

MEMORANDUM

Date: April 29, 2021
To: City of Baxter Council/City of Baxter Utility Commission
From: Derek Arens/Pete Lemke *pml*
Subject: 2022 Inglewood Drive Railway Crossing and Associated Roadway Improvements
Glory Road/Isle Drive Intersection
City of Baxter
Municipal Project No.: 4121
BMI Project No. T42.120675

Background

On April 6, 2021, Bolton & Menk presented the proposed layout of the 2022 Inglewood Drive Railway Crossing and Associated Roadway Improvements (Inglewood Drive) project. The purpose of the presentation was to receive input from the council and consensus to proceed with amending the feasibility report and public input process. During the discussion, questions were brought up about the Glory Road/Isle Drive intersection. With the intent of the Inglewood Drive project completing the west reliever roadway for the TH 371 corridor, safety concerns of this intersection with the existing traffic control today were examined. Another question asked was “shall this intersection become part of the project?” This memo’s intent is to address these questions and concerns with a recommended motion of proceeding with an Intersection Control Evaluation (ICE) report to vet out all opportunities and solutions.

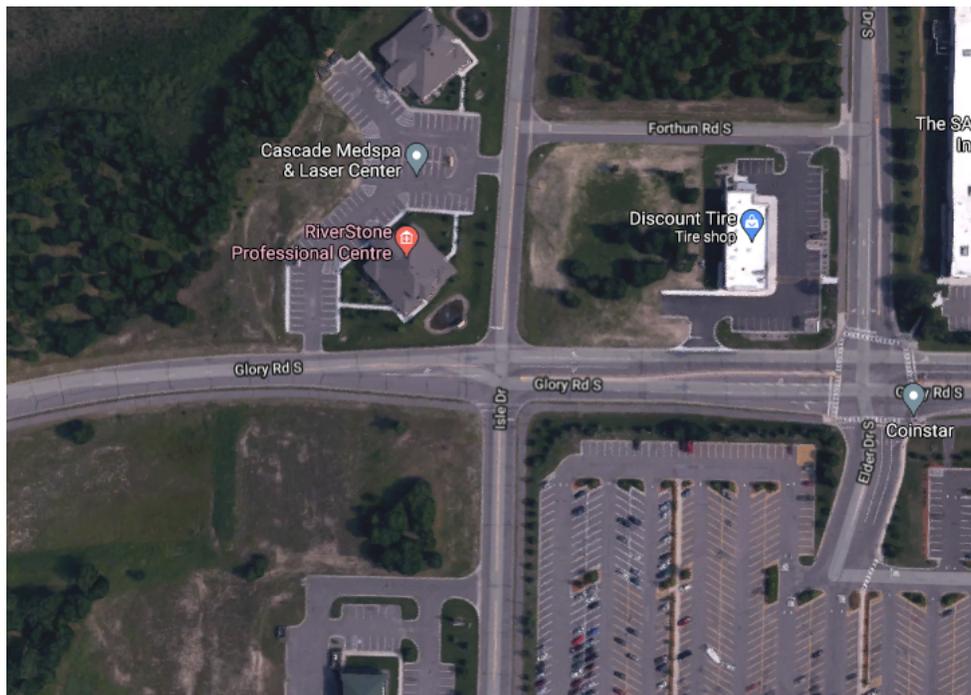


Figure 1: Plan View of Concerned Intersection (Glory Road/Isle Drive)

Existing Conditions

Today this intersection is a 2-way stop control with the free-flowing movements on Glory Road and the stop condition on Isle Drive. It is located within the city's commercial district west of the existing signalized intersection of Glory Road and Elder Drive. On Glory Road west of Isle Drive, it is a 2-lane section with turn lanes that transitions into a 4-lane section east of the intersection. West of the intersection Glory Road has lane tapers that could accommodate a full 4-lane section if re-striped. The face of curb to face of curb width is 71' across Glory Road between Isle Drive and Elder Drive which tends to be on the wider end for the expected traffic and use of this intersection.



Figure 2: Glory Road Lane Configuration with Intersection width

Isle Drive is a 2-lane road with no turn lanes north of the intersection. South of the intersection it is 2-lane with a center left turn lane. The north curb line of Glory Road transitions into a valley gutter as it crosses Isle Drive. If Isle Drive becomes the free-flowing traffic movement, we recommend removal of the valley gutter for a smoother ride through the intersection. Existing Speed limits for both roadways are 30 mph.



Figure 3: Isle Drive Lane Configuration with Valley Gutter within the intersection

The general public's perception is that this intersection is unsafe for both vehicle and pedestrian movements, especially with the NB and SB thru movements of Isle Drive. With the wide lanes and open roadway along Glory Road, vehicle speeds tend to be high as well. There is no pedestrian refuge between the EB and WB movements and there are no landing or facilities north of the intersection for continuing NB pedestrian movements. The wide intersection combined with lane transitions of higher speeds throughout cause driver anxiety when trying to cross the intersection. The signalized intersection to the east at Glory Road/Elder Drive help to break traffic for crossing gaps from the east but continuing sporadic traffic still is approaching from the west.

The city has received verbal notices and a letter as well seeking safety and operations solutions at this intersection. The letter stressed that Isle Drive traffic does not always take into consideration that Glory Road does not have a stop. The letter to council states there have been multiple near miss experiences along with one accident because of this issue. A resident requested that the city incorporate a W4-4P sign per the MnDOT Standard Sign Summary that states "Cross Traffic Does Not Stop" directly under the Stop signs on Isle Drive.



Figure 4: W4-4P Traffic Sign from the MnDOT Standard Sign Summary

Future Development

Around this intersection is an up-and-coming commercial business district with plans for more development in the future. Currently the NW and SE corners are developed with RiverStone Professional Centre and Walmart, respectively. The NE and SW corners are vacant with plans in the works for future site construction. All infrastructure is in place to facilitate future development and build-out of the surrounding area so the intersection will not be affected. The southwest quadrant of this intersection has substantially more development opportunities in commercial and residential to the far west. All this potential for traffic generating activity will only increase the vehicle and pedestrian use of this intersection.

Potential Alternatives of the Intersection

1. Leave As-Is (Existing Conditions): Continue with the current 2-way stop controlled intersection and lane configuration. **ESTIMATED COSTS: \$0-\$300 (If just add the W4-4P signage)**
2. Modified 2-way Stop Control: If it is determined that the 4-lane section of Glory Road through this intersection has significantly higher volume than Isle Drive but is still considered overbuilt, removal of pavement and curb line re-alignments could be recommended. The tightening of the intersection would provide major safety benefits by eliminating conflict points and shortening the crossing length where drivers and pedestrians are exposed. **ESTIMATED COSTS: \$50,000-\$100,000**
3. All-way Stop Control: If it is determined that speeding through the intersection is prevalent and adding a stop sign on the Glory Road legs would not impact the adjacent signalized intersection to the east, then an all-way stop intersection control could be recommended. The 4 legs of the intersection should be balanced for traffic volumes as well. **ESTIMATED COSTS: \$1,000-\$300,000+ (with lane additions or modifications)**
4. Signalized Intersection: If it is determined that speeding is prevalent, gaps for turning movements is limited, and future growth will increase the average daily traffic (ADT) of the intersection, then an addition of a signal could be recommended. Warrants determined in the Manual on Uniform Traffic Control Devices would need to be met in order to install a signal. **ESTIMATED COSTS: \$250,000-\$750,000+ with lane additions**

5. **Mini-Roundabout:** If it is determined that there is a crash history at this intersection, future growth will continue to aggravate crash potential, smaller vehicle types tend to utilize this intersection and Isle Drive will become a higher use roadway, a mini roundabout is a possible solution. **ESTIMATED COSTS: \$350,000-\$950,000**

6. **Roundabout:** If it is determined that there is a crash history at this intersection, future growth will continue to aggravate crash potential, larger vehicle types tend to utilize this intersection and Isle Drive will become a higher use roadway, a roundabout is a possible solution. In some cases, roundabouts can handle more vehicles per hour than a conventional traffic signal with greater safety. **ESTIMATED COSTS: \$500,000-\$1,500,000**

BOLTON & MENK RECOMMENDATIONS

We recommend the City move forward with completing a full Intersection Control Evaluation (ICE) report (Option 2 below) that will continue to analyze this intersection and the implementation of each alternative listed above based on existing conditions, forecasted traffic volumes, traffic warrants met, intersection geometry, bicycle and pedestrian accommodations, crash history and safety, future land use, and traffic operations. The ICE report would evaluate the impacts of the existing signalized intersection to the east with each possible alternative identified above. In addition, consideration of recent concerns from residents will be incorporated.

An ICE report is a formal process to study an intersection and identify the right traffic control based on existing and proposed (design year) conditions. Completing an ICE report will allow the City to identify the right solution that addresses safety, multi-modal travel, traffic operations, and cost-effectiveness. An ICE report is required by most agencies as the accepted process for determining traffic control at an intersection and as a requirement for funding.

Aligned with recommending Option 2, we also recommend delaying the Glory Road full depth reclamation (FDR) improvements until 2023 (currently planned for 2022 and delayed from 2021) to give time to complete the ICE report and implement the intersection improvements identified in the ICE report at the same time as the Glory Road improvements.

In the interim, to address the immediate concerns from residents, we recommend installing the "Cross Traffic Does Not Stop" signs that will provide additional information on the intersection operations. Adding these signs enhance the existing intersection control and does not change the intersection control (two way stop on Isle Drive) therefore it is easily justified without completing a full traffic study and should be easily understandable for drivers approaching the intersection from the north or south.

Engineering Cost options of this ICE report are:

1. **Basic ICE Report** – Obtain traffic counts, traffic forecasting, model existing and future conditions, collect historical crash data, analyze alternative solutions with a recommendation to evaluate. **ESTIMATED COST: \$9,000 – 12,000**

2. **Complex ICE Report with Feasibility Analysis of Conceptual Alternatives** - Obtain traffic counts, traffic forecasting, model existing and future conditions, collect historical crash data, analyze alternative solutions, consider operational interactions with Elder Drive signalized intersection, plan view figures of alternative solutions and their operations, preliminary costs of each alternative solution, select alternative for recommendation. **ESTIMATED COST: \$16,000 – 17,500**

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COUNCIL ACTION REQUESTED

Consensus on direction for which option to proceed with in the evaluation of Glory Road/Isle Drive intersection traffic control