

## 1-SPEED BUMPS



### Description:

Speed bumps are rounded raised areas placed across the roadway. They are generally 10 to 14 feet long (in the direction of travel), making them distinct from the shorter "speed humps" found in many parking lots, and are 3 to 4 inches high. The profile of a speed hump can be circular, parabolic, or sinusoidal. They are often tapered as they reach the curb on each end to allow unimpeded drainage.

### Advantages:

- Speed Humps are relatively inexpensive
- They are relatively easy for bicycles to cross if designed appropriately
- They are very effective in slowing travel speeds.

### Disadvantages:

- They cause a "rough ride" for all drivers, and can cause severe pain for people with certain skeletal disabilities
- They force large vehicles, such as emergency vehicles and those with rigid suspensions, to travel at slower speeds
- They may increase noise and air pollution
- They have questionable aesthetics.

## 2-SPEED TABLES



### Description:

Speed tables are flat-topped speed humps often constructed with brick or other textured materials on the flat section. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on the flat section. Their long flat fields give speed tables higher design speeds than speed bumps. The brick or other textured materials improve the appearance of speed tables, draw attention to them, and may enhance safety and speed-reduction.

### Advantages:

- They are smoother on large vehicles (such as fire trucks) than Speed Humps
- They are effective in reducing speeds, though not to the extent of Speed Humps

### Disadvantages:

- They have questionable aesthetics, if no textured materials are used;
- Textured materials, if used, can be expensive; and
- They may increase noise and air pollution.

## 3-RAISED CROSS-WALKS



### Description:

Raised crosswalks are Speed Tables outfitted with crosswalk markings and signage to channelize pedestrian crossings, providing pedestrians with a level street crossing. Also, by raising the level of the crossing, pedestrians are more visible to approaching motorists.

### Advantages:

- Raised Crosswalks improve safety for both pedestrians and vehicles
- If designed well, they can have positive aesthetic value
- They are effective in reducing speeds, though not to the extent of Speed Humps

### Disadvantages:

- Textured materials, if used, can be expensive
- Their impacts on drainage needs to be considered
- They may increase noise and air pollution

## 4-RAISED INTERSECTIONS



### Description:

Raised intersections are flat raised areas covering an entire intersection, with ramps on all approaches and often with brick or other textured materials on the flat section. They usually raise to the level of the sidewalk, or slightly below to provide a "lip" that is detectable by the visually impaired. By modifying the level of the intersection, the crosswalks are more readily perceived by motorists to be "pedestrian territory".

### Advantages:

- Raised Intersections improve safety for both pedestrians and vehicles
- If designed well, they can have positive aesthetic value
- They can calm two streets at once

### Disadvantages:

- They tend to be expensive, varying by materials used
- Their impact to drainage needs to be considered
- They are less effective in reducing speeds than Speed Humps, Speed Tables, or Raised Crosswalks

## 5-TEXTURED PAVEMENT



### Description:

Textured and colored pavement includes the use of stamped pavement or alternate paving materials to create an uneven surface for vehicles to traverse. They may be used to emphasize either an entire intersection or a pedestrian crossing, and are sometimes used along entire street blocks.

### Advantages:

- Textured Pavements can reduce vehicle speeds over an extended length
- If designed well, they can have positive aesthetic value

### Disadvantages:

- They are generally expensive, varying by materials used
- If used on a crosswalk, they can make crossings more difficult for wheelchair users and the visually impaired

## 6-ROUNDBABOUTS



### Description:

Roundabouts require traffic to circulate counterclockwise around a center island. Unlike Traffic Circles, roundabouts are used on higher volume streets to allocate right-of-way between competing movements.

### Advantages:

- Roundabouts can moderate traffic speeds on an arterial
- They are generally aesthetically pleasing if well landscaped
- They enhanced safety compared to traffic signals
- They can minimize queuing at the approaches to the intersection
- They are less expensive to operate than traffic signals

### Disadvantages:

- They must be designed so that the circulating lane does not encroach on the crosswalks
- They may require the elimination of some on-street parking
- Landscaping must be maintained, either by the residents or by the municipality

## 7-CHICANES



### Description:

Chicanes are curb extensions that alternate from one side of the street to the other, forming S-shaped curves. Chicane can also be created by alternating on-street parking, either diagonal or parallel, between one side of the street and the other. Each parking bay can be created either by restriping the roadway or by installing raised, landscaping islands at the ends of each parking bay.

### Advantages:

- Chicane discourage high speeds by forcing horizontal deflection
- They are easily negotiable by large vehicles (such as fire trucks) except under heavy traffic conditions

### Disadvantages:

- They must be designed carefully to discourage drivers from deviating out of the appropriate lane
- Curb realignment and landscaping can be costly, especially if there are drainage issues
- They may require the elimination of some on-street parking

## 8-NECK DOWNS



### Description:

Neckdowns are curb extensions at intersections that reduce the roadway width from curb to curb. They "pedestrianize" intersections by shortening crossing distances for pedestrians and drawing attention to pedestrians via raised peninsulas. They also tighten the curb radii at the corners, reducing the speeds of turning vehicles.

### Advantages:

- Neckdowns improves pedestrian circulation and space
- Through and left-turn movements are easily negotiable by large vehicles
- They create protected on-street parking bays
- They reduce speeds, especially for right-turning vehicles

### Disadvantages:

- Effectiveness is limited by the absence of vertical or horizontal deflection
- They may slow right-turning emergency vehicles
- They may require the elimination of some on-street parking near the intersection
- They may require bicyclists to briefly merge with vehicular traffic

## 9-CENTER ISLAND NARROWING



### Description:

Center island narrowing is a raised island located along the centerline of a street that narrow the travel lanes at that location. Center island are often landscaped to provide a visual amenity. Placed at the entrance to a neighborhood, and often combined with textured pavement, they are often called "gateway islands." Fitted with a gap to allow pedestrians to walk through at a crosswalk, they are often called "pedestrian refuges."

### Advantages:

- Midblock Median increase pedestrian safety
- If designed well, they can have positive aesthetic value
- They reduce traffic volumes

### Disadvantages:

- Their speed-reduction effect is somewhat limited by the absence of any vertical or horizontal deflection
- They may require elimination of some on-street parking

## 10-CHOKERS



### Description:

Chokers are curb extensions at midblock locations that narrow a street by widening the sidewalk or planting strip. If marked as crosswalks, they are also known as safe crossings. Two-lane chokers leave the street cross section with two lanes that are narrower than the normal cross section. One-lane chokers narrow the width to allow travel in only one direction at a time, operating similarly to one-lane bridges. They are good for areas with substantial speed problems and no on-street parking shortage.

### Advantages:

- Chokers are easily negotiable by large vehicles (such as fire trucks)
- If designed well, they can have positive aesthetic value
- They reduce both speeds and volumes

### Disadvantages:

- Their effect on vehicle speeds is limited by the absence of any vertical or horizontal deflection
- They may require bicyclists to briefly merge with vehicular traffic
- They may require the elimination of some on-street parking

### Effectiveness:

## 11-RADAR SPEED SIGNS



### Description:

Driver feedback signs that use radar to provide motorists with an instant message, displayed on a reader board, telling them how fast they are driving and to encourage drivers to slow down and drive the posted speed.

### Advantages:

- Radar Speed Signs are highly visible and very effective educational tool at providing and communicating information to motorists.
- They are effective for temporary speed reduction.

### Disadvantages:

- They are not self-enforcing.
- The duration of effectiveness may be limited.
- They are relatively expensive.
- They are not aesthetically pleasing.

## 12-SPEED CUSHIONS



### Description:

Speed cushions consist of either recycled rubber or asphalt, raised about 3 inches in height. The length of the cushion is about 10 ft. The spaces between the cushions allow emergency vehicles to partially straddle the device.

### Advantages:

- Speed Cushions Reduces vehicle speed.
- They can reduce vehicular volumes.
- There are no restrictions to on-street parking.
- They do not restrict access to residents.
- They requires minimum maintenance.
- They have minimal impact to emergency response times.

### Disadvantages:

- They may divert traffic to parallel streets that do not have traffic calming measures.
- They may increase emergency response times.
- They are not aesthetically pleasing.

| Speed Impacts of Traffic Calming Measures<br>(standard deviations in parentheses) |             |                                    |  |                  |
|---|-------------|------------------------------------|--|------------------|
|   | Sample Size | 85th Percentile Speed<br>Afterward | Average Change in 85th<br>Percentile Speed | Average % Change |
| 12' Speed Hump  | 179         | 27.8 mph<br>(4.0 mph)              | -7.8 mph<br>(3.5 mph)                      | -22%<br>(9%)     |
| 14' Speed Hump  | 15          | 25.6<br>(2.1)                      | -7.7<br>(2.1)                              | -23<br>(8)       |
| 22' Speed Table   | 58          | 30.1<br>(2.7)                      | -6.5<br>(3.2)                              | -18<br>(8)       |
| Longer Table (>22')   | 10          | 31.6<br>(6.0)                      | -3.2<br>(3.9)                              | -9<br>(10)       |
| Raised Intersection   | 3           | 34.3<br>(6.0)                      | -0.3<br>(3.9)                              | -1<br>(10)       |
| Traffic Circle  | 45          | 30.3<br>(4.3)                      | -3.9<br>(3.2)                              | -11<br>(10)      |
| Narrowing   | 7           | 32.3<br>(2.8)                      | -2.6<br>(3.5)                              | -7<br>(22)       |
| Choker  | 5           | 38.8<br>(3.1)                      | -2.8<br>(1.3)                              | -4<br>(4)        |
| Half Closure  | 16          | 28.3<br>(2.2)                      | -6.0<br>(3.6)                              | -19<br>(11)      |
| Diagonal Diverter   | 7           | 27.9<br>(5.2)                      | -1.4<br>(4.7)                              | -5<br>(17)       |

Note: speeds are measured at midpoints between measures

| Volume Impacts of Traffic Calming Measures<br>(standard deviations in parentheses) |             |   |                  |
|--|-------------|---|------------------|
|  | Sample Size | Average Change in Volume                        | Average % Change |
| Choker   | 5           | -392 vehicles per day<br>(384 vehicles per day) | -20%<br>(19%)    |
| Full Closure   | 19          | -671<br>(790)                                   | -44<br>(36)      |
| Half Closure   | 53          | -1611<br>(2444)                                 | -42<br>(41)      |
| Diagonal Diverter  | 27          | -401<br>(622)                                   | -32<br>(46)      |
| Other Volume Control   | 10          | -1187<br>(1781)                                 | -31<br>(36)      |

| Safety Impacts of Traffic Calming Measures<br>(U.S. Experience) |                        |                              |                        |        |
|---|------------------------|------------------------------|------------------------|--------|
|   | Number of Observations | Average Number of Collisions | % Change in Collisions |        |
|   |                        | Before Treatment             | After Treatment        |        |
| 12' Speed Hump  | 49                     | 2.7                          | 2.4                    | -11%   |
| 14' Speed Hump  | 5                      | 4.4                          | 2.8                    | -41%   |
| 22' Speed Table   | 8                      | 6.7                          | 3.7                    | -45%   |
| Traffic Circle<br>(w/o Seattle)                                 | 17                     | 5.9                          | 4.2                    | -29%   |
| Traffic Circle<br>(w/ Seattle)                                  | 130                    | 2.2                          | 0.6                    | -73%   |
| All Measures  |                        |                              |                        |        |
| w/ adjustments  | 192                    | 2.6                          | 1.3                    | -50%*  |
| w/ adjustments  | 42                     | 3.8                          | 3.0                    | -21%** |

\* Significant at 0.001 probability level  
\*\* Significant at 0.04 probability level



# ALLISON ROAD TRAFFIC CALMING OPTIONS