



Traffic Calming

City of Northampton, MA

September 2020

Introduction

The City of Northampton aims to transform the community into a place where pedestrians, cyclists, transit users, and motorists can use public infrastructure equally. For decades, roads were built primarily for vehicular traffic. However, motor vehicles are not the sole mode of transportation. There has been a shift towards increased pedestrian, bicycle, and transit activity. With this change, there are concerns for the safety of non-motorized users on roadways with vehicles traveling at excessive speeds. Research shows that higher speeds lead to greater chance of serious injury or fatality for pedestrians and cyclists. There is a growing need to calm traffic for the safety of all users.

The Federal Highway Administration (FHWA) and Institute of Traffic Engineers (ITE) describes traffic calming as the following:

The primary purpose of traffic calming is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, roadside, and other features that use self-enforcing physical or psycho-perception means to produce desired effects.

By installing certain design features, drivers are encouraged to reduce their speeds and be cognizant of cyclists and pedestrians. Traffic calming can be implemented on streets to increase the quality of life and create attractive neighborhoods.

Traffic Calming Measures

There are various traffic calming measures that can be implemented based on the geometry of the roadway and the roadway functional classification. This includes roadway narrowing, horizontal shifts, and vertical deflections.

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|---------------------|--------------------------|-----------------------|
| ❖ Roadway Narrowing | ❖ Horizontal Shifts | ❖ Vertical Deflection |
| ○ Curb Extensions | ○ Lateral Shift | ○ Speed Hump |
| ○ Choker | ○ Chicane | ○ Speed Cushion |
| ○ Median Island | ○ Realigned Intersection | ○ Speed Table |
| ○ On-street Parking | ○ Traffic Circle | ○ Offset Speed Table |
| ○ Road Diet | | ○ Raised Crosswalk |
| | | ○ Raised Intersection |



Curb Extension in Northampton, MA

Curb Extensions/Choker

- Also known as bulb-outs or bump outs.
- Curb extensions create a pinch point in the streets by extending the curb line out.
- Pedestrians are more visible and the crossing distance is reduced.
- Chokers are similar to curb extensions, but are located midblock.
- Drainage impacts must be considered and larger vehicles may not be able to make turns around these structures.

Median Island

- Also known as a raised island or pedestrian island.
- These are structures in the center of the roadway that narrow the travel lanes.
- When installed in conjunction with a crosswalk, it allows pedestrians to cross the street in two phases.
- Driveways and side street access must be considered for these islands. On-street parking may be eliminated due to the reduction in pavement width.



Pedestrian Island in Northampton, MA



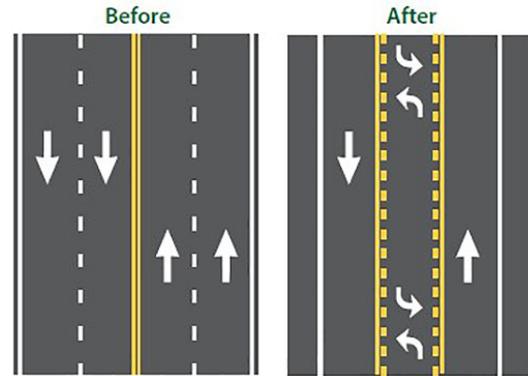
Parking lane in Northampton, MA

On-Street Parking

- Parking on one or both sides of the roadway can narrow the travel lanes.
- Parking lanes can be delineated by line paint if there is sufficient space.
- A parking lane can provide a buffer between pedestrians on the sidewalk and vehicular traffic.
- On-street parking near a crosswalk may reduce visibility of pedestrians.

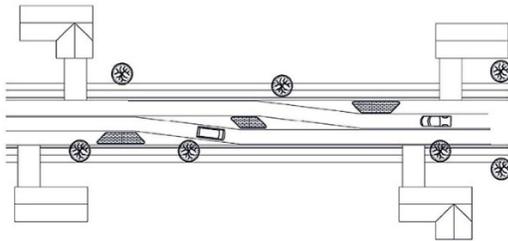
Road Diets

- For streets with multiple lanes, this design reduces the number of lanes.
- The available pavement width can be used for bike lanes or parking lanes.
- Fewer lanes result in reduced conflict points, improved sight distances, and improved pedestrian and bicycle safety.



(Source: FHWA Road Diet Information Guide)

Horizontal Shift



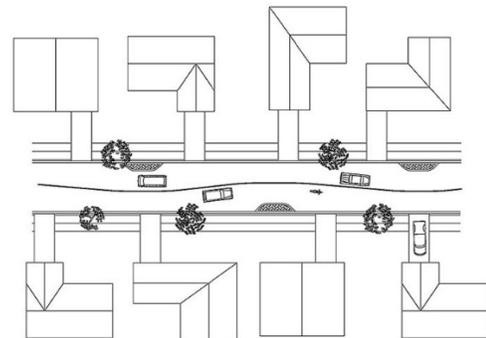
(Source: Delaware Department of Transportation)

Lateral Shift

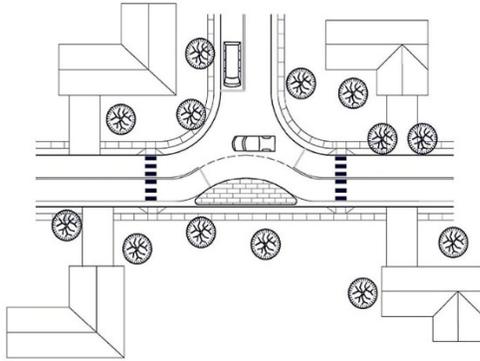
- This measure shifts traffic so that the line of travel is not straight.
- The shift is done with curb extensions. The center island is optional.
- Drainage impacts must be considered for the curb extensions. The locations of the driveways must also be assessed. On-street parking may be eliminated.

Chicane

- Chicanes are a series of curb extensions that alternate sides (typically three structures).
- The travel lane is diverted into an S-shape.
- Drainage impacts must be considered for the curb extensions. The locations of the driveways must also be assessed. On-street parking may be eliminated.



(Source: Delaware Department of Transportation)



(Source: Delaware Department of Transportation)

Realigned Intersection

- A horizontal deflection is added at an intersection which puts a break in the straight path of travel.
- This can be done by the means of a curb extension.
- Drainage impact must be considered for the curb extension. The appropriate turning radius must be maintained for emergency vehicle and bus access.

Traffic Circle

- A traffic circle is a raised circular island which requires vehicular travel in a counterclockwise direction.
- The circular design reduces vehicle speed and prevents vehicles from traversing straight through the intersection, reducing the possibility of collisions.
- There may be drainage impacts. Landscaping may be allowed in the island. Larger vehicles may not be able to traverse the circle.



(Source: Seattle Department of Transportation)

Vertical Deflection



Speed hump in Northampton, MA

Speed Hump

- Speed humps are raised sections of the roadway (typically 12 to 14 feet in length and 3 to 4 inches in height).
- For longer stretches, two or more speed humps may need to be installed to effectively reduce speeds.
- There may be an increase in noise and increase in emergency response time.



Speed table in Northampton, MA

Speed Table

- Speed tables are raised sections of the roadway. Unlike the speed hump, they have a flat top and are longer in length. They are 22 feet long and 3 to 4 inches in height.
- Due to the longer length, this device is more gradual.
- There may be an increase in noise and increase in emergency response time.

Raised Intersection

- This intersection is raised to be at the same grade as the sidewalk or slightly lower.
- The flat area typically has a textured pattern to alert drivers of a change in the roadway.
- Pedestrians are more visible when crossing.
- Drainage impacts must be considered and emergency response times may be affected.



Raised intersection in Northampton, MA
(Source: Google Maps)



Raised crosswalk in Northampton, MA

Raised Crosswalk

- Raised crosswalks are similar to speed tables in length and height. However, they extend from curb to curb and are marked with a crosswalk.
- Pedestrians are more visible when crossing.
- Drainage impacts must be considered.

Some of these features may not be appropriate for major roadways, emergency routes, or transit routes. Each specific location needs to be evaluated to determine the applicability of any given measure.

Devices Not Included in Traffic Calming

Concerns about speeding traffic are often accompanied by requests for new stop signs, traffic signals, turn restrictions, speed limit signs and the like. These are not traffic calming devices, but rather regulatory traffic controls that are governed by either national engineering guidelines, state laws, or both.

The Department of Public Works (DPW) frequently receives requests for new stop signs to “slow down traffic” and “improve safety” on a local street. Not only are stop signs not a traffic calming measure, but research shows that installing unwarranted stop signs can often result in more collisions and more speeding. Drivers often increase speed between intersections to make up for perceived lost time.

Another common traffic-related request involves the lowering of posted speed limits on Northampton roadways. A posted speed limit is a regulatory control governed by the Massachusetts Department of Transportation (MassDOT) through a state approval process that requires documented speed and engineering studies. Conducting a study does not guarantee lowering the speed limit. Again, most research concludes that driver speed is less a function of posted speed limits and more a function of real or perceived driving conditions.

Children at Play, Slow Children, and Deaf Child signs are a common request for residential neighborhoods. These types of signs are non-standard. State and local entities follow the Manual on Uniform Traffic Control Devices (MUTCD), which is a document issued by the Federal Highway Administration (FHWA) and the United States Department of Transportation (USDOT) to specify standard traffic signs and pavement markings. Warning signs are intended to inform drivers of upcoming conditions of the roadway. According to a report conducted by the Wisconsin Department of Transportation, “there is no evidence that special warning signs of this sort reduce driver speeds or crash rates.” These signs may give parents a false sense of security that it is safe for children to play in the road. Drivers may be led to believe that there are no children in areas where these signs are not present. The MUTCD states “the use of warning signs should be kept to a minimum as the unnecessary use of warning signs tends to breed disrespect for all signs.”

Initiation and Implementation

1. Residents may fill out the traffic calming request form found at www.northamptonma.gov/1118.
An upload option is available so that supporting information such as letters or photos regarding the area of concern may be attached.
2. DPW and Police will review the request and determine whether further action is warranted. If deemed appropriate, information that may be collected includes, but is not limited to, traffic volume, traffic speeds, crash data, pavement condition, sidewalk presence and existing signage. Other City Departments may be engaged as necessary.
3. The traffic calming request will be placed on a Transportation and Parking Commission (TPC) meeting agenda. Information compiled as part of item 2 will be presented, and the TPC will

provide a public forum for further comment. TPC members may publicly provide input on the potential remediation of roadway safety concerns.

4. DPW and Police will further review the application based on feedback received as part of item 3.
5. DPW and Police will make a joint written recommendation of proposed action. This recommendation will be reported to the TPC, the original petitioner and the Ward Councilor at a future TPC meeting.
6. The proposed action will be implemented in keeping with departmental budgets and operational considerations. Improvements may be incorporated into a larger roadway reconstruction project as appropriate.

*Note that it is not the intent of this process to require drivers to slow down well below the speed limit. This could create congestion where it did not exist previously. Motorists should be able to move through a corridor while safely sharing the roadway with cyclists and pedestrians. There are certain traffic calming measures that may not be applicable for collector and arterial roadways with higher speed limits. Considerations are also made for emergency access, transit routes and DPW plowing operations.

References

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- CTC & Associates LLC. *Effectiveness of "Children at Play" Warning Signs*. Madison: WisDOT Research & Library Unit, 2007.