



# CITY COUNCIL ACTION REPORT

October 26, 2009

TO: John Szerlag, City Manager

FROM: Mark Miller, Asst. City Manager/Economic Development Services  
Steven J. Vandette, City Engineer *SV*  
William J. Huotari, Deputy City Engineer *WJA*

SUBJECT: Traffic Committee Recommendations  
October 21, 2009

## Background:

The Traffic Committee considered these items at the October 21, 2009 meeting and made the following recommendations (minutes attached):

- Recommend installing a STOP sign on southbound Ruthland at Kirk Lane (Item 3).
- Recommend installing a STOP sign on Norton at Quill Creek (Item 4).
- Recommend installing a STOP sign on Marengo at Norton (Item 5).
- Recommend establishing fire lanes/tow away zones at 3039 Rochester Road as recommended by the Fire Department (Item 7).
- Recommend establishing fire lanes/tow away zones at 925 W. South Boulevard as recommended by the Fire Department (Item 8).
- Recommend establishing fire lanes/tow away zones at 791 W. Big Beaver as recommended by the Fire Department (Item 9).
- Recommend establishing fire lanes/tow away zones at 1026 Maplelawn (Item 10).

## Financial Considerations:

- Signs cost approximately \$115.

## Policy Considerations:

- Troy has enhanced the health and safety of the community.

## Options:

- Council can approve or deny the recommendations.

A regular meeting of the Troy Traffic Committee was held Wednesday, October 21, 2009 in the Council Boardroom at Troy City Hall. Ted Halsey called the meeting to order at 7:30 p.m.

**1. Roll Call**

PRESENT: Sarah Binkowski  
John Diefenbaker  
Ted Halsey  
Richard Kilmer  
Gordon Schepke  
Sam Jiang

ABSENT: Jan Hubbell  
Pete Ziegenfelder

Also present: Bill Huotari, Deputy City Engineer  
Lt. David Livingston, Troy Police Dept.  
Lt. Eric Caloia, Troy Fire Dept.

And John Shepperd, 278 Kirk Lane Drive, Troy  
Kira Binkowski

**2. Minutes – July 15, 2009****RESOLUTION #2009-10-09**

Moved by Binkowski  
Seconded by Schepke

To approve the July 15, 2009 minutes.

YES: All-5  
NO: None  
ABSENT: 2 (Hubbell, Ziegenfelder)  
MOTION CARRIED

**REGULAR BUSINESS****3. Install STOP Sign on Southbound Ruthland at Kirk Lane**

John Shepperd, 278 Kirk Lane, requests a STOP sign on southbound Ruthland at Kirk Lane. There are sight obstructions at that location. See attached report. Mr. Shepperd said that his wife has had three near crashes recently. The corner is also a school bus stop. Mr. Shepperd mentioned that there are STOP and YIELD signs all through the subdivision, except for this intersection.

**RESOLUTION #2009-10-10**

Moved by Binkowski  
Seconded by Kilmer

To recommend installation of a STOP sign on southbound Ruthland at Kirk Lane.

YES: All-5  
NO: None  
ABSENT: 2 (Hubbell, Ziegenfelder)  
MOTION CARRIED

**4. Install STOP Sign on Norton at Quill Creek**

A resident of Norton requested that the city investigate conditions at the intersection of Norton and Quill Creek because of sight obstructions. See attached report.

RESOLUTION #2009-10-11

Moved by Schepke  
Seconded by Binkowski

To recommend installation of a STOP sign on southbound Norton at Quill Creek.

YES: All-5  
NO: None  
ABSENT: 2 (Hubbell, Ziegenfelder)  
MOTION CARRIED

**5. Install STOP Sign on Marengo at Norton**

Gordon Schepke requests a STOP sign on westbound Marengo at Norton because of sight obstruction by a line of trees and a large shrub. A friend of his had a close call at this intersection. The street is also used as a cut-through. See attached report.

RESOLUTION #2009-10-12

Moved by Kilmer  
Seconded by Diefenbaker

To recommend installation of a STOP sign on westbound Marengo at Norton.

YES: All-5  
NO: None  
ABSENT: 2 (Hubbell, Ziegenfelder)  
MOTION CARRIED

**6. Request for Traffic Information on Daley North of Big Beaver**

Richard Kilmer requested a study of traffic on Daley, north of Big Beaver. See attached report. The Traffic technicians put out counters on Daley, but Mr. Kilmer said that the location didn't catch the speeders. Mr. Huotari explained that the location was chosen to count the volumes accurately, more so than the speeds.

**7. Establish Fire Lanes at 3039 Rochester Road**

Section 8.28, Chapter 106, Troy City Code, provides for the establishment of fire lanes on private property. The Fire Department recommends that the fire lanes shown on the attached sketch be provided to allow proper deployment of and travel by emergency vehicles (fire, police, medical).

**RESOLUTION #2009-10-13**

Moved by Kilmer

Seconded by Diefenbaker

Recommend establishing fire lanes/tow away zones at 3039 Rochester Road as recommended by the Fire Department.

YES: All-5

NO: None

ABSENT: 2 (Hubbell, Ziegenfelder)

MOTION CARRIED

**8. Establish Fire Lanes at 925 W. South Boulevard**

Section 8.28, Chapter 106, Troy City Code, provides for the establishment of fire lanes on private property. The Fire Department recommends that the fire lanes shown on the attached sketch be provided to allow proper deployment of and travel by emergency vehicles (fire, police, medical).

**RESOLUTION #2009-10-14**

Moved by Schepke

Seconded by Kilmer

Recommend establishing fire lanes/tow away zones at 925 W. South Boulevard as recommended by the Fire Department.

YES: All-5

NO: None

ABSENT: 2 (Hubbell, Ziegenfelder)

MOTION CARRIED

**9. Establish Fire Lanes at 791 W. Big Beaver**

Section 8.28, Chapter 106, Troy City Code, provides for the establishment of fire lanes on private property. The Fire Department recommends that the fire lanes shown on the attached sketch be provided to allow proper deployment of and travel by emergency vehicles (fire, police, medical).

**RESOLUTION #2009-10-15**

Moved by Diefenbaker

Seconded by Kilmer

Recommend establishing fire lanes/tow away zones at 791 W. Big Beaver as recommended by the Fire Department.

YES: All-5  
 NO: None  
 ABSENT: 2 (Hubbell, Ziegenfelder)  
 MOTION CARRIED

#### 10. **Establish Fire Lanes at 1026 Maplelawn**

Section 8.28, Chapter 106, Troy City Code, provides for the establishment of fire lanes on private property. The Fire Department recommends that the fire lanes shown on the attached sketch be provided to allow proper deployment of and travel by emergency vehicles (fire, police, medical).

#### RESOLUTION #2009-10-16

Moved by Schepke  
 Seconded by Diefenbaker

Recommend establishing fire lanes/tow away zones at 1026 Maplelawn as recommended by the Fire Department.

YES: All-5  
 NO: None  
 ABSENT: 2 (Hubbell, Ziegenfelder)  
 MOTION CARRIED

#### 11. **Public Comment**

Ms. Kira Binkowski expressed thanks to Lt. Livingston for the good work by the Police Department, ensuring the safety of students at her school by issuing an order for a lockdown until a fugitive in the area was apprehended.

#### 12. **Other Business**

Ted Halsey commented that the left turn lane from westbound Maple to southbound Coolidge is always backed up, and motorists have to sit through several cycles before turning. The Acting Traffic Engineer will ask the Road Commission for Oakland County to check the signal timing.

#### 13. **Adjourn**

The meeting adjourned at 8:15 p.m.

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Ted Halsey, Acting Chairperson

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Laurel Nottage, Recording Secretary



## TRAFFIC COMMITTEE REPORT

October 2, 2009

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/Acting Traffic Engineer *WJH*

SUBJECT: Ruthland at Kirk Lane – Stop Sign Request

### Background:

- John Shepperd, 278 Kirk Lane, requested that a stop sign be installed on southbound Ruthland at Kirk Lane.
- Mr. Shepperd lives just west of the intersection and states that there have been some close calls at the intersection due to some large trees near the intersection which can block a driver's view.
- The posted speed limit on both streets is 25 mph.
- Kirk Lane is considered the major road at this location due to its higher traffic volumes.
- 24 hour traffic volumes were collected by city staff and indicate that the average daily traffic (ADT) on Kirk Lane was 268 with Ruthland at 172.
- The highest peak hour volumes along each road are 32 for Kirk Lane and 23 on Ruthland.
- The volumes are well below the threshold levels for multi-way STOP sign warrants.
- There has been one crash in the past five (5) years at this intersection, but it was the result of a motorist backing up into the intersection from the dead end of Ruthland.
- 85<sup>th</sup> percentile speeds, on Kirk Lane are approximately 28 mph and 25 mph on Ruthland .
- There is a sight distance concern due to some large pine trees located at the intersection and primarily with one located in the northwest quadrant.
- The city requested that our traffic engineering consultant (OHM) review the request and provide a report of their findings and recommendations (copy attached).
- The report recommends that a STOP sign be placed on the Ruthland southbound approach to the intersection, based on their review and findings that the safe approach speed on Ruthland is less than 10 mph.

### Recommendations:

- Staff concurs with our consultant's recommendation to modify the intersection control from "no traffic control" to a STOP sign on the Ruthland southbound approach to Kirk Lane.

### Suggested Resolutions:

- a. Recommend installation of a STOP sign on the Ruthland southbound approach to Kirk Lane.
- b. Recommend no changes at the intersection of Ruthland and Kirk Lane.

September 29, 2009



Mr. William Huotari, P.E.  
Deputy City Engineer  
City of Troy  
500 W. Big Beaver Road  
Troy, MI 48084

Subject: Traffic Control Recommendation for the intersection of Kirk Lane Drive and  
Ruthland Drive  
OHM JN: 0128-09-0040

Dear Mr. Huotari:

As requested, we have reviewed the Kirk Lane Drive/Ruthland Drive intersection to determine the proper traffic control. The subject intersection is a 4-leg intersection located in the City of Troy, approximately 0.20 miles west of Livernois Road and 0.70 miles north of Big Beaver Road. Both Kirk Lane and Ruthland are local streets, with Kirk Lane running in the east-west direction and Ruthland running north-south. The speed limit on both streets is 25 mph. There is currently no traffic control on any of the approaches. Reference the attachments for an aerial photograph and intersection photos.

#### **Background on Traffic Control Determination**

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 "multiway-STOP" or "all-way" STOP sign installation is discouraged. The multiway-STOP warrant requires the volumes of traffic per approach leg on intersecting roads to be approximately equal.

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.

### **Traffic Volumes**

24-Hour traffic volumes were provided by the City of Troy. The counts indicate the average daily traffic (ADT) on Kirk Lane Drive to be 268 with Ruthland Drive at 172. The highest peak hour volumes along each road are 31 for Kirk Lane Drive and 21 on Ruthland Drive. The MMUTCD indicates that multi-way STOP control could be warranted if there were at least 300 vehicles per hour from the major street approaches and 200 units (vehicles, pedestrians and bicycles) per hour from the minor street approaches for the same eight hours on an average day. Based on the peak hour volumes alone, the option of multi-way STOP control does not meet warrants.

With the pedestrian and vehicular traffic added together (assuming 20 pedestrians per hour) this location is still far below warrant thresholds for multi-way STOP control. All traffic counts are provided as an attachment to this letter. Pedestrian traffic has not been counted at the intersection.

### **Crash Analysis**

There was one (1) crash recorded in the past five years at this intersection.

### **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 Highways**

Although both Kirk Lane Drive and Ruthland Drive are considered local streets, Kirk Lane Drive is considered the major road at this intersection based on the traffic volumes. The road with the heavier volume of traffic, Kirk Lane Drive, should be given the right-of-way.

### **Sight Distance**

The most significant sight distance obstruction at the intersection is the large pine tree located in the northwest quadrant. The obstruction and sight distance 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 greater than 10 mph for the minor road, a YIELD sign is commonly used. In this case, the safe approach speed on Ruthland Drive was found to be less than 10 mph; therefore a STOP sign is the recommended treatment. The safe approach speed calculation spreadsheet is attached for your reference.

**Recommendation**

OHM recommends that the intersection control be modified from uncontrolled to a STOP sign on the Ruthland Drive southbound approach to the intersection. We recommend against modifying the intersection to multi-way STOP control.

Sincerely,  
Orchard Hiltz & McCliment, Inc.

A handwritten signature in black ink, appearing to read 'S. Loveland', written in a cursive style.

Steven M. Loveland, PE, PTOE  
Traffic Project Engineer

Attachments:

- Aerial and Intersection Photos
- Traffic Counts
- Safe Approach Speed Calculation Spreadsheet



Google

Eye alt: 1.17 km

© 2009 Tele-Atlas

42°34'18.68"N 83°09'12.47"W elev: 211 m

Imagery Date: JUN 2007



**Kirk Lane EB at Ruthland**



**Kirk Lane WB at Ruthland**



**Ruthland SB at Kirk Lane**



**Ruthland NB at Kirk Lane**

VOLUME

Site Reference: IRD002  
 Site ID: Kirk  
 Location: East of Ruthlaand, sec21  
 Direction: E/W

File: D0914002.prn  
 City: Troy  
 County: Oakland

TIME	MON 14	TUE 15	WED 16	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00		2	1			1			1	3
02:00		0	0			0			0	0
03:00		0	0			0			0	0
04:00		0	1			0			0	1
05:00		0	0			0			0	0
06:00		1	1			1			1	2
07:00		7	9			8			8	16
08:00		17	13			15			15	30
09:00		16	18			17			17	34
10:00		12	13			12			12	25
11:00		15	9			12			12	24
12:00		14	16			15			15	30
13:00	10	16				13			13	26
14:00	15	16				15			15	31
15:00	13	14				13			13	27
16:00	24	20				22			22	44
17:00	19	14				16			16	33
18:00	32	31				31			31	63
19:00	27	22				24			24	49
20:00	22	19				20			20	41
21:00	19	11				15			15	30
22:00	9	14				11			11	23
23:00	4	7				5			5	11
24:00	2	3				2			2	5

TOTALS	196	271	81	0	0	268	0	0	268	548
% AVG WKDY	73.1	101.1	30.2							
% AVG WEEK	73.1	101.1	30.2							
AM Times		08:00	09:00			09:00			09:00	
AM Peaks		17	18			17			17	
PM Times	18:00	18:00				18:00			18:00	
PM Peaks	32	31				31			31	

VOLUME

ite Reference: IRD001  
 ite ID: Ruthland  
 ocation: North of Kirk, sec 21  
 irection: N/S

File: D0914003.prn  
 City: Troy  
 County: Oakland

TIME	MON 14	TUE 15	WED 16	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00		0	0			0			0	0
02:00		0	0			0			0	0
03:00		0	0			0			0	0
04:00		0	1			0			0	1
05:00		0	0			0			0	0
06:00		1	1			1			1	2
07:00		6	6			6			6	12
08:00		18	13			15			15	31
09:00		7	12			9			9	19
10:00		8	9			8			8	17
11:00		6	5			5			5	11
12:00		6	11			8			8	17
13:00	5	10				7			7	15
14:00	11	10				10			10	21
15:00	13	9				11			11	22
16:00	16	19				17			17	35
17:00	13	7				10			10	20
18:00	22	20				21			21	42
19:00	23	12				17			17	35
20:00	13	9				11			11	22
21:00	12	3				7			7	15
22:00	6	8				7			7	14
23:00	1	1				1			1	2
24:00	1	1				1			1	2

TOTALS	136	161	58	0	0	172	0	0	172	355
AVG WKDY	79	93.6	33.7							
AVG WEEK	79	93.6	33.7							

AM Times 08:00 08:00 08:00 08:00  
 AM Peaks 18 13 15 15

PM Times 19:00 18:00 18:00 18:00  
 PM Peaks 23 20 21 21

# Safe Approach Speed Calculation

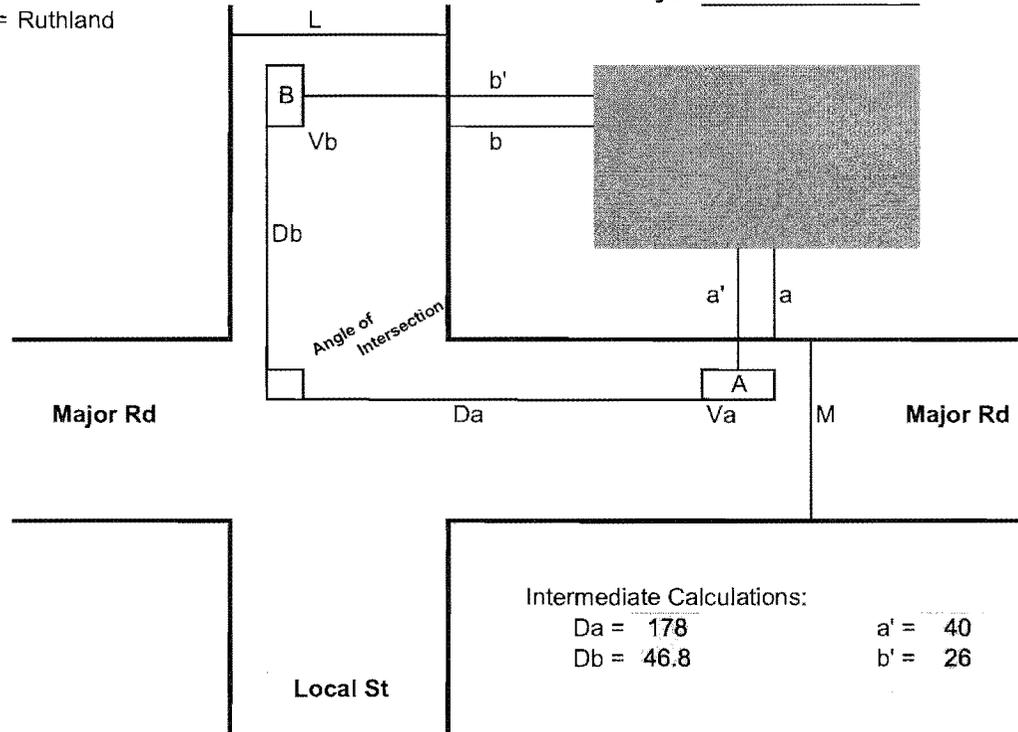
Kirk Lane at Ruthland  
City of Troy, MI

Major = Kirk Lane  
Local = Ruthland

Date: 9/29/2009  
Analyst: S. Loveland

Measured:

Width of Roads  
Major: M = 22 (ft)  
Local: L = 22 (ft)  
Distance to Obstruction  
a = 32 (ft)  
b = 12 (ft)  
Angle of Intersection  
Delta = 90 (degrees)  
Major Rd Posted  
Speed Limit = 25 (mph)



Assumed:

Speed of Vehicle A = Posted Speed Limit  
on Major Road + 5 (mph)  
Va = 30 (mph)  
Perception / Reaction Time (AASHTO)  
t = 2.0 (sec)  
Coefficient of friction (AASHTO)  
f = 0.40  
Clearance distance in excess of safe stopping distance (AAA)  
C = 15 (ft)

Intermediate Calculations:  
Da = 178      a' = 40  
Db = 46.8      b' = 26

Calculated Safe Approach Speed for Vehicle  
Approaching on Local Rd  
Vb = 8.7 (mph)

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 local street

based on safe approach speed : **STOP Sign**



## TRAFFIC COMMITTEE REPORT

October 2, 2009

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/Acting Traffic Engineer *WHH*

SUBJECT: Norton at Quill Creek – Stop Sign Request

### Background:

- While city staff was collecting data on the Norton at Marengo intersection, a resident on Norton requested that we also look at the intersection of Norton at Quill Creek.
- The resident stated that there are sight obstructions at the intersection of Norton and Quill Creek.
- The posted speed limit on both streets is 25 mph.
- Quill Creek is considered the major road at this location due to its continuous nature, while Norton is considered the minor road due to its termination at Quill Creek.
- 24 hour traffic volumes were collected by city staff and indicate that the average daily traffic (ADT) on Quill Creek was 105 with Norton at 82.
- The highest peak hour volumes along each road are 18 for Quill Creek and 13 on Norton.
- The volumes are well below the threshold levels for multi-way STOP sign warrants.
- There have been no crashes recorded at this intersection in the past three (3) years.
- 85<sup>th</sup> percentile speeds, on both streets, are approximately 28 mph.
- There are sight distance concerns due to a row of trees and shrubs that parallel Quill Creek in the northeast quadrant.
- The city requested that our traffic engineering consultant (OHM) review the request and provide a report of their findings and recommendations (copy attached).
- The report recommends that a STOP sign be placed on the Norton southbound approach to the intersection, based on their review and findings that the safe approach speed on Norton is less than 10 mph.

### Recommendations:

- Staff concurs with our consultant's recommendation to modify the intersection control from "no traffic control" to a STOP sign on the Norton southbound approach to Quill Creek.

### Suggested Resolutions:

- a. Recommend installation of a STOP sign on the Norton southbound approach to Quill Creek.
- b. Recommend no changes at the intersection of Norton and Quill Creek.

September 29, 2009



Mr. William Huotari, P.E.  
Deputy City Engineer  
City of Troy  
500 W. Big Beaver Road  
Troy, MI 48084

Subject: Traffic Control Recommendation for the intersection of Norton Street and  
Quill Creek Drive  
OHM JN: 0128-09-0040

Dear Mr. Huotari:

As requested, we have reviewed the Norton Street/Quill Creek Drive intersection to determine the proper traffic control. The subject intersection is a T-intersection located in the City of Troy, approximately 0.35 miles west of Rochester Road and 0.45 miles north of Square Lake Road. Norton Street is a local street, which runs north-south forming a T-intersection at the south end with Quill Creek Drive. Quill Creek Drive is a local street running in the east-west direction. The speed limit on both streets is 25 mph. There is currently no traffic control on any of the approaches. Reference the attachments for an aerial photograph and intersection photos.

#### **Background on Traffic Control Determination**

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 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 "multiway-STOP" or "all-way" STOP sign installation is discouraged. The multiway-STOP warrant requires the volumes of traffic per approach leg on intersecting roads to be approximately equal.

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.

### **Traffic Volumes**

24-Hour traffic volumes were provided by the City of Troy. The counts indicate the average daily traffic (ADT) on Quill Creek Drive to be 105 with Norton Street at 82. The highest peak hour volumes along each road are 13 for Quill Creek Drive and 9 on Norton Street. The MMUTCD indicates that multi-way STOP control could be warranted if there were at least 300 vehicles per hour from the major street approaches and 200 units (vehicles, pedestrians and bicycles) per hour from the minor street approaches for the same eight hours on an average day. Based on the peak hour volumes alone, the option of multi-way STOP control does not meet warrants.

With the pedestrian and vehicular traffic added together (assuming 20 pedestrians per hour) this location is still far below warrant thresholds for multi-way STOP control. All traffic counts are provided as an attachment to this letter. Pedestrian traffic has not been counted at the intersection.

### **Crash Analysis**

There have been no crashes recorded in the past three years at this intersection.

### **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 Highways**

Although both Quill Creek Drive and Norton Street are considered local streets, Quill Creek Drive should be assigned right of way in this case, as it is the continuing road and Norton Street terminates at Quill Creek Drive. Driver expectation is that the continuing road does not have to stop and the terminating road must at a minimum slow to make the turn.

### **Sight Distance**

There is a major sight distance obstruction at the intersection in northeast quadrant. A row of trees and shrubs parallels Quill Creek Drive, approximately 6.5' off of the roadway. The obstructions and sight distance 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 greater than 10 mph for the minor road, a YIELD sign is commonly used. In this case, the safe approach speed on Norton Street was found to be less than 10 mph; therefore a STOP sign is the recommended treatment. The safe approach speed calculation spreadsheet is attached for your reference.

**Recommendation**

OHM recommends that the intersection control be modified from uncontrolled to a STOP sign on the Norton Street southbound approach to the intersection. We recommend against modifying the intersection to multi-way STOP control.

Sincerely,  
Orchard Hiltz & McCliment, Inc.

A handwritten signature in black ink, appearing to read 'S. Loveland', written in a cursive style.

Steven M. Loveland, PE, PTOE  
Traffic Project Engineer

Attachments:

- Aerial and Intersection Photos
- Traffic Counts
- Safe Approach Speed Calculation Spreadsheet





**Quill Creek EB at Norton**



**Quill Creek WB at Norton**



**Norton SB at Quill Creek**

City of Troy  
 WEEKLY SUMMARY FOR LANE 1  
 Starting: 7/27/09

Page: 1

*VOLUME*

Site Reference: IRD004  
 Site ID: ~~Quail Creek~~  
 Location: Sect 3 - E. of Norton  
 Direction: E/W

File: D0727003.prn  
 City: Troy  
 County: Oakland

TIME	MON 27	TUE 28	WED 29	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00		0	0			0			0	0
02:00		1	0			0			0	1
03:00		2	1			1			1	3
04:00		0	0			0			0	0
05:00		0	0			0			0	0
06:00		1	1			1			1	2
07:00		0	1			0			0	1
08:00		3	3			3			3	6
09:00		7	2			4			4	9
10:00		1	1			1			1	2
11:00		7	8			7			7	15
12:00		7	3			5			5	10
13:00	3	3				3			3	6
14:00	5	11				8			8	16
15:00	5	9				7			7	14
16:00	3	9				6			6	12
17:00	4	5				4			4	9
18:00	11	5				8			8	16
19:00	9	14				11			11	23
20:00	6	11				8			8	17
21:00	18	8				13			13	26
22:00	9	5				7			7	14
23:00	6	8				7			7	14
24:00	2	1				1			1	3

TOTALS	81	118	20	0	0	105	0	0	105	219
% AVG WKDY	77.1	112.3	19							
% AVG WEEK	77.1	112.3	19							
AM Times		09:00	11:00			11:00			11:00	
AM Peaks		7	8			7			7	
PM Times	21:00	19:00				21:00			21:00	
PM Peaks	18	14				13			13	

City of Troy  
 WEEKLY SUMMARY FOR LANE 1  
 Starting: 7/27/09

Page: 1

*VOLUME*

Site Reference: IRD003  
 Site ID: ~~10000000~~  
 Location: Sect 3 - Sth of Marengo  
 Direction: N/S

File: D0727002.prn  
 City: Troy  
 County: Oakland

TIME	MON 27	TUE 28	WED 29	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00		0	0			0			0	0
02:00		1	0			0			0	1
03:00		0	0			0			0	0
04:00		0	0			0			0	0
05:00		1	1			1			1	2
06:00		2	0			1			1	2
07:00		0	0			0			0	0
08:00		3	1			2			2	4
09:00		1	2			1			1	3
10:00		1	0			0			0	1
11:00		4	3			3			3	7
12:00		5	0			2			2	5
13:00	3	5				4			4	8
14:00	6	10				8			8	16
15:00	9	9				9			9	18
16:00	5	7				6			6	12
17:00	6	2				4			4	8
18:00	9	7				8			8	16
19:00	10	6				8			8	16
20:00	7	5				6			6	12
21:00	13	5				9			9	18
22:00	8	2				5			5	10
23:00	5	1				3			3	6
24:00	3	2				2			2	5

TOTALS	84	79	7	0	0	82	0	0	82	170
% AVG WKDY	102.4	96.3	8.5							
% AVG WEEK	102.4	96.3	8.5							
AM Times		12:00	11:00			11:00			11:00	
AM Peaks		5	3			3			3	
PM Times	21:00	14:00				15:00			15:00	
PM Peaks	13	10				9			9	

# Safe Approach Speed Calculation

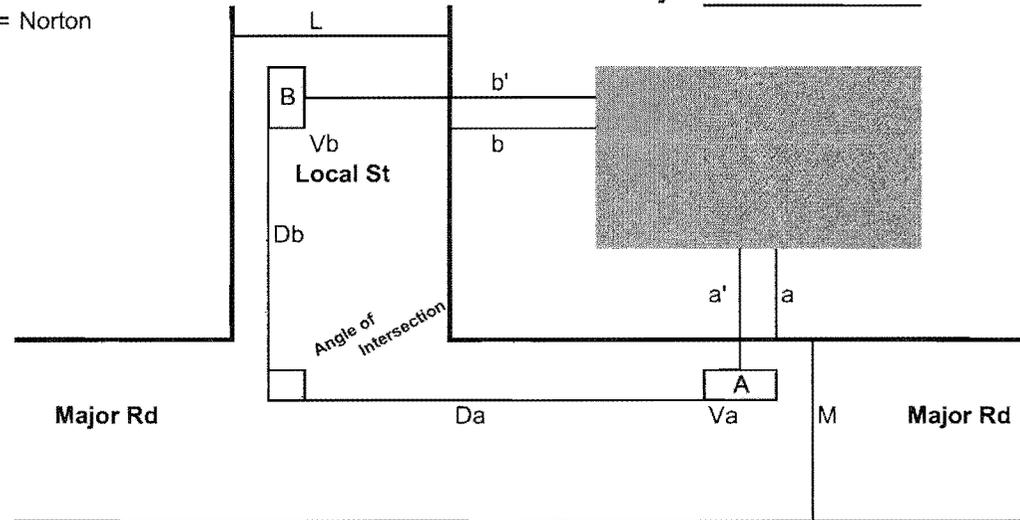
Norton and Quill Creek  
City of Troy, MI

Major = Quill Creek  
Local = Norton

Date: 9/29/2009  
Analyst: S. Loveland

Measured:

Width of Roads  
Major: M = 24 (ft)  
Local: L = 21.5 (ft)  
Distance to Obstruction  
a = 6.5 (ft)  
b = 20 (ft)  
Angle of Intersection  
Delta = 90 (degrees)  
Major Rd Posted  
Speed Limit = 25 (mph)



Assumed:

Speed of Vehicle A = Posted Speed Limit  
on Major Road + 5 (mph)  
Va = 30 (mph)  
Perception / Reaction Time (AASHTO)  
t = 2.0 (sec)  
Coefficient of friction (AASHTO)  
f = 0.40  
Clearance distance in excess of safe stopping distance (AAA)  
C = 15 (ft)

Intermediate Calculations:

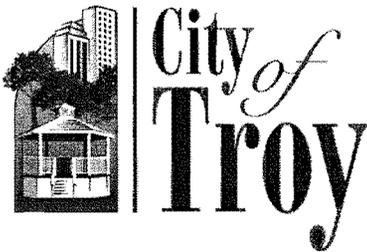
Da = 178      a' = 15.5  
Db = 19.1      b' = 33.8

Calculated Safe Approach Speed for Vehicle  
Approaching on Local Rd  
Vb = 1.4 (mph)

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 local street

based on safe approach speed : **STOP Sign**



## TRAFFIC COMMITTEE REPORT

October 2, 2009

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/Acting Traffic Engineer *WJA*

SUBJECT: Marengo at Norton  
Stop Sign Request

### Background:

- Mr. Schepke requested that a STOP sign be installed on westbound Marengo at Norton.
- Mr. Schepke stated that there are partial sight obstructions looking both north and south and a full stop is necessary to enter the intersection safely.
- The posted speed limit on both streets is 25 mph.
- Norton is considered the major road at this location due to its continuous nature, while Marengo is considered the minor road due to its termination at Norton.
- 24 hour traffic volumes were collected by city staff and indicate that the average daily traffic (ADT) on Marengo was 148 with Norton at 154.
- The highest peak hour volumes along each road are 18 for Marengo and 17 on Norton.
- The volumes are well below the threshold levels for multi-way STOP sign warrants.
- There have been no crashes recorded at this intersection in the past five (5) years.
- 85<sup>th</sup> percentile speeds, on both streets, are approximately 28 mph.
- There are sight distance concerns due to a tree in the southeast quadrant and a large shrub along the driveway in the northeast quadrant.
- The city requested that our traffic engineering consultant (OHM) review the request and provide a report of their findings and recommendations (copy attached).
- The report recommends that a STOP sign be placed on the Marengo westbound approach to the intersection, based on their review and findings that the safe approach speed on Marengo is less than 10 mph.

### Recommendations:

- Staff concurs with our consultant's recommendation to modify the intersection control from "no traffic control" to a STOP sign on the Marengo westbound approach to Norton.

### Suggested Resolutions:

- a. Recommend installation of a STOP sign on the Marengo westbound approach to Norton.
- b. Recommend no changes at the intersection of Marengo and Norton.

September 25, 2009



Mr. William Huotari, P.E.  
Deputy City Engineer  
City of Troy  
500 W. Big Beaver Road  
Troy, MI 48084

Subject: Traffic Control Recommendation for the intersection of Norton Street and  
Marengo Drive  
OHM JN: 0128-09-0040

Dear Mr. Huotari:

As requested, we have reviewed the Norton Street/Marengo Drive intersection to determine the proper traffic control. The subject intersection is a T-intersection located in the City of Troy, approximately 0.35 miles west of Rochester Road and 0.55 miles north of Square Lake Road. Marengo Drive is a local street, which runs east-west forming T-intersections at both ends (with Norton Street to the west and Rochester Road to the east). Norton Street is a local street running in the north-south direction. The speed limit on both streets is 25 mph. There is currently no traffic control on any of the approaches. Reference the attachments for an aerial photograph and intersection photos.

#### **Background on Traffic Control Determination**

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 "multiway-STOP" or "all-way" STOP sign installation is discouraged. The multiway-STOP warrant requires the volumes of traffic per approach leg on intersecting roads to be approximately equal.

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.

### **Traffic Volumes**

24-Hour traffic volumes were provided by the City of Troy. The counts indicate the average daily traffic (ADT) on Marengo Drive to be 148 with Norton Street at 154. The highest peak hour volumes along each road are 18 for Marengo Drive and 17 on Norton Street. The MMUTCD indicates that multi-way STOP control could be warranted if there were at least 300 vehicles per hour from the major street approaches and 200 units (vehicles, pedestrians and bicycles) per hour from the minor street approaches for the same eight hours on an average day. Based on the peak hour volumes alone, the option of multi-way STOP control does not meet warrants.

With the pedestrian and vehicular traffic added together (assuming 20 pedestrians per hour) this location is still far below warrant thresholds for multi-way STOP control. All traffic counts are provided as an attachment to this letter. Pedestrian traffic has not been counted at the intersection.

### **Crash Analysis**

There have been no crashes recorded in the past five years at this intersection.

### **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 Highways**

Although both Marengo Drive and Norton Street are considered local streets, Norton Street should be assigned right of way in this case, as it is the continuing road and Marengo Drive terminates at Norton Street. Driver expectation is that the continuing road does not have to stop and the terminating road must at a minimum slow to make the turn.

### **Sight Distance**

The only major sight distance obstructions at the intersection are the tree in the southeast quadrant and the large round shrub along the driveway in the northeast quadrant. The obstructions and sight distance 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 greater than 10 mph for the minor road, a YIELD sign is commonly used. In this case, the safe approach speed on Marengo Drive was found to

be less than 10 mph; therefore a STOP sign is the recommended treatment. The safe approach speed calculation spreadsheet is attached for your reference.

**Recommendation**

OHM recommends that the intersection control be modified from uncontrolled to a STOP sign on the Marengo Drive westbound approach to the intersection. We recommend against modifying the intersection to multi-way STOP control.

Sincerely,  
Orchard Hiltz & McCliment, Inc.

A handwritten signature in black ink, appearing to read 'S. Loveland', written in a cursive style.

Steven M. Loveland, PE, PTOE  
Traffic Project Engineer

Attachments:

- Aerial and Intersection Photos
- Traffic Counts
- Safe Approach Speed Calculation Spreadsheet



Marengo and Norton

Norton Rd

Marengo Dr

Crum Creek Dr

Peacock Dr

Reehoter Rd

Woodside Trail Dr

Villa Park Dr

Google

Eye alt 869 m

© 2009 Tele Atlas  
42° 36' 48' 37" N 83° 08' 00' 91" W elev. 215 m

Imagery Date: Jun 2007



**Marengo WB at Norton**



**Norton NB at Marengo**



**Norton SB at Marengo**

# Safe Approach Speed Calculation

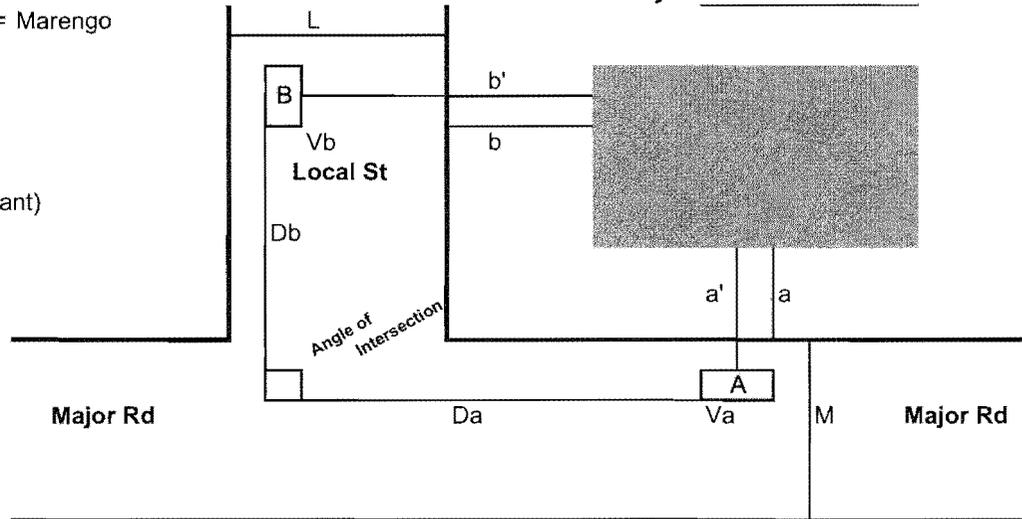
Norton and Marengo  
City of Troy, MI

Major = Norton  
Local = Marengo

Date: 9/25/2009  
Analyst: S. Loveland

Measured:

- Width of Roads
  - Major: M = 20 (ft)
  - Local: L = 24 (ft)
- Distance to Obstruction (large round shrub NE quadrant)
  - a = 14 (ft)
  - b = 78 (ft)
- Angle of Intersection
  - Delta = 90 (degrees)
- Major Rd Posted Speed Limit = 25 (mph)



Assumed:

- Speed of Vehicle A = Posted Speed Limit on Major Road + 5 (mph)
  - Va = 30 (mph)
- Perception / Reaction Time (AASHTO)
  - t = 2.0 (sec)
- Coefficient of friction (AASHTO)
  - f = 0.40
- Clearance distance in excess of safe stopping distance (AAA)
  - C = 15 (ft)

Intermediate Calculations:

Da = 178      a' = 21  
Db = 44      b' = 93

Calculated Safe Approach Speed for Vehicle Approaching on Local Rd  
Vb = 8.0 (mph)

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 local street

based on safe approach speed : **STOP Sign**

City of Troy  
 WEEKLY SUMMARY FOR LANE 1  
 Starting: 7/20/09

Page: 1

VOLUME

ite Reference: IRD002  
 ite ID: Marengo  
 ocation: Sect 3 - West of Roch.Rd.  
 irection: E/W

File: D0720003.prn  
 City: Troy  
 County: Oakland

TIME	MON 20	TUE 21	WED 22	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00		0	1			0			0	1
02:00		0	1			0			0	1
03:00		0	0			0			0	0
04:00		0	0			0			0	0
05:00		1	0			0			0	1
06:00		4	6			5			5	10
07:00		3	1			2			2	4
08:00		4	5			4			4	9
09:00		6	8			7			7	14
10:00		14	4			9			9	18
11:00		11	5			8			8	16
12:00		12	11			11			11	23
13:00	8	8				8			8	16
14:00	9	14				11			11	23
15:00	16	18				17			17	34
16:00	11	9				10			10	20
17:00	8	13				10			10	21
18:00	15	13				14			14	28
19:00	9	10				9			9	19
20:00	11	5				8			8	16
21:00	10	5				7			7	15
22:00	4	5				4			4	9
23:00	5	1				3			3	6
24:00	2	1				1			1	3
TOTALS	108	157	42	0	0	148	0	0	148	307
AVG WKDY	72.9	106	28.3							
AVG WEEK	72.9	106	28.3							
AM Times		10:00	12:00			12:00			12:00	
AM Peaks		14	11			11			11	
PM Times	15:00	15:00				15:00			15:00	
PM Peaks	16	18				17			17	

City of Troy  
 WEEKLY SUMMARY FOR LANE 1  
 Starting: 7/20/09

Page: 1

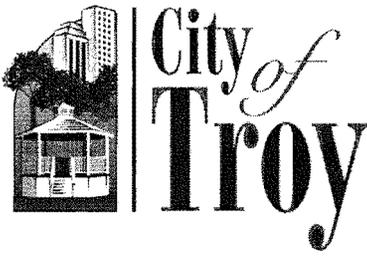
VOLUME

Site Reference: IRD001  
 Site ID: Norton  
 Location: Sect 3 - Sth. of South blvd.  
 Direction: N/S

File: D0720002.prn  
 City: Troy  
 County: Oakland

TIME	MON 20	TUE 21	WED 22	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00		0	1			0			0	1
02:00		0	1			0			0	1
03:00		0	0			0			0	0
04:00		0	0			0			0	0
05:00		1	1			1			1	2
06:00		3	5			4			4	8
07:00		2	1			1			1	3
08:00		6	6			6			6	12
09:00		9	8			8			8	17
10:00		12	8			10			10	20
11:00		10	7			8			8	17
12:00		17	8			12			12	25
13:00	6	8				7			7	14
14:00	8	12				10			10	20
15:00	14	16				15			15	30
16:00	13	11				12			12	24
17:00	11	15				13			13	26
18:00	15	15				15			15	30
19:00	14	13				13			13	27
20:00	5	4				4			4	9
21:00	5	9				7			7	14
22:00	7	6				6			6	13
23:00	3	2				2			2	5
24:00	0	1				0			0	1

TOTALS	101	172	46	0	0	154	0	0	154	319
% AVG WKDY	65.5	111.6	29.8							
% AVG WEEK	65.5	111.6	29.8							
AM Times		12:00	09:00			12:00			12:00	
AM Peaks		17	8			12			12	
PM Times	18:00	15:00				15:00			15:00	
PM Peaks	15	16				15			15	



## TRAFFIC COMMITTEE REPORT

October 1, 2009

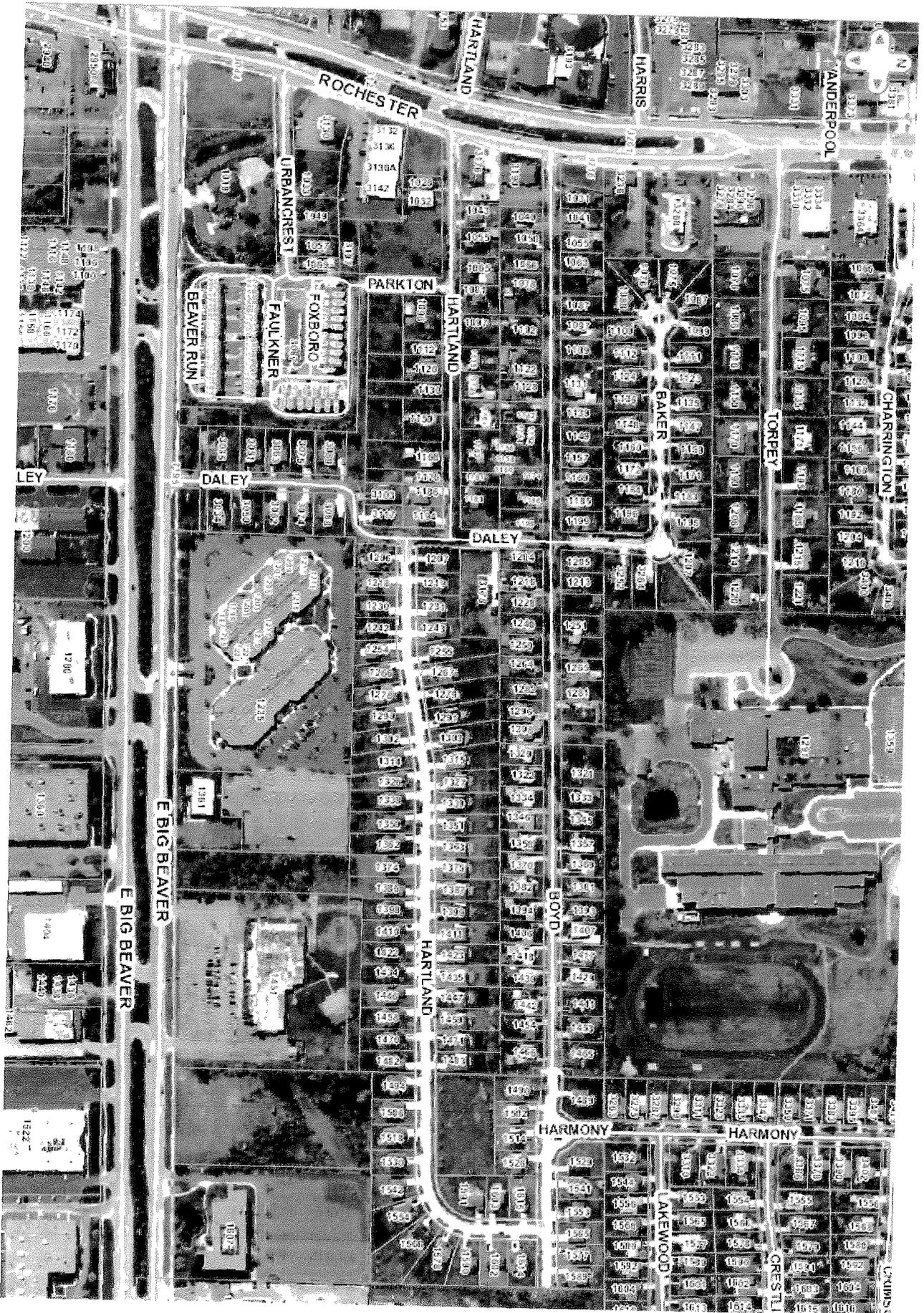
TO: Traffic Committee

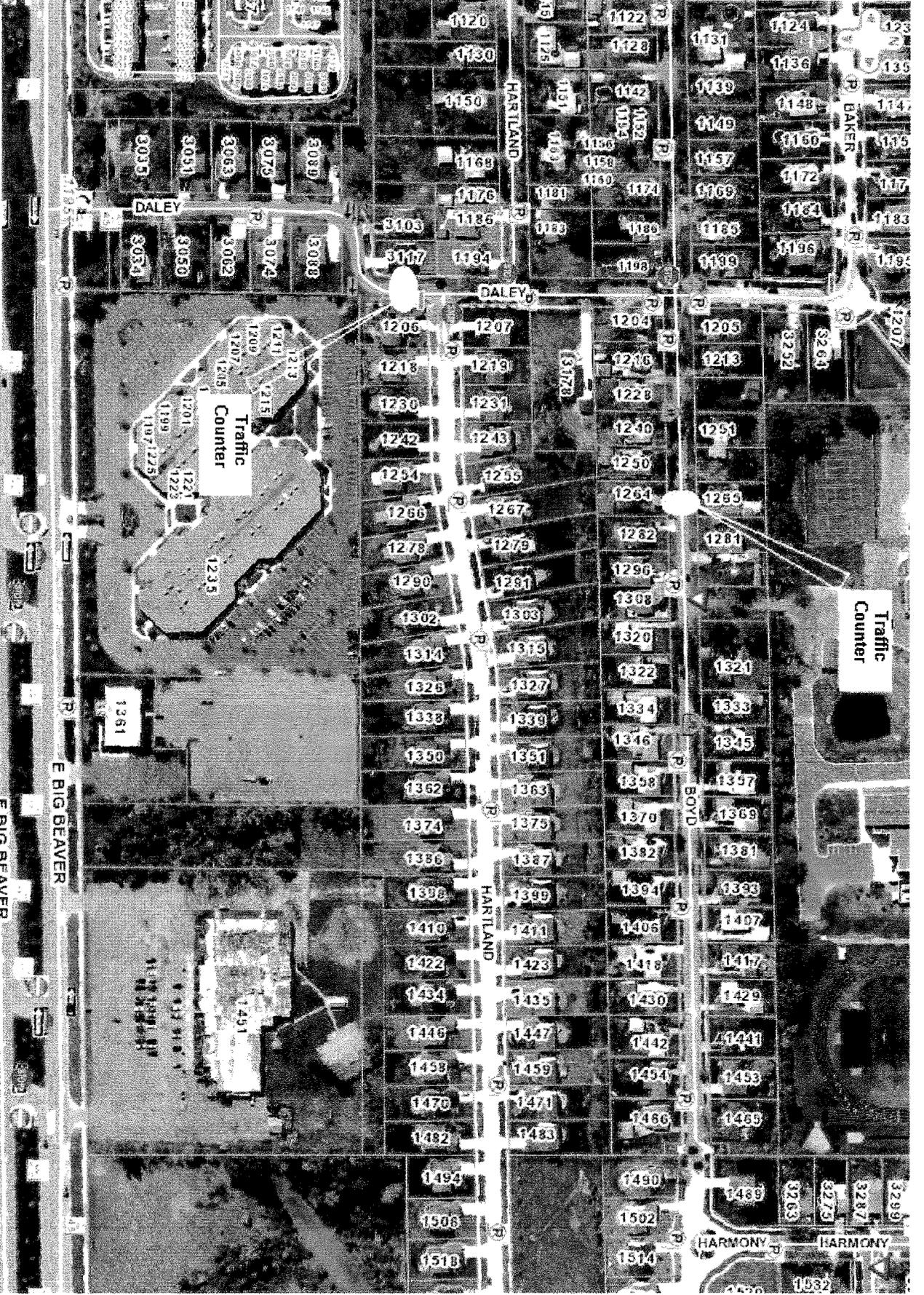
FROM: Bill Huotari, Deputy City Engineer/Acting Traffic Engineer *WJH*

SUBJECT: Daley, North of Big Beaver  
Request for Information

- Mr. Kilmer requested traffic information on Daley, north of Big Beaver.
- Data was collected on Daley, just south of Hartland on September 28 and 29, 2009.
- The weekday average volume for Daley was 919 vehicles.
- Peak hour traffic occurred at 8:00 a.m. with an average volume of 157 vehicles.
- 85<sup>th</sup> percentile speeds were less than 20.0 mph and average speeds were just over 16 mph.
- Traffic volumes on this section of Daley are fairly consistent throughout the day, except during the times of school arrival and dismissal.
- Baker Middle School and the International Academy East are both located at the same site at the end of Torpey with a secondary access to the site from Boyd.
- Volume counts were taken on Boyd, just west of the southerly entrance to the school site on September 23 and 24, 2009.
- Weekday average volumes on Boyd were 900 vehicles, but the average was skewed by heavier evening volumes between 7:00 p.m. and 9:00 p.m. due to an activity at the school on September 24.
- Peak hour traffic occurred at 8:00 a.m. with an average volume of 213 vehicles.
- Boyd is a dead end street at its east terminus with West Oak Subdivision
- A map of the area detailing counter locations and an overall map of the area are attached for your reference.

Please advise if more information is required.



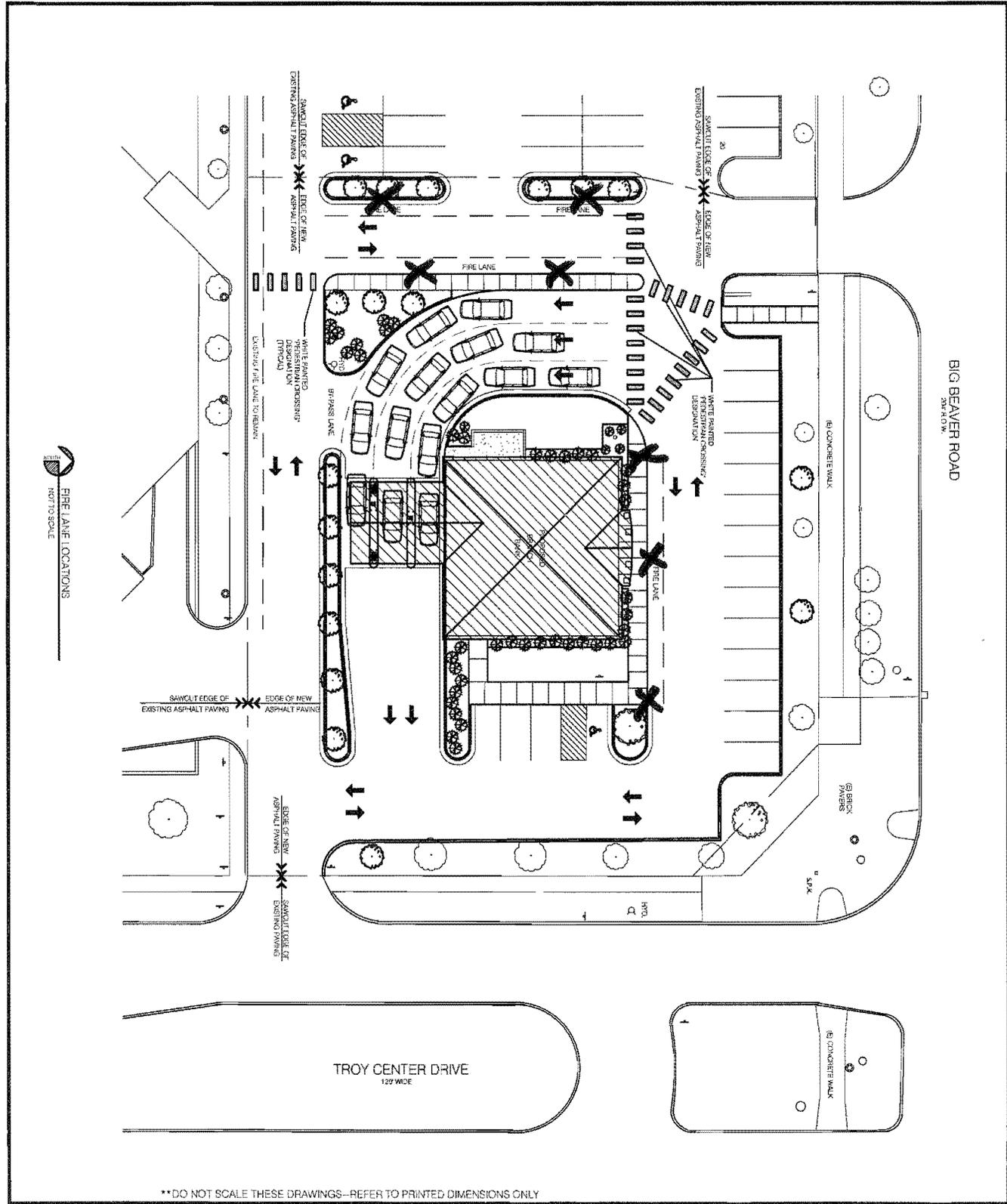








# 791 W. BIG BEAVER



\*\*DO NOT SCALE THESE DRAWINGS--REFER TO PRINTED DIMENSIONS ONLY

Per Fire Department Request: 05 August 2009	DRAWING REF.:	Project No.: 3407
	DRAWING NO.:	Huntington Bank Troy Main Branch
	DRAWING SCALE:	791 W. Big Beaver Road
	Not to Scale	© Ehresman Associates, Inc. 2009

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