

Howard R. Chapman, P.E.
36 John Street, Charleston, SC 29403

May 4, 2009

Little Oak Island Speed Hump Committee
C/o Ms. Sandra J. Senn, Esquire
#3 Wesley Drive
Charleston, SC 29407

Dear Sir/Madam:

At your request, I have investigated the conditions along Little Oak Island Drive in the City of Folly Beach (SC) regarding the existing non-standard speed bumps within the neighborhood. A field review conducted on April 28, 2009, indicates that there are a total of six (6) speed bumps along the private roadway Little Oak Island Drive. Little Oak Island Drive is a gated private roadway which serves only residential units along its entire distance of approximately 0.7 mile. It is my understanding that the neighborhood is planning to resurface this road and wishes to determine whether or not the speed bumps currently in place are appropriate and in accordance with standard practices of the Institute of Transportation Engineers.

The use of speed humps (not speed bumps) on residential streets is an accepted traffic calming device, as suggested by the Institute of Traffic Engineers. However, "speed bumps" such as those placed on Little Oak Island Drive are normally only utilized in private parking lots. "Speed humps" generally have a length of 12' to 22' with a maximum height of 3". According to the Institute of Transportation Engineers, speed humps are often placed in a series and are not used on primary emergency response routes. The Institute of Transportation Engineers has recorded an approximate delay of 3-5 seconds per speed hump for fire trucks and an approximate delay of up to 10 seconds per speed hump for ambulances with patients.

A field review indicates that there are (6) current speed bumps between the entrance gate on Folly Road and the cul-de-sac at the end of Little Oak Island Drive. The existing speed bumps are generally ~ 7' in length and between 19' and 21' in width across the 2-way Little Oak Island Drive. The heights of the existing speed bumps range from 3" to 4". All of the current speed bumps do not meet standards set by the Institute of Transportation Engineers. Additionally, several of the existing speed bumps are in inappropriate locations such as on the causeway, itself, where there are no residences, as well as on curves within the inhabited area.

The information provided previously to the Board in a letter dated January 4, 2008, indicates concern for emergency vehicles entering Little Oak Island Drive with potential delays of up to 24 seconds for arriving emergency vehicles in the event of a fire. Additionally, a patient needing an ambulance could expect up to a 2-minute delay in arriving at a hospital or emergency intervention center for treatment by medical personnel. These delays could be a liability for the residents involved and the Board in an emergency situation. The lack of standard signage, the lack of standard speed humps and the placement of speed bumps in the curvature of the road which provides the only emergency access for the residents along Little Oak Island Drive should be a concern to the Board.

In the event that the community determines their desire to have traffic calming measures, such as speed humps on the road, I would recommend the following changes in location, number and design:

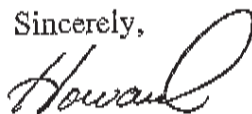
1. Speed humps should only be placed on straight-of-way areas. As such, there appears to be only (3) eligible locations for speed humps throughout the duration of Little Oak Island Drive.
 - a. Upon entering from Folly Road, Speed Hump #1 should be placed adjacent to the last palmetto tree on the west (left-hand) side as one enters the neighborhood. This would allow sufficient warning to drivers that they were approaching a residential neighborhood in advance of the curve where the first residential unit exists.
 - b. In the vicinity of #269 Little Oak Island Drive, Speed Hump #2 would be in the same relative location of an existing "speed bump".
 - c. The location of the last recommended Speed Hump #3 would be in the vicinity of #288 Little Oak Island Drive in the same relative location of an existing "speed bump".
2. All new installations should have a length between 12' to 24' with a maximum height of 3" and extend from the edge of pavement to the edge of pavement.
3. All (3) of the newly proposed speed humps should be marked with chevrons on the pavement and speed hump signage on a yellow background with black letters and an advisory speed plate of 15 MPH.
4. Signage and pavement markings should be reflective so that they can be properly seen at night.

In conclusion, I would be remiss if I did not notify the Committee that there currently exists a location in the vicinity of #277 Little Oak Island Drive where a tree is in the middle of the road and surrounded by wooden barricades. Yellow pavement markings indicating the island, as well as some type of lighting, and possibly some type of pavement markers should delineate this tree-island.

Finally, current signage within the neighborhood does not meet standards of the Manual on Uniform Traffic Control Devices (MUTCD). Placement of any traffic signs on the street with the revisions suggested above regarding speed humps should reflect sign and pavement markings in accordance with MUTCD.

I would be happy to answer any questions you may have about my review and suggestions regarding conditions on Little Oak Island Drive. Please do not hesitate to contact me with any questions, concerns or comments regarding this information.

Sincerely,



Howard R. Chapman, P.E.



- Calming Measures
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Traffic Calming Measures - Speed Hump

Description:

- rounded raised areas of pavement typically 12 to 14 feet in length
- often placed in a series (typically spaced 300 to 600 feet apart)
- sometimes called road humps or undulations

Applications:

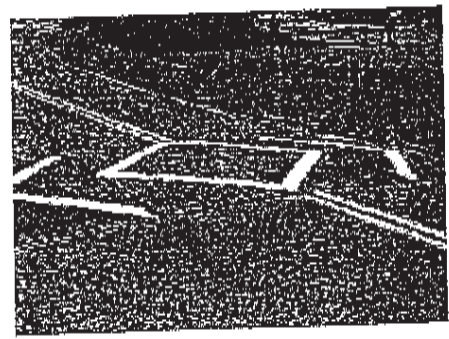
- residential streets
- not typically used on major roads, bus routes, or primary emergency response routes
- midblock placement, not at an intersection
- not on grades greater than 8 percent
- work well with curb extensions



U.S. Department of Transportation
Federal Highway Administration



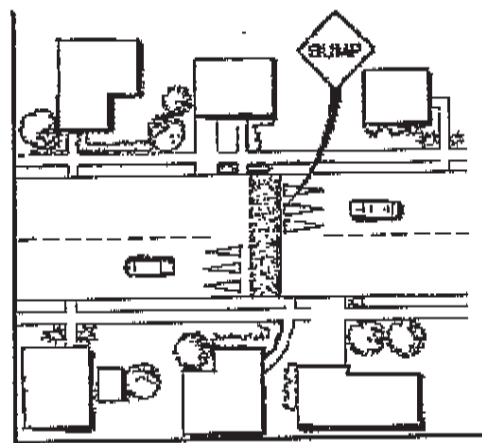
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Design/Installation Issues:

- typically 12 to 14 feet in length; other lengths (10, 22, and 30 feet) reported in practice in U.S.
- speed hump shapes include parabolic, circular, and sinusoidal
- hump heights range between 3 and 4 inches with trend toward 3 - 3 1/2 inches maximum
- difficult to construct precisely; may need

- to specify a construction tolerance (e.g. \pm 1/8 inch) on height
- often have signage (advance warning sign before first hump in series and warning sign or object marker at hump)
- typically have pavement marking (zigzag, shark's tooth, chevron, zebra)
- taper edge near curb to allow gap for drainage
- some have speed advisories
- bicyclists prefer that it not cover or cross a bike lane



Potential Impacts:

- no effect on non-emergency access
- speeds determined by height and spacing; speeds between humps have been observed to be reduced between 20 and 25 percent on average
- based on a limited sample of sites, typical crossing speeds (85th percentile) of 19 mph have been measured for 3½ inch high, 12 foot humps and of 21 mph for 3 inch high, 14 foot humps; speeds have been observed to rise to 27 mph within 200 feet downstream
- speeds typically increase approximately 0.5 mph midway between humps for each 100 feet of separation
- studies indicate that traffic volumes have been reduced on average by 18 percent depending on alternative routes available
- studies indicate that collisions have been reduced on average by 13 percent on treated streets (not adjusted for traffic diversion)
- most communities limit height to 3-3½ inches, partly because of harsh ride over 4-inch high humps
- possible increase in traffic noise from braking and acceleration of vehicles, particularly buses and trucks

Emergency Response Issues:

- Concern over jarring of emergency rescue vehicles
- Approximate delay of between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulance with patient

Typical Cost:

- Approximately \$2,000 (1997 dollars)

For additional detail, refer to ITE's Recommended Practice entitled *Guidelines for the Design and Application of Speed Humps*. Visit the [ITE Bookstore](#) for more information about this publication.