



# **TRAFFIC COMMITTEE AGENDA**

**March 16, 2022 – 7:30 P.M.**

**Council Boardroom – Troy City Hall – 500 West Big Beaver**

1. Roll Call
2. Approval of Minutes – February 16, 2022 Traffic Committee

## **PUBLIC HEARINGS**

3. No Public Hearings

## **REGULAR BUSINESS**

4. Request for Traffic Control – Ellery Drive at Rangemore Drive
5. Request for Traffic Control – Midvale Drive at Ludstone Drive
6. Public Comment
7. Other Business
8. Adjourn

## **Copy to:**

Item 4 & 5: Austin Cheek 5389 Rangemore; Whispering Park Condominium Association 5413 Rangemore;  
Properties within 300'

Traffic Committee Members; Sgt. Brian Warzecha, Police Department; Assistant Chief Paul Firth, Fire Department

## **TRAFFIC COMMITTEE**

### **MESSAGE TO VISITORS, DELEGATIONS AND CITIZENS**

The Traffic Committee is composed of seven Troy citizens who have volunteered their time to the City to be involved in traffic and safety concerns. The stated role of this Committee is:

- a. To give first hearing to citizens' requests and obtain their input.
- b. To make recommendations to the City Council based on technical considerations, traffic surveys, established standards, and evaluation of citizen input.
- c. To identify hazardous locations and recommend improvements to reduce the potential for traffic crashes.

Final decisions on sidewalk waivers will be made by the Committee at this meeting.

The recommendations and conclusions arrived at on regular items this evening will be forwarded to the City Council for their final action. Any citizen can discuss these recommendations before City Council. The items discussed at the Traffic Committee meeting will be placed on the City Council Agenda by the City Manager. The earliest date these items might be considered by City Council would normally be 10 days to 2 weeks from the Traffic Committee meeting. If you are interested, you may wish to contact the City Manager's Office in order to determine when a particular item is on the Agenda.

Persons wishing to speak before this Committee should attempt to hold their remarks to no more than 5 minutes. Please try to keep your remarks relevant to the subject at hand. Please speak only when recognized by the Chair. These comments are made to keep this meeting moving along. Anyone wishing to be heard will be heard; we are here to listen and help in solving or resolving your particular concerns.

## 2. Approval of Minutes – February 16, 2022 Traffic Committee

### PUBLIC HEARING

## 3. No Public Hearings

### REGULAR BUSINESS

## 4. Request for Traffic Control – Ellery Drive at Rangemore Drive

Austin Cheek of 5389 Rangemore, representing the Whispering Park Condominium Association, requests that the intersection of Ellery Drive at Rangemore Drive be reviewed for purposes of traffic control at the intersection. He stated that the lack of traffic control signage creates a hazardous situation.

### SUGGESTED RESOLUTIONS:

- a. RESOLVED, that the intersection of Ellery Drive at Rangemore Drive be **MODIFIED** from NO traffic control to a YIELD sign on the Ellery Drive approach to the intersection.
- b. RESOLVED, that **NO CHANGE** be made at the intersection of Ellery Drive at Rangemore Drive.

## 5. Request for Traffic Control – Midvale Drive at Ludstone Drive

Austin Cheek of 5389 Rangemore, representing the Whispering Park Condominium Association, requests that the intersection of Midvale Drive at Ludstone Drive be reviewed for purposes of traffic control at the intersection. He stated that the lack of traffic control signage creates a hazardous situation.

### SUGGESTED RESOLUTIONS:

- a. RESOLVED, that the intersection of Midvale Drive at Ludstone Drive be **MODIFIED** from NO traffic control to a YIELD sign on the Midvale Drive approach to the intersection.
- b. RESOLVED, that **NO CHANGE** be made at the intersection of Midvale Drive at Ludstone Drive.

## 6. Public Comment

## 7. Other Business

## 8. Adjourn

A regular meeting of the Troy Traffic Committee was held Wednesday, February 16, 2022 in the Council Boardroom at Troy City Hall. Pete Ziegenfelder called the meeting to order at 7:30 p.m.

**1. Roll Call**

Present: Richard Kilmer  
Cindy Nurak  
Al Petrulis  
Sunil Sivaraman  
Abi Swaminathan  
Cynthia Wilsher  
Pete Ziegenfelder  
Tyler Koralewski, Student Representative

Also present: Justin Novak, Police Department  
Brian Warzecha, Police Department  
Paul Firth, Fire Department  
Harj Deol, 5241 Virgilia  
Bill Huotari, City Engineer/Traffic Engineer

**2. Minutes – November 17, 2021**

Resolution # 2022-02-01  
Moved by Kilmer  
Seconded by Sivaraman

To approve the November 17, 2021 minutes as printed.

Yes: Kilmer, Nurak, Petrulis, Sivaraman, Swaminathan, Wilsher, Ziegenfelder  
No: None  
Absent: None

**MOTION CARRIED****PUBLIC HEARINGS****3. No Public Hearings****REGULAR BUSINESS****4. Request for Traffic Control – Fabius Drive at Virgilia Drive**

Christal March of 251 Fabius requests that the intersection of Fabius Drive at Virgilia Drive be reviewed for purposes of traffic control at the intersection. She stated that the lack of traffic control signage creates a hazardous situation.

Ms. March was not present at the meeting.



Harj Deol of 5241 Virgilia was in attendance at the meeting and questioned why the item was even being considered as there are only two (2) houses on Virgilia. He would like to review the background data. Mr. Deol was directed to the City website as the agenda is posted online and provides the supporting information for the item. He also had questions about road conditions at the intersection and when the roads in his neighborhood would be addressed. [Traffic Engineer followed up with a phone call after the meeting to Mr. Deol to discuss his concerns as well as another issue with I75 noise concerns. DPW will address the road condition concerns when weather allows and a complete overlay of the subdivision is included in the proposed CIP for 2024 – 2025. I75 noise concerns will be evaluated by a MDOT noise study and status beyond that is unknown].

Mr. Kilmer did not believe that any change should be made to the intersection and that it should remain as-is.

Ms. Nurak agreed and would not support any traffic control at the intersection.

Ms. Wilsher has been out to the intersection two times and did not notice any issues that would be addressed with traffic control signage.

Mr. Petrulis added that he questioned why traffic control would be necessary at this intersection.

Mr. Ziegenfelder stated his continued support for traffic control at all intersections and specifically the use of Stop signs when traffic control is recommended.

Resolution # 2022-02-02

Moved by Kilmer

Seconded by Petrulis

RESOLVED, that no change be made at the intersection of Fabius Drive at Virgilia Drive.

Yes: Kilmer, Nurak, Sivaraman, Swaminathan, Petrulis, Wilsher, Ziegenfelder  
No: None  
Absent: None

## **MOTION CARRIED**

### **5. Public Comment**

There was no further public comment at the meeting.

### **6. Other Business**

Student Representative, Tyler Koralewski introduced himself to the committee and general discussion took place.

Assistant Fire Chief, Paul Firth, introduced himself to the committee and general discussion took place. Asst. Fire Chief Firth may have another member of the Fire Department attend the

meeting as regular Traffic Committee meeting dates are in conflict with the monthly All Officers meeting of the Fire Department.

Officer Brian Warzecha was introduced by Sgt. Novak. Officer Warzecha will be taking Sgt. Novak's position as of March 19, 2022 and will become the Troy Police Department representative at the Traffic Committee meetings.

**7. Adjourn**

The meeting adjourned at 7:52 PM.

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Pete Ziegenfelder, Chairperson

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William J. Huotari, City Engineer/Traffic Engineer

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## **TRAFFIC COMMITTEE REPORT**

March 1, 2022

TO: Traffic Committee

FROM: Bill Huotari, City Engineer/Traffic Engineer

SUBJECT: Request for Traffic Control – Ellery Drive at Rangemore Drive

### **Background:**

Austin Cheek of 5389 Rangemore, representing the Whispering Park Condominium Association, requests that the intersection of Ellery Drive at Rangemore Drive be reviewed for purposes of traffic control at the intersection. He stated that the lack of traffic control signage creates a hazardous situation.

The posted speed limit on both streets is 25 mph.

The intersection is currently uncontrolled.

Rangemore Drive is presumed to be the major road, while Ellery Drive is considered the minor road. Both Rangemore Drive and Ellery Drive serve as key routes throughout the neighborhood.

Whispering Park is a newly constructed subdivision and as such historical crash data is of limited usefulness. There were no crashes recorded in the past full five (5) years within a 250' radius of the intersection.

Traffic counts were not collected as part of the intersection study, but will be collected as part of a speed study to be conducted when weather allows.

The major potential sight distance obstruction at the intersection for a motorist traveling northbound on Ellery Drive would be the house corners on the southeast and southwest quadrants of the intersection.

The safe approach speed for northbound vehicles on Ellery Drive is 13.4 mph due to the permanent sight distance obstruction from the house corners on the southwest and southeast quadrants.

OHM recommends implementing a YIELD sign on the Ellery Drive approach to the intersection.

The city requested that OHM review the intersection and provide their findings and recommendations (copy attached).



# GIS Online

Legend:

Road Centerline Text



Notes:

Map Scale: 1=504

Created: February 15, 2022



Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.



February 25, 2022

Mr. William Huotari, PE  
City Engineer  
City of Troy  
500 W. Big Beaver Rd  
Troy, MI 48084

RE: Traffic Control Recommendation for Rangemore Drive at Ellery Drive

Dear Mr. Huotari:

As requested, we have reviewed the intersection of Rangemore Drive at Ellery Drive to determine the proper traffic control. Rangemore Drive at Ellery Drive is a 3-legged intersection located in the City of Troy. The speed limit on both streets under investigation is 25 mph. The intersection does not have any controlled approaches. Attached are aerial and intersection photos.

### **Types of Roadways**

Both Rangemore Drive and Ellery Drive are considered local streets. Rangemore Drive runs from the east and turns to the north providing direct access to the neighborhood. Ellery Drive extends south and provides indirect access to the neighborhood off E Long Lake Road.

The surrounding land use is entirely single-family residential. On-street parking is permitted on all sides of Rangemore Drive and on the east and west sides of Ellery Drive. There is no clear major versus minor street. However, for the purpose of analysis Rangemore Drive is presumed to be the major road, while Ellery Drive is considered the minor road. Both Rangemore Drive and Ellery Drive serve as key routes throughout the neighborhood.

### **Traffic Control Analyses**

Traffic control analyses described herein adheres to the requirements presented in the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) that are considered mandates of state law. A reference document explaining the background behind the analyses is attached to this memo.

### **Crash Analysis**

We note that the Whispering Pines subdivision development was only recently constructed, and historical crash data is therefore of limited usefulness. Based on information obtained through the Traffic Improvement Association of Michigan, there were no crashes recorded in the past full five (5) years within a 250' radius of the intersection. The crash history does not constitute a compelling case for modifying the existing controls.



### Traffic Volumes

Traffic counts were not collected in the vicinity of the intersection. Traffic volumes in residential areas are predominantly driven by the number of single-family residential homes in the neighborhood. Based on the residential nature and the number of homes in the surrounding area it is highly improbable that this location would satisfy any of the minimum volume warrants for an all-way STOP (see attached Reference Guide).

It is therefore extremely unlikely that Rangemore Drive meets and sustains the 300 vehicles per hour threshold for a minimum of 8 hours. The combined vehicular, pedestrian, and bicycle volumes entering from Ellery Drive is similarly unlikely to average at least 200 units for any 8 hours. Additionally, since the posted speed limit is only 25mph, it is reasonable to assume that the 85<sup>th</sup> percentile approach speed does not exceed 40mph on either road; thus, the minimum vehicular volume warrants cannot be discounted to 70 percent of the values described previously. Finally, the study intersection is likely to fall significantly shy even of the reduced 80 percent volumes, based on expected trip generation for this neighborhood. Therefore, the minimum volume criteria for an all-way STOP has not likely been met.

### Approach Speed Limits

The approach speed limit on all study streets is 25mph. Speed limits alone cannot be used in this case to determine which direction of traffic should be assigned the right-of-way.

### Sight Distance

The major potential sight distance obstruction at the intersection of Rangemore Drive at Ellery Drive for a motorist traveling northbound on Ellery Drive would be the house corners on the southeast and southwest quadrants of the intersection. These obstructions impact the calculated safe approach speeds for the intersection. The safe approach speed is the speed at which a vehicle can approach an intersection and still stop in time to avoid a collision with a vehicle seen on the cross street.

When the safe approach speed is found to be less than 10 mph, a STOP sign is recommended. When the safe approach speed is found to be more than 10 mph, a YIELD sign is recommended. In this case, the safe approach speed for northbound vehicles on Ellery Drive is 13.4 mph due to the permanent sight distance obstruction from the house corner on the southwest and southeast quadrants. Thus, based on the safe approach speed calculations, YIELD-control is the computed right-of-way control for Ellery Drive approach. The safe approach speed calculation spreadsheet for the intersection is attached for reference.

### Recommendation

The preceding analysis determined that criteria were not met for all-way STOP-control. The safe approach speed calculations suggested YIELD-control would be appropriate for the minor street (Ellery Drive) approach.

OHM recommends implementing a YIELD sign on the Ellery Drive approach. The intersection should be reevaluated if traffic volumes increase, or crashes begin to occur.



Sincerely,  
**OHM Advisors**

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Ife Ogundeji  
Traffic Engineer

Attachments:

- Aerial Photo
- Safe Approach Speed Calculation Spreadsheet
- Intersection Photos
- Traffic Control Determination Reference Guide



Elery Dr & Rangemore Dr, Troy, MI 48065



Elery Dr

Elery Dr

Elery Dr

Lila Dr

Lila Dr

Lila Dr

Lila Dr

Prentiss Dr

Google



Safe Approach Speed Calculation

Rangemore Drive and Ellery Drive  
City of Troy

Measured:

Width of Roads  
Road 1 = 24 (ft)  
Road 2 = 24 (ft)  
Distance to Obstruction  
a = 53 (ft)  
b = 50 (ft)  
c = 42 (ft)  
d = 42 (ft)  
Angle of Intersection  
Delta = 90 (degrees, measure counterclockwise)  
Road 1 Posted  
Speed Limit = 25 (mph)

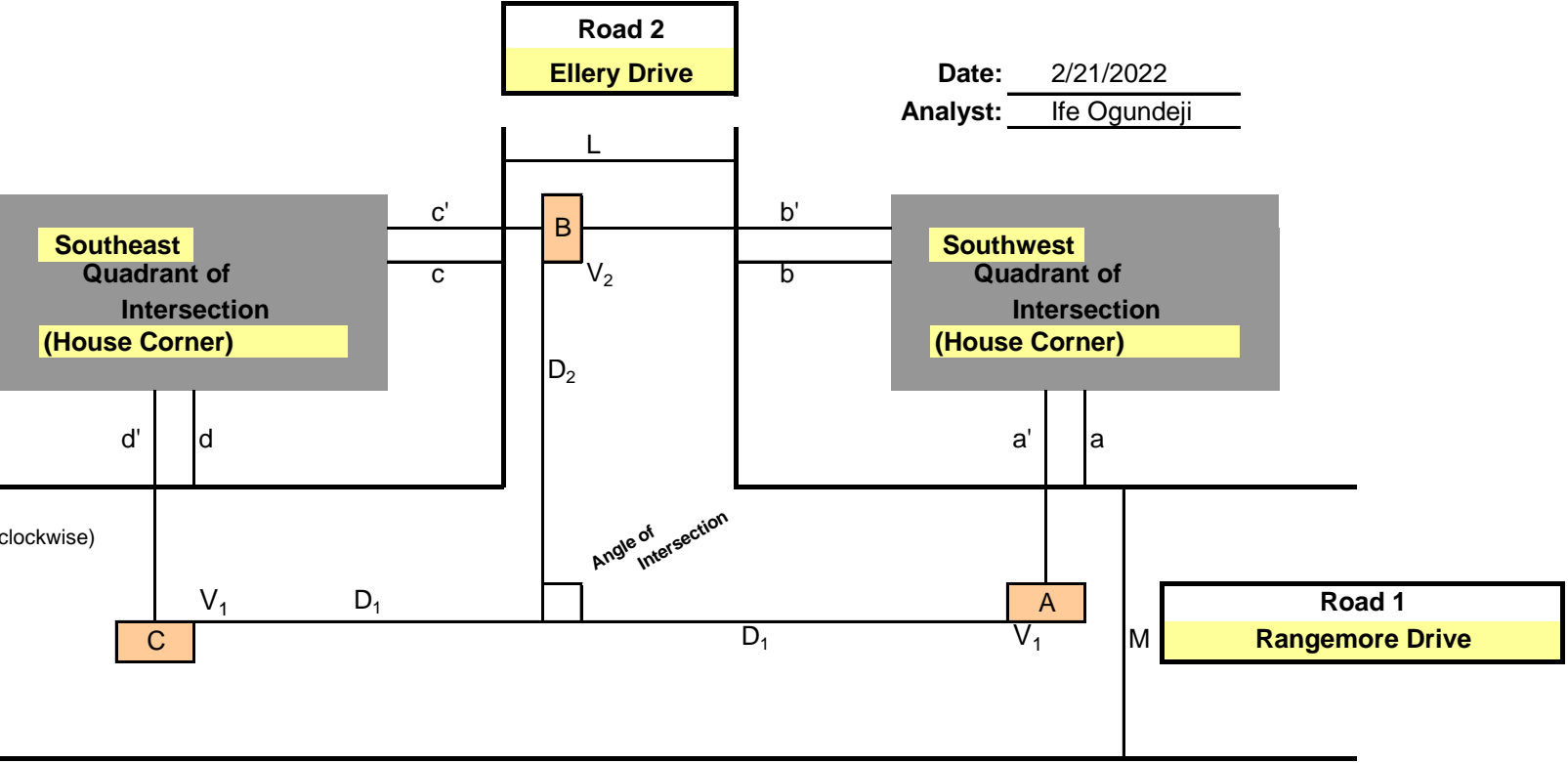
Assumed:

Speed of Vehicle A = Speed of Vehicle C  
= Posted Speed Limit on Road 1  
+ 5 (mph)  
V<sub>1</sub> = 30 (mph)  
Perception / Reaction Time (AASHTO)  
t = 2.5 (sec)  
Deceleration rate (AASHTO)  
A = 11.20  
Clearance distance in excess of safe stopping distance (AAA)  
EC = 0 (ft)

Calculated Safe Approach Speed for Vehicle B  
Approaching on Road 2

16.4 (mph) [Based on Veh. A]  
or V<sub>2</sub> = 13.4 (mph) [Based on Veh. C]

Threshold of Safe Approach Speed (AAA, FHWA & NSC)  
to Recommend STOP Control 10.0 (mph)  
to Recommend YIELD Control 25.0 (mph)  
Otherwise Recommends NO CONTROL.



Intermediate Calculations:

D<sub>1</sub> = 196  
D<sub>2A</sub> = 86.2  
D<sub>2C</sub> = 66.2  
a' = 59  
b' = 62  
c' = 48  
d' = 54

Based On  $D_1 = (1.075 V_1^2 / A) + 1.4667 V_1 t + EC$   
 $D_{2A} = \frac{a' * D_1}{(D_1 - b')}$  or  $D_{2C} = \frac{c' * D_1}{(D_1 - d')}$

Notes: Enter field measurements in yellow highlighted area.  
Blue fields are std. default values; change only for cause.  
Calculated by spreadsheet

Recommended ROW control for Road 2  
based on safe approach speed : YIELD SIGN



**Photograph No. 1:** Ellery Drive- Heading North  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 2:** Ellery Drive- Heading North looking left  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 3:** Ellery Drive- Heading North looking right  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 4:** Rangemore Drive- Heading East  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji





**Photograph No. 5:** Rangemore Drive - Heading East and looking left  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji

## **Reference Guide on Traffic Control Determination in the State of Michigan**

### **Background**

This document is intended to be used as a reference guide for performing intersection traffic control studies of intersections on public roadways in Michigan. The document explains the procedure and requirements necessary to implement traffic control at an intersection as stipulated by the Michigan Manual on Uniform Traffic Control Devices (MMUTCD). Act 300 of Public Acts of 1949 (as amended) requires the adoption of this Manual, and further requires conformance to the manual for all state highways, county roads and local streets open to public travel.

Generally, the starting premise is an uncontrolled intersection. The first step would then be to verify if the intersection should remain uncontrolled or if YIELD or STOP controls on the minor street approach(es) should be provided. For locations with higher traffic volumes and /or crash issues, then an evaluation of the location for all-way STOP warrants would be performed. The appropriate analysis for each level of control described below.

### **YIELD Traffic Control Guidance**

The use of a YIELD sign is intended to assign the right-of-way at intersections where it is not usually necessary to stop before proceeding into the intersection. Conversely, the STOP sign is intended for use where it is usually necessary to stop before proceeding into the intersection.

The following conditions should be fully evaluated to determine how the right-of-way should be assigned:

- Traffic Volumes: Normally, the heavier volume of traffic should be given the right-of-way.
- Approach Speeds: The higher speed traffic should normally be given the right-of-way.
- Types of Highways: When a minor highway intersects a major highway, it is usually desirable to control the minor highway.
- Sight Distance: Sight distance across the corners of the intersection is the most important factor and is critical in determining safe approach speeds.

### **STOP Traffic Control Guidance**

Based on the MMUTCD there are four conditions where STOP signs may be warranted:

- At the intersection of a less important road with a main road where application of the normal right-of-way rule is unduly hazardous.
- On a street entering a through highway or street.
- At an unsignalized intersection in a signalized area.
- At other intersections where a combination of high speed, restricted view, or crash records indicate a need for control by the STOP sign.

In many cases STOP signs are installed where they may not be warranted. Traffic experts agree that unnecessary STOP signs:

- Cause accidents they are designed to prevent.
- Breed contempt for other necessary STOP signs.
- Waste millions of gallons of gasoline annually.
- Create added noise and air pollution.
- Increase, rather than decrease, speeds between intersections.

There is also an explicit restriction in the MMUTCD that STOP signs are not to be used for speed control, in Section 2B.04.

Evaluation of All-Way STOP Traffic Control

Based on the MMUTCD there are four conditions where **all-way** STOP signs may be warranted:

- A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*
- B. *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*
- C. *Minimum volumes:*
  - 1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*
  - 2. *The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but*
  - 3. *If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*
- D. *Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*



## **TRAFFIC COMMITTEE REPORT**

March 1, 2022

TO: Traffic Committee

FROM: Bill Huotari, City Engineer/Traffic Engineer

SUBJECT: Request for Traffic Control – Midvale Drive at Ludstone Drive

### **Background:**

Austin Cheek of 5389 Rangemore, representing the Whispering Park Condominium Association, requests that the intersection of Midvale Drive at Ludstone Drive be reviewed for purposes of traffic control at the intersection. He stated that the lack of traffic control signage creates a hazardous situation.

The posted speed limit on both streets is 25 mph.

The intersection is currently uncontrolled.

Ludstone Drive is presumed to be the major road, while Midvale Drive is considered the minor road. Both Ludstone Drive and Midvale Drive serve as key routes throughout the neighborhood.

Whispering Park is a newly constructed subdivision and as such historical crash data is of limited usefulness. There were no crashes recorded in the past full five (5) years within a 250' radius of the intersection.

Traffic counts were not collected as part of the intersection study, but will be collected as part of a speed study to be conducted when weather allows.

The major potential sight distance obstruction at the intersection for a motorist traveling westbound on Midvale Drive would be the house corners on the southeast and northeast quadrants of the intersection.

The safe approach speed for westbound vehicles on Midvale Drive is 13.5 mph due to the permanent sight distance obstruction from the house corners on the southeast and northeast quadrants.

OHM recommends implementing a YIELD sign on the Midvale Drive approach to the intersection.

The city requested that OHM review the intersection and provide their findings and recommendations (copy attached).





# GIS Online

Legend:

Road Centerline Text



Notes:

Map Scale: 1=504

Created: February 15, 2022



Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.



February 25, 2022

Mr. William Huotari, PE  
City Engineer  
City of Troy  
500 W. Big Beaver Rd  
Troy, MI 48084

RE: Traffic Control Recommendation for Ludstone Drive at Midvale Drive

Dear Mr. Huotari:

As requested, we have reviewed the intersection of Ludstone Drive at Midvale Drive to determine the proper traffic control. Ludstone Drive at Midvale Drive is a 3-legged intersection located in the City of Troy. The speed limit on both streets under investigation is 25 mph. The intersection does not have any stop-controlled approaches. Attached are aerial and intersection photos.

### **Types of Roadways**

Both Ludstone Drive and Midvale Drive are considered local streets. Ludstone Drive runs north to south providing direct access to the neighborhood. Midvale Drive runs east to west offering access to the neighborhood off Allison Drive and E Long Lake Road.

The surrounding land use is entirely single-family residential. On-street parking is permitted on both sides of Midvale Drive and on both sides of Ludstone Drive. There is no clear major versus minor street. However, for the purpose of analysis Ludstone Drive is presumed to be the major road, while Midvale Drive is considered the minor road. Both Midvale Drive and Ludstone Drive serve as key routes throughout the neighborhood.

### **Traffic Control Analyses**

Traffic control analyses described herein adheres to the requirements presented in the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) that are considered mandates of state law. A reference document explaining the background behind the analyses is attached to this memo.

### **Crash Analysis**

We note that the Whispering Pines subdivision development was only recently constructed, and historical crash data is therefore of limited usefulness. Based on information obtained through the Traffic Improvement Association of Michigan, there were no crashes recorded in the past full five (5) years within a 250' radius of the intersection. The crash history does not constitute a compelling case for modifying the existing controls.



### Traffic Volumes

Traffic counts were not collected in the vicinity of the intersection. Traffic volumes in residential areas are predominantly driven by the number of single-family residential homes in the neighborhood. Based on the residential nature and the number of homes in the surrounding area it is highly improbable that this location would satisfy any of the minimum volume warrants for an all-way STOP (see attached Reference Guide).

It is therefore extremely unlikely that Ludstone Drive meets and sustains the 300 vehicles per hour threshold for a minimum of 8 hours. The combined vehicular, pedestrian, and bicycle volumes entering from Midvale Drive is similarly unlikely to average at least 200 units for any 8 hours. Additionally, since the posted speed limit is only 25mph, it is reasonable to assume that the 85<sup>th</sup> percentile approach speed does not exceed 40mph on either road; thus, the minimum vehicular volume warrants cannot be discounted to 70 percent of the values described previously. Finally, the study intersection is likely to fall significantly shy even of the reduced 80 percent volumes, based on expected trip generation for this neighborhood. Therefore, the minimum volume criteria for an all-way STOP has not likely been met.

### Approach Speed Limits

The approach speed limit on all study streets is 25mph. Speed limits alone cannot be used in this case to determine which direction of traffic should be assigned the right-of-way.

### Sight Distance

The major potential sight distance obstruction at the intersection of Ludstone Drive at Midvale Drive for a motorist traveling westbound on Midvale Drive would be the house corners on the southeast and northeast quadrants of the intersection. These obstructions impact the calculated safe approach speeds for the intersection. The safe approach speed is the speed at which a vehicle can approach an intersection and still stop in time to avoid a collision with a vehicle seen on the cross street.

When the safe approach speed is found to be less than 10 mph, a STOP sign is recommended. When the safe approach speed is found to be more than 10 mph, a YIELD sign is recommended. In this case, the safe approach speed for westbound vehicles on Midvale Drive is 13.5 mph due to the permanent sight distance obstruction from the house corner on the southeast and northeast quadrants. Thus, based on the safe approach speed calculations, YIELD-control is the computed right-of-way control for Midvale Drive approach. The safe approach speed calculation spreadsheet for the intersection is attached for reference.

### Recommendation

The preceding analysis did not determine that any criteria were met for all-way STOP-control. The safe approach speed calculations suggested YIELD-control would be appropriate for the minor street (Midvale Drive) approach.

OHM recommends implementing a YIELD sign on the Midvale Drive approach. The intersection should be reevaluated if traffic volumes increase, or crashes begin to occur.



Sincerely,  
**OHM Advisors**

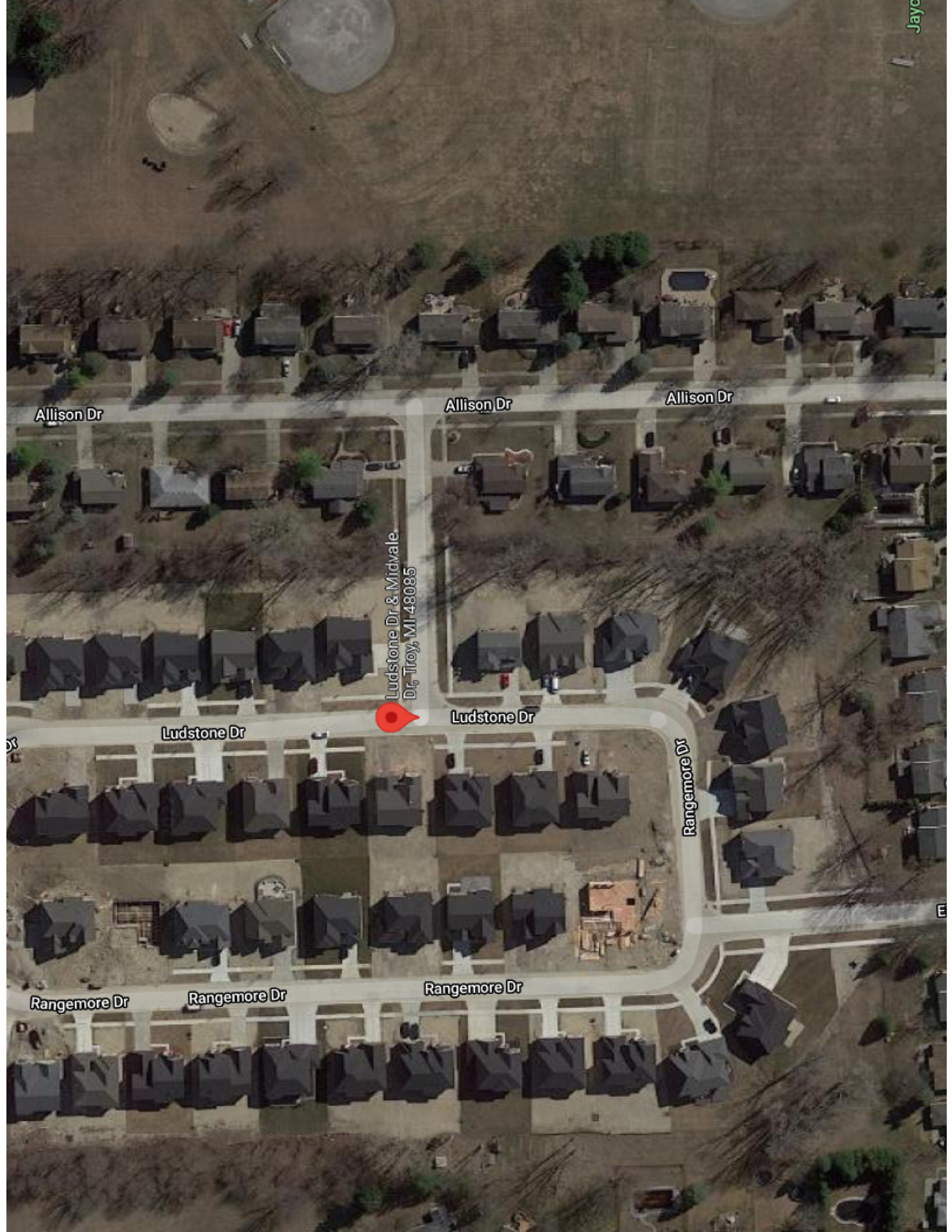
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Ife Ogundeji  
Traffic Engineer

Attachments:

- Aerial Photo
- Safe Approach Speed Calculation Spreadsheet
- Intersection Photos
- Traffic Control Determination Reference Guide





Jayc

Allison Dr

Allison Dr

Allison Dr

Ludstone Dr & Midvale Dr, Troy, MI 48085

Ludstone Dr

Ludstone Dr

Rangemore Dr

Rangemore Dr

Rangemore Dr

Rangemore Dr

Safe Approach Speed Calculation

Ludstone Drive and Midvale Drive  
City of Troy

Measured:

Width of Roads  
Road 1 = 24 (ft)  
Road 2 = 24 (ft)  
Distance to Obstruction  
a = 47 (ft)  
b = 44 (ft)  
c = 42 (ft)  
d = 44 (ft)  
Angle of Intersection  
Delta = 90 (degrees, measure counterclockwise)  
Road 1 Posted  
Speed Limit = 25 (mph)

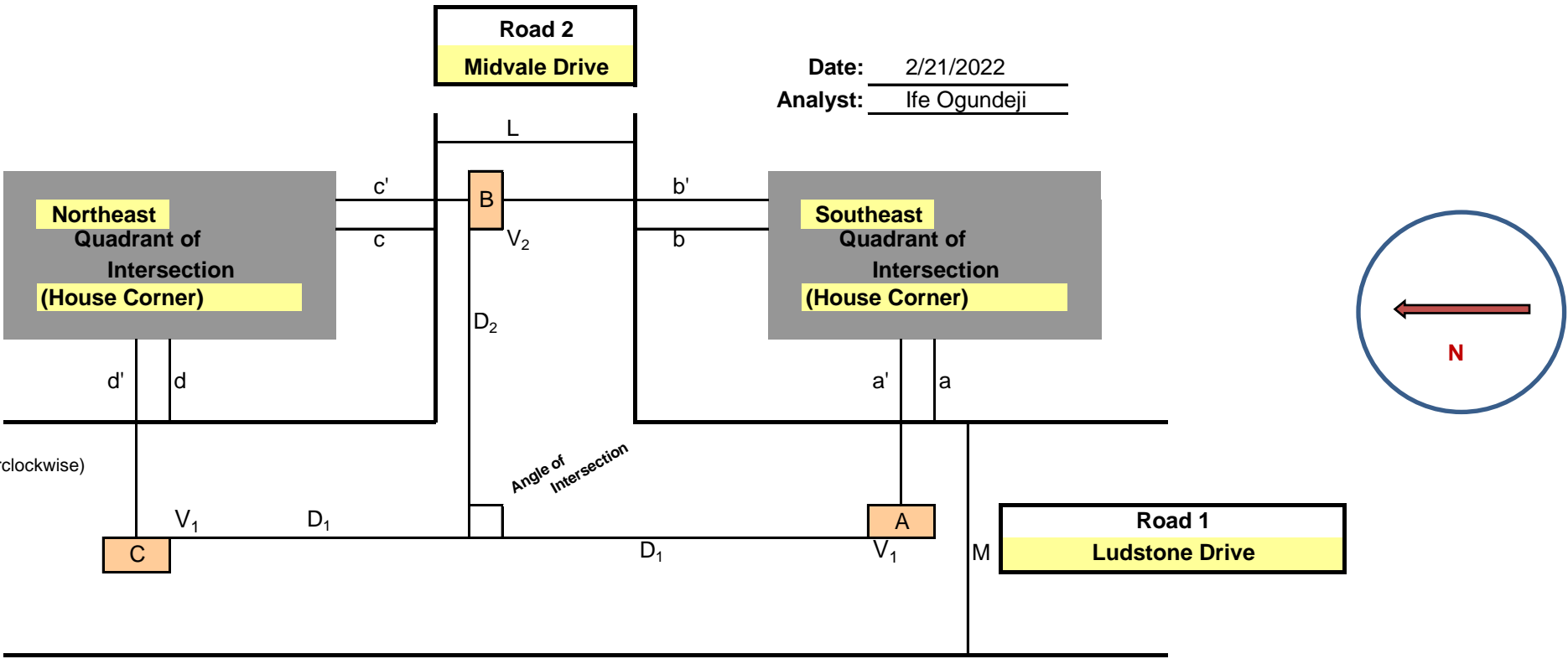
Assumed:

Speed of Vehicle A = Speed of Vehicle C  
= Posted Speed Limit on Road 1  
+ 5 (mph)  
V<sub>1</sub> = 30 (mph)  
Perception / Reaction Time (AASHTO)  
t = 2.5 (sec)  
Deceleration rate (AASHTO)  
A = 11.20  
Clearance distance in excess of safe stopping distance (AAA)  
EC = 0 (ft)

Calculated Safe Approach Speed for Vehicle B  
Approaching on Road 2

14.6 (mph) [Based on Veh. A]  
or V<sub>2</sub> = 13.5 (mph) [Based on Veh. C]

Threshold of Safe Approach Speed (AAA, FHWA & NSC)  
to Recommend STOP Control 10.0 (mph)  
to Recommend YIELD Control 25.0 (mph)  
Otherwise Recommends NO CONTROL.



Intermediate Calculations:

D<sub>1</sub> = 196  
D<sub>2A</sub> = 74.1  
D<sub>2C</sub> = 67.1  
a' = 53  
b' = 56  
c' = 48  
d' = 56

Based On  $D_1 = (1.075 V_1^2 / A) + 1.4667 V_1 t + EC$   
 $D_{2A} = \frac{a' * D_1}{(D_1 - b')}$  or  $D_{2C} = \frac{c' * D_1}{(D_1 - d')}$

Notes: Enter field measurements in yellow highlighted area.  
Blue fields are std. default values; change only for cause.  
Calculated by spreadsheet

Recommended ROW control for Road 2  
based on safe approach speed : YIELD SIGN





**Photograph No. 1:** Midvale Drive- Heading West  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 2:** Midvale Drive- Heading West looking left  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 3:** Midvale Drive- Heading West looking right  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 4:** Ludstone Drive- Heading South  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji





**Photograph No. 5:** Ludstone Drive - Heading South and looking left  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji



**Photograph No. 6:** Ludstone Drive - Heading North  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji





**Photograph No. 7:** Ludstone Drive- Heading North looking right  
**Date:** 02/21/2021      **Photographer:** Ife Ogundeji

## **Reference Guide on Traffic Control Determination in the State of Michigan**

### **Background**

This document is intended to be used as a reference guide for performing intersection traffic control studies of intersections on public roadways in Michigan. The document explains the procedure and requirements necessary to implement traffic control at an intersection as stipulated by the Michigan Manual on Uniform Traffic Control Devices (MMUTCD). Act 300 of Public Acts of 1949 (as amended) requires the adoption of this Manual, and further requires conformance to the manual for all state highways, county roads and local streets open to public travel.

Generally, the starting premise is an uncontrolled intersection. The first step would then be to verify if the intersection should remain uncontrolled or if YIELD or STOP controls on the minor street approach(es) should be provided. For locations with higher traffic volumes and /or crash issues, then an evaluation of the location for all-way STOP warrants would be performed. The appropriate analysis for each level of control described below.

### **YIELD Traffic Control Guidance**

The use of a YIELD sign is intended to assign the right-of-way at intersections where it is not usually necessary to stop before proceeding into the intersection. Conversely, the STOP sign is intended for use where it is usually necessary to stop before proceeding into the intersection.

The following conditions should be fully evaluated to determine how the right-of-way should be assigned:

- Traffic Volumes: Normally, the heavier volume of traffic should be given the right-of-way.
- Approach Speeds: The higher speed traffic should normally be given the right-of-way.
- Types of Highways: When a minor highway intersects a major highway, it is usually desirable to control the minor highway.
- Sight Distance: Sight distance across the corners of the intersection is the most important factor and is critical in determining safe approach speeds.

### **STOP Traffic Control Guidance**

Based on the MMUTCD there are four conditions where STOP signs may be warranted:

- At the intersection of a less important road with a main road where application of the normal right-of-way rule is unduly hazardous.
- On a street entering a through highway or street.
- At an unsignalized intersection in a signalized area.
- At other intersections where a combination of high speed, restricted view, or crash records indicate a need for control by the STOP sign.

In many cases STOP signs are installed where they may not be warranted. Traffic experts agree that unnecessary STOP signs:

- Cause accidents they are designed to prevent.
- Breed contempt for other necessary STOP signs.
- Waste millions of gallons of gasoline annually.
- Create added noise and air pollution.
- Increase, rather than decrease, speeds between intersections.

There is also an explicit restriction in the MMUTCD that STOP signs are not to be used for speed control, in Section 2B.04.

Evaluation of All-Way STOP Traffic Control

Based on the MMUTCD there are four conditions where **all-way** STOP signs may be warranted:

- A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*
- B. *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*
- C. *Minimum volumes:*
  - 1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*
  - 2. *The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but*
  - 3. *If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*
- D. *Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*