

## **Discussion of Speed Humps**

**AASHTO -Highway Sub-Committee on Traffic Engineering  
T. Hicks, MD SHA -Monterey, CA -June 1985**

**The purpose of this presentation is to make a few comments and observations on the use of speed humps as a traffic control device. Why is this of interest to us? For several reasons. Primarily we are concerned because of the traffic situations that involve commuter routes with high v/c ratios and low levels of service in areas where alternate routes are available through local street systems. This combination of factors is usually an unfortunate one resulting in a high relative speed mixture of vehicles with conflicting travel objectives.**

**Too, we at the State level are often shielded from the traffic problems of this sort which are normally encountered by local jurisdictions. Residential traffic management is, still a rapidly evolving area, and there hasn't been much in the way of definitive research done to give us the answers we need in this area of traffic control and safety. These things coupled with the seeming changes in driver attitude, as well as that of local officials who are called upon to deal with these situations, suggest that we examine the several factors and consider needed guidelines in the interest of uniform and effective traffic control.**

**Speed humps are one of the devices used by some jurisdictions to control traffic speed, volume, and noise along local streets. Despite their obvious drawbacks, such use has been effectively made of them in the interest of public safety.**

**The purpose of the local street is to provide access for adjacent land uses. When commuter or through traffic makes use of local streets as arterial routes, we have problems, and one of the basic problems is excessive vehicle speed.**

**The commonly used means for controlling excessive speed are the implementation of various traffic engineering measures and enforcement. Enforcement is constrained by the availability of police manpower, financial resources, and differing priorities, as determined by the police agency, and the effectiveness of enforcement diminishes over time. Traffic engineering options then usually become the means for neighborhood traffic control, and they include these kinds of things:**

- 1 ) warning signs
- 2) stop signs
- 3) rumble strips
- 4) one-way traffic control
- 5) turn restrictions
- 6) restrictions on commercial vehicles
- 7) channelization and traffic circles
- 8) diagonal diverters and road closures
- 9) low speed limits
- 10) part-time regulations
- 11) speed bumps/humps

Each method usually results in providing some effectiveness not only for speed deterrence but for traffic diversion and some types of safety improvements as well. Adverse safety effects can also be realized, as will be seen in a moment, as the restrictions that are placed are not welcomed by some, and often amount to a situation of over control.

I won't delve into the specific points of each of these controls but will instead dwell upon the attributes of the speed hump. For purposes of this discussion, we'll assure that there are local streets that serve to provide relief from intolerable arterial congestion and that the traffic engineer must do something to minimize the negative effects of the local street usage.

Speed "humps" are not to be confused with the much more abrupt and frequently dangerous speed "bumps" commonly found on private parking lots and driveways. The hump is much larger in profile (12') and lower (3") than the bump.

Speed humps are not included as a TCD in the MUTCD. Past court precedents have indicated that there is no legal basis for the use of them as a deterrent to speed. The Maryland Vehicle Law makes specific reference to the introduction of hazardous conditions on public highways as being unlawful. Our attorneys advise against the use of speed humps on the state highway system. Some local jurisdictions, however have used speed humps with some success.

In reviewing local street operations, we can identify several specific problems caused by traffic in neighborhoods:

a) Traffic Accidents -The occurrence of accidents along local streets, and frequently the fear or expectation that such accidents may occur are significant problems. Citizen anger

and reaction to traffic situations stem from a desire for safer local streets.

b) **Noise** -Even at low levels, noise represents a nuisance within the neighborhood.

c) **Traffic Speed** - Speed is the Subject of most frequent resident complaint. In some cases, the speed of all vehicles is a problem; in others, a few hotrodders or shortcutters are the culprits.

d) **Traffic Volume** -The total amount of traffic is a major cause of complaint, as local streets are sometimes called upon to carry 6,000 or more ADT.

e) **Traffic Composition** - In most cases, it is through traffic that residents complain of. Certain types of traffic are also prime causes of annoyance; especially trucks, buses, and motorcycles, which create more noise, fumes, and vibrations than does the automobile.

Causes of the problems can be classified as either psychological or physical. The psychological causes relate to the unfounded expectations of both motorists and residents. Many motorists simply regard any street in any location as a place to drive. Neighborhood residents, on the other hand, usually desire a quiet, pleasant and safe place to live free of traffic and its attendant problems.

Physical causes of the local street problems relate to the way cities have been designed and the way in which traffic demand has grown. The pattern of the street systems, street geometrics, location of major traffic, generators, traffic congestion on major streets, and characteristics of traffic control all contribute to neighborhood traffic problems.

One solution in the eyes of some to these local street problems is the use of speed humps. There are a wide range of opinions regarding the potential benefits and problems associated with the use of speed humps. The research data is not sufficiently extensive to substantiate the effectiveness and safety of speed humps for all types of vehicles at different speeds.

When properly designed and installed, speed humps have caused a reduction in vehicle speed, particularly at and in the vicinity

of the humps. Speeds between humps are reported to be quite a bit higher than at the humps themselves. The magnitude of this variation depends on several factors including height and configuration of the humps, posted speed limit, and vehicle type.

Evidence has shown that speed humps can also result in diversion of traffic from the streets where humps are installed to other parallel and adjacent streets in the neighborhood.

There is still strong skepticism and concern over issues related to speed humps which have deterred more widespread use of the device. Liability remains the primary concern of traffic engineers. The concern over liability among other factors is primarily due to:

- 1) Lack of official design standards
- 2) Lack of application warrants.
- 3) Lack of official endorsement of the device
- 4) Concerns about safety of vehicles and drivers
- 5) Delays to emergency vehicles

Neighborhoods where speed humps have been installed have shown mixed reactions. From the resident's viewpoint, the loss of parking spaces can cause the greatest opposition. Another serious side effect is the "joyriding" over them at some speed by some motorists. The third most common problem is noise/vibration heard and felt in houses and yards. Fourth, there is a perception of danger to parked vehicles.

In summary, well conceived and field tested warrants and criteria for the use of speed humps are not available. Some local jurisdictions have taken a lead in this direction and developed their own criteria and guidelines to be used for determining the basis for installing humps on city streets in response to community concerns.

It appears that a need exists for the development of warrants for speed humps and for standards of design, construction, signing, and parking of them. Research dealing with the various aspects of speed humps is needed for the development of these guidelines and standards. Speed humps must be used with discretion, for the indiscriminate use of them will most certainly result in problems that are worse than the problems they are intended to solve.

I propose to the subcommittee that AASHTO encourage the

**development of uniform standards and guidelines for the use and application of speed humps. I would offer that the task of developing such standards and guideline for speed hump usage should not be AASHTO's to do - but that AASHTO would work through the TRB research programs and/or encourage FHWA to actively pursue the objective of developing such standards and guidelines.**

**For additional insight into the use and application of speed humps, and the experience of others in their use, the following references are recommended.**

**-Speed (Road) Bumps: Issues and Opinions, by Chadda & Cross, Journal of Transportation Engineers, ASCE  
(not yet published)**

**-The Use of Speed Bumps in Rockville, MD, by Cutro  
(City Traffic Engineer) Feb '83**

**-State of the Art Report: Residential Traffic Management -  
Report No. FHWA / RD -80/092, Dec '80**

**-Synthesis of Safety Research Related to Traffic Control and  
Roadway Elements -FHWA-TS-82-233, Dec '82**