



**CITY of NOVI CITY COUNCIL**

**Agenda Item H  
August 9, 2010**

**SUBJECT:** Approval of Traffic Control Order 10-36 for the implementation of a 35 mile per hour speed limit on 12 Mile Road between Napier Road and the Wixom city limit.

**SUBMITTING DEPARTMENT:** Department of Public Services, Engineering Division *BTC*

**CITY MANAGER APPROVAL:** *[Signature]* *RH*

**BACKGROUND INFORMATION:**

The City of Novi assumed jurisdiction over 0.7 miles of 12 Mile Road between Napier Road and the city limit in 2007. The road is currently posted with a 40 mile per hour (mph) speed limit for which the City of Wixom has a traffic control order; however, Wixom was unable to produce a study or any documentation that would support the traffic control order for 40 mph. Because the posted speed limit lacks a traffic control order issued by Novi and lacks support of the speed issued under Wixom's traffic control order, a speed study was initiated. Given the low traffic volumes for 12 Mile Road, a speed study was conducted using in-house staff (see Coburn memo dated August 2, 2010, attached).

While the 85<sup>th</sup> percentile speed of 40.2 mph for this segment of 12 Mile Road was noted from the speed sample, there are other factors that may be considered in setting the posed speed limit. The geometry of the existing road (which is narrower than a standard two lane roadway), the relatively poor condition of the gravel portion of the roadway, the presence of large trees at the edge of the roadway, and the lower 10 mph pace speed of 25-35 mph are all valid factors to support a lower speed recommendation of 35 mph (see attached report for additional information).

The study also recommends the installation of warning signs in advance of and at the 90 degree curve. The recommended signage will be installed by Field Operations Division staff within the coming weeks.

**RECOMMENDED ACTION:** Approval of Traffic Control Order 10-36 for the implementation of a 35 mile per hour speed limit on 12 Mile Road between Napier Road and the Wixom city limit.

	1	2	Y	N
Mayor Landry				
Mayor Pro Tem Gatt				
Council Member Crawford				
Council Member Fischer				

	1	2	Y	N
Council Member Margolis				
Council Member Mutch				
Council Member Staudt				

CITY OF NOVI  
TRAFFIC CONTROL ORDER

X SPEED  
PARKING  
OTHER

DATE OF ORDER: August 2, 2010

CONTROL NUMBER: 10-36

PURSUANT TO CHAPTER NO. 33 OF THE CODE OF ORDINANCES OF THE CITY OF NOVI, MICHIGAN, SAME BEING THE UNIFORM TRAFFIC CODE FOR CITIES, TOWNSHIPS AND VILLAGES OF MICHIGAN AND IN THE INTEREST OF PUBLIC SAFETY AND CONVENIENCE THE FOLLOWING TRAFFIC CONTROL ORDER IS HEREBY ISSUED BY BRIAN COBURN, SENIOR CIVIL ENGINEER, DULY AUTHORIZED AS TRAFFIC ENGINEER, BY SEC. 33.141 OF THE AFORESAID CHAPTER.

ISSUANCE OF THIS TRAFFIC CONTROL ORDER WAS PRECEDED BY STUDY AND INVESTIGATION OF TRAFFIC CONDITIONS ON THE FOLLOWING PUBLIC ROAD OR ROADS IN THE CITY OF NOVI, MICHIGAN.

12 MILE RD

AND AFTER SAID INVESTIGATION, IT IS HEREBY ORDERED AND DIRECTED THAT THE DEPARTMENT OF PUBLIC SERVICES ERECT AND MAINTAIN THE SPEED LIMIT SIGN (S) IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AS REQUIRED BY SEC. 33.217 OF THE AFORESAID CHAPTER, SAID SIGNS TO GIVE NOTICE OF THE FOLLOWING DETERMINATION:

SPEED LIMIT FOR 12 MILE ROAD FROM NAPIER RD TO NORTH CITY LIMIT TO BE 35 MPH

  
TRAFFIC ENGINEER-BRIAN COBURN

DATED: 08/02/2010

**APPROVED BY CITY COUNCIL**

TRAFFIC CONTROL ORDER NUMBER 10-36 HAVING BEEN PRESENTED TO THE COUNCIL OF THE CITY OF NOVI, MICHIGAN FOR STUDY AND APPROVAL, IS HEREBY APPROVED AND IT IS HEREBY ORDEED AND DIRECTED THAT THIS ORDER BE FILED IN THE OFFICE OF THE CITY CLERK AND A COPY THEREOF IN THE OFFICE OF THE CHIEF OF POLICE OF SAID CITY.

IT IS FURTHER ORDERED AND DIRECTED THAT THIS ORDER SHALL BECOME EFECTIVE UPON BEING FILED WITH THE CLERK AND UPON ERECTION OF ADEQUATE SIGNS GIVING NOTICE OF THE EXISTENCE OF AFORESAID,

SPEED LIMIT FOR 12 MILE ROAD FROM NAPIER RD TO NORTH CITY LIMIT TO BE 35 MPH

ADOPTED AT THE REGULAR MEETING  
OF COUNCIL ON \_\_\_\_\_.

BY: \_\_\_\_\_  
Mayor - David Landry

By: \_\_\_\_\_  
City Clerk - Maryanne Cornelius



## MEMORANDUM

**TO:** ROB HAYES, P.E.; DIRECTOR OF PUBLIC SERVICES  
**FROM:** BRIAN COBURN, P.E.; SENIOR CIVIL ENGINEER *BCC*  
**SUBJECT:** SPEED LIMIT ON 12 MILE ROAD (NAPIER TO CITY LIMIT)  
**DATE:** AUGUST 2, 2010

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The jurisdiction of 12 Mile Road between Napier Road and the 90-degree curve near Grand River Avenue was transferred from the City of Wixom to the City of Novi in 2007. The road is currently posted with a 40 mile per hour (mph) speed limit for which the City of Wixom has a traffic control order; however, Wixom was unable to produce a study or any documentation that would support the traffic control order for 40 mph. Because the posted speed limit lacks a traffic control orders issued by Novi and lacks support of the speed issued under Wixom's traffic control order, a speed study was initiated. Given the low traffic volumes for 12 Mile Road, this speed study was conducted using in-house staff.

### Speed Law Requirements

Speed limits are governed by the Michigan Vehicle Code (MVC) and the Michigan Manual of Traffic Control Devices (MMUTCD). The MVC provides a standard "prima facie" speed based on the number of access points on a roadway. The MVC allows the local agency to adjust the speed limit based on a traffic engineering study. The MMUTCD requires an engineering study to determine the speed limit in accordance with established traffic engineering practices and that the limit must be adopted by the local agency (in the form of a traffic control order). Drivers that are ticketed for violating a speed limit can challenge the ticket if a valid traffic control order (supported by an engineering study) is not on file.

Generally, speed limits should be set so that the majority of drivers observe them voluntarily. Studies have shown that drivers generally operate their vehicles at speeds that are reasonable and proper, regardless of the posted speeds. Nationally, this is recognized as the 85th percentile speed, which is the speed at which 85 percent of the vehicles are moving. It is generally accepted that when traffic deviates from the 85th percentile speed, the probability of a traffic crash becomes greater. In addition to the 85th percentile speed, the MMUTCD recommends review of other road characteristics including pedestrian activity, road conditions, crash experience, and road side environment. Realistic speed limits should be set at no more than five miles per hour below or above the 85th percentile speed based on these mitigating factors.

### Data and Analysis

**Prima Facie Speed Limit** - The aerial photo was reviewed to determine that there are six curb cuts along 12 Mile Road within the study area. Given the average of 3 curb cuts per half mile, the prima facie speed limit under MCL 257.627 would be 55 miles per hour.

**85<sup>th</sup> Percentile Speed** – DPS personnel conducted automated speed sampling on 12 Mile Road between Sprucewood and Helfer (at the midpoint of the segment) as shown in Figure 1. The average of the daily traffic volumes collected from the sample is 305 vehicles. The speed data is summarized in Table 1, and indicates that the 85<sup>th</sup> percentile speed is 40.2 mph.

**Figure 1. Location Map**



**Table 1. Summary of Speed Data for 12 Mile Road**

Direction	Date	Sample Size	Speed (mph)			
			Average Speed	85th percentile	10-mph pace	% in Pace
WB	7/20/2010 (>12 pm)	94	29.8	38.3	25-35	46.8
	7/21/2010	140	30.5	38.8	25-35	42.1
	7/22/2010 (<12 pm)	35	26.9	41.3	25-35	28.5
	Average Day	135	29.1	39.5	25-35	28.5
EB	7/20/2010 (>12 pm)	91	30.5	40.2	25-35	38.4
	7/21/2010	178	31.2	39.5	25-35	44.9
	7/22/2010 (<12 pm)	72	35	43.3	25-35	43
	Average Day	171	35	43.3	25-35	42.1
<b>Both</b>	<b>Average Day</b>	<b>305</b>	<b>30.7</b>	<b>40.2</b>	<b>25-35</b>	<b>40.6</b>

**Other Factors** – The MMUTCD allows other factors to be considered when establishing speed limits, such as: road characteristics (shoulder condition, grade, alignment, and sight distance), pace speed, roadside development and environment, parking practices and pedestrian activity, and reported crash experience. Of the 0.7 mile segment, only 0.2 miles is paved with asphalt. The unpaved portion of 12 Mile Road varies in width from 17 feet to 26 feet and the condition of the road varies depending on weather conditions and maintenance. The segment is heavily forested and lacks an adequate clear zone adjacent to the traveled road. The eastern end of the segment includes a 90-degree curve that lacks proper signage or a posted advisory speed. There

is a mix of developed and undeveloped land along the segment. The pace speed, which is the 10 mph window containing the largest number of vehicles is 25 mph to 35 mph, lower than the 85<sup>th</sup> percentile speed of 40.2 mph.

**Crash History** - The crash database for the years 2005 through 2009 was reviewed to determine the number and frequency of crashes occurring along the 12 Mile Road segment. There were only two crashes reported on this segment during this period of time. One crash involved a single vehicle avoiding a deer and was not cited for speed. The second crash involved a failure to maneuver the 90-degree curve at the city boundary in which speed at the curve may have been a factor.

**Curve Speed** - The road segment contains a sharp 90-degree with a radius of approximately 60 feet based on the aerial photos. Using the *AASHTO Guidelines for Geometric Design of Very Low Volume Local Roads*, the design speed for the curve would be 15 mph for a gravel surfaced road.

### Conclusions

This segment of 12 Mile Road is currently posted at 40 mph. While the 85<sup>th</sup> percentile speed of 40.2 mph for this segment of 12 Mile Road was noted from the speed sample, there are other factors that must be considered in setting the posed speed limit. The geometry of the existing road (which is narrower than a standard two lane roadway), the condition of the gravel portion of the roadway, the presence of large trees at the edge of the roadway, and the lower 10 mph pace speed of 25-35 mph are all valid factors to support a lower speed recommendation of 35 mph.

The horizontal curve at the eastern end of the segment, where the roadway turns 90-degrees from east-west to north-south at the city limit, should be posted with a 15 mph advisory speed.

### Recommendations

- Engineering will prepare a traffic control order to City Council for the consideration of a 35 mph speed limit between Napier Road and the 90-degree curve at the city boundary.
- Upon approval of the traffic control order by City Council, Field Operations should install 35 mph speed limit signs at the following locations:
  - For westbound traffic approximately 400 feet west of the 90 degree curve and at the midpoint of the segment, near Sprucewood.
  - For eastbound traffic, approximately 400 feet east of Napier Road and near the midpoint of the segment, near Sprucewood.
- Field Operations should install a 30-inch W1-1 (90-degree curve) sign with a supplemental 15 mph W13-1 advisory speed placard (24" x 24") a distance of 200 feet from the curve on the eastbound leg. (Note that the City of Wixom has installed a sign for southbound traffic in advance of the curve).
- Field Operations should install a W1-6 (One Direction Large Arrow) sign at the outside of the 90-degree curve at a 90-degree degree angle to oncoming traffic for both southbound and eastbound drivers at the curve.



Photo 1. Looking south at 90-degree curve (City of Wixom)



Photo 2. Looking east at 90-degree curve



Photo 3. Looking west from Sprucewood (narrowest portion of the segment)



Photo 4. Looking east from west of Helfer (widest portion of the segment)



Traffic Improvement Association

Crash Detail Report

Request #: 0005418

Printed By: Brian Coburn

Printed On: 7/30/2010

CNTY_CD:	63
FROM_DATE:	1/1/2005
TO_DATE:	12/31/2009
CITY_TWSP:	Wixom

#1 Location: 12 MILE (0.61) 1320 feet SW of GRAND RIVER Crash ID: 6397103  
 Crash Date: 07/19/2006 Day: Wed Hour: 3pm Weather: clear Roadway: dry Light: day  
 Injuries K: 0 Inj A: 0 Inj B: 1 Inj C: 0 Inj 0: 2 How: head-on  
 CVT: Wixom Area: curved HBD: N Drugs: N Complaint No: 0600001317

Unit No	Veh Dir	Action	Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	W	right turn		loss of control	ran off road/l	tree	none	negl driving	pickup	

UD-10: 061161525

#2 Location: 12 MILE (0.17) 42 feet E of NAPIER Crash ID: 6836235  
 Crash Date: 11/16/2007 Day: Fri Hour: 6am Weather: clear Roadway: dry Light: dark/unltd  
 Injuries K: 0 Inj A: 0 Inj B: 0 Inj C: 1 Inj 0: 0 How: single  
 CVT: Wixom Area: straight HBD: N Drugs: N Complaint No: 0700002204

Unit No	Veh Dir	Action	Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	W	right turn		tree	none	none	none	none	car	ctrfront

UD-10: 070356550



**Crash Type**

Count	Type
0	uncoded
1	single
1	head-on
0	head-on/lt
0	angle
0	rr-end
0	rr-end/lt
0	rr-end/rt
0	ss-same
0	ss-opp
0	unknown
<b>Totals: 2</b>	

**Light Conditions**

Count	Type
0	uncoded
1	day
0	dawn
0	dusk
0	dark/lt
1	dark/unltd
0	unknown
<b>Totals: 2</b>	

**Weather**

Count	Type
0	uncoded
2	clear
0	cloudy
0	fog/smoke
0	rain
0	snow
0	wind
0	sleet/hail
0	unknown
<b>Totals: 2</b>	

**Road Condition**

Count	Type
0	uncoded
2	dry
0	wet
0	icy
0	snowy
0	muddy
0	slushy
0	debris
0	unknown
<b>Totals: 2</b>	

**Vehicle Type**

Count	Type
0	uncoded
1	car
0	other
0	truck/bus
0	van
1	pickup
0	sm truck
0	motorcycle
0	moped
0	go-cart
0	snowmobile
0	off-rd veh
<b>Totals: 2</b>	

**Crashes By Month**

Count	Type
0	January
0	February
0	March
0	April
0	May
0	June
1	July
0	August
0	September
0	October
1	November
0	December
<b>Totals: 2</b>	

**Hazardous Action**

Count	Type
1	none
0	speeding
0	imprp/no signal
0	imprp backing
0	unable to stop
0	other
0	unknown
0	reckls driving
1	negl driving
0	spd too slow
0	failed to yeild
0	disrgd traffic cntrl
0	wrong way
0	left of center
0	imprp passing
0	imprp lane use
0	imprp turn
<b>Totals: 2</b>	

**Unit Type**

Count	Type
0	uncoded
2	vehicle
0	pedestrian
0	bicyclist
0	engineer
<b>Totals: 2</b>	

## Crash Severity

	FATAL	A	B	C	No Inj	Total
Persons	0	0	1	1	2	4
Crashes	0	0	1	1	N/A	2

## Alcohol in Crashes

	FATAL	PI	PD	Total
Drinking	0	0	0	0
Not Drinking	0	2	0	2
Total	0	2	0	2

## Crashes per Hour by Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Unknown	Total
12a - 1a	0	0	0	0	0	0	0	0	0
1a - 2a	0	0	0	0	0	0	0	0	0
2a - 3a	0	0	0	0	0	0	0	0	0
3a - 4a	0	0	0	0	0	0	0	0	0
4a - 5a	0	0	0	0	0	0	0	0	0
5a - 6a	0	0	0	0	0	0	0	0	0
6a - 7a	0	0	0	0	0	1	0	0	1
7a - 8a	0	0	0	0	0	0	0	0	0
8a - 9a	0	0	0	0	0	0	0	0	0
9a - 10a	0	0	0	0	0	0	0	0	0
10a - 11a	0	0	0	0	0	0	0	0	0
11a - 12p	0	0	0	0	0	0	0	0	0
12p - 1p	0	0	0	0	0	0	0	0	0
1p - 2p	0	0	0	0	0	0	0	0	0
2p - 3p	0	0	0	0	0	0	0	0	0
3p - 4p	0	0	0	1	0	0	0	0	1
4p - 5p	0	0	0	0	0	0	0	0	0
5p - 6p	0	0	0	0	0	0	0	0	0
6p - 7p	0	0	0	0	0	0	0	0	0
7p - 8p	0	0	0	0	0	0	0	0	0
8p - 9p	0	0	0	0	0	0	0	0	0
9p - 10p	0	0	0	0	0	0	0	0	0
10p - 11p	0	0	0	0	0	0	0	0	0
11p - 12a	0	0	0	0	0	0	0	0	0
Unknown Time	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0	0	2