build intersection capacity analysis shown in Table 3 indicates that all study intersections are expected to continue to operate at an acceptable overall LOS D or better during the weekday p.m., “busy” Saturday midday, and Black Friday midday peak hours, except the County Road B2 and Snelling Avenue West Ramps intersection, which is expected to operate at an unacceptable overall LOS E during the Black Friday midday peak hour. Although the majority of the intersections operate acceptably overall, there are a few notable queues within the study area during the peak hours.



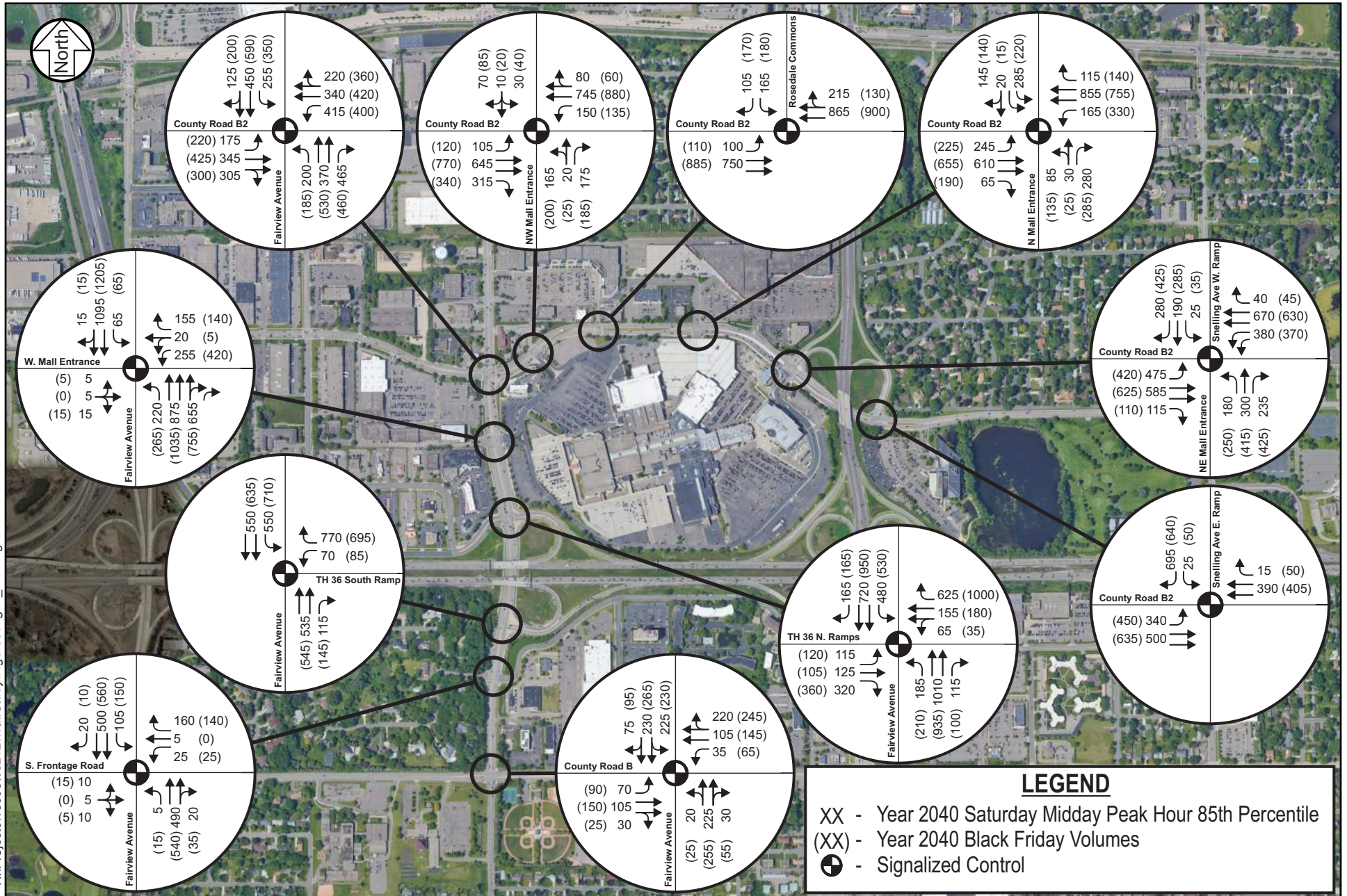


Table 4. Year 2040 No Build Conditions

Intersection	Weekday P.M. Peak Hour		“Busy” Saturday Midday Peak Hour		Black Friday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Fairview Avenue/County Road B	D	36 sec.	C	24 sec.	C	26 sec.
Fairview Avenue/Gluek Drive-South	B	11 sec.	B	16 sec.	B	14 sec.
Fairview Avenue/TH 36 South Ramps	A	5 sec.	B	13 sec.	A	9 sec.
Fairview Avenue/TH 36 North Ramps	C	29 sec.	D	40 sec.	D	37 sec.
Fairview Avenue/West Mall Entrance	B	10 sec.	B	16 sec.	C	25 sec.
Fairview Avenue/County Road B2	C	27 sec.	C	31 sec.	D	47 sec.
County Road B2/Northwest Mall	B	10 sec.	B	18 sec.	C	29 sec.
County Road B2/Rosedale Commons	A	6 sec.	A	9 sec.	B	18 sec.
County Road B2/North Mall Entrance	B	18 sec.	C	34 sec.	D	44 sec.
County Road B2/Snelling Avenue West	C	32 sec.	D	47 sec.	E	67 sec.
County Road B2/Snelling Avenue East	A	8 sec.	C	22 sec.	C	34 sec.

During the weekday p.m. peak hour, the following notable queues are expected:

- Maximum eastbound through queues at the Fairview Avenue and County Road B2 intersection continue to extend approximately 425 feet, blocking the Rosedale Marketplace entrance along County Road B2.
- At the West Snelling Avenue Ramps intersection, the average eastbound left-turn queues are no longer expected to extend beyond the available left-turn lane storage, however, maximum queues would still be expected to reach approximately 550 feet. This would cause vehicles to spill into the eastbound through lanes and queue beyond the available through lane storage.

During the “busy” Saturday midday peak hour,

- The queuing issues continue to occur at the County Road B2 and West Snelling Avenue Ramp intersection, with average eastbound left-turn queues exceeding the available storage.
- The northbound maximum queues at the Fairview Avenue and TH 36 North Ramps intersection are expected to extend beyond the merge point of TH 36 South Ramps westbound right-turn, causing congestion issues that can prohibit right-turning vehicles from exiting the TH 36 South Ramp. Additionally, this queueing would exacerbate the difficult weaving issues in between the two ramps with motorists looking to both enter and exit Fairview Avenue within a congested area.

During the “Black Friday” midday peak hour, which represents a 100 percent peak condition,

- There is expected to be queuing along both Fairview Avenue and County Road B2 that impacts adjacent intersections during portions of the peak hour. Along Fairview Avenue, there is expected to be congestion caused by northbound queues between the TH 36 North Ramps and the West Mall Entrance and from southbound queues between County Road B2 and the TH 36 North

Ramps. The northbound queues can impact vehicles exiting TH 36 via the south ramps and the southbound queues can impact motorists exiting the Rosedale Center via the West Mall Access.

- Along County Road B2, maximum westbound queues extending from Fairview Avenue may prohibit vehicles from exiting the Rosedale Center. Additionally, eastbound queues between the North Mall Entrance and the Northeast Mall Entrance/West Snelling Ramps intersection cause congestion and weaving issues, as left-turn queues extend out of turn lane bays into the thru lanes.

In addition to the key queues and intersections levels of service previously noted, a summary of turning movements with LOS D or worse operations or other notable maximum queues are shown in the following for the weekday p.m. peak hour and the “busy” Saturday midday peak hour and within the PMT Powerpoint, attached in the Appendix:

Weekday P.M. Peak Hour

Fairview Avenue and County Road B

- Northbound through and left-turn – 175 feet, LOS D
- Southbound through and left-turn – 350 feet, LOS D
- Southbound right-turn – 375 feet, LOS C
- Eastbound left-turn – 325 feet, LOS D
- Eastbound through and right-turn – 325 feet, LOS C

Fairview Avenue and Gluek Drive

- Westbound approach – LOS D

Fairview Avenue and TH 36 South Ramp

- Westbound left-turn – LOS D

Fairview Avenue and TH 36 North Ramp

- Northbound through – 450 feet, LOS D
- Southbound left-turn – 350 feet, LOS D
- Eastbound and Westbound left-turn and through – LOS D

Fairview Avenue and West Mall Access

- Westbound left-turn and through – LOS D

Fairview Avenue and County Road B2

- Northbound right-turn – 350 feet, LOS D
- Southbound through – 250 feet, LOS D
- Eastbound through and right-turn – 425 feet, LOS C
- Westbound left-turn – 225 feet, LOS D

County Road B2 and Northwest Mall Entrance

- Northbound approach – LOS D
- Southbound approach – LOS D

County Road B2 and Rosedale Commons Entrance

- Southbound left-turn – LOS D

County Road B2 and North Mall Entrance

- Northbound left-turn and through – LOS D
- Southbound left-turn and through – LOS D

County Road B2 and West Snelling Avenue Ramp

- Eastbound left-turn – 550 feet, LOS D

- Eastbound through – 575 feet, LOS C
- Westbound left-turn and through – LOS D

“Busy” Saturday Midday Peak Hour

Fairview Avenue and Gluek Drive

- Westbound approach – LOS D

Fairview Avenue and TH 36 South Ramp

- Westbound left-turn – LOS E
- Westbound right-turn – 350 feet, LOS C

Fairview Avenue and TH 36 North Ramp

- Northbound through – 650 feet, LOS E
- Southbound left-turn – 450 feet, LOS D
- Eastbound left-turn and through – LOS E
- Westbound left-turn and through – 325 feet, LOS F

Fairview Avenue and West Mall Access

- Westbound left-turn and through – LOS D

Fairview Avenue and County Road B2

- Southbound through – 250 feet, LOS D
- Eastbound through and right-turn – 425 feet, LOS D
- Westbound left-turn – 375 feet, LOS D

County Road B2 and Northwest Mall Entrance

- Northbound approach – LOS E
- Southbound approach – LOS E

County Road B2 and Rosedale Commons Entrance

- Southbound left-turn – LOS D

County Road B2 and North Mall Entrance

- Northbound left-turn and through – LOS E
- Northbound right-turn – LOS D
- Southbound left-turn – LOS F
- Southbound through – LOS D

County Road B2 and West Snelling Avenue Ramp

- Eastbound left-turn – 675 feet, LOS E
- Eastbound through – 450 feet, LOS D
- Westbound left-turn – 250 feet, LOS E
- Westbound through – 475 feet, LOS E

Year 2040 No Build Intersection Improvements

Based on the analysis completed as part of the year 2040 no build conditions intersection capacity analysis and the goals set forth by Ramsey County to improve pedestrian and bicycle connections along county roadways, the following list of improvements were developed. These improvements are a comprehensive list of items that could be constructed to improve intersection operations and pedestrian/bicycle safety. While it may not be feasible to construct all of these improvements with the upcoming overlay project the County is planning for in year 2021, the items listed are what could be considered before year 2040 as roadway projects occur. The proposed improvement concept design plans are included within the Appendix.

Fairview Avenue and TH 36 South Ramp

- Remove the northbound channelized right-turn island
- Remove the westbound channelized right-turn island and construct a dual westbound right-turn lane. The outside westbound right-turn lane would turn into a newly developed third northbound through lane.
- This westbound right turn lane would be expected to operate within a right-turn overlap phase with the southbound left-turn phase in the signal operations.

Fairview Avenue and TH 36 North Ramp

- Remove the northbound channelized right-turn island and construct a third northbound through lane and dedicated northbound right-turn lane.
- Remove the westbound channelized right-turn island and construct a dual westbound right-turn lane.
- This westbound right turn lane would be expected to operate within a right-turn overlap phase with the southbound left-turn phase.
- Remove the eastbound/westbound split-phasing signal operations.
- Construct crosswalks on both the northbound and southbound approaches of the intersection.
- ***Optional, if feasible/needed in the future:*** Construct a dual southbound left-turn lane and additional receiving lane on the TH 36 North Ramp entrance to westbound TH 36.

Fairview Avenue and West Mall Access

- Remove the northbound channelized right-turn island and dual northbound right-turn lane into the Rosedale Center and trap the right-most through lane into a dedicated single northbound right-turn lane.
- Paint the previous outside northbound right-turn with hatching to indicate a shoulder to prevent motorists from using the lane.

Fairview Avenue and County Road B2

- Construct an eastbound right-turn lane.
- Remove the northbound channelized right-turn island

County Road B2 and Northwest Mall Entrance

- Remove the eastbound channelized right-turn island and construct a single eastbound dedicated right-turn lane.

County Road B2 and West Snelling Avenue Ramps

- Construct a dual eastbound left-turn lane within the existing median space.

- Construct a receiving lane on the West Snelling Avenue entrance ramp to accommodate the dual eastbound left-turn maneuvers.

Year 2040 No Build Intersection Capacity Analysis – With Improvements

An analysis was completed for the year 2040 no build conditions with improvements using the traffic forecasts developed and the improvements, both geometric and signal timing, listed above. Results of the year 2040 no build with improvements intersection capacity analysis shown in Table 4 indicates that all study intersections are expected to continue to operate at an acceptable overall LOS D or better during the weekday p.m., “busy” Saturday midday, and Black Friday midday peak hours, except the Fairview Avenue and County Road B2 intersection, which is expected to operate at an unacceptable overall LOS E during the Black Friday midday peak hour. It is not uncommon for specific locations to operate at an unacceptable overall LOS during the highest peak days, of which Black Friday is in this location. It should be noted that if a dual southbound left-turn was constructed at the Fairview Avenue and TH 36 North Ramps intersection, the southbound delays along Fairview would be expected to improve during the Black Friday midday conditions and the Fairview Avenue and County Road B2 intersection would operate at an acceptable overall LOS. However, that improvement could have significant geometric modifications along the Fairview Avenue corridor, which were determined to not be feasible at this time.

Table 5. Year 2040 No Build Conditions – With Improvements

Intersection	Weekday P.M. Peak Hour		“Busy” Saturday Midday Peak Hour		Black Friday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Fairview Avenue/County Road B	D	41 sec.	C	26 sec.	C	28 sec.
Fairview Avenue/Gluek Drive	B	10 sec.	B	16 sec.	B	16 sec.
Fairview Avenue/TH 36 South Ramps	A	7 sec.	B	16 sec.	C	21 sec.
Fairview Avenue/TH 36 North Ramps	C	31 sec.	C	34 sec.	D	37 sec.
Fairview Avenue/West Mall Entrance	B	14 sec.	C	21 sec.	C	31 sec.
Fairview Avenue/County Road B2	C	26 sec.	C	28 sec.	E	70 sec.
County Road B2/Northwest Mall	B	10 sec.	B	17 sec.	C	34 sec.
County Road B2/Rosedale Commons	A	7 sec.	A	9 sec.	B	15 sec.
County Road B2/North Mall Entrance	B	18 sec.	C	26 sec.	C	31 sec.
County Road B2/Snelling Avenue West	C	28 sec.	D	35 sec.	D	39 sec.
County Road B2/Snelling Avenue East	A	9 sec.	C	20 sec.	B	19 sec.

During the p.m. peak hour, there is still a portion of the peak hour that County Road B2 eastbound through queues from Fairview Avenue may block the Rosedale Marketplace, however, the delay issues experienced by eastbound right-turning vehicles are mitigated. Additionally, the eastbound left-turn queues that extended beyond the available turn lane storage at the County Road B2 and West Snelling Ramps intersection are expected to be mitigated by the additional eastbound left-turn lane.

During the “busy” Saturday midday peak hour, the eastbound left-turn queuing issues at the County Road B2 and West Snelling Avenue Ramp intersection are expected to be minimized with the construction of the dual eastbound left-turn lane. Additionally, the northbound queuing issues between the TH 36 Ramps along Fairview Avenue is expected to be eliminated, reducing the weaving issues that were occurring.

During the Black Friday midday peak hour, the northbound queuing issues between the TH 36 Ramps is expected to be eliminated, which eliminates the unsafe weaving occurring under the TH 36 bridge. Southbound Fairview Avenue is still expected to operate under congested conditions between the TH 36 North Ramps and County Road B2, however, this is likely to be only during the busiest traffic volumes on a Black Friday, which may not justify mitigation. Note, an additional southbound left-turn lane at the TH 36 North Ramps intersection would improve overall southbound operations, however, this has significant geometric impacts along Fairview Avenue. Along County Road B2, maximum westbound queues extending from Fairview Avenue may prohibit vehicles from exiting the Rosedale Center. The eastbound queueing issues along County Road B2 between the North Mall Entrance and the West Snelling Ramps are expected to be significantly reduced or eliminated.

A summary of the changes in operations and queueing to the turning movements with LOS D or worse operations or other notable maximum queues from the year 2040 no build conditions are shown in the following for the weekday p.m. peak hour and the “busy” Saturday midday peak hour. These are also noted within the PMT Powerpoint and full analysis results are attached in the Appendix:

Weekday P.M. Peak Hour

Fairview Avenue and County Road B

- Northbound through and left-turn – No Change
- Southbound through and left-turn – +50 feet, LOS D/E
- Southbound right-turn – +50 feet, LOS C
- Eastbound left-turn – No Change
- Eastbound through and right-turn – No Change

Fairview Avenue and South Frontage Road intersections

- Westbound approach – No Change

Fairview Avenue and South TH 36 Ramps intersections

- Westbound left-turn– No Change

Fairview Avenue and North TH 36 Ramps intersections

- Northbound through – (-125 feet), LOS D
- Southbound left-turn – +25 feet, LOS E
- Eastbound and Westbound left-turn and through – No Change

Fairview Avenue and West Mall Access

- Westbound left-turn and through –No Change

Fairview Avenue and County Road B2

- Northbound right-turn – -(75feet), LOS C
- Southbound through – (-25 feet, LOS C
- Eastbound through and right-turn – (-25 feet), LOS C
- Westbound left-turn – 225 feet, LOS C

County Road B2 and Northwest Mall Entrance

- Northbound approach – LOS C
- Southbound approach – No Change

County Road B2 and Rosedale Commons Entrance

- Southbound left-turn – No Change

County Road B2 and North Mall Entrance

- Northbound left-turn and through – No Change
- Southbound left-turn and through – No Change

County Road B2 and West Snelling Avenue Ramps

- Eastbound left-turn – (-300 feet), LOS D
- Eastbound through – (-75 feet), LOS C
- Westbound left-turn – LOS E

“Busy” Saturday Midday Peak Hour**Fairview Avenue and South Frontage Road intersections**

- Westbound approach – No Change

Fairview Avenue and South TH 36 Ramps intersections

- Westbound left-turn– LOS D
- Westbound right-turn – +50 feet, LOS B

Fairview Avenue and North TH 36 Ramps intersections

- Northbound through – (-250 feet), LOS D
- Southbound left-turn – +50 feet, LOS D
- Eastbound left-turn and through – LOS C/D
- Westbound left-turn and through – (-175 feet), LOS C/D

Fairview Avenue and West Mall Access

- Westbound left-turn and through – No Change

Fairview Avenue and County Road B2

- Southbound through – No Change
- Eastbound through and right-turn – (-250 feet), LOS B/C
- Westbound left-turn – No Change

County Road B2 and Northwest Mall Entrance

- Northbound approach – LOS D
- Southbound approach – LOS C

County Road B2 and Rosedale Commons Entrance

- Southbound left-turn – No Change

County Road B2 and North Mall Entrance

- Northbound left-turn and through – LOS D
- Northbound right-turn – LOS B
- Southbound left-turn – LOS D
- Southbound left-turn – No Change

County Road B2 and West Snelling Avenue Ramps

- Eastbound left-turn – (-350 feet), No Change
- Eastbound through – (-150 feet), LOS C
- Westbound left-turn – No Change
- Westbound through – (-200 feet), LOS C

Proposed Development

As part of the Rosedale Center development plans, there is potential for redevelopment of part of the existing Rosedale Center mall and potential development of the outlots located around the mall. This redevelopment plan includes 250 units of mid-rise housing, 175 units of active adult housing, a 300 room hotel, 100,000 square feet (SF) of office space, 220,000 SF of additional retail space, a 2,900 SF fast-food with drive-thru, a 1,800 SF coffee shop with drive-thru, a 3,000 SF walk in bank, and a separate 6,700 SF retail strip center. Trip generation for the Rosedale Center redevelopment and outlot development was completed as part of the Rosedale Center EAW completed by Kimley Horn in February 2020 and a Rosedale Outlots Traffic Study completed by SRF in July 2020. The detailed trip generation of the developments was included within the future build analysis and is detailed in Table 5.

Table 6. Trip Generation Estimate

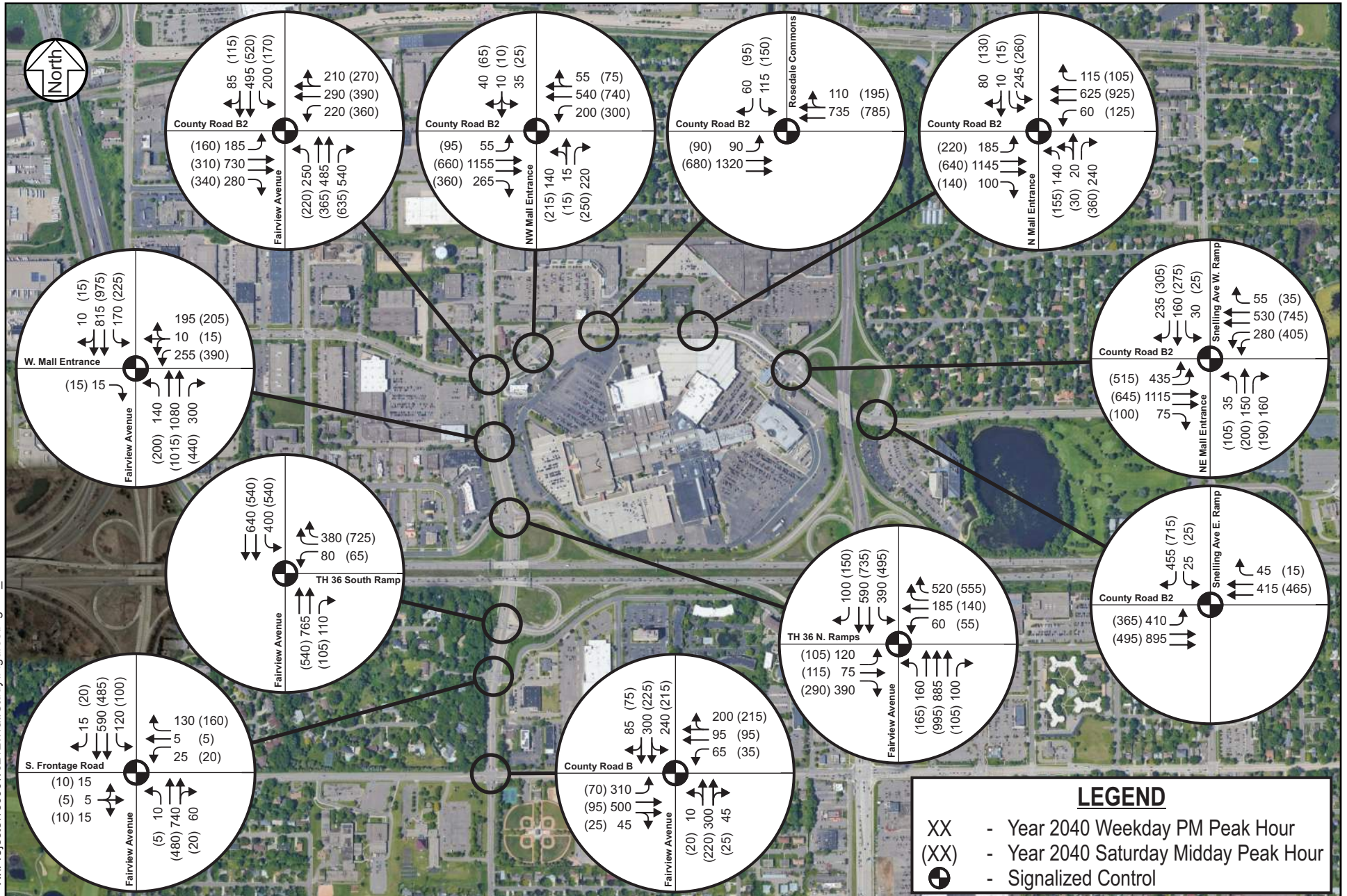
Land Use (ITE Code)	Size	Weekday		Saturday	
		P.M. Peak Hour		Midday Peak Hour	
		In	Out	In	Out
Rosedale Center EAW Proposal					
Mid Rise Housing (221)	250 DU	65	45	55	55
Active Adult Housing (252)	175 DU	25	20	35	25
Hotel (310)	300 Rooms	90	90	125	95
Office (710)	100,000 SF	20	95	30	25
Retail Center (Local Data)	220,000 SF	210	175	360	305
Total Rosedale EAW Trips		410	425	600	505
Rosedale Outlots Proposal					
Shopping Center (820)	6,737 SF	12	14	16	14
Walk-in Bank (911)	3,000 SF	16	20	24	23
Fast-Food w/ Drive-Thru (934)	2,915 SF	50	46	82	78
Coffee Shop w/ Drive-Thru (937)	1,798 SF	39	39	79	79
Total Rosedale Outlots Trips		117	113	201	194
Internal Capture Reductions		(-165)	(-165)	(-175)	(-175)
Total Site Trips		362	373	626	524

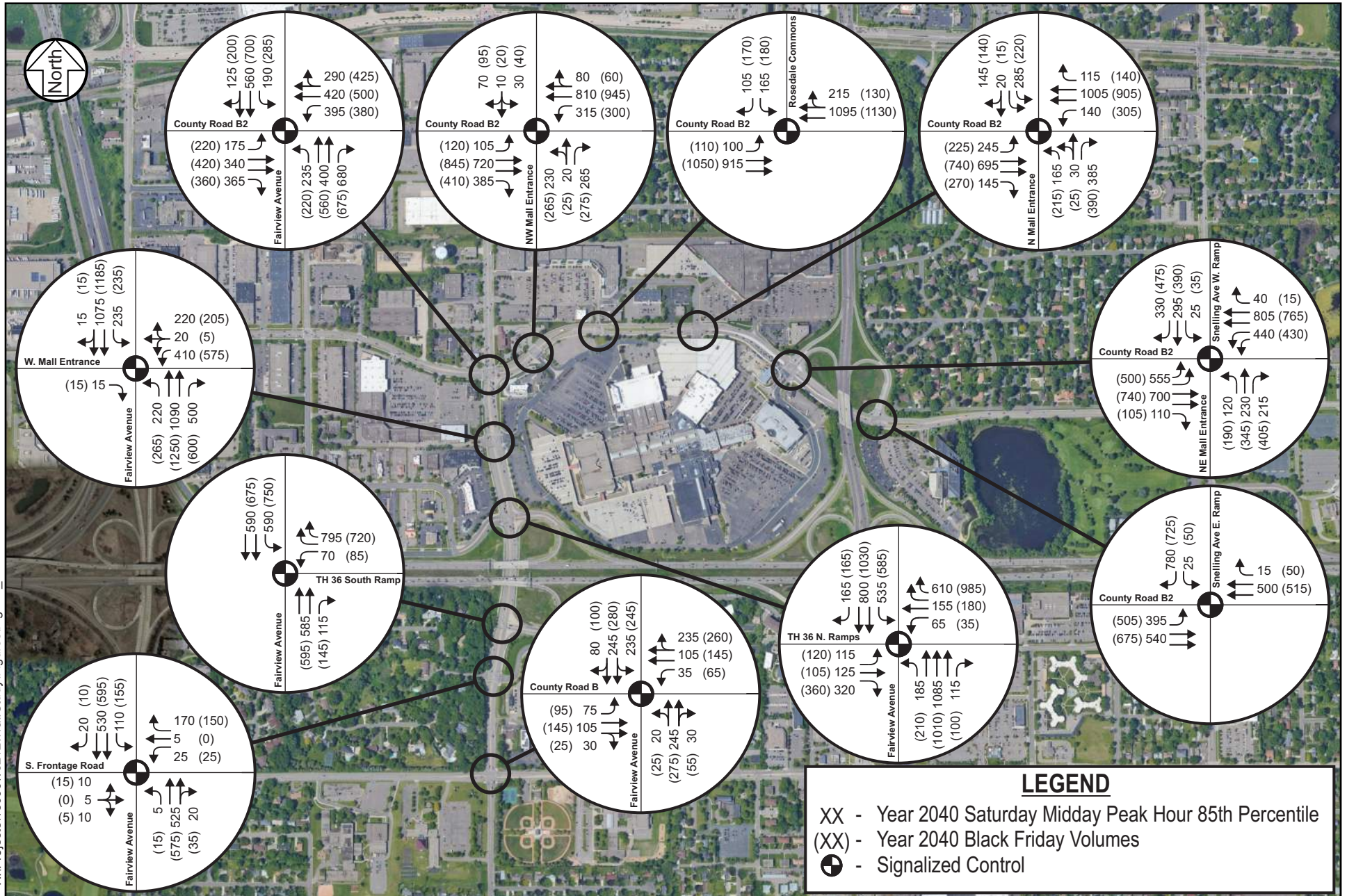
The proposed redevelopment within the Rosedale Center site is expected to generate approximately 735 weekday p.m. peak hour, and 1,150 Saturday midday peak hour trips. The trips generated by the proposed developments were distributed throughout the study area based on the directional distributions identified within the studies. This distribution was developed based on existing area travel patterns, data from the Regional Travel Demand Model, and engineering judgment.

Travel Pattern Changes

In addition to the development changes expected within the Rosedale Center site, it is expected that the internal ring road network will be modified from one-way to two-way operations. This is expected to change travel patterns not only within the site, but also on the adjacent surrounding roadway network of Fairview Avenue and County Road B2.

Changes to the travel patterns were identified within the Rosedale Center EAW completed in February 2020 by Kimley Horn and were brought forward into this study for year 2040 build conditions. The resultant year 2040 build condition traffic forecasts, including both redevelopment trips and ring road travel pattern modifications, are shown in Figure 5.





Year 2040 Build Intersection Capacity Analysis with No Build Improvements

An analysis was completed for the year 2040 build conditions using the traffic forecasts developed for the background traffic growth, the proposed area developments, and the Rosedale Center ring road modifications. *Additionally, the analysis was completed using the improvements, both geometric and signal timing identified as part of the year 2040 no build conditions analysis.* Any additional intersection improvements necessary to accommodate the build condition volume changes will be identified through the year 2040 build conditions intersection capacity analysis.

Results of the year 2040 build with improvements intersection capacity analysis shown in Table 6 indicates that all study intersections are expected to continue to operate at an acceptable overall LOS D or better during the weekday p.m., “busy” Saturday midday, and Black Friday midday peak hours, except the Fairview Avenue and County Road B2 intersection, which is expected to operate at an unacceptable overall LOS E during the Black Friday midday peak hour. However, this is only one (1) peak day out of the year and does not justify mitigation given the potential costs. Note, the intersection is also expected to operate near the LOS D/E threshold, indicating that it is not significantly over capacity. Given that the year 2040 build conditions analysis does not indicate any area of mitigation for the weekday p.m. or “busy” Saturday midday peak hours, it is expected that no additional improvements will be recommended to accommodate the build conditions traffic forecasts.

Table 7. Year 2040 Build Conditions with No Build Improvements

Intersection	Weekday P.M. Peak Hour		“Busy” Saturday Midday Peak Hour		Black Friday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Fairview Avenue/County Road B	D	42 sec.	C	27 sec.	C	30 sec.
Fairview Avenue/Gluck Drive-	B	10 sec.	B	15 sec.	B	17 sec.
Fairview Avenue/TH 36 South Ramps	A	8 sec.	B	20 sec.	C	29 sec.
Fairview Avenue/TH 36 North Ramps	C	31 sec.	C	36 sec.	D	47 sec.
Fairview Avenue/West Mall Entrance	B	17 sec.	C	26 sec.	D	40 sec.
Fairview Avenue/County Road B2	C	27 sec.	C	29 sec.	E	59 sec.
County Road B2/Northwest Mall	B	14 sec.	B	17 sec.	C	36 sec.
County Road B2/Rosedale Commons	A	7 sec.	B	14 sec.	C	21 sec.
County Road B2/North Mall Entrance	B	20 sec.	D	39 sec.	D	43 sec.
County Road B2/Snelling Avenue West	C	30 sec.	D	43 sec.	D	50 sec.
County Road B2/Snelling Avenue East	A	9 sec.	B	16 sec.	C	24 sec.

While most delays remain similar to year 2040 no build conditions with improvements, it is expected that delays will increase during the “busy Saturday midday and “Black Friday” peak hours at the County Road B2 intersections with the North Mall Access and the Snelling Avenue West Ramps. It is expected that with the volume shifts and the additional development related traffic under build conditions that delays will increase. While the delays are expected to increase, they are still expected to operate within an acceptable overall LOS.

While the acceptable overall operations and the limited geometric options or right-of-way available for modifications, no improvements to these intersections are expected. Additionally, it is expected that under year 2040 build conditions “Black Friday” midday forecasts that the Fairview Avenue and both TH 36 Ramps intersections are expected to have increased delays of approximately eight (8) to 10 seconds. However, MnDOT has indicated that if queues and delays began to impact the mainline TH 36 operations, additional traffic signal timing could be provided to minimize queuing impacts on the ramps. Given this ability, no physical mitigation is necessary.

Recommendations

The following recommendations are offered for your consideration and shown in attached layout concepts.

- 1) Ramsey County is completing an overlay of County Road B2 along with a traffic signal optimization along the corridors of Fairview Avenue and County Road B2. As part of these efforts, a traffic study was completed to determine the long-term modifications of the study roadways to accommodate both current and proposed redevelopment traffic along with improving access and safety for pedestrians and bicyclists.
- 2) The following improvements are recommended to improve intersection operations along the Fairview Avenue and County Road B2 corridors:

Fairview Avenue and South TH 36 Ramps intersections

- a) Remove the northbound channelized right-turn island and construct a dedicated northbound right-turn lane.
- b) Remove the westbound channelized right-turn island and construct a dual westbound right-turn lane. The outside westbound right-turn lane would turn into a newly developed third northbound through lane.
- c) This westbound right turn lane would be expected to operate within a right-turn overlap phase with the southbound left-turn phase in the signal operations.

Fairview Avenue and North TH 36 Ramps intersections

- d) Remove the northbound channelized right-turn island and construct a third northbound through lane and dedicated northbound right-turn lane.
- e) Remove the westbound channelized right-turn island and construct a dual westbound right-turn lane.

- f) This westbound right turn lane would be expected to operate within a right-turn overlap phase with the southbound left-turn phase in the signal operations.
- g) Remove the eastbound/westbound split-phasing signal operations.
- h) Construct crosswalks on both the northbound and southbound approaches of the intersection.
- i) Optional, if feasible in the future: Construct a dual southbound left-turn lane and additional receiving lane on the TH 36 North Ramp entrance to westbound TH 36.

Fairview Avenue and West Mall Access

- j) Remove the northbound channelized right-turn island and dual northbound right-turn lane into the Rosedale Center and trap the outside through lane into a dedicated single northbound right-turn lane.
- k) Paint the previous outside northbound right-turn with hatching to indicate a shoulder to prevent motorists from using the lane.

Fairview Avenue and County Road B2

- l) Construct an eastbound right-turn lane.
- m) Remove the northbound channelized right-turn island and construct a dedicated northbound right-turn lane.

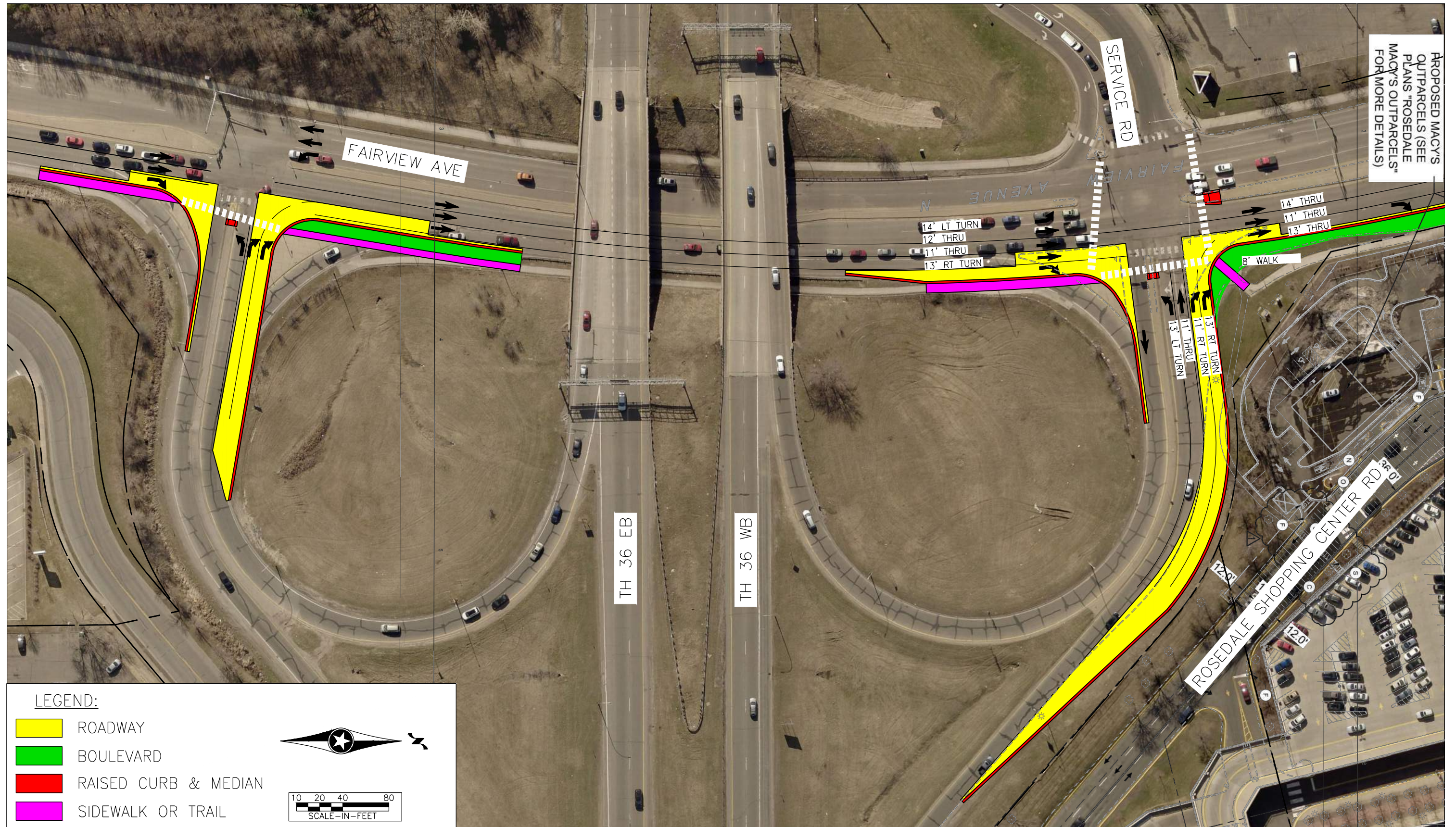
County Road B2 and Northwest Mall Entrance

- n) Remove the eastbound channelized right-turn island and construct a single eastbound dedicated right-turn lane.

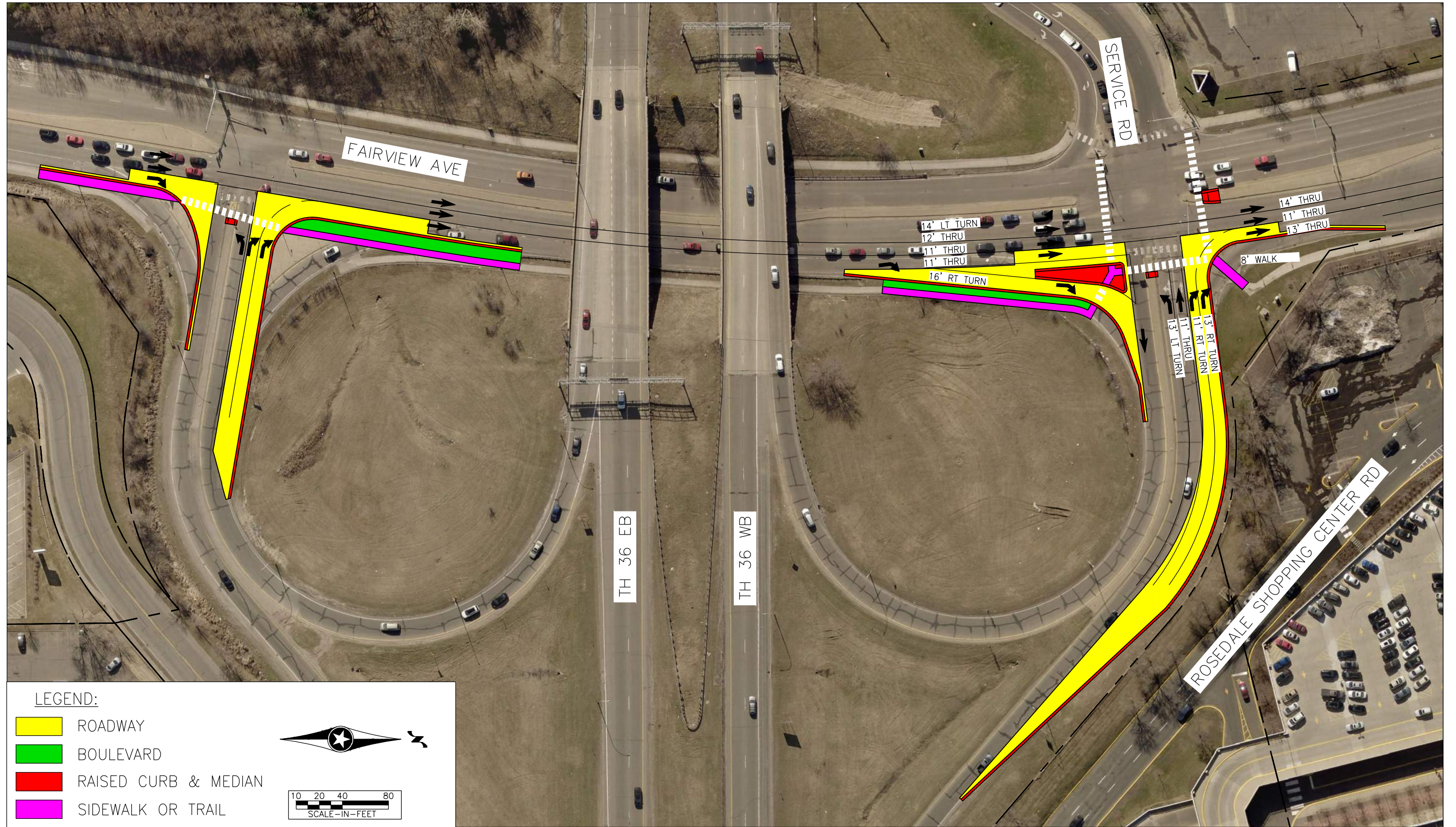
County Road B2 and West Snelling Avenue Ramps

- o) Construct a dual eastbound left-turn lane within the existing median space.
- p) Construct a receiving lane on the West Snelling Avenue entrance ramp to accommodate the dual eastbound left-turn maneuvers.

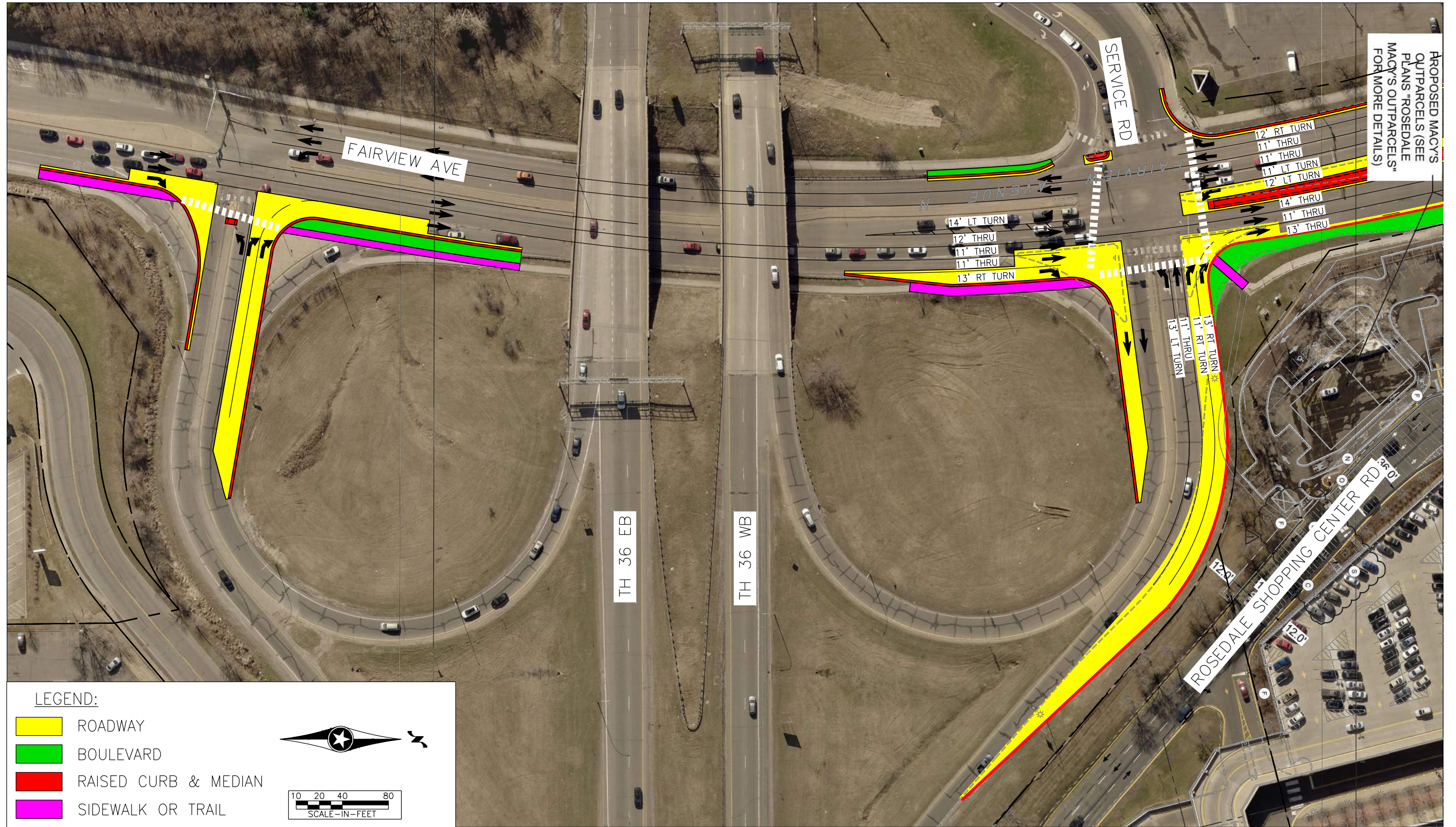
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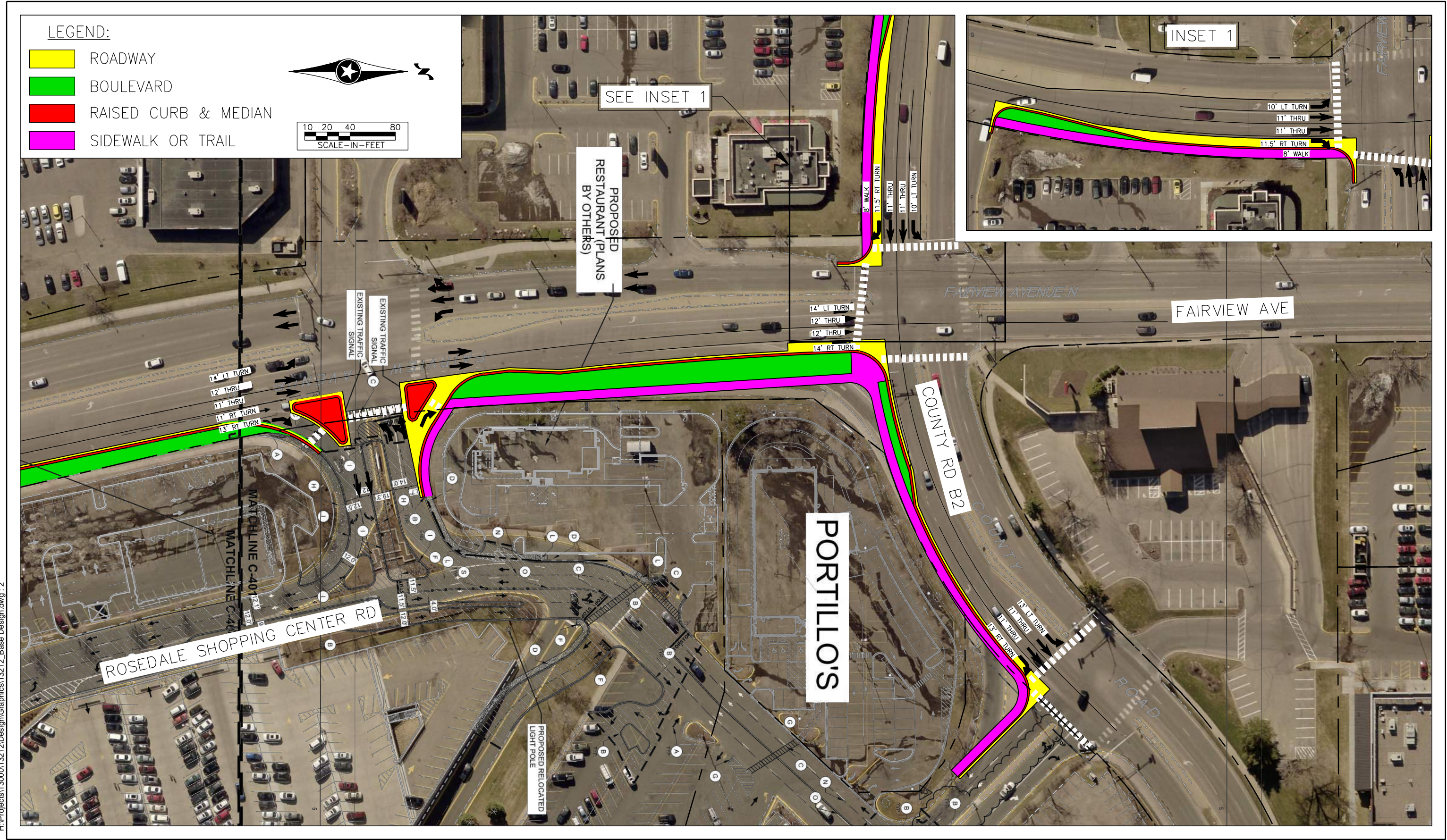


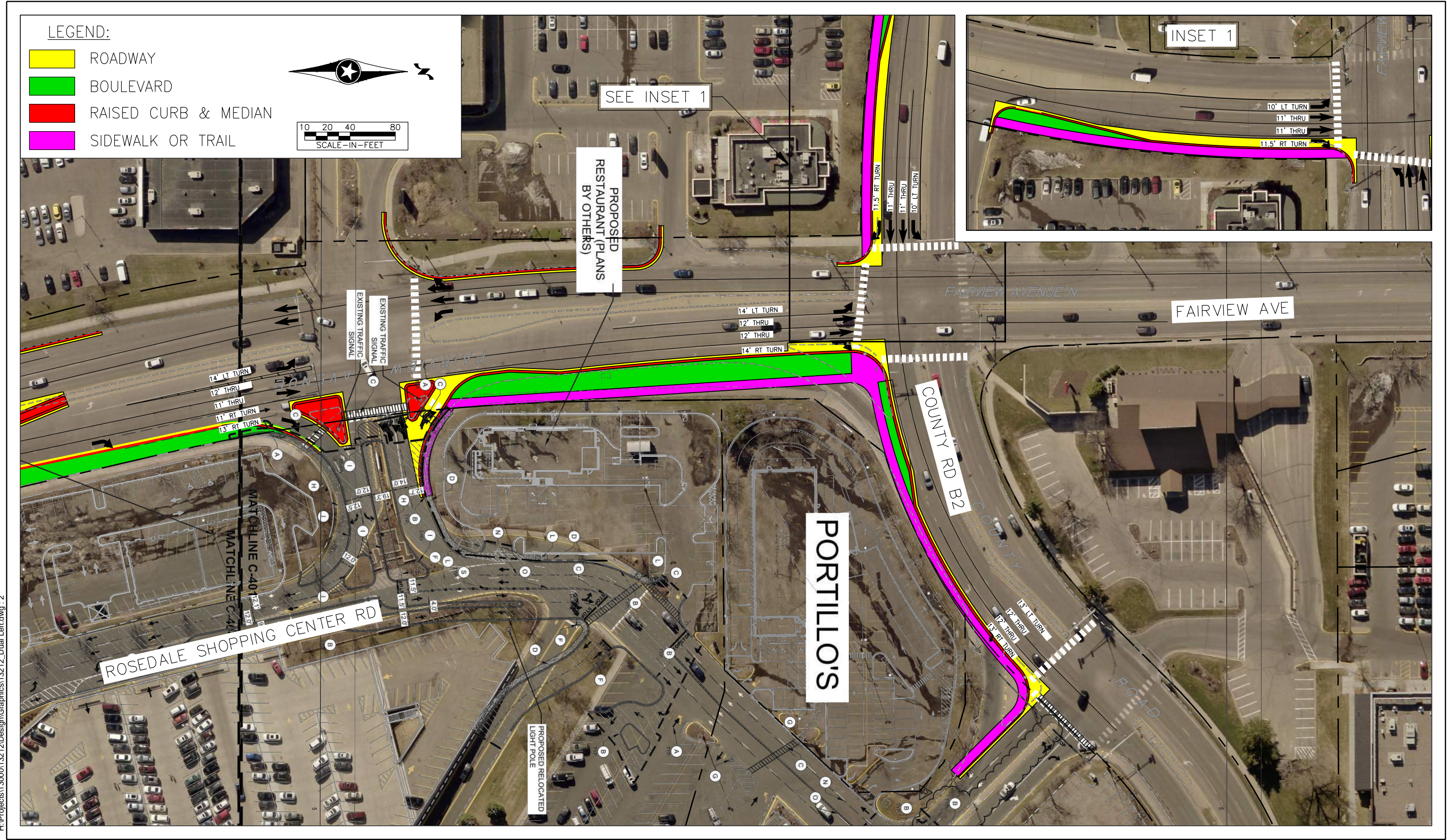
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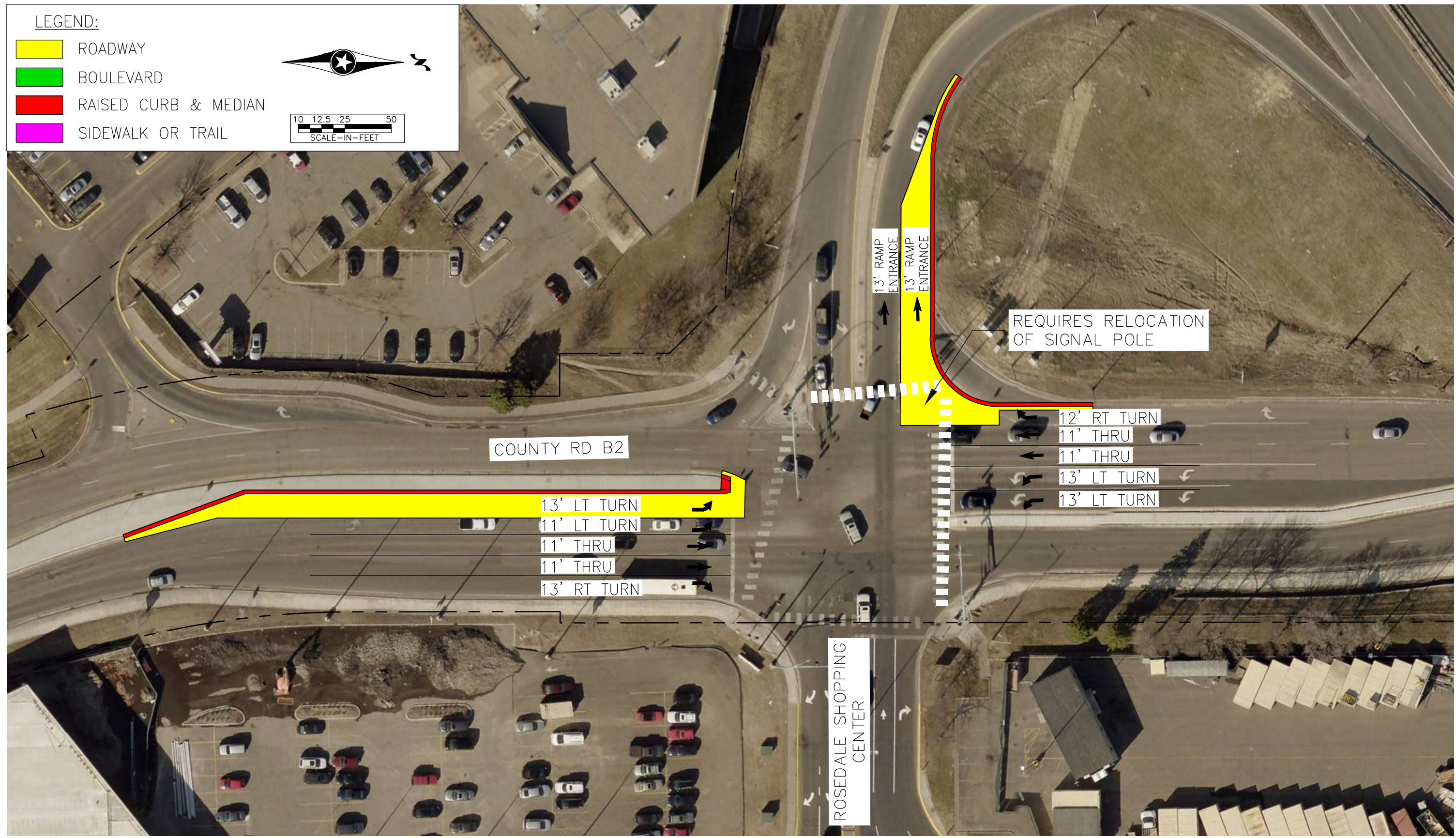
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2019 Existing Saturday Midday
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	18	20	103	25	C	24.0	C	20.6	C						
	Thru	186	20	103	25.5	C										
	Right	22	26	113	9.8	A										
Southbound	Left	188	46	234	25.7	C	22.8	C			20.6	C				
	Thru	195	46	234	24.7	C										
	Right	70	53	248	9.9	A										
Eastbound	Left	51	5	52	21.6	C	20.1	C					20.6	C		
	Thru	87	8	60	21.6	C										
	Right	21	6	70	9.9	A										
Westbound	Left	26	3	38	21.5	C	14.9	B							20.6	C
	Thru	86	14	116	23.2	C										
	Right	174	18	125	9.8	A										

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	2	17	174	12	B	10.8	B	12.7	B
	Thru	391	16	156	10.9	B				
	Right	18	20	172	9.4	A				
Southbound	Left	86	2	59	8.8	A	8.1	A		
	Thru	433	11	152	8.1	A				
	Right	13	0	26	2.4	A				
Eastbound	Left	4	1	19	38.8	D	23.7	C		
	Thru	1	1	18	29.5	C				
	Right	4	2	31	7.0	A				
Westbound	Left	20	3	37	34.8	C	33.5	C		
	Thru	0	-	-	0.0	A				
	Right	134	27	150	33.3	C				

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	432	10	136	6.9	A	6.2	A	5.3	A
	Right	95	1	37	2.8	A				
Southbound	Left	416	11	196	8.0	A	5.4	A		
	Thru	474	3	93	3.1	A				
Westbound	Left	59	13	77	39.3	D	4.4	A		
	Right	597	0	1	1.0	A				

Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	150	42	251	46	D	44.6	D	26.7	C
	Thru	820	194	489	45.5	D				
	Right	40	2	44	20.8	C				
Southbound	Left	394	89	357	35.4	D	21.2	C		
	Thru	581	41	272	15.5	B				
	Right	137	3	57	4.4	A				
Eastbound	Left	90	24	116	45.8	D	23.4	C		
	Thru	100	27	122	47.6	D				
	Right	259	8	106	6.3	A				
Westbound	Left	50	40	157	39.7	D	11.5	B		
	Thru	127	40	157	41.5	D				
	Right	516	0	0	1.4	A				

2019 Existing Saturday Midday
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	174	15	143	24	C	7.0	A	12.5	B
	Thru	728	16	156	6.7	A				
	Right	526	1	88	1.7	A				
Southbound	Left	51	2	43	15.6	B	16.2	B		
	Thru	894	63	356	16.4	B				
	Right	11	72	376	9.4	A				
Eastbound	Left	0	-	-	0.0	A	12.8	B		
	Thru	0	-	-	0.0	A				
	Right	10	1	34	12.8	B				
Westbound	Left	211	41	222	30.1	C	24.3	C		
	Thru	12	41	222	31.6	C				
	Right	131	14	230	14.2	B				

Fairview Ave & County Rd B2

Signal

Fairview Ave & County Rd BZ										Signal
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	168	26	164	28	C	20.5	C	25.9	C
	Thru	302	37	193	33.7	C				
	Right	388	16	224	7.0	A				
Southbound	Left	213	31	176	27.1	C	32.3	C		
	Thru	375	59	242	37.1	D				
	Right	106	62	247	26.2	C				
Eastbound	Left	141	15	141	19.9	B	28.4	C		
	Thru	280	72	329	32.6	C				
	Right	255	82	344	28.4	C				
Westbound	Left	330	65	310	32.1	C	24.2	C		
	Thru	279	32	233	21.3	C				
	Right	179	38	247	14.1	B				

County Rd B2 & NW Mall Entrance

Signal

County Rd B2 & NW Main Entrance										Signal
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	131	34	155	41	D	25.8	C	10.6	B
	Thru	15	34	154	37.4	D				
	Right	142	46	172	10.2	B				
Southbound	Left	24	13	95	41.9	D	29.0	C		
	Thru	8	13	95	44.8	D				
	Right	57	15	102	21.3	C				
Eastbound	Left	86	3	106	10.4	B	4.9	A		
	Thru	531	10	122	5.7	A				
	Right	260	1	51	1.5	A				
Westbound	Left	127	4	67	10.5	B	9.3	A		
	Thru	601	20	172	9.1	A				
	Right	63	24	185	8.9	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	133	36	177	42.5	D	30.6	C	7.1	A
	Right	86	41	184	12.2	B				
Eastbound	Left	76	2	48	12.8	B	3.4	A		
	Thru	619	4	75	2.2	A				
Westbound	Thru	703	8	126	4.2	A	4.1	A		
	Right	167	10	136	3.9	A				

2019 Existing Saturday MIDDAY
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	67	31	135	46	D	23.6	C	26.7	C
	Thru	26	31	135	46.3	D				
	Right	235	44	154	14.7	B				
Southbound	Left	228	31	134	34.6	C	27.4	C		
	Thru	15	8	86	29.0	C				
	Right	107	11	95	11.8	B				
Eastbound	Left	201	34	201	32.3	C	26.5	C		
	Thru	498	48	249	26.5	C				
	Right	52	1	35	4.5	A				
Westbound	Left	134	17	119	26.1	C	27.7	C		
	Thru	695	75	313	30.5	C				
	Right	93	3	81	9.2	A				

County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	145	25	140	32	C	23.9	C	36.3	D
	Thru	243	49	243	31.5	C				
	Right	193	11	116	8.0	A				
Southbound	Left	19	2	34	25.3	C	21.2	C		
	Thru	158	40	247	39.9	D				
	Right	227	7	117	7.9	A				
Eastbound	Left	376	230	530	77.3	E	48.8	D		
	Thru	479	53	231	34.6	C				
	Right	93	4	68	7.4	A				
Westbound	Left	310	53	161	47.3	D	37.8	D		
	Thru	556	63	246	33.6	C				
	Right	19	0	22	6.3	A				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	21	1	32	12.2	B	15.3	B	12.0	B
	Right	569	58	323	15.5	B				
Eastbound	Left	270	15	182	12.1	B	8.7	A		
	Thru	416	8	117	6.5	A				
Westbound	Thru	318	14	114	13.3	B	12.9	B		
	Right	10	0	19	3.0	A				

Note: Results are the average of ten (10) simulation runs

2019 Existing Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	10	42	156	39	D	38.1	D	32.7	C
	Thru	265	41	156	40.1	D				
	Right	38	49	166	23.4	C				
Southbound	Left	214	100	339	46.3	D	40.9	D		
	Thru	253	100	338	42.3	D				
	Right	78	110	352	21.8	C				
Eastbound	Left	269	56	264	33.9	C	29.4	C		
	Thru	458	55	262	27.4	C				
	Right	40	59	272	22.9	C				
Westbound	Left	54	7	62	25.4	C	21.2	C		
	Thru	84	23	147	31.8	C				
	Right	179	28	155	15.0	B				

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	9	12	169	8	A	5.9	A	8.5	A
	Thru	653	13	162	5.9	A				
	Right	52	16	179	5.0	A				
Southbound	Left	100	2	57	11.3	B	5.1	A		
	Thru	520	6	114	4.0	A				
	Right	9	0	14	1.6	A				
Eastbound	Left	11	2	32	39.0	D	24.1	C		
	Thru	0	-	-	0.0	A				
	Right	10	4	47	7.8	A				
Westbound	Left	20	4	40	37.0	D	36.1	D		
	Thru	1	0	9	25.2	C				
	Right	113	24	130	36.0	D				

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	678	11	150	5.3	A	4.9	A	5.7	A
	Right	100	0	32	1.8	A				
Southbound	Left	293	10	164	10.2	B	5.9	A		
	Thru	562	5	116	3.6	A				
Westbound	Left	69	13	87	35.8	D	7.1	A		
	Right	308	0	0	0.6	A				

2019 Existing Weekday PM
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	146	35	182	41	D	29.6	C	22.8	C
	Thru	767	95	358	29.4	C				
	Right	62	0	27	5.2	A				
Southbound	Left	307	78	319	40.5	D	26.1	C		
	Thru	458	36	219	20.4	C				
	Right	89	2	53	5.4	A				
Eastbound	Left	103	25	117	43.2	D	17.2	B		
	Thru	66	14	87	39.7	D				
	Right	345	8	123	5.1	A				
Westbound	Left	54	44	176	35.4	D	13.1	B		
	Thru	164	44	175	37.5	D				
	Right	453	0	2	1.6	A				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	121	19	207	14	B	8.3	A	11.3	B
	Thru	878	26	217	9.7	A				
	Right	323	9	123	2.3	A				
Southbound	Left	61	2	50	14.0	B	12.2	B		
	Thru	728	34	275	12.1	B				
	Right	7	39	293	7.7	A				
Eastbound	Left	2	1	25	51.5	D	20.6	C		
	Thru	1	2	29	60.4	E				
	Right	10	2	36	10.4	B				
Westbound	Left	117	27	160	33.6	C	24.7	C		
	Thru	7	24	153	24.8	C				
	Right	108	13	162	15.0	B				

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	187	56	258	32	C	30.9	C	31.2	C
	Thru	399	75	280	39.5	D				
	Right	394	69	331	21.7	C				
Southbound	Left	195	32	187	28.9	C	33.5	C		
	Thru	394	62	251	37.5	D				
	Right	80	65	255	25.5	C				
Eastbound	Left	175	23	172	24.0	C	32.2	C		
	Thru	658	110	397	34.9	C				
	Right	209	119	410	30.4	C				
Westbound	Left	194	46	209	43.9	D	27.4	C		
	Thru	216	26	169	22.3	C				
	Right	158	32	184	14.0	B				

2019 Existing Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	72	23	118	39	D	27.7	C	9.6	A
	Thru	12	23	118	36.9	D				
	Right	129	35	136	20.6	C				
Southbound	Left	30	13	85	54.9	D	37.2	D		
	Thru	5	12	84	45.5	D				
	Right	36	16	94	21.3	C				
Eastbound	Left	48	13	202	7.7	A	6.1	A		
	Thru	1,029	25	223	6.8	A				
	Right	168	0	31	1.3	A				
Westbound	Left	60	2	48	16.7	B	7.2	A		
	Thru	461	9	123	6.1	A				
	Right	55	12	138	5.8	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	97	22	118	40.8	D	29.1	C	11.0	B
	Right	53	26	123	7.9	A				
Eastbound	Left	82	1	38	10.3	B	11.6	B		
	Thru	1,099	48	235	11.7	B				
Westbound	Thru	523	10	151	5.7	A	5.6	A		
	Right	96	12	159	5.0	A				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	69	31	136	40	D	29.8	C	32.0	C
	Thru	16	31	136	36.1	D				
	Right	185	44	156	25.4	C				
Southbound	Left	214	29	117	36.8	D	30.1	C		
	Thru	5	2	48	32.9	C				
	Right	65	4	57	7.9	A				
Eastbound	Left	157	21	161	39.7	D	39.9	D		
	Thru	980	191	528	40.8	D				
	Right	40	1	43	19.5	B				
Westbound	Left	68	7	73	25.1	C	19.4	B		
	Thru	487	36	197	21.6	C				
	Right	105	4	83	5.5	A				

2019 Existing Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	90	11	96	24	C	20.5	C	38.5	D
	Thru	175	31	176	28.0	C				
	Right	158	11	119	10.5	B				
Southbound	Left	28	3	33	23.3	C	14.4	B		
	Thru	93	14	103	29.5	C				
	Right	150	2	56	3.4	A				
Eastbound	Left	365	274	633	88.9	F	50.4	D		
	Thru	908	171	612	39.1	D				
	Right	97	3	73	11.6	B				
Westbound	Left	204	37	122	45.4	D	35.0	C		
	Thru	427	47	186	31.9	C				
	Right	26	0	22	4.4	A				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	24	2	34	15.2	B	13.5	B	6.4	A
	Right	356	30	198	13.4	B				
Eastbound	Left	315	9	173	8.0	A	4.4	A		
	Thru	771	6	163	2.9	A				
Westbound	Thru	305	5	75	5.4	A	5.1	A		
	Right	40	0	30	2.7	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Weekday PM - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	11	49	176	43	D	40.3	D	35.8	D
	Thru	292	49	176	42.1	D				
	Right	43	57	187	27.8	C				
Southbound	Left	239	119	361	50.9	D	44.2	D		
	Thru	281	119	359	44.5	D				
	Right	87	130	376	24.8	C				
Eastbound	Left	292	83	326	41.9	D	34.1	C		
	Thru	505	74	322	30.5	C				
	Right	44	79	332	23.7	C				
Westbound	Left	62	7	65	24.6	C	20.9	C		
	Thru	91	25	166	31.8	C				
	Right	198	29	174	14.7	B				

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	9	18	206	6	A	7.1	A	11.1	B						
	Thru	714	18	197	7.2	A										
	Right	57	22	214	5.6	A										
Southbound	Left	113	4	74	12.2	B	7.6	A			11.1	B				
	Thru	576	12	145	6.8	A										
	Right	10	0	25	2.4	A										
Eastbound	Left	13	4	39	49.4	D	33.9	C					11.1	B		
	Thru	1	4	38	62.3	E										
	Right	12	6	55	14.8	B										
Westbound	Left	24	5	51	44.8	D	44.3	D							11.1	B
	Thru	1	1	9	61.4	E										
	Right	125	33	161	44.1	D										

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	743	6	130	2.9	A	2.8	A	4.7	A
	Right	108	0	31	1.7	A				
Southbound	Left	329	9	143	9.9	A	4.6	A		
	Thru	624	2	67	1.8	A				
Westbound	Left	75	20	104	47.4	D	9.0	A		
	Right	343	0	0	0.6	A				

Year 2040 No Build Weekday PM - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	159	52	256	52	D	41.1	D	29.1	C
	Thru	843	156	441	41.8	D				
	Right	70	1	37	9.3	A				
Southbound	Left	343	106	345	47.8	D	31.1	C		
	Thru	511	52	254	25.0	C				
	Right	100	2	55	5.3	A				
Eastbound	Left	115	30	139	46.2	D	19.2	B		
	Thru	71	17	94	44.6	D				
	Right	384	13	164	6.4	A				
Westbound	Left	58	65	219	50.1	D	16.6	B		
	Thru	176	65	220	48.3	D				
	Right	501	0	0	1.6	A				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	133	12	192	16	B	7.4	A	10.4	B
	Thru	974	22	208	8.4	A				
	Right	359	3	108	1.8	A				
Southbound	Left	67	2	45	12.6	B	10.7	B		
	Thru	815	33	258	10.6	B				
	Right	7	39	276	4.0	A				
Eastbound	Left	3	1	27	56.7	E	22.1	C		
	Thru	0	-	-	0.0	A				
	Right	12	2	37	13.4	B				
Westbound	Left	129	29	174	35.4	D	25.3	C		
	Thru	8	28	173	39.5	D				
	Right	120	9	185	13.4	B				

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	212	39	236	29	C	20.9	C	27.3	C
	Thru	445	50	280	23.2	C				
	Right	440	49	344	14.8	B				
Southbound	Left	220	41	201	33.2	C	33.9	C		
	Thru	442	63	246	36.3	D				
	Right	88	63	245	23.8	C				
Eastbound	Left	191	20	146	23.9	C	31.1	C		
	Thru	721	117	424	34.0	C				
	Right	232	127	438	28.1	C				
Westbound	Left	213	50	226	42.8	D	23.5	C		
	Thru	234	20	134	16.4	B				
	Right	174	26	148	9.5	A				

Year 2040 No Build Weekday PM - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	78	33	135	53	D	35.2	D	10.1	B
	Thru	13	32	134	51.4	D				
	Right	143	46	152	24.0	C				
Southbound	Left	32	21	106	60.3	E	44.5	D		
	Thru	6	19	103	55.2	E				
	Right	40	24	114	30.3	C				
Eastbound	Left	54	7	280	6.5	A	4.3	A		
	Thru	1,147	21	294	4.7	A				
	Right	188	0	31	1.3	A				
Westbound	Left	68	2	49	15.2	B	9.1	A		
	Thru	511	15	159	8.4	A				
	Right	58	18	172	8.2	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	108	32	153	47.4	D	34.6	C	5.6	A
	Right	56	35	156	10.1	B				
Eastbound	Left	90	1	35	8.0	A	3.3	A		
	Thru	1,235	10	194	3.0	A				
Westbound	Thru	585	5	86	3.2	A	3.1	A		
	Right	107	6	96	2.7	A				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	72	40	160	50	D	34.3	C	18.4	B		
	Thru	17	40	159	44.5	D						
	Right	203	55	180	27.7	C						
Southbound	Left	232	37	137	41.6	D	34.1	C				
	Thru	5	3	52	36.0	D						
	Right	71	5	62	9.3	A						
Eastbound	Left	179	15	143	22.9	C	17.2	B				
	Thru	1,116	75	463	16.7	B						
	Right	44	0	34	5.8	A						
Westbound	Left	76	5	52	21.2	C	8.0	A				
	Thru	548	13	113	7.2	A						
	Right	118	1	61	3.0	A						

Year 2040 No Build Weekday PM - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	99	15	114	27	C	23.1	C	31.7	C
	Thru	192	36	202	29.2	C				
	Right	172	16	130	14.2	B				
Southbound	Left	28	3	42	24.9	C	15.4	B		
	Thru	103	18	115	31.9	C				
	Right	165	2	59	3.5	A				
Eastbound	Left	409	128	547	43.1	D	31.1	C		
	Thru	1,028	131	567	28.7	C				
	Right	109	3	67	9.0	A				
Westbound	Left	227	48	145	54.7	D	45.0	D		
	Thru	476	70	228	42.7	D				
	Right	28	1	27	5.4	A				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	26	2	39	13.3	B	13.9	B	7.6	A
	Right	392	35	221	13.9	B				
Eastbound	Left	352	22	230	14.0	B	6.8	A		
	Thru	865	9	195	3.8	A				
Westbound	Thru	335	4	67	3.6	A	3.4	A		
	Right	44	0	29	2.1	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Saturday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	18	23	110	28	C	25.7	C	22.1	C						
	Thru	204	23	109	27.1	C										
	Right	23	29	120	11.4	B										
Southbound	Left	207	55	253	27.8	C	24.6	C			22.1	C				
	Thru	216	55	253	26.0	C										
	Right	75	63	267	11.3	B										
Eastbound	Left	56	6	61	22.6	C	21.2	C					22.1	C		
	Thru	97	9	65	22.8	C										
	Right	24	7	75	11.1	B										
Westbound	Left	30	3	41	22.4	C	15.9	B							22.1	C
	Thru	94	17	129	24.9	C										
	Right	193	21	136	10.5	B										

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	1	19	171	24	C	11.3	B	14.2	B		
	Thru	433	19	173	11.4	B						
	Right	18	24	190	7.6	A						
Southbound	Left	93	4	74	11.5	B	10.6	B				
	Thru	472	16	147	10.7	B						
	Right	15	0	32	2.4	A						
Eastbound	Left	5	1	20	32.7	C	20.2	C				
	Thru	0	-	-	0.0	A						
	Right	5	2	34	7.6	A						
Westbound	Left	21	3	37	31.8	C	33.7	C				
	Thru	0	-	-	0.0	A						
	Right	150	30	165	33.9	C						

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	481	5	134	4.8	A	4.4	A	9.3	A
	Right	106	1	36	2.4	A				
Southbound	Left	450	17	239	9.5	A	5.3	A		
	Thru	514	2	57	1.7	A				
Westbound	Left	64	13	76	45.4	D	18.6	B		
	Right	655	67	178	16.0	B				

Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	167	58	314	53	D	59.2	E	41.2	D
	Thru	902	297	566	60.9	E				
	Right	44	2	40	46.8	D				
Southbound	Left	416	281	526	90.3	F	49.6	D		
	Thru	630	144	460	33.1	C				
	Right	153	5	83	6.6	A				
Eastbound	Left	99	25	124	44.0	D	22.6	C		
	Thru	111	28	136	45.7	D				
	Right	283	8	121	6.1	A				
Westbound	Left	55	54	184	53.8	D	14.1	B		
	Thru	141	54	184	49.5	D				
	Right	571	0	0	1.5	A				

Year 2040 No Build Saturday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	190	32	223	31	C	10.8	B	17.6	B		
	Thru	797	34	230	12.1	B						
	Right	577	4	160	2.4	A						
Southbound	Left	57	2	42	18.2	B	24.1	C				
	Thru	976	109	419	24.5	C						
	Right	13	120	438	15.1	B						
Eastbound	Left	0	-	-	0.0	A	19.9	B				
	Thru	0	-	-	0.0	A						
	Right	12	2	34	19.9	B						
Westbound	Left	232	50	247	33.2	C	27.3	C				
	Thru	14	50	244	32.2	C						
	Right	145	22	257	17.4	B						

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	184	20	144	24	C	12.5	B	26.6	C
	Thru	331	17	152	13.6	B				
	Right	425	15	243	6.9	A				
Southbound	Left	233	31	183	25.3	C	27.3	C		
	Thru	414	51	214	30.3	C				
	Right	116	51	214	20.9	C				
Eastbound	Left	155	18	130	21.5	C	40.8	D		
	Thru	306	137	398	44.2	D				
	Right	281	148	411	47.8	D				
Westbound	Left	360	94	318	39.6	D	29.0	C		
	Thru	305	43	265	23.9	C				
	Right	197	51	279	17.8	B				

County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	143	42	171	45	D	28.3	C	12.9	B
	Thru	16	42	171	42.5	D				
	Right	157	54	189	11.4	B				
Southbound	Left	26	15	102	42.6	D	31.9	C		
	Thru	8	15	101	45.3	D				
	Right	62	19	110	25.6	C				
Eastbound	Left	94	5	146	13.0	B	6.5	A		
	Thru	585	17	174	7.8	A				
	Right	283	1	49	1.6	A				
Westbound	Left	139	5	70	11.6	B	12.3	B		
	Thru	664	32	194	12.7	B				
	Right	70	37	206	9.5	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	149	40	199	41.7	D	31.1	C	7.4	A
	Right	97	45	205	14.8	B				
Eastbound	Left	86	3	50	14.5	B	3.4	A		
	Thru	683	4	66	2.0	A				
Westbound	Thru	778	11	135	4.6	A	4.5	A		
	Right	186	13	146	3.9	A				

Year 2040 No Build Saturday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	75	36	146	42	D	24.6	C	24.3	C		
	Thru	30	36	146	49.4	D						
	Right	258	49	164	16.6	B						
Southbound	Left	252	35	146	34.2	C	27.9	C				
	Thru	17	10	102	35.9	D						
	Right	123	14	113	14.0	B						
Eastbound	Left	222	41	215	33.5	C	22.3	C				
	Thru	547	39	223	19.8	B						
	Right	58	1	37	3.5	A						
Westbound	Left	147	20	127	27.5	C	24.4	C				
	Thru	767	70	298	26.0	C						
	Right	102	3	79	7.8	A						

County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	163	33	170	37	D	22.7	C	37.4	D
	Thru	268	43	235	25.8	C				
	Right	213	12	119	8.1	A				
Southbound	Left	21	2	38	23.6	C	18.9	B		
	Thru	174	39	271	35.7	D				
	Right	249	5	103	6.8	A				
Eastbound	Left	425	154	511	49.0	D	35.6	D		
	Thru	529	53	278	30.1	C				
	Right	101	4	72	7.8	A				
Westbound	Left	341	64	199	55.1	E	57.6	E		
	Thru	611	140	400	60.6	E				
	Right	21	1	24	10.5	B				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	22	1	27	10.1	B	15.8	B	15.2	B
	Right	627	66	366	16.0	B				
Eastbound	Left	299	54	289	30.9	C	17.6	B		
	Thru	460	13	148	8.9	A				
Westbound	Thru	352	11	99	9.4	A	9.2	A		
	Right	11	0	18	2.6	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Saturday MD - 80th Percentile - Draft
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	20	27	124	30	C	27.9	C	23.9	C						
	Thru	224	27	123	29.6	C										
	Right	26	33	135	12.4	B										
Southbound	Left	224	67	277	31.2	C	27.6	C			23.9	C				
	Thru	239	67	277	28.8	C										
	Right	81	75	292	14.3	B										
Eastbound	Left	61	7	63	23.8	C	21.7	C					23.9	C		
	Thru	106	10	66	23.2	C										
	Right	25	8	77	10.3	B										
Westbound	Left	33	3	45	19.4	B	16.0	B							23.9	C
	Thru	102	20	146	23.8	C										
	Right	213	24	154	11.8	B										

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	2	19	195	7	A	11.4	B	15.6	B						
	Thru	474	21	194	11.5	B										
	Right	21	27	212	9.6	A										
Southbound	Left	100	5	85	11.9	B	10.9	B			15.6	B				
	Thru	515	19	166	11.0	B										
	Right	18	0	31	2.3	A										
Eastbound	Left	6	1	21	47.5	D	29.8	C					15.6	B		
	Thru	0	-	-	0.0	A										
	Right	5	2	35	8.6	A										
Westbound	Left	24	4	47	38.2	D	41.6	D							15.6	B
	Thru	0	-	-	0.0	A										
	Right	164	43	202	42.1	D										

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	526	4	94	4.8	A	4.6	A	12.6	B
	Right	116	1	48	3.2	A				
Southbound	Left	503	22	256	10.7	B	6.1	A		
	Thru	563	2	62	1.9	A				
Westbound	Left	68	18	93	59.8	E	28.2	C		
	Right	706	114	343	25.1	C				

Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	178	146	529	71	E	72.2	E	40.2	D
	Thru	969	394	643	72.7	E				
	Right	48	4	62	65.0	E				
Southbound	Left	476	144	450	44.2	D	24.0	C		
	Thru	698	61	373	14.6	B				
	Right	168	4	70	5.3	A				
Eastbound	Left	109	38	144	58.5	E	30.2	C		
	Thru	123	40	194	55.6	E				
	Right	312	17	178	10.3	B				
Westbound	Left	59	127	312	113.2	F	27.3	C		
	Thru	154	128	312	88.0	F				
	Right	629	0	0	4.4	A				

Year 2040 No Build Saturday MD - 80th Percentile - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	206	29	173	33	C	9.2	A	16.4	B
	Thru	868	27	193	8.7	A				
	Right	628	2	81	2.2	A				
Southbound	Left	62	3	46	18.9	B	20.5	C		
	Thru	1,080	101	414	20.6	C				
	Right	12	110	432	16.2	B				
Eastbound	Left	0	-	-	0.0	A	17.9	B		
	Thru	0	-	-	0.0	A				
	Right	12	2	37	17.9	B				
Westbound	Left	255	72	321	40.1	D	34.1	C		
	Thru	15	72	321	40.0	D				
	Right	157	28	327	23.8	C				

Fairview Ave & County Rd B2

Signal

Fairview Ave & County Rd 22										Signal
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	199	49	213	43	D	21.5	C	31.2	C
	Thru	358	39	254	23.4	C				
	Right	465	32	299	10.8	B				
Southbound	Left	256	43	224	30.4	C	35.7	D		
	Thru	457	78	266	40.5	D				
	Right	128	78	266	29.0	C				
Eastbound	Left	168	21	154	24.1	C	36.1	D		
	Thru	339	123	419	40.3	D				
	Right	311	134	432	38.0	D				
Westbound	Left	393	133	376	48.2	D	33.3	C		
	Thru	334	49	284	26.2	C				
	Right	216	57	297	17.0	B				

County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	150	96	256	96	F	59.4	E	18.3	B
	Thru	18	95	257	92.3	F				
	Right	172	110	274	24.2	C				
Southbound	Left	28	34	135	67.4	E	57.9	E		
	Thru	10	33	134	65.8	E				
	Right	66	39	144	52.7	D				
Eastbound	Left	102	16	194	20.8	C	10.1	B		
	Thru	642	29	205	12.3	B				
	Right	316	1	65	1.9	A				
Westbound	Left	150	4	62	9.6	A	8.6	A		
	Thru	735	19	139	8.4	A				
	Right	77	25	153	8.1	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	163	56	231	51.2	D	39.6	D	8.9	A
	Right	108	61	237	22.0	C				
Eastbound	Left	94	6	74	24.2	C	6.6	A		
	Thru	749	10	117	4.4	A				
Westbound	Thru	855	5	108	3.0	A	3.0	A		
	Right	204	7	118	3.0	A				

Year 2040 No Build Saturday MD - 80th Percentile - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	81	85	247	56	E	46.2	D	33.7	C
	Thru	32	89	252	55.8	E				
	Right	276	101	267	42.2	D				
Southbound	Left	258	120	272	102.5	F	72.9	E		
	Thru	17	14	112	44.4	D				
	Right	133	18	122	19.1	B				
Eastbound	Left	240	66	301	46.4	D	32.0	C		
	Thru	600	75	313	28.9	C				
	Right	64	1	36	7.0	A				
Westbound	Left	161	17	111	22.8	C	16.4	B		
	Thru	844	48	224	16.8	B				
	Right	114	3	70	4.9	A				

County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	180	44	210	43	D	28.3	C	46.8	D
	Thru	292	58	297	31.0	C				
	Right	233	24	185	13.3	B				
Southbound	Left	22	3	35	27.5	C	23.0	C		
	Thru	187	56	322	41.2	D				
	Right	277	8	138	10.3	B				
Eastbound	Left	450	316	669	79.5	E	56.5	E		
	Thru	568	106	448	47.2	D				
	Right	108	4	69	9.9	A				
Westbound	Left	376	81	258	64.5	E	59.8	E		
	Thru	667	154	460	58.7	E				
	Right	23	1	29	12.5	B				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	26	1	29	11.0	B	18.1	B	21.8	C
	Right	681	88	465	18.4	B				
Eastbound	Left	321	113	372	56.2	E	29.8	C		
	Thru	495	18	174	12.7	B				
Westbound	Thru	386	15	117	12.0	B	11.7	B		
	Right	12	0	24	3.3	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Black Friday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	21	34	139	32	C	29.9	C	25.5	C
	Thru	254	34	139	32.6	C				
	Right	52	41	150	16.0	B				
Southbound	Left	228	71	295	31.4	C	27.8	C		
	Thru	264	71	295	29.2	C				
	Right	96	80	308	15.7	B				
Eastbound	Left	81	9	72	23.0	C	24.3	C		
	Thru	150	16	83	26.2	C				
	Right	24	15	93	17.2	B				
Westbound	Left	62	7	60	21.4	C	19.7	B		
	Thru	146	30	177	26.5	C				
	Right	236	35	185	15.0	B				

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	15	22	218	11	B	10.3	B	14.0	B						
	Thru	521	22	210	10.4	B										
	Right	33	27	227	8.6	A										
Southbound	Left	140	6	98	10.9	B	9.0	A			14.0	B				
	Thru	560	15	166	8.6	A										
	Right	7	0	14	2.0	A										
Eastbound	Left	13	4	43	58.7	E	46.2	D					14.0	B		
	Thru	0	-	-	0.0	A										
	Right	5	6	57	13.7	B										
Westbound	Left	23	4	48	43.1	D	44.5	D							14.0	B
	Thru	0	-	-	0.0	A										
	Right	142	40	181	44.7	D										

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	526	14	150	7.3	A	6.7	A	8.9	A
	Right	144	3	58	4.8	A				
Southbound	Left	664	75	502	17.1	B	9.8	A		
	Thru	623	2	61	1.9	A				
Westbound	Left	82	25	116	52.3	D	9.6	A		
	Right	648	14	75	4.1	A				

Year 2040 No Build Black Friday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	204	126	482	67	E	59.8	E	37.2	D
	Thru	901	257	569	59.5	E				
	Right	47	3	57	33.5	C				
Southbound	Left	507	190	516	50.9	D	28.1	C		
	Thru	907	132	478	19.3	B				
	Right	155	4	67	5.2	A				
Eastbound	Left	116	38	157	58.3	E	30.6	C		
	Thru	99	31	150	55.2	E				
	Right	354	34	266	14.7	B				
Westbound	Left	32	125	337	109.4	F	30.1	C		
	Thru	172	126	335	99.3	F				
	Right	964	30	177	15.2	B				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	244	75	298	45	D	16.6	B	25.4	C
	Thru	1,016	64	291	18.3	B				
	Right	701	5	136	4.3	A				
Southbound	Left	64	4	52	25.6	C	25.1	C		
	Thru	1,160	132	451	25.2	C				
	Right	15	145	469	17.1	B				
Eastbound	Left	1	1	27	81.3	F	25.8	C		
	Thru	0	-	-	0.0	A				
	Right	14	2	38	21.9	C				
Westbound	Left	407	162	445	57.8	E	58.2	E		
	Thru	5	162	448	48.3	D				
	Right	131	92	460	59.8	E				

Fairview Ave & County Rd B2

Signal

Fairview Ave & County Rd 22										Signal
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	179	85	324	49	D	38.0	D	47.1	D
	Thru	517	107	351	34.8	C				
	Right	441	93	403	37.4	D				
Southbound	Left	341	197	561	68.9	E	67.8	E		
	Thru	571	252	675	71.6	E				
	Right	199	252	673	54.8	D				
Eastbound	Left	218	75	379	44.5	D	49.8	D		
	Thru	418	176	503	52.4	D				
	Right	299	184	513	50.2	D				
Westbound	Left	376	148	382	54.4	D	33.5	C		
	Thru	403	81	347	26.5	C				
	Right	352	91	361	19.3	B				

Year 2040 No Build Black Friday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	178	158	340	124	F	89.6	F	29.0	C
	Thru	21	160	343	122.3	F				
	Right	173	175	360	50.7	D				
Southbound	Left	35	77	233	93.0	F	93.6	F		
	Thru	17	76	232	78.3	E				
	Right	79	83	241	97.1	F				
Eastbound	Left	111	39	253	35.3	D	16.3	B		
	Thru	753	58	260	19.6	B				
	Right	328	2	70	2.5	A				
Westbound	Left	138	21	103	20.2	C	14.3	B		
	Thru	880	44	215	13.4	B				
	Right	61	50	227	12.9	B				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	170	75	283	64.2	E	48.1	D	17.8	B
	Right	172	81	290	32.2	C				
Eastbound	Left	103	20	106	46.1	D	21.7	C		
	Thru	848	48	178	18.7	B				
Westbound	Thru	918	11	155	4.5	A	4.3	A		
	Right	133	13	164	3.2	A				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	132	123	280	92	F	62.1	E	44.4	D
	Thru	26	121	280	86.3	F				
	Right	279	138	297	45.9	D				
Southbound	Left	206	72	183	77.1	E	55.9	E		
	Thru	12	19	120	43.3	D				
	Right	130	24	134	23.6	C				
Eastbound	Left	201	102	427	72.6	E	60.3	E		
	Thru	615	176	509	66.0	E				
	Right	179	19	158	26.8	C				
Westbound	Left	326	90	307	46.8	D	22.6	C		
	Thru	789	43	224	16.0	B				
	Right	146	3	65	4.2	A				

Year 2040 No Build Black Friday MD - Draft
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	224	381	632	223	F	81.4	F	66.5	E
	Thru	396	122	557	39.8	D				
	Right	416	149	453	44.6	D				
Southbound	Left	32	5	51	59.7	E	51.4	D		
	Thru	271	280	735	66.3	E				
	Right	411	201	637	41.0	D				
Eastbound	Left	390	188	565	64.0	E	57.5	E		
	Thru	592	144	445	61.4	E				
	Right	106	3	66	11.8	B				
Westbound	Left	371	87	303	70.1	E	71.5	E		
	Thru	632	196	545	74.4	E				
	Right	23	1	27	14.9	B				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	47	2	43	14.3	B	18.8	B	34.2	C
	Right	626	88	418	19.1	B				
Eastbound	Left	411	299	619	108.2	F	54.7	D		
	Thru	621	29	208	19.3	B				
Westbound	Thru	403	15	135	11.1	B	10.3	B		
	Right	47	1	37	3.1	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Improvements Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	10	55	183	43	D	44.1	D	40.5	D
	Thru	294	55	182	45.6	D				
	Right	43	64	194	34.2	C				
Southbound	Left	235	153	407	69.4	E	55.3	E		
	Thru	279	154	408	50.7	D				
	Right	87	165	420	32.3	C				
Eastbound	Left	304	89	330	43.8	D	35.6	D		
	Thru	489	81	337	31.5	C				
	Right	44	86	347	24.7	C				
Westbound	Left	61	8	70	26.4	C	23.4	C		
	Thru	89	28	156	35.1	D				
	Right	201	33	164	17.3	B				

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	9	17	194	9	A	6.7	A	10.2	B
	Thru	731	17	192	6.8	A				
	Right	56	21	209	5.7	A				
Southbound	Left	112	5	74	14.3	B	6.0	A		
	Thru	575	7	124	4.5	A				
	Right	10	0	16	1.9	A				
Eastbound	Left	12	4	42	53.5	D	35.1	D		
	Thru	1	4	38	60.8	E				
	Right	12	6	59	14.7	B				
Westbound	Left	23	6	54	44.6	D	43.9	D		
	Thru	1	1	11	71.5	E				
	Right	124	32	154	43.5	D				

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	761	13	159	5.7	A	5.2	A	7.4	A
	Right	108	1	36	1.9	A				
Southbound	Left	329	18	172	14.9	B	6.5	A		
	Thru	624	3	70	2.0	A				
Westbound	Left	73	20	102	48.1	D	13.9	B		
	Right	342	12	107	6.6	A				

Year 2040 No Build Improvements Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	160	52	214	54	D	39.7	D	30.6	C
	Thru	858	98	322	39.4	D				
	Right	70	5	67	11.0	B				
Southbound	Left	341	130	388	57.5	E	37.1	D		
	Thru	514	50	226	26.2	C				
	Right	100	13	98	23.5	C				
Eastbound	Left	114	17	111	28.5	C	15.1	B		
	Thru	71	15	88	40.5	D				
	Right	383	13	166	6.5	A				
Westbound	Left	58	8	74	28.1	C	20.4	C		
	Thru	178	43	186	41.1	D				
	Right	461	25	184	11.4	B				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	135	5	83	15	B	10.9	B	14.2	B
	Thru	937	36	321	10.8	B				
	Right	373	19	199	9.5	A				
Southbound	Left	67	2	50	14.1	B	13.8	B		
	Thru	815	43	283	13.8	B				
	Right	7	49	296	9.9	A				
Eastbound	Left	0	#N/A	#N/A	0.0	A	7.3	A		
	Thru	0	#N/A	#N/A	0.0	A				
	Right	15	0	33	7.3	A				
Westbound	Left	128	38	152	34.7	C	35.4	D		
	Thru	8	37	152	39.7	D				
	Right	118	38	152	35.8	D				

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	212	33	211	25	C	19.6	B	25.7	C
	Thru	445	42	240	23.5	C				
	Right	399	35	270	12.3	B				
Southbound	Left	219	33	185	27.8	C	30.9	C		
	Thru	441	55	237	33.6	C				
	Right	89	55	236	25.5	C				
Eastbound	Left	190	25	182	24.4	C	28.7	C		
	Thru	727	99	392	35.7	D				
	Right	233	11	118	10.5	B				
Westbound	Left	211	33	209	28.5	C	24.3	C		
	Thru	236	34	208	26.2	C				
	Right	174	41	222	16.7	B				

Year 2040 No Build Improvements Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	80	31	133	54	D	31.5	C	10.3	B
	Thru	14	31	134	57.1	E				
	Right	142	44	151	16.5	B				
Southbound	Left	33	18	104	59.4	E	42.0	D		
	Thru	6	18	107	55.9	E				
	Right	40	21	113	25.5	C				
Eastbound	Left	51	6	197	7.4	A	5.2	A		
	Thru	1,112	19	209	5.6	A				
	Right	181	0	37	2.2	A				
Westbound	Left	68	2	52	11.4	B	9.0	A		
	Thru	507	16	190	8.9	A				
	Right	59	19	203	7.7	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	108	31	152	47.2	D	34.6	C	6.5	A
	Right	56	35	156	10.2	B				
Eastbound	Left	86	1	40	9.1	A	4.5	A		
	Thru	1,203	16	290	4.2	A				
Westbound	Thru	585	6	84	3.5	A	3.4	A		
	Right	107	7	94	2.8	A				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	73	35	148	50	D	31.3	C	17.5	B
	Thru	17	35	148	47.6	D				
	Right	204	50	167	23.4	C				
Southbound	Left	233	38	135	42.5	D	34.8	C		
	Thru	5	3	50	33.4	C				
	Right	71	5	61	9.7	A				
Eastbound	Left	176	15	145	22.6	C	15.3	B		
	Thru	1,092	61	424	14.5	B				
	Right	43	0	31	4.8	A				
Westbound	Left	76	4	54	19.8	B	8.8	A		
	Thru	548	16	118	8.5	A				
	Right	118	2	60	3.2	A				

Year 2040 No Build Improvements Weekday PM
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	99	14	116	26	C	23.3	C	27.5	C						
	Thru	191	37	199	30.6	C										
	Right	172	16	136	14.0	B										
Southbound	Left	28	3	41	25.9	C	16.3	B			27.5	C				
	Thru	103	18	120	32.6	C										
	Right	163	3	67	4.4	A										
Eastbound	Left	401	86	251	52.4	D	28.3	C					27.5	C		
	Thru	1,017	82	495	21.1	C										
	Right	105	3	62	6.6	A										
Westbound	Left	227	49	146	56.3	E	32.8	C							27.5	C
	Thru	474	38	181	23.4	C										
	Right	29	0	41	3.5	A										

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	26	6	51	39.8	D	17.4	B	8.8	A
	Right	391	44	243	15.9	B				
Eastbound	Left	352	5	95	5.0	A	3.2	A		
	Thru	857	5	95	2.4	A				
Westbound	Thru	336	21	124	18.9	B	17.5	B		
	Right	44	1	40	6.6	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Improvements Saturday MD - 80th Percentile
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	21	31	120	33	C	31.2	C	25.6	C
	Thru	225	30	119	33.0	C				
	Right	26	38	131	14.8	B				
Southbound	Left	224	68	293	32.3	C	28.1	C		
	Thru	237	68	292	29.0	C				
	Right	81	77	307	13.8	B				
Eastbound	Left	65	8	68	24.7	C	23.7	C		
	Thru	100	11	71	26.0	C				
	Right	25	10	81	12.5	B				
Westbound	Left	33	4	46	23.3	C	18.1	B		
	Thru	98	22	151	27.0	C				
	Right	216	27	159	13.3	B				

Fairview Ave & S Frontage Rd

Signal

Fairview Ave & S Frontage Rd										Signal						
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	2	18	169	9	A	11.5	B	15.9	B						
	Thru	483	19	159	11.6	B										
	Right	21	25	176	9.7	A										
Southbound	Left	101	6	81	13.4	B	11.8	B			15.9	B				
	Thru	515	20	165	11.9	B										
	Right	18	0	32	2.4	A										
Eastbound	Left	6	1	22	43.2	D	27.1	C					15.9	B		
	Thru	0	-	-	0.0	A										
	Right	5	2	36	7.7	A										
Westbound	Left	24	4	39	39.4	D	40.7	D							15.9	B
	Thru	0	-	-	0.0	A										
	Right	164	41	193	40.9	D										

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	530	38	210	20.4	C	17.5	B	16.3	B
	Right	116	2	65	4.4	A				
Southbound	Left	504	72	350	25.5	C	14.3	B		
	Thru	564	8	97	4.3	A				
Westbound	Left	70	16	83	43.8	D	18.0	B		
	Right	739	68	407	15.5	B				

Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	188	69	280	62	E	53.3	D	33.6	C
	Thru	1,028	153	410	53.3	D				
	Right	50	6	76	20.5	C				
Southbound	Left	476	140	499	42.7	D	28.3	C		
	Thru	699	60	309	20.8	C				
	Right	167	17	123	18.4	B				
Eastbound	Left	111	18	121	31.1	C	22.7	C		
	Thru	122	31	173	44.6	D				
	Right	312	20	184	11.1	B				
Westbound	Left	61	10	74	33.8	C	19.6	B		
	Thru	156	38	165	43.8	D				
	Right	627	32	221	12.2	B				

Year 2040 No Build Improvements Saturday MD - 80th Percentile
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	215	36	187	39	D	14.4	B	21.3	C
	Thru	889	23	241	7.9	A				
	Right	654	64	397	15.1	B				
Southbound	Left	62	3	52	22.7	C	25.6	C		
	Thru	1,081	123	424	25.9	C				
	Right	13	135	444	18.1	B				
Eastbound	Left	0	#N/A	#N/A	0.0	A	8.8	A		
	Thru	0	#N/A	#N/A	0.0	A				
	Right	15	1	33	8.8	A				
Westbound	Left	255	65	243	38.7	D	38.7	D		
	Thru	15	65	243	39.7	D				
	Right	157	65	243	38.6	D				

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	202	52	223	44	D	22.6	C	28.0	C
	Thru	362	46	252	26.4	C				
	Right	473	36	282	10.5	B				
Southbound	Left	256	49	236	32.9	C	37.1	D		
	Thru	453	75	262	41.0	D				
	Right	128	75	262	31.7	C				
Eastbound	Left	169	20	142	24.4	C	23.4	C		
	Thru	340	43	189	34.6	C				
	Right	311	20	155	10.5	B				
Westbound	Left	395	107	353	40.3	D	29.9	C		
	Thru	334	48	249	25.4	C				
	Right	216	56	263	17.8	B				

County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	150	77	241	75	E	44.1	D	16.8	B
	Thru	18	78	243	75.3	E				
	Right	173	92	260	13.8	B				
Southbound	Left	28	17	101	44.4	D	31.4	C		
	Thru	10	17	101	43.5	D				
	Right	66	20	110	24.0	C				
Eastbound	Left	104	20	216	22.1	C	12.7	B		
	Thru	646	36	227	15.1	B				
	Right	316	4	94	4.7	A				
Westbound	Left	149	4	66	9.5	A	10.1	B		
	Thru	736	27	171	10.3	B				
	Right	76	26	168	9.5	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	165	52	239	46.9	D	36.4	D	9.1	A
	Right	107	57	244	20.2	C				
Eastbound	Left	97	8	85	26.7	C	6.5	A		
	Thru	751	8	177	3.9	A				
Westbound	Thru	857	9	176	4.1	A	4.1	A		
	Right	205	11	185	3.9	A				

Year 2040 No Build Improvements Saturday MD - 80th Percentile
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	81	47	182	55	D	29.5	C	25.7	C
	Thru	33	48	182	53.0	D				
	Right	283	62	201	19.5	B				
Southbound	Left	278	55	190	47.7	D	37.5	D		
	Thru	17	13	108	43.0	D				
	Right	134	17	118	15.6	B				
Eastbound	Left	244	56	264	40.8	D	24.7	C		
	Thru	605	44	233	20.5	C				
	Right	65	1	38	3.3	A				
Westbound	Left	161	17	117	22.9	C	20.5	C		
	Thru	847	65	259	22.1	C				
	Right	113	3	67	5.5	A				

County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	179	34	193	33	C	24.1	C	35.2	D		
	Thru	292	54	287	30.5	C						
	Right	233	14	134	9.1	A						
Southbound	Left	22	3	35	28.3	C	23.6	C				
	Thru	188	54	323	40.6	D						
	Right	277	13	164	11.8	B						
Eastbound	Left	470	123	330	65.6	E	44.6	D				
	Thru	585	72	306	34.8	C						
	Right	110	4	69	6.9	A						
Westbound	Left	375	74	225	56.3	E	37.6	D				
	Thru	667	65	264	28.2	C						
	Right	23	1	43	6.0	A						

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	25	4	42	38.0	D	30.4	C	20.2	C
	Right	679	170	608	30.2	C				
Eastbound	Left	333	9	112	8.3	A	6.5	A		
	Thru	507	9	87	5.3	A				
Westbound	Thru	387	43	188	31.6	C	30.9	C		
	Right	12	0	29	6.4	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 No Build Improvements Black Friday MD
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	22	39	140	32	C	32.5	C	27.6	C
	Thru	253	39	140	35.1	D				
	Right	51	47	152	19.8	B				
Southbound	Left	221	77	321	36.0	D	30.8	C		
	Thru	260	77	321	31.2	C				
	Right	94	86	335	17.4	B				
Eastbound	Left	87	10	78	23.8	C	24.9	C		
	Thru	143	16	83	26.7	C				
	Right	24	15	93	18.6	B				
Westbound	Left	62	7	64	22.7	C	21.4	C		
	Thru	142	33	177	29.7	C				
	Right	242	38	186	16.2	B				

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	15	21	182	10	B	10.9	B	15.7	B
	Thru	533	22	179	11.1	B				
	Right	33	27	198	9.0	A				
Southbound	Left	138	8	108	13.8	B	12.2	B		
	Thru	547	22	199	11.9	B				
	Right	6	0	16	2.1	A				
Eastbound	Left	13	3	44	59.3	E	46.5	D		
	Thru	0	-	-	0.0	A				
	Right	5	6	60	13.4	B				
Westbound	Left	22	5	60	42.6	D	43.9	D		
	Thru	0	-	-	0.0	A				
	Right	142	39	177	44.0	D				

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	533	59	250	30.9	C	25.6	C	21.0	C
	Right	146	4	74	6.2	A				
Southbound	Left	650	158	529	37.7	D	21.7	C		
	Thru	604	7	92	4.5	A				
Westbound	Left	83	20	108	44.8	D	15.6	B		
	Right	664	45	346	11.9	B				

Year 2040 No Build Improvements Black Friday MD
Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	205	79	284	64	E	56.0	E	36.6	D
	Thru	940	147	394	56.4	E				
	Right	48	5	71	16.2	B				
Southbound	Left	482	221	553	62.9	E	40.1	D		
	Thru	870	118	458	30.4	C				
	Right	149	19	118	23.1	C				
Eastbound	Left	116	17	114	27.2	C	20.7	C		
	Thru	100	25	125	45.6	D				
	Right	356	25	223	11.6	B				
Westbound	Left	34	4	52	28.1	C	20.6	C		
	Thru	177	40	190	41.7	D				
	Right	996	87	574	16.6	B				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	258	67	244	53	D	17.7	B	30.7	C
	Thru	1,049	32	268	9.5	A				
	Right	741	80	420	16.8	B				
Southbound	Left	57	4	53	40.8	D	49.4	D		
	Thru	1,080	243	489	50.0	D				
	Right	15	263	511	37.4	D				
Eastbound	Left	0	#N/A	#N/A	0.0	A	10.7	B		
	Thru	0	#N/A	#N/A	0.0	A				
	Right	16	1	35	10.7	B				
Westbound	Left	419	87	292	40.1	D	40.3	D		
	Thru	5	88	294	36.2	D				
	Right	141	87	292	40.8	D				

Fairview Ave & County Rd B2

Signal

Fairview Ave & County Rd 22										Signal
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	183	60	283	46	D	29.0	C	69.5	E
	Thru	530	83	299	39.0	D				
	Right	466	49	321	10.8	B				
Southbound	Left	296	666	968	192.7	F	191.8	F		
	Thru	489	702	1,021	198.1	F				
	Right	173	697	1,016	172.8	F				
Eastbound	Left	218	58	281	38.1	D	36.5	D		
	Thru	420	65	266	39.2	D				
	Right	296	71	295	31.6	C				
Westbound	Left	378	155	371	59.3	E	35.3	D		
	Thru	402	78	347	27.1	C				
	Right	348	87	360	18.8	B				

Year 2040 No Build Improvements Black Friday MD
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	172	173	337	147	F	105.1	F	33.7	C
	Thru	21	177	341	157.9	F				
	Right	175	191	357	57.6	E				
Southbound	Left	38	46	194	59.5	E	52.7	D		
	Thru	18	44	191	56.7	E				
	Right	86	51	202	48.9	D				
Eastbound	Left	109	33	275	31.2	C	15.6	B		
	Thru	748	52	279	17.7	B				
	Right	323	5	92	5.4	A				
Westbound	Left	141	11	128	19.4	B	26.8	C		
	Thru	883	103	320	27.7	C				
	Right	61	101	315	30.5	C				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	170	87	307	54.7	D	46.4	D	15.4	B
	Right	167	93	315	38.0	D				
Eastbound	Left	102	23	148	37.6	D	8.0	A		
	Thru	853	11	201	4.4	A				
Westbound	Thru	932	41	299	12.7	B	12.2	B		
	Right	135	44	310	9.4	A				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	132	76	221	69	E	36.2	D	30.6	C
	Thru	26	75	221	69.5	E				
	Right	286	91	240	18.3	B				
Southbound	Left	216	35	136	40.3	D	31.7	C		
	Thru	12	12	105	42.3	D				
	Right	131	16	117	16.6	B				
Eastbound	Left	205	63	308	46.7	D	32.6	C		
	Thru	626	86	361	35.2	D				
	Right	183	7	97	7.9	A				
Westbound	Left	331	85	322	42.6	D	26.7	C		
	Thru	807	66	275	23.9	C				
	Right	148	4	78	6.1	A				

Year 2040 No Build Improvements Black Friday MD
 Ramsey County Road B2 & Fairview Ave corridors - VISSIM Analysis
 MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	245	79	296	52	D	28.6	C	39.3	D
	Thru	409	83	427	29.8	C				
	Right	433	44	278	14.0	B				
Southbound	Left	31	5	49	58.5	E	60.8	E		
	Thru	271	342	781	76.5	E				
	Right	409	274	735	50.6	D				
Eastbound	Left	406	84	236	49.6	D	35.0	D		
	Thru	611	65	290	30.4	C				
	Right	108	4	66	6.5	A				
Westbound	Left	372	76	266	55.2	E	40.6	D		
	Thru	636	77	303	33.3	C				
	Right	23	0	45	5.6	A				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	47	9	67	39.7	D	29.1	C	19.4	B
	Right	628	141	526	28.3	C				
Eastbound	Left	434	25	177	12.9	B	9.5	A		
	Thru	638	14	125	7.2	A				
Westbound	Thru	402	47	204	31.0	C	28.7	C		
	Right	45	2	44	7.9	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 Build Improvements Weekday PM
Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	11	55	177	40	D	44.0	D	42.2	D		
	Thru	291	55	177	45.4	D						
	Right	43	64	189	35.4	D						
Southbound	Left	242	178	444	77.0	E	60.3	E				
	Thru	294	178	444	54.9	D						
	Right	89	189	458	32.8	C						
Eastbound	Left	307	91	330	44.3	D	35.9	D				
	Thru	492	83	330	31.4	C						
	Right	45	88	339	27.5	C						
Westbound	Left	63	8	73	27.3	C	23.5	C				
	Thru	91	28	177	34.1	C						
	Right	197	33	185	17.4	B						

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	9	16	181	9	A	6.7	A	10.3	B
	Thru	724	17	180	6.8	A				
	Right	57	21	197	5.3	A				
Southbound	Left	121	5	80	15.0	B	6.3	A		
	Thru	602	8	142	4.6	A				
	Right	8	0	20	2.5	A				
Eastbound	Left	13	4	42	52.1	D	34.4	C		
	Thru	0	-	-	0.0	A				
	Right	11	6	57	13.4	B				
Westbound	Left	24	5	48	42.1	D	44.0	D		
	Thru	1	1	9	63.4	E				
	Right	130	35	167	44.3	D				

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	762	18	191	7.2	A	6.7	A	8.3	A
	Right	108	1	42	2.9	A				
Southbound	Left	375	27	224	16.9	B	7.6	A		
	Thru	658	4	85	2.2	A				
Westbound	Left	74	19	98	46.3	D	13.5	B		
	Right	358	13	112	6.7	A				

Year 2040 Build Improvements Weekday PM
Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	162	58	217	63	E	54.0	D	31.0	C
	Thru	883	158	434	55.6	E				
	Right	68	6	73	13.2	B				
Southbound	Left	391	75	351	31.0	C	23.2	C		
	Thru	596	43	244	19.4	B				
	Right	105	9	95	16.2	B				
Eastbound	Left	113	18	108	28.8	C	16.2	B		
	Thru	71	16	91	41.2	D				
	Right	384	17	172	7.9	A				
Westbound	Left	58	9	76	28.9	C	19.5	B		
	Thru	178	45	204	42.9	D				
	Right	528	27	217	10.6	B				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	135	5	72	14	B	9.3	A	16.5	B
	Thru	1,092	40	336	10.2	B				
	Right	299	3	82	3.5	A				
Southbound	Left	169	19	154	28.9	C	18.5	B		
	Thru	821	53	318	16.5	B				
	Right	7	62	337	9.4	A				
Eastbound	Left	0	#N/A	#N/A	0.0	A	7.7	A		
	Thru	0	#N/A	#N/A	0.0	A				
	Right	13	0	33	7.7	A				
Westbound	Left	249	68	246	35.4	D	36.9	D		
	Thru	6	69	246	36.6	D				
	Right	192	68	246	38.8	D				

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	248	53	240	35	D	20.3	C	26.7	C
	Thru	480	47	264	21.1	C				
	Right	555	43	292	12.8	B				
Southbound	Left	200	35	188	31.7	C	34.7	C		
	Thru	504	70	269	37.0	D				
	Right	91	70	268	28.5	C				
Eastbound	Left	189	25	194	25.1	C	28.6	C		
	Thru	723	101	418	35.7	D				
	Right	278	15	144	12.6	B				
Westbound	Left	213	37	222	31.7	C	26.3	C		
	Thru	280	43	234	27.5	C				
	Right	209	50	248	19.1	B				

Year 2040 Build Improvements Weekday PM
 Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
 MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	133	55	197	56	E	34.4	C	13.8	B
	Thru	13	54	194	57.7	E				
	Right	214	68	214	19.8	B				
Southbound	Left	34	18	100	59.2	E	41.6	D		
	Thru	6	17	101	40.7	D				
	Right	41	21	107	27.0	C				
Eastbound	Left	53	14	294	10.5	B	8.6	A		
	Thru	1,161	41	309	9.7	A				
	Right	263	1	51	3.4	A				
Westbound	Left	208	15	154	18.2	B	11.2	B		
	Thru	536	16	195	9.0	A				
	Right	52	19	210	6.7	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	111	32	150	46.7	D	34.4	C	6.8	A
	Right	56	35	153	10.0	B				
Eastbound	Left	85	1	37	7.5	A	4.5	A		
	Thru	1,322	16	274	4.3	A				
Westbound	Thru	743	12	157	5.4	A	5.3	A		
	Right	101	14	167	4.3	A				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	140	49	195	47	D	36.7	D	20.0	B
	Thru	20	49	195	45.0	D				
	Right	243	64	214	30.0	C				
Southbound	Left	235	39	138	42.6	D	35.2	D		
	Thru	6	3	50	28.5	C				
	Right	70	6	60	11.0	B				
Eastbound	Left	184	20	184	25.7	C	16.5	B		
	Thru	1,147	79	526	16.0	B				
	Right	100	1	41	5.9	A				
Westbound	Left	55	3	45	20.4	C	11.9	B		
	Thru	637	26	146	12.7	B				
	Right	116	2	70	4.0	A				

Year 2040 Build Improvements Weekday PM
Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS						
Northbound	Left	34	5	50	28	C	23.8	C	30.2	C						
	Thru	145	31	172	33.7	C										
	Right	159	15	134	13.9	B										
Southbound	Left	30	4	43	28.0	C	17.2	B			30.2	C				
	Thru	156	29	162	33.5	C										
	Right	228	5	90	4.6	A										
Eastbound	Left	437	93	291	54.6	D	32.6	C					30.2	C		
	Thru	1,118	123	569	25.6	C										
	Right	77	2	56	8.3	A										
Westbound	Left	284	58	170	55.2	E	34.5	C							30.2	C
	Thru	549	49	243	25.5	C										
	Right	31	0	42	3.2	A										

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	25	7	47	49.0	D	10.9	B	8.9	A
	Right	452	24	222	8.8	A				
Eastbound	Left	412	3	74	4.0	A	2.3	A		
	Thru	888	2	58	1.6	A				
Westbound	Thru	407	39	175	27.3	C	25.7	C		
	Right	43	2	44	10.3	B				

Note: Results are the average of ten (10) simulation runs

Year 2040 Build Improvements Saturday MD - 80th Percentile
 Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
 MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	20	31	122	27	C	30.5	C	26.6	C		
	Thru	240	31	123	32.4	C						
	Right	27	39	134	16.8	B						
Southbound	Left	236	75	294	33.9	C	30.3	C				
	Thru	250	75	293	31.9	C						
	Right	86	84	307	16.2	B						
Eastbound	Left	73	9	74	27.2	C	24.3	C				
	Thru	100	11	69	24.9	C						
	Right	27	10	79	14.0	B						
Westbound	Left	34	4	43	23.7	C	18.8	B				
	Thru	97	25	159	28.9	C						
	Right	231	29	167	13.8	B						

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS		
Northbound	Left	4	22	178	13	B	11.9	B	15.4	B		
	Thru	518	22	176	12.1	B						
	Right	18	28	194	7.5	A						
Southbound	Left	105	4	75	10.5	B	9.9	A				
	Thru	548	18	176	10.1	B						
	Right	21	0	32	2.1	A						
Eastbound	Left	7	1	22	46.4	D	30.0	C				
	Thru	0	-	-	0.0	A						
	Right	5	2	35	7.0	A						
Westbound	Left	24	5	54	40.8	D	42.4	D				
	Thru	1	0	9	45.8	D						
	Right	177	46	202	42.6	D						

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	584	59	259	28.6	C	25.1	C	20.1	C
	Right	116	4	74	7.4	A				
Southbound	Left	552	96	443	27.8	C	15.8	B		
	Thru	604	9	102	4.9	A				
Westbound	Left	69	14	79	42.8	D	21.9	C		
	Right	762	106	521	20.0	C				

Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	183	86	348	74	E	61.1	E	35.8	D
	Thru	1,094	227	526	61.0	E				
	Right	56	7	73	20.3	C				
Southbound	Left	534	133	524	35.3	D	25.1	C		
	Thru	789	65	348	20.2	C				
	Right	163	14	130	15.5	B				
Eastbound	Left	110	22	118	36.8	D	24.6	C		
	Thru	121	31	166	43.6	D				
	Right	312	24	196	12.9	B				
Westbound	Left	60	12	79	40.4	D	21.3	C		
	Thru	154	42	175	48.3	D				
	Right	611	35	251	12.7	B				

Year 2040 Build Improvements Saturday MD - 80th Percentile
 Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
 MOE Results



Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	213	42	179	42	D	14.8	B	25.5	C
	Thru	1,100	59	406	13.6	B				
	Right	502	13	171	5.8	A				
Southbound	Left	225	75	397	52.2	D	32.2	C		
	Thru	1,068	141	459	28.1	C				
	Right	13	154	477	19.0	B				
Eastbound	Left	0	#N/A	#N/A	0.0	A	10.4	B		
	Thru	0	#N/A	#N/A	0.0	A				
	Right	13	1	33	10.4	B				
Westbound	Left	406	107	337	41.8	D	42.5	D		
	Thru	16	107	338	44.9	D				
	Right	222	107	337	43.5	D				

Fairview Ave & County Rd B2

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	229	73	234	53	D	20.9	C	28.8	C
	Thru	393	44	254	22.1	C				
	Right	694	32	281	9.4	A				
Southbound	Left	192	39	185	38.6	D	50.1	D		
	Thru	564	132	380	55.5	E				
	Right	125	132	380	43.7	D				
Eastbound	Left	172	23	147	27.4	C	25.6	C		
	Thru	330	46	194	37.4	D				
	Right	372	34	215	14.2	B				
Westbound	Left	377	81	326	35.7	D	23.7	C		
	Thru	414	45	305	19.8	B				
	Right	285	53	318	13.5	B				

County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	219	87	274	59	E	35.9	D	17.4	B
	Thru	16	86	274	56.5	E				
	Right	265	101	291	15.7	B				
Southbound	Left	29	17	117	47.3	D	31.8	C		
	Thru	9	17	117	39.7	D				
	Right	66	21	125	23.9	C				
Eastbound	Left	108	23	258	29.3	C	11.8	B		
	Thru	720	37	272	13.2	B				
	Right	390	3	86	4.6	A				
Westbound	Left	310	30	247	20.2	C	13.9	B		
	Thru	792	34	320	12.1	B				
	Right	75	34	318	8.0	A				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	165	56	249	50.1	D	38.0	D	13.8	B
	Right	107	61	256	19.4	B				
Eastbound	Left	96	6	73	21.9	C	4.3	A		
	Thru	916	6	97	2.4	A				
Westbound	Thru	1,079	88	482	16.6	B	16.2	B		
	Right	205	91	492	13.9	B				

Year 2040 Build Improvements Saturday MD - 80th Percentile
 Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
 MOE Results



County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	162	195	385	71	E	76.4	E	39.2	D
	Thru	27	192	382	71.1	E				
	Right	372	211	402	79.1	E				
Southbound	Left	274	71	208	60.2	E	46.4	D		
	Thru	18	14	113	45.4	D				
	Right	133	19	124	18.0	B				
Eastbound	Left	245	80	396	48.8	D	33.4	C		
	Thru	691	99	427	33.0	C				
	Right	136	3	73	7.8	A				
Westbound	Left	132	13	93	25.8	C	24.9	C		
	Thru	989	106	491	26.5	C				
	Right	117	2	60	10.4	B				

County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	119	24	144	36	D	25.0	C	43.3	D
	Thru	224	44	225	33.8	C				
	Right	213	14	119	9.5	A				
Southbound	Left	23	3	49	39.4	D	26.6	C		
	Thru	289	86	406	43.0	D				
	Right	328	21	205	11.4	B				
Eastbound	Left	537	212	531	86.2	F	53.1	D		
	Thru	685	94	458	34.0	C				
	Right	107	5	71	9.0	A				
Westbound	Left	434	109	378	66.6	E	49.7	D		
	Thru	798	130	490	41.6	D				
	Right	23	1	49	9.6	A				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	25	6	45	46.1	D	21.0	C	15.5	B
	Right	765	120	632	20.2	C				
Eastbound	Left	381	8	96	7.6	A	5.3	A		
	Thru	540	5	76	3.6	A				
Westbound	Thru	497	45	208	25.9	C	25.5	C		
	Right	11	0	24	6.7	A				

Note: Results are the average of ten (10) simulation runs

Year 2040 Build Improvements Black Friday MD
Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
MOE Results



Fairview Ave & County Rd B

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	22	45	155	36	D	35.7	D	30.4	C
	Thru	268	44	154	37.6	D				
	Right	53	53	166	25.5	C				
Southbound	Left	231	89	332	39.2	D	34.1	C		
	Thru	275	89	332	35.2	D				
	Right	99	99	346	19.0	B				
Eastbound	Left	90	12	90	28.9	C	26.9	C		
	Thru	144	16	84	27.7	C				
	Right	25	15	94	15.6	B				
Westbound	Left	63	8	70	23.8	C	23.4	C		
	Thru	141	44	218	31.3	C				
	Right	254	49	226	18.9	B				

Fairview Ave & S Frontage Rd

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	14	29	209	18	B	17.8	B	16.7	B
	Thru	559	34	211	18.0	B				
	Right	31	40	229	15.7	B				
Southbound	Left	142	6	95	12.8	B	8.4	A		
	Thru	584	14	185	7.5	A				
	Right	8	0	12	1.9	A				
Eastbound	Left	12	3	42	49.2	D	37.2	D		
	Thru	0	-	-	0.0	A				
	Right	5	5	58	8.7	A				
Westbound	Left	23	5	45	44.1	D	45.9	D		
	Thru	0	-	-	0.0	A				
	Right	152	55	208	46.1	D				

Fairview Ave & TH 36 S Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Thru	580	85	296	45.7	D	39.3	D	29.2	C
	Right	141	9	99	13.2	B				
Southbound	Left	697	189	625	38.0	D	22.2	C		
	Thru	652	8	94	5.3	A				
Westbound	Left	83	18	105	55.4	E	31.9	C		
	Right	668	97	447	29.0	C				

Year 2040 Build Improvements Black Friday MD
Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
MOE Results



Fairview Ave & TH 36 N Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	201	135	460	96	F	85.0	F	46.9	D
	Thru	974	274	564	86.0	F				
	Right	46	5	79	18.6	B				
Southbound	Left	551	132	538	34.1	C	25.9	C		
	Thru	969	99	443	22.9	C				
	Right	150	13	110	15.3	B				
Eastbound	Left	113	30	141	46.4	D	27.9	C		
	Thru	100	25	131	45.8	D				
	Right	354	37	273	16.9	B				
Westbound	Left	32	6	52	43.9	D	46.4	D		
	Thru	173	50	206	69.9	E				
	Right	953	196	800	42.2	D				

Fairview Ave & W Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	249	71	253	59	E	30.9	C	40.0	D
	Thru	1,212	129	526	36.6	D				
	Right	572	16	184	6.7	A				
Southbound	Left	215	92	424	63.0	E	39.3	D		
	Thru	1,102	175	474	34.8	C				
	Right	14	189	494	26.7	C				
Eastbound	Left	0	#N/A	#N/A	0.0	A	12.6	B		
	Thru	0	#N/A	#N/A	0.0	A				
	Right	15	1	34	12.6	B				
Westbound	Left	551	181	443	63.1	E	66.2	E		
	Thru	4	182	443	69.5	E				
	Right	205	182	443	74.6	E				

Fairview Ave & County Rd B2

Signal

Fairview Ave & County Rd 22										Signal
Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	210	81	252	51	D	23.7	C	58.8	E
	Thru	543	81	299	22.8	C				
	Right	654	72	325	15.8	B				
Southbound	Left	252	343	728	137.5	F	150.3	F		
	Thru	623	664	1,043	157.1	F				
	Right	185	676	1,051	144.8	F				
Eastbound	Left	209	68	324	40.9	D	39.7	D		
	Thru	411	96	361	48.0	D				
	Right	361	82	374	29.5	C				
Westbound	Left	351	121	372	61.6	E	35.3	D		
	Thru	469	107	366	27.3	C				
	Right	416	117	379	22.2	C				

Year 2040 Build Improvements Black Friday MD
 Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
 MOE Results



County Rd B2 & NW Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	236	171	354	121	F	78.6	E	35.8	D
	Thru	22	171	354	92.6	F				
	Right	257	186	372	38.0	D				
Southbound	Left	38	40	173	50.3	D	38.0	D		
	Thru	16	38	173	43.0	D				
	Right	85	44	180	31.5	C				
Eastbound	Left	109	76	348	48.3	D	20.4	C		
	Thru	812	90	354	22.7	C				
	Right	394	10	141	8.0	A				
Westbound	Left	293	93	380	37.0	D	34.1	C		
	Thru	917	148	500	33.5	C				
	Right	58	148	500	28.8	C				

County Rd B2 & Rosedale Commons

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	170	78	292	60.1	E	45.5	D	21.1	C
	Right	168	83	299	30.7	C				
Eastbound	Left	99	40	129	43.1	D	8.1	A		
	Thru	998	11	143	4.6	A				
Westbound	Thru	1,118	131	480	26.5	C	26.0	C		
	Right	125	135	490	21.7	C				

County Rd B2 & N Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	208	87	290	53	D	37.9	D	43.3	D
	Thru	25	87	290	53.3	D				
	Right	383	104	310	28.8	C				
Southbound	Left	213	37	138	43.2	D	33.4	C		
	Thru	12	22	120	39.0	D				
	Right	127	27	132	16.5	B				
Eastbound	Left	206	103	479	57.6	E	43.4	D		
	Thru	703	169	526	48.1	D				
	Right	250	21	253	18.6	B				
Westbound	Left	291	163	556	67.1	E	48.1	D		
	Thru	922	223	646	46.5	D				
	Right	146	4	78	20.8	C				

Year 2040 Build Improvements Black Friday MD
Ramsey County Road B2 & Fairview Ave Corridors - VISSIM Analysis
MOE Results



County Rd B2 & Snelling W Ramps / NE Mall Entrance

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	181	81	256	70	E	30.3	C	50.1	D
	Thru	345	60	308	28.1	C				
	Right	408	43	283	14.8	B				
Southbound	Left	30	8	89	54.4	D	48.3	D		
	Thru	371	244	797	61.1	E				
	Right	455	165	637	37.4	D				
Eastbound	Left	478	104	318	56.0	E	38.3	D		
	Thru	713	77	326	30.8	C				
	Right	104	4	64	8.0	A				
Westbound	Left	419	131	514	83.5	F	80.0	E		
	Thru	742	287	662	79.8	E				
	Right	24	1	52	24.9	C				

County Rd B2 & Snelling E Ramps

Signal

Approach	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	Left	47	9	65	43.8	D	28.4	C	24.4	C
	Right	702	158	659	27.4	C				
Eastbound	Left	482	37	241	16.8	B	10.2	B		
	Thru	668	10	108	5.3	A				
Westbound	Thru	508	91	305	51.3	D	48.3	D		
	Right	48	2	44	16.5	B				

Note: Results are the average of ten (10) simulation runs