City of Pleasant Ridge
Traffic Calming Manual

February 12, 2019

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1. Introduction

1.1 A City of Beautiful Streets

The City of Pleasant Ridge is blessed with some of the most beautiful residential streets in the region. Tree-lined corridors with beautiful homes create an ambiance that makes Pleasant Ridge one of the most sought after addresses for people in the know in the area. The quality of the public realm along our streets significantly contributes to the identity of Pleasant Ridge. Our beautiful streets draw people to walk and bike. However, an oft-cited issue is that of too-high vehicle speeds. Speeding cars can be a danger to pedestrians or bicyclists, but even when they are not a danger, vehicles traveling at too-high speeds degrade the public realm with the excessive noise and feeling of danger that they create. This manual seeks to address the commonly-cited issue of too-high vehicle speeds in the City by providing residents with a way to implement measures on their block or street to slow down cars to an acceptable speed for a residential area.

1.2 Problem Statement

Pleasant Ridge is a first-ring suburb that was developed largely between 1920 and 1930. As the region has grown around Pleasant Ridge, we have seen changes in the regional transportation network. Now, Woodward and I-696 carry hundreds of thousands of cars through our City each day. Crossing Woodward is but one issue for anyone on foot or on bike. Many of our local streets – Ridge, Oakland Park, and Woodward Heights most notably - carry higher traffic volumes generated by residents of Pleasant Ridge and other nearby cities. Finally, while our residential streets generally have lower traffic volumes and most drivers travel at reasonable speeds, some local or cut-through drivers do travel at excessive rates of speed.

This manual is intended to examine the facts of existing traffic volumes and speed to provide a baseline for decision making, and to identify a range of proven traffic calming measures that can be implemented on our local streets.

This manual does not identify on-street bike facilities or other non-motorized improvements. Pleasant Ridge's local streets are all low-volume as defined by street design manuals, and there is not a need, nor is there a feasible way to provide separated non-motorized or bicycle infrastructure on our streets. Given our traffic volumes, the design of our streets, and their local nature it is acceptable to expect bicycles to share the street with cars. Calming vehicle traffic will create a safer environment for bicyclists riding on the street.

1.3 Passive vs. Proactive Design

Passive Design assumes and tries to account for the worst-case scenario for user behavior. It overdesigns streets to build in a design cushion for speeding drivers. Wider travel lanes, larger curve radii, clear zones, and even building setbacks create a condition where unsafe vehicle speeds are accounted for. However, this passive design philosophy that seeks to accommodate speeding cars ends up encouraging more speeding.

Proactive Design is based on the understanding that human behavior is adaptable and responds to external conditions. Street design is an external condition that influences driver behavior. Instead of designing for the fastest and worst driver, which creates conditions that encourages normal drivers to travel at faster speeds, proactive design uses street design to create the desired outcomes, guiding user behavior through physical and environmental cues.

1.4 Vehicle Speed and Safety

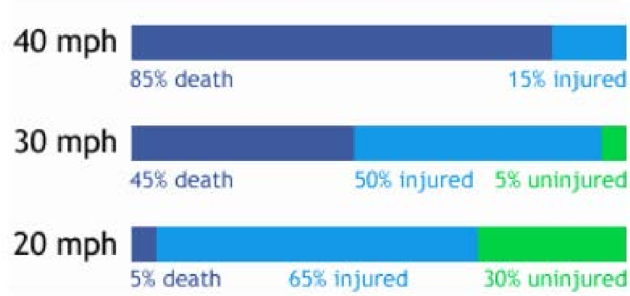
Vehicle speed is a key risk factor in traffic injuries, influencing both the risk of a crash and the severity of injuries that result. Controlling vehicle speed can prevent crashes from happening and lessens the severity of injuries sustained by the victims.

Being a primarily residential community and given that Pleasant Ridge streets are all residential in nature, our primary concern is the safety of pedestrians walking along and across our streets, and bicyclists riding in or across our streets.

Impact Speed. The human body is designed to withstand impacts up to a certain speed. A person falling 12 feet to the ground will impact the ground at about 19 miles per hour. Almost all people would survive this fall with varying levels of injury based on their age, overall health, and other factors such as how they stuck the ground. Similarly, almost all people survive being hit by a car traveling at 20 mph.

However, Newton's laws dictate that a doubling in vehicle speed results as four times as much kinetic energy being absorbed during and impact. Small increases in vehicle speed results in a disproportionately large increase in pedestrian fatalities.

The following table summarizes two established and often cited sources of research for the relationship between vehicle speed and pedestrian fatalities. The key takeaway from the table is that almost all persons will survive a crash at 20 mph. Fatalities become much more likely at 30 mph, and become highly likely at 40 mph.



The relationship between pedestrian injury severity and motor vehicle impact speeds. Source: Federal Highway Administration

The goal of Pleasant Ridge's traffic calming program is to limit speeds to 25 mph or below in accordance with traffic control laws, but also to ensure that any vehicle-pedestrian crashes that do occur are not fatal. A further goal of the traffic calming program is to make it extremely difficult to travel at speeds of greater than 30 mph along our residential streets.

Chance of Pedestrian Fatality

Vehicle Speed	Source 1	Source 2
20 mph	5%	5%
30 mph	45%	37%
40 mph	85%	83%

Source 1: Killing Speed and Saving Lives, UK Dept. of Transportation, London, England. See also Limpert, Rudolph. Motor Vehicle Accident Reconstruction and Cause Analysis. Fourth Edition. Charlottesville, VA. The Michie Company, 1994, p. 663

Source 2: Vehicle Speeds and the Incidence of Fatal Pedestrian Collisions prepared by the Austrailian Federal Office of Road Safety, Report CR 146, October 1994, by McLean AJ,Anderson RW, Farmer MJB, Lee BH, Brooks CG

1.5 Basis for Recommendations

The basis for recommendations made in this document are established and accepted engineering manuals and studies. Examples of these include the AASHTO Green Book, the Institute of Transportation Engineers Traffic Engineering Handbook, the NACTO Urban Street Design Guide[1], and studies published by the FHWA, universities, and other respected sources. Citations are offered where appropriate.

[1] The NACTO urban street design guide provides a more in-depth examination of traffic safety, street design, and traffic calming. It is available for review online at: https://nacto.org/publication/urban-street-design-guide/

2. Physical Factors that Influence Vehicle Speed

2.1 Target Speed, Design Speed, Posted Speed, and Operating Speed[2]

2.1.1. <u>Design Speed.</u> The physical configuration of streets plays an important role in providing cues to motorists of what constitutes a safe speed. The design speed of a street refers to the speed at which motorists are expected to drive based on their perception of safety. Drivers will generally go the maximum speed at which they feel safe. The design speed is therefore the product of a series of design choices for the street.

Many street design manuals suggest that the design speed should be 5 to 10 mph above the posted speed limit. This general premise draws upon the principle that a higher design speed provides a safety cushion for drivers who speed. However, this practice results in drivers feeling comfortable driving at speeds that are faster than the posted speed limit.

Glossary of Terms:

<u>Target Speed.</u> The desired speed at which the City would like traffic to travel on a street.

<u>Posted Speed.</u> The posted speed limit for a street. The posted speed is usually, but not always, the same as target speed.

<u>Design Speed.</u> The speed at which traffic is expected to travel on a street based on geometric design factors.

<u>Operating Speed.</u> The observed speed at which most traffic travels on a street. It is often defined as the 85th percentile vehicle speed.

2.1.2. <u>Posted Speed.</u> The posted speed is determined by local and state laws. Posted speeds that do not correspond with the design speed of a street are frequently ignored. Police enforcement can help limit speeds, but it is an artificial and short-term practice because enforcement of posted speed limits that are lower than the design speed of the street is in effect forcing drivers to go slower than they feel safe doing.

2.1.3. <u>Resulting Operating Speed.</u> Most of the streets in Pleasant Ridge and throughout the region are designed based on the conventional highway design process which takes the target speed (25 mph for Pleasant Ridge local streets), adds a 5 mph “safety cushion,” and then designs a street with a design speed of 30 mph. Therefore the 85th percentile speed observed on many Pleasant Ridge streets is close to 30 mph.

Operating speed usually equals design speed, even if the posted speed is lower. The design speed on most Pleasant Ridge streets is 30 mph, even though the speed limit is 25 mph, and this is reflected in the data which shows that the 85th percentile operating speed on most of our residential streets is very near 30 mph.

2.1.4. **A better practice is to align the design speed of the street with the target speed.** By first setting a target speed at which the City wishes drivers to travel, we can make design choices that cause drivers to feel comfortable driving at the target speed, and not higher.

However, lowering speeds on our streets requires increasing the friction that drivers feel. This will require implementing measures to retrofit the design of our streets that are

[2] For more information on this topic, see: https://nacto.org/publication/urban-street-design-guide/design-controls/design-speed/

unpopular with some or many. But, if the desire is truly to lower vehicle speeds on our streets, this is something that we as a community must accept and implement.

2.2 Geometric Factors that Influence Design Speed

Geometric factors that influence the design speed of a street include:

- Lane Width – wider travel lanes encourage higher speeds
- Number of lanes – more lanes encourage higher speeds
- Curb radii – larger curb radii encourage higher speeds
- Straight street segments – straight street segments without any kind of horizontal deflection encourage higher speeds.

2.3 Geometric Calming Factors Which Limit Vehicle Speed

Vehicle speed can be limited by either introducing <u>vertical</u> (i.e. speed bumps, humps, and the like), or <u>horizontal</u> elements to constrict the width of the street.

<u>Vertical speed control elements</u> only influence vehicle speeds in a limited area surrounding the speed bump. For this reason, they must be installed in series along a street to limit speeds along a street segment, or they are appropriately used at specific points along a street where lower speeds are important, such as crosswalks.

<u>Horizontal speed control elements</u> can be targeted to specific points along a street to lower travel speeds in a specific area, or they can be implemented along an entire street to lower vehicle speeds along the entire segment.

Vertical and horizontal speed control measures are discussed in detail in Section 4 of this manual.

3. Traffic Calming Options

3.1 Chicane

3.1.1. Overview. Chicanes are barriers placed in the street that require drivers to slow down and drive around them. The barriers can be in the form of landscaping, curb extensions, street furniture, parked cars, or other devices.

3.1.2. Location. Chicanes can be used in any location along a residential street where there is space to accommodate the barriers or curb extensions necessary to create the calming measure.

3.1.3. Negatives. There are no major negatives created by chicanes.

3.1.4. Cost. Costs are dependent on the specific conditions on the street and the design choices made for the chicane, but generally it will cost between $10,000 and $20,000 to implement.

3.2 Traffic Circle/Mini-Roundabout

3.2.1. *Overview.* A traffic circle is a small area that is painted or raised with curbs in the middle of an intersection. The traffic circle requires vehicles to slow down to traverse through the intersection. They also eliminate left turn conflicts in intersections, resulting in safer turning movements. Traffic circles provide some traffic calming, but also intersection control benefits.

3.2.2. *Location.* Traffic circles can be in the middle of intersections.

3.2.3. *Negatives.* There are no major negatives created by traffic islands, however, they only slow down traffic by a few miles per hour on average. They are best used as a complement to and in conjunction with other traffic calming measures along the street.

3.2.4. *Cost.* Cost is highly dependent on design choices and the size of the circle and will vary widely. Traffic circles can be installed for anywhere from $5,000 to $75,000, depending on the context.

3.3 Choker/Pinchpoint

3.3.1. *Overview.* This element is created with curb extensions to narrow the roadway. These elements can be used to slow traffic speeds, and to create a mid-block crosswalk. Trees may also be planted in the extended curb area to further visually narrow the street and reduce travel speeds. Pedestrians have a reduced crossing distance, which improves safety.

Chokers can be used to create either one or two travel lanes. The traffic calming effect of narrowing down to one lane is greater, but if two vehicles arrive at the choke point at the same time, it requires one driver to yield to the other. The traffic calming effect of two lanes is less, as two cars can pass by each other without stopping.

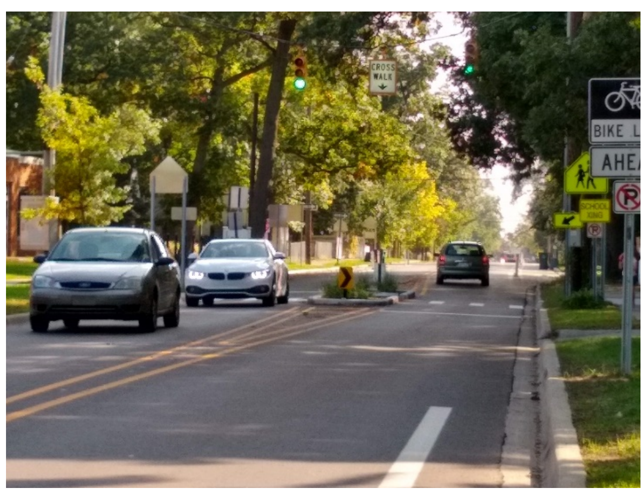
3.3.2. *Location.* Chokers can be used anywhere along a street. Practically, they will have to be at a location where the curb extensions will not impact driveways or utilities.

3.3.3. *Negatives.* Chokers will reduce the available on-street parking supply. They can also create an uncomfortable environment for bicyclists. One way around this is to maintain a passage for bicyclists next to the curb.

Chokers also have a limited area of influence on travel speeds, as vehicles will return to the pre-traffic calming speed once they are away from the choke point.

3.3.4. *Cost.* Costs are dependent on the specific conditions on the street and the design choices made for the choker, but generally one choker will cost between $10,000 and $20,000 to implement.

3.4 Center Median



3.4.1. *Overview.* This element is created by adding a median in the middle of the street to narrow the roadway. This element can be used to slow traffic speeds, and to create a mid-block crosswalk. The center median can be planted with landscaping or can be all concrete. The median must have raised curbs.

3.4.2. *Location.* Medians can only be used where they will not impact access into and out of driveways. In Pleasant Ridge, this limits the number of locations that they can be located.

3.4.3. *Negatives.* Center medians can limit on-street parking supply. They can also create a locally uncomfortable environment for bicyclists due to the narrowing of the street. Medians also have a limited area of influence on travel speeds.

3.4.4. *Cost.* Generally, a center median will cost between $10,000 and $25,000 to implement.

3.5 Bike Lanes/Paint

3.5.1. *Overview.* Overly-wide streets can be narrowed by adding bike lanes, or by striping in edge lines to narrow travel lanes. Narrower travel lanes are shown to reduce travel speeds.

3.5.2. *Location.* This technique can be used to create 9.5 to 11-foot-wide travel lanes and assigning some road space to a bike lane.

3.5.3. *Negatives.* There are no major negative impacts of narrowing travel lanes with paint, including creating bike lanes where space permits.

3.5.4. *Cost.* Cost will depend on the length of the roadway and the type of paint used, but generally, the cost will not exceed $7,500 per mile of street.

3.6 Corner Bump-Outs

3.6.1. *Overview.* Corner bump outs are curb extensions at intersections that are used to narrow the street and shorten crossing distances for pedestrians. The primary purpose of corner bump outs is to increase pedestrian safety at intersections, and to slow down vehicle turning speeds.

3.6.2. *Negatives.* Corner bump outs can make it difficult for large vehicles to navigate corners without swinging into the opposing travel lane. It is important to carefully select an appropriate design vehicle for the intersection.

3.6.3. *Cost.* Costs are dependent on the specific conditions on the street and the design choices made for the corner bump outs, but generally it will cost between $10,000 and $20,000 to implement bump outs on one street at a corner.

3.7 On-Street Parking/Yield Street

3.7.1. *Overview.* Allowing for on-street parking on both sides of a street naturally introduces nearly all the preceding horizontal traffic calming methods at no cost. Parked cars along the street will create natural choke points and chicanes that slow travel speeds.

A variation on allowing on-street parking on both sides of the street is to create alternating "checkerboard" parking zones on both sides of the street. This naturally creates chicanes on the street, while still maintaining two travel lanes. This type of alternating-side parking arrangement is a compromise that offers more of a traffic calming benefit than the standard one side only on-street parking arrangement while maintaining two travel lanes.

3.7.2. *Negatives.* Many drivers do not like yield streets because it requires them to slow down, and occasionally stop to allow oncoming traffic to pass. However, this is the purpose of traffic calming. For residents of the street, the biggest negative is that drivers or rear-seat passengers getting out of parked vehicles on the street side can exit vehicles into a narrow roadway space, which can be uncomfortable.

3.7.3. *Cost.* There is no significant cost to implementing parking on both sides of the street to create a yield street. There may be some cost for street markings or to remove signs, but these are negligible.

3.8 Speed Humps

3.8.1. *Overview*. Speed humps influence traffic speeds for 200 to 300 feet on either side of the hump. This means that a series of humps are required to reinforce a consistent speed on a street.

Studies show that, when properly deployed, speed humps result in 85th percentile speeds of 25.6 mph for 14-foot humps, or 27.3 mph for 12-foot humps.[3]

Speed humps are only recommended for use on streets with an 85th percentile speed of 30 mph or higher. Implementing speed humps on streets with an 85th percentile speed lower than 30 mph will only result in a small speed reduction, if any.

[3] Ewing, R. *Traffic Calming State of the Practice*, Institute of Transportation Engineers/Federal Highway Administration, 1999, p. 104

3.8.2. *Location*. The first hump in a series must be in a position where it cannot be approached at a high speed from either direction. To achieve this objective, the first hump in a series is typically installed within 100 to 200 feet of a small-radius curve or stop sign. Care should be taken so that humps are not proposed in areas which would conflict with existing infrastructure

3.8.3. *Spacing*. Research indicates that spacing humps between 300 and 500 feet apart is most effective at lowering the 85th percentile speed to the targeted range.

3.8.4. *Negatives*. Speed humps increase air and noise pollution at and near the hump itself as vehicles slow, and then accelerate once clear of the hump. This is reinforced by the City of Ferndale's recent pilot projects to install speed humps on some residential streets. Their survey results show that residents who live at or near the humps complain about increased vehicle noise, among relatively mixed results overall.[4]

The humps reduce the availability of on street parking for residents who live at a hump.

Finally, the humps have an aesthetic impact. In Pleasant Ridge, we would have asphalt humps on concrete streets.

3.8.5. *Cost*. Cost estimates for speed humps range from $3,000 to $5,000 per hump.

3.9 Signs

3.9.1. *Radar Speed Signs*

a. <u>Overview</u>. Radar speed signs offer education and feedback to drivers by highlighting the speed limit on a street and showing the current travel speed of the vehicle approaching the sign. Radar speed signs have been shown to reduce travel speeds by about 10% from the baseline condition before they were installed.

b. <u>Location</u>. Radar speed signs are best suited for higher volume streets.

c. <u>Cost</u>. Each radar speed sign costs about $5,000 - $7,500 for the equipment and installation. Solar technology eliminates the need for electrical service to the sign but can lead to periods where the sign is not functional due to a loss of battery charge.

3.10 Raised Intersections.

3.10.1. *Overview.* Raised intersections bring the level of the street up to match that of the sidewalk. This creates a large speed table within an intersection that requires drivers to slow down when traversing the intersection. Bollards are often used to keep vehicles from leaving the vehicle travel way and crossing into pedestrian space.

3.10.2. *Location.* This traffic calming method is often used in more densely populated areas, or in places that have non-residential or a mixture of uses. Their applicability in Pleasant Ridge will

[4] City of Ferndale Neighborhood Traffic Calming Post-Project Survey Findings, January 17, 2018

likely be limited, but they could be used in certain instances. For example, where a bike path or multi-use path crosses a street.

3.10.3. *Negatives.* There are no intrinsic negatives to a raised intersection, but they do often require alterations to storm water infrastructure because they change grade and drainage patterns on a street. They are also costly because they require significant concrete work to raise the street level up to the sidewalk and require reconstruction of an intersection from sidewalk to sidewalk rather than from curb to curb.

3.10.4. *Cost.* It is difficult to estimate a cost because the specific conditions at each intersection are different. Creating a raised intersection where an alley crosses a residential street may cost about $20,000, while creating a raised intersection at two residential streets could cost upwards of $60,000. The costs and planning involved in implementing this type of traffic calming measure will most likely mean that it will only be used as part of a larger infrastructure project being done by the City or another road agency.

4. Traffic Control Methods that are NOT Traffic Calming

Some traffic control devices and practices are intended to improve safety and street function at intersections or specific points along the street, but do not provide a traffic calming benefit and should not be used for traffic calming purposes.

4.1 Stop Signs.[5]

4.1.1. Overview. Stop signs are used to assign right-of-way at busy intersections. National standards have been established to determine when stop signs are warranted, taking into consideration traffic volume, sight distance, and accident history.

4.1.2. Location and Impact. Engineering studies across the nation have shown that stop signs are relatively ineffective as a speed control measure, except within 150 feet of the intersection. While speeds decrease in the immediate vicinity of unwarranted stop signs, speeds often increase between stop signs as drivers “make up for lost time,” thus any effect that they have on speeds is limited to the small area surrounding the stop sign itself.

4.1.3. Negatives. Stop signs also increase air pollution, waste fuel, and create more traffic noise as vehicle accelerate away from the stop sign. The City receives such complaints from residents who live near the stop signs on Woodward Heights at Bermuda.

Most drivers are reasonable and prudent. When confronted with unreasonable and unnecessary restrictions, motorists are more likely to violate them, which often leads to contempt for other traffic signs.

For the above reasons, the City will not install stop signs for speed control. The City only implements stop signs when they are warranted for intersection control, as determined by an engineering study.

4.2 Street Closures

Street closures are not traffic calming. Traffic calming seeks to slow and manage existing traffic on a street. Street closures eliminate through traffic on one street and redistribute it to other nearby streets. Street closures are a system-level decision that benefits one street to the detriment of other streets. As such, the City will not consider requests for permanent street closures.

4.3 Enforcement

Enforcement of traffic rules and traffic control such as speed limits and stop signs address the symptoms of the problem, not the cause. When discussing traffic issues in the City, there is a perception that the police simply need to enforce the existing rules and traffic signs. However, we have 26 local streets, and many areas in town where there are traffic issues. Speeding on Oakland Park and Oxford, the prohibited

[5] *Speed Control in Residential Areas*, Institute of Transportation Engineers & Michigan Office of Highway Safety Planning, p. 12
https://mutcd.fhwa.dot.gov/htm/2009r1r2/part2/part2b.htm#section2B05
https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa09027/resources/Iowa%20Traffic%20and%20Safety%20FS-%20Unsignalized%20Intersections.pdf
https://www.fcgov.com/traffic/pdf/ntsp-stop.pdf

turn on Millington, the stop sign at Bermuda and Woodward Heights, the daily backups at Roosevelt School, etc. The police cannot sit on all of these problems all of the time.

Enforcement does not address the root cause of these problems. While enforcement can cause drivers to obey the rules while enforcement is occurring, once enforcement stops drivers will return to their previous behavior. It is the conditions on and around the street that allow drivers to be comfortable speeding, or running stop signs, or making prohibited turns.

The purpose of traffic calming is to change the conditions on the street so that drivers do not feel comfortable engaging in the problem behavior. The purpose of traffic calming is to change driver behavior all of the time, not just the fraction of the time that the police can spend enforcing the various issues that exist around town.

5. Vehicle Speed and Volume Data

The City has been gathering speed and volume data for local streets since late 2014. The data is gathered by the City based on our own knowledge of which streets carry higher volumes or see higher speeds and based on resident requests to examine traffic issues on a particular street.

Table 1. Traffic Data Inventory by Street (sorted by Average Vehicle Speed)

Street	Date	Location	Average Weekday Volume	Average Weekend Volume	Average Vehicle Speed	85th Percentile Speed
Ridge	2015.10	100 ft. S of Cambridge	4,724	3,778	29.5	32.9
Ridge	2014.12	100 ft. S of Oakland Park	3,549	3,257	28.5	32.3
Oakland Park	2015.09	800 ft. E of Ridge	2,624	2,156	28.4	32.1
Oakland Park	2015.08	800 ft. E of Ridge	2,827	2,286	27.9	32.1
Oxford	2015.10	850 ft. W of Woodward	913	951	27.6	32.1
Ridge	2015.11	100 ft. S of Cambridge	4,735	4,064	26.8	30.8
Ridge	2018.09	100 ft. S of Oakland Park	3,601	3,115	26.8	30.4
Ridge	2018.10	100 ft. S of Oakland Park	--	--	26.6	29.8
Woodward Heights	2015.04	400 ft. E of Indiana	2,854	2,068	26.2	29.9
Oxford	2015.05	850 ft. W of Woodward	1,152	888	26.2	30.3
Cambridge W	2014.12	300 ft. E of Oakdale	525	227	26.2	30.7
Sylvan	2015.08	250 ft. E of Woodward	1,256	867	25.7	29.8
Millington	2015.08	400 ft. E of Ridge	1,159	1,170	24.9	28.9
Elm Park Ave	2018.03	500 ft. W of Ridge	278	258	23.9	28.0
Maplefield	2015.05	150 ft. N of Cambridge	424	--	23.4	30.2
Hanover	2016.09	500 ft. W of Ridge	338	292	22.9	27.2
Indiana	2015.07	150 ft. N of Sylvan	892	730	21.4	26.0
Cambridge E	2017.07	250 ft. W of Woodward	891	--	20.9	24.8
Wellesley	2017.06	600 ft. E of Indiana	170	152	20.8	24.8
Woodward Alley	2018.07	Bet. D'shire & Kens'ton	284	215	18.0	20.6
Gainsboro	2015.07	150 ft. S of Wellesley	90	79	18.0	21.8

6. Implementation Methods

There are two methods for implementing traffic calming projects: 1) City led implementation, and 2) resident petition led implementation.

6.1 City-Initiated Projects

The City will initiate and fund projects where conditions warrant an active intervention. The City's policy is to evaluate streets which have an average weekday traffic volume higher than 2,500 vehicles, OR where the 85th percentile speed is 32 mph or higher (7 mph over the 25-mph speed limit).[6]

The City will also implement traffic calming measures on streets that do not meet either of the above criteria if there are specific areas that present a significant safety hazard for bicyclists or pedestrians, or when traffic calming improvements can be implemented as part of a larger project.

The City has implemented traffic control measures on Ridge Road and is planning an improvement to the Oakland Park/Sylvan crossing at Woodward. Woodward Heights will be the next target street that the City will be implementing traffic calming measures.

6.2 Resident Petition Process

The City supports a neighborhood-driven approach to residential speed control on streets that do not meet the criteria for City-led projects. To be clear, the City will also consider a resident-led process on one of the four streets that qualify for city-initiated projects. To be effective, speed control measures need to be supported by the residents along a street.

The City will explore traffic calming measures when petitioned by the residents of a street using the following process:

6.2.1. If at least 50% of the households on a block sign on in favor of implementing traffic calming measures on their block, the City will convene a meeting and present different traffic calming measures that can be implemented on that block, along with the estimated cost to permanently implement each measure.

6.2.2. The residents of the block will provide input to the City, and collaboratively we will decide which traffic calming measures to test along the block. The field tests will be conducted using temporary materials. The City will collect speed and volume data before and during the test, and residents will be able to provide qualitative input about how they believe the traffic calming measures work. There is no cost to the residents to conduct the traffic calming tests.

6.2.3. The City will convene a post-test meeting with the residents of the block to review the results of the test. The City will also present revised cost estimates to make the traffic calming measures permanent.

6.2.4. The residents of the block will then determine if they want to make the traffic calming measures permanent. The cost to make the improvements permanent will be assessed equally to each property on the block through a special assessment, which will be repaid over time on the residents' tax bill (usually 5 or 10 years). Approval of the special assessment

[6] The 32 mph 85th percentile speed was established as the cut-off because our streets have a 30mph design speed. The 85th percentile speed on most of our residential streets is around 30mph. It is not possible to retrofit all our residential streets to have lower 85th percentile speeds without reconstructing them. Also, studies show that speed humps will result in 25-27mph 85th percentile speeds.

district will require a second petition signed by at least 55% of the households on the block. State law[7] provides for the creation of special assessment districts in home rule cities, and the City Charter[8] establishes the method by which the City Commission may establish a special assessment district.

6.2.5. The City may from time to time make funding available to offset the cost of resident-initiated traffic calming projects. This funding may be in the form of grants or matching funds, as determined by the City Commission.

[7] http://www.legislature.mi.gov/(S(foibgd50r32byh1xyotq4qay))/mileg.aspx?page=GetObject&objectname=mcl-117-4d
[8] https://library.municode.com/mi/pleasant_ridge/codes/code_of_ordinances?nodeId=PTICH_ARTVIIISPAS