

CHAPTER 39

TRAFFIC CALMING

39.1 General

This chapter defines acceptable methods of neighborhood traffic calming that are determined by the District to be necessary for existing Local and Minor Collector Roadways. This chapter also provides for specific design criteria for a number of traffic calming methods. "Traffic Calming is the combination of mainly physical measures that reduce the negative effects of motor vehicles, alter driver behavior and improve conditions for non-motorized street users".

NOTE: For additional information and criteria relative to Traffic Calming, refer to the **ITE/FHWA publication: Current Traffic Calming, State of Practice** and the **DDOT Traffic Calming Manual**

39.1.1 Intended Use

The necessity or desire for traffic safety and calming stems from the perception that Local and Minor Collector Roadways, particularly in residential areas, do not always function as intended. These roadways should be low traffic volume roadways used for direct access to residences on the street. They are also intended as a multi-modal system that is shared by vehicular, bicycle, and pedestrian traffic equally, in a manner that minimally impacts residents in the adjacent neighborhood.

39.1.2 Design Principles

Traffic calming measures shall only be designed at a location where an engineering study has been performed that indicates calming measures are warranted. Getting the community involved is a major element in a traffic calming project. Concurrence and a fully informed neighborhood is essential in insuring a successful traffic calming project.

The design of traffic calming measures shall be in accordance with principles and guidelines established by the DDOT Traffic Calming Manual and the FHWA Traffic Calming State of Practice. The designer should review the geometric roadway design criteria with the **AASHTO Green Book**, latest edition and signing and pavement markings should be in accordance with **MUTCD**.

NOTE: The design of roundabouts shall be based on guidelines established by current **USDOT/FHWA, Publication Roundabouts - an Informational Guide**.

39.1.3 Traffic Calming for New Street Design

New roadways (local streets and minor collectors) are to be designed to minimize cut through traffic, high volumes, and high-speed operation and to maximize the efficiency of the roadway to provide vehicular access and bicycle and pedestrian traffic, especially the handicapped persons.

39.1.3 Roundabouts and Mini Roundabouts

Roundabouts and Mini Roundabouts, considered traffic control measures, are included in the **Intersections** chapter within this manual. These traffic control measures may be used in new or existing street design if the appropriate criteria are met.

39.2 Traffic Safety Problems

Some residents in certain residential areas maintain that excessive speed, volume, or cut-through traffic is unacceptable. The resident believes the presence of too many vehicles traveling at high speeds diminishes that neighborhood's quality of life. Traffic calming measures are intended to minimize these issues and return the quality of life to the neighborhood. Care must be taken by the designer so that the installation of traffic calming devices does not create unintended hazards that delay emergency response or jeopardize the safety of bicyclists, pedestrians, especially the handicapped persons or motorists.

39.2.1 Speeding

Speeding may occur on roadways that allow the driver to feel safe while exceeding the posted speed limit. Factors that contribute to this perception include long, unbroken line of sight, steep roadway grades, wide roadways, low-density developments, low pedestrian activity, and large building setbacks. In addition, speeding may occur when the street functions as a higher classification street than originally intended.

39.2.2 Measuring Spread of Roadway

The standard method of measuring speed on any street is the determination of the 85th percentile speed. The 85th percentile speed is the speed at which or below which 85 percent of the vehicles travel. If the 85th percentile speed is at or below the posted speed limit, a speeding problem does not exist. However, if the 85th percentile speed is over the posted

speed limit by 5 mph or greater, either the posted speed limit may be inappropriate or a speeding problem may exist. Many other factors must be evaluated for determining speed limit.

39.2.3 Traffic Intrusion (Cut-through Traffic)

Intrusion is increased volume or excessive non-local traffic along a neighborhood street. This cut-through traffic is caused by drivers who use a Local Street to go through a neighborhood and save time on their trip. Local Streets that are less impeded than other local streets within the same neighborhood will often invite cut-through traffic. Routes that are perceived to be timesaving will attract more traffic. This increased cut-through traffic can cause a local street to function more like a Collector.

39.2.4 Pedestrian Safety

Pedestrian safety is a concern on streets experiencing speeding vehicles, cut-through traffic, or a combination of these problems. The high concern areas are near neighborhood schools and parks or mid-block pedestrian crossings, particularly on streets with on-street parking. These areas require special consideration for the mobility and safety of the pedestrian.

When designing handicap ramps the Traffic Safety Division requires all handicap ramps to be located within the crosswalk. At least one of the ramp's side flares must align, as close as possible to the back edge line of the crosswalks. Handicap ramps must be installed for each travel direction at a corner. Handicap ramps located at the center of the corner radii must be pre-approved by the Traffic Safety Division. All mid-block crossings require advance pedestrian signing. Signs must be placed a minimum of 150 ft. before a mid-block crosswalk.

NOTE: The remainder of this chapter describes design criteria for the engineered solutions; it does not state when or where these improvements are to be used.

39.2.5 Devices

Traffic calming measures are usually classified according to their dominant effect and are as follows:

- Volume Control (full street closures, half closures, diagonal diverters, median barriers and forced turn islands)
- Speed Control
 - Vertical Control Measures (speed humps, speed tables, raised intersections and textured pavements)

- Horizontal Control Measures (traffic circles, chicanes, lateral shifts and realigned intersections)
- Narrowings (neckdowns, center island narrowings and chokers)

39.3 Volume Control Devices

These devices are intended to control the number of vehicles used in a corridor or specific area. There are several methods used to control the traffic including the following:

39.3.1 Forced Turn Barrier (Pork Chops)

This device is used on secondary roads or driveways to prohibit straight movements across congested streets. It forces the motorists to turn right or left. This island (pork chop) should be designed with a minimum size of 50 sf.

39.3.2 Turn Prohibitors

These devices can be signs or physical barricades used to prohibit turns that are disruptive to the flow of traffic or to minimize the cut through traffic into a residential neighborhood.

39.3.3 Semi-Diverters

Semi-diverters prevent drivers from entering or exiting certain legs of an intersection. Strategically located, semi-diverters can effectively reduce traffic volumes on a street. Generally, these are used on non-transit streets only.

39.3.4 Diagonal Diverters

These physical barricades limit vehicular traffic from continuous travel or left turns in the intersection. The diverters may be created as a temporary situation using removable concrete barriers or as a permanent situation with a wall or trees or other more permanent devices.

39.4 Vertical Control Measures

39.4.1 Speed Humps

There are several varieties including rounded and flat topped. The flat topped are used for pedestrian crossings. The width of the humps may be restricted to allow the curb drainage to flow appropriately. Speed humps

are not recommended for bus routes because of the potential discomfort to bus passengers.

39.4.2 Raised Intersections

Raised Intersections – This flat topped raised area for the entire intersection. This use is more appropriate for bus routes.

39.4.3 Dips

Refer to the **Roadway** chapter within this manual for standard Cross-pan design.

39.4.4 Textured Pavements

This may include differential pavements colored concrete pad within an asphalt street, rumble strips, stamped concrete or other similar treatments to make the driver aware of a crosswalk, a congested intersection or other situations that may require special driver attention.

39.5 Horizontal Control Measures

39.5.1 Neighborhood Traffic Circles

Refer to the **Intersections** chapter within this manual for Traffic Circle design requirements.

39.5.2 Realigned Intersections

The intersection is physically split and causes the vehicular traffic to turn out of their travel pattern to turn left to continue on the same roadway. This realigned intersection tends to cause traffic to disperse and travel on other corridors.

39.5.3 Chicanes

This narrowing of the roadway is intended to slow speeds of vehicles on roadways to permit pedestrians to cross, as appropriate, more safely due to less roadway to cross.

39.6 Narrowings

39.6.1 Neck-downs/Intersection Chokers

Neckdowns are designed and built at intersections. Generally, it will assist by bringing pedestrians and traffic control (stop signs) out into a clearer view for the vehicular traffic. Special attention needs to be given to drainage around the neckdowns or chokers. If bike lanes exist, care should be taken to carry bike lanes through the neck-down or proper signage should be installed to warn bicyclists of narrowing.

39.6.2 Lane Eliminating Choker

This design eliminates a lane of traffic, thereby requiring more volume in one lane of traffic, thereby, decreased speeds.

39.6.3 Center Islands/Medians

Generally, center islands are more effective as a pedestrian refuge area, but may be used in conjunction with chicanes to slow down vehicular traffic. These islands should be a minimum of four foot wide.

39.7 Neighborhood Identification Island (Gateway Design)

Identifying neighborhoods, thereby notifying traffic that they are entering a residential area, increases motorist awareness of the appropriate speed and uses of the roadways.

39.8 Drop Off Zone for Schools

This tool is used to separate the parents dropping off children at school from the through traffic by creating an extra roadway, traffic lane, layby or drop off area similar to bus stops.