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MEMORANDUM

TO: Trevor Walter, PE – Public Works Director/City Engineer
City of Baxter

FROM: Justin Anibas, PE (MN), PTOE

DATE: May 23, 2024

RE: Inglewood Drive and Clearwater Road - Flashing LED Stop Sign Request
SEH No. BAXTE 176734

REQUEST

Review whether solar powered flashing LED stop signs are warranted at the intersection of Inglewood Drive and Clearwater Road

EXISTING CONDITIONS

Inglewood Drive is a north-south, major collector roadway, which extends from Trunk Highway (TH) 210 to Pine Beach Road (CSAH 77). In 2023, a signal was installed at the intersection of TH 210 and Inglewood Drive as part of the Foley Road project, which has likely resulted in more vehicles using Inglewood Drive to access TH 210. The speed limit on Inglewood Drive in the area of the intersection is 30 mph.

Clearwater Road is an east-west roadway which extends from Whipple Lake to Cypress Drive. Clearwater Road is functionally classified as a major collector west of Inglewood Drive and a minor collector east of Inglewood Drive. The speed limit on Clearwater Road is 40 mph west of Inglewood Drive and 30 mph east of Inglewood Drive.

The intersection of Inglewood Drive and Clearwater Road is an all-way stop controlled intersection with stop and stop ahead signs on each intersection approach. Currently, only the westbound has a painted stop bar, which has faded over the years. The northbound and southbound Clearwater Road approaches have a single lane for all movements. The eastbound and westbound Clearwater Road approaches each have a shared through/left turn lane and a dedicated right turn lane. The area surrounding the intersection is generally residential, however, Clearwater Road provides access to commercial land uses to the east near TH 371.

There is currently a grade separated multi-use trail on the north side of Clearwater Road west of Inglewood Drive. The shoulders of Inglewood Drive are signed with No Parking as a bike lane in both directions.

No intersection turning movement counts were conducted as part of this review. However, Average Annual Daily Traffic (AADT) volumes are available from MnDOT's Traffic Mapping Application as both roadways are state aid roads. The AADTs and the year of the counts are provided below:

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- Inglewood Drive north of Clearwater Road (North Leg) – 3,197 vehicles per day (vpd) (2023 count)
- Inglewood Drive south of Clearwater Road (South Leg) – 3,133 vpd (2023 count)
- Clearwater Road east of Inglewood Drive (East Leg) – 1,400 vpd (2019 count)
- Clearwater Road west of Inglewood Drive (West Leg) – 2,848 vpd (2023 count)

SAFETY REVIEW

Crash data since January 1, 2014 was provided by the City of Baxter Police. Crash data was also reviewed using MnDOT's Crash Mapping Analysis Tool (MnCMAT2). In total there have been 5 crashes at the intersection since 2014. The crashes occurred in 2017, 2019, 2022, and then 2 in 2024 within the past 30 days. Four out of the five crashes occurred during daylight hours.

Police Chief Jim Exsted stated that the intersection has never been an intersection of concern for the police department as it relates to dangerous crashes as prior to the past 30 days, the intersection was averaging approximately one crash every 3.4 years and only the 2022 crash resulted in any kind of injury.

In the two most recent crashes, one southbound driver was cited for a stop sign violation and in the other crash both drivers stated they had stopped. In total, four of the five crashes resulted in someone receiving a citation for stop sign violation, which would indicate that stop sign compliance may be an issue at this intersection.

Following the two most recent crashes, the Baxter Police Department conducted drive throughs of the intersection to determine if there were any obstructed sightlines and did not observe any obstructions.

FLASHING LED STOP SIGN GUIDANCE

To determine whether flashing LED Stop Signs may be appropriate at the intersection of Inglewood Drive and Clearwater Road, MnDOT's Traffic Engineering Manual (TEM) was reviewed.

Chapter 6 of the MnDOT TEM states that the installation of flashing LED stop signs should only be considered in situations necessitating enhanced visibility of the sign as determined by an engineering study. These signs should be limited to locations with at least two of the following:

- Limited visibility on approach to the intersection
- A history of crashes documented to be caused by a failure to stop and deemed preventable by implementation of conspicuity improvements.
- At a rural junction of two or more high speed trunk highways to warn drivers of an unexpected crossing of another highway.
- At a rural junction of a trunk highway and a local road which has no STOP controlled intersection within five miles.

Based on the criteria from the MnDOT TEM, the intersection of Inglewood Drive and Clearwater Road does not meet the guidelines for installation of flashing LED stop signs for the following reasons:

- Based on the safety review, it seems that the intersection has a stop compliance issue rather than a sign visibility issue. This is typical of all-way stops where volumes are generally low throughout most of the day because drivers learn that they typically do not need to stop for any opposing traffic. Flashing LED stop signs are not recommended for intersections where stop sign compliance is the primary issue as they have not been shown to increase driver compliance.
- The City of Baxter Police Department did not notice any obstructions that limit the visibility of the intersection or the stop signs on approach to the intersection during their recent drive throughs.

- While the intersection has experienced two crashes in the past 30 days, the intersection has not had a significant crash history over the past 10+ years.
- The intersection is located within the City limits of Baxter and is not a rural trunk highway junction.
- The intersection is located within a residential area where intersections are not unexpected and there are other nearby stop-controlled intersections.

The MnDOT TEM provides alternative intersection enhancements prior to selecting flashing LED stop signs, which are listed below:

- Install stop ahead signs on each approach.
- Increase the size of a standard stop sign.
- Install a second stop sign of equal or lesser size on the left-hand side of the roadway.
- Add red or orange flags above the stop signs.
- Install pavement marking messages appropriate to intersection control, such as "STOP" and/or "STOP AHEAD".
- Install in-lane rumble strips on the approach to the intersection.

RECOMMENDATION

It is not recommended to install flashing LED stop signs at the intersection of Inglewood Drive and Clearwater Road as the intersection does not meet the criteria described in Chapter 6 of the MnDOT TEM. However, because the intersection has experienced two crashes in the past 30 days, the intersection should continue to be monitored to determine if the recent crash trend persists. If crashes become an issue at the intersections, alternative intersection enhancements such as stop bars on each approach, pavement marking such as "STOP" or "STOP AHEAD", or additional stop signs on the left-hand side of the roadway could be considered.