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# CITY of NOVI CITY COUNCIL

Agenda Item M August 23, 2010

**SUBJECT:** Approval of Traffic Control Order 10-43 for the implementation of a 45 mph speed limit on West Park Drive between 12 Mile Road and West Road.

SUBMITTING DEPARTMENT: Department of Public Services, Engineering Division Blue

CITY MANAGER APPROVAL:

# **BACKGROUND INFORMATION:**

A recent audit of the City's traffic control sign inventory identified a number of posted speed limits that lack traffic control orders for enforcement of the speed. The Uniform Traffic Code requires that traffic control orders, as issued by the traffic engineer and approved by the City Council, be on file for the enforcement of traffic control signs. As such, an engineering study was performed to establish a legal speed limit as required by the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) (see Birchler Arroyo study dated May 10, 2010). Speed limits are generally set using the 85th percentile speed, which is the speed at or below which 85 percent of the motorists drive on a given road unaffected by slower traffic or poor weather.

The posted speed limit on West Park Drive between 12 Mile Road and West Road is currently 40 mph; however there is not a traffic control order on file for the posted speed on this segment. A speed limit of 45 mph is proposed to represent existing driver behavior on this segment as demonstrated by the 85th percentile speeds of 48.5 mph near Dylan Drive and 46.0 mph near the bridge over the CSX railroad. As discussed in the attached August 10, 2010 memo regarding the proposed speed limit changes, an increase in the posted speed to match the 85th percentile speed does not significantly increase the 85th percentile speed when the posted speed limit is increased. In reviewing the segments on which the speed limits were increased in 2009, the 85th percentile speed increased an average of 0.8 mph. In accordance with Department of Public Service's standard procedures, within one year after implementation of new speed limits, staff will collect speed samples to verify that the new posted speed limit continues to reflect the 85th percentile speed.

The new speed limit signs would meet the federal retroreflectivity requirements and would be funded by the Traffic Control Sign Replacement Program as approved in the FY2010-11 budget.

**RECOMMENDED ACTION:** Approval of Traffic Control Order 10-43 for the implementation of a 45 mph speed limit on West Park Drive between 12 Mile Road and West Road.

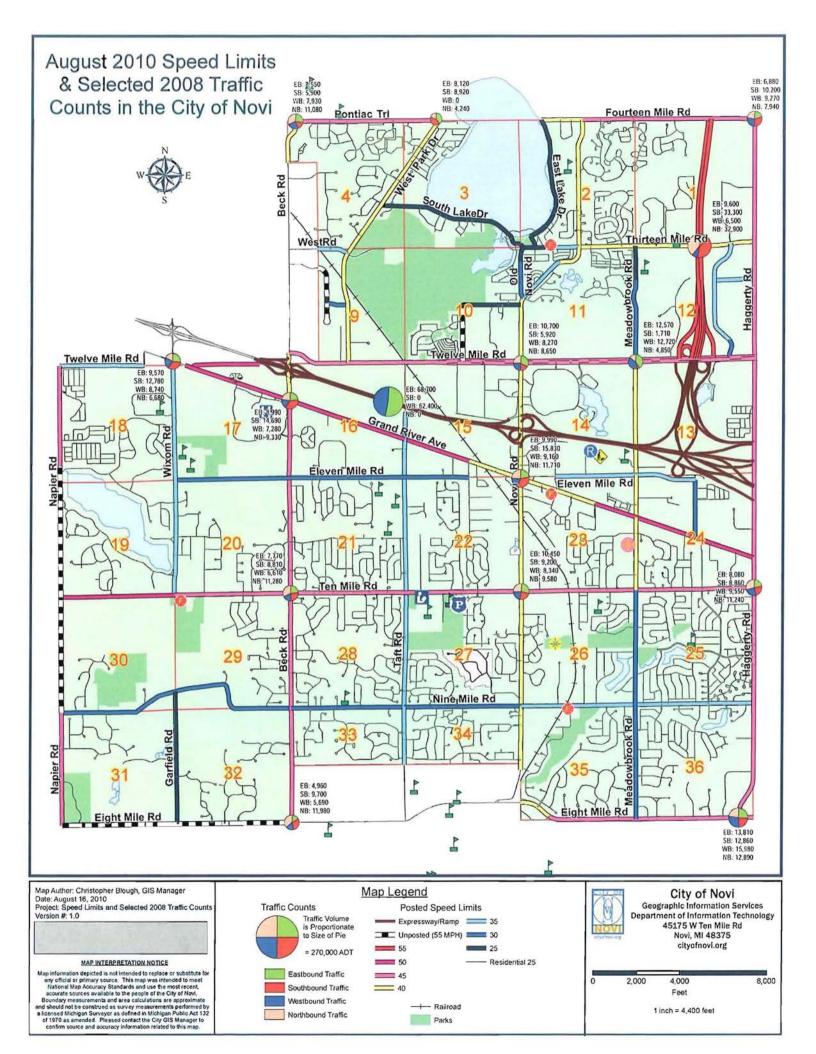
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Mayor Landry				
Mayor Pro Tem Gatt				
Council Member Crawford				
Council Member Fischer				

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Council Member Margolis				
Council Member Mutch				
Council Member Staudt				

# CITY OF NOVI TRAFFIC CONTROL ORDER

X	SPEED	DATE OF	ORDER:	August 16, 2010
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SPEED LI	MIT FOR WEST PARK DRIVE FROM 12 M	ILE ROAD	TO WEST ROAD	TO BE 45 MPH
		Brian	Coburn, P.E	Traffic Engineer
		Date	ed: August 16,	2010
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SPEED LIA	MIT FOR WEST PARK DRIVE FROM 12 M	ILE ROAD	TO WEST ROAD	TO BE 45 MPH
	D AT THE REGULAR MEETING OF UNCIL ON <u>August 23, 2010.</u>	Ву:	David Landry,	Mayor
		By:		

Maryanne Cornelius, Clerk



# MEMORANDUM



TO: ROB HAYES, P.E.; DIRECTOR OF PUBLIC SERVICES

FROM: BRIAN COBURN, P.E.; SENIOR CIVIL ENGINEER BC

SUBJECT: PROPOSED SPEED LIMIT CHANGES

**DATE:** AUGUST 10, 2010

This memo is a follow-up to my April 28, 2010 memo regarding speed limit evaluations. As you may recall, I conducted an audit of the city's speed limit signs and identified a number of installed signs that lack traffic control orders. The road segments that lack traffic control orders for the posted speed are as follows:

- Novi Road (12 Mile Road to 14 Mile Road)
- Meadowbrook Road (12 Mile Road to 13 Mile Road)
- 13 Mile Road (Meadowbrook Road to Haggerty Road)
- West Park Drive (12 Mile Road to West Road)
- Town Center Drive
- Crescent Blvd
- Crowe Drive
- Ingersol Drive

With the assistance of the Field Operations Division and our traffic consultant, Birchler Arroyo, we have collected speed samples and evaluated these segments to determine the appropriate speed limit. The speed studies for each segment are attached to this memo.

## Legal Requirements for Speed Limits

The Uniform Traffic Code requires that traffic control orders, as issued by the traffic engineer and approved by the City Council, be on file for the enforcement of traffic control signs. As discussed in the Detroit News article attached to the April 28 memo, tickets issued for a speed limit that lacks a traffic control order could be successfully challenged by the motorist. 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.

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 or below which 85 percent of the motorists drive on a given road unaffected by slower traffic or poor weather. 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, 10 mph pace, 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.

# Public Perception of Speed Limits

It is usually difficult for the public to understand that even though the road may be posted at one speed, a great number of drivers may actually be driving faster based on their comfort level with the road. There is also a perception that when the posted speed limit is increased that it will result in even higher speeds. For example, if a road is posted at 30 mph and the 85th percentile speed is 35 mph, there is a perception that if the posted speed limit is increased to 35 mph, drivers would increase their speed toward 40 mph. To demonstrate the impact of increasing the posted speeds, we have analyzed the speed limits that were changed in 2009. The table below compares the observed 85th percentile speed on several road segments before the new speed limit was posted with the observed 85th percentile speed after the new speed limit was posted. While there was a notable increase on two segments of Beck Road and on Lewis Drive, there was no change in 85th percentile speed for many of the segments. The average change is a 0.8 mph increase in speed.

				85th per	centile speed (	mph)
Road	Segment	Original Posted Speed	New Posted Speed (2009)	Before New Posted Speed Limit	After New Posted Speed Limit	Change
11 Mile	Town Center to Meadowbrook	30	35	36	37	+1
Road	Meadowbrook to Seeley	30	35	39	39	0
Cabal	Lewis to 13 Mile	25	35	38	38	0
Cabot Drive	South of Lewis	25	35	37	37	0
D	North of 12 Mile (curves)	25	30	34	34	0
Lewis Drive	Haggerty to Cabot	25	35	35	37	+2
	11 Mile to Grand River	40	45	47	47	0
Beck	10 Mile to 11 Mile	40	45	45	49	+4
Road	Nine Mile to 10 Mile	40	45	48	46	-2
	Eight Mile to Nine Mile	40	45	47	49	+2
				Ave	rage Change	+0.8

## **Proposed Speed Limits**

The enclosed studies demonstrate that the speed limits that are currently posted on the subject road segments are not being observed by the majority of drivers. Further, since the posted speeds lack traffic control orders or engineering studies to support the posted speed limits, they must be reviewed to establish legal speed limits. A summary of the proposed speed limits is shown in the table below, with the justification for each recommendation included in the enclosed studies.

Road	Sagment	Current Posted	85 <sup>th</sup> Percentile	Recommended Posted Speed Limit
KOGG	Segment	Speed Limit	Speed	Limit
	12 Mile to 1,640 feet south of 13 Mile	40	47	45
Novi Road	1,640 feet south of 13 Mile to 13 Mile	35	45	45
	13 Mile Road to 14 Mile Road	40	48	45 (*)
Meadowbrook	12 Mile Road to Meadowbrook Elem	30	36	35
Road	13 Mile Road to Meadowbrook Elem	25	36	35 (**)
13 Mile Road	Meadowbrook Road to Haggerty Road	40	46	45
West Park Drive	12 Mile Road to West Road	40	47	45
Crowe Drive	Novi Road to Ingersol Drive	25	24	25
Ingersol Drive	Crescent Blvd to Crowe Drive	25	27	25
Crescent Blvd	Novi Road to Town Center Drive	25	33	30
Town Center	Crescent Blvd to 11 Mile Road	25	33	30
Drive	Grand River Ave to 11 Mile Road	25	29	30

(\*)A 30 mph school speed zone is proposed for this segment during school arrival and dismissal times (\*\*)A 25 mph school speed zone is proposed for this segment during school arrival and dismissal times

As noted in the table, there are two school speed zones proposed for implementation. The first is adjacent to Hickory Woods Elementary School on Novi Road. The posted speed limit is currently 40 mph at this location and there is no school speed zone at this time. The report recommends a school speed zone be set at 30 mph in the vicinity of the school property. The second school speed zone is proposed adjacent to Meadowbrook Elementary on Meadowbrook Road. The speed limit is currently set at 25 mph as a regular speed limit that is in effect all-day, every day. The report proposes the implementation of a school speed zone set at 25 mph in the vicinity of the school property. State law (MCL 257.627a) allows the speed limit to be decreased by 15 mph from the posted speed (but set at not less than 25 mph) in a school zone for a period of 30 minutes to one hour before school and 30 minutes to one hour after school, when requested by the school superintendent. We have discussed the proposed school speed zones with Walled Lake Schools. They are supportive of the recommendations and intend to request the school speed zones as proposed.

#### **Public Notification**

The majority of the segments being studied are located in non-residential areas. Meadowbrook Road has the largest potential impact on the residents since there are several residential units along Meadowbrook Road in the existing 25 mph speed zone. A "Speed Limit Under Review" sign (as shown at right) has been installed at the north and south ends of the Meadowbrook Road segment (12 Mile Road to 13 Mile Road) to notify residents and motorists that the speed limit is being studied. We have received a few calls from residents who were primarily concerned with the speed limit near the school. Our staff has explained that a school speed zone is proposed which calmed their concerns.



#### Implementation

We propose to prepare the traffic control orders for the speed limit recommendations from the studies for consideration by City Council on an upcoming agenda. Once approved by City Council, the new speed signs would be installed by Field Operations staff as recommended by the studies. The new signs would meet the federal retroreflectivity requirements and would be funded by the Traffic Control Sign Replacement Program as approved in the FY2010-11 budget.

cc: David Molloy, Public Safety Director/Police Chief Matt Wiktorowski, Field Operations Senior Manager Terry Whitfield, Police Department May 10, 2010

Brian T. Coburn, P.E.
Engineering Div., Dept. of Public Services
City of Novi
26300 Delwal Drive
Novi, MI 48375
bcoburn@cityofnovi.org



Subject: Speed Limit Study of West Park Drive, 12 Mile Road to West Road

Dear Mr. Coburn:

Per your request, we have evaluated the above road segment (Figure 1) to determine an appropriate speed limit and evaluate the possible need for curve warning and/or advisory speed signs. This letter reports our findings and recommendation.

#### Recommendation

The speed limit for West Park Drive between 12 Mile and West Road should be increased to 45 mph.

## Background

Construction plans for what was initially referred to as the "Taft Road Extension" (now West Park Drive) were prepared in 1998 by the City's engineering consultant. These plans indicate a design speed of 50 mph, a posted speed of 40 mph, and an anticipated first-year average daily traffic volume of 8,000 vehicles. Since there is apparently no Traffic Control Order on file for the 40-mph speed limit that was posted upon the completion of construction, Birchler Arroyo Associates was contracted to conduct this speed limit study.

#### Criteria

In establishing a speed limit, it is appropriate to determine and consider (1) the prima facie limit, (2) the "speed of vehicular traffic" (typically expressed as the 85th-percentile speed), and (3) other traffic and roadway characteristics (per the *Michigan Manual of Uniform Traffic Control Devices*).

A portion of the *Michigan Vehicle Code* (MCL 257.627) establishes prima facie speed limits based on (1) whether or not the road runs through a business district, and (2) the number of access points (driveways or intersecting roadways) within each half mile of road. In a business district or where there are 60 or more access points per half mile, the prima facie limit is 25 mph. Outside a business district, the prima facie limit is 35 mph for 45-59 access points per half mile and 45 mph for 30-44 access points per half mile.

Another portion of the law (MCL 257.628) indicates that a posted speed limit different than the prima facie limit may be determined based on an "engineering and traffic investigation." Relevant guidelines for such an investigation, found in Section 2B.13 of the *MMUTCD* (approved jointly by the MDOT and the State Police), are as follows:

"When a speed limit is to be posted, it should be within 5 mph of the 85th-percentile of free
flowing traffic.

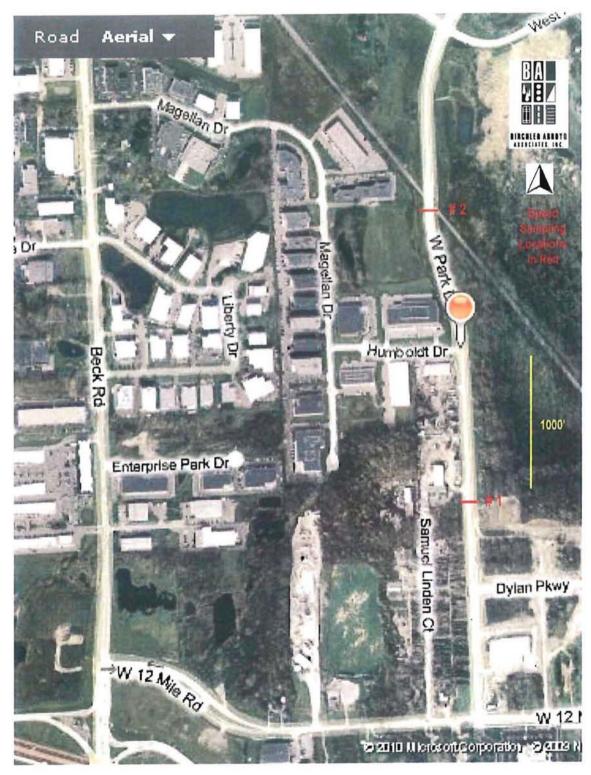


Figure 1. West Park Drive, 12 Mile to West Road

Speed Limit Study of West Park Drive between 12 Mile Road and West Road, page 3 Other factors that may be considered when establishing speed limits are the following: A. Road characteristics, shoulder condition, grade, alignment, and sight distance; B. The pace speed: C. Roadside development and environment: D. Parking practices and pedestrian activity: E. Reported crash experience for at least a 12-month period." Data Collection and Analysis Prima Facie Speed Limit · Our review of recent-vintage aerial photos (Figures 2-7) found an average of 4.7 access points per half mile for Meadowbrook between 12 and 13 Mile Road. This access-point frequency is well below any of the ranges specified in MCL 257.627; hence, the prima facie speed limit is 55 mph. Design Speed - Design speed is a selected speed used to determine the various geometric design features of a roadway, such as the lengths of horizontal and vertical curves to provide driving comfort and adequate sight distance. Birchler Arroyo Associates has reviewed the construction plans for West Park Drive and reached the following conclusions relative to: Comfortable Speed on Horizontal Curves – Each of the three horizontal curves has a 1,200-ft radius and a maximum superelevation (or banking) of 0.04 ft/ft. The methodology and assumed comfortable lateral friction recommended by the American Association of State Highway and Transportation Officials (in both the 1990 policy applicable at the time the design was prepared and the 2004 policy now in effect) yields a safe and comfortable speed of 55 mph. Stopping Sight Distance on Crests -- According to the rates of vertical curvature shown on the plans and relevant AASHTO criteria, the crest vertical curves along West Park Drive ensure stopping sight distance for 58 mph (at the bridge) to 60 mph (on the crests south of the bridge). Given the above findings, it remains unclear why the stated design speed is 50 mph rather than 55 mph. This uncertainty should not remain an impediment, however, to possibly raising the posted speed limit to 45 mph. That limit would be (an adequate) 5 mph under the stated design speed; 10 mph under the inferred design speed on the horizontal curves (dictated by driving comfort with a large margin of safety relative to possible skidding); and 13-15 mph under the inferred design speed on the vertical curves (more directly linked to safety via the need for stopping sight distance). 85th-Percentile Speed - At our request, City personnel conducted automated speed and volume sampling over 48-hour midweek periods. The two sampling locations are marked in red on Figures 1,3, and 6. Table 1 summarizes the traffic statistics by location, direction, and day. Key findings are as follows: The current average daily volume ranges from about 6,900-7,300 vehicles, or somewhat less than the 8,000 vehicles expected by the road's designers upon its opening some ten years ago. The average speed ranges from 41.6 mph on the railroad overpass to 43.4 mph between Humboldt and Dylan. The corresponding 85th-percentile speeds are 45.9 mph and 48.5 mph, or approximately 6-8 mph over the current speed limit of 40 mph.

**Crash Experience** – At our request, the Traffic Improvement Association searched its files for crashes occurring along West Park Drive from 12 Mile to West Road between 2005 and 2009, inclusive. Excluded

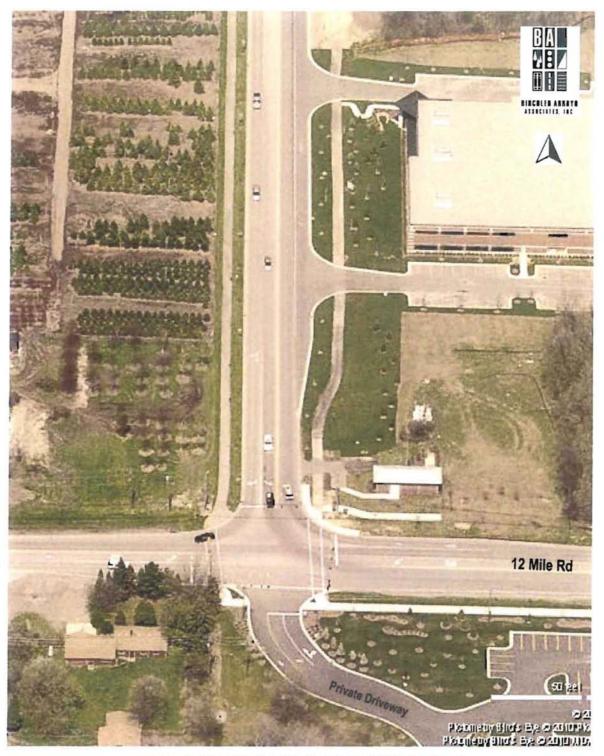


Figure 2. West Park Drive North from 12 Mile Road



Figure 3. West Park Drive, Second Section North of 12 Mile Road



Figure 4. West Park Drive, Third Section North of 12 Mile Road



Figure 5. West Park Drive Near Humboldt Drive

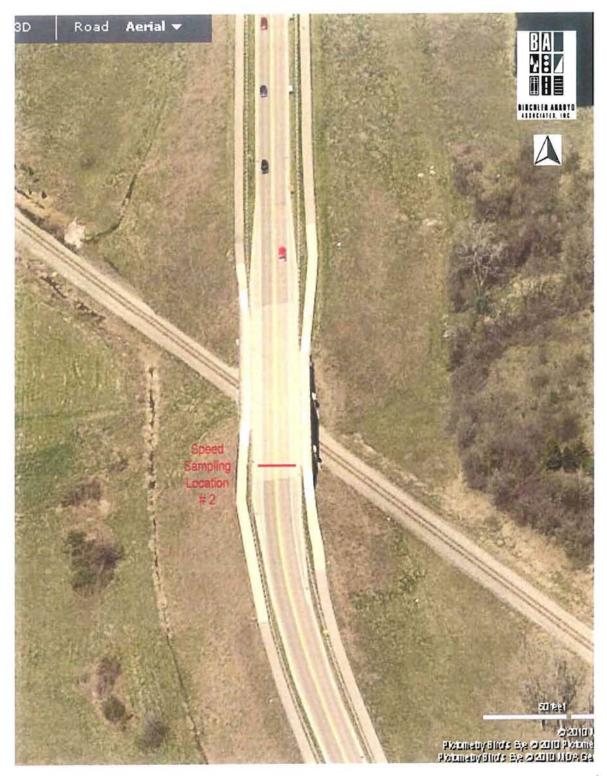


Figure 6. West Park Drive, Second Section South from West Road

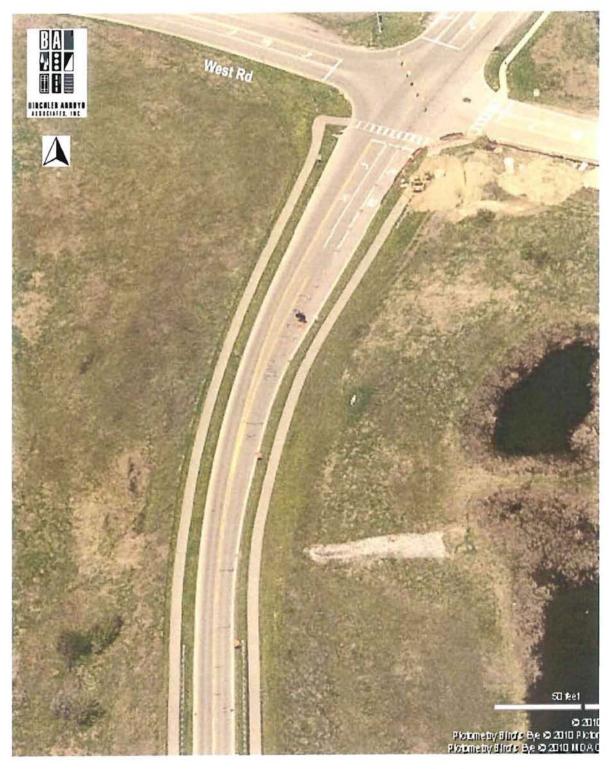


Figure 7. West Park Drive South from West Road

Table 1. Summary of Speed Statistics for West Park Drive, 12 Mile to West Road for May 4-6, 2010

Sampling	Dir.	Date	Sample		Spee	ed (mph)	
Location	DIF.	Date	Size	Average	85th %tile	10-mph Pace	% in Pace
		5-04-10 (>11 am)	2952	44.6	49.4	40-50	78.9%
	ND	5-05-10	3730	44.0	49.0	40-50	79.2%
	NB	5-06-10 (<11 am)	730	43.7	49.2	40-50	75.6%
#1		Average Day	3706	44.2	49.2	40-50	78.7%
(North of		5-04-10 (>11 am)	2149	42.6	47.9	40-50	68.5%
Dylan)	SB	5-05-10	3589	42.4	47.7	35-45	69.2%
,_,,,		5-06-10 (<11 am)	1505	43.0	47.9	40-50	74.0%
		Average Day	3622	42.6	47.8	187	191
	Both	Average Day	7328	43.4	48.5		•
		5-04-10 (>11 am)	2810	42.2	47.1	35-45	74.8%
	ND	5-05-10	3345	41.7	46.6	35-45	76.3%
	NB	5-06-10 (<11 am)	545	41.8	46.5	35-45	80.6%
# 2		Average Day	3350	41.9	46.8	35-45	76.0%
on RR over		5-04-10 (>11 am)	1992	41.3	45.2	35-45	80.6%
pass)	CD.	5-05-10	3531	41.3	44.9	35-45	83.2%
	SB	5-06-10 (<11 am)	1635	41.9	46.0	35-45	79.5%
		Average Day	3579	41.4	45.2	35-45	81.6%
Ī	Both	Average Day	6929	41.7	46.0	35-45	78.9%

Speed Limit Study of West Park Drive between 12 Mile Road and West Road, page 11

were intersection crashes at 12 Mile and at West, since such crashes would likely be due primarily to factors other than the speed limit on West Park.

As can be seen in Table 2, eight of the 14 reported crashes involved an animal (presumably a deer). Ice was involved in two interrelated crashes. Speed was potentially an issue in the remaining two crashes (bolded).

#### Conclusions and Recommendation

- An overall speed limit of 45 mph is supported by the observed 85th-percentile speeds, infrequent access points, design speed of 50 mph (stated) to 55 mph (inferred), and negligible number of speed-related crashes. No curve warning signs are warranted.
- In addition to revising the posted speed limit to 45 mph, it is recommended several Deer Warning (W11-3) signs be installed. Given the locations of the reported deer accidents, it would be appropriate to install one sign northbound just north of 12 Mile Road, one sign southbound just south of West Road, and two signs at the approximate midpoint (just south of Humboldt Drive). To ensure sign visibility, no new sign should be placed within 100 ft of an existing sign.

Sincerely,

BIRCHLER ARROYO ASSOCIATES, INC.

Rodney L. Arroyo, AICP

Vice President

William A. Stimpson, P.E. Director of Traffic Engineering

William a. Stimpson

Table 2. 2005-2009 Crash History for West Park Drive between 12 Mile and West Roads

							Crash (T	ype or #)			Cras	sh Se	verity	(# P	ersons)	
Year	Date	Time	Cross Road	Distance from Cross	Anala	Head	Sides	swipe	Page	Cinala	Fatal		erson Injury		Property	Possible Contributing Factors
			,,,,,,	Road	Angle	-On	Opposite Direction	Same Direction	Rear- End	Single- Vehicle	Fatal	Α	В	С	Damage Only	
	10/29	8 p	Humboldt	51' N.						Animal					1	Likely deer crossing after dark.
2000	10/24	11 p	West	500' S.						Animal					1	Likely deer crossing after dark.
2009	1/27	7 p	Humboldt	250' S.						Animal					1	Likely deer crossing after dark.
	1/16	6 p	Humboldt	300' S.						Animal					1	Likely deer crossing after dark.
	1/15	8 p	12 Mile	1325' N.						Animal					1	Likely deer crossing after dark.
2008	1/14	7 a	West	206' S.					3 veh						6	Chain reaction on snow & ice.
	1/14	7 a	West	201' S.						G-rail					1	Ran off icy rd to avoid above crash?
2007	12/12	7 a	12 Mile	528' N.					SB						2	V#2 waiting to turn left onto Dylan?
2006	5/12	Unk.	West	300' S.						SB					?	Speeding & ran off road.
	12/08	11 p	Humboldt	150' S.					NB						2	V#2 slowing in through lane to turn?
	4/14	8 p	West	250' S.						Cycle			1			Motorcyclist lost control; why?
2005	1/26	6 p	West	1320' S.						Animal					1	Likely deer crossing after dark.
	1/22	12 a	12 Mile	500' N.						Animal					2	Likely deer crossing after dark.
	1/18	3 a	12 Mile	500' N.						Animal					1	Likely deer crossing after dark.
		_			0	0	0	0	3	11	0	0	1	0	20	5 01 01 01 0
		10	tals			•		14	•		21	+ (no	# for	2006	crash)	Deer 8; Ice 2; Left turns 2; Speed 2





## West Park Dr between 12 Mile and West Rd

Request#	0003943			yresi		By Dominic				Printed On: 4/23/20
FROM DA			1/1/200	5						
TO_DATE			12/31/20	1.00 A						
PR/MP						O MP 0.959 to W Park D		wn]		
#1 Locatio	n: N WES	TPARK	DR (0.09	9) 500 feet	N of 12 N	MILE RD			Crash	ID: 5887902
Crash Dat	e: 01/18/2	005	Day: To	e Hour:	3am W	Veather: clea	ar Road	iway: dry L	ight: dark/ltd	
Injuries K:	: 0		Inj A: 0	Inj B:	0 Ir	nj C: 0	Inj 0:	1 F	low: head-on	
CVT: Novi			Area: s	traight	н	BD: N	Drug	s: N (	Complaint No	: 053495
Unit No 1 UD-10: 05	Veh Dir N 5408078	Actio go str	n Prior aight	Event 1 animal	Event 2	2 Event 3 none	Event 4 none	Haz Action none	Veh Type car	Damage lftfront
	e: 01/22/2				12am V	Veather: cle nj C: 0 HBD: N	ar Road Inj 0: Drug	2 F	Crash light: dark/unl low: single Complaint No	
Unit No 1 JD-10: 05	Veh Dir N 5408094	Action go stra	n Prior aight	Event 1 animal	Event 2	2 Event 3 none	Event 4 none	Haz Action none	Veh Type pickup	Damage rtside
3 Locatio	n: W WES	STPARK	DR (0.7	1) 1320 fee	t S of WE	EST RD			Crash	ID: 5889480
Crash Date	e: 01/26/20	005	Day: We			eather: clou	3350		<b>∟ight</b> : dark/un	Itd
njuries K:	0		Inj A: 0	Inj B:		j <b>C</b> : 0	Inj 0		How: single	
CVT: Novi			Area: st	raight	н	BD: N	Drug	gs: N (	Complaint No	: 155041
Unit No	Veh Dir	Action	Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go stra	aight	animal	none	none	none	none	car	Iftfront
JD-10: 05	5409681									
4 Locatio	n: W PAR	K DR (0	91) 250	feet SW of	WESTR	D			Crash	ID: 6031675
crash Date	e: 04/14/20	005	Day: Th	u Hour:	Bpm We	eather: clea	r Roadv	vay: dry Lig	ght: dark/unito	
njuries K:	0		Inj A: 0	Inj B: 1	Inj	C: 0	Inj 0: (		w: single	
VT: Novi			Area: st	raight	HE	BD: N	Drugs	: N Co	omplaint No:	0519387
Unit No	Veh Dir	Action	Prior I	Event 1	Even	nt 2 Event	3 Event 4	Haz Action	Veh Type	Damage
1	S	go strai	ght o	other nonco	oll none	none	none	none	motorcycle	Iftside

UD-10: 055555484

#5 Location: N WEST PARK (0.48) 150 feet S of HUMBOLDT Crash ID: 6229952 Crash Date: 12/08/2005 Day: Thu Hour: 11pm Weather: snow Roadway: snowy Light: dark/unitd Injuries K: 0 Inj A: 0 Inj B: 0 Ini C: 0 Ini 0: 2 How: rr-end CVT: Novi HBD: Y Area: straight Drugs: N Complaint No: 0567178 Unit No Veh Dir Action Prior Event 1 Event 2 Event 3 Event 4 Haz Action Veh Type Damage go straight veh in transpt none none none unable to stop sm truck Iftfront go straight ven in transpt none none none car lftrear UD-10: 055761291 #6 Location: WEST PARK (0.90) 300 feet S of WEST Crash ID: 6364200 Crash Date: 05/12/2006 Day: Fri Hour: unknown Weather: rain Roadway: wet Light: dark/unitd Injuries K: 0 Inj A: 0 Inj B: 0 Ini C: 0 Inj 0:0 How: single CVT: Novi Area: curved HBD: N Drugs: N Complaint No: 0630775 Unit No Veh Dir Action Prior Event 1 Event 2 Event 3 Event 4 Haz Action Veh Type Damage S go straight ran off road/r ctrfront curb none none speeding car UD-10: 061127159 #7 Location: W PARK AVE (0.10) 528 feet N of 12 MILE RD Crash ID: 6866731 Day: Wed Crash Date: 12/12/2007 Hour: 7am Weather: cloudy Roadway: icy Light: day Injuries K: 0 Inj A: 0 Inj B: 0 Inj C: 0 Inj 0: 2 How: rr-end CVT: Novi Area: straight HBD: N Drugs: N Complaint No: 0773868 Unit No Veh Dir Action Prior Event 1 Event 2 Event 3 Event 4 Haz Action Veh Type Damage go straight veh in transpt unable to stop ctrfront S none none none car 2 S stop on road veh in transpt ctrrear none none none pickup UD-10: 070420915 #8 Location: W PARK (0.71) 201 feet S of WEST ROAD Crash ID: 6900896 Crash Date: 01/14/2008 Day: Mon Hour: 7am Weather: snow Roadway: icy Light: dawn Injuries K: 0 Inj A: 0 Inj B: 0 Ini C: 0 Inj 0: 1 How: single CVT: Novi Area: fwy ramp HBD: N Drugs: N Complaint No: 0801990 Unit No Veh Dir Action Prior Event 1 Event 2 Event 3 Event 4 Haz Action Veh Type Damage S go straight loss of control cross ctrline/med guardrail face none speeding sm truck ctrfront UD-10: 080031855 #9 Location: W PARK (0.25) 1325 feet N of 12 MILE RD Crash ID: 6900899 Crash Date: 01/15/2008 Day: Tue Hour: 8pm Roadway: dry Weather: cloudy Light: dark/unitd Injuries K: 0 Inj A: 0 Inj B: 0 Inj C: 0 Inj 0: 1 How: single CVT: Novi Area: straight HBD: N Drugs: N Complaint No: 082328 Unit No Veh Dir Action Prior Event 1 Event 2 Event 3 Event 4 Haz Action Veh Type Damage S go straight animal none none none none car rtfront UD-10: 080031861

	tion: PAR	(0.71) 206	feet S o	f WEST						Crash I	ID: 6902569
Crash Dat	te: 01/14/2	008 Da	y: Mon	Hour: 7	am Wea	ther: snow	Road	way: icy	Light	t: dawn	
Injuries K	: 0	lnj	A: 0	Inj B: 0	Inj C	: 0	Inj 0:	6	How	rr-end	
CVT: Novi	i	Ar	ea: fwy r	amp	HBD	): N	Drugs	s: N	Com	plaint No: 0	801991
Unit No	Veh Dir	Action Pri	or Eve	nt 1	Event 2	Event 3	Event 4	Haz Ad	tion	Veh Type	Damage
1	S	go straight	veh	in transpt	none	none	none	unable	to stop	sm truck	ctrfront
2	S	stop on roa	d veh	in transpt	none	none	none	none		van	ctrrear
3	S	right turn	veh	in transpt	none	none	none	none		car	ctrfront
UD-10: 08	0034555.	080035019									
		RK DR (0.4	35/								D: 7232511
Crash Dat				lour: 6pm		er: cloudy	Roadw	ay: dry	_	dark/unitd	
Injuries K		2.0		nj B: 0	Inj C: 0		Inj 0: 1		How:		namananon samon
CVT: Novi		Are	a: straig	iht	HBD: N	1	Drugs:	N	Comp	laint No: 90	003194
Unit No	Veh Dir	Action Pr	ior E	vent 1	Event 2	Event 3	Event 4	Haz Ac	tion '	Veh Type	Damage
1	N	go straigh	/3.8/A.I. (C)	100000000000000000000000000000000000000			none	none		car	rtside
		090049761	-	100000000						5.701	
Injuries K CVT: Novi		25	A: 0 a: straig	Inj B: 0 iht	Inj C: HBD:		Inj 0: 1 Drugs:	N	How: s	single laint No: 90	005768
Unit No	Veh Dir N	Action Pr go straigh	3.5		11111111111111111111111111111111111111		Event 4 none	Haz Ac none		Veh Type van	Damage ctrfront
		RK RD (0.8	3) 500 fe	et S of W	EST ROA	D				Crash I	D: 7441118
	e: 10/24/2			lour: 11pr		ner: clear	Roadwa	v: drv	Light: c	ark/unitd	
uiasii Dal		Inj A		nj B: 0	Inj C:	0	Inj 0: 1	Some Sunse.	How: si		
		2005 <b>#</b> 0-0	a: straig	100	HBD:		Drugs: N			int No: 090	068838
Injuries K:		Are	a. Straig	nt							
Injuries K: CVT: Novi						Event 3	Event 4	Haz Ac	tion \	/eh Type	Damage
Injuries K: CVT: Novi Unit No	Veh Dir	Action Pr	ior E	vent 1	Event 2		Event 4	Haz Ac		/eh Type	Damage
Injuries K: CVT: Novi Unit No 1	Veh Dir S		ior E	vent 1	Event 2		Event 4	Haz Ac			Damage ctrfront
Injuries K: CVT: Novi Unit No 1 UD-10: 090	Veh Dir S 0519596	Action Pr	ior E	vent 1 E	Event 2	none				car	
Injuries K: CVT: Novi Unit No 1 UD-10: 090	Veh Dir S 0519596 ion: W PA	Action Pr go straigh	ior E t a	vent 1 E	Event 2 none MBOLT D	none		none	C	car	ctrfront
Unit No Unit No UD-10: 090 #14 Locati	Veh Dir S 0519596 ion: W PA e: 10/29/2	Action Pr go straigh	ior E t ac 2) 51 fee ; Thu I	vent 1 Enimal r	Event 2 none MBOLT D	none R er: clear	none	none y: dry	C	Crash II	ctrfront
Unit No 1 UD-10: 09 #14 Locati Crash Dat	Veh Dir S 0519596 ion: W PA e: 10/29/2	Action Pr go straigh RK DR (0.52 009 Day Inj A	ior E t ac 2) 51 fee ; Thu I	vent 1 E nimal r et N of HUI Hour: 8pn	Event 2 none  MBOLT Di	none  R er: clear	Roadway	none y: dry	Light: d	Crash II	ctrfront D: 7448603
Unit No 1 UD-10: 090 #14 Locati Crash Dat Injuries K: CVT: Novi	Veh Dir S 0519596 ion: W PA e: 10/29/2	Action Pr go straigh RK DR (0.52 009 Day Inj Are	ior E t a 2) 51 fee : Thu I A: 0 I a: straig	vent 1 Enimal r it N of HUI Hour: 8pn Inj B: 0	MBOLT Di Meath Inj C: ( HBD: I	none  R er: clear 0	Roadway Inj 0: 1 Drugs: N	y: dry	Light: d How: si Compla	Crash II ark/unitd ngle int No: 0900	D: 7448603
Unit No 1 UD-10: 090 #14 Locati Crash Dat Injuries K: CVT: Novi	Veh Dir S 0519596 ion: W PA e: 10/29/2	Action Pr go straigh RK DR (0.52 009 Day Inj Are	ior E t a 2) 51 fee : Thu I A: 0 I a: straig	vent 1 Enimal r It N of HUI Hour: 8pn Inj B: 0 ht	MBOLT Di Meath Inj C: ( HBD: I	none  R er: clear 0 N	Roadway Inj 0: 1 Drugs: N	none y: dry	Light: d How: si Compla	Crash II ark/unitd ngle int No: 0900	ctrfront D: 7448603

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## Crash Type

Count	Type
0	uncoded
10	single
1	head-on
0	head-on/It
0	angle
3	rr-end
0	rr-end/it
0	rr-end/rt
0	ss-same
0	ss-opp
0	unknown
Totals:	14

## **Light Conditions**

Count	Туре
0	uncoded
1	day
2	dawn
0	dusk
1	dark/ltd
10	dark/unitd
0	unknown
Totals:	14

## Weather

Count	Type			
0	uncoded			
6	clear			
4	cloudy			
0	fog/smoke			
1	rain			
3	snow			
0	wind			
0	sleet/hail			
0	unknown			
Totals:	14			

## **Road Condition**

Count	Type uncoded dry wet				
0					
9					
1					
3	icy				
1	snowy				
0	muddy				
0	slushy				
0	debris				
0	unknown				
Totals:	14				

# Vehicle Type

Count	Туре				
0	uncoded				
10	car				
0	other				
0	truck/bus				
2	van				
2	pickup				
3	sm truck				
1	motorcycle				
0	moped				
0	go-cart				
0	snowmobile				
0	off-rd veh				
Totals:	18				

## Crashes By Month

Count	Type				
8	January				
0	February				
0	March				
1	April				
1	May				
0	June				
0	July				
0	August				
0	September				
2	October				
0	November				
2	December				
Totals:	14				

## Hazardous Action

Count	Туре
13	none
2	speeding
0	imprp/no signal
0	imprp backing
3	unable to stop
0	other
0	unknown
0	reckls driving
0	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
Totals:	18

# Unit Type

Count	Туре
0	uncoded
18	vehicle
0	pedestrian
0	bicyclist
0	engineer
Totals:	18

# Crash Severity

	FATAL	Α	В	С	No Inj	Total
Persons	0	0	1	0	20	21
Crashes	0	0	1	0	13	14

## Alcohol in Crashes

	FATAL	PI	PD	Total
Drinking	0	0	1	1
Not Drinking	0	1	12	13
Total	0	1	13	14

## Crashes per Hour by Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Unknown	Total
12a - 1a	0	0	0	0	0	0	1	0	1
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	1	0	0	0	0	0	1
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	0	0	0	0
7a - 8a	0	2	0	1	0	0	0	0	3
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	0	0	0	0	0	0
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	1	0	1	0	0	2
7p - 8p	0	0	1	0	0	0	0	0	1
8p - 9p	0	0	1	0	2	0	0	0	3
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	1	0	1	0	2
Unknown Time	0	0	0	0	0	1	0	0	1
Total	0	2	3	2	3	2	2	0	14