DDOT Speed Hump Request Procedures and Engineering Guidelines

2010

DISTRICT DEPARTMENT OF TRANSPORTATION

Table of Contents

I. Introduction

The District of Columbia is committed to reducing the negative impacts of traffic and to ensuring the overall safety and livability of residential neighborhoods. The use of speed humps can reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for pedestrians and non-motorized street and roadway users.

A speed hump is a raised area of pavement on the roadway surface that extends across the pavement width. Typically, speed humps are 12 -14 feet long in the direction of travel and 3 to 4 inches high. The 14 ft. (4.2m) hump was chosen by DDOT over the more common 12 feet (3.7m) hump due to its slightly higher speed allowance and smoother ride for emergency vehicles. Speed bumps will only be applied to streets classified as "local streets" with the Average Daily Traffic (ADT) volume of 2,000 vehicles per day or less.

In order to meet the demand for traffic calming on residential "local" Streets, DDOT has developed guidelines for responding to requests from individuals, community groups, and ANCs. Speed humps may be installed upon receipt of a petition in which residents endorse the measure with at least seventy-five percent (75%) support of the households in the candidate block or street segment.

This document identifies criteria to be used in determining if and when the installation of speed humps is warranted. The document also outlines the mandatory neighborhood (residents') support needed for approving installation of speed hump(s).

II. Speed Hump Eligibility Criteria

In order to install speed hump(s) on a particular street, that street must meet the following criteria.

1. The street must be classified as a "local" street.
2. The street grade must not exceed 8%.
3. The posted speed limit must be 30 MPH or less.
4. The street must NOT be a primary bus route or truck route
5. The street must NOT be a primary emergency vehicle route (such as a main approach to a hospital or fire house)
6. The Fire and Police Departments must be notified prior to installing Speed Humps (for comment and so that they may adjust their response routes if necessary).
7. The 85th percentile of measured vehicle speeds must substantially exceed the

posted speed limit (guideline: by at least 25 percent).

III. Potential Impacts

Like many operational changes to the transportation network, installing speed humps can result in both positive and negative impacts:

1. In some settings, speed humps have proven to achieve their primary effect, which is to slow traffic speeds and help manage aggressive driving.
2. Speed humps can help keep vehicles on arterial roadways and discourage "cut-through" traffic.
3. Speed humps can increase emergency response time.
4. Typically, on–street parking and speed humps can co-exist on the same street segment. However, a small loss of on-street parking spaces may occur.
5. People with back and neck problems may experience pain or discomfort when traveling over speed humps.

IV. Request Procedures

A. Requirements

A request for speed humps, generated by a citizen representative, must include the formal agreement of residents living on the candidate block or street segment:

1. The agreement shall take the form of a petition demonstrating that **seventy-five (75) percent of the households** of the candidate block or street segment support the installation of speed humps. The Request Form and petition are located on page 14 of this document.
2. The local ANC Chairperson will be notified of DDOT plans to install speed humps in response to citizens' petition.
3. Speed hump or other traffic calming measures recommended as part of a technical DDOT study do NOT require petition support and will also be subject to an ANC / public comment period.

B. Additional Citizen Considerations

1. Residents must be aware that a speed hump may be installed in front of their residence. This location may be necessary to achieve the appropriate design distance between humps.
2. Residents must be aware that warning signs may be installed in front of their residence.

V. Engineering Evaluation

Once a complete Request Form (including petition) has been submitted, DDOT will conduct an engineering evaluation prior to installation of speed humps to determine if installation at the candidate location is in conformance with the criteria and guidelines in this document.

In its evaluation, DDOT will consider the potential impacts of speed humps on the operations of the surrounding transportation network. If negative impacts are expected or observed, DDOT will monitor the area for changes to traffic flows.

VI. Installation of Speed Humps

If all criteria are met, the street will be placed on DDOT's work schedule. Speed humps will be installed on a first-come, first-served basis. Pending roadwork on the subject street may delay installation of speed humps.

All construction should be executed in accordance with District Department of Transportation policies, standards, and regulations.

VII. Modification or Removal of Speed Humps

DDOT may consider the removal or modification of a speed hump or other traffic calming measure if it fails to meet the intended objective or if it leads to the development of unsafe traffic operations. Citizens may petition to have traffic calming measure modified or removed and must submit a formal request for the removal by using the form on page 17.

Speed Hump Design Guidelines

A. Speed Hump Standards

The typical hump has a design speed of 25MPH. This speed is safe and comfortable for passenger cars. Larger vehicles such as trash trucks, SU-9 single-unit trucks, WB-40 trucks, school buses, ambulance vans, fire trucks, etc. have to cross the hump at lower speeds. In order to achieve a particular crossing speed, a speed hump may be designed in a range from 2 to 4 inches in height (50 to 100 mm). Speed humps are parabolic or semi-circular raised surfaces that extend the width of the roadway. For common parabolic speed humps the following equation describes the shape of a parabolic hump:

$$\mathbf{Y = K\,H\,x\,(W - x) / W^2}$$

Where H is the highest hump cross-section point, K is the slope coefficient and is within 1- 4, and W is the width of the hump cross-section. See Figure 1.

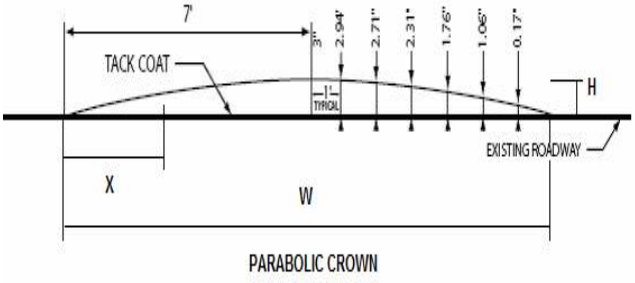


Figure 1. Speed Hump Profile

1. Construction Details

   a. The speed hump profile shall be parabolic or semi-circular, and shall appear as a raised section of pavement on the roadway. It shall be 14 feet wide and gradually rise to 3 to 4 inches above the profile of the roadway surface.

   b. Speed humps shall be installed across the entire roadway width to the lip of the gutter, with the last one-foot tapered flush with the pavement. The tapered design is intended to minimize gutter blockage and preserve drainage flows.

B. Positioning of Speed Humps

SUMMARY – ***Speed Humps shall be placed in locations where drivers have adequate sight distance to see vertical deflection on the roadway surface; and***

avoid conflicts with other transportation and utility infrastructure.

1. In general, speed humps shall be installed at least 200 feet apart but not greater than 750 feet apart except if special circumstances dictate.

2. The positioning of the speed humps shall take into consideration the following which should be field verified prior to installation:

   a. Speed humps should NOT be installed in the path of a pedestrian crossing or curb ramp.

   b. Speed humps should NOT be constructed at driveway locations.

   c. Speed humps should be located to avoid conflict with underground utility access to boxes, vaults, and sewers.

   d. Speed humps should NOT be installed over manholes, water valves or adjacent to fire hydrants.

   e. Speed humps located near drainage inlets should be installed on the down slop side of the inlet. This arrangement promotes positive drainage flow to the inlet.

   f. Speed humps should be located near a streetlight to ensure nighttime illumination.

   g. The speed humps should NOT be located on horizontal or vertical curves where visibility of the speed hump is limited, or on approaches to these curves. The speed humps must be visible from a distance of at least 250 feet using the AASHTO measurement procedures. Speed humps should not be used on curves unless the radius is greater than 300 feet.

   h. Speed humps should NOT be installed less than 150 feet from stop sign or yield sign, and 250 feet from a traffic signal.

C. Pavement Markings

1. Speed Humps shall be marked with retro reflective pavement-marking compound.

2. Speed hump pavement markings shall be consistent with the provisions of the MUTCD 2003 Figure 3. The markings are shown as a white “v” shape inside a second “v” shape. Speed humps are shown with a dimension of 4.2 m (14 ft) longitudinally across both lanes of a two-

lane two-way roadway. The travel lanes are each shown as 3.7 m (12 ft) wide, and this width is denoted as “typical.” The “v” shaped markings are shown as centered in each travel lane, with the point of each “v” pointing in the direction of traffic flow in the lane. The lines making the “v” are shown at a dimension of 300 mm (12 in) wide. The space between the two sets of “v” markings is shown at a dimensioned distance of 0.3 m (1 ft) wide. Figure 2 shows a black arrow, indicating the direction of travel in the lanes. The marking is shown as 1.8 m (6 ft) wide at the base of the “v.” Figure 3 shows a two-lane roadway segment with arrows indicating one lane of travel in each direction. One speed hump marking is shown on the pavement in each direction, with the base of the “v” shown at the near edge of the speed hump and the point of the “v” shown at the center of the speed hump.

3. Advance Speed Hump Markings: The advance speed hump pavement markings are not applicable within the District of Columbia.

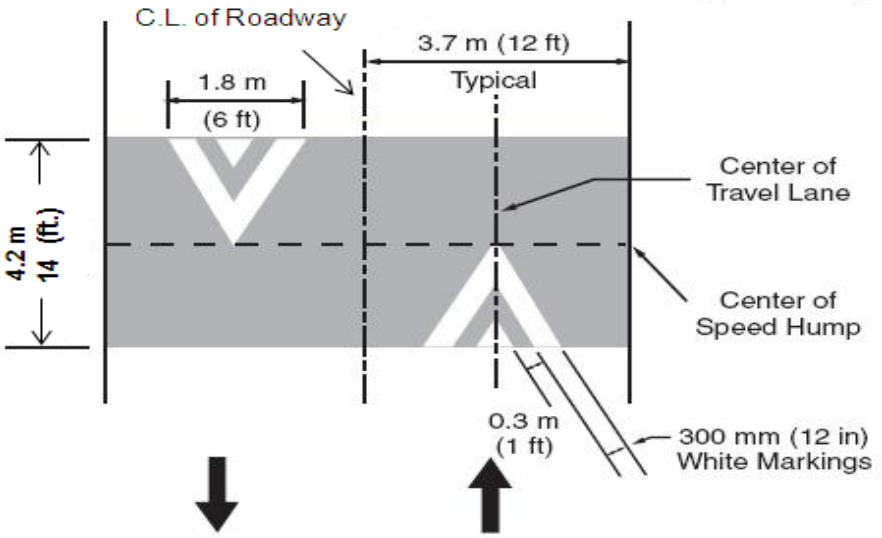


Figure 2

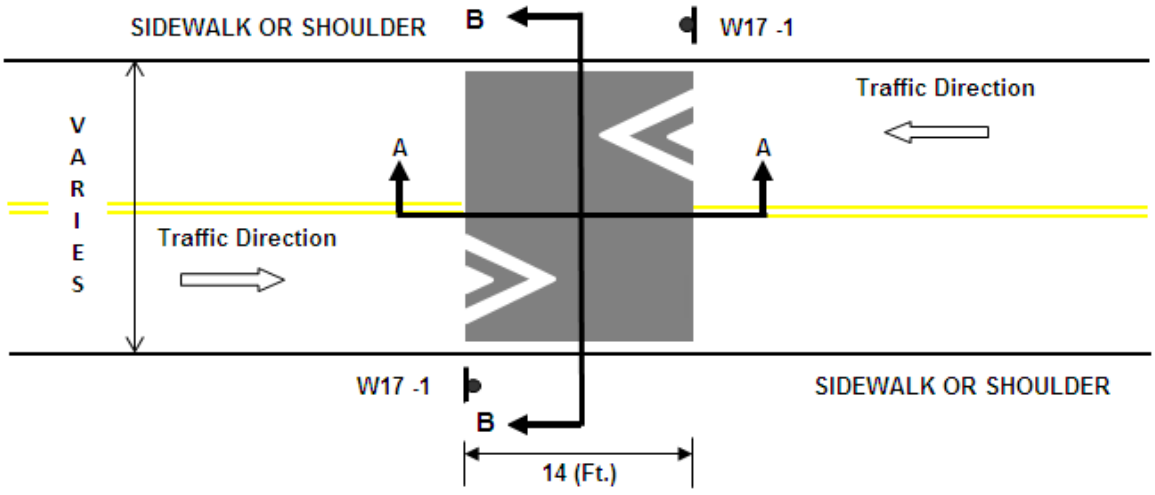


Figure 3

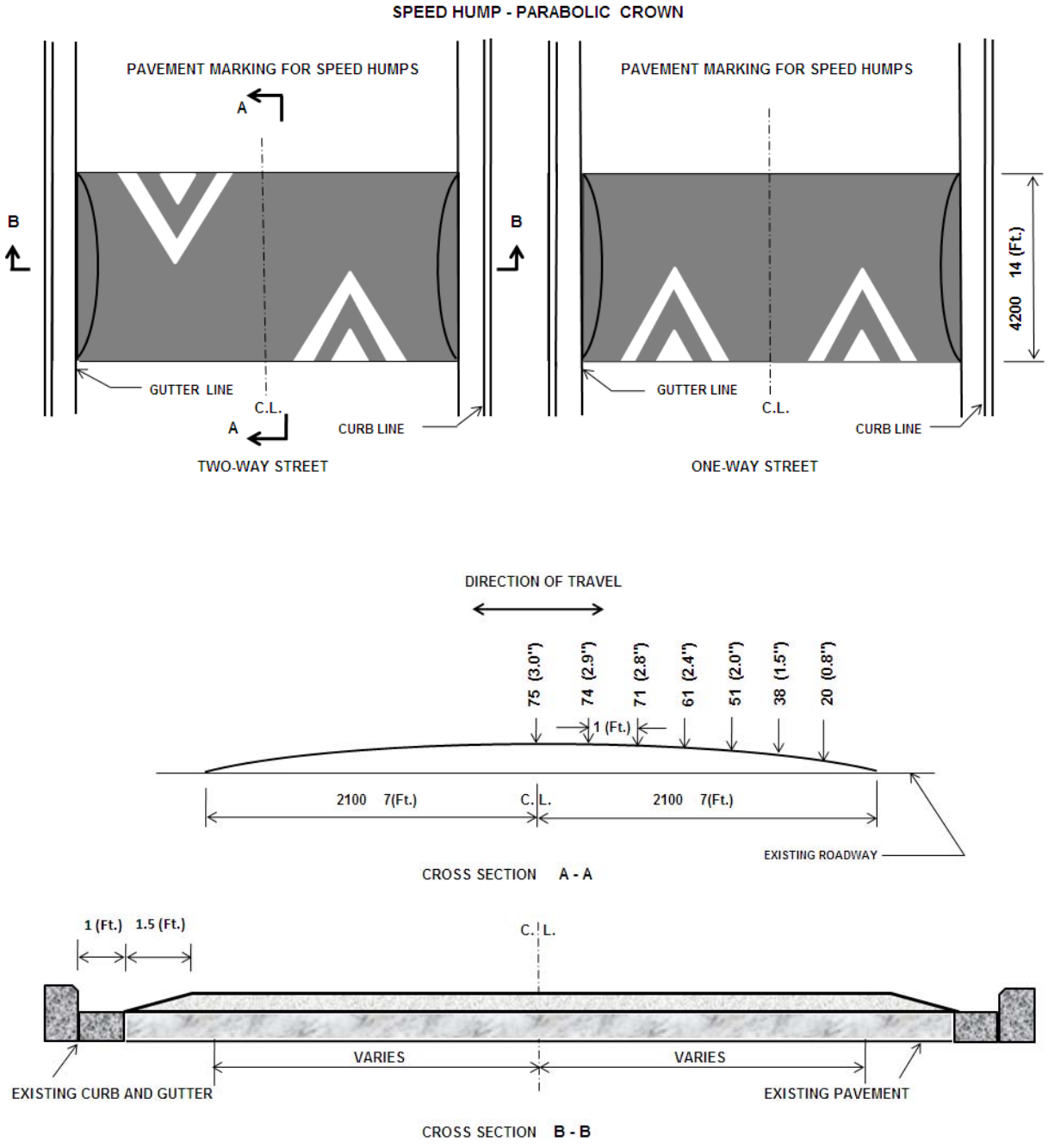

SPEED HUMP - PARABOLIC CROWN
PAVEMENT MARKING FOR SPEED HUMPS
A
B
GUTTER LINE
C.L.
CURB LINE
TWO-WAY STREET
PAVEMENT MARKING FOR SPEED HUMPS
B
GUTTER LINE
C.L.
CURB LINE
ONE-WAY STREET
14 (Ft.)
4200
DIRECTION OF TRAVEL
75 (3.0")
74 (2.9")
71 (2.8")
61 (2.4")
51 (2.0")
38 (1.5")
20 (0.8")
1 (Ft.)
2100 7(Ft.)
C. L.
2100 7(Ft.)
EXISTING ROADWAY
CROSS SECTION A - A
1 (Ft.) 1.5 (Ft.)
C. L.
VARIES
VARIES
EXISTING CURB AND GUTTER
EXISTING PAVEMENT
CROSS SECTION B - B

Figure 4

D. Warning signs

MUTCD, Section 2C.24 SPEED HUMP Sign (W17-1) Guidance: The Speed Hump (W17-1) sign (see Figure-5) should be used to give warning of a vertical deflection in the roadway. Adequate signing and marking of each speed hump is essential to warn roadway users of the hump's presence and guide their subsequent movements.

If a multiple humps are to be installed on a street, the sign before the first hump encountered shall be labeled "SPEED HUMPS AHEAD" for each traffic direction. The "Speed HUMP" (W17-1) message sign or "SPEED HUMP with HUMP IMAGE" should be used to give warning of sharp rise in the profile of the road, that is designed to reduce the speed of travelers and must indicate exact location of the hump.

It is also recommended that the "Speed Hump" sign be accompanied by an "Advisory Speed Plaque" (W13-1). The indicated advisory shall be installed in accordance with Section 2C.46 of the MUTCD.

Option:

If a series of speed humps exists in close proximity, an Advisory Speed plaque may be eliminated on all but the first SPEED HUMP sign in the series. The legend SPEED BUMP may be used instead of the legend SPEED HUMP on the W17-1 sign.

Support:

Speed humps generally provide more gradual vertical deflection than speed bumps. Speed bumps limit the speed of traffic more severely than speed humps. However, this difference in engineering terminology is not well known by the public, so for signing purposes the terms are interchangeable.

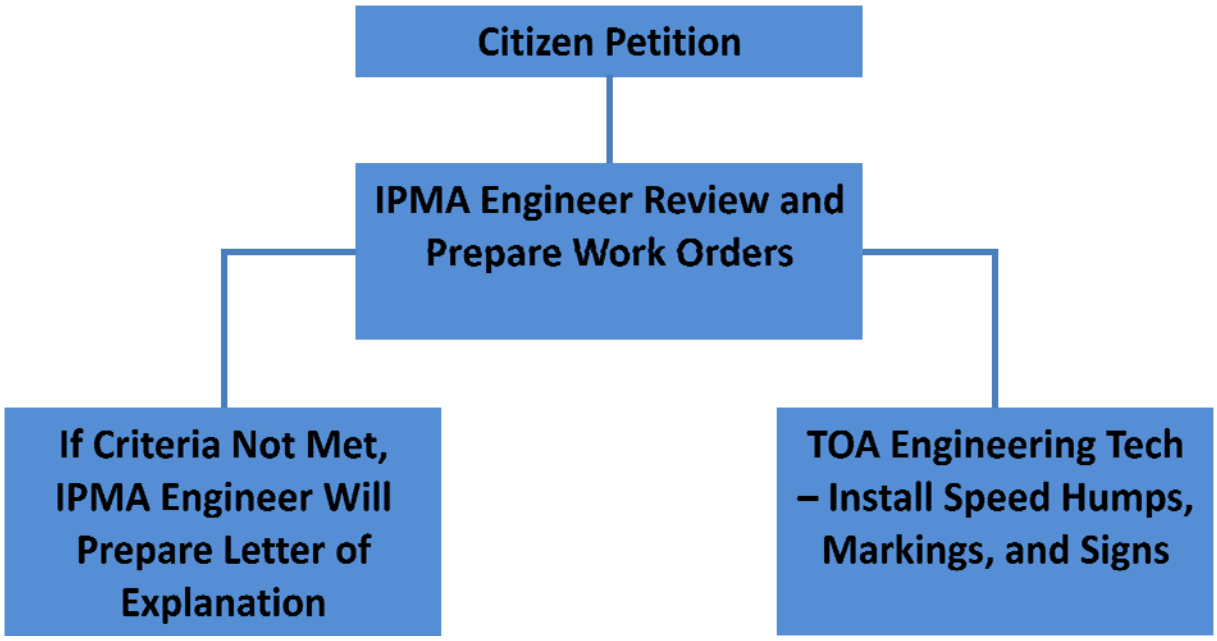
Figure 5

E. Other Engineering Considerations

1. Bicyclists and Motorcyclists will have the most direct physical impact of all travelers passing over the speed humps. The 14 feet length humps with crown high 3 inches are much more preferable than 12 feet length. Where significant bicycle traffic is anticipated, side slopes on tapers shall be no steeper than 1: 6 vertical to horizontal (V:H)

2. During the snow season, each speed hump, in addition to Speed Hump sign, must be accompanied with delineator posts to alert snow plow operators to lift their plows.

Application Procedure for Speed Humps



Any questions or requests regarding this program should be directed to the

District Department of Transportation

Customer Service Clearinghouse

55 M Street SE, Suite 400

Washington DC 20003

Telephone: 311

PETITION FOR INSTALLATION OF SPEED HUMPS

MAIL PETITION TO:

District Department of Transportation,
Customer Service Clearinghouse
55 M Street SE, Suite 400
Washington DC 20003
Telephone: 311

Petition Representative: _____

Address: _____

Telephone: _____

E-mail: _____

Signature: _____

The undersigned residents in the _____hundred block(s) of _____ Street, petition the Department of Transportation to install speed humps on the stated street segment.

This petition must contain one (1) adult signature per household and be endorsed by ***75 percent or more*** of the households in each one hundred (100) block.

NAME	ADDRESS	SIGNATURE	PHONE

(attach additional sheets if necessary)

PETITION FOR REMOVAL OF SPEED HUMPS

MAIL PETITION TO:

District Department of Transportation,
Customer Service Clearinghouse
55 M Street SE, Suite 400
Washington DC 20009
Telephone: 311

Petition Representative: _____

Address: _____

Telephone: _____

E-mail: _____

Signature: _____

The undersigned residents in the _____ hundred block(s) of _____ Street, petition the Department of Transportation to remove speed humps or other traffic calming measures on the stated street segment.

This petition must contain one (1) adult signature per household and be endorsed by ***75 percent or more*** of the households in each one hundred (100) block.

NAME	ADDRESS	SIGNATURE	PHONE

(attach additional sheets if necessary)