

MaineDOT Guidelines for the Use of Traffic Calming Devices

Overview

Policy Purpose

The purpose of this policy is to provide guidance to local, regional and State jurisdictions for the application of traffic calming techniques on streets and highway.

Need for Policy

MaineDOT believes that traffic calming, as defined by the Institute of Transportation Engineers, is a valid and useful approach to traffic management.

Since Context Sensitive Solutions and Practical Design are important tools in the designer's toolbox, guidelines are necessary to indicate options available and the limits of acceptance/use of certain traffic calming features on Maine roadways.

Maine's arterial and major collector systems provide a network for the safe and efficient inter-regional movement of people, goods and services between and through major urban centers and municipalities. This sometimes causes conflicts with local needs, such as the compatibility of traffic calming objectives with the prime mobility function of arterial highways. The primary goal of traffic calming is to reduce vehicular speed to a more consistent and acceptable level with secondary gains of reduced crashes and a safer roadway for all users

What is Traffic Calming

For policy purposes, MaineDOT will use the following definition of traffic calming established by the Institute of Transportation Engineers:

“Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non motorized street users.”

Federal Classifications

This policy is designed to the road system in Maine with Federal functional classifications of principle arterial, minor arterial, major/urban collector, minor collector and local.

Applicability

Prohibition: 40 MPH or Greater

The objectives of certain traffic calming techniques may be incompatible with the mobility function of high speed roadways.

MaineDOT will prohibit certain measures on highways and streets that have Federal functional classifications as minor collectors, major/urban collectors, minor arterials and principal arterials with a posted speed or a design speed limit of 40 miles-per-hour or greater.

These measures include vertical changes involving speed humps, speed bumps, speed tables, or raised intersections, and lateral changes involving chicanes or offset intersections.

Note: This does not preclude the designer from using roadway narrowing using stamped, flush concrete and raised islands are all still allowed on these types of roadway.

Local streets, Minor Collectors, Urban Roadways classified as local streets and collectors with a posted speed of 35 mph and below.

The full range of traffic calming techniques may be considered appropriate for implementation on highways bearing these Federal functional classifications.

Arterial Highways and Streets posted 35 mph and below

Arterial Highways and Streets

The prime function of the higher classifications roadways such as arterial highways and streets is to provide mobility for transportation system users.

Traffic calming on minor arterials and principle arterials with posted speeds or designed to be posted with a speed limit of 35 miles-per-hour and below shall not be considered unless:

- It can be shown that the 85th percentile speed is greater than 10 miles per hour over the posted speed; or
- there are high crash locations on the route that can be mitigated with speed reduction; or
- there are documented issues regarding the safety of pedestrians along the roadway.

Traffic calming should not be the first step undertaken for remediation of the above issues. Standard enforcement should be undertaken first. Next, additional regulatory, warning and or guide signs may be installed to try to obtain compliance. If the municipality can document that one of the above criteria is met, and the municipality has also shown that increased enforcement and signage have not produced satisfactory results, then the matter shall be brought before the engineering council on a case by case basis.

Note: This does not preclude the designer from using roadway narrowing using stamped, flush concrete and raised islands are all still allowed on these types of roadway.

Minor Collectors and Major/Urban Collectors 35 MPH and Below

Vertical changes involving speed tables, raised intersections, and lateral changes involving chicanes, offset intersections, or lateral shifts in the geometric alignment shall be allowed on highways and streets that have Federal functional classifications as Minor Collectors and major/urban collectors with posted speeds or designed to be posted with a speed limit of 35 miles-per-hour and below.

Local Government Official Approval

The Department shall further require that any local or regional jurisdiction that is considering traffic calming within their community must officially approve the change at the local government level before MaineDOT will consider official approval.

Community Traffic Calming Plan

It is also recommended that a community considering traffic calming measures develop a municipality-wide or regionally-based traffic calming plan that documents the needs and specifies the areas where traffic calming may be appropriate to address the needs of the community.

This municipal/regional plan should be reviewed and approved by the responsible municipal/regional authority (council/select board) and MaineDOT (this only applies for municipalities with plans to use traffic calming on a state or state-aid roadway). Possible exceptions to the policy on arterial traffic calming should be identified in these plans and reviewed on a case-by-case basis for the purposes of identifying the most appropriate treatment to solve the problem. Any proposed treatments must minimize potential conflicts between the objectives of traffic calming and the overall mobility function of roadways.

Please note that traffic calming may cause diversion of traffic into unwanted/unintended areas. These ramifications should be identified and weighed before indiscriminately using a traffic calming technique.

Table: Federal Functional Class and Speed Limits

ALLOWABLE VERTICAL & LATERAL CHANGES

Federal Functional Class

Principal Arterial		Minor Arterial		Major Collector		Minor Collector	
≤ 35 mph	40+	≤ 35 mph	40+	≤ 35 mph	40+	≤ 35 mph	40+
N*	N	N*	N	Y	N	Y	N

* **Narrowly defined exceptions listed in policy**

RESOURCES:

Some good references for traffic calming can be located at the following sites:

<http://www.ite.org/traffic/index.asp>.

This website includes “Traffic Calming: State of the Practice, ITE/FHWA, August 1999”.

http://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Also, see MUTCD Sections 2C.29 Speed Hump Sign (W17-1) and Sections 3B.22 thru 26 and Figures 3B.28 thru 31 for additional guidance on signing and striping.

Traffic Calming Measures

Traffic calming measures often have trade-offs to get the desired result. Below is a list of measures with items to be taken under consideration, other measures will be considered on a case by case basis.

*Pictures of the different measures can be found on the P Drive under **P:\traffic engineering\traffic calming measures.***

Driver feedback signs – These types of dynamic signs can be used on the roadway to provide information to the driver that may or may not be readily apparent, such as: dynamic speed display, pedestrian activated rectangular rapid flashing beacons, blank out signs that convey messages that are only in effect at certain times such as “No Turn On Red”, “Yield to Pedestrians”. These types of devices sometimes have little effect in and of themselves, but may be combined with features shown below to provide a more complete solution. *Items to consider: these devices often have power and future maintenance costs associated with them, municipalities that are asking for traffic calming are be required to pay electrical and on-going maintenance costs for these devices.*

Vertical changes in the street – Speed tables and raised intersections/crosswalks can be effective tools in slowing traffic along a route. A speed study should be performed prior to considering the use of these devices to determine if there is truly an issue to resolve. Speed Table tops are normally four inches high with a minimum table top of ten feet with six foot ramps (both measured longitudinally to the roadway). See Tables 1, 2 and 3. *Items to consider: drainage issues, volumes of trucks in relation to noise made by shifting loads, fire and safety response times, who has winter maintenance responsibilities and ability to plow, location of trucking firms (ie. Heavy-haul route, bike routes may require a larger gutter so as not to impede bike traffic, need to have proper lighting/delineation/signage.*

Lateral changes in the street – Chicanes are used to slow traffic down in mid-block areas or in advance of an intersection. They are usually constructed using raised island to force traffic to perform an S shape maneuver. The deflections should be at least 45 degrees and provide a path large enough for the largest design vehicle to pass. *Items to consider: Is there ample ROW, would the chicanes remove parking in an area, drainage issues, impacts on access and turning vehicles, width for plowing, needs to have the proper lighting/delineation/signage.*

Roadway narrowing – Spot narrowing of the roadway can help in reducing speeds along certain stretches of roadway. The narrowing can occur using a center island/median or the use of edge islands in the form of a bump out. The islands can be either raised, flushed concrete, stamped pavement or a combination. Raised island are the most effective as shy distance enters the equation. Flushed islands may allow more flexibility as the roadway can be narrowed more than with raised islands and still allow needed traffic movements. Curb bump-outs and center medians can also provide safe havens for pedestrians. Road narrowing can also be used at intersections using a passenger car template as the basic design and using a raised apron to accommodate the largest design vehicle. While less likely to decrease speed in and of themselves, optical speed bars have been shown to help in combination with other treatments. On some roadways, the addition of striping or wider striping may also lead to a calming effect over what was originally present. *Items to consider: width for plowing, check with entity that provides winter maintenance, loss of parking, drainage issues, bike routes, need for proper lighting/delineation/signage. **Note, while on-street-parking may act as a traffic calming***

feature, it is not a technique that should be artificially introduced to a roadway as traffic calming. On-street parking should only be installed where there is a documented need.

Roundabouts/mini-roundabouts – Roundabouts have been shown to handle substantial traffic, reduce crash rates over a standard four-way signalized and un-signalized intersection and should be looked at as an alternative during enhanced project scoping. Roundabouts lessen the number of potential vehicle-to-vehicle conflict points, lessening the chances for crashes. Roundabouts have been shown to reduce overall speed and cause only a minimum diversion in traffic. Mini-roundabouts are used at smaller type intersections usually on local roads. Mini-roundabouts have a totally mountable inner circle. They provide the same benefits as a roundabout. One major difference is that left turning traffic, for the most part, travels over the inner circle. From a cost/benefit standpoint, a roundabout may not be a practical solution solely to reduce speed if there are no other safety issues present. *Items to consider: ROW, overall costs, drainage issues, roadway entrance grades, separator islands, design speed, education, two lane roundabouts are difficult to navigate for bicyclists and pedestrians,*

Table 1 Speed Table Plan View



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Speed Table Details

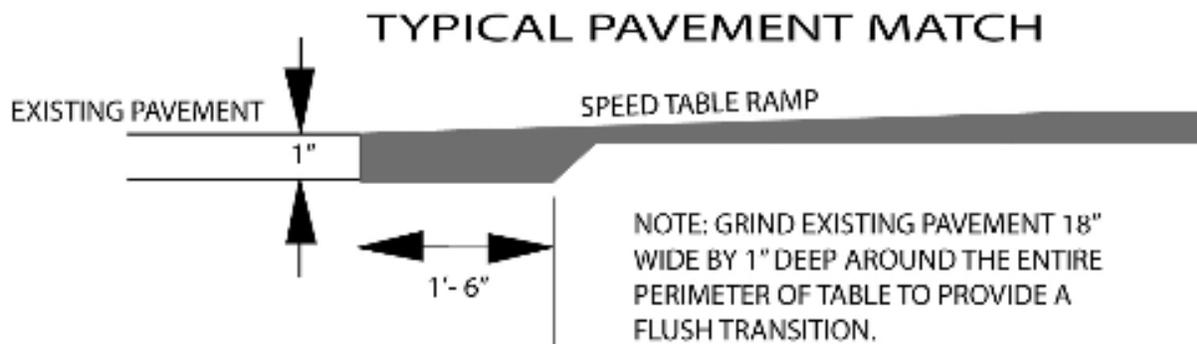
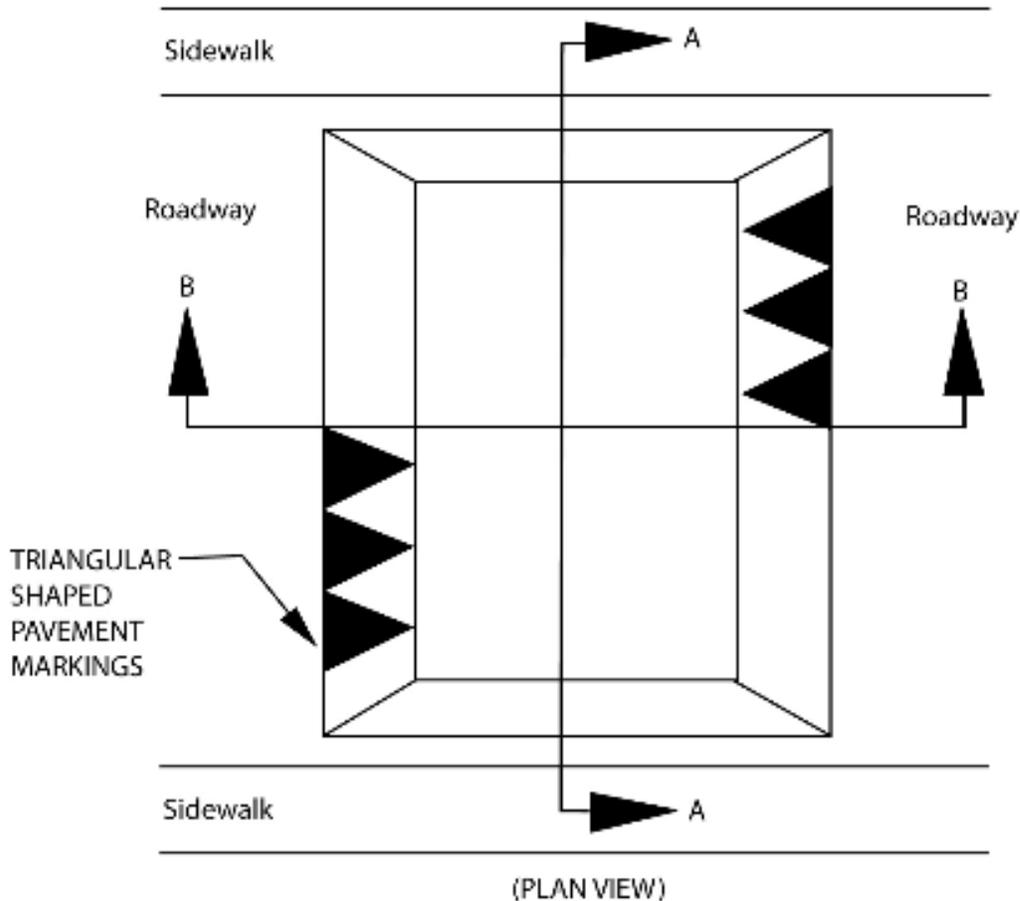
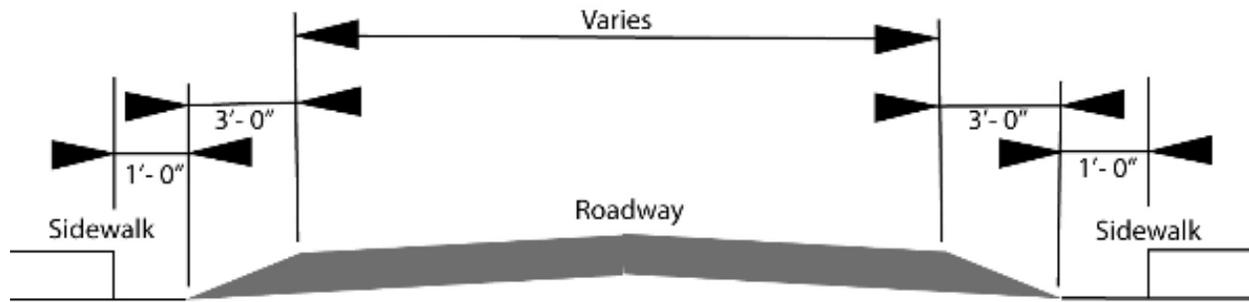


Table 2 – Speed Table Cross-Sections

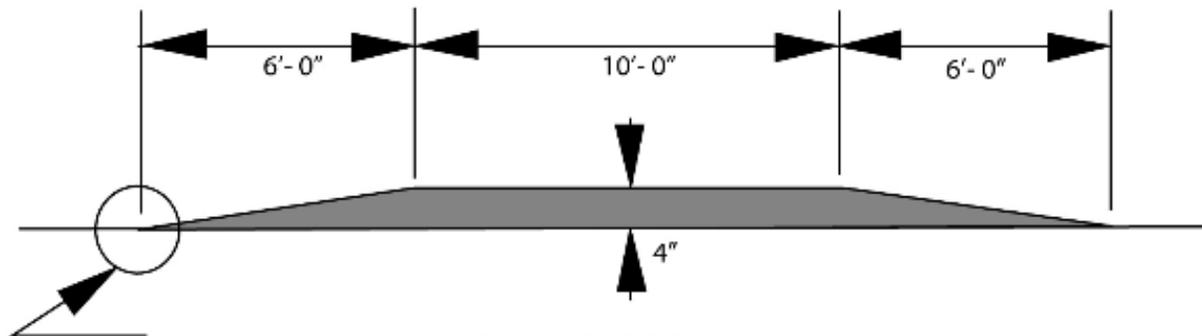


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Speed Table Details Continued



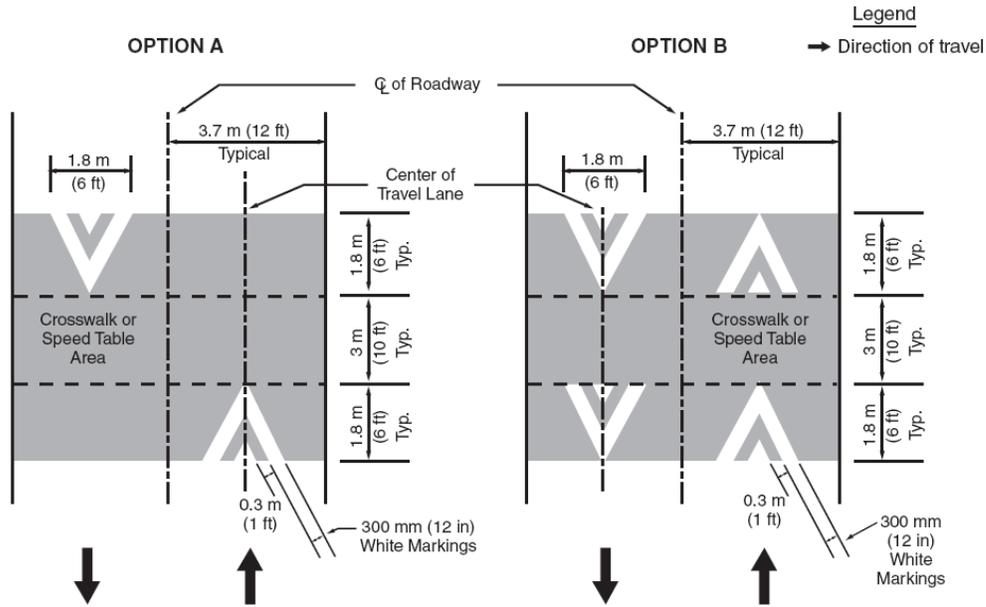
SECTION A-A



FLUSH PAVEMENT MATCH
(TYPICAL) See Detail

SECTION B-B

Table 3 – Speed Table Markings



Option:

Advance speed hump markings may be used in advance of an engineered vertical roadway deflection where added visibility is desired or where such deflection is not expected (see Figure 3B-31).

Advance pavement wording such as BUMP or HUMP (see Section 3B.19) may be used on the approach to a speed hump either alone or in conjunction with advance speed hump markings. Appropriate advance warning signs may be used in conformance with Section 2C.24.

Guidance:

If used, advance speed hump markings should be installed in each approach lane.

Appendix A