TRAFFIC SAFETY

TOOL KIT

City of Madison

Traffic Engineering Division

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Traffic Safety Tool Kit

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TRAFFIC CONCERNS IN NEIGHBORHOODS

Traffic Engineering receives thousands of traffic-related requests annually, from residents, community groups, school organizations, and others throughout the City of Madison. Some of the most common concerns or requests are:

Speeding

Parking problems

Stop Signs

Traffic signals

Crosswalks and Crossing Guards

School Area Traffic Safety

The City of Madison Traffic Engineering Division addresses these neighborhood traffic-related concerns, conducts studies, and implements solutions using prudent traffic engineering practices.

To share traffic-related concerns and request a study, residents can contact:

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APPROPRIATE USES OF TRAFFIC CONTROLS

The consistent application of traffic control devices is essential in maintaining traffic safety. Any given device for the control of traffic should have the same meaning and require the same action on the part of all motorists regardless of where it is encountered. For example, an out-of-state motorist should be able to expect similar traffic conditions when encountering the same traffic control device.

STOP SIGNS AND TRAFFIC SIGNALS AND ROUNDABOUTS

Stop signs and traffic signals are not intended to reduce speeding. Generally, stop signs and traffic signals are installed at intersections where conflicting traffic volumes are high enough to require control, or where there is a high incidence of collisions correctable by stop signs or traffic signals.

Stop Signs

Stop signs help drivers and pedestrians establish right-of-way at intersections. The justification for stop sign installation is determined by nationally recognized, "warrants," or guidelines. These warrants consider:

- The number of vehicles and pedestrians entering the intersection during a substantial part of the day,
- The prevailing speed of traffic,
- The amount of time traffic must wait to enter the intersection, including the availability of safe crossing opportunities, and
- Collision patterns susceptible of correction by stop control.

The volumes of traffic on both streets should be nearly equal to consider all-way stop control at an intersection.

Stop signs installed at locations that **do not satisfy** the above warrants may produce negative consequences such as:

- Unnecessary traffic congestion and delay,
- Motorist frustration and the temptation to not completely stop, disobey the stop signs, An increase in the potential for rear-end collisions,
- Added noise and pollution for nearby residents as vehicles stop and accelerate, and
- An intersection that previously appeared "not busy," may now look like a major intersection.

Traffic Signals

Traffic signals provide for the orderly movement of vehicles and pedestrians by:

- Increasing the traffic handling capacity of the intersection,
- Reducing the frequency of certain types of accidents, especially the right angle type,
- Providing for the efficient and orderly movement of traffic, and
- Providing for minor street traffic to enter or cross the major street with less delay or risk of accidents.

The justification for installing traffic signals is based on nationally recognized warrants, or guidelines, and considers factors such as:

- The number of vehicles and pedestrian entering the intersection during a substantial part of the day,
- The prevailing speed of traffic,
- Schools in the vicinity,
- The amount of time traffic must wait to enter the intersection, including the availability of safe crossing opportunities, and
- Any accident patterns susceptible of correction by traffic signals.

Roundabouts

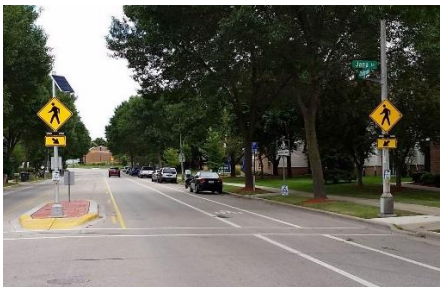
Roundabouts have become popular based on the multiple opportunities to improve safety and operational efficiency, and provide other benefits. Of course, roundabouts are not always feasible and do not always provide the optimal solution for every problem. The following is a list of some of the benefits of roundabout intersections, and some constraining factors:

- Recent studies showed overall reductions of 35 percent in total crashes and 76 percent in injury crashes. Severe, incapacitating injuries and fatalities are rare
- Roundabouts typically have lower overall delay than signalized and all-way stop-controlled intersections.
- Because roundabouts can facilitate U-turns, they can be reduce or eliminate left-turn movements at driveways between major intersections.
- Due to the reduction of vehicle speeds in and around the intersection, roundabouts can improve pedestrian crossings and the splitter island refuge area provides the ability for pedestrians to focus on one traffic stream at a time while crossing. However, pedestrians with visual impairments will not receive the same level of information as at a typical signalized intersection and since vehicle traffic is yield controlled verses stop controlled, many pedestrians feel uncomfortable crossing at a roundabout.

FLASHING BEACONS AND RECTANGULAR RAPID FLASHING BEACONS (RRFB)

Flashing yellow beacons and RRFBs may be used at heavily used crosswalks that are not already controlled by traffic signals or stop signs, and when there is no alternate controlled crossing nearby. Flashing Beacons are also used to warn motorists of upcoming severe dips or curves, or obstructions such as tunnel portals, bridge railings and abutments, or overcrossings.

Flashers attract attention to conditions that may not be readily apparent to drivers. For flashers to be effective, they must command the respect of motorists. Therefore, the condition must be viewed serious enough for motorists to justify having been alerted. If it seems arbitrary or unnecessary, drivers tend to ignore it.



FACTS AND STATISTICS ABOUT SPEEDING

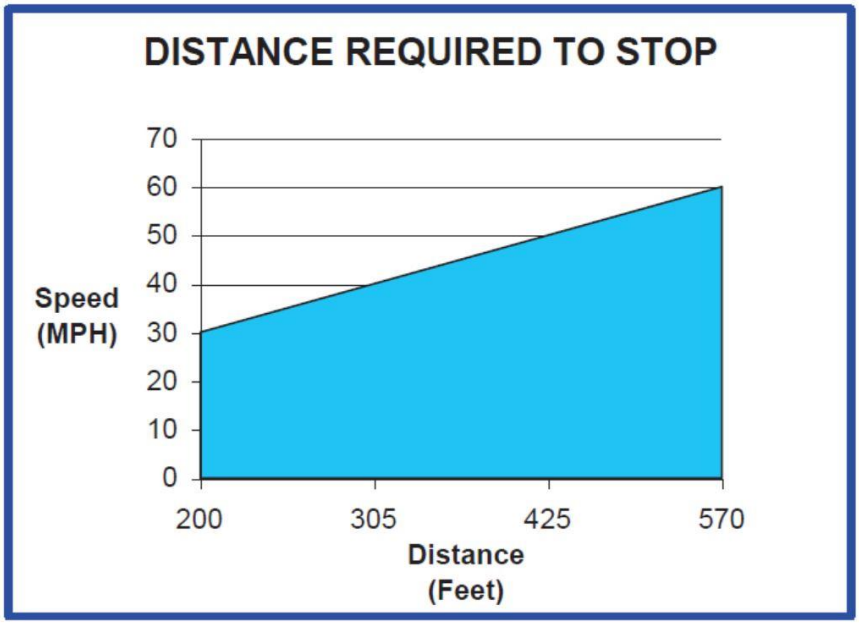
Speeding in residential neighborhoods is one of the most common traffic-related complaints received by Traffic Engineering. By gaining a better understanding of some of the facts about speeding we can work together towards alleviating speeding on our roadways.

Speeding Facts and Statistics:

- The speed limit on residential roadways is 25 mph, unless otherwise determined by an Engineering and Traffic Survey.
- The distance required to come to a stop is:

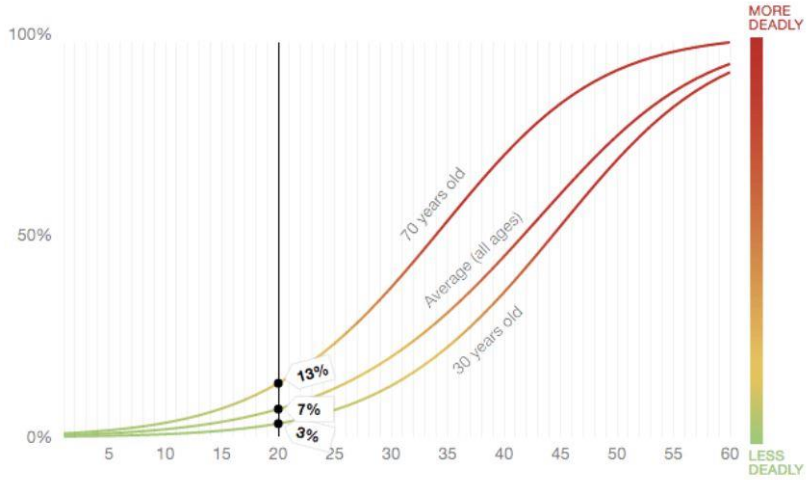
200 feet if you're traveling at 30 mph*
305 feet if you're traveling at 40 mph*
425 feet if you're traveling at 50 mph*
570 feet if you're traveling at 60 mph*

*American Association of State Highway and Transportation Officials (AASHTO) policies



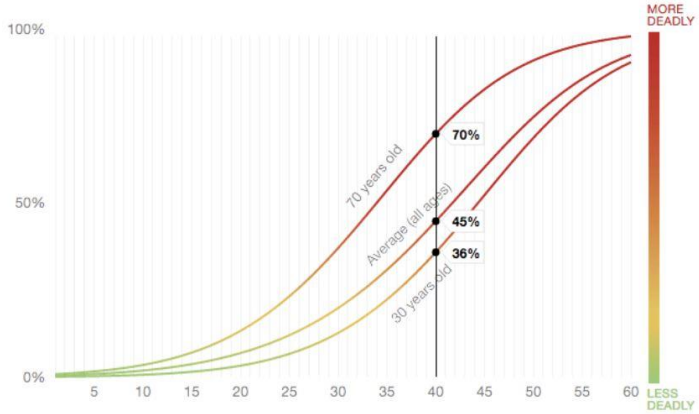
The Chance of Being Killed by a Car Going 20 mph

Roll over the curved lines to see the risk at any speed



The Chance of Being Killed by a Car Going 40 mph

Roll over the curved lines to see the risk at any speed



EFFECTIVE WAYS TO REDUCE SPEEDING IN RESIDENTIAL NEIGHBORHOODS

TRAFFIC SIGNS

Speed limit signs remind motorists to drive within the established speed limit. Other signs, such as curve warning signs supplemented with advisory speed plates, assist drivers in safely negotiating unexpected roadway conditions that require significant speed reduction.

Inappropriate signs often confuse and annoy drivers, and tend to foster disrespect for other appropriate traffic signs. Well-placed signs in accordance with the State of Wisconsin's criteria can be highly effective in reducing speeds and increasing traffic safety.

SPEED LIMITS

The Wisconsin Vehicle Code (WVC) sets the following speed limits:

- 15 mph in alleys, in school zones during posted times, and parks and recreation areas where children are arriving, departing, or playing
- 25 mph on service roads and highways within city or village limits

These speed limits may be posted or unposted.

Speed limits may also be established by an Engineering and Traffic Survey. Traditionally this Survey determined an appropriate speed limit considering factors such as the type of adjacent development, pedestrian and bicycle activity, roadside conditions, reported crash history, and the prevailing speed of traffic. The prevailing speed is that speed which 85 percent of the motorists are traveling at or below. The prevailing speed is utilized as a reference to establish speed limits based on the concept that most motorists can be relied upon to drive at a reasonable speed. Some cities have also started to experiment setting lower speed limits than the traditional method.

SPEED HUMPS

When less restrictive means, such as traffic limit signs and speed enforcement, have not been effective, speed humps may be considered on roadways with the following characteristics:

- Local, residential street with one travel lane in each direction
- Roadway width is not more than 32 feet
- There are no curves that would make it difficult for drivers to see the speed humps or cushions as they approach them
- Grade or slope less than 8 percent
- Traffic volumes on local and neighborhood collector streets up to 3,000 vehicles per day. Consideration of speed humps on collector streets with traffic volumes between 3,000 and 5,000 vehicles per day will be based on a case-by-case review
- Speed limits of 25 mph or less
- Actual measured prevailing speeds greater than 35 mph
- Not a transit route or primary emergency response route

A petition is required to determine if there is sufficient neighborhood support to expend staff resources on a project. The City Traffic Engineer may modify both the petition and petition area to address unique circumstances. Additionally, the Fire Department and Madison Metro must review and approve the location on a case-by-case basis to ensure fire response times and bus operations are not unduly affected.

Pros of Speed Humps

- They effectively lower the prevailing speeds on roadways with the above characteristics.

Cons of Speed Humps

- They must be supplemented with signs and pavement markings, which may not always be aesthetically pleasing.
- There may be an increase in noise as cars slow down and speed up at the speed humps or cushions, especially in the evenings when the neighborhood is quiet.
- Some residents feel that going over the speed humps or cushions on a daily basis
- becomes an annoyance after a while.

ELECTRONIC DRIVER FEEDBACK BOARDS

This type of equipment displays the actual speed of motorists in comparison to the posted speed limit as they pass by. The cities current policy to place these on approaches to school zones and selected locations with documented speeding problems.

RADAR SPEED TRAILER/ SPEED DISPLAY SIGNS

This type of equipment displays the actual speed of motorists in comparison to the posted speed limit as they pass by. They are temporarily deployed and serve as an educational tool to encourage motorists to be mindful of the speed at which they are traveling.

ENFORCEMENT

In the City of Madison, speeding laws are enforced by the Traffic Enforcement and Safety Team (TEST). The mission of the TEST is to increase public safety on the streets and highways of the City of Madison. Through the use of both enforcement and education, TEST will address dangerous behaviors that compromise traffic safety.

To request TEST, Citizens can:

- Call (608) 266-4622
- Call Speeders Hotline: (608) 266-4624 to lodge a complaint.
- Report Traffic Enforcement Concerns (https://www.cityofmadison.com/reportaproblem/trafficenforcement.cfm)

PEDESTRIAN SAFETY

Pedestrian Safety Tips When Crossing The Street:

- Cross at signalized or stop-controlled intersections whenever possible.
- Always look left, right, and left again.
- Always make eye contact with drivers.
- Always observe all vehicles stopping for you.
- Always cautiously walk across the street.
- Wear light-colored clothing at night.
- Avoid distractions such as phone calls, texting, and music.

CROSSWALKS

A crosswalk can be either "marked" or "unmarked". A "marked crosswalk" is designated by white or yellow painted lines on the pavement. Where there are no painted lines at intersections, "unmarked crosswalks" exist.

Per the Wisconsin Vehicle Code, drivers must yield the right of way to pedestrians within a crosswalk, whether it is marked or unmarked. However, pedestrians must not enter a crosswalk when there is an approaching vehicle so close as to be a danger.

When should crosswalks be marked?

- Crosswalks are usually marked at intersections controlled by traffic signals or stop signs.
- At locations where there are no traffic signals or stop signs, the crosswalks are usually unmarked, unless there are substantial amounts of pedestrians to justify marking the crosswalk, or where necessary to direct pedestrians along a suggested or more desirable route.

Some research suggests that marked crosswalks, at inappropriate locations, can give pedestrians a false sense of security since the rate of pedestrians being hit by a vehicle in a marked crosswalk is about 3 times greater than in unmarked crossings. Pedestrians appear to use less caution when crossing at a marked crosswalk than at locations where no marked crosswalks exist, often times stepping off the curb into the roadway, expecting drivers to stop. For the approaching motorist, however, the crosswalk is not as visible as it is to the crossing pedestrian.

On multi-lane roadways, marked crosswalks at locations where there are no appropriate accommodations such as traffic signals, stop signs, or refugee islands, are even more of a safety concern. An unfortunate but recurring scenario involves a motorist in the lane nearest the curb stopping for a pedestrian. The pedestrian begins to walk across the street not seeing a second vehicle approaching in the adjacent lane. The motorist in the second vehicle may not notice the pedestrian until the pedestrian steps directly into the vehicle's path, which may be too late to stop.

For these reasons, marked uncontrolled crosswalks should not be arbitrarily installed, but only after traffic and pedestrian conditions have been thoroughly examined.

PEDESTRIAN SIGNALS

When crossing at traffic signals pedestrians should follow these steps to enhance their safety:

1. Always press the pedestrian push button (ppb). When the ppb is pushed the traffic signal system will activate the pedestrian signal and provide longer green time for vehicles, to allow pedestrians to cross the street. However, when the ppb is not pushed, the pedestrian signal is not activated and traffic signal system will only account for the time necessary to clear the vehicles.

2. Begin crossing only after you've observed that the vehicles have stopped, and the "walking person" symbol appears on the pedestrian signal. Be aware of vehicles entering the crosswalk to turn right.

3. If a bright flashing "orange hand" indication appears on the pedestrian signal while you're in the crosswalk, continue walking you have enough time to get to the other side before the signal turns red. Some traffic signals may provide a countdown display to inform pedestrians of the number of seconds remaining to cross the street.

4. If you have not yet left the curb and a bright orange hand indication appears, Flashing or steady, DO NOT START TO CROSS since there may not be enough time to get to the other side before the signal turns red. Push the ppb and wait for the next cycle of the walking person symbol to appear.

SCHOOL AREA TRAFFIC SAFETY

During school arrival and dismissal times, congestion and confusion can result when cars, school buses, and pedestrians all use the roadway at the same time. Younger children are often inexperienced at maneuvering through this congestion. The orderly control of traffic and efficient use of curbside parking can greatly enhance traffic safety for motorists and children.

Parking Controls

Traffic Engineering, in cooperation with school administration, may implement parking controls such as:

- SCHOOL BUS LOADING zones,
- NO PARKING zones where parents can stop to load/unload students, but not leave cars unattended,
- PASSENGER LOADING zones,
- NO STOPPING zones to keep certain areas clear of vehicles for safety or traffic flow reasons, or
- TIME LIMIT parking to restrict the length of time for parking in certain areas. These restrictions can be full-time or for certain hours of the school day.

Crosswalks

Where there are no traffic signals or stop signs, the crosswalk is accompanied by pedestrian crossing warning signs.

Crossing Guard Service

At school crossings where pedestrian and vehicular volumes are high, school officials may request Traffic Engineering to conduct a crossing guard study. Upon determination that traffic conditions satisfy established warrants, crossing guard service may be implemented if approved by the Transportation Commission.

COMMUNITY PARTICIPATION

The best solutions for establishing appropriate traffic controls often come from effective partnerships among local residents, law enforcement, school officials, traffic engineers and government representatives.

There are usually several options available to improve traffic and pedestrian safety when a significant traffic concern exists. It helps to approach the situation with an open mind and work together towards solutions.

NEIGHBORHOOD AND HOMEOWNERS ASSOCIATION NEWSLETTERS

Newsletters prepared and distributed by members of the neighborhood are also highly effective in encouraging speed reduction. Since the residents are often the most knowledgeable with regards to speeding "hot spots," a newsletter identifying these areas may serve as a reminder to other neighbors to reduce their speeds, sensitize them to the concerns of others, as well as bring the community together in addressing this common concern.

NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

To enhance the walkability, driveability and liveability of public roadways, while maintaining safety and mobility for pedestrians and motorists, Traffic Engineering offers a Neighborhood Traffic Management Program (NTMP).

The NTMP is a process in which we will work together with your community, as a group, to identify traffic-related concerns, and implement appropriate and effective traffic management devices and controls. Some of the measures include:

- Enforcement
- Traffic signs and markings
- Speed trailers
- Traffic diverters to reduce or eliminate cut-through traffic
- Speed hump
- Curb extensions or center medians
- Traffic circles

Appropriate application of traffic devices and controls requires consultation with traffic engineers to ensure conformance with design standards, sound planning, and prudent traffic engineering practices.

The NTMP is a community-based process that begins and ends with your community. Participants will be involved with the development, evaluation and implementation of traffic solutions in their own neighborhood. This process involves:

- Written request/petition from individuals or community groups.
- Requests collected at Neighborhood Resource Team meetings
- Traffic studies including field reviews, data analyses, preliminary recommendations, and design.
- Community Meeting to discuss proposals.
- Temporary Installations and Evaluations.
- Permanent Installations.

Table 1, on the following page, lists the various Neighborhood Traffic Management Devises.

On a yearly basis, Traffic Engineering Staff provides a review of the NTMP process and an annual report on the list of traffic calming requests from neighborhoods throughout the City, along with data collected and the ranking according to previously established procedures for Commission and public comment. The Commission is to review and approve the ranking. The top ranked projects will be funded for construction in the current year.

TABLE 1: NEIGHBORHOOD TRAFFIC MANAGEMENT DEVICES

Devices	Safety	Speed Reduction	Pedestrian, Bicyclists Access	Traffic Diversion	Noise	Exhaust Emissions	Emergency Services	Acceptable for Traffic Management
Police Enforcement	Improvement	Depends on Amount	Possible Improvement	No Effect	No Effect	No Effect	No Effect	Yes
Speed Humps	Unknown	Yes	Mixed Results	Possible	Increase	Small Increase	Possible Problem	Yes
Education	Possible Improvement	Possible	Possible Improvement	N.A.	N.A.	N.A.	No Effect	Yes
Entrance Treatments	Possible Improvement	Unlikely	Possible Improvement	Mixed Result	No Effect	No Effect	Possible Problems	Yes
Curb Extensions	Improve Ped Crossing	Unlikely	Yes	No Effect	No Effect	No Effect	Possible Problems	Yes
Partial diverters/ Diverters/Cul-de-Sac	Possible Improvement	Possible	Possible	Yes	Possible Reduction	No Effect	Possible Problems	Possible
Chicanes	Possible Improvement	Possible	Possible	Possible	No Effect	Small Increase	Possible Problems	Yes
Traffic Circles	Improved	Yes	Possible	Possible	No Effect	No Effect	Possible Problems	Yes
One-way Streets	Possible Improvement	No	Mixed Results	Possible	No Effect	No Effect	Possible Problems	Yes
Median Barrier	Possible Improvement	No	Mixed Result	Possible	No Effect	No Effect	Possible Problems	Yes
Improve Arterial Streets	Possible Improvement	Unlikely	Possible Improvement	Possible Improvement	Possible Improvement	Possible Decrease	No Effect	Limited
Traffic Control Devices: e.g. Prohibitory Signing	Possible Improvement	Unlikely	Possible Improvement	Yes	Possible Improvement	No Effect	No Effect	Possible