

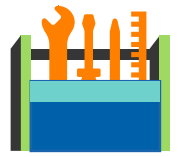


AUSTIN TRANSPORTATION

TRAFFIC CALMING TOOLKIT



TRAFFIC CALMING TOOLKIT TABLE OF CONTENTS



page 02

- An Introduction to Speed Management

page 04

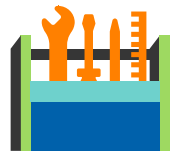
- Type 1 Devices - Horizontal Deflection Devices

page 07

- Type 2 Devices - Vertical Deflection Devices

page 09

- Type 3 Devices - Speed Monitoring & Awareness Tools



Austin Transportation's Speed Management Program

As Austin continues to grow, effectively managing speed is a critical component to creating streets that support safe, convenient travel by all road users. Austin Transportation's Speed Management Program works to reduce egregious speeding on all street levels to improve safety and enhance the livability of Austin streets.

The Speed Management Program utilizes a comprehensive, data-driven approach to speed management and traffic calming that applies a combination of engineering and other countermeasures. The program's objectives support the City's Vision Zero goal of eliminating serious injuries and deaths on Austin roadways and aligns with the Austin Strategic Mobility Plan's policy goals of prioritizing our transportation network.

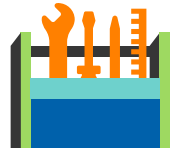
Traffic Calming Devices

Austin Transportation's Speed Management Program utilizes various approaches to reduce speeding throughout the city. One approach is to utilize different kinds of traffic calming devices to achieve context appropriate and cost effective speed reduction strategies. This Traffic Calming Toolkit provides an overview of the different kinds of devices available to use. Austin Transportation selects traffic calming devices based on the needs and context of a particular roadway.

When possible, low-cost, high-impact treatments will be applied first, and gradually escalated over time as needed. The use of traffic calming devices are developed in consultation with emergency response departments to ensure emergency access for first responders. The three types of traffic calming devices used by Austin Transportation are horizontal deflection devices, vertical deflection devices and speed monitoring and awareness tools. The specific devices presented in this toolkit may expand as staff continue to research new ideas from other cities and test new speed management solutions where appropriate.

The devices included in this toolkit may be used individually for speed mitigation, or the engineer may use a combination of several devices and/or techniques to create other types of place making traffic calming features such as rain gardens, curb extensions, diverters, etc. ATD's Speed Management Program works with other partners to achieve the goals of safer streets through reduced speeds. To request targeted speed enforcement in your neighborhood, please contact your [APD District Representative](#).

SPEED MANAGEMENT DEVICES



Type I Devices -

Horizontal Deflection Devices

Horizontal deflection devices encourage drivers to slow down by introducing an obstacle which drivers must safely and comfortably navigate around. The horizontal shift in roadway geometry due to physical devices may also introduce an optical narrowing of the road.



Type II Devices -

Vertical Deflection Devices

Vertical deflection devices encourage driver to slow down by introducing raised sections of pavement which vehicles have to drive over.



Type III Devices -

Speed Monitoring & Awareness Tools

Speed monitoring and awareness tools provide drivers a dynamic feedback or provide messages and information by using Dynamic Speed Display Devices (DSDD), yard signs, and other informational and safety signage. Providing feedback or safety messaging may remind drivers to change their behavior and encourage slower speeds.

Traffic Calming Device Table

	Roadway Characteristics	Speed Limit Compatibility	Vehicle Volumes	Considerations
Type I Devices Horizontal Deflection	Typically installed on roadways over 36' wide	30 - 35 mph	Typically under 10,000 vehicles a day	Horizontal deflection devices may require removal of parking opportunities. Devices such as curb extensions must take into consideration existing drainage.
Type II Devices Vertical Deflection	Typically installed on roadways under 36' where existing design speed of 30 mph may want to be reduced	25 - 30 mph	Typically no more than 6,000 vehicles a day	Vehicles may park adjacent to devices. Devices are designed such that drainage is not impacted. Not recommended for steep grades.
Type III Devices Speed Monitoring & Awareness Tools	Any	Any	Any	Informational and driver feedback signage is self-enforcing.

TYPE 1 – HORIZONTAL DEFLECTOR DEVICES



Traffic Circles and Mini Roundabouts

A traffic circle is a raised center island placed within an unsignalized intersection, creating an all-way yield condition. A traffic circle causes drivers to reduce their speed when entering the intersection and while navigating around the center island. There are several variations of a traffic circle, and in some cases, a mini roundabout may be installed to serve the same purpose.



**Mini Roundabout
with Mountable Curbs**



Traffic Circle with Raised Curbs



Rapid Build Traffic Circle



Hybrid Mini Roundabout

TYPE 1 – HORIZONTAL DEFLECTON DEVICES



Median/Pedestrian Islands

Medians separate opposing directions of traffic and can be used to shift a travel path or visually narrow the width of the roadway, inducing drivers to reduce their speed.

Pedestrian Islands are a type of median island that are accessible to pedestrians and cyclists. Pedestrian islands may be used in conjunction with crosswalk markings and sidewalk curb ramps to reduce pedestrian exposure to traffic by providing a two-step crossing.



Median



Rapid Build Median using Delineators

Rapid Build Solutions

Delineator posts are flexible plastic posts that may be used to visually narrow the roadway or reinforce horizontal deflection on streets without physical devices. They are easy to install and are usually implemented as a rapid solution to address an immediate safety concern before a more permanent solution can be implemented.

Curb Extensions

Curb extensions or bulb-outs are devices which extend the sidewalk or curb into the roadway. Curb extensions visually narrow the roadway and force drivers to slow down in order to navigate around the devices.

Curb extensions enhance safety for people walking or riding bicycles by decreasing the distance to cross at an intersection. Curb extensions may interfere with established drainage patterns.



Curb Extension

TYPE 1 – HORIZONTAL DEFLECTON DEVICES



Chicanes

A chicane is a series of alternating curves with or without medians located in a position that forces drivers to diverge from a straight travel path. To navigate the alternating curves, drivers must reduce speed as they travel through the feature. Chicanes are appropriate for both urban and suburban local roads or low-volume collector roads where the speed limit is less than 35 mph.

Chicanes are typically installed mid-block, away from crosswalks. Chicanes may impact parking adjacent to the chicane and directly on the approach and departure.

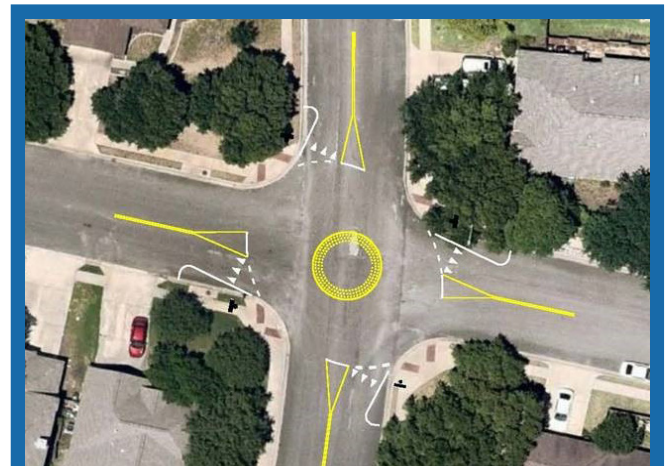


Chicane

Photo from NACTO

Jiggle Bars

Jiggle bars are a type of large, ceramic raised pavement marker. Jiggle Bars are used to delineate the edge of a roadway where driver paths are discouraged. Jiggle bars discourage vehicles from entering an area by creating short, fast, alternating impacts to vehicle wheels which may be uncomfortable for drivers. Jiggle bars can be implemented rapidly with easy installation and may require regular maintenance.



Ceramic Tile Jiggle Bar Concept

TYPE 2 – VERTICAL DEFLECTION DEVICES



Asphalt Speed Humps

Asphalt speed humps are raised sections of asphalt approximately 10 to 14 feet long and 3 to 4 inches high. They are typically used on low speed residential streets and are placed gutter-to-gutter across a roadway. As a driver approaches an asphalt speed hump, the device functions by forcing drivers to lower their speed in order to comfortably traverse the device. The spacing and profile of asphalt speed humps helps to prevent hard braking and accelerating patterns. Asphalt speed humps are not suitable for sharp curves or steep grades.



Asphalt Speed Hump

Speed Cushions

Speed cushions are created by rubber or asphalt and are placed in groups of 2 or more cushions. The spacing can be offset to allow emergency vehicles to pass through with ease and are typically used on key emergency response routes. To comfortably navigate over speed cushions, a driver must reduce their speed. Rubber speed cushions can be more abrupt than asphalt speed cushions and are sometimes used when more speed control is desired.



Asphalt Speed Cushion



Rubber Speed Cushion



Raised Crosswalks & Intersections

Raised crosswalks (sometimes also referred to as speed tables) extend fully across the street and signed for pedestrian use. Similar to speed humps, raised crosswalks are typically 3 to 6 inches high and have a flat top to allow pedestrian use. Raised crosswalks can enhance safety for people crossing the street by encouraging drivers to slow down as they approach the crosswalk.

Similar to raised crosswalks, raised intersections reinforce slow speeds and encourage drivers to yield to pedestrians at the crosswalk. Raised crosswalks and raised intersections may affect drainage.



Raised Crosswalk

Rumble Strips

Rumble strips are formed into the pavement surface of a roadway by placing grooves or materials into the pavement. When a driver drives on top of a rumble strip, they are alerted that they are leaving the roadway by a vibration and sound, which can cause them to slow down and correct their trajectory. The noise and vibration effect is created by the tires bouncing over the strips. Two commonly used types of rumble strips are:

- **Milled Rumble Strips**

Milled rumble strips are created by a machine that cuts a smooth groove in a roadway.

- **Raised Rumble Strips**

Raised rumble strips are created by introducing slight grade differences (1/4 to 1/2 inches high) using various materials like asphalt or plastic.



Rumble Strips

Photo from City of San Antonio



Dynamic Speed Display Devices (DSDD)

A Dynamic Speed Display Device (DSDD) is typically a portable unit that measures the speed of approaching vehicles and communicates the speed to drivers on a digital display.



Dynamic Speed Display Device

Yard Signs

Yard signs can be placed on both residential and commercial properties in front of roadways with encouraging messages to drivers to drive slower, drive with caution and to look out for others.



Yard Signs