

Clinton County Engineer's Office

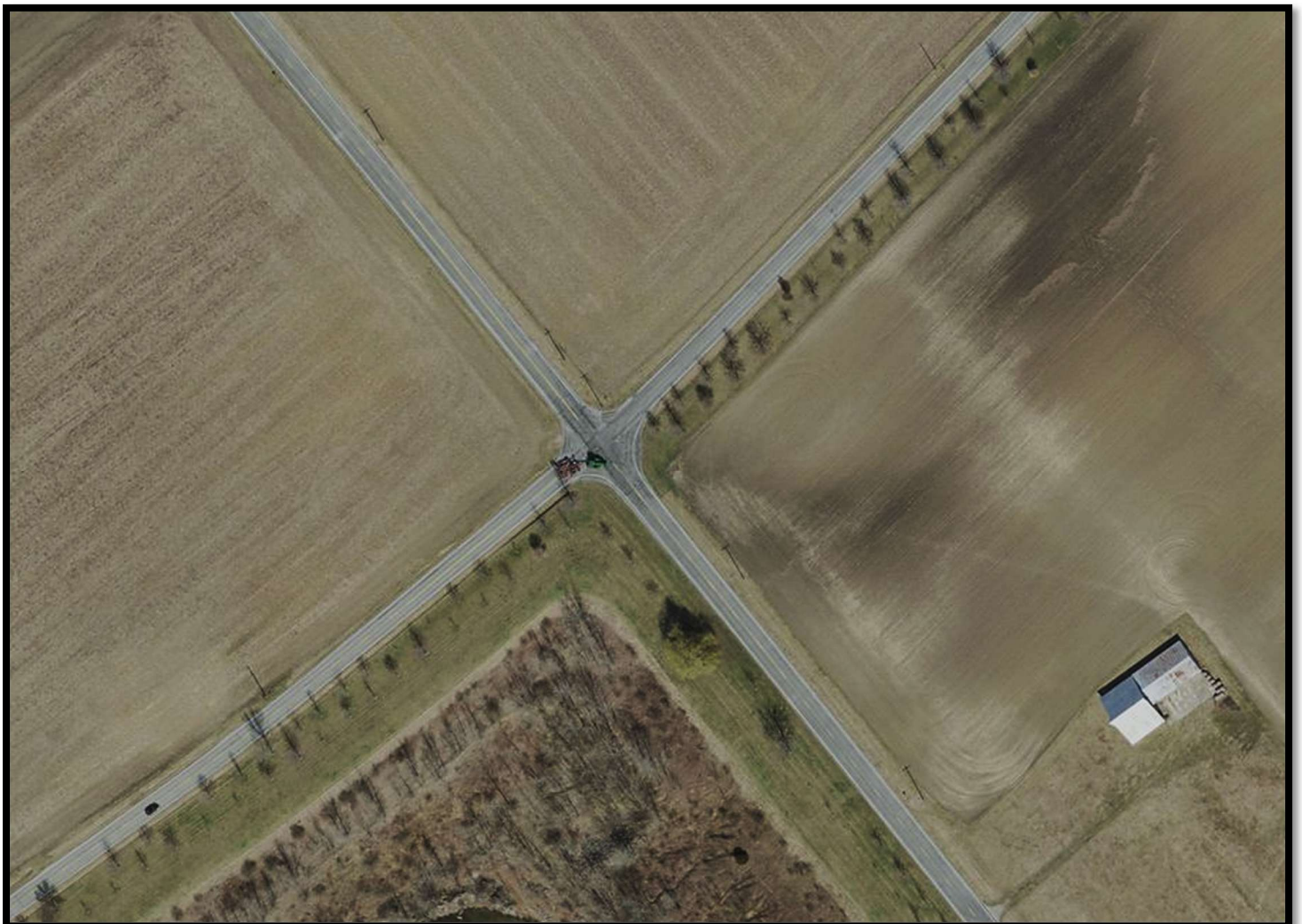
Melvin Road and Stone Road Intersection



Safety Report

Prepared by the Clinton County Engineer's Office

Report: November 24, 2025



A. Purpose and Need

The purpose of this study is to investigate the current conditions of the intersection of Melvin Road and Stone Road to identify crash trends and to evaluate crash mitigation strategies. This will be done by reviewing intersection data and comparing it to the Ohio Manual of Uniform Traffic Control Devices warrants for a four way stop. In addition, Melvin Stone and Nutrien Ag Solutions (which are the main generators of traffic at this intersection) were involved to gain their perspective on the issue.

B. Crash History

Since 2016 there have been seven recorded crashes in the intersection of Stone Road and Melvin Road. Of those seven crashes, four of them resulted in injuries. All of the incidents within the intersection were caused by vehicles on Stone Road either failing to yield (three crashes) or failing to stop (four crashes). **Table 1** along with **figure 1** shows a breakdown of the crash data. A diagram of the crash history can be seen in **figure 2**.

Table 1 – Crash Statistics

Crash year	Number	Percent
2016	1	14%
2018	1	14%
2022	1	14%
2023	2	29%
2024	1	14%
2025	1	14%

Hour of Day	Number	Percent
0:00	1	14%
5:00	2	29%
8:00	1	14%
14:00	1	14%
15:00	1	14%
16:00	1	14%

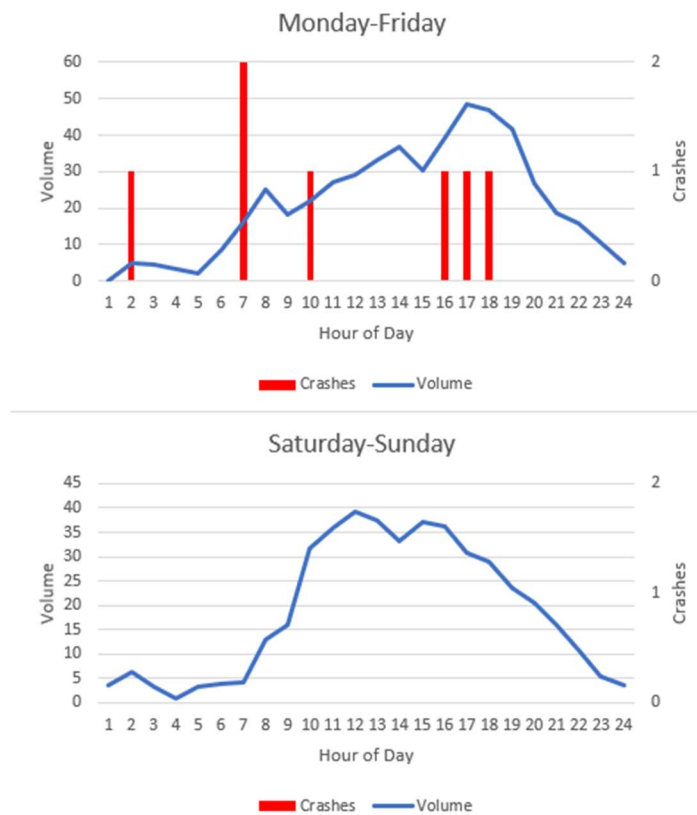
Crash Severity	Number	Percent
Injury Crash	4	57%
Property Damage Only	3	43%

Crash Type	Number	Percent
Angle	6	86%
Rear End	0	0%
Fixed Object	1	14%
Sideswipe	0	0%

Road Conditions	Number	Percent
Dry	7	100%
Wet	0	0%
Snow	0	0%
Ice	0	0%

Day of Week	Number	Percent
Sunday	0	0%
Monday	1	14%
Tuesday	0	0%
Wednesday	3	43%
Thursday	2	29%
Friday	1	14%
Saturday	0	0%

Figure 1 – Crash Distribution by time of day



C. Crash History Analysis

When analyzing the crash history, a few patterns emerged:

-Rate of Crashes

Since 2016 the rate of crashes have gone from one crash every two years, to one to two crashes in each of the past few years. This trend could be the result of an increase of total traffic volumes.

-Angle Crashes

Of the seven recorded crashes at this intersection, six of them were angle crashes. Angle crashes are common for intersections and tend to be more severe with more injuries and fatalities than other types of crashes.

-Road Conditions

With all seven of the crashes occurring during dry conditions, the data reflects that there are no weather dependent issues.

-Time and day

Crashes look to be focused around the morning and afternoon peaks of the day during the weekdays. This could be correlated to the increased industrial traffic that this intersection sees Monday through Friday and peaks around those times.

D. Mitigation Strategies

The primary goal is to mitigate angle crashes at this intersection in which four strategies are considered:

Convert Intersection to a Roundabout – not recommended

Converting to a roundabout has been proven to reduce the severity of angle crashes even though they show no reduction in the total number of angle crashes. That being said, a cost-benefit analysis of what it would take to construct a roundabout would not create a positive return on investment with roundabout cost starting in the one to two million dollar range. Another consideration to take into account is the large number of truck ADT at this intersection. The roundabout would need to be enlarged or else the intersection would become hard to navigate for larger vehicles.

Convert Intersection to Signal Controlled – not recommended

Similar to a roundabout, this option also would provide a negative cost benefit. With costs ranging from two to four hundred thousand, the lower ADT nature of this intersection makes larger mitigation strategies hard to implement.

Add LED blinking signage – not recommended

This option would see the existing “stop ahead” or “stop” sign replaced with LED flashing signs. This option looks to increase drivers’ awareness to the approaching intersection on the minor roadway. This mitigation strategy is not recommended due to a large number of the crashes at

this intersection being vehicles on the minor roadway stopping but then subsequently failing to yield to the major roadway.

Convert Intersection to All Way Stop – recommended

Implementing an all-way stop would see stop and stop ahead signs added to Melvin Road as seen in Figure 3. All-way stops are effective at reducing “failure to yield” crashes as seen from the current crash history by forcing traffic on both roads to slow to a stop. This countermeasure is a cost effective solution that is supported by residents and local industry in the area.

E. Ohio MUTCD All-way Stop Warrants

The Ohio MUTCD provides warrants to apply when looking to create an all way stop which are as follows:

- **Warrant A: Crash Experience -not warranted**
The crash experience warrant states that a four-leg intersection may have all way stop control if there were 5 or more reported crashes in a 12-month period or six or more in a 36-month period. The intersection of Stone Road and Melvin Road (within the study timeframe) has a peak 12-month crash period of 2 and a peak 36-month crash period of 4.
- **Warrant B: Sight Distance – not warranted**
The sight distance warrant states that an all-way stop is warranted if the sight distance of the minor road (Stone Road) approaches controlled by a stop sign is not adequate for a vehicle to turn onto or cross the major (uncontrolled) road (Melvin Road). For a 55 mile per hour road like Melvin Road, the intersection sight distance is 610 feet. When investigating the sight distance, it was determined that the horizontal sight distance (See figure 2) was not impeded within the required sight distance. It shall be noted however, that if a vehicle does not pull forward enough utility poles and crops could be considered as obstructions.
- **Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection – not warranted**
The sight transition to signal control or transition to yield control at a circular intersection warrant applies only to roundabout construction procedure which is not applicable.
- **Warrant D: 8-Hour Volume – not warranted**
The 8-Hour volume warrant applies when an intersection with a major road has a least 300 vehicles per hour for each of any 8 hours of a typical day and a minor road with least 200 vehicles per hour for each of any of the same 8 hours. These numbers are reduced to 210 vehicles for the major roadway and 140 vehicles for the minor roadway when the major roadway’s 85th percentile speed exceed 40 miles per hour which applies

to this intersection. Even with these reductions, Melvin Road with an ADT (average Daily Traffic) of 1096 and Stone Road with an ADT of 834 does not fulfill this warrant.

- **Warrant E: Other Factors**

The other factor warrant takes engineering judgement into account for any other factors that the previous warrants did not address. Evaluating the crash history of this intersection indicates that the major issue that shows up is vehicles failing to stop and failure to yield coming from Stone Road. With vehicles failing to stop, mitigation strategies such as stop signs on both sides of the road and the inclusion of stop ahead signs on both sides of Stone Road have already been implemented but have failed to substantially reduce crashes. The other thing to consider is the number of failures to yield crashes at this intersection. Since sight distance is not an issue at this intersection, little preventative measures can be implemented to prevent vehicles from pulling out in front of traffic going through on Melvin Road. The only cost-effective preventative measure to reduce these types of crashes would be to implement an all way stop at the intersection. An all-way stop would likely reduce the chances of any high-speed collisions occurring due to one driver's poor judgement.

D. Public Involvement

Two main sources of industrial traffic in this area comes from Melvin Stone and Nutrien Ag Solutions. Consultation with Melvin Stone and Nutrien ag Solutions indicate that both users are supportive of an all way stop.

E. Conclusion

It is recommended that an all-way stop is a viable solution to reduce the types of crashes seen at this intersection. Figure 3 shows the proposed signage recommended for the intersection while figure 4 shows the proposed temporary signage to be used during implementation.

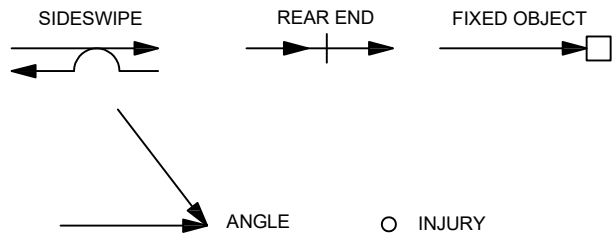
FIGURE 1



CRASH TOTALS

- 3 PROPERTY DAMAGE ONLY
- 4 INJURY
- 7 TOTAL CRASHES

CRASH SYMBOLS



CRASH TEXT

1. TIME, DAY, DATE
2. ROAD CONDITION (IF NOT DRY)
3. TIME OF DAY (IF NOT DAY)

NOTES:
 -CRASH TEXT IS ORIENTATED WITH THE AT FAULT VEHICLE
 -CRASH DATA FROM 2016-2025

FIGURE 4

