July 8,2002

Honorable Chairman and Members of
The Hermosa Beach Public Works Commission

Regular Meeting of
July 17, 2002

PROPOSED SPEED HUMP POLICIES AND PROCEDURES

Recommendation:

It is recommended that the Commission review and comment.

Summary:

Concerns have been expressed regarding speeding on residential streets in the City. With more and more residents requesting that the City mitigate this undesirable problem, the City Council has directed staff to develop policies and procedures for the installation of speed humps in the streets of Hermosa Beach.

Staff has drafted the attached policies and procedures for the Commission's review and comments.

Background:

Speeding on residential streets is a common occurrence throughout the City. Unfortunately, there are no easy solutions to this problem. The California Vehicle Code establishes the speed limit at 25 mph on all residential streets. The Police Department presently is using selective enforcement of speed limits on residential streets. This has been found to be effective as a tool for controlling speeds in Hermosa Beach.

Because of the high number of requests that the City Council receives for the installation of speed humps to curb speeding, City Council has directed staff to develop policies and procedures for their use in the City. Speed humps have met with widespread acceptance in many communities as a speed-reducing device.

As you know, speed humps (also known as undulations) are not official traffic control devices as approved by the State of California. They are considered to be road treatments used to reduce and control speeds on residential streets. According to Dr. Wolfgang S. Hamburger of the University of California at Berkeley, "the survey performed jointly by the Federal Highway Administration and the City of Thousand Oaks, California, found that twenty (20) responding jurisdictions had installed undulations, six (6) more were planning to install them, and sixty-three (63) others were evaluating the possibility. By early 1986, Thousand Oaks and Pasadena, California, each had about sixty (60) undulation installations and had not experienced any adverse traffic safety incidents related to them."

Purpose of Speed Humps:

The following information was taken from the "Residential Street Design and Traffic Control and Institute of Transportation Engineers" publication.

The basic purpose of pavement undulations (speed humps) is obviously to reduce speed. However, the actual design of the undulations is critical to their ability to achieve this. Tests have also shown that some designs produce less discomfort at higher speeds than at lower ones, in direct contradiction to their purpose. The most successful undulation units have the design features recommended below.

a. **Effect on Traffic Volume**. Undulations usually cause at least small traffic volume reductions on the streets where they are employed. This is natural since the undulations introduce slower speeds and a discomfort factor to the street in question. The extent to which diversion occurs is largely dependent on the configuration of and flow conditions on the area street system rather than on the properties of the undulation installation. However, a series of closely spaced undulations are likely to produce more diversion than a broadly spaced sequence.

b. **Effect on Traffic Speed.** Undulations have been shown to reduce the 85th percentile speed on the average between 14 and 20 mph at the device itself and to also produce substantial reductions in speeds on the road segments between undulations. The extent of speed reduction achieved between undulations is related to the spacing distance between undulations. At spacing under 800 feet (250 m), undulations exert a rather continuous effect on drivers' choices of speeds, but at greater separation distance they have an effect only in their immediate vicinity (very much like a stop sign).

c. **Effect on Noise, Air Quality, and Energy Consumption.** When used on low-volume local streets, undulations normally produce small reductions (1 to 2 decibels) in average sound levels both at and in between devices. On busier streets or streets with significant truck volumes, noise levels can increase.

d. **Effect on Traffic Safety.** A 1983 study of pavement undulations by a subcommittee of the California Traffic Control Devices Committee found that between 150 and 200 million vehicle crossings of the 150 to 160 undulations on public streets in the state had taken place without incident. No cases of motorists losing control of a vehicle were reported, and, while a few claims for damages to vehicles allegedly caused by the undulations had been filed, in only one instance had a plaintiff been provided compensation (less than $20). Emergency vehicles, buses, and large trucks must pass over the undulations at relatively slow speeds (under 20 mph) or else significant jolts to the vehicle, discomfort to occupants, and jostling of cargo will be experienced.

<u>Desirable design and location features</u>

- In profile the undulation should have a generally circular arc cross section on a 12-foot (3.5 m) chord with a maximum midpoint height of 3 inches (7.5 cm) and an allowable construction tolerance of plus or minus 0.5 inch (1.2 cm). (This recommended height is less than the 4 inch (10 cm) value recommended in early research reports). The undulation should extend across the roadway with the last 1 to 3 feet (0.3 to 1.0 m)

tapered so that it becomes flush with the gutter pan to maintain drainage flows.

- Undulations should be placed singly. Closely spaced pairs, though utilized successfully by some jurisdictions, do not appear any more or less effective than single undulations.

- Undulations should be placed approximately 550 feet (165 m) or less apart.

- Undulations should be placed at least 200 feet (60 m) away from intersections and sharp horizontal curves and be otherwise located so they are clearly visible for at least 200 feet (60 m)

- Specific positioning of undulations should consider access to utilities, driveway locations, and existing illumination.

- The undulations should be marked with warning signs at the device and pavement messages in advance. Advance warning signs, advisory speed plates, and pavement markings on the device are optional.

- Unfortunately, major and collector streets which are residential in character are those on which traffic speed is a significant issue. However, undulations should not be utilized on these classes of streets because the level of restraint they impose is inconsistent with the functional purpose of the streets.

- Undulations should not be used on grades greater than 5 percent.

- Undulations should not be placed on primary emergency vehicle access/egress routes nor on important transit routes.

To sum up, with the widespread acceptance of speed humps as being a speed controlling device, it is in the City's best interest to have policies and procedures that clearly delineate the process and criteria by which the City will approve the installation of speed humps.

<u>The proposed criteria are as follows:</u>

1. The street must have a speed limit of 25 mph as determined in accordance with State Law. The need to reduce speed substantially at speed humps would not make these devices appropriate for streets posted higher than 25 mph because of the severe speed differential such an installation would create along the street. Severe differentials between the speed of vehicles on a street are known to contribute to traffic accidents.

2. The street shall be no more than one lane in each direction.

3. The street should not be a truck route or a transit route.

4. The street should not have grades greater than 5%.

It is further proposed that speed humps will only be considered for installation on local residential streets determined by the Public Works Department to have adequate vertical and horizontal alignment for safe sight distance. Also, that the street should not be a primary access route for emergency vehicles.

The proposed procedures for the installation of speed humps outline the steps a representative of a local residential street must take in order to initiate the speed hump investigation process.

Alternatives:

1. Support proposal as is.

2. Support proposal with modifications.

3. Send report back to staff for further study.

Financial Impact:

Not applicable.

Attachments:

1. Resolution (Not available at the time of this writing.)
2. Draft – Petition Requesting Installation of Speed Humps
3. Draft – Speed Hump Standard Plan
4. Road Humps (Speed Humps) Compared to Speed Bumps

Respectfully submitted,

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Director of Public Works/City Engineer

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EXHIBIT A

POLICY ON SPEED HUMPS

Speed humps are an appropriate mechanism for reducing speeds on certain streets when properly installed under the right circumstances.

Speed humps can be considered for installation when the benefits normally derived by residents from a local residential street are significantly diminished by the speed of traffic (even though there have been few or no reported accidents), as evidenced by a substantial majority of abutting residences signing a petition for the installation of speed humps.

Speed humps should only be used on local residential streets (i.e., streets where the primary function is to provide access to abutting residences). Experience has shown that the average motorist reduces speed to approximately 16 mph to traverse a 3 inch speed hump. It would not be realistic to expect motorists on streets intended to serve more than just abutting residences to reduce speeds to 16 mph every 300 feet or so. Such installations would inevitably lead to extreme driver frustration and substantial negative public reaction to the concept of using speed humps for speed control, even at locations where they are clearly appropriate. Installation of speed humps on streets other than local residential streets could have potentially severe traffic safety consequences, almost certainly affect emergency services and other service delivery activities, and likely create the diversion of large amounts of through traffic onto local residential streets which were not intended for that purpose.

The majority of street mileage in Hermosa Beach can clearly be classified as local residential streets. However, speed humps will not normally be considered for streets which are classified as collector streets or higher in the City's General Plan, or which are determined to provide a transportation service to the community beyond that of simply providing access to the immediate abutting residences. There is no absolute criteria that clearly distinguishes a purely local residential street from other relatively low-volume streets that provide important services to residents in addition to those immediately abutting the street in question. However, streets carrying less than 1,000 vehicles per day, are almost always local residential streets, and streets carrying over 3,000 vehicles per day almost always provide important services to the larger community. In the final analysis, the suitability of a particular street for the installation of speed humps will have to be determined on a case-by-case basis.

Speed humps should be installed on logical segments of local residential streets. They will not normally be installed in isolated blocks along a continuous street, or on relatively short (less than 800 feet) cul-de-sac-streets. A substantial majority of residents on logical continuous segments of a local residential street must support the installation of speed humps. Logical segments are considered to be segments between arterial streets or between natural discontinuities, such as jogs in the street. The cost of installing speed humps on relatively short cul-de-sac streets cannot normally be justified.

Streets eligible for the installation of speed humps shall meet the following criteria:

1. Have a speed limit of 25 mph as determined in accordance with State Law.

2. The street shall be no more than one lane in each direction.

3. The street should not be a truck route or a transit route.

4. The street should not have grades greater than 5%.

Proposed policies 1 through 4 above are identical to recommendations made by the California Traffic Control Devices Committee on Pavement Undulations, and are based on the best information currently available.

Speed humps will only be considered for installation on local residential streets determined by the Public Works Department to have adequate vertical and horizontal alignment and sight distances to safely accommodate the installation of speed humps. The street should not be a primary access route for emergency vehicles. Factors to be considered are:

1. Whether the street is a primary route for emergency vehicles.

2. Whether the installation of speed humps could cause a significant delay in the response of emergencies.

Speed humps are still an experimental roadway feature; therefore, additions, alterations, or removal of any or all speed humps may occur at any time.

EXHIBIT B

PROCEDURES FOR THE INSTALLATION OF SPEED HUMPS

The Council's adopted policies and procedures for the installation of speed humps will be made available to all interested parties.

A representative of a local residential street who believes the residents on his street will support the installation of speed humps, will submit a request in writing to the Public Works Department which will consult with the Police and Fire Departments in making a determination of whether the street in question is eligible for further consideration for the installation of speed humps (i.e., the street is consistent with the City Council's policies for the installation of speed humps).

Upon determination that a street is not eligible for speed humps, the representative(s) of the street will be notified in writing giving the reason why the street is not eligible. The representative(s) of the street will be given fifteen (15) days to appeal the decision in writing to the Director of Public Works/City Engineer. A report of those streets determined to be ineligible will be sent to the City Manager for distribution to the City Council. Staff will review the original determination of streets, which are appealed. If staff concludes their original decision is still valid, staff will present the appeal to the City Council for final determination if representatives of the street wish the matter to be referred to the City Council.

Upon determination that a street is eligible for further consideration, the representative of the street will be advised to submit a petition (forms provided by the City) from the abutting property owners or residents indicating that a clear majority (65% or more) support the installation of speed humps on their street. The petition forms provided by the City will state:

1. If there is subsequently a desire by residents to remove the speed humps, the humps will only be considered for removal after receipt of a petition from a substantial majority (65% or more) asking for the removal; and,

2. Petition to be filed along with sufficient funds for the removal of the speed hump (up to a maximum of $1,000 per speed hump).

The sponsor of the petition is required to contact every resident of the abutting properties on the subject street. If a resident is against the speed humps, the word "opposed" will be noted on the petition signature space. If the sponsor is unable to contact a resident, "no contact" will be noted on the petition signature space with the days and times that contact was attempted. It is required that the sponsor make at least two (2) attempts on separate days to contact a resident.

To be considered for the program, the Public Works Department must receive signed petitions.

Upon verification of the petition, staff will make every reasonable effort to notify the surrounding area of the proposal for speed lumps on a particular street. Such notification may include information in City publications and neighborhood newsletters, when available,

and in some instances, special signs posted on the street. If there is substantial opposition to the installation of speed humps by people who travel the street on a regular basis, the City Traffic Engineer will consult with the various parties and attempt to reach consensus. If agreement cannot be reached on a particular street, the matter will be referred to the City Council for final determination.

Upon verification of the petition, the City Traffic Engineer will make traffic speed and volume measurements and review the traffic accident history for the street in question. In addition, the City Traffic Engineer will submit the list of requests to the Police and Fire Departments for their comments.

In the event the number of requests for speed humps exceed the funds available, the City Traffic Engineer will rank the requests in a recommended order of priority and submit these recommendations to the City Council for approval. The priority list recommended for approval will be based on traffic accidents, speed, traffic volume and comments of the Police and Fire Departments. The Director of Public Works/City Engineer will set forth the basis for the recommended priorities in a report accompanying the priority list.

Unless there is an overriding consideration, such as high incidence of speed-related accidents (a rare condition on most local residential streets), priorities will normally be established by multiplying the percentage of motorists exceeding 25 mph by the 24 hour traffic volume of the street in question. A street yielding the highest numerical value resulting from the above computation will be considered to have the highest priority for speed humps. Depending upon the number of petitions received and the types of streets involved, it is possible that a "cut-off speed" (perhaps an 85^{th} percentile speed of 30 mph) will be established below which streets will not be considered for the program.

The physical installation of speed humps and the associated traffic control devices shall conform to design standards established by the Public Works Department.