AGENDA

Traffic Committee Meeting

October 19, 2016 – 7:30 P.M.

Lower Level Conference Room – Troy City Hall, 500 West Big Beaver Road

1. Roll Call

2. Minutes – September 21, 2016

REGULAR BUSINESS

3. Request for Traffic Control – Welling at Calvert

4. Request for Traffic Control – Tutbury at Bretby

5. Request for Traffic Control – Haldane at Niles

6. Public Comment

7. Other Business

8. Adjourn

cc:

Item 3:	Bob Brokenshire, 1596 Welling Properties within 300'
Item 4:	Terry Stuart, 6303 Tutbury Properties within 300'
Item 5:	Properties on Haldane and Niles

Traffic Committee Members
Captain Robert Redmond & Sgt. Mike Szuminski, Police Department
Lt. Eric Caloia, Fire Department
William J. Huotari, Deputy City Engineer/Traffic Engineer

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.

REGULAR BUSINESS

3. Request for Traffic Control – Welling at Calvert

At the September 21, 2016 Traffic Committee meeting, Mr. Bob Brokenshire of 1596 Welling requested that the intersection of Welling at Calvert be reviewed. There are existing Yield signs on the Welling Drive approaches to Calvert. He felt that the existing Yield signs did not provide the proper traffic control at the intersection. Mr. Brokenshire stated that traffic does not yield the right-of-way, travels through the intersection at a high rate of speed, is unsafe for drivers and pedestrians and creates a hazardous condition.

SUGGESTED RESOLUTION:

a. RESOLVED, that **NO CHANGE** be made at the intersection of Welling at Calvert.

4. Request for Traffic Control – Tutbury at Bretby

Mr. Terry Stuart of 6303 Tutbury states that the lack of existing traffic control at the intersection of Tutbury at Bretby creates a hazardous condition. Traffic does not yield the right-of-way and travels through the intersection at a high rate of speed and is unsafe for drivers and pedestrians. Increased traffic due to the I-75 construction has further exacerbated the issue with higher volumes of traffic during the peak hours

SUGGESTED RESOLUTION:

a. RESOLVED, that the intersection of Tutbury at Bretby be **MODIFIED** from no traffic control to two-way YIELD control on the Tutbury Lane approaches to the intersection.

5. Request for Traffic Control – Haldane at Niles

A resident along Niles contacted the City's Building Official regarding the lack of traffic control signs at the intersection of Haldane and Niles. The resident stated that traffic does not yield the right-of-way and creates a hazardous condition at the intersection.

SUGGESTED RESOLUTION:

a. RESOLVED, that the intersection of Haldane at Niles be **MODIFIED** from no traffic control to two-way YIELD control on the Haldane Drive approaches to the intersection.

b. RESOLVED, that the intersection of Haldane at Niles be **MODIFIED** from no traffic control to two-way STOP control on the Haldane Drive approaches to the intersection.

6. Public Comment

7. Other Business

8. Adjourn

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A regular meeting of the Troy Traffic Committee was held Wednesday, September 21, 2016 in the Lower Level Conference Room at Troy City Hall. Pete Ziegenfelder called the meeting to order at 7:30 p.m.

1. Roll Call

Present: Tim Brandstetter
Richard Kilmer
Al Petrulis
Cynthia Wilsher
Pete Ziegenfelder

Absent: Mitch Huber

Also present: Darrin Millar, 4700 Chapel
Donna & Bob Brokenshire, 1596 Welling
Narsa, 2116 Bridle Path
Vistinu Guttapalem, 2100 Bridle Path
Anjith Gaddam, 2070 Chaps
Lt. Eric Caloia, Fire Department
Bill Huotari, Deputy City Engineer/Traffic Engineer

2. Minutes – July 20, 2016

Resolution # 2016-08-26
Moved by Kilmer
Seconded by Wilsher

To approve the July 20, 2016 minutes as printed.

Yes: Brandstetter, Kilmer, Petrulis, Wilsher, Ziegenfelder
No: None
Absent: Huber

MOTION CARRIED

REGULAR BUSINESS

3. Request for Traffic Control – Mayflower at Aster

Mr. Bill Bounds of 2205 Mayflower states that the lack of existing traffic control at the intersection of Mayflower and Aster creates a hazardous condition. Traffic does not yield the right-of-way and travels through the intersection at a high rate of speed and is unsafe for drivers and pedestrians.

No residents were in attendance at the meeting to discuss the request.

Mr. Kilmer discussed the lack of public support for this request.

Mr. Petrulis stated that he did not see a need for traffic control at this time.

Mr. Ziegenfelder stated that he is in favor of traffic control at all intersections.

Resolution # 2016-08-27
Moved by Kilmer
Seconded by Petrulis

RESOLVED, that NO CHANGE be made at the intersection of Mayflower at Aster.

Yes: Kilmer, Petrulis
No: Brandstetter, Wilsher, Ziegenfelder
Absent: Huber

MOTION FAILED

Mr. Ziegenfelder discussed that this is still a relatively new area with new houses being built. As households increase, traffic will increase and some traffic control device is needed. He would recommend a Yield sign.

Mr. Brandstetter discussed that we don't want signs everywhere just for the sake of having signs. The City's consultant recommended a Yield sign. Volumes at Mayflower/Aster should not change dramatically as more residents move in as there will be another access point to John R at Chaps.

Three (3) emails were received, but all pertained to issues relative to access to/from John R. Several residents showed up at approximately 7:45 PM with the intention of discussing John R. It was explained that there is additional traffic on John R due to drivers avoiding the Dequindre Road construction, as well as impacts to all north-south routes due to construction on I-75. It was further explained that John R, from Long Lake to South Boulevard will be reconstructed and widened to a 3-lane cross section. Construction is anticipated to start in the fall of 2017. Residents in attendance to discuss John R were satisfied with this explanation and left the meeting without commenting on the Mayflower at Aster intersection.

Resolution # 2016-08-28
Moved by Kilmer
Seconded by Petrulis

RESOLVED, that the intersection of Mayflower at Aster be **MODIFIED** from NO traffic control to a YIELD sign on the Aster Drive southbound approach to the intersection.

Yes: Brandstetter, Wilsher, Ziegenfelder
No: Kilmer, Petrulis
Absent: Huber

MOTION CARRIED

4. Request for Traffic Control – Mayflower at Bridle Path

Mr. Bill Bounds of 2205 Mayflower states that the lack of existing traffic control at the intersection of Mayflower and Bridle Path creates a hazardous condition. Traffic does not yield the right-of-way and travels through the intersection at a high rate of speed and is unsafe for drivers and pedestrians.

No residents were in attendance at the meeting to discuss the request.

Mr. Ziegenfelder questioned the need for traffic control at this intersection as there are no visible obstructions.

Mr. Brandstetter added that there is good visibility at the intersection. The T-intersection along with the curves coming into it help reduce speeds in and around the intersection. The only conflicting movement he noted was for left turns, but again there is good visibility at the intersection.

Mr. Ziegenfelder asked about pedestrian crossing and issues related to pedestrians. There are no known issues at this time.

Resolution # 2016-08-29
Moved by Brandstetter
Seconded by Petrulis

RESOLVED, that **NO CHANGE** be made at the intersection of Mayflower at Bridle Path.

Yes: Brandstetter, Kilmer, Petrulis, Wilsher, Ziegenfelder
No: None
Absent: Huber

MOTION CARRIED

5. Request for Traffic Control –Calvert at Chapel

Mr. Darrin Millar of 4700 Chapel states that drivers are not exhibiting caution and/or stopping at the existing YIELD signs on Calvert when traffic is approaching from Chapel. Traffic does not yield the right-of-way and travels through the intersection at a high rate of speed and is unsafe for drivers and pedestrians.

Mr. Millar was in attendance at the meeting to discuss this request. He provided the following remarks:

- Safety – the area is a passageway for three (3) schools. Students walk to Costello Elementary; students walk to Athens High School; and students walk to the intersection for the bus stop for Larson Middle School.
- Distracted drivers – we can all probably agree that drivers are far more distracted now than they were 20, 10 or even 5 years ago. The Yield sign may have been adequate when the subdivision was built in the 1970's, but it is no longer adequate today.

- Confusion – people are forgetting what a Yield sign means. People are just blowing through the intersection. The near crash that my family had this summer involved a man in a large pickup truck. He stated to me that the Yield sign "does not mean he has to stop". From the Secretary of State handbook "What Every Driver Must Know", it states that "the Yield sign indicates that a driver must slow down and give way to all traffic and pedestrians.
- Personal – We have lived here for 15 years. We have had numerous close calls. I know my neighbors have had close calls as well. I am including emails and letters from people in my subdivision. We can't always see the Yield sign with the growth of bushes.
- Our subdivision – our subdivision is changing. The demographics of the subdivision is that we have many younger families with school age children. Also, there is a high amount of high school kids that are now driving or will be driving in the near future.
- Looking at the report provided, I know that the numbers are close to the 10 mph benchmark [Safe Approach Speed]. If I understand it correctly, we are only one (1) foot away. With the benchmark so close, I am asking the committee to error on the side of caution. We have so many school children, of all ages, that use the intersection every day.

Bob Brokenshire of 1596 Welling supported Stop signs at Calvert at Chapel. He has many of the same experiences as stated by Mr. Millar. Mr. Brokenshire also requested that the intersection of Welling at Calvert be reviewed for purposes of replacing the existing Yield signs on Welling with Stop signs at the intersection with Calvert. He stated that drivers totally disregard Yield signs and feels Stop signs would be more appropriate.

Mr. Brandstetter noted that the vegetation used in the Safe Approach Speed (SAS) calculation was on private property and outside of the 25' x 25' corner clearance.

Mr. Ziegenfelder commented that Yield signs are a "gray" area and many drivers do not understand that they must yield to oncoming traffic.

Mr. Brandstetter discussed that Yield signs are better than no signs, when warranted, but a Stop sign is still a "step up".

Donna Brokenshire of 1596 Welling stated that they have been at their present address since 1972 and have watched the area grow. There are a lot of children who walk or ride a bike to school in this area. She observes many drivers who do not yield or stop at the intersection and believes Stop signs would be more appropriate and safer.

Mr. Kilmer noted that Mr. Millar provided nine (9) letters/emails in support of Stop signs.

Mr. Brandstetter discussed the fact that the SAS of 10.3 mph is so close to the 10 mph benchmark, that is generally accepted by the traffic engineering community. Stop signs placed where they are not warranted can breed contempt and create a false sense of security for pedestrians when they expect a driver to stop.
Mr. Petrulis stated that there are not a series of Stop signs along Calvert that could cause driver frustration and lead to drivers not stopping at Stop signs.

Resolution # 2016-08-30
Moved by Brandstetter
Seconded by Petrulis

RESOLVED, that the existing YIELD signs on Calvert at Chapel be **REPLACED** with STOP signs.

Yes: Brandstetter, Kilmer, Petrulis, Wilsher, Ziegenfelder
No: None
Absent: Huber

MOTION CARRIED

5. Public Comment

There was no additional public comment made.

6. Other Business

Discussion of various road projects (I-75, Dequindre, Big Beaver, etc.) and private developments ensued.

7. Adjourn

The meeting adjourned at 8:17 p.m.

Pete Ziegenfelder, Chairperson

Bill Huotari, Deputy City Engineer/Traffic Engineer

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ITEM #3

TRAFFIC COMMITTEE REPORT

October 6, 2016

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/ Traffic Engineer

SUBJECT: Request for Traffic Control
Welling at Calvert

Background:

At the September 21, 2016 Traffic Committee meeting, Mr. Bob Brokenshire of 1596 Welling requested that the intersection of Welling at Calvert be reviewed. There are existing Yield signs on the Welling Drive approaches to Calvert. He felt that the existing Yield signs did not provide the proper traffic control at the intersection. Mr. Brokenshire stated that traffic does not yield the right-of-way, travels through the intersection at a high rate of speed, is unsafe for drivers and pedestrians and creates a hazardous condition.

There have been no crashes reported at this intersection in the past five (5) years.

The posted speed limit on both streets is 25 mph. Calvert Drive is considered the continuing roadway due to the existing Yield signs on Welling Drive.

The major potential sight distance obstructions at the intersection are houses in each quadrant of the intersection.

The safe approach speed was found to be 15.5 mph for both Welling Drive approaches; therefore, maintaining YIELD control is the recommended treatment.

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

October 4, 2016

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

RE: Traffic Control Recommendation for Calvert Drive and Welling Drive
OHM JN: 0128-16-0250

Dear Mr. Huotari:

As requested, we have reviewed the Calvert Drive at Welling Drive intersection to determine the proper traffic control. The subject intersection is a 4-leg intersection located in the City of Troy approximately 1,500 feet south of E. Long Lake Road and 1,800 feet west of John R. Road. The speed limit on both streets is 25 mph. The intersection is presently YIELD-controlled on the Welling Drive approaches. Reference the attachments for aerial and intersection photos.

Background on Traffic Control Determination
Based on the Michigan Manual of Uniform Traffic Control Devices (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.*

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

Based on the Michigan Manual of Uniform Traffic Control Devices (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.

Many times 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.

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.

Crash Analysis
Based on information obtained through the Traffic Improvement Association of Michigan, there were no crashes recorded in the past five (5) years at the intersection of Welling Drive at Calvert Drive. The crash data does not constitute a compelling case for modifying the existing controls.

Types of Roadways & Minimum Volumes
Both Welling Drive and Calvert Drive are considered local streets. On-street parking is not permitted on the right-side in all directions in the vicinity of the intersection. Calvert Drive could be considered the major road and Welling Drive the minor one because Welling Drive is presently under YIELD-control. While traffic counts were not collected in the vicinity of the intersection, based on knowledge of the area and the residential nature of the location, it is highly improbable that there are any daily hours in which

Calvert Drive meets the 300 vehicles per hour threshold for a minimum of 8 hours, therefore the minimum volume criteria for an all-way STOP has not been met.

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

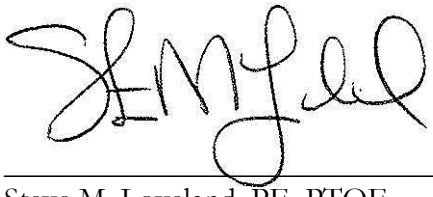
Sight Distance
The major potential sight distance obstructions at the intersection are houses at each quadrant of the intersection. These obstructions come into play when determining the safe approach speeds for the intersection. The safe approach speed is the speed at which a vehicle can approach an intersection and still stop in time to avoid a collision with a vehicle on the cross street. Safe approach speeds are determined through calculations.

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 was found to be 15.5 mph for both Welling Drive approaches as a result of the sight obstruction from the houses on approach to the intersection, therefore maintaining YIELD-control is the recommended treatment. The safe approach speed calculation spreadsheets are attached for your reference.

Recommendation

OHM recommends that the intersection continue to operate under YIELD-control on the Welling Drive approaches to the intersection. The major sight distance obstructions in this study were houses on each quadrant of the intersection.

Sincerely,
Orchard, Hiltz & McCliment, Inc.



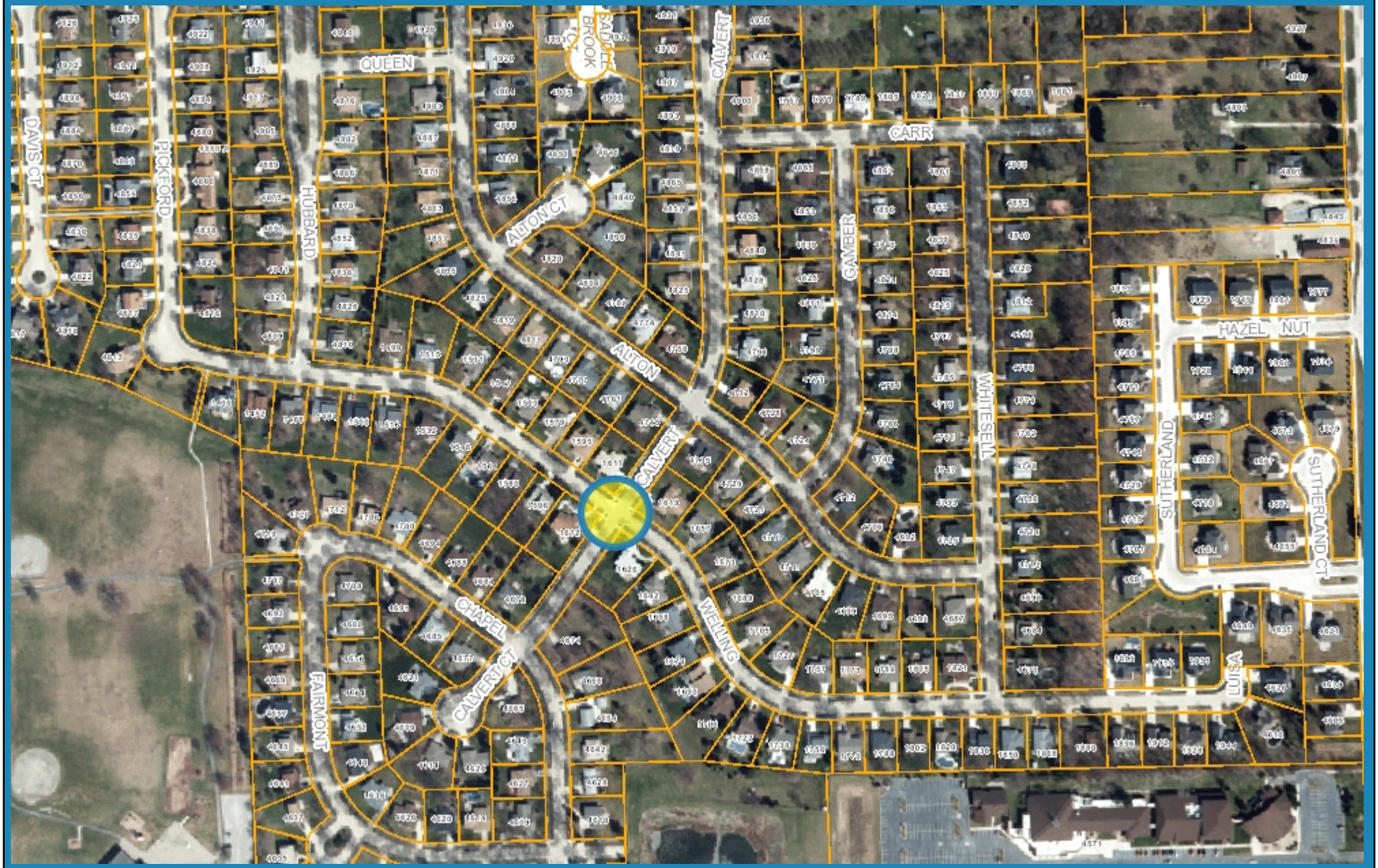
Steve M. Loveland, PE, PTOE
Traffic Project Manager

Matt L. Clark, EIT
Engineer

Attachments:

- Aerial and Intersection Photos
- Safe Approach Speed Calculation Spreadsheet

City of Troy GIS Online



833 0 417 833 Feet

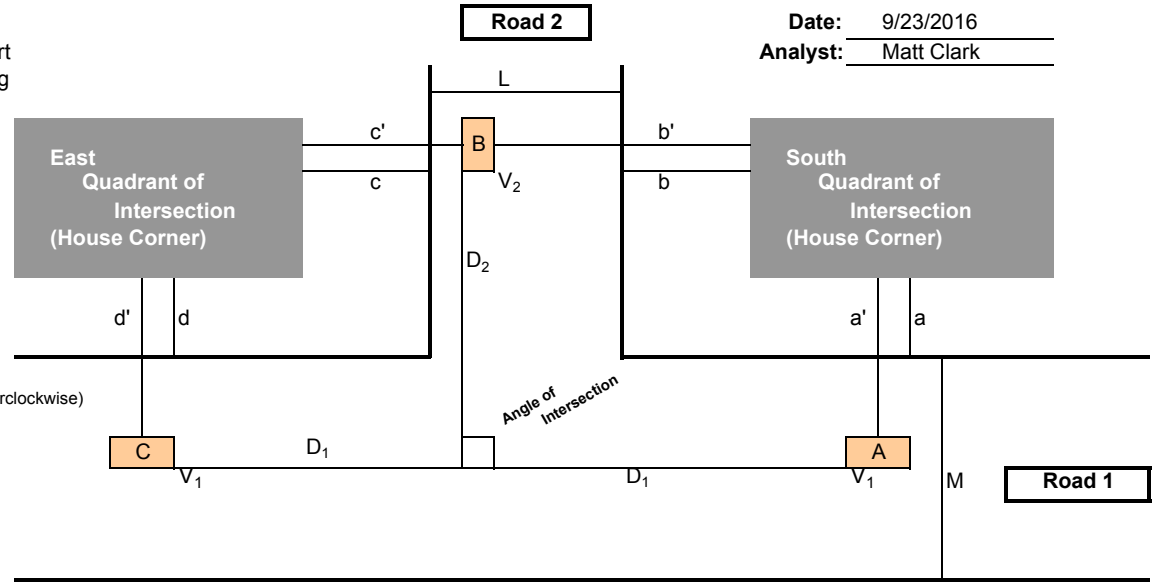
Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.

Safe Approach Speed Calculation

Calvert at Welling
City of Troy

Road 1 = Calvert
Road 2 = Welling

Date: 9/23/2016
Analyst: Matt Clark



Measured:

Width of Roads

Road 1 =	26	(ft)
Road 2 =	26	(ft)

Distance to Obstruction

a =	44	(ft)
b =	48	(ft)
c =	49	(ft)
d =	46	(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_1 =	30	(mph)

Perception / Reaction Time (AASHTO)

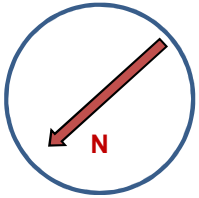
t =	2.5	(sec)

Deceleration rate (AASHTO)

A =	11.20	

Clearance distance in excess of safe stopping distance (AAA)

EC =	0	(ft)



Intermediate Calculations:

D_1=	196	a' =	54
D_{2A}=	80.1	b' =	64
D_{2C}=	86.2	c' =	59
		d' =	62

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 $D_{2C} = \frac{c' * D_1}{(D_1 - d'}$

Calculated Safe Approach Speed for Vehicle B
Approaching on Road 2

V_2 =	15.5	(mph) [Based on Veh. A]
or V_2 =	16.4	(mph) [Based on Veh. C]

TRUE

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

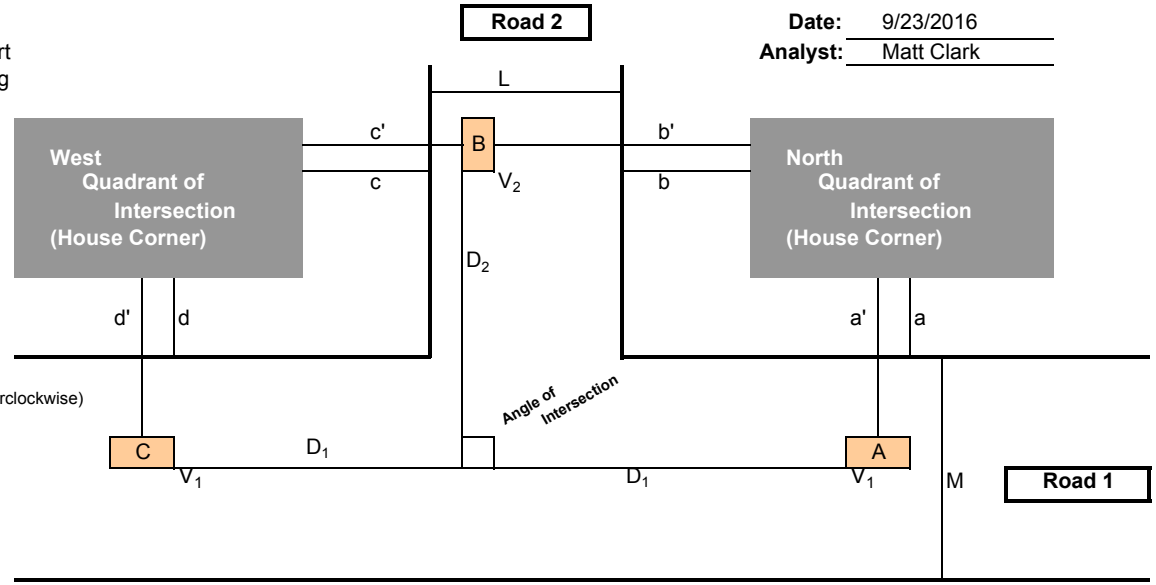
Recommended ROW control for Road 2
based on safe approach speed : YIELD Sign

Safe Approach Speed Calculation

Calvert at Welling
City of Troy

Road 1 = Calvert
Road 2 = Welling

Date: 9/23/2016
Analyst: Matt Clark



Measured:

Width of Roads

Road 1 =	26	(ft)
Road 2 =	26	(ft)

Distance to Obstruction

a =	47	(ft)
b =	46	(ft)
c =	45	(ft)
d =	45	(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_1 =	30	(mph)

Perception / Reaction Time (AASHTO)

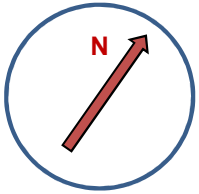
t =	2.5	(sec)

Deceleration rate (AASHTO)

A =	11.20	

Clearance distance in excess of safe stopping distance (AAA)

EC =	0	(ft)



Intermediate Calculations:

D_1=	196	a' =	57
D_{2A}=	83.3	b' =	62
D_{2C}=	79.8	c' =	55
		d' =	61

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 $D_{2C} = \frac{c' * D}{(D_1 - d}$

Calculated Safe Approach Speed for Vehicle B
Approaching on Road 2

V_2 =	16.0	(mph) [Based on Veh. A]
or V_2 =	15.5	(mph) [Based on Veh. C]

TRUE

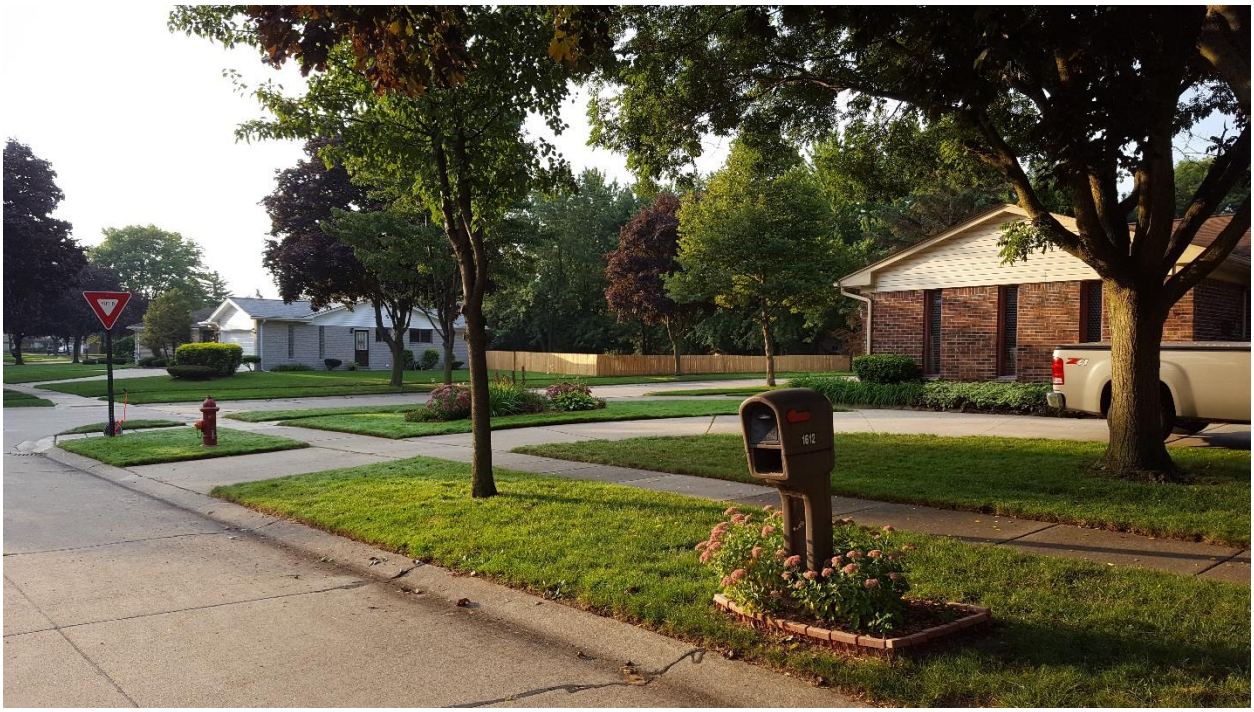
Notes: Enter field measurements in yellow highlighted area.
Blue fields are std. default values; change only for cause.
Calculated by spreadsheet

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

Welling Drive heading northwest

Welling Drive heading northwest and looking left

Welling Drive heading southeast



Welling Drive heading southeast and looking right

Calvert Drive heading northeast

Calvert Drive heading southwest

ITEM #4

TRAFFIC COMMITTEE REPORT

October 6, 2016

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/ Traffic Engineer

SUBJECT: Request for Traffic Control
Tutbury at Bretby

Background:

Mr. Terry Stuart of 6303 Tutbury states that the lack of existing traffic control at the intersection of Tutbury at Bretby creates a hazardous condition. Traffic does not yield the right-of-way and travels through the intersection at a high rate of speed and is unsafe for drivers and pedestrians. Increased traffic due to the I-75 construction has further exacerbated the issue with higher volumes of traffic during the peak hours.

There have been no crashes reported at this intersection in the past five (5) years.

The posted speed limit on both streets is 25 mph. Bretby Drive could be considered the major road and Tutbury Lane the minor one because Bretby Drive acts as a connector between Adams Road and Beach Road, while Tutbury Lane connects Adams Road and Charnwood.

The major potential sight distance obstructions at the intersection are trees at the southeast quadrant of the intersection. .

The safe approach speed was found to be 12.3 mph for northbound Tutbury Lane; therefore, two-way YIELD control on the Tutbury Lane approaches to the intersection is the recommended treatment.

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

ARCHITECTS. ENGINEERS. PLANNERS.

OHM Advancing Communities®

September 29, 2016

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

RE: Traffic Control Recommendation for Tutbury Lane and Bretby Drive
OHM JN: 0128-16-0260

Dear Mr. Huotari:

As requested, we have reviewed the Tutbury Lane at Bretby Drive intersection to determine the proper traffic control. The subject intersection is a 4-leg intersection located in the City of Troy approximately 3,350 feet south of W. South Boulevard and 700 feet east of N. Adams Road. The speed limit on both streets is 25 mph. The intersection is presently uncontrolled. Reference the attachments for aerial and intersection photos.

Background on Traffic Control Determination
Based on the Michigan Manual of Uniform Traffic Control Devices (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.*

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

OHM Advisors
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LIVONIA, MICHIGAN 48150
T 734.522.6711
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OHM-Advisors.com

Based on the Michigan Manual of Uniform Traffic Control Devices (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.

Many times 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.

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.

Crash Analysis
Based on information obtained through the Traffic Improvement Association of Michigan, there were no crashes recorded in the past five (5) years at the intersection of Tutbury Lane at Bretby Drive. The crash data does not constitute a compelling case for modifying the existing controls.

Types of Roadways & Minimum Volumes
Both Tutbury Lane and Bretby Drive are considered local streets. On-street parking is permitted in all directions in the vicinity of the intersection. Bretby Drive could be considered the major road and Tutbury Lane the minor one because Bretby Drive acts as a connector between N. Adams Road (arterial road) and Beach Road (collector road), while Tutbury Lane connects N. Adams Road and Charnwood Drive (local street). While traffic counts were not collected in the vicinity of the intersection, a 7-day

speed study was conducted on Malvern Drive just to the east which observed an AADT of approximately 130 vehicles. Based on those results and the residential nature of the location, it is highly improbable that there are any daily hours in which Bretby Drive meets the 300 vehicles per hour threshold for a minimum of 8 hours, therefore the minimum volume criteria for an all-way STOP has not been met.

Approach Speeds
The approach speed limit on both streets is 25 mph. 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 are trees at the southeast quadrant of the intersection (see page 1 of the attached approach pictures). This obstruction comes into play when determining the 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 on the cross street. Safe approach speeds are determined through calculations.

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 was found to be 12.3 mph for northbound Tutbury Lane based on a vehicle traveling westbound on Bretby Drive as a result of the sight obstruction from the trees on the right side on approach to the intersection, therefore a YIELD sign is the recommended treatment. The safe approach speed calculation spreadsheet is attached for your reference.

Recommendation

OHM recommends that the intersection be set under two-way YIELD control on the Tutbury Lane approaches to the intersection. The major sight distance obstruction in this study were overhanging branches from trees that reside in the public right-of-way at the southeast quadrant of the intersection (see attached ROW map). We would also recommend trimming this vegetation to improve sight distances at the intersection, as the trees under scrutiny are also a detriment to the sight distance for vehicles traveling westbound on Bretby Drive (see page 3 of the attached approach pictures).

Sincerely,
Orchard, Hiltz & McCliment, Inc.

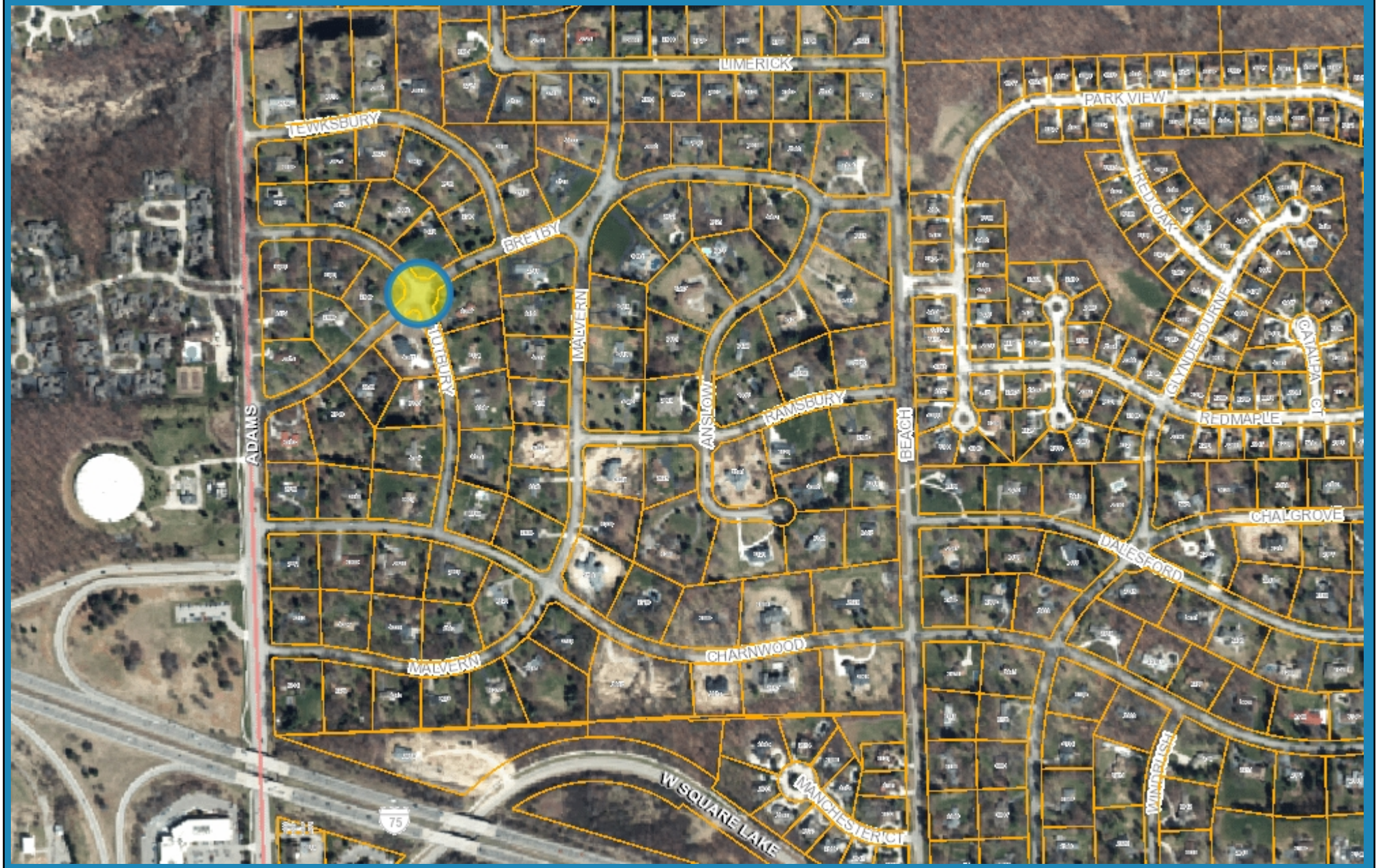
Steve M. Loveland, PE, PTOE
Traffic Project Manager

Matt L. Clark, EIT
Engineer

Attachments:

- Aerial and Intersection Photos
- Safe Approach Speed Calculation Spreadsheet

City of Troy GIS Online



1,435 0 717 1,435 Feet

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.

City of Troy GIS Online

90 0 45 90 Feet

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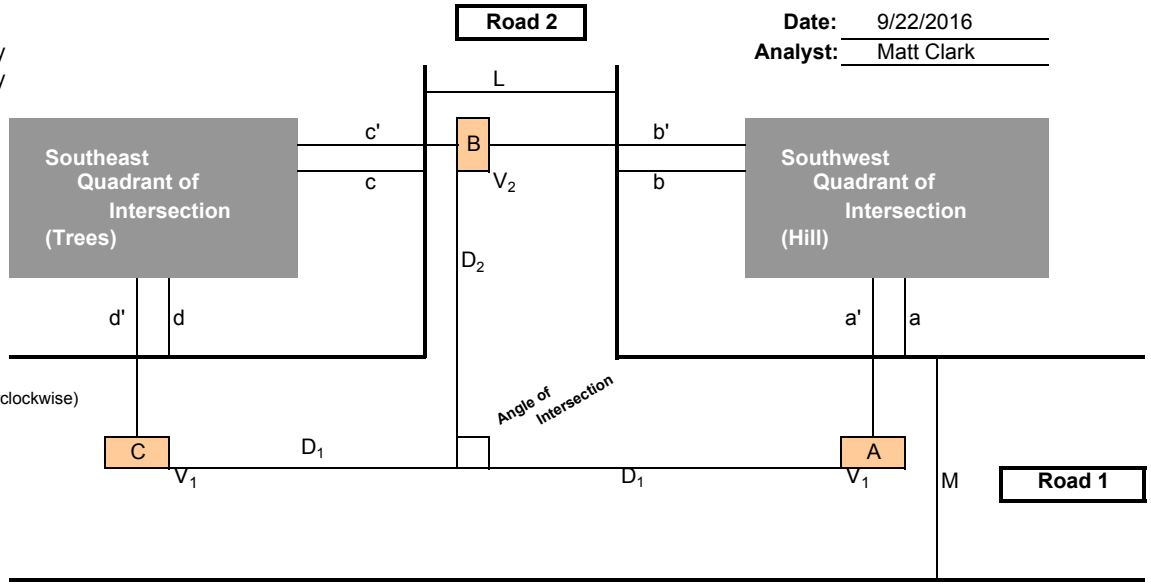
Safe Approach Speed Calculation

Tutbury at Bretby
City of Troy

Road 1 = Bretby
Road 2 = Tutbury

Date: 9/22/2016
Analyst: Matt Clark



Measured:

Width of Roads

Road 1 =	21	(ft)
Road 2 =	21	(ft)

Distance to Obstruction

a =	69	(ft)
b =	55	(ft)
c =	48	(ft)
d =	0	(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_1 =	30	(mph)

Perception / Reaction Time (AASHTO)

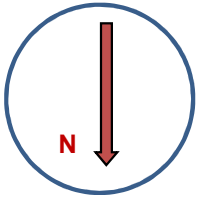
t =	2.5	(sec)

Deceleration rate (AASHTO)

A =	11.20	

Clearance distance in excess of safe stopping distance (AAA)

EC =	0	(ft)



Intermediate Calculations:

D_1=	196	a' =	76.5
D_{2A}=	117	b' =	68.5
D_{2C}=	59.6	c' =	55.5
		d' =	13.5

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 $D_{2C} = \frac{c' * D_1}{(D_1 - d'}$

Calculated Safe Approach Speed for Vehicle B
Approaching on Road 2

V_2 =	20.8	(mph) [Based on Veh. A]
or V_2 =	12.3	(mph) [Based on Veh. C]

TRUE

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

Tutbury Lane heading north

Tutbury Lane heading north and looking right

Tutbury Lane heading north and looking left

Bretby Drive heading west

Bretby Drive heading west and looking left

Tutbury Lane heading south

Bretby Drive heading east

TRAFFIC COMMITTEE REPORT

October 6, 2016

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/ Traffic Engineer

SUBJECT: Request for Traffic Control
Haldane at Niles

Background:

A resident along Niles contacted the City's Building Official regarding the lack of traffic control signs at the intersection of Haldane and Niles. The resident stated that traffic does not yield the right-of-way and creates a hazardous condition at the intersection.

There have been no crashes reported at this intersection in the past five (5) years.

The posted speed limit on both streets is 25 mph. Niles Drive could be considered the major road and Haldane Drive the minor one because Niles Drive continues further before it dead-ends.

The major potential sight distance obstruction at the intersection is a line of vegetation along the southeast quadrant of the intersection.

The safe approach speed was found to be 10.2 mph for westbound Haldane Drive; therefore, two-way YIELD control on the Haldane Drive approaches to the intersection is the recommended treatment.

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

ARCHITECTS. ENGINEERS. PLANNERS.

OHM Advancing Communities®

September 16, 2016

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

RE: Traffic Control Recommendation for Haldane Drive at Niles Drive
OHM JN: 0128-16-0240

Dear Mr. Huotari:

As requested, we have reviewed the Haldane Drive at Niles Drive intersection to determine the proper traffic control. The subject intersection is a 4-leg intersection located in the City of Troy approximately 515 feet south of E. Square Lake Road and 630 feet west of Livernois Road. The speed limit on both streets is 25 mph. Niles Drive dead-ends to the south of the intersection and Haldane Drive dead-ends to the west of the intersection. The intersection is presently uncontrolled. Reference the attachments for aerial and intersection photos.

Background on Traffic Control Determination
Based on the Michigan Manual of Uniform Traffic Control Devices (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.*

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

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Based on the Michigan Manual of Uniform Traffic Control Devices (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.

Many times 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.

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.

Crash Analysis
Based on information obtained through the Traffic Improvement Association of Michigan, there were no crashes recorded in the past five (5) years at the intersection of Haldane Drive at Niles Drive. The crash data does not constitute a compelling case for modifying the existing controls.

Minimum Volumes
Niles Drive could be considered the major road and Haldane Drive the minor one because Niles Drive continues further before it dead-ends. While traffic counts were not collected in the vicinity of the intersection, based on knowledge of the area and the residential nature of the location, it is highly improbable that there are any daily hours in which Niles Drive meets the 300 vehicles per hour threshold

for a minimum of 8 hours, therefore the minimum volume criteria for an all-way STOP has not been met.

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

Types of Roadways
Both Haldane Drive and Niles Drive are considered local streets. It should be noted that currently there are "no parking" signs posted along eastbound Haldane Drive on the east-leg of the intersection, in both directions on the south-leg of the intersection, along westbound Haldane Drive on the west-leg of the intersection, and in both directions on the north-leg of the intersection.

Sight Distance
The major potential sight distance obstruction at the intersection is a line of vegetation along the southeast quadrant of the intersection. This obstruction comes into play when determining the 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 on the cross street. Safe approach speeds are determined through calculations.

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 was found to be 10.2 mph for westbound Haldane Drive based on a vehicle traveling northbound on Niles Drive as a result of the sight obstruction from the line of vegetation on the left side on approach to the intersection. The safe approach speed calculation spreadsheet is attached for your reference.

Recommendation

OHM recommends that the intersection be set under two-way YIELD control on the Haldane Drive approaches to the intersection. The major sight distance obstruction in this study was a line of vegetation that likely resides in the public right-of-way at the southeast quadrant of the intersection. We would also recommend trimming this vegetation to improve sight distances at the intersection. Haldane Drive was selected as the road to control due to the potential for greater volumes of "cut-through" vehicles unfamiliar with conditions at the intersection.

Sincerely,
Orchard Hiltz & McCliment, Inc.

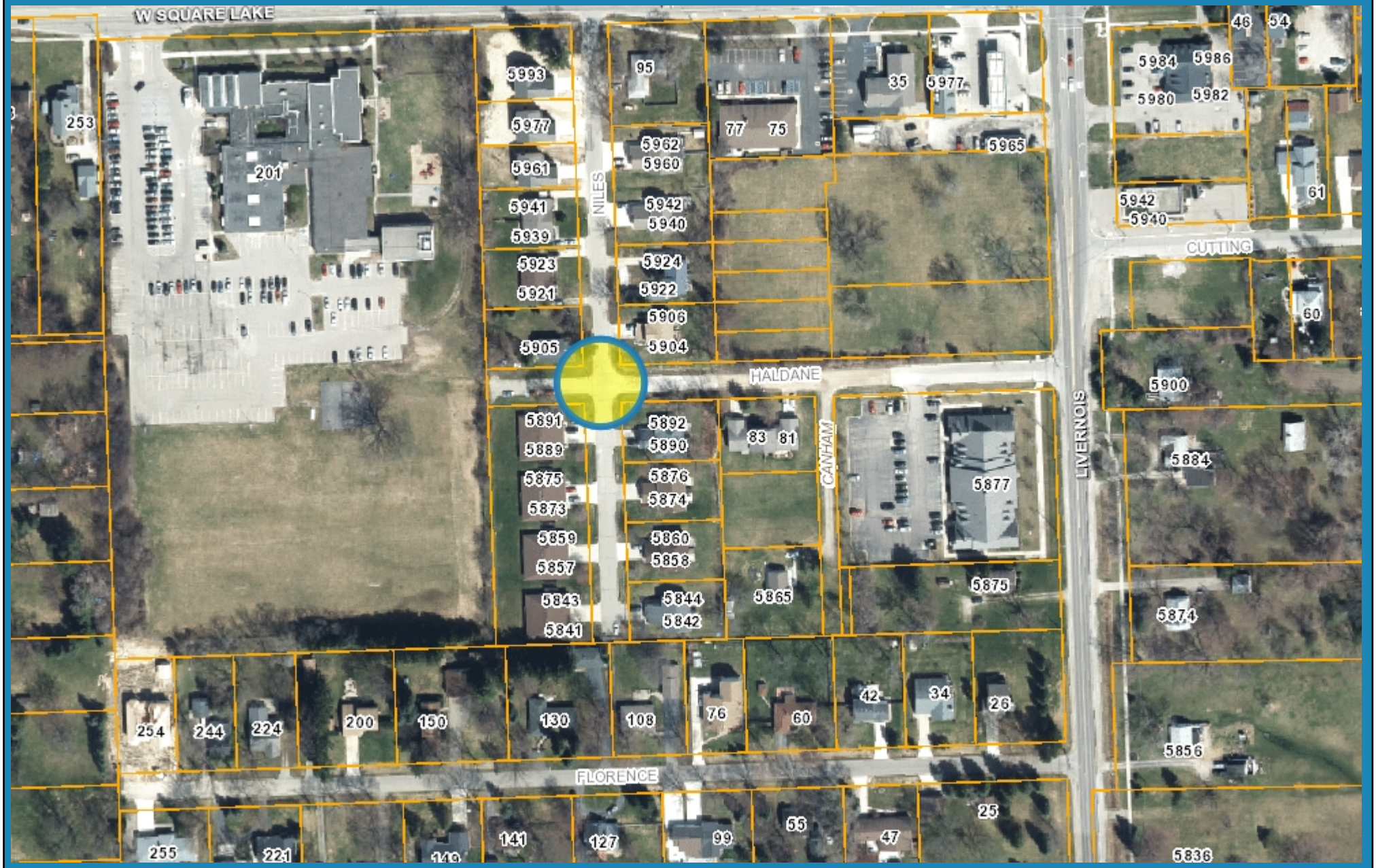
Stephen B. Dearing, PE, PTOE
Practice Leader for Traffic Group

Matt L. Clark, EIT
Engineer

Attachments:

- Aerial and Intersection Photos
- Safe Approach Speed Calculation Spreadsheet

City of Troy GIS Online



476 0 238 476 Feet

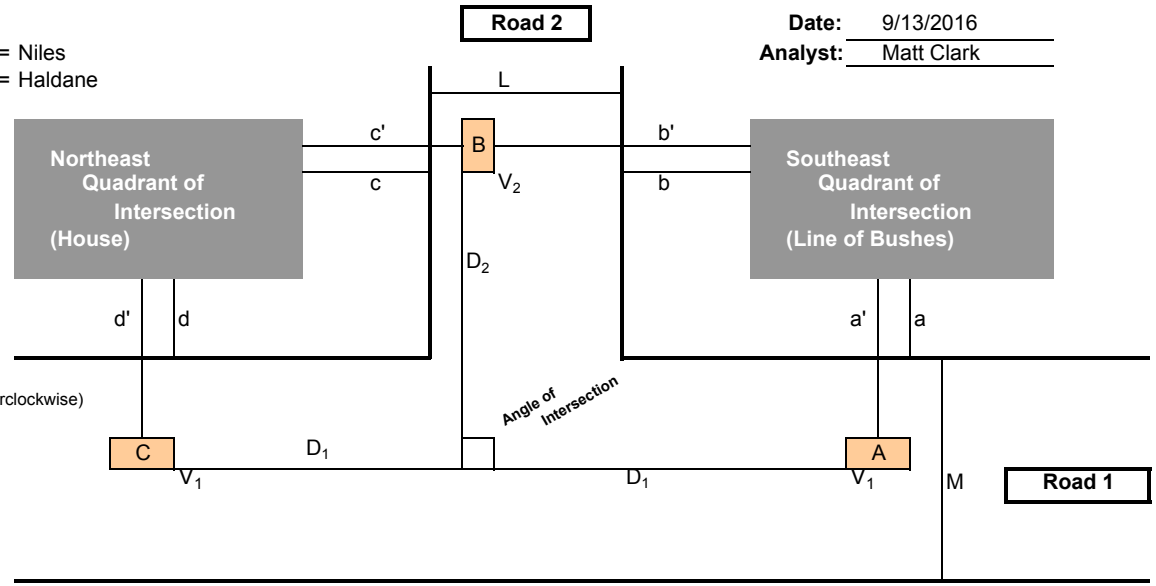
Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.

Safe Approach Speed Calculation

Haldane at Niles
City of Troy

Road 1 = Niles
Road 2 = Haldane

Date: 9/13/2016
Analyst: Matt Clark



Measured:

Width of Roads

Road 1 =	23	(ft)
Road 2 =	22	(ft)

Distance to Obstruction

a =	35	(ft)
b =	2	(ft)
c =	37	(ft)
d =	54	(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_1 =	30	(mph)

Perception / Reaction Time (AASHTO)

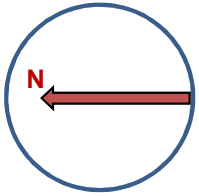
t =	2.5	(sec)

Deceleration rate (AASHTO)

A =	11.20	

Clearance distance in excess of safe stopping distance (AAA)

EC =	0	(ft)



Intermediate Calculations:

D_1=	196	a' =	43.5
D_{2A}=	47.4	b' =	16
D_{2C}=	69.1	c' =	45
		d' =	68.5

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 $D_{2C} = \frac{c' * D}{(D_1 - d}$

Calculated Safe Approach Speed for Vehicle B
Approaching on Road 2

V_2 =	10.2	(mph) [Based on Veh. A]
or V_2 =	13.8	(mph) [Based on Veh. C]

TRUE

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**

Haldane Drive looking west

Niles Drive looking south

Haldane Drive looking east

Niles Drive looking north