

Intersection Control Evaluation

Foley Road and Isle Drive

Baxter, MN

SAP No. 230-121-002

BAXTE 190670 | September 20, 2026

Baxter City Council Acceptance Date: _____



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Intersection Control Evaluation

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Baxter, MN

S.A.P. No. 230-121-002
SEH No. BAXTE 190670

September 20, 2026

I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



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Intersection Control Evaluation

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Intersection Control Evaluation

Foley Road and Isle Drive

Prepared for the City of Baxter

1 Introduction

As part of the 2028 MnDOT Trunk Highway (TH) 371 and TH 210 Interchange Project, the existing access to TH 210 at Elder Drive will be closed and the TH 210 access will be shifted approximately $\frac{1}{4}$ mile west to connect to Forthun Road, which is in the process of being renamed Isle Drive. The roadway will be referred to as Isle Drive throughout this report. The shifted connection to TH 210 will significantly change traffic demands at the intersection of Foley Road and Isle Drive and shift traffic patterns in the commercial area on the south side of TH 210 and west side of TH 371.

To accommodate the changes to access along TH 210, the City of Baxter is planning to reconstruct the intersection of Foley Road and Isle Drive in 2027 to prepare for the access changes in 2028. The intent of this intersection study is to analyze the short- and long-term needs of the intersection of Foley Road and Isle Drive once the TH 210 access is shifted to Isle Drive to determine the appropriate traffic control at the intersection.

1.1 Overview

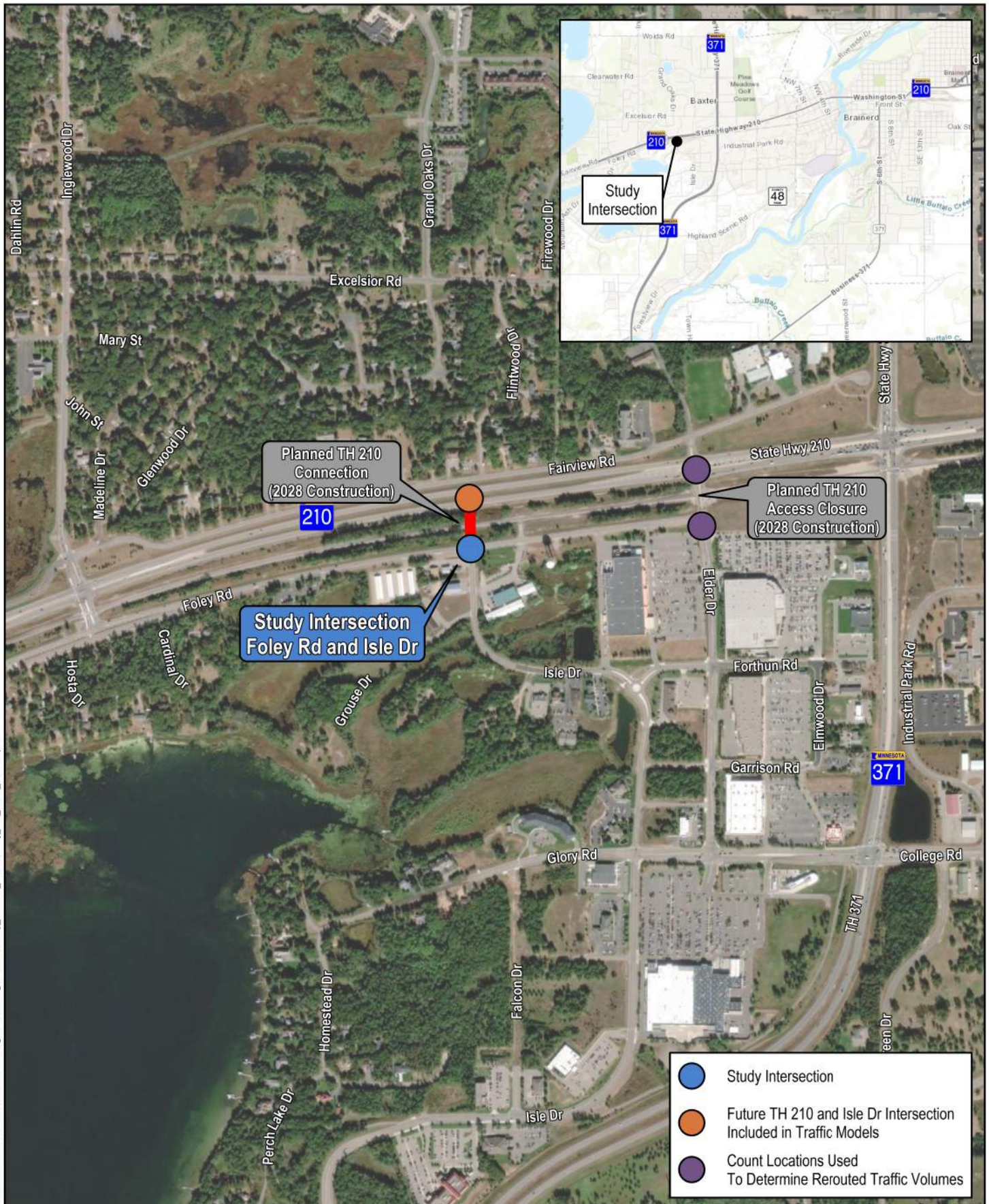
The Minnesota Department of Transportation (MnDOT) Intersection Control Evaluation (ICE) process is an objective process used to investigate and determine the optimal type of traffic control at an intersection to serve the existing conditions and future needs. The investigation includes analyzing traffic operations during the weekday AM and PM peak hours for the existing year (2026) and forecast years (2030 and 2050) traffic conditions. The 2030 analysis represents the year of opening of the new TH 210 access at Isle Drive and the 2050 analysis represents the long-term needs at the intersection as the area continues to develop. The evaluation includes assessing traffic control warrants, safety, railroad considerations, and traffic operations.

The range of traffic control options includes all viable traffic control options for the planned 4-legged intersection once the connection to TH 210 is constructed, including minor street stop, three-way stop, traffic signal control, and roundabout control. As part of this study, a No Build scenario was not analyzed as the existing 3-leg intersection will be modified as part of the 2028 TH 371 and TH 210 Interchange construction.

In addition to the intersection of Foley Road and Isle Drive, the intersection of TH 210 and Isle Drive was included in all traffic models to better capture the interaction between the closely spaced intersections along Isle Drive after the 2028 TH 371 and TH 210 Interchange construction is complete. The planned TH 210 and Isle Drive intersection will be constructed as a $\frac{3}{4}$ access intersection, with left turns from Isle Drive prohibited.

Figure 1 depicts the study intersection in a location map.

Path: X:\AEB\BAXTE\190670\5-final-dsgn\51-drawings\90-GIS\Foley_Forthun_Traffic\Foley_Isle_Elder_Traffic.aprx



Project: BAXTE 190670
Print Date: 8/27/2026

Map by: jdanibas
Projection: Crow Wing Co. Coords.
Source: ESRI

PROJECT LOCATION

Foley Road and Isle Drive ICE Study
Baxter, MN

Figure
1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

2 Existing Conditions

Foley Road is an east-west major collector roadway that connects from County State Aid Highway (CSAH) 48 (Highland Scenic Road) to Elder Drive, and is a portion of the Inglewood Dr, Foley Road, and Isle Drive route that serves as a parallel reliever on the west side of TH 371. The Inglewood Dr, Foley Road, and Isle Drive parallel reliever route will serve to increase traffic efficiency in Baxter by offering a route that may be preferred by local traffic over TH 371. Foley Road provides access to residential, commercial, and industrial land uses as well as to routes such as CSAH 48, Inglewood Drive, and Elder Drive that connect to TH 210. Foley Road is a 2-lane undivided roadway with no turn lanes at the Isle Drive intersection. The posted speed limit on Foley Road is 35 mph.

Isle Drive, previously called Forthun Road, is a north-south major collector roadway that connects from Foley Road to CSAH 48, where it becomes Mapleton Road/County Road 170. Isle Drive is another portion of the Inglewood Dr, Foley Road, and Isle Drive route that serves as a parallel reliever on the west side of TH 371. Isle Drive provides access to commercial, office, and industrial land uses as well as to routes such as Glory Road that connect to TH 371. Isle Drive is a 2-lane undivided roadway with no turn lanes at the Foley Road intersection. The posted speed limit on Isle Drive is 25 mph.

The intersection of Foley Road and Isle Drive is currently minor street stop controlled, with Isle Drive traffic required to stop. There is a single approach lane on each of the three intersection approaches.

2.1 Traffic Volumes

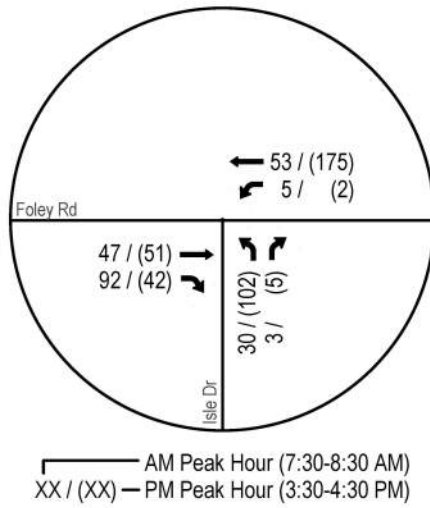
24-hour turning movement counts were collected at the below intersections in May 2026 for use in determining the existing and future traffic volumes at the intersection of Foley Road and Isle Drive. The counts along Elder Drive were utilized to reroute traffic in the area to the planned Isle Drive connection to TH 210.

- Foley Road and Isle Drive
- TH 210 and Elder Drive
- Elder Drive and Foley Road/North Costco Access

Based on the traffic counts, the AM peak hour was determined to be 7:30 to 8:30 AM and the PM peak hour was determined to be 3:30 to 4:30 PM. Based on the traffic counts along Foley Road, Isle Drive, and Elder Drive, the commercial area serves approximately 0.5% heavy trucks throughout the day. Overall, traffic volumes in the commercial area in the southwest corner of the TH 371 and TH 210 intersection grow during the morning hours then remain steady from 11 AM to 6 PM during peak commercial/retail business hours. As a result, the traffic volumes in the PM peak hour are significantly higher than those in the AM peak hour.

Figure 2 shows the existing 2026 AM and PM peak hour traffic volumes at the intersection of Foley Road and Isle Drive. **Appendix A** includes the raw count data at each of the three intersections counted.

Figure 2 – 2026 Existing Traffic Volumes



2.2 Crash History

The most recent 10.5-years of crash data from January 1, 2016 through June 30, 2026 was obtained from the MnDOT Crash Mapping Analysis Tool (MnCMAT2). The type and severity of the crashes were reviewed, and crash rates and critical crash rates were calculated for the study intersection.

Based on the crash data, there have been no reported crashes at the intersection of Foley Road and Isle Drive in the last 10.5 years.

3 Future Conditions

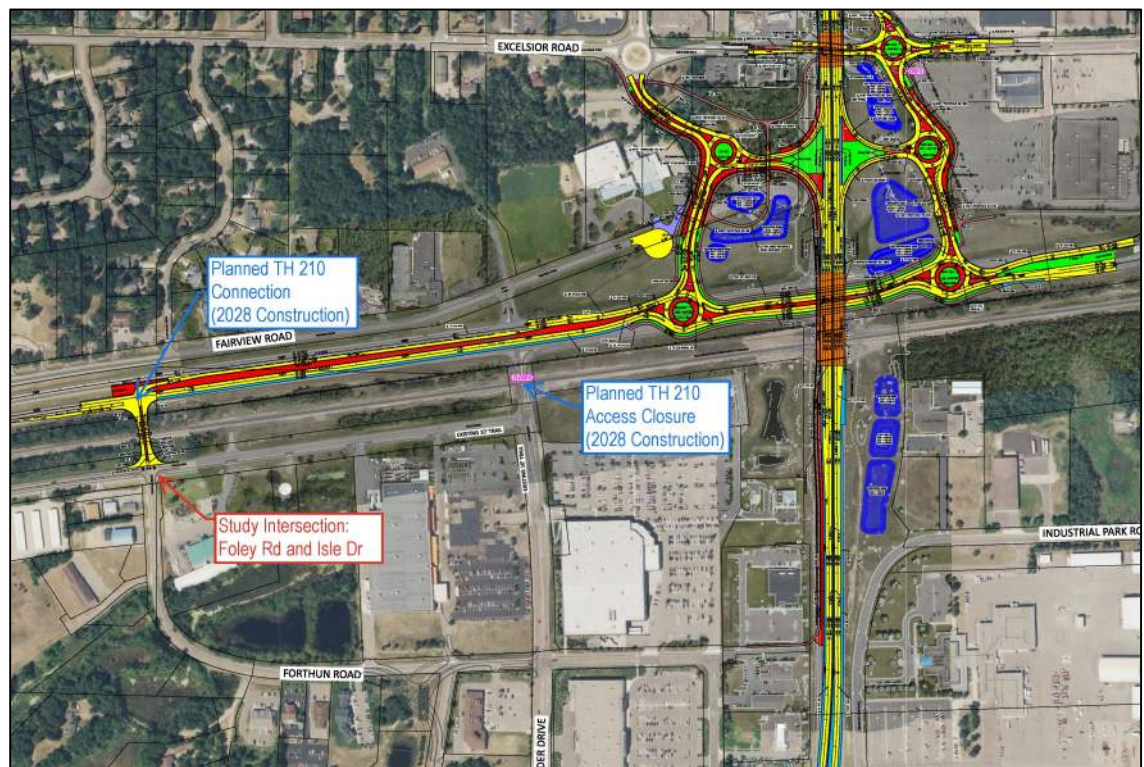
This study includes evaluation of the study intersection to determine the appropriate type of intersection control; future conditions were evaluated for the 2030 and 2050 conditions. The 2030 analysis represents the year of opening of the new TH 210 access at Isle Drive, and the 2050 analysis represents the long-term needs at the intersection as the area continues to develop.

3.1 TH 210 Access Changes

As was mentioned previously, the 2028 TH 371 and TH 210 Interchange Construction project includes changes to access on TH 210 west of TH 371, including closing the Elder Drive access and moving it approximately ¼ mile west to connect to Isle Drive as shown in **Figure 3**. The new TH 210 connection at Isle Drive will add a fourth leg to the Foley Road and Isle Drive intersection and shift traffic patterns within the commercial area on the south side of TH 210 between Isle Drive and TH 371, which includes several high-traffic generating businesses, such as Costco, Home Depot, Walmart, and other large retailers. Drivers that currently use Elder Drive to enter/exit the area will need to reroute to either Isle Drive or Foley Road to enter/exit the area once construction is complete.

The 2026 traffic counts collected along Elder Drive at TH 210, Foley Road, and the north Costco Access were used to estimate the rerouted traffic volumes that would use Foley Road and Isle Drive to access TH 210 once construction is complete. In general, it is expected that most traffic destined to/from commercial land uses north of Forthun Road will use Foley Road to access TH 210 and the businesses south of Forthun Road will split between Isle Drive and Foley Road.

Figure 3 – TH 371 and TH 210 Interchange Design



Source: Hwy 31 and Hwy 210 – Baxter Intersection Improvement Project Website; Revised Design Layout Feb. 2026

3.2 Railroad Crossing

When the new Isle Drive connection to TH 210 is constructed, there will be a new BNSF railroad crossing approximately 100 feet north of the Foley Road and Isle Drive intersection, which will impact traffic operations along Isle Drive at times. In May 2026, 48-hours of video footage at the existing Elder Drive railroad crossing was reviewed to determine the number and duration of train crossing each day. **Table 1** shows the date, time, and duration of each train during the 48-hour observation period. The train duration is measured as the time from when the gates begin to close to when they open and traffic proceeds across the tracks. Overall, there were three trains over the 48-hour period, with crossing durations ranging from 2.5 to 2.75 minutes.

Table 1 – Railroad Crossing Observations

Date	Time	Crossing Duration
5/19/2026	1:22 PM	2:45
5/20/2026	11:24 AM	2:30
5/19/2026	2:05 PM	2:40

The close spacing between the Foley Road and Isle Drive intersection and the railroad crossing is an important consideration in choosing the traffic control and turn lane design for the study intersection. It is important to avoid having vehicles queuing over the tracks whenever possible and provide storage for vehicles to wait while a train is crossing Isle Drive.

3.3 Traffic Forecasts

In addition to rerouting trips for the TH 210 access changes, traffic growth for the 2030 and 2050 scenarios were developed based on the forecasts from the MnDOT TH 371 and TH 210 Interchange Improvement Traffic Study and a 2011 Traffic Impact Study for the Costco area within the commercial development.

The MnDOT TH 371 and TH 210 Interchange Improvement Traffic Study used a 0.5% per year annual background growth rate for all area roadways, which was applied to Foley Road, Isle Drive, and TH 210 for use in this ICE study. In addition to background growth, the MnDOT study also assumed some traffic pattern changes on TH 210 related to the access change shifting access from Elder Drive to Isle Drive. Those traffic pattern changes were applied to the Foley Road, Isle Drive, and TH 210 intersections as described below:

- A 20% reduction in westbound left turns compared to the left turn volume with just background traffic
 - These vehicles are expected to reroute southbound on TH 371 to take a southbound right turn at Glory Road based on the MnDOT traffic forecasts
- A 5% increase in westbound TH 210 traffic compared to the through volume with just background growth

The trip generation estimates from the June 2011 Costco Wholesale Traffic Impact Study for the three undeveloped parcels surrounding the Costco site were incorporated in the future 2050

forecast scenario, which include restaurant and retail land uses. One of the sites, a Panera Bread, is currently under construction and is expected to open in Fall 2026.

Below is a summary of the trip generation estimates for the three remaining undeveloped parcels:

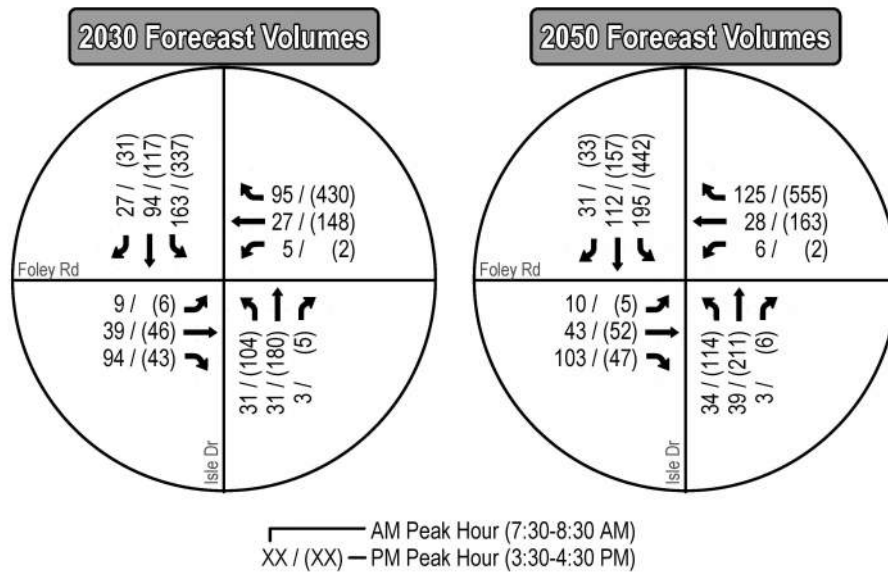
- 4,320 Daily Trips
 - 2,160 enter
 - 2,160 exit
- 75 AM peak hour trips – not included in 2011 study report, based on existing daily traffic distributions
 - 40 enter
 - 35 exit
- 290 PM peak hour trips
 - 150 enter
 - 140 exit

Table 2 compares the existing 2026, future 2030, and future 2050 daily approach volumes at the study intersection. The southbound TH 210 connection approach is expected to have the highest overall traffic volumes, while the westbound Foley Road and northbound Isle Drive approaches are expected to see significant increases in traffic due to the rerouting of traffic to access TH 210. **Figure 4** shows the AM and PM peak hour volumes at the study intersection for 2030 and 2050.

Table 2 – Daily Approach Volume Comparison

Approach		Existing	2030	2050
Eastbound	Volume (vpd)	1,250	1,275	1,400
	% Difference		2%	12%
Westbound	Volume (vpd)	1,790	5,670	7,220
	% Difference		217%	303%
Northbound	Volume (vpd)	1,020	2,830	3,270
	% Difference		179%	222%
Southbound	Volume (vpd)	N/A	5,895	7,620
	% Difference		N/A	N/A
Intersection Total	Volume (vpd)	9,265	15,670	19,510
	% Difference		286%	381%

Figure 4 – 2030 and 2050 Forecast Traffic Volumes



4 Analysis of Alternatives

Intersection control evaluations rely on traffic control warrants to assess the different options available at an intersection. To determine the control options, warrants are evaluated to assess where control changes can be made based on volumes. The results are used to aid in the evaluation of traffic safety and traffic operations at the study intersection.

4.1 Warrant Analysis

The Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD) provides guidance on when it may be appropriate to use all-way stop or signal control at an intersection. This guidance is provided in the form of “warrants”, or criteria, and engineering analysis of the intersection’s design factors to determine when all-way stop or signal control may be justified. All-way stop or signal control should not be installed at an intersection unless a MnMUTCD warrant is met. Meeting warrant criteria at an intersection does not in itself require the installation of a particular control type. The specific control type also requires an engineering analysis of the intersection’s design for it to be justified. Roundabouts are warranted if traffic volumes meet the criteria for either all-way stop or traffic signal control, or if there is a need to address an existing safety issue. The MnDOT ICE manual provides guidance on the approach and inputs for evaluating warrants.

Warrant analysis was completed for the intersection of Foley Road and Isle Drive under existing, 2030 forecast, and 2050 forecast conditions. The 24-hour future traffic volumes include expected rerouting from the TH 210 access changes, background growth, and expected development on the Costco site.

4.1.1 Requirements for Installation of an All-way Stop

For all-way stop control installation, the study reviewed the minimum volume criteria outlined in the MnMUTCD (Chapter 2B). This criteria states that for any eight hours of the day, the combined major approach volumes and combined minor approach volumes should be at or greater than the volume thresholds. An engineering study that considers factors, including warrants, should be performed to determine the “best” type of control at an intersection.

4.1.2 Requirements for Installation of a Traffic Signal

For traffic signal installation, many agencies typically require volume thresholds for Warrant 1 to be satisfied, which requires 8-hours of combined major approach volumes and the highest minor street approach volume to meet MnMUTCD thresholds (Chapter 4C). These thresholds vary with the number of approach lanes on the major and minor streets. However, other warrants may be used as indicators of a need to consider traffic control change.

In this analysis, Warrant 2 (4-hour volumes) and Warrant 3 (peak hour volumes) were also reviewed for the study intersection. An engineering study that considers factors, including warrants, should be performed to determine the “best” type of control.

4.1.3 Warrant Analysis Assumptions

The MnMUTCD and MnDOT ICE Manual provide guidance and options for performing Traffic Control Warrant Analysis. The following section will discuss the guidance, options, and assumptions used in the traffic control warrant analysis for this project.

The MnMUTCD and MnDOT ICE Manual guidelines suggest that for the purpose of warrant analysis, 100% of right turning traffic from the minor leg should be removed because right turning vehicles are typically able to enter the traffic stream with minimal delay or conflict; the right turning traffic would not require a traffic signal to reduce delay or improve safety. In certain circumstances, depending on the minor approach lane geometry, the ICE Manual has guidance on when to allow for the inclusion of either 100% or 50% of the minor street right turning traffic in the warrant analysis; Table 3 of the 2025 ICE Manual provides example lane geometrics, and the corresponding minor right turn percentage to include.

The MnMUTCD and MnDOT ICE Manual provide guidance on the number of lanes for each approach, two different lane options are provided including one lane and two (or more) lane approaches; including additional approach lanes above 2 does not change volume criteria. Typically, through lanes and shared through lanes are considered, but engineering judgment can be used to include separate turn lanes if the turning volume is sufficient. Engineering judgment should be used if the minor street approaches include left turn lanes and shared through lanes. On the minor street approaches, if the right turning volume is removed, a right turn lane should not be considered. Table 4 of the 2025 ICE Manual includes example lane geometrics and guidance on when to potentially not include all available lanes.

Assumption: Based on the guidance, the number of lanes on the minor approaches and percentage of minor right turn volumes are noted in the warrant table and described below

- Existing Conditions
 - Include all traffic volumes on each leg and one lane on each approach
- 2030 and 2050 future conditions:
 - All major northbound and southbound approach volumes were included and each approach was analyzed as a single lane based on the preliminary layout of the intersection.
 - 0% of the westbound right turning volumes were included because a right turn lane is included in the preliminary layout of the intersection; 100% of the eastbound right turn volume was included as it is planned as a shared through/right turn lane.
 - The eastbound and westbound left turn lanes and volumes were not included in the analysis as the volumes make up a small percentage of the overall approach volumes
 - The minor eastbound and westbound approaches include 1 lane for both approaches as the dedicated turn lane volumes and lanes were not included.

The MnMUTCD and MnDOT ICE Manual guidelines suggest that the warrant thresholds may be reduced based on the roadway speeds and population of the city the intersection is within. If either major approach to the intersection has a posted speed, or 85th percentile speed, that exceeds 40 mph, then a reduction to 70% threshold volumes is allowed in both the all-way stop warrant and traffic signal warrant. If the population of the city is less than 10,000 people, a reduction to 70% threshold volumes is allowed in the traffic signal warrant, but not in the all-way stop warrant.

Assumption: Based on the guidance, the warrant analysis does not include the reduction based on speed because the speed limit on Foley Road is 35 mph and the speed limit on Isle Drive is 25 mph. The population of the Baxter is currently less than 10,000 people but is expected to reach 10,000 people by 2030.

4.1.4 Warrant Analysis Results

Based on the existing traffic volumes, the existing 3-legged intersection of Foley Road and Isle Drive does not meet the volume thresholds for either the all-way stop or any traffic signal control warrant during any hour of the day.

In 2030, with the rerouted trips due to the TH 210 access changes with the TH 371 and TH 210 Interchange project, the intersection is expected to meet the all-way stop warrant but not the traffic signal warrants.

Under 2050 conditions, with the additional background growth and development trips, the intersection is expected to meet the all-way stop warrant and Traffic Signal Warrant 2 (4 hour). Traffic Signal Warrant 1 (8 hour) and Warrant 3 (peak hour) are not expected to be met.

Table 3 provides the all-way stop and traffic signal warrant summary for the 2026 existing, 2030 future, and 2050 future conditions. Complete all-way stop and traffic signal analysis can be found in **Appendix B**.

Table 3 – Warrant Analysis Results

Scenario	Approach Lanes		All-way Stop Warrant	Traffic Signal Warrants		
	Approach	# of Lanes		Warrant 1 (8 Hour)	Warrant 2 (4 hour)	Warrant 3 (Peak Hour)
2026 Existing	Major	1	Not Met	Not Met	Not Met	Not Met
	Minor	1*	0 of 8 hours	0 of 8 hours	0 of 4 hours	0 of 1 hours
2030 Future	Major	1	MET	Not Met	Not Met	Not Met
	Minor	1*	12 of 8 hours	3 of 8 hours	0 of 4 hours	0 of 1 hours
2050 Future	Major	1	MET	Not Met	MET	Not Met
	Minor	1*	13 of 8 hours	7 of 8 hours	5 of 4 hours	0 of 1 hours
* All scenarios include only one approach lane on the minor approaches based on 2025 MnDOT ICE Manual Guidance; either due to dedicated right turn lanes or lack of volume in dedicated left turn lanes						

4.2 Safety Analysis

Future intersection crash estimates were developed by applying MnDOT statewide average (5-year; 2020-2024) crash rates to the 2030 and 2050 forecast volumes for each control type at the intersection. The crash rate at each intersection is expressed as the number of crashes per million entering vehicles (MEV). The fatal and severity A crash rate (FAR rate) is expressed as a number of fatal and severity "A" crashes per 100 million entering vehicles (100 MEV). Total annual crashes and total annual fatal/serious injury crashes were estimated for each control type.

- For minor street stop control estimates, the MnDOT Statewide average crash rate for urban minor stop control was used, which used a crash rate of 0.15 crashes per MEV and a FAR rate of 0.42 crashes per 100 MEV. The Statewide average crash rate was used because the existing crash rate is not representative of the future conditions, with the additional intersection leg and significantly increased traffic demands.
- All-way stop control estimates were based on the MnDOT Statewide average crash rate of 0.29 crashes per MEV and a FAR rate of 0.63 crashes per 100 MEV.

- Three-way stop control, which would allow southbound traffic coming from TH 210 to operate freely while all approaches stop, is expected to have similar crash and FAR rates to all-way stop control.
- Traffic signal control estimates were based on the MnDOT Statewide average crash rate for traffic signals with less than 20,000 ADT on the highest volume leg, which have a crash rate of 0.50 crashes per MEV and a FAR rate of 0.95 crasher per 100 MEV.
- Roundabout crash estimation was completed using MnDOT's *A Study of Traffic Safety at Roundabouts in Minnesota* for a single lane roundabout. This study found that single lane roundabouts have a crash rate of 0.32 crashes per MEV and a FAR rate of 0.31 crashes per 100 MEV.

Table 4 shows the projected number of total annual crashes at the study intersection for each control type analyzed for the 2030 and 2050 forecast years.

Table 4 – Future Annual Crash Estimates

Analysis Year	Expected Crashes based on Statewide Average Crash Rates ¹			
	Minor Stop	All-way or Three-way Stop	Traffic Signal	Single Lane Roundabout
2030	0.4	0.8	1.4	0.9
2050	0.5	1.0	1.8	1.1
1 MnDOT Statewide Average Crash Rates (5-year; 2020-2024; latest published)				

An estimation of the total number of fatal and severity A crashes was also conducted for each alternative. Due to the low number of these types of crashes, a total 20-year estimate was developed (2023 to 2050). The 20-year fatal and severity A crash estimates for each traffic control alternative are summarized below:

- Minor Stop Control – 0.28 fatal and severity A crashes
- All-way or Three-way Stop Control – 0.43 fatal and severity A crashes
- Traffic Signal – 0.64 fatal and severity A crashes
- Single lane roundabout – 0.21 fatal and severity A crashes

Based on the crash estimates, minor stop control would be expected to have the lowest overall crashes with the second lowest total fatal and severity A crashes.

All-way stop or three-way stop control would be expected to have approximately twice as many total crashes, with an approximate 50% increase in fatal and serious injury crashes compared to the minor street stop control.

The traffic signal would be expected to increase both overall fatal and severity A crashes compared to minor stop control.

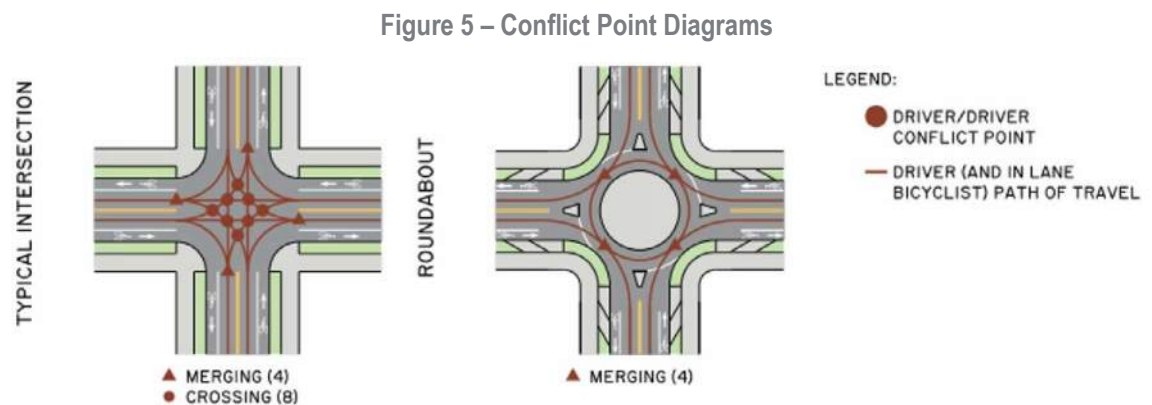
The single lane roundabout would be expected to have the second highest number of total crashes; however it would be expected to have the lowest number of fatal and severity A crashes. Roundabouts require a low travel speed through the intersection and eliminate left turn and crossing crashes. This greatly reduces the potential for the most severe types of crashes that result in personal injury or fatality.

4.2.1 Conflict Point Analysis

Another predictor of safety at an intersection is the number of conflict points. A conflict point is any point where vehicles cross or merge at an intersection and are points where a crash is most likely to occur. Reducing the number of conflict points, especially crossing conflict points, at an intersection can improve vehicle safety.

The planned 4-leg intersection has a total of 12 crossing or merging conflict points. As a single full access intersection, the only feasible way to reduce conflict points would be to install a roundabout which reduces the number of conflict points to 4. A roundabout also eliminates all of the crossing conflicts at the intersection, with only merging conflicts. Movement reduction was not considered reasonable at the study intersection.

Figure 5 shows the conflict point diagrams for a 4-leg intersection and a roundabout.



Source: MnDOT Traffic Engineering Manual – Chapter 4, Figure 4-48

4.3 Traffic Operations

Existing 2026 and future 2030 and 2050 traffic operations analyses were conducted to determine the level of service (LOS), delay, and queuing information for the AM and PM peak hour conditions for each viable control type.

LOS is a qualitative rating system used to describe the efficiency of traffic operations at an intersection. Six LOS are defined, designated by letters A through F. LOS A represents the best operating conditions (no congestion), and LOS F represents the worst operating conditions (severe congestion). For the study intersections, it was assumed that a LOS E or better, for all approaches and the overall intersection, represents acceptable operating conditions.

LOS for intersections is determined by the average control delay per vehicle. The range of control delay for each LOS is different for signalized and unsignalized intersections. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will experience greater delays than an unsignalized intersection. Driver tolerance for delay is greater at a signal than at a stop sign; therefore, the LOS thresholds for each LOS category are lower for unsignalized intersections than for signalized intersections. **Table 5** shows the LOS thresholds for signalized and unsignalized intersections.

Table 5 – Level of Service Thresholds

Level of Service	Average Vehicle Delay (sec/veh)	
	Signalized Intersection	Unsignalized (Stop or Roundabout) Intersection
A	0 to 10	0 to 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

All traffic operations analysis were performed using the Synchro/SimTraffic (Version 11) software package. The results reported in this analysis are an average of 10 runs in SimTraffic 11. All relevant traffic operation result tables can be found in **Appendix C**.

As was mentioned previously, the intersection of TH 210 and Isle Drive was included in all Synchro/SimTraffic models to analyze the impacts of each traffic control option on the closely spaced TH 210 access. The planned $\frac{3}{4}$ access at the intersection of TH 210 and Isle Drive is expected to operate acceptably through the 2050 design year with the northbound right turns expected to operate at LOS A during the AM and PM peak hour and the westbound left turn expected to operate at LOS D or better during the AM and PM peak hour under each scenario.

With the TH 210 and Isle Drive intersection operating acceptably under all scenarios, the following results are for the study intersection of Foley Road and Isle Drive. For the study intersection, there are no future No Build scenarios as a fourth leg will be added to the intersection as part of the 2028 TH 371 and TH 210 Interchange Construction Project.

4.3.1 2026 Existing Conditions

Under existing conditions, there is minimal delay at the minor stop controlled intersection of Foley Road and Isle Drive, with each movement and approach operating at LOS A during the AM and PM peak hours.

Table 6 shows a summary of the 2026 existing traffic operations at the study intersection during the AM and PM peak hours, with minor street stop control.

Table 6 – 2026 Existing Traffic Operations

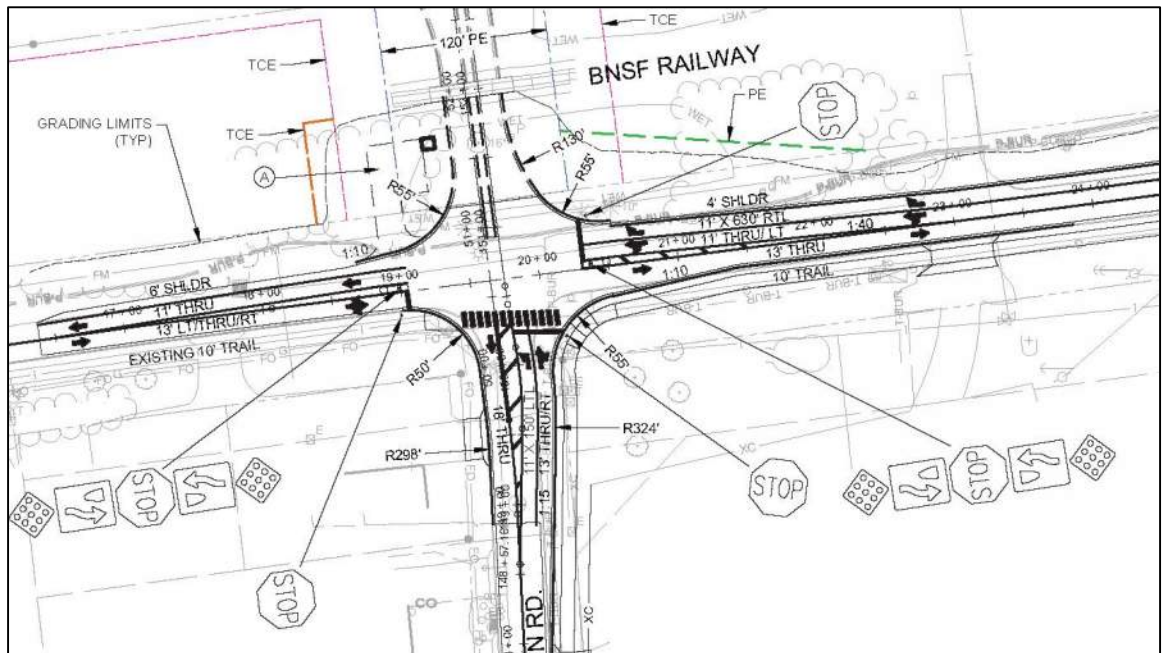
Year	Approach	AM Peak Hour		PM Peak Hour	
		Approach (delay / LOS)	Intersection (delay / LOS)	Approach (delay / LOS)	Intersection (delay / LOS)
2026	Northbound	4.4 / A	1.1 / A	5.3 / A	1.8 / A
	Eastbound	0.6 / A		0.4 / A	
	Westbound	0.3 / A		0.4 / A	

4.3.2 Intersection Control Alternatives

In 2028, when the TH 210 access for the commercial area on the south side of TH 210 is moved from Elder Drive to Isle Drive as part of the TH 371 and TH 210 Interchange Construction Project, a north leg will be added to the study intersection and traffic volumes are expected to increase significantly. As a baseline, the new 4-legged intersection is expected to have the following intersection geometry, based on the preliminary layout of the intersection shown in **Figure 6**.

- Southbound Approach – a single lane for all movements.
- Northbound Approach – a 150-foot dedicated left turn lane and a shared through/right turn lane.
- Eastbound Approach – a single lane for all movements.
- Westbound Approach – a shared through/left turn lane and a 630-foot dedicated right turn lane.

Figure 6 – Foley Road and Isle Drive Intersection Preliminary Layout



Based on warrant analysis, the intersection is expected to meet all-way stop warrant in the 2030 year of opening, with Traffic Signal Warrant 2 (4-hour) being met by the 2050 design year. Based on the warrant analysis results, the following traffic control alternatives were analyzed for the intersection of Foley Road and Isle Drive.

- Minor Street Stop Control
- Three-way Stop Control – southbound traffic would not be required to stop
- Traffic Signal Control
- Single-Lane Roundabout Control

All-way stop control was not analyzed for the study intersection because requiring all southbound traffic coming from TH 210 to stop would likely lead to significant queuing impacts to TH 210 as well as consistent queueing over the railroad tracks located approximately 100 feet north of the

intersection. The desire is to keep southbound traffic coming from TH 210 moving through the intersection to limit the impact to the TH 210 intersection and safety of the railroad crossing.

4.3.2.1 Minor Stop Control

Under minor street stop control, northbound and southbound Isle Drive traffic would operate freely, while eastbound and westbound Foley Road traffic would be required to stop. Under this scenario, a southbound left turn lane would be recommended to provide a dedicated space for southbound left turning vehicles to safely wait while yielding to northbound traffic. Adding a second southbound lane between TH 210 and Foley Road would increase the number of lanes at the railroad crossing approximately 100 feet north of the intersection.

Under minor street stop control, the intersection is expected to operate acceptably through the 2050 design year with each movement expected to operate at LOS E or better and each approach expected to operate at LOS C or better during the AM and PM peak hours. Based on the analysis, the southbound left turn queues are not expected to reach TH 210 (approximately 250 feet) but could reach the railroad crossing, creating a significant safety concern.

Table 7 shows a summary of the 2030 and 2050 Build traffic operations under minor stop control during the AM and PM peak hours.

Table 7 – Build Traffic Operations – Minor Stop Control

Year	Approach	AM Peak Hour		PM Peak Hour	
		Approach (delay / LOS)	Intersection (delay / LOS)	Approach (delay / LOS)	Intersection (delay / LOS)
2030	Northbound	1.0 / A	3.1 / A	1.5 / A	6.1 / A
	Southbound	2.1 / A		3.2 / A	
	Eastbound	5.5 / A		9.3 / A	
	Westbound	3.9 / A		10.5 / B	
2050	Northbound	1.1 / A	3.3 / A	1.7 / A	10.5 / B
	Southbound	2.3 / A		3.8 / A	
	Eastbound	5.7 / A		15.2 / C	
	Westbound	4.3 / A		19.6 / C	

4.3.2.2 Three-way Stop Control

Under three-way stop control, southbound Isle Drive coming from TH 210 would operate freely, while all other intersection approaches would be required to stop. This is a common traffic control throughout the City of Baxter at intersections located adjacent to TH 210 or TH 371, including nearby intersections such as Foley Road and Inglewood Drive, which is located approximately ½ mile west of the study intersection. Under this scenario, the southbound approach could remain a single lane approach as southbound left turning traffic would not need to yield to any other intersection traffic. Southbound traffic not having to yield also makes this control the safest for the railroad crossing located approximately 100 feet north of the intersection.

Under three-way stop control, the intersection is expected to operate with minimal delay under 2030 traffic demands, with each movement expected to operate at LOS C or better and each

approach at LOS B or better during the AM and PM peak hours. Under 2050 traffic demands, as the area continues to develop, delay at the three-way stop controlled intersection is expected to increase, with each approach still operating acceptably at LOS E or better and the intersection expected to operate at LOS D or better during the AM and PM peak hours. Without southbound traffic yielding to other intersection traffic, southbound queueing will be minimal and will not reach the train tracks or TH 210.

Under 2050 conditions, there may be times when the northbound Isle Drive queue extends beyond the planned 150-foot northbound left turn lane storage during the PM peak hour, with a 95th percentile queue of approximately 215 feet. The 95th percentile westbound right turn queue is expected to be below 550 feet during the 2050 PM peak hour conditions, so the planned 630-foot westbound right turn lane is expected to be adequate to store right turn queues.

Table 8 shows a summary of the 2030 and 2050 Build traffic operations under three-way stop control during the AM and PM peak hours.

Table 8 – Build Traffic Operations – Three-way Stop Control

Year	Approach	AM Peak Hour		PM Peak Hour	
		Approach (delay / LOS)	Intersection (delay / LOS)	Approach (delay / LOS)	Intersection (delay / LOS)
2030	Northbound	5.5 / A	3.6 / A	13.9 / B	9.4 / A
	Southbound	1.6 / A		1.8 / A	
	Eastbound	5.2 / A		10.0 / B	
	Westbound	5.3 / A		13.6 / B	
2050	Northbound	6.0 / A	3.8 / A	31.3 / D	26.3 / D
	Southbound	1.6 / A		2.2 / A	
	Eastbound	5.8 / A		14.2 / B	
	Westbound	5.5 / A		47.5 / E	

4.3.2.3 Traffic Signal Control

Under traffic signal control, a southbound left turn lane would be recommended to provide a dedicated space for southbound left turning vehicles to safely wait while yielding to northbound traffic. Adding a second southbound lane between TH 210 and Foley Road would increase the number of lanes at the railroad crossing approximately 100 feet north of the intersection. For the purposes of this analysis, the traffic signal was analyzed with protected-permissive left turns northbound and southbound, with permissive only left turns eastbound and westbound. If a traffic signal were constructed at the intersection, the traffic signal timing would likely need to accommodate phasing to clear southbound traffic from the tracks prior to a train crossing.

Under traffic signal control, the intersection is expected to operate acceptably through the 2050 design year with each approach and the intersection is expected to operate at LOS B or better during the AM and PM peak hours. Based on the analysis, the southbound left turn queues could approach TH 210 at times, which could impact traffic operations at the TH 210 access.

Table 9 shows a summary of the 2030 and 2050 Build traffic operations under traffic signal control during the AM and PM peak hours.

Table 9 – Build Traffic Operations – Traffic Signal Control

Year	Approach	AM Peak Hour		PM Peak Hour	
		Approach (delay / LOS)	Intersection (delay / LOS)	Approach (delay / LOS)	Intersection (delay / LOS)
2030	Northbound	7.5 / A	7.0 / A	13.0 / B	11.3 / B
	Southbound	6.8 / A		11.5 / B	
	Eastbound	8.2 / A		13.3 / B	
	Westbound	5.7 / A		9.9 / A	
2050	Northbound	8.4 / A	7.5 / A	15.2 / B	15.6 / B
	Southbound	7.4 / A		15.8 / B	
	Eastbound	9.0 / A		16.7 / B	
	Westbound	5.7 / A		15.4 / B	

4.3.2.4 Single Lane Roundabout Control

A single lane roundabout at the intersection is likely unfeasible as it would likely have significant impacts to railroad right-of-way and the parcels on the southwest and southeast corners of the intersection. However, traffic operations analysis for a single lane roundabout was completed for comparison with the other traffic control options.

Under roundabout control, the intersection is expected to operate acceptably through the 2050 design year with each approach and the intersection expected to operate at LOS A during the AM and PM peak hours. Based on the analysis, the southbound queues could extend to the railroad tracks (approximately 100 feet) but not to TH 210. The roundabout also does not provide anyway to clear vehicles off the railroad tracks in the event of a train crossing.

Table 10 shows a summary of the 2030 and 2050 Build traffic operations under single lane roundabout control during the AM and PM peak hours.

Table 10 – Build Traffic Operations – Single Lane Roundabout Control

Year	Approach	AM Peak Hour		PM Peak Hour	
		Approach (delay / LOS)	Intersection (delay / LOS)	Approach (delay / LOS)	Intersection (delay / LOS)
2030	Northbound	2.5 / A	3.4 / A	4.6 / A	5.7 / A
	Southbound	3.6 / A		5.0 / A	
	Eastbound	3.8 / A		4.3 / A	
	Westbound	2.8 / A		7.2 / A	
2050	Northbound	2.7 / A	3.5 / A	6.3 / A	10.6 / B
	Southbound	3.8 / A		7.4 / A	
	Eastbound	3.9 / A		4.8 / A	
	Westbound	2.9 / A		16.3 / C	

4.4 Railroad Considerations

As was previously mentioned, Isle Drive crosses railroad tracks, which are owned by BNSF railroad, approximately 100 feet north of the intersection of Foley Road and Isle Drive. Therefore, it is important to minimize queuing on the southbound approach to the study intersection to avoid potential safety issues with vehicles stopping on the railroad tracks. Below is a summary of the expected impact of each traffic control type analyzed on the railroad crossing and recommendations to improve safety and/or operations.

- **Minor Street Stop Control**
 - Southbound left turning traffic must yield northbound through traffic, which has the potential to have queues reach the railroad tracks.
 - To improve safety at the intersection, a southbound left turn lane would be recommended if the intersection operated under minor stop control, which would increase the number of lanes at the railroad crossing.
- **Three-way Stop Control**
 - Southbound traffic operates freely and does not have to yield to any other intersection traffic, minimizing the potential for queuing on the railroad tracks, which makes it the safest control option related to the railroad crossing.
 - The southbound approach could remain a single lane approach as southbound left turning traffic would not need to yield to any other intersection traffic, minimizing the number of lanes at the railroad crossing
 - During a recent review of the planned intersection improvements at Foley Road and Isle Drive, BNSF agency representatives supported three-way stop control similar to what their diagnostic team agreed to at the Inglewood Drive and Foley Road intersection approximately ½ miles west of the study intersection.
- **Traffic Signal Control**
 - The southbound queues would extend over the railroad tracks at times, creating a safety concern.
 - The traffic signal timing would likely need to accommodate phasing to clear southbound traffic off of the tracks prior to a train crossing.
 - To improve safety at the intersection, a southbound left turn lane would be recommended if the intersection operated under minor stop control, which would increase the number of lanes at the railroad crossing.
- **Single Lane Roundabout Control**
 - A roundabout would likely have significant impact to the railroad right-of-way, which is not desirable.
 - The southbound queue could extend over the railroad tracks at times.
 - There is no way to clear vehicles off the tracks in the event of a train crossing.

4.4.1 Railroad Crossing Queue Analysis

With the railroad crossing located approximately 100 feet north of the intersection of Foley Road and Isle Drive, it is important to design the intersection to provide space for vehicles to queue during train crossing events. Based on the 48-hour review completed as part of this study, there are typically 1 to 2 trains per day, with crossing durations ranging from 2.5 to 2.75 minutes.

For intersection turn lane design, the 2030 and 2050 24-hour forecast traffic volumes were analyzed to estimate queues on each study intersection approach throughout the day. The timing of trains can be variable; therefore, queues were estimated for each 15-minute period throughout the day to understand how vehicle queues during train crossings may vary throughout the day. Vehicle queues during train crossings of 2.5 minutes and 3 minutes were estimated.

Table 11 summarizes the average, 95th percentile, and maximum vehicle queues expected during train crossing throughout the day. Based on the analysis, the northbound shared through/right turn lane is not expected to ever block access to the northbound left turn lane in 2030 but could block the northbound left turn lane during 1% of the day in 2050. The westbound right turn queue is not expected to spill beyond the planned 630-feet of storage under 2030 conditions but could exceed 630 feet during up to 15% of the day in 2050. However, under 2050 conditions, the right turn queue is only expected to spill out of the turn lane (approximately 780 feet with storage and taper) during 2% of the day. Based on the results of the train crossing queue analysis, the planned 150-foot northbound left turn lane and 630-foot westbound right turn lane should be large enough to avoid queueing issues during train crossing events through the 2050 design year.

Table 11 – Railroad Crossing Queue Analysis

Year	Measurement		Eastbound Foley Rd	Northbound Isle Drive	Westbound	
			Single Lane Approach	Shared Through/Right Turn Lane ¹	Dedicated Right Turn Lane ²	
2030	Average Queue (ft)	2.5-min Train	67	102	247	
		3-min Train	80	127	309	
	95 th Percentile Queue (ft)	2.5-min Train	149	194	466	
		3-min Train	180	238	575	
	Maximum Queue (ft)	2.5-min Train	188	222	506	
		3-min Train	226	271	623	
2050	Average Queue (ft)	2.5-min Train	72	128	348	
		3-min Train	87	158	431	
	95 th Percentile Queue (ft)	2.5-min Train	165	230	649	
		3-min Train	198	281	794	
	Maximum Queue (ft)	2.5-min Train	209	259	699	
		3-min Train	251	316	854	
		Exceeds Turn Lane Storage			Exceeds Turn Lane Storage + Taper	
1 Highlighting is based on northbound through/right turn queues blocking the northbound left turn lane; northbound left turn lane storage is 150 ft, storage + taper is 300 ft; 2 Westbound right turn lane storage is 630 ft, storage + taper is 780 ft						

5 Conclusion

The 2028 TH 371 and TH 210 Interchange Construction project includes changes to access on TH 210 west of TH 371, including closing the Elder Drive access and moving it approximately ¼ mile west to connect to Isle Drive. The new TH 210 connection at Isle Drive will add a fourth leg to the Foley Road and Isle Drive intersection and shift traffic patterns within the commercial area on the south side of TH 210 between Isle Drive and TH 210, which includes several high-traffic generating businesses, such as Costco, Home Depot, Walmart, and other large retailers.

To accommodate the changes to access along TH 210, the City of Baxter is planning to reconstruct the intersection of Foley Road and Isle Drive in 2027 to prepare for the access changes in 2028. This ICE study analyzed the short- and long-term needs of the intersection of Foley Road and Isle Drive once the TH 210 access is shifted to Isle Drive to determine the appropriate traffic control at the intersection.

The planned 4-legged intersection of Foley Road and Isle Drive was analyzed under minor street stop control, three-way stop control, traffic signal control, and single lane roundabout control under both 2030 and 2050 forecast traffic demands. As a baseline, the planned 4-legged intersection is expected to have the following intersection geometry based on a preliminary layout of the intersection.

- Southbound Approach – a single lane for all movements.
- Northbound Approach – a 150-foot dedicated left turn lane and a shared through/right turn lane.
- Eastbound Approach – a single lane for all movements.
- Westbound Approach – a shared through/left turn lane and a 630-foot dedicated right turn lane.

Minor Street Stop Control

- A southbound left turn lane would be recommended to provide dedicated space for southbound left turning vehicles to safely wait while yielding to northbound traffic, which would increase the number of lanes at the railroad crossing approximately 100 feet north of the intersection.
- The intersection is expected to operate acceptably through the 2050 design year with each movement expected to operate at LOS E or better and each approach expected to operate at LOS C or better during the AM and PM peak hours.
- Southbound queues could reach the railroad tracks approximately 100 feet north of the intersection, creating a significant safety concern.

Three-way Stop Control

- Southbound Isle Drive coming from TH 210 would operate freely, while all other intersection approaches would be required to stop, which is a common traffic control throughout the City of Baxter at intersections located adjacent to TH 210 or TH 371.
- With southbound traffic not needing to yield to other traffic, the southbound approach could remain a single lane for all movements and is expected to have minimal queueing, which would not reach the railroad tracks and makes it the safest control option related to the railroad crossing.

- The intersection is expected to operate with minimal delay under 2030 traffic demands, with each movement expected to operate at LOS C or better and each approach at LOS B or better during the AM and PM peak hours.
- Under 2050 traffic demands, as the area continues to develop, delay at the three-way stop-controlled intersection is expected to increase, with each approach still operating acceptably at LOS E or better and the intersection expected to operate at LOS D or better during the AM and PM peak hours.
- During a recent review of the planned intersection improvements at Foley Road and Isle Drive, BNSF Railway staff supported three-way stop control similar to what their diagnostic team agreed to at the Inglewood Drive and Foley Road intersection approximately ½ miles west of the study intersection.

Traffic Signal Control

- A southbound left turn lane would be recommended to provide a dedicated space for southbound left turning vehicles to safely wait while yielding to northbound traffic, which would increase the number of lanes at the railroad crossing approximately 100 feet north of the intersection.
- The traffic signal timing would likely need to accommodate phasing to clear southbound traffic off of the tracks prior to a train crossing as queues are expected to extend beyond the railroad tracks and reach TH 210 under 2050 conditions. Vehicles queued over the tracks presents a significant safety concern.
- The intersection is expected to operate acceptably through the 2050 design year with each approach and the intersection expected to operate at LOS B or better during the AM and PM peak hours.

Single Lane Roundabout Control

- A single lane roundabout at the intersection is likely unfeasible as it would likely have significant impacts to railroad right-of-way and the parcels on the southwest and southeast corners of the intersection.
- The intersection is expected to operate acceptably through the 2050 design year with each approach and the intersection expected to operate at LOS A during the AM and PM peak hours.
- Southbound queues could reach the railroad tracks at times.
- There is no way to clear vehicles off the tracks in the event of a train crossing.

With the railroad crossing located approximately 100 feet north of the intersection of Foley Road and Isle Drive, it is important to design the intersection to provide space for vehicles to queue during train crossing events. For intersection turn lane design, the 2030 and 2050 24-hour forecast traffic volumes were analyzed to estimate queues on each study intersection approach throughout the day because train arrival times can be variable. Based on the results of the train crossing queue analysis, the planned 150-foot northbound left turn lane and 630-foot westbound right turn lane should be large enough to avoid queueing issues during train crossing events through the 2050 design year.

5.1 Recommendations

Based on the analysis documented in this report, **three-way stop control is recommended** at the intersection of Foley Road and Isle Drive for the following reasons:

- Provides acceptable traffic operations through the 2050 design year.
- Minimizes queueing on the southbound approach to the study intersection to avoid potential issues with the adjacent railroad tracks and TH 210 access by keeping traffic coming from TH 210 moving through the intersection, making it the safest option related to the railroad crossing.
- Allows for a single southbound approach lane, limiting the number of lanes crossing the railroad tracks.
- BNSF Railway supports a three-way stop controlled intersection similar to the intersection of Inglewood Drive and Foley Road.
- Three-way stop control is a common traffic control throughout the City of Baxter at intersections located adjacent to TH 210 or TH 371.

The three-way stop should be constructed with the following intersection geometry and controls:

- Southbound Approach (operates freely) – a single lane for all movements.
- Northbound Approach (stop control) – a 150-foot dedicated left turn lane and a shared through/right turn lane.
- Eastbound Approach (stop control) – a single lane for all movements.
- Westbound Approach (stop control) – a shared through/left turn lane and a 630-foot dedicated right turn lane.

Appendix A

2026 Turning Movement Counts

Location: Foley Road at Forthun Road
 Count Date: 5/19/2026
 Counted By: CountCloud



TURNING MOVEMENT COUNT DATA
All Vehicles + Total Peds/Bikes

Start Time	N/A				Foley Rd				Isle Drive/Forthun Rd				Foley Rd				Int. Total
	Southbound				Westbound				Northbound				Eastbound				
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	
0:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
0:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	5
4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
5:30	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
5:45	0	0	0	0	0	1	0	0	1	0	0	0	0	1	3	0	6
6:00	0	0	0	0	0	1	0	0	2	0	1	0	0	2	4	0	10
6:15	0	0	0	0	0	5	0	0	2	0	0	0	0	2	2	0	11
6:30	0	0	0	0	0	3	0	0	2	0	0	0	0	1	4	0	10
6:45	0	0	0	0	0	8	0	0	3	0	0	0	0	5	5	0	21
7:00	0	0	0	0	0	13	0	0	9	0	0	0	0	5	12	0	39
7:15	0	0	0	0	1	9	0	0	3	0	0	0	0	7	12	0	32
7:30	0	0	0	0	1	15	0	0	4	0	0	0	0	2	29	0	51
7:45	0	0	0	0	2	18	0	0	10	0	0	0	0	13	31	0	74
8:00	0	0	0	0	0	6	0	0	7	0	1	0	0	19	15	0	48
8:15	0	0	0	0	2	14	0	0	9	0	2	1	0	13	17	0	57
8:30	0	0	0	0	2	10	0	0	9	0	0	0	0	15	17	0	53
8:45	0	0	0	0	0	29	0	0	14	0	1	0	0	15	6	0	65
9:00	0	0	0	0	0	12	0	0	7	0	2	0	0	17	12	0	50
9:15	0	0	0	0	1	12	0	0	7	0	0	0	0	9	12	0	41
9:30	0	0	0	0	1	26	0	0	10	0	3	0	0	14	14	0	68
9:45	0	0	0	0	0	19	0	0	10	0	4	0	0	13	20	0	66
10:00	0	0	0	0	0	21	0	0	17	0	0	0	0	10	11	0	59
10:15	0	0	0	0	1	25	0	0	20	0	0	0	0	12	8	0	66
10:30	0	0	0	0	1	19	0	0	16	0	1	0	0	9	6	0	52
10:45	0	0	0	0	0	23	0	0	16	0	0	0	0	25	9	0	73
11:00	0	0	0	0	1	21	0	0	16	0	1	0	0	12	10	0	61
11:15	0	0	0	0	2	31	0	0	13	0	0	0	0	14	12	0	72
11:30	0	0	0	0	1	30	0	0	17	0	1	0	0	14	10	0	73
11:45	0	0	0	0	3	30	0	0	20	0	0	0	0	10	9	0	72
12:00	0	0	0	0	0	34	0	0	27	0	1	0	0	15	12	0	89
12:15	0	0	0	0	1	29	0	0	22	0	0	0	0	11	9	0	72
12:30	0	0	0	0	0	43	0	0	17	0	1	0	0	13	18	0	92
12:45	0	0	0	0	2	35	0	0	21	0	1	0	0	11	17	0	87
13:00	0	0	0	0	2	37	0	0	14	0	2	0	0	13	12	0	80
13:15	0	0	0	0	2	27	0	0	24	0	2	0	0	7	12	0	74
13:30	0	0	0	0	1	26	0	0	15	0	0	0	0	16	15	0	73
13:45	0	0	0	0	0	39	0	0	25	0	0	0	0	18	11	0	93

Location: Foley Road at Forthun Road
Count Date: 5/19/2026
Counted By: CountCloud



TURNING MOVEMENT COUNT DATA
All Vehicles + Total Peds/Bikes

Start Time	N/A				Foley Rd				Isle Drive/Forthun Rd				Foley Rd				Int. Total
	Southbound				Westbound				Northbound				Eastbound				
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	
14:00	0	0	0	0	1	46	0	0	21	0	2	0	0	14	12	0	96
14:15	0	0	0	0	0	44	0	0	17	0	0	1	0	11	7	0	79
14:30	0	0	0	0	1	38	0	0	19	0	0	0	0	16	21	0	95
14:45	0	0	0	0	0	39	0	0	24	0	2	0	0	15	10	0	90
15:00	0	0	0	0	0	37	0	0	29	0	0	0	0	18	9	0	93
15:15	0	0	0	0	2	35	0	0	27	0	0	0	0	18	5	0	87
15:30	0	0	0	0	1	41	0	0	27	0	2	0	0	11	9	0	91
15:45	0	0	0	0	1	51	0	0	21	0	0	0	0	17	10	0	100
16:00	0	0	0	0	0	46	0	0	22	0	3	0	0	11	12	0	94
16:15	0	0	0	0	0	37	0	0	32	0	0	0	0	12	11	0	92
16:30	0	0	0	0	0	58	0	0	36	0	1	0	0	11	8	0	114
16:45	0	0	0	0	0	49	0	0	32	0	1	0	0	13	5	0	100
17:00	0	0	0	0	1	55	0	0	26	0	1	0	0	17	9	0	109
17:15	0	0	0	0	0	59	0	0	18	0	0	0	0	15	7	0	99
17:30	0	0	0	0	0	34	0	0	20	0	2	0	0	8	6	0	70
17:45	0	0	0	0	0	41	0	0	24	0	1	0	0	9	6	0	81
18:00	0	0	0	0	0	38	0	0	16	0	0	1	0	6	7	0	67
18:15	0	0	0	0	1	24	0	0	17	0	0	1	0	6	1	0	49
18:30	0	0	0	0	0	37	0	0	8	0	0	2	0	11	3	0	59
18:45	0	0	0	0	0	29	0	0	11	0	0	0	0	9	5	0	54
19:00	0	0	0	0	0	29	0	0	16	0	0	0	0	6	0	0	51
19:15	0	0	0	0	0	23	0	0	12	0	0	0	0	4	3	0	42
19:30	0	0	0	0	0	27	0	0	5	0	0	0	0	5	1	0	38
19:45	0	0	0	0	0	29	0	0	13	0	0	1	0	7	1	0	50
20:00	0	0	0	0	0	27	0	0	17	0	0	0	0	6	5	0	55
20:15	0	0	0	0	0	23	0	0	7	0	0	1	0	2	4	0	36
20:30	0	0	0	0	0	15	0	0	10	0	0	0	0	3	0	0	28
20:45	0	0	0	0	0	12	0	0	10	0	0	0	0	1	3	0	26
21:00	0	0	0	0	0	8	0	0	6	0	0	0	0	0	0	0	14
21:15	0	0	0	0	0	9	0	0	1	0	0	0	0	1	0	0	11
21:30	0	0	0	0	1	6	0	0	3	0	0	1	0	5	2	0	17
21:45	0	0	0	1	0	9	0	0	2	0	1	0	0	0	1	0	13
22:00	0	0	0	0	0	13	0	0	4	0	0	0	0	1	0	0	18
22:15	0	0	0	0	0	3	0	0	5	0	0	0	0	0	0	0	8
22:30	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	5
22:45	0	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0	4
23:00	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	3
23:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
23:30	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
23:45	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	1	36	1756	0	0	975	0	40	9	0	664	585	0	4056
Cars+	0	0	0	0	34	1741	0	0	969	0	40	5	0	654	577	0	4015
Trucks	0	0	0	1	2	15	0	0	6	0	0	4	0	10	8	0	41
% Trucks	0.0	0.0	0.0	100.0	5.6	0.9	0.0	0.0	0.6	0.0	0.0	44.4	0.0	1.5	1.4	0.0	1.0
	0.0				0.9				0.6				1.4				

Location: TH 210 at Elder Drive/Fairview Road
Count Date: 5/19/2026
Counted By: CountCloud



TURNING MOVEMENT COUNT DATA
All Vehicles + Total Peds/Bikes

Start Time	Fairview Rd				TH 210				Elder Dr				TH 210				Int. Total
	Southbound				Westbound				Northbound				Eastbound				
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	
0:00	0	0	0	0	1	7	0	0	0	0	2	0	0	4	2	0	16
0:15	0	0	0	0	1	2	0	0	0	0	1	0	0	0	0	0	4
0:30	0	0	0	0	0	7	1	0	0	0	0	1	0	0	3	0	12
0:45	0	0	0	0	2	3	0	0	0	0	1	0	0	4	0	0	10
1:00	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
1:15	0	0	0	0	0	4	1	0	0	0	0	0	0	3	0	0	8
1:30	0	0	0	0	0	2	0	0	0	0	0	3	0	5	0	0	10
1:45	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0	5
2:00	0	0	0	0	0	1	1	0	0	0	0	0	0	2	0	0	4
2:15	0	0	0	0	0	3	0	0	0	0	0	2	0	9	0	0	14
2:30	0	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0	4
2:45	0	0	0	0	2	3	0	0	0	0	0	0	0	4	0	0	9
3:00	0	0	0	0	7	4	0	0	0	0	0	0	0	5	0	0	16
3:15	0	0	0	0	0	6	0	0	0	0	0	0	0	5	0	0	11
3:30	0	0	0	0	8	6	1	0	0	0	0	0	0	9	3	0	27
3:45	0	0	0	0	11	14	0	0	0	0	1	0	0	10	3	0	39
4:00	0	0	0	0	4	11	0	0	0	0	1	0	0	13	1	0	30
4:15	0	0	0	0	2	8	0	0	0	0	3	0	0	15	0	0	28
4:30	0	0	0	0	2	7	0	0	0	0	0	0	0	22	2	0	33
4:45	0	0	0	0	8	11	1	0	0	0	1	0	0	24	2	0	47
5:00	0	0	0	0	6	13	0	0	0	0	1	0	0	28	2	0	50
5:15	0	0	0	0	2	20	1	0	0	0	1	0	0	45	1	0	70
5:30	0	0	0	0	7	33	0	0	0	0	1	0	0	70	2	0	113
5:45	0	0	0	0	18	20	1	0	0	0	0	0	2	70	1	0	112
6:00	0	0	0	0	7	35	0	0	0	0	10	0	0	65	6	0	123
6:15	0	0	0	0	19	43	3	0	0	0	6	0	0	83	6	0	160
6:30	0	0	3	0	24	47	3	0	0	0	8	0	0	126	6	0	217
6:45	0	0	3	0	47	47	4	0	0	0	6	0	2	158	11	0	278
7:00	0	0	1	0	31	75	8	0	0	0	22	0	1	176	9	0	323
7:15	0	0	1	0	34	102	19	0	0	0	18	0	8	195	14	0	391
7:30	0	0	2	0	55	116	15	0	0	0	17	0	8	239	15	0	467
7:45	0	0	2	0	75	106	19	0	0	0	30	0	10	300	22	0	564
8:00	0	0	6	0	61	122	22	0	0	0	39	0	7	205	17	0	479
8:15	0	0	3	0	64	82	17	0	0	0	47	0	7	154	20	0	394
8:30	0	0	0	0	67	68	2	0	0	0	64	0	0	136	15	0	352
8:45	0	0	0	0	101	90	5	0	0	0	39	0	0	120	17	0	372
9:00	0	0	0	0	88	84	2	0	0	0	68	0	1	105	22	0	370
9:15	0	0	2	0	89	71	2	0	0	0	70	0	0	110	14	0	358
9:30	0	0	0	0	103	52	2	0	0	0	91	0	1	112	29	0	390
9:45	0	0	1	0	145	86	6	0	0	0	74	0	0	126	27	0	465
10:00	0	0	0	0	140	92	6	0	0	0	94	0	1	92	26	0	451
10:15	0	0	2	0	140	80	4	0	0	0	110	0	0	89	22	0	447
10:30	0	0	0	0	134	86	3	0	0	0	130	0	0	126	33	0	512
10:45	0	0	6	0	146	83	9	0	0	0	131	0	0	112	17	0	504
11:00	0	0	0	0	139	78	3	0	0	0	132	0	0	123	28	0	503
11:15	0	0	0	0	167	82	6	0	0	0	136	0	0	101	27	0	519
11:30	0	0	1	0	147	78	6	0	0	0	165	0	0	112	32	2	541
11:45	0	0	0	0	142	97	7	0	0	0	160	0	1	100	19	0	526
12:00	0	0	2	0	135	116	5	0	0	0	174	0	2	114	22	0	570
12:15	0	0	2	0	143	85	6	0	0	0	156	0	0	91	24	0	507
12:30	0	0	1	0	131	98	3	0	0	0	154	0	0	97	24	0	508
12:45	0	0	0	0	170	115	3	0	0	0	147	0	0	101	26	0	562
13:00	0	0	1	0	141	97	5	0	0	0	131	0	0	118	19	0	512
13:15	0	0	0	0	128	92	6	0	0	0	161	0	0	90	23	0	500
13:30	0	0	1	0	147	86	6	0	0	0	157	0	0	120	26	0	543
13:45	0	0	1	0	137	120	4	0	0	0	162	0	0	119	20	0	563

Location: TH 210 at Elder Drive/Fairview Road
Count Date: 5/19/2026
Counted By: CountCloud



TURNING MOVEMENT COUNT DATA
All Vehicles + Total Peds/Bikes

Start Time	Fairview Rd				TH 210				Elder Dr				TH 210				Int. Total
	Southbound				Westbound				Northbound				Eastbound				
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	
14:00	0	0	1	0	135	100	8	0	0	0	152	0	0	86	21	0	503
14:15	0	0	2	0	120	138	10	0	0	0	142	0	0	87	20	0	519
14:30	0	0	1	0	130	113	18	0	0	0	159	0	0	98	24	0	543
14:45	0	0	14	0	122	110	18	0	0	0	146	0	0	147	12	0	569
15:00	0	0	3	0	113	152	10	0	0	0	153	0	3	117	21	0	572
15:15	0	0	2	0	108	140	6	0	0	0	143	0	1	149	24	0	573
15:30	0	0	0	0	115	155	6	0	0	0	161	0	0	163	31	0	631
15:45	0	0	1	0	128	138	5	0	0	0	138	0	3	138	28	0	579
16:00	0	0	1	0	123	156	6	0	0	0	150	0	1	123	23	0	583
16:15	0	0	2	0	108	141	15	0	0	0	160	0	1	119	15	0	561
16:30	0	0	4	0	104	150	7	0	0	0	117	0	3	132	20	0	537
16:45	0	0	3	0	98	209	12	0	0	0	137	0	3	102	21	0	585
17:00	0	0	1	0	99	186	9	0	0	0	127	0	5	112	24	0	563
17:15	0	0	1	0	116	163	7	0	0	0	110	0	1	96	16	0	510
17:30	0	0	2	0	72	132	9	0	0	0	105	0	0	103	21	0	444
17:45	0	0	3	0	92	117	2	0	0	0	109	0	0	90	15	0	428
18:00	0	0	0	0	80	134	10	0	0	0	102	0	0	57	18	0	401
18:15	0	0	4	0	60	143	18	0	0	0	104	0	4	70	17	0	420
18:30	0	0	7	0	65	87	7	0	0	0	100	0	0	87	11	0	364
18:45	0	0	0	0	62	100	2	0	0	0	76	0	0	79	13	0	332
19:00	0	0	2	0	59	94	6	0	0	0	66	0	0	64	15	0	306
19:15	0	0	0	0	60	98	3	0	0	0	72	0	1	56	15	0	305
19:30	0	0	3	0	34	92	4	0	0	0	56	0	0	52	9	0	250
19:45	0	0	1	0	37	70	4	0	0	0	58	0	4	53	13	0	240
20:00	0	0	7	0	37	57	6	0	0	0	51	0	0	48	6	0	212
20:15	0	0	1	0	28	64	4	0	0	0	43	0	0	57	5	0	202
20:30	0	0	0	0	23	74	2	0	0	0	39	0	0	30	5	0	173
20:45	0	0	0	0	16	68	1	0	0	0	26	0	0	32	3	0	146
21:00	0	0	0	0	12	52	1	0	0	0	25	0	0	28	5	0	123
21:15	0	0	0	0	14	60	2	0	0	0	20	0	1	28	6	0	131
21:30	0	0	0	0	20	32	1	0	0	0	9	0	0	19	1	0	82
21:45	0	0	0	0	13	33	2	0	0	0	11	0	0	16	6	0	81
22:00	0	0	0	0	9	18	0	0	0	0	9	0	0	14	2	0	52
22:15	0	0	1	0	4	30	3	0	0	0	3	0	0	17	2	0	60
22:30	0	0	1	0	3	27	0	0	0	0	6	0	0	11	1	0	49
22:45	0	0	0	0	1	10	0	0	0	0	6	0	1	10	0	0	28
23:00	0	0	0	0	0	13	0	0	0	0	2	0	0	13	2	0	30
23:15	0	0	0	0	0	10	0	0	0	0	0	0	0	14	0	0	24
23:30	0	0	0	0	1	21	0	0	0	0	0	0	0	7	0	0	29
23:45	0	0	0	0	1	8	1	0	0	0	4	0	0	11	0	0	25
Total	0	0	109	0	5801	6596	443	0	0	0	6026	0	83	7204	1148	2	27410
Cars+	0	0	107	0	5767	6287	437	0	0	0	5994	0	82	6888	1132	2	26694
Trucks	0	0	2	0	34	309	6	0	0	0	32	0	1	316	16	0	716
% Trucks	0.0	0.0	1.8	0.0	0.6	4.7	1.4	0.0	0.0	0.0	0.5	0.0	1.2	4.4	1.4	0.0	2.6
	1.8				2.7				0.5				3.9				

Location: Elder Drive at Foley Road/Costco Access
 Count Date: 5/19/2026
 Counted By: CountCloud



TURNING MOVEMENT COUNT DATA
All Vehicles + Total Peds/Bikes

Start Time	Elder Dr				Costco Right-in/Right-out				Elder Dr				Foley Rd				Int. Total
	Southbound				Westbound				Northbound				Eastbound				
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	
0:00	0	3	0	0	0	0	1	0	1	1	0	0	0	0	0	0	6
0:15	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
0:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
0:45	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
2:30	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
2:45	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
3:00	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
3:45	0	14	0	0	0	0	0	0	0	1	0	0	0	0	0	0	15
4:00	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	6
4:15	0	2	0	0	0	0	0	0	0	2	0	0	1	0	0	0	5
4:30	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:45	0	10	0	0	0	0	0	0	0	1	0	0	0	0	1	0	12
5:00	0	6	1	0	0	0	0	0	0	1	0	0	0	0	0	0	8
5:15	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5
5:30	0	9	0	0	0	0	0	0	1	1	0	0	0	0	0	0	11
5:45	0	19	0	0	0	0	2	0	1	1	2	0	0	0	1	0	26
6:00	0	13	1	0	0	0	2	0	1	5	0	0	2	0	1	0	25
6:15	0	23	2	0	0	1	1	0	2	5	0	0	0	0	1	0	35
6:30	0	29	1	0	0	0	5	0	2	3	3	0	0	0	2	0	45
6:45	0	54	3	0	0	0	3	0	5	3	2	0	0	0	3	0	73
7:00	0	37	4	0	0	0	7	0	10	13	0	0	2	0	2	0	75
7:15	0	39	8	0	0	0	8	0	2	9	3	0	2	0	7	0	78
7:30	0	61	10	0	0	1	2	0	6	14	2	0	1	0	2	0	99
7:45	0	86	14	0	0	1	12	0	7	16	5	0	1	0	10	0	152
8:00	0	75	3	0	0	0	12	0	7	23	3	0	4	0	11	0	138
8:15	0	74	8	0	0	0	17	0	9	26	3	0	4	0	8	0	149
8:30	0	76	8	0	0	1	15	0	6	43	2	0	9	0	7	0	167
8:45	0	107	9	0	0	0	9	0	8	27	3	0	1	0	16	0	180
9:00	0	107	6	0	0	0	23	0	8	39	3	0	4	0	10	0	200
9:15	0	93	11	0	1	3	14	0	12	55	1	0	1	0	7	0	198
9:30	0	123	7	0	0	1	28	0	19	58	3	0	4	0	14	0	257
9:45	0	159	13	0	0	1	34	0	14	37	2	0	7	0	13	0	280
10:00	0	158	10	0	0	0	37	0	13	53	3	0	4	0	6	0	284
10:15	0	147	15	0	0	1	51	0	15	54	4	0	4	0	15	0	306
10:30	0	155	13	0	0	1	51	0	18	78	2	0	2	0	11	0	331
10:45	0	153	11	0	0	1	61	0	19	64	7	0	6	0	16	0	338
11:00	0	152	12	0	0	0	49	0	16	80	2	0	3	0	9	0	323
11:15	0	180	15	0	0	1	67	0	23	70	3	0	1	0	14	0	374
11:30	0	169	15	0	0	0	83	0	31	75	3	0	5	0	14	2	395
11:45	0	147	12	0	0	0	73	0	18	87	5	0	4	0	8	0	354
12:00	0	139	15	0	0	0	82	0	25	93	5	0	6	0	15	0	380
12:15	0	154	12	0	0	0	76	0	23	75	7	0	4	0	12	0	363
12:30	0	141	17	0	1	1	63	0	39	92	2	0	3	0	9	0	368
12:45	0	177	13	0	0	0	69	0	29	77	4	0	1	0	12	0	382
13:00	0	151	15	0	1	1	58	0	31	71	5	0	5	0	15	0	353
13:15	0	140	11	0	1	0	57	0	17	90	2	0	9	0	6	0	333
13:30	0	160	15	0	0	1	69	0	20	82	8	0	3	0	10	0	368
13:45	0	146	11	0	0	0	77	0	27	80	6	0	4	0	15	0	366

Location: Elder Drive at Foley Road/Costco Access
Count Date: 5/19/2026
Counted By: CountCloud



TURNING MOVEMENT COUNT DATA

All Vehicles + Total Peds/Bikes

Start Time	Elder Dr				Costco Right-in/Right-out				Elder Dr				Foley Rd				Int. Total
	Southbound				Westbound				Northbound				Eastbound				
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	
14:00	0	141	17	0	0	0	53	0	34	94	6	0	7	0	14	0	366
14:15	0	124	15	0	0	2	66	0	32	70	2	0	10	0	8	0	329
14:30	0	141	13	0	0	0	51	0	27	104	2	0	6	0	14	0	358
14:45	0	120	16	0	1	0	62	0	38	74	3	0	7	0	10	0	331
15:00	0	128	5	0	0	1	54	0	27	93	8	0	5	0	20	0	341
15:15	0	130	4	0	0	2	63	0	29	74	2	0	5	0	13	0	322
15:30	0	133	11	0	0	1	68	0	26	88	4	0	5	0	12	0	348
15:45	0	146	8	0	0	0	64	0	46	71	6	0	3	0	17	0	361
16:00	0	140	10	0	0	1	57	0	38	87	3	0	6	0	12	0	354
16:15	0	114	11	0	0	1	71	0	30	87	6	0	3	0	7	0	330
16:30	0	110	11	0	0	2	41	0	45	70	0	0	5	0	14	0	298
16:45	0	114	7	0	0	1	57	0	38	77	4	0	4	0	10	0	312
17:00	0	120	4	0	0	0	44	0	49	78	3	0	2	0	13	0	313
17:15	0	122	13	0	0	0	49	0	52	56	2	0	5	0	11	0	310
17:30	0	93	3	0	0	0	46	0	31	57	2	0	2	0	10	0	244
17:45	0	103	3	0	0	1	43	0	31	62	4	0	5	0	6	0	258
18:00	0	93	4	0	0	1	40	0	33	61	4	0	2	0	6	0	244
18:15	0	70	4	0	0	1	41	0	22	62	2	0	2	0	5	0	209
18:30	0	75	2	0	0	3	46	0	29	53	0	0	0	0	12	0	220
18:45	0	71	3	0	0	2	27	0	21	43	0	0	4	0	4	0	175
19:00	0	74	0	0	0	1	30	0	24	37	0	0	0	0	6	0	172
19:15	0	73	4	0	0	1	20	0	21	50	0	0	0	0	5	0	174
19:30	0	41	3	0	0	0	15	0	24	38	1	0	1	0	4	0	127
19:45	0	50	0	0	0	1	18	0	25	40	1	0	0	0	7	0	142
20:00	0	36	5	0	0	2	19	0	20	30	6	0	2	0	3	0	123
20:15	0	34	1	0	0	2	14	0	16	28	2	0	1	0	2	0	100
20:30	0	24	4	0	0	0	9	0	13	28	1	0	1	0	3	0	83
20:45	0	17	2	0	0	1	5	0	8	21	2	0	0	0	1	0	57
21:00	0	17	0	0	0	1	4	0	7	21	0	0	2	0	0	0	52
21:15	0	18	2	0	0	0	1	0	4	17	1	0	0	0	1	0	44
21:30	0	19	2	0	0	0	2	0	5	7	0	0	0	0	5	0	40
21:45	0	18	1	0	0	1	0	0	9	11	0	0	0	0	1	0	41
22:00	0	8	3	0	0	0	1	0	9	8	0	0	0	0	1	0	30
22:15	0	6	0	0	0	0	2	0	3	1	0	0	0	0	0	0	12
22:30	0	3	0	0	0	0	1	0	3	5	0	0	0	0	0	0	12
22:45	0	1	0	0	0	0	0	0	2	5	0	0	0	0	0	0	8
23:00	0	3	0	0	0	0	0	0	0	2	0	0	0	0	1	0	6
23:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
23:30	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
23:45	0	1	0	0	0	0	3	0	4	1	0	0	0	0	0	0	9
Total	0	6457	512	0	5	45	2405	0	1363	3427	182	0	203	0	561	2	15160
Cars+	0	6420	499	0	5	45	2403	0	1352	3398	182	0	200	0	556	2	15060
Trucks	0	37	13	0	0	0	2	0	11	29	0	0	3	0	5	0	100
% Trucks	0.0	0.6	2.5	0.0	0.0	0.0	0.1	0.0	0.8	0.8	0.0	0.0	1.5	0.0	0.9	0.0	0.7

Appendix B

Warrant Analysis Results

Foley Rd at Forthun Rd - Existing 2026

ALL WAY STOP WARRANT ANALYSIS

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

Speed*	Approach	Description	Direction:	Lanes	Approach Total
35	Major App1:	Foley Rd	EB	1	1,249
35	Major App3:	Foley Rd	WB	1	1,792
25	Minor App2:	Forthun Rd	NB	1	1,024
25	Minor App4:	N/A	SB	0	1

*Posted Speed or 85th Percentile
0.70 SPEED FACTOR USED? **No**
CORRECTABLE CRASHES: 0

(12-month period)

Minimum Volume Requirement

300
200
(base requirements are 300 and 200 vph)

	MAJOR	MAJOR	MINOR	MINOR	MAJOR APPROACH TOTAL	MINOR APPROACH TOTAL	WARRANT MET
HOURLY	APP. 1	APP. 3	APP. 2	APP. 4	Σ (APP.1 + APP. 3)	Σ (APP.2 + APP. 4)	MAJOR / MINOR
0:00 - 1:00	0	1	1	0	1	1	NO / NO
1:00 - 2:00	1	1	0	0	2	0	NO / NO
2:00 - 3:00	0	0	0	0	0	0	NO / NO
3:00 - 4:00	0	0	2	0	0	2	NO / NO
4:00 - 5:00	10	0	0	0	10	0	NO / NO
5:00 - 6:00	9	2	1	0	11	1	NO / NO
6:00 - 7:00	25	17	10	0	42	10	NO / NO
7:00 - 8:00	111	59	26	0	170	26	NO / NO
8:00 - 9:00	117	63	44	0	180	44	NO / NO
9:00 - 10:00	111	71	43	0	182	43	NO / NO
10:00 - 11:00	90	90	70	0	180	70	NO / NO
11:00 - 12:00	91	119	68	0	210	68	NO / NO
12:00 - 13:00	106	144	90	0	250	90	NO / NO
13:00 - 14:00	104	134	82	0	238	82	NO / NO
14:00 - 15:00	106	169	86	0	275	86	NO / NO
15:00 - 16:00	97	168	106	0	265	106	NO / NO
16:00 - 17:00	83	190	127	0	273	127	NO / NO
17:00 - 18:00	77	190	92	0	267	92	NO / NO
18:00 - 19:00	48	129	56	0	177	56	NO / NO
19:00 - 20:00	27	108	47	0	135	47	NO / NO
20:00 - 21:00	24	77	45	0	101	45	NO / NO
21:00 - 22:00	9	33	14	1	42	15	NO / NO
22:00 - 23:00	2	20	13	0	22	13	NO / NO
23:00 - 24:00	1	7	1	0	8	1	NO / NO

Daily **1,249** **1,792** **1,024** **1**
Met (Hr) **Required (Hr)**
Hours met for warrant: 0 8

AWS Volume Warrant:
(2B.16 MnMUTCD)
Not satisfied
Crash Warrant:
(2B.13 MnMUTCD)
Not Satisfied
COMMENTS: In addition to the 8-hour volume and crash experience warrants, sight distance, interim conditions, and other factors may be considered.

Foley Rd at Forthun Rd - Existing 2026

SIGNAL WARRANT ANALYSIS

Warrant 1 Summary

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

Speed*	Approach	Description	Direction:	Lanes	Approach
35	Major App1:	Foley Rd	EB	1	1,249
35	Major App3:	Foley Rd	WB	1	1,792
25	Minor App2:	Forthun Rd	NB	1	1,015
25	Minor App4:	N/A	SB	0	0

*Posted Speed or 85th Percentile

40 MPH OR FASTER?	NO
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	YES

CORRECTABLE CRASHES: 0
(12-month period)

	Minimum Volume Requirement		
	1A	1B	1A&B*
Major Total	350	525	420
Minor Approach	105	53	84

*Combination 1A&B Warrant is 80% of highest 1A or 1B criteria.

HOUR	MAJOR	MAJOR	MINOR	MINOR	MAJOR APPROACH TOTAL	MAX MINOR APPROACH	WARRANT 1A - 8 Hour	WARRANT 1B - 8 Hour	WARRANT 1A/B 8 Hour
	APP. 1	APP. 3	APP. 2	APP. 4	S (APP. 1 + APP. 3)	(APP. 2 or 4)	MAJOR/MINOR	MAJOR/MINOR	MAJOR/MINOR
0:00 - 1:00	0	1	1	0	1	1	NO / NO	NO / NO	NO / NO
1:00 - 2:00	1	1	0	0	2	0	NO / NO	NO / NO	NO / NO
2:00 - 3:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	0	0	2	0	0	2	NO / NO	NO / NO	NO / NO
4:00 - 5:00	10	0	0	0	10	0	NO / NO	NO / NO	NO / NO
5:00 - 6:00	9	2	1	0	11	1	NO / NO	NO / NO	NO / NO
6:00 - 7:00	25	17	10	0	42	10	NO / NO	NO / NO	NO / NO
7:00 - 8:00	111	59	26	0	170	26	NO / NO	NO / NO	NO / NO
8:00 - 9:00	117	63	43	0	180	43	NO / NO	NO / NO	NO / NO
9:00 - 10:00	111	71	43	0	182	43	NO / NO	NO / NO	NO / NO
10:00 - 11:00	90	90	70	0	180	70	NO / NO	NO / YES	NO / NO
11:00 - 12:00	91	119	68	0	210	68	NO / NO	NO / YES	NO / NO
12:00 - 13:00	106	144	90	0	250	90	NO / NO	NO / YES	NO / YES
13:00 - 14:00	104	134	82	0	238	82	NO / NO	NO / YES	NO / NO
14:00 - 15:00	106	169	85	0	275	85	NO / NO	NO / YES	NO / YES
15:00 - 16:00	97	168	106	0	265	106	NO / YES	NO / YES	NO / YES
16:00 - 17:00	83	190	127	0	273	127	NO / YES	NO / YES	NO / YES
17:00 - 18:00	77	190	92	0	267	92	NO / NO	NO / YES	NO / YES
18:00 - 19:00	48	129	52	0	177	52	NO / NO	NO / NO	NO / NO
19:00 - 20:00	27	108	46	0	135	46	NO / NO	NO / NO	NO / NO
20:00 - 21:00	24	77	44	0	101	44	NO / NO	NO / NO	NO / NO
21:00 - 22:00	9	33	13	0	42	13	NO / NO	NO / NO	NO / NO
22:00 - 23:00	2	20	13	0	22	13	NO / NO	NO / NO	NO / NO
23:00 - 24:00	1	7	1	0	8	1	NO / NO	NO / NO	NO / NO
Totals	1,249	1,792	1,015	0					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	Eight Hour Volumes	0	8	Not satisfied
	Warrant 1A Minimum Vehicular Volume	0	8	Not satisfied
	Warrant 1B Interruption of Continuous Flow	0	8	Not satisfied
	1A & 1B Combination of Warrants (80% of 1A and 1B)	0	8	Not satisfied
Warrant 2	Four Hour Volumes	0	4	Not satisfied
Warrant 3	Peak Hour Volumes	0	1	Not satisfied
Warrant 7	Crash Experience	0	8	Not satisfied

MINOR APPROACHES:

NB: 100% Minor Rights Included; Minor Left is approximately 96% of total approach volume.

SB: 100% Minor Rights Included; Minor Left is approximately 0% of total approach volume.

Foley Rd at Forthun Rd - Existing 2026

SIGNAL WARRANT ANALYSIS

Warrants 2 and 3 Summary

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

40 MPH OR FASTER? NO

POPULATION < 10,000? YES

VOLUME REQ. AT 70%? YES

Speed*	Approach	Description	Direction:	Lanes	Approach
35	Major App1:	Foley Rd	EB	1	1,249
35	Major App3:	Foley Rd	WB	1	1,792
25	Minor App2:	Forthun Rd	NB	1	1,015
25	Minor App4:	N/A	SB	0	0

*Posted Speed or 85th Percentile

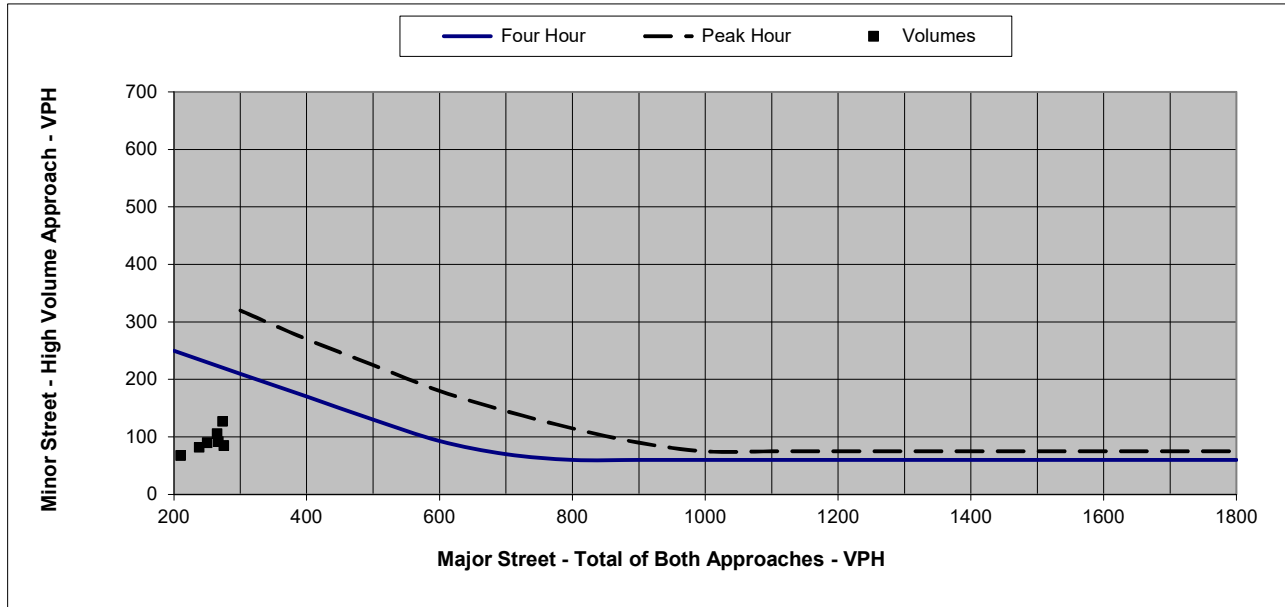


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200	250	
300	210	320
400	170	270
500	130	225
600	93	180
700	70	145
800	60	115
900	60	90
1000	60	75
1100	60	75
1200	60	75
1300	60	75
1400	60	75
1500	60	75
1600	60	75
1700	60	75
1800	60	75

Actual Hourly Count			Warrants Met:	
HOUR	Sum Major App.	Max Minor App.	Warrant 2	Warrant 3
0:00 - 1:00	1	1	NO	NO
1:00 - 2:00	2	0	NO	NO
2:00 - 3:00	0	0	NO	NO
3:00 - 4:00	0	2	NO	NO
4:00 - 5:00	10	0	NO	NO
5:00 - 6:00	11	1	NO	NO
6:00 - 7:00	42	10	NO	NO
7:00 - 8:00	170	26	NO	NO
8:00 - 9:00	180	43	NO	NO
9:00 - 10:00	182	43	NO	NO
10:00 - 11:00	180	70	NO	NO
11:00 - 12:00	210	68	NO	NO
12:00 - 13:00	250	90	NO	NO
13:00 - 14:00	238	82	NO	NO
14:00 - 15:00	275	85	NO	NO
15:00 - 16:00	265	106	NO	NO
16:00 - 17:00	273	127	NO	NO
17:00 - 18:00	267	92	NO	NO
18:00 - 19:00	177	52	NO	NO
19:00 - 20:00	135	46	NO	NO
20:00 - 21:00	101	44	NO	NO
21:00 - 22:00	42	13	NO	NO
22:00 - 23:00	22	13	NO	NO
23:00 - 24:00	8	1	NO	NO

Foley Rd at Forthun Rd - 2030 Future

ALL WAY STOP WARRANT ANALYSIS

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

Speed*	Approach	Description	Direction:	Lanes	Approach Total
35	Major App1:	Forthun Rd	NB	1	2,283
35	Major App3:	TH 210 Access	SB	1	5,896
25	Minor App2:	Foley Rd	EB	1	1,255
25	Minor App4:	Foley Rd	WB	1	6,234

*Posted Speed or 85th Percentile

0.70 SPEED FACTOR USED? **No**

CORRECTABLE CRASHES: 0

(12-month period)

Minimum Volume Requirement

300

200

(base requirements are 300 and 200 vph)

HOUR	MAJOR	MAJOR	MINOR	MINOR	MAJOR APPROACH TOTAL	MINOR APPROACH TOTAL	WARRANT MET
	APP. 1	APP. 3	APP. 2	APP. 4	Σ (APP.1 + APP. 3)	Σ (APP.2 + APP. 4)	MAJOR / MINOR
0:00 - 1:00	2	6	0	5	8	5	NO / NO
1:00 - 2:00	0	0	1	4	0	5	NO / NO
2:00 - 3:00	0	3	0	3	3	3	NO / NO
3:00 - 4:00	3	27	0	0	30	0	NO / NO
4:00 - 5:00	0	18	10	4	18	14	NO / NO
5:00 - 6:00	1	33	9	4	34	13	NO / NO
6:00 - 7:00	17	110	25	32	127	57	NO / NO
7:00 - 8:00	42	219	113	97	261	210	NO / YES
8:00 - 9:00	97	310	118	169	407	287	YES / YES
9:00 - 10:00	107	441	111	287	548	398	YES / YES
10:00 - 11:00	181	555	91	414	736	505	YES / YES
11:00 - 12:00	184	593	91	573	777	664	YES / YES
12:00 - 13:00	217	570	106	628	787	734	YES / YES
13:00 - 14:00	211	540	104	585	751	689	YES / YES
14:00 - 15:00	196	491	106	617	687	723	YES / YES
15:00 - 16:00	242	485	97	613	727	710	YES / YES
16:00 - 17:00	258	433	85	597	691	682	YES / YES
17:00 - 18:00	177	387	77	541	564	618	YES / YES
18:00 - 19:00	118	276	48	436	394	484	YES / YES
19:00 - 20:00	95	207	27	312	302	339	YES / YES
20:00 - 21:00	85	103	24	188	188	212	NO / YES
21:00 - 22:00	27	66	9	80	93	89	NO / NO
22:00 - 23:00	21	19	2	33	40	35	NO / NO
23:00 - 24:00	2	4	1	12	6	13	NO / NO

Daily	2,283	5,896	1,255	6,234
-------	-------	-------	-------	-------

Met (Hr)	Required (Hr)
10	10
15	15
20	20
25	25
30	30
35	35
40	40
45	45
50	50
55	55
60	60
65	65
70	70
75	75
80	80
85	85
90	90
95	95
100	100

Hours met for warrant:	12	8
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**AWS Volume Warrant:
(2B.16 MnMUTCD)**

Satisfied

**Crash Warrant:
(2B.13 MnMUTCD)**

Not Satisfied

COMMENTS: In addition to the 8-hour volume and crash experience warrants, sight distance, interim conditions, and other factors may be considered.

Foley Rd at Forthun Rd - 2030 Future

SIGNAL WARRANT ANALYSIS

Warrant 1 Summary

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

Speed*	Approach	Description	Direction:	Lanes	Approach
35	Major App1:	Forthun Rd	NB	1	2,283
35	Major App3:	TH 210 Access	SB	1	5,896
25	Minor App2:	Foley Rd	EB	1	1,144
25	Minor App4:	Foley Rd	WB	1	1,469

*Posted Speed or 85th Percentile

40 MPH OR FASTER?	NO
POPULATION < 10,000?	NO
VOLUME REQ. AT 70%?	NO

CORRECTABLE CRASHES: 0
(12-month period)

	Minimum Volume Requirement		
	1A	1B	1A&B*
Major Total	500	750	600
Minor Approach	150	75	120

*Combination 1A&B Warrant is 80% of highest 1A or 1B criteria.

HOUR	MAJOR	MAJOR	MINOR	MINOR	MAJOR APPROACH TOTAL	MAX MINOR APPROACH	WARRANT 1A - 8 Hour	WARRANT 1B - 8 Hour	WARRANT 1A/B 8 Hour
	APP. 1	APP. 3	APP. 2	APP. 4	S (APP. 1 + APP. 3)	(APP. 2 or 4)	MAJOR/MINOR	MAJOR/MINOR	MAJOR/MINOR
0:00 - 1:00	2	6	0	1	8	1	NO / NO	NO / NO	NO / NO
1:00 - 2:00	0	0	1	1	0	1	NO / NO	NO / NO	NO / NO
2:00 - 3:00	0	3	0	0	3	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	3	27	0	0	30	0	NO / NO	NO / NO	NO / NO
4:00 - 5:00	0	18	9	0	18	9	NO / NO	NO / NO	NO / NO
5:00 - 6:00	1	33	8	2	34	8	NO / NO	NO / NO	NO / NO
6:00 - 7:00	17	110	23	11	127	23	NO / NO	NO / NO	NO / NO
7:00 - 8:00	42	219	110	25	261	110	NO / NO	NO / YES	NO / NO
8:00 - 9:00	97	310	102	41	407	102	NO / NO	NO / YES	NO / NO
9:00 - 10:00	107	441	99	54	548	99	YES / NO	NO / YES	NO / NO
10:00 - 11:00	181	555	81	63	736	81	YES / NO	NO / YES	YES / NO
11:00 - 12:00	184	593	85	88	777	88	YES / NO	YES / YES	YES / NO
12:00 - 13:00	217	570	102	116	787	116	YES / NO	YES / YES	YES / NO
13:00 - 14:00	211	540	95	99	751	99	YES / NO	YES / YES	YES / NO
14:00 - 15:00	196	491	92	134	687	134	YES / NO	NO / YES	YES / YES
15:00 - 16:00	242	485	91	146	727	146	YES / NO	NO / YES	YES / YES
16:00 - 17:00	258	433	76	163	691	163	YES / YES	NO / YES	YES / YES
17:00 - 18:00	177	387	67	178	564	178	YES / YES	NO / YES	NO / YES
18:00 - 19:00	118	276	43	120	394	120	NO / NO	NO / YES	NO / YES
19:00 - 20:00	95	207	26	106	302	106	NO / NO	NO / YES	NO / NO
20:00 - 21:00	85	103	22	69	188	69	NO / NO	NO / NO	NO / NO
21:00 - 22:00	27	66	9	28	93	28	NO / NO	NO / NO	NO / NO
22:00 - 23:00	21	19	2	17	40	17	NO / NO	NO / NO	NO / NO
23:00 - 24:00	2	4	1	7	6	7	NO / NO	NO / NO	NO / NO
Totals	2,283	5,896	1,144	1,469					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	Eight Hour Volumes	3	8	Not satisfied
	Warrant 1A Minimum Vehicular Volume	2	8	Not satisfied
	Warrant 1B Interruption of Continuous Flow	3	8	Not satisfied
	1A & 1B Combination of Warrants (80% of 1A and 1B)	3	8	Not satisfied
Warrant 2	Four Hour Volumes	0	4	Not satisfied
Warrant 3	Peak Hour Volumes	0	1	Not satisfied
Warrant 7	Crash Experience	7	8	Not satisfied

MINOR APPROACHES:

EB: 100% Minor Rights Included; Minor Left is approximately 9% of total approach volume, Left Turn Lane Was Not Considered.

WB: 0% Minor Rights Included; Minor Left is approximately 1% of total approach volume, Left Turn Lane Was Not Considered.

Foley Rd at Forthun Rd - 2030 Future

SIGNAL WARRANT ANALYSIS

Warrants 2 and 3 Summary

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

40 MPH OR FASTER? NO

POPULATION < 10,000? NO

VOLUME REQ. AT 70%? NO

Speed*	Approach	Description	Direction:	Lanes	Approach
35	Major App1:	Forthun Rd	NB	1	2,283
35	Major App3:	TH 210 Access	SB	1	5,896
25	Minor App2:	Foley Rd	EB	1	1,144
25	Minor App4:	Foley Rd	WB	1	1,469

*Posted Speed or 85th Percentile

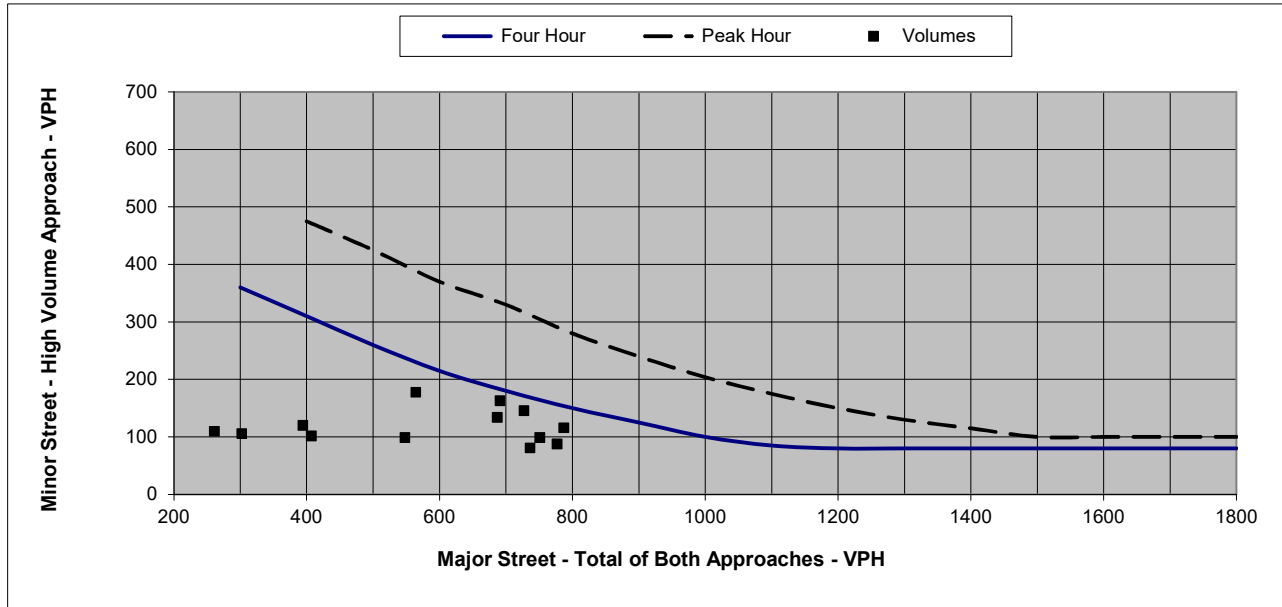


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200		
300	360	
400	310	475
500	260	425
600	215	370
700	180	330
800	150	280
900	125	240
1000	100	204
1100	85	175
1200	80	150
1300	80	130
1400	80	115
1500	80	100
1600	80	100
1700	80	100
1800	80	100

Actual Hourly Count			Warrants Met:	
HOUR	Sum Major App.	Max Minor App.	Warrant 2 Four Hour	Warrant 3 Peak Hour
0:00 - 1:00	8	1	NO	NO
1:00 - 2:00	0	1	NO	NO
2:00 - 3:00	3	0	NO	NO
3:00 - 4:00	30	0	NO	NO
4:00 - 5:00	18	9	NO	NO
5:00 - 6:00	34	8	NO	NO
6:00 - 7:00	127	23	NO	NO
7:00 - 8:00	261	110	NO	NO
8:00 - 9:00	407	102	NO	NO
9:00 - 10:00	548	99	NO	NO
10:00 - 11:00	736	81	NO	NO
11:00 - 12:00	777	88	NO	NO
12:00 - 13:00	787	116	NO	NO
13:00 - 14:00	751	99	NO	NO
14:00 - 15:00	687	134	NO	NO
15:00 - 16:00	727	146	NO	NO
16:00 - 17:00	691	163	NO	NO
17:00 - 18:00	564	178	NO	NO
18:00 - 19:00	394	120	NO	NO
19:00 - 20:00	302	106	NO	NO
20:00 - 21:00	188	69	NO	NO
21:00 - 22:00	93	28	NO	NO
22:00 - 23:00	40	17	NO	NO
23:00 - 24:00	6	7	NO	NO

Foley Rd at Forthun Rd - 2050 Future

ALL WAY STOP WARRANT ANALYSIS

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

Speed*	Approach	Description	Direction:	Lanes	Approach Total
35	Major App1:	Forthun Rd	NB	1	2,522
35	Major App3:	TH 210 Access	SB	1	7,620
25	Minor App2:	Foley Rd	EB	1	1,393
25	Minor App4:	Foley Rd	WB	1	7,963

*Posted Speed or 85th Percentile

0.70 SPEED FACTOR USED? **No**

CORRECTABLE CRASHES: 0

(12-month period)

Minimum Volume Requirement

300

200

(base requirements are 300 and 200 vph)

Hour	Major	Major	Minor	Minor	Major Approach Total	Minor Approach Total	Warrant Met
	App. 1	App. 3	App. 2	App. 4	Σ (App.1 + App. 3)	Σ (App.2 + App. 4)	Major / Minor
0:00 - 1:00	2	7	0	6	9	6	NO / NO
1:00 - 2:00	0	0	1	4	0	5	NO / NO
2:00 - 3:00	0	3	0	3	3	3	NO / NO
3:00 - 4:00	3	29	0	0	32	0	NO / NO
4:00 - 5:00	0	20	10	4	20	14	NO / NO
5:00 - 6:00	1	37	9	5	38	14	NO / NO
6:00 - 7:00	19	128	27	43	147	70	NO / NO
7:00 - 8:00	48	260	124	125	308	249	YES / YES
8:00 - 9:00	106	369	132	211	475	343	YES / YES
9:00 - 10:00	120	532	124	361	652	485	YES / YES
10:00 - 11:00	200	708	100	554	908	654	YES / YES
11:00 - 12:00	206	780	101	754	986	855	YES / YES
12:00 - 13:00	241	764	118	823	1,005	941	YES / YES
13:00 - 14:00	233	720	116	768	953	884	YES / YES
14:00 - 15:00	219	651	119	786	870	905	YES / YES
15:00 - 16:00	262	639	108	780	901	888	YES / YES
16:00 - 17:00	283	570	94	748	853	842	YES / YES
17:00 - 18:00	194	510	87	682	704	769	YES / YES
18:00 - 19:00	131	378	54	549	509	603	YES / YES
19:00 - 20:00	107	268	30	377	375	407	YES / YES
20:00 - 21:00	93	141	26	233	234	259	NO / YES
21:00 - 22:00	29	76	10	93	105	103	NO / NO
22:00 - 23:00	23	24	2	40	47	42	NO / NO
23:00 - 24:00	2	6	1	14	8	15	NO / NO
Daily	2,522	7,620	1,393	7,963			

	Met (Hr)	Required (Hr)
Hours met for warrant:	13	8

**AWS Volume Warrant:
(2B.16 MnMUTCD)**

Satisfied

**Crash Warrant:
(2B.13 MnMUTCD)**

Not Satisfied

COMMENTS: In addition to the 8-hour volume and crash experience warrants, sight distance, interim conditions, and other factors may be considered.

Foley Rd at Forthun Rd - 2050 Future

SIGNAL WARRANT ANALYSIS

Warrant 1 Summary

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

Speed*	Approach	Description	Direction:	Lanes	Approach
35	Major App1:	Forthun Rd	NB	1	2,522
35	Major App3:	TH 210 Access	SB	1	7,620
25	Minor App2:	Foley Rd	EB	1	1,278
25	Minor App4:	Foley Rd	WB	1	1,613

*Posted Speed or 85th Percentile

40 MPH OR FASTER?	NO
POPULATION < 10,000?	NO
VOLUME REQ. AT 70%?	NO

CORRECTABLE CRASHES: 0
(12-month period)

	Minimum Volume Requirement		
	1A	1B	1A&B*
Major Total	500	750	600
Minor Approach	150	75	120

*Combination 1A&B Warrant is 80% of highest 1A or 1B criteria.

HOUR	MAJOR	MAJOR	MINOR	MINOR	MAJOR APPROACH TOTAL	MAX MINOR APPROACH	WARRANT 1A - 8 Hour	WARRANT 1B - 8 Hour	WARRANT 1A/B 8 Hour
	APP. 1	APP. 3	APP. 2	APP. 4	S (APP. 1 + APP. 3)	(APP. 2 or 4)	MAJOR/MINOR	MAJOR/MINOR	MAJOR/MINOR
0:00 - 1:00	2	7	0	1	9	1	NO / NO	NO / NO	NO / NO
1:00 - 2:00	0	0	1	1	0	1	NO / NO	NO / NO	NO / NO
2:00 - 3:00	0	3	0	0	3	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	3	29	0	0	32	0	NO / NO	NO / NO	NO / NO
4:00 - 5:00	0	20	9	0	20	9	NO / NO	NO / NO	NO / NO
5:00 - 6:00	1	37	8	2	38	8	NO / NO	NO / NO	NO / NO
6:00 - 7:00	19	128	25	13	147	25	NO / NO	NO / NO	NO / NO
7:00 - 8:00	48	260	121	28	308	121	NO / NO	NO / YES	NO / YES
8:00 - 9:00	106	369	114	43	475	114	NO / NO	NO / YES	NO / NO
9:00 - 10:00	120	532	112	59	652	112	YES / NO	NO / YES	YES / NO
10:00 - 11:00	200	708	89	71	908	89	YES / NO	YES / YES	YES / NO
11:00 - 12:00	206	780	95	98	986	98	YES / NO	YES / YES	YES / NO
12:00 - 13:00	241	764	114	127	1,005	127	YES / NO	YES / YES	YES / YES
13:00 - 14:00	233	720	107	108	953	108	YES / NO	YES / YES	YES / NO
14:00 - 15:00	219	651	104	147	870	147	YES / NO	YES / YES	YES / YES
15:00 - 16:00	262	639	103	159	901	159	YES / YES	YES / YES	YES / YES
16:00 - 17:00	283	570	85	179	853	179	YES / YES	YES / YES	YES / YES
17:00 - 18:00	194	510	76	196	704	196	YES / YES	NO / YES	YES / YES
18:00 - 19:00	131	378	49	132	509	132	YES / NO	NO / YES	NO / YES
19:00 - 20:00	107	268	29	115	375	115	NO / NO	NO / YES	NO / NO
20:00 - 21:00	93	141	24	76	234	76	NO / NO	NO / YES	NO / NO
21:00 - 22:00	29	76	10	32	105	32	NO / NO	NO / NO	NO / NO
22:00 - 23:00	23	24	2	19	47	19	NO / NO	NO / NO	NO / NO
23:00 - 24:00	2	6	1	7	8	7	NO / NO	NO / NO	NO / NO
Totals	2,522	7,620	1,278	1,613					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	Eight Hour Volumes	7	8	Not satisfied
	Warrant 1A Minimum Vehicular Volume	3	8	Not satisfied
	Warrant 1B Interruption of Continuous Flow	7	8	Not satisfied
	1A & 1B Combination of Warrants (80% of 1A and 1B)	5	8	Not satisfied
Warrant 2	Four Hour Volumes	5	4	Satisfied
Warrant 3	Peak Hour Volumes	0	1	Not satisfied
Warrant 7	Crash Experience	9	8	Crashes Insufficient

MINOR APPROACHES:

EB: 100% Minor Rights Included; Minor Left is approximately 8% of total approach volume, Left Turn Lane Was Not Considered.

WB: 0% Minor Rights Included; Minor Left is approximately 0% of total approach volume, Left Turn Lane Was Not Considered.

Foley Rd at Forthun Rd - 2050 Future

SIGNAL WARRANT ANALYSIS

Warrants 2 and 3 Summary

LOCATION: Foley Rd at Forthun Rd

COUNTY: Crow Wing

REF. POINT: 0

DATE: 8/25/2026

OPERATOR: JDA

40 MPH OR FASTER? NO
 POPULATION < 10,000? NO
 VOLUME REQ. AT 70%? NO

Speed*	Approach	Description	Direction:	Lanes	Approach
35	Major App1:	Forthun Rd	NB	1	2,522
35	Major App3:	TH 210 Access	SB	1	7,620
25	Minor App2:	Foley Rd	EB	1	1,278
25	Minor App4:	Foley Rd	WB	1	1,613

*Posted Speed or 85th Percentile

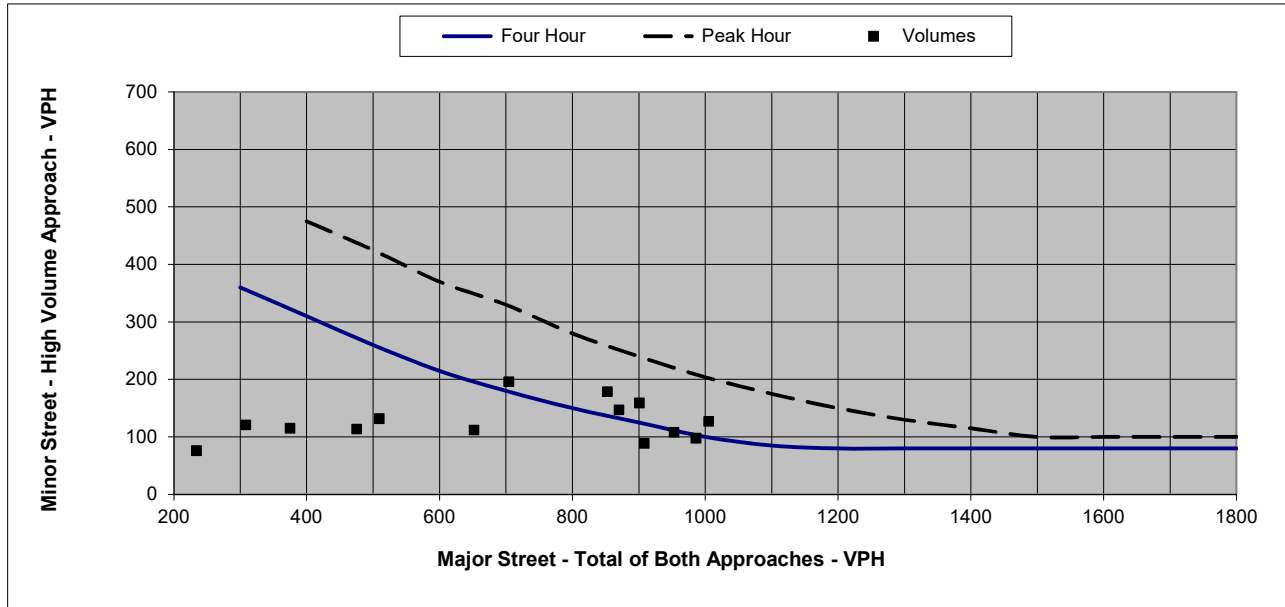


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200		
300	360	
400	310	475
500	260	425
600	215	370
700	180	330
800	150	280
900	125	240
1000	100	204
1100	85	175
1200	80	150
1300	80	130
1400	80	115
1500	80	100
1600	80	100
1700	80	100
1800	80	100

Actual Hourly Count			Warrants Met:	
HOUR	Sum Major App.	Max Minor App.	Warrant 2 Four Hour	Warrant 3 Peak Hour
0:00 - 1:00	9	1	NO	NO
1:00 - 2:00	0	1	NO	NO
2:00 - 3:00	3	0	NO	NO
3:00 - 4:00	32	0	NO	NO
4:00 - 5:00	20	9	NO	NO
5:00 - 6:00	38	8	NO	NO
6:00 - 7:00	147	25	NO	NO
7:00 - 8:00	308	121	NO	NO
8:00 - 9:00	475	114	NO	NO
9:00 - 10:00	652	112	NO	NO
10:00 - 11:00	908	89	NO	NO
11:00 - 12:00	986	98	NO	NO
12:00 - 13:00	1,005	127	YES	NO
13:00 - 14:00	953	108	NO	NO
14:00 - 15:00	870	147	YES	NO
15:00 - 16:00	901	159	YES	NO
16:00 - 17:00	853	179	YES	NO
17:00 - 18:00	704	196	YES	NO
18:00 - 19:00	509	132	NO	NO
19:00 - 20:00	375	115	NO	NO
20:00 - 21:00	234	76	NO	NO
21:00 - 22:00	105	32	NO	NO
22:00 - 23:00	47	19	NO	NO
23:00 - 24:00	8	7	NO	NO

Appendix C

Traffic Operations Results

Table C1
Foley Road at Isle Drive ICE Study
2026 Existing Conditions
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Left Turn Lane				Through Lane (s)					Right Turn Lane						
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ <---->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ <---->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹			
AM Peak Hour	Foley Rd at Isle Dr (Minor Street Stop)	NB	30		3	33	4.5	A			3.4	A	4.4	A	1.1	A						788	20	44								
		SB											0.0	A																		
		EB		47	92	139			0.9	A	0.5	A	0.6	A																		
		WB	5	53		58	2.2	A	0.2	A			0.3	A										788	20	20						
PM Peak Hour	Foley Rd at Isle Dr (Minor Street Stop)	NB	102		5	107	5.4	A			3.7	A	5.3	A	1.8	A						788	35	56								
		SB											0.0	A																		
		EB		51	42	93			0.5	A	0.2	A	0.4	A																		
		WB	2	175		177	1.6	A	0.4	A			0.4	A										788		20						

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C2a
Foley Road at Isle Drive ICE Study
2030 Future Conditions - Minor Street Stop Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection			Left Turn Lane				Through Lane (s)						Right Turn Lane				
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹			
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			135	135					4.6	A	4.6	A	3.4	A													330	22	47	
		SB											0.0	A																		
		EB		916	74	990			2.2	A	1.8	A	2.2	A										1780		20				300	20	20
		WB	210	469		679	15.3	C	0.5	A			4.9	A			1000	62	130			1423	20	20								
	Foley Rd at Isle Dr (Minor Street Stop)	NB	31	31	3	65	1.9	A	0.2	A	0.1	A	1.0	A	3.1	A	150	20	21													
		SB	163	94	27	284	2.7	A	1.4	A	1.1	A	2.1	A			205	20	24			207		20								
		EB	9	39	94	142	7.8	A	9.0	A	3.8	A	5.5	A								939	37	58								
		WB	5	27	95	127	7.5	A	8.2	A	2.6	A	3.9	A								775	20	46				630	29	45		
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			616	616					4.4	A	4.4	A	4.0	A													330	62	120	
		SB											0.0	A																		
		EB		554	99	653			2.3	A	1.6	A	2.2	A								1780		20				300	20	20		
		WB	386	635		1,021	12.1	B	0.7	A			5.0	A			1000	73	133													
	Foley Rd at Isle Dr (Minor Street Stop)	NB	104	180	5	289	2.5	A	0.9	A	0.5	A	1.5	A	6.1	A	150	20	46			787	20	20								
		SB	337	117	31	485	4.0	A	1.4	A	1.1	A	3.2	A			205	37	69			207	20	20								
		EB	6	46	43	95	13.5	B	13.1	B	4.9	A	9.3	A								939	36	64								
		WB	2	148	430	580	18.6	C	17.9	C	7.9	A	10.5	B								775	56	97				630	75	128		

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C2b
Foley Road at Isle Drive ICE Study
2050 Future Conditions - Minor Street Stop Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection			Left Turn Lane				Through Lane (s)						Right Turn Lane				
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹			
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			174	174					6.0	A	6.0	A	5.3	A												330	32	70		
		SB											0.0	A																		
		EB		1006	90	1,096			2.6	A	2.1	A	2.6	A											1780	20	20			300	20	20
		WB	248	513		761	26.3	D	0.6	A			9.1	A			1000	91	204													
	Foley Rd at Isle Dr (Minor Street Stop)	NB	34	39	3	76	2.1	A	0.3	A	0.2	A	1.1	A	3.3	A	150	20	24			787		20								
		SB	195	112	31	338	2.9	A	1.6	A	1.2	A	2.3	A			205	20	29			207		20								
		EB	10	43	103	156	8.5	A	9.5	A	3.9	A	5.7	A								939	39	63								
		WB	6	28	125	159	7.4	A	8.4	A	3.2	A	4.3	A								775	21	46				630	32	52		
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			771	771					6.7	A	6.7	A	6.5	A												330	100	185		
		SB											0.0	A																		
		EB		608	129	737			3.1	A	2.1	A	2.9	A											1780	20	20			300	20	26
		WB	503	694		1,197	20.0	C	0.8	A			8.7	A			1000	118	224			1423		20								
	Foley Rd at Isle Dr (Minor Street Stop)	NB	114	211	6	331	2.6	A	1.2	A	0.7	A	1.7	A	10.5	B	150	20	47			787	20	21								
		SB	442	157	33	632	4.7	A	1.6	A	1.3	A	3.8	A			205	49	93			207	20	20								
		EB	5	52	47	104	30.9	D	20.3	C	8.5	A	15.2	C								939	43	84								
		WB	2	163	555	720	43.4	E	31.8	D	15.9	C	19.6	C								775	79	156				630	124	243		

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C3a
Foley Road at Isle Drive ICE Study
2030 Future Conditions - Three-Way Stop Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Left Turn Lane				Through Lane (s)						Right Turn Lane					
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹			
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			135	135					5.4	A	5.4	A	3.1	A													330	23	52	
		SB											0.0	A																		
		EB		916	74	990			2.1	A	2.0	A	2.1	A										1790	20	20				300	20	20
		WB	210	469		679	12.2	B	0.5	A			4.1	A			1000	57	106													
	Foley Rd at Isle Dr (3-Way Stop)	NB	31	31	3	65	4.6	A	6.7	A	3.7	A	5.5	A	3.6	A	150	20	43			787	20	44								
		SB	163	94	27	284	1.4	A	1.9	A	1.3	A	1.6	A								206		20								
		EB	9	39	94	142	6.4	A	8.8	A	3.7	A	5.2	A								939	37	57								
		WB	5	27	95	127	5.1	A	8.2	A	4.5	A	5.3	A								776	20	44					630	32	52	
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			616	616					5.1	A	5.1	A	4.4	A													330	57	114	
		SB											0.0	A																		
		EB		554	99	653			2.5	A	2.1	A	2.4	A								1790		20					300	20	22	
		WB	386	635		1,021	12.9	B	0.7	A			5.3	A			1000	77	142			1423		20								
	Foley Rd at Isle Dr (3-Way Stop)	NB	104	180	5	289	7.1	A	18.2	C	13.4	B	13.9	B	9.4	A	150	39	65		1 %	787	65	120								
		SB	337	117	31	485	1.6	A	2.3	A	1.4	A	1.8	A								206	20	20								
		EB	6	46	43	95	11.3	B	14.5	B	5.7	A	10.0	B								939	37	63								
		WB	2	148	430	580	16.9	C	16.6	C	12.5	B	13.6	B								776	53	94					630	87	166	

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C3b
Foley Road at Isle Drive ICE Study
2050 Future Conditions - Three-Way Stop Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Left Turn Lane				Through Lane (s)						Right Turn Lane					
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹			
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			174	174					6.5	A	6.5	A	3.8	A												330	33	67		
		SB											0.0	A																		
		EB		1006	90	1,096			2.4	A	2.0	A	2.4	A										1790		20				300	20	20
		WB	248	513		761	15.6	C	0.5	A			5.3	A			1000	68	127			1423		20								
	Foley Rd at Isle Dr (3-Way Stop)	NB	34	39	3	76	5.1	A	6.8	A	4.9	A	6.0	A	3.8	A	150	20	43			787	24	48								
		SB	195	112	31	338	1.5	A	2.0	A	1.3	A	1.6	A								206		20								
		EB	10	43	103	156	7.7	A	9.5	A	4.1	A	5.8	A								939	39	63								
		WB	6	28	125	159	6.6	A	8.4	A	4.8	A	5.5	A								776	21	44				630	34	51		
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			771	771					7.0	A	7.0	A	7.8	A												330	89	168		
		SB											0.0	A																		
		EB		608	129	737			3.2	A	2.7	A	3.1	A								1790	20	20				300	20	34		
		WB	503	694		1,197	25.2	D	0.9	A			11.1	B			1000	141	307			1423	20	69								
	Foley Rd at Isle Dr (3-Way Stop)	NB	114	211	6	331	8.9	A	43.3	E	33.5	D	31.3	D	26.3	D	150	43	100		10 %	787	110	213								
		SB	442	157	33	632	2.0	A	2.8	A	1.7	A	2.2	A								206	20	20								
		EB	5	52	47	104	19.5	C	19.1	C	8.2	A	14.2	B								939	41	74								
		WB	2	163	555	720	53.5	F	44.2	E	48.5	E	47.5	E								776	150	452	2 %	4 %	630	248	541			

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C4a
Foley Road at Isle Drive ICE Study
2030 Future Conditions - Traffic Signal Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection			Left Turn Lane				Through Lane (s)						Right Turn Lane				
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹			
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			135	135					5.2	A	5.2	A	3.3	A													330	25	55	
		SB											0.0	A																		
		EB		916	74	990			2.1	A	1.8	A	2.1	A										1780	20	20				300	20	20
		WB	210	469		679	14.6	B	0.5	A			4.8	A			1000	59	115			1423		20								
	Foley Rd at Isle Dr (Traffic Signal)	NB	31	31	3	65	6.0	A	9.1	A	4.9	A	7.5	A	7.0	A	150	20	38			787	20	42								
		SB	163	94	27	284	7.4	A	6.7	A	3.0	A	6.8	A			205	37	74			207	23	56								
		EB	9	39	94	142	14.8	B	14.6	B	4.8	A	8.2	A								939	44	76								
		WB	5	27	95	127	15.1	B	13.8	B	3.1	A	5.7	A								775	20	45				630	29	50		
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			616	616					5.1	A	5.1	A	4.3	A													330	72	150	
		SB											0.0	A																		
		EB		554	99	653			2.5	A	1.8	A	2.4	A								1780		20				300	20	20		
		WB	386	635		1,021	12.6	B	0.7	A			5.1	A			1000	75	137													
	Foley Rd at Isle Dr (Traffic Signal)	NB	104	180	5	289	8.8	A	15.7	B	8.1	A	13.0	B	11.3	B	150	36	74			787	71	128								
		SB	337	117	31	485	12.4	B	10.7	B	5.6	A	11.5	B			205	89	151			207	39	87								
		EB	6	46	43	95	28.2	C	17.3	B	7.1	A	13.3	B								939	38	81								
		WB	2	148	430	580	23.7	C	15.9	B	7.8	A	9.9	A								775	57	103				630	82	136		

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C4b
Foley Road at Isle Drive ICE Study
2050 Future Conditions - Traffic Signal Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																	Vehicle Queuing Information (feet)																
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection			Left Turn Lane				Through Lane (s)						Right Turn Lane					
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ---->	% Block Thru ⁽²⁾ <----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹				
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			174	174					6.1	A	6.1	A	4.9	A													330	30	65		
		SB											0.0	A																			
		EB		1006	90	1,096			2.6	A	2.0	A	2.6	A											1780	20	20				300	20	20
		WB	248	513		761	23.6	C	0.6	A			8.0	A			1000	84	193														
	Foley Rd at Isle Dr (Traffic Signal)	NB	34	39	3	76	7.0	A	10.0	B	4.9	A	8.4	A	7.5	A	150	20	44				787	20	48								
		SB	195	112	31	338	8.1	A	7.1	A	3.8	A	7.4	A			205	46	86				207	28	63								
		EB	10	43	103	156	15.2	B	16.7	B	5.4	A	9.0	A									939	48	89								
		WB	6	28	125	159	16.7	B	12.5	B	3.5	A	5.7	A									775	20	47				630	33	56		
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			771	771					7.7	A	7.7	A	8.3	A													330	117	222		
		SB											0.0	A																			
		EB		608	129	737			3.2	A	2.3	A	3.0	A											1780	20	20				300	20	30
		WB	503	694		1,197	27.4	D	0.9	A			11.9	B			1000	149	322				1423	20	85								
	Foley Rd at Isle Dr (Traffic Signal)	NB	114	211	6	331	10.5	B	18.0	B	9.5	A	15.2	B	15.6	B	150	43	83		1 %		787	84	145								
		SB	442	157	33	632	17.5	B	12.9	B	6.0	A	15.8	B			205	131	201				207	53	114								
		EB	5	52	47	104	40.6	D	20.7	C	9.6	A	16.7	B									939	47	99								
		WB	2	163	555	720	21.4	C	18.7	B	14.4	B	15.4	B									775	66	118				630	129	257		

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C5a
Foley Road at Isle Drive ICE Study
2030 Future Conditions - Roundabout Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																	
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Left Turn Lane				Through Lane (s)						Right Turn Lane						
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹				
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			135	135					4.6	A	4.6	A	3.4	A													330	22	51		
		SB											0.0	A																			
		EB		916	74	990			2.2	A	2.1	A	2.2	A											1788	20	20				300	20	20
		WB	210	469		679	14.9	B	0.5	A			5.0	A			1000	61	126			1422		20									
	Foley Rd at Isle Dr (Roundabout)	NB	31	31	3	65	2.4	A	2.7	A	2.3	A	2.5	A	3.4	A							758	20	32								
		SB	163	94	27	284	3.4	A	4.1	A	3.5	A	3.6	A									187	20	41								
		EB	9	39	94	142	2.9	A	4.9	A	3.4	A	3.8	A									915	20	46								
		WB	5	27	95	127	2.6	A	4.0	A	2.5	A	2.8	A									750	20	21								
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			616	616					4.7	A	4.7	A	4.3	A													330	64	137		
		SB											0.0	A																			
		EB		554	99	653			2.5	A	2.3	A	2.5	A											1788	20	20				300	20	25
		WB	386	635		1,021	12.6	B	0.7	A			5.2	A			1000	75	134			1422		20									
	Foley Rd at Isle Dr (Roundabout)	NB	104	180	5	289	4.4	A	4.8	A	3.5	A	4.6	A	5.7	A							758	43	82								
		SB	337	117	31	485	4.8	A	5.6	A	4.9	A	5.0	A									187	46	94								
		EB	6	46	43	95	3.6	A	5.1	A	3.7	A	4.3	A									915	20	47								
		WB	2	148	430	580	8.2	A	7.9	A	6.9	A	7.2	A									750	59	149								

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

Table C5b
Foley Road at Isle Drive ICE Study
2050 Future Conditions - Roundabout Control
AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours

AM (7:30-8:30 AM) & PM (3:30-4:30 PM) Peak Hours																Vehicle Queuing Information (feet)																	
Intersection		Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection			Left Turn Lane				Through Lane (s)						Right Turn Lane					
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Thru ⁽²⁾ ----->	% Block Left ⁽²⁾ <-----	Link Length (feet)	Avg. Queue (feet) ¹	95th % Queue (feet) ¹	% Block Right ⁽²⁾ ----->	% Block Thru ⁽²⁾ <-----	Storage (feet) ³	Avg. Queue (feet) ¹	95th % Queue (feet) ¹				
AM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			174	174					5.8	A	5.7	A	4.1	A													330	32	67		
		SB											0.0	A																			
		EB		1006	90	1,096			2.5	A	2.1	A	2.5	A											1788	20	20				300	20	21
		WB	248	513		761	17.3	C	0.6	A			6.0	A			1000	74	135			1422		20									
	Foley Rd at Isle Dr (Roundabout)	NB	34	39	3	76	2.4	A	2.9	A	2.5	A	2.7	A	3.5	A							758	20	35								
		SB	195	112	31	338	3.5	A	4.3	A	3.5	A	3.8	A									187	20	44								
		EB	10	43	103	156	3.8	A	5.1	A	3.5	A	3.9	A									915	20	47								
		WB	6	28	125	159	2.6	A	3.9	A	2.7	A	2.9	A									750	20	23								
PM Peak Hour	TH 210 at Isle Dr (3/4 Access)	NB			771	771					6.5	A	6.5	A	9.1	A													330	99	178		
		SB											0.0	A																			
		EB		608	129	737			3.4	A	3.0	A	3.3	A											1788	20	20				300	20	34
		WB	503	694		1,197	32.5	D	1.0	A			14.3	B			1000	174	391			1422	20	126									
	Foley Rd at Isle Dr (Roundabout)	NB	114	211	6	331	6.3	A	6.3	A	6.2	A	6.3	A	10.6	B							758	58	108								
		SB	442	157	33	632	7.2	A	8.1	A	7.2	A	7.4	A									187	75	142								
		EB	5	52	47	104	3.3	A	5.4	A	4.2	A	4.8	A									915	21	50								
		WB	2	163	555	720	16.2	C	17.0	C	16.1	C	16.3	C									750	123	322								

NOTES 1. If the reported queue is greater than zero (0), but less than 20 ft, a minimum of 20 ft is reported.
2. Block Percentage is proportion of analysis time (1 hour) the storage lane or through lane is blocked or blocking.
3. Multiple storage lanes of different length are averaged together to show the "Effective Storage Length" per lane.

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