



HORIZONTAL SPEED CONTROL MEASURES

Horizontal speed controls reduce traffic speeds and reinforce safe, pedestrian-friendly streets by breaking up the linear path of vehicles through horizontal shifts. By forcing drivers around horizontal curves and blocking long views of the road ahead, vehicle speeds can be reduced on neighborhood streets. Horizontal deflections include chicanes, neck-downs/chokers, and center islands. Mini-traffic circles are also a form of horizontal speed control.

USE

- Horizontal speed control elements should be applied on streets with speed limits below 30 mph, and where there is higher than desired operating speeds. They should be used on lower order streets (Neighborhood Residential, Link Residential, Neighborhood Business, and Maker/Industrial streets).
- They may also be used on streets where traffic volumes are higher than desired and frequently used by cut-through traffic on a regular basis.

- Horizontal speed control elements may be accompanied by operational strategies to reduce vehicles speeds, such as targeted enforcement efforts or speed display signs.

DESIGN

CHICANE

Chicanes are bulb-outs that alternate from one side of the street to the other, forming S-shaped curves. Vehicles slow their speeds to pass through the series of curves. A chicane-like effect can be achieved sometimes at less cost, by alternating on-street parking from one side of the street to the other. Chicanes can be landscaped to provide visual amenity and neighborhood identity, as well as to provide mid-point refuge for pedestrian crossings at crosswalks.

- Chicanes are located midblock and may be used in conjunction with other traffic calming measures.
- The shifts in alignment should be at least one lane width, with deflection angles of at least 45 degrees, and center islands to prevent drivers from following a straight “racing line” path through the feature.
- The number of chicanes will depend on the length of the street, but generally a series of at least three bulb-outs are needed to create the S-shaped curves needed to slow vehicle speeds.

- Chicanes might not be appropriate on steep streets where there is a grade that exceeds five percent.


BULB-OUTS AND NECK-DOWNS

Bulb-outs are vertical treatments that narrow the street by expanding the sidewalk or adding a planting strip, often at midblock pedestrian crossings. Neck-downs are bulb-outs at intersections that tighten the curb radii at the corner, reducing the pedestrian crossing distance, increasing pedestrian visibility and lowering the speeds of turning vehicles. Both treatments are particularly useful on streets with longer block lengths where motorists tend to pick up speed.

- Neck-downs are located at intersections while chokers are midblock.
- Neck-downs and chokers are commonly coupled with on-street parking bays and crosswalks.
- Neck-downs should not be used on streets with separated bicycle lanes or other separated facilities where they would result in moving bicyclists into the traffic flow.

Sometimes called midblock medians, median slow points, or median chokers, center islands are a small median or island located at the centerline of a street that causes traffic to shift its path to the right in order to travel around it. Travel speeds are reduced due to the narrow path of travel at that location and the need to shift horizontally around the curve. Center islands also act as effective pedestrian refuge locations.

- Center islands may be located at the approach to an intersection or midblock.

 Horizontal control measures often provide opportunities for plantings, street trees, and low impact development in the bulb-out.

SPECIAL CONSIDERATIONS

- Roadway narrowing can be enhanced by vertical design elements that draw attention to the constriction and provide visual cues to the driver to slow down. Street trees, street furniture, signage, and public art are all opportunities to create special places along the calmed streets.

- Well-designed lateral shifts—often using protected parking bays—in otherwise straight streets are one of the few measures that can be used on higher order streets, such as Network Residential, where higher traffic volumes and higher posted speeds preclude other traffic calming measures.

OPERATIONS AND MAINTENANCE

- The impact of traffic calming treatments at the network or neighborhood level should be monitored prior to and after installation to ensure there are no adverse impacts.
- Vertical control measures can be installed on a pilot basis to assess potential impacts before permanent treatments are deployed.
- Horizontal control measures that result in added bulb-outs will require additional maintenance of trees, street furniture, or landscaping.
- Designs should consider snow removal operations. The bulb-outs can offer space to store snow in winter; however, visual cues, particularly vertical elements, should alert snow plow operators of the change in the roadway.

REFERENCES

- AASHTO: Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2004
 - Section 2.6.2: Traffic-Calming Methods
- AASHTO: Guide for the Development of Bicycle Facilities, 2012
 - Section 4.12.6: Bicycles and Traffic Calming
- ITE/FHWA: Traffic Calming: State of the Practice, 1999
 - Chapter 3: Toolbox of Traffic Calming Measures
 - Horizontal Measures <http://library.ite.org/pub/48b037de-a555-47f5-2651-bb412d17bab5>