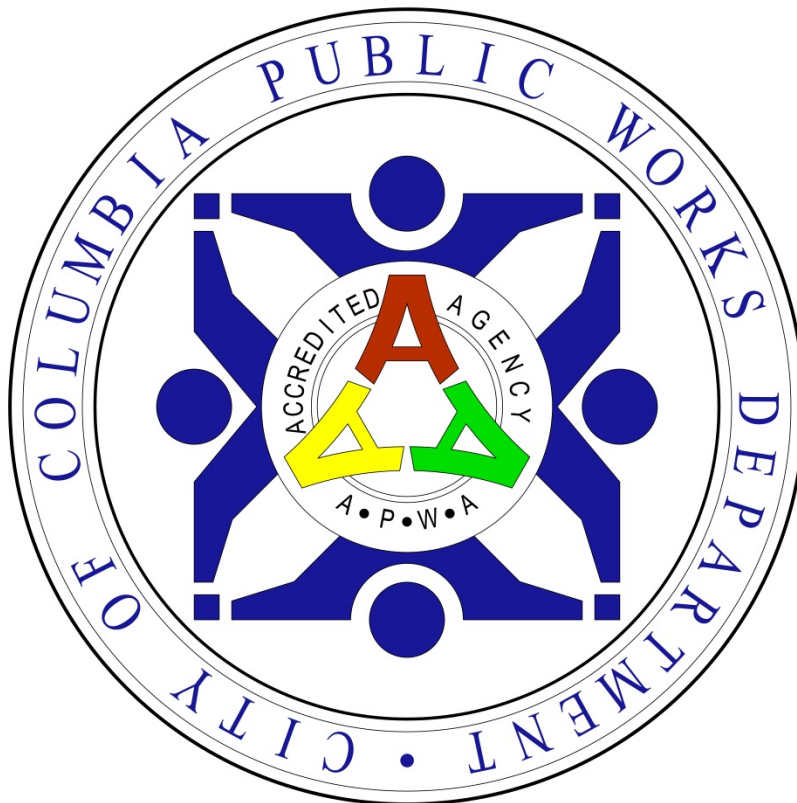


# Traffic Calming Guidebook

Explanation of Traffic Calming Devices and When to Use Them



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# Traffic Calming Guidebook

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## *City of Columbia Public Works Department*

This guidebook is designed to assist residents and community leaders by increasing their knowledge base of tools that may be used to calm traffic.

Traffic calming devices come in all shapes and sizes, from the subtle to the very aggressive. Each device has appropriate applications, limitations, advantages, disadvantages and costs associated with it. This guidebook will try to explain the when, where, why, and how of each traffic calming device.

First the problem must be correctly identified. Once the problem is identified the proper traffic calming device may be selected to counteract the problem. Some traffic calming devices address speed reduction while other may be more suited to address volume reduction. It's important to select the correct device for the appropriate problem.

The Traffic Calming Guidebook should be used in conjunction with the Neighborhood Traffic Management Program. The Guidebook will discuss traffic calming devices, what they are, where they should be placed, and advantages and disadvantages of each. The Neighborhood Traffic Management Program at:

<http://www.gocolumbiamo.com/PublicWorks/Streets/index.php>

Throughout the guidebook a general Price Scale will be utilized. The Scale is as follows:

\$\$\$\$\$ less than \$1,000

\$\$\$\$ between \$1,000 - \$5,000

\$\$\$ between \$5,000 - \$10,000

\$\$\$\$\$ between \$10,000 - \$25,000

\$\$\$\$\$ typically greater than \$25,000

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## Level 1 Traffic Calming Devices (Increase Safety)

Level 1 traffic calming devices are intended to address safety concerns and can be implemented quickly. These traffic control devices and programs are intended to regulate, warn, guide, inform, enforce, and educate drivers, bicyclists, and pedestrians. These traffic calming devices include standard striping and signing elements, minor roadway design elements to improve visibility and safety, as well as, enforcement by police and safety education programs. These devices are the least intrusive, but could create a behavioral change resulting in a higher quality of life in the neighborhood.

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## Pavement Markings

**Description:** Stop bars, yield bars, turn arrows, delineators, lane markings, crosswalks, etc...

**Purpose:** To delineate and to transmit to motorists, bicyclists, and pedestrians important information necessary to safely travel upon the City's street.

**Advantages:**

- Quick application
- Relatively easy to install

**Tradeoffs:**

- Maintenance cost
- Not visible when snow covered

**Cost:** \$\$\$\$\$ - \$\$\$\$\$



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## Radar Trailer

**Description:** Portable radar speed trailer capable of measuring vehicles speed and displaying the speed of the driver.

**Purpose:** To educate residents and drivers about vehicle speeds

**Advantages:**

- Effective for temporary speed reduction
- Effective public relations tool
- Educational tool

**Tradeoffs:**

- May not change long term habits
- Effects speeds only in area of trailer

**Cost:** \$\$\$\$\$



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## High-Visibility Speed Limit Signs

**Description:** High Visibility signs may include larger speed limit signs with a yellow border with the phrase “SET THE PACE,” or “KID FRIENDLY” or similar wording. These signs create awareness of the neighborhood and inform the motorists of the speed.

**Purpose:** To create a visual reminder to the motorists of the speed through the neighborhood. The co-funding aspect makes the speed limit signs more attainable to the neighborhood. “KID FRIENDLY” or “SET THE PACE” reminds motorists they are driving through a residential neighborhood.

### Advantages:

- Provides a clear definition of legal speed limit or other warnings
- Provide context for enforcement efforts

### Tradeoffs:

- Not-self enforcing

**Cost:** \$\$\$\$\$



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## Neighborhood Speed Watch

**Description:** Residents use radar equipment to identify speeding vehicles.

**Purpose:** To raise awareness of the posted speed limit, educate drivers about vehicle speeds, and allow resident to take an active part in the program. This program does not issue citations or tickets.

**Advantages:**

- Increases driver awareness in regards to speeds in the neighborhood
- Educates the neighborhood about the speed limit
- An effective public relations tool

**Tradeoffs:**

- Not an enforcement tool
- May not change long term habits

**Cost:** \$\$\$\$\$





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## Police Enforcement

**Description:** Increased enforcement of speed limits on residential streets. Police presence to monitor speeds and issue citations.

**Purpose:** To reduce traffic speed and increase traffic safety.

**Advantages:**

- Effective for temporary speed reduction while officer is present

- Can be targeted at specific times

- Targets violators without affecting normal traffic

- Increases driver awareness of speed limit

**Tradeoffs:**

- May not change long term habits

- Enforcement limited by police availability and other policing duties

- May not be repeatable as often as desired

**Cost:** \$\$\$\$\$



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## Restricted Movement Signing

**Description:** Sign that prohibits certain movements at an intersection. Used in special circumstances.

**Purpose:** To increase traffic safety.

**Advantages:**

- Redirects traffic to main streets
- Reduces volume
- Addresses time-of-day problems

**Tradeoffs:**

- May increase trip length for some drivers
- No significant effect on vehicle speeds

**Cost:** \$\$\$\$\$



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## One-Way Sign

**Description:** Directional movement sign that limits the direction of travel. Used in special circumstances.

**Purpose:** To indicate to drivers that traffic is allowed to travel only in a certain direction. When used as a comprehensive traffic calming measure, the intent to limit or reduce through traffic along a street.

**Advantages:**

Intersection conflicts are reduced as there are fewer turning movements.  
Reduction in traffic volume

**Tradeoffs:**

May increase speeds

**Cost:** \$\$\$\$\$



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## Level 2 Traffic Calming Devices (Reduce Speed)

Level 2 traffic calming devices are intended to address speeding/safety concerns with devices that go beyond Level 1 traffic calming. These traffic calming devices are designed to primarily slow down traffic within residential areas. They are employed when the use of Level 1 traffic calming devices were not effective in reducing speeds.

Many of the Level 2 traffic calming devices include horizontal or vertical deflection. Horizontal deflection can be achieved two different ways. The first hinders the driver's ability to drive in a straight line by creating a horizontal shift in the roadway. This shift forces drivers to slow down in order to safely navigate. The second is designed to narrow the width of the travel lane. A narrower travel lane reduces the usable surface of the roadway causing drivers to slow down to maintain an acceptable level of comfort.

Vertical deflection changes the height of the roadway, essentially having the driver drive over a designed device in order to slow the driver. When properly designed the driver will slow down in order to avoid an unpleasant bumping sensation.

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## Speed Hump

**Description:** Speed humps are an area of pavement raised 3-6 inches in height over a minimum of 12 feet in length. The combination of different height, lengths and approach ramps will vary the speed a vehicle can comfortably go over the hump. They are accompanied with signs and pavement markings.

**Purpose:** To reduce vehicle speed.

### Advantages:

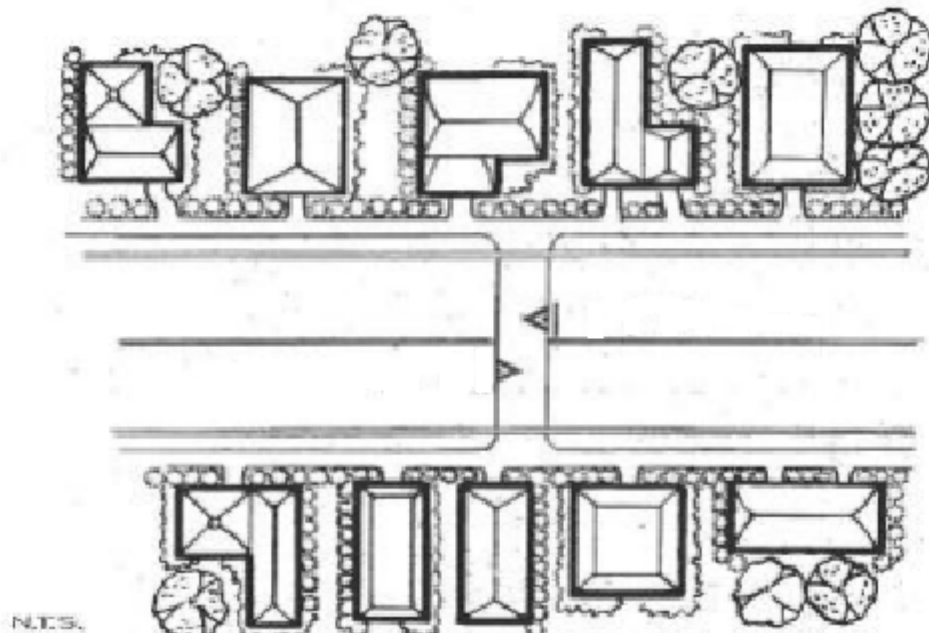
- Slows traffic
- Self enforcing
- Requires minimal maintenance
- Minimal impact on snow removal

### Tradeoffs:

- Slightly increases emergency response times
- May increase traffic noise in vicinity of speed hump
- May disrupt drainage paths
- More disruptive on larger vehicles
- Accompanied by signs and some parking modifications

### Cost:

\$\$\$



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## Raised Crosswalk

**Description:** Flat topped speed hump built as a pedestrian crossing

**Purpose:** To reduce vehicle speed mid-block and improve pedestrian safety

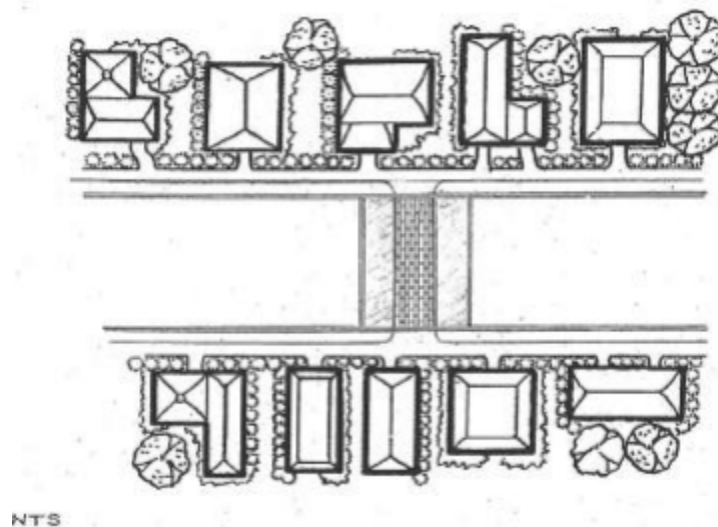
**Advantages:**

- Slows traffic
- Requires minimal maintenance
- Minimal impact on snow removal
- Increases pedestrian visibility in the crosswalk
- Clearly designates the crosswalk

**Tradeoffs:**

- Slightly increases emergency response times
- May increase traffic noise in vicinity of raised crosswalk
- May disrupt drainage paths
- More disruptive on larger vehicles
- Typically involves drainage modifications

**Cost:** \$\$\$\$



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## Speed Table

**Description:** Speed tables are raised intersections with a flat section in the middle and ramps on the ends.

**Purpose:** To reduce vehicle speed.

**Advantages:**

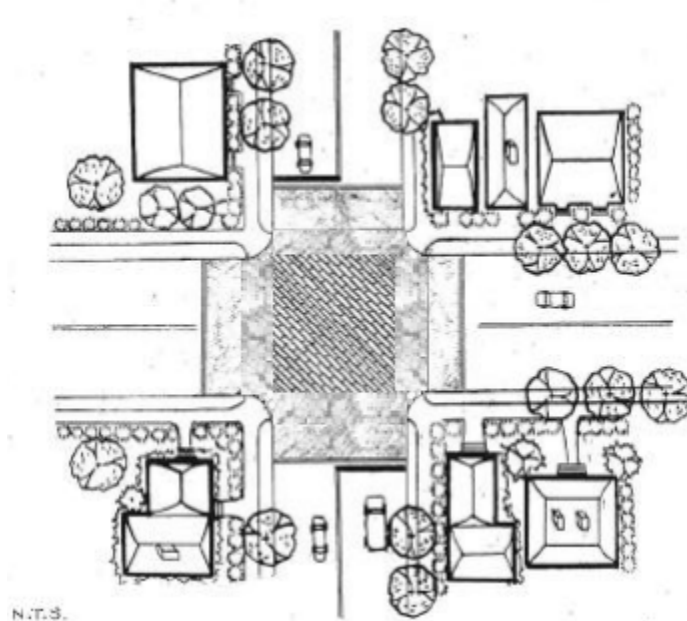
- Slows traffic
- Self enforcing
- Requires minimal maintenance
- Minimal impact on snow removal

**Tradeoffs:**

- Slightly increases emergency response times
- May increase traffic noise in vicinity of speed table
- May disrupt drainage paths
- Accompanied by signs and some parking modifications

**Cost:**

\$\$\$\$-\$\$\$\$\$



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## Median

**Description:** Raised island in the center of the roadway.

**Purpose:** To reduce vehicle speed and interrupt sight distance down the center of the roadway.  
Can be used to deflect vehicle path.

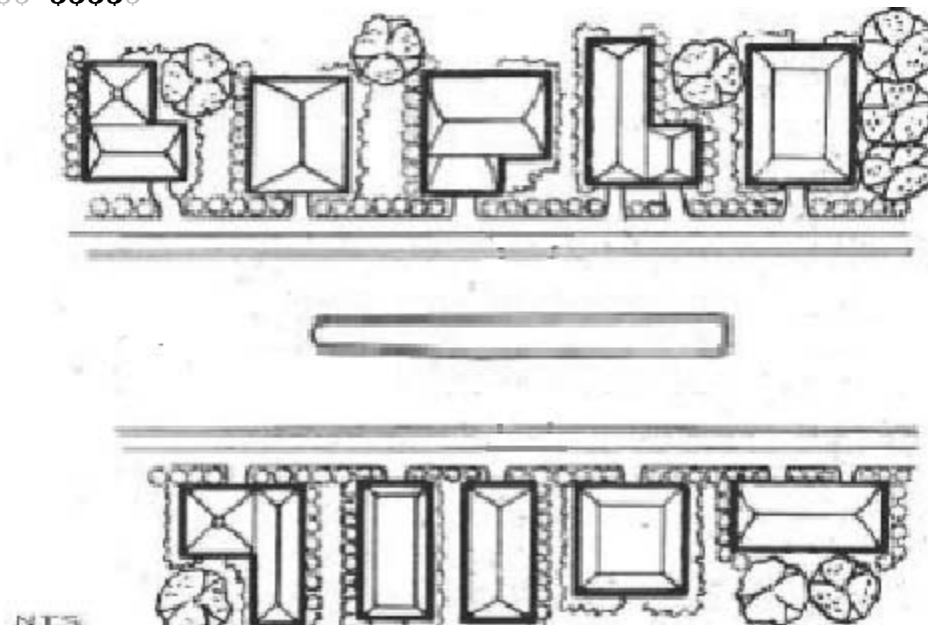
**Advantages:**

- Narrowed travel lanes encourage slower vehicle speeds
- Opportunity for landscaping
- Can utilize space which otherwise would be less used pavement
- Can be used to control access

**Tradeoffs:**

- May interrupt driveway access and result in U-turns
- May require removal of parking
- Long medians may interrupt emergency access and operations
- Might adversely impact bicyclist comfort

**Cost:** \$\$\$\$- \$\$\$\$\$





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## Entry Island/Islands

**Description:** A raised section of a two-way street that identifies the entrance to a neighborhood.

**Purpose:** To reduce vehicle speed and interrupt sight distance down the center of the roadway, while also establishing a gateway to the neighborhood.

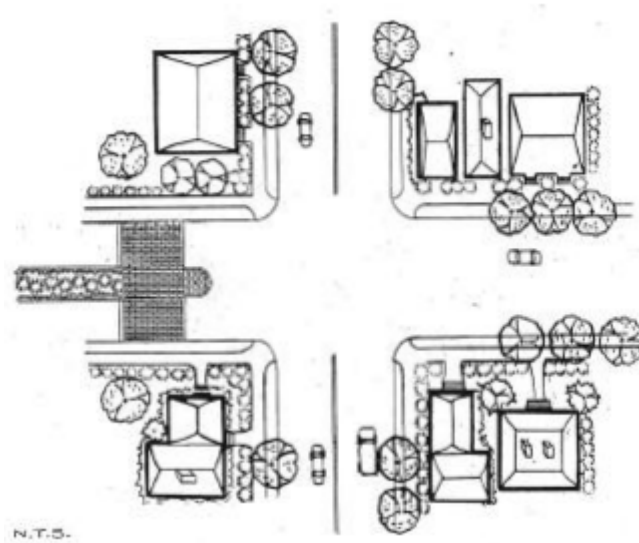
**Advantages:**

- Notifies drivers of change in roadway character
- Reduces speed
- Opportunity for landscaping
- May discourage volume

**Tradeoffs:**

- Need for maintenance
- May necessitate removal of parking
- May impact snow removal operation

**Cost:** \$\$\$\$- \$\$\$\$\$



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## Chicanes

**Description:** Curb extensions that alternate from one side of the street to the other forming curves

**Purpose:** To reduce vehicle speed using horizontal deflection

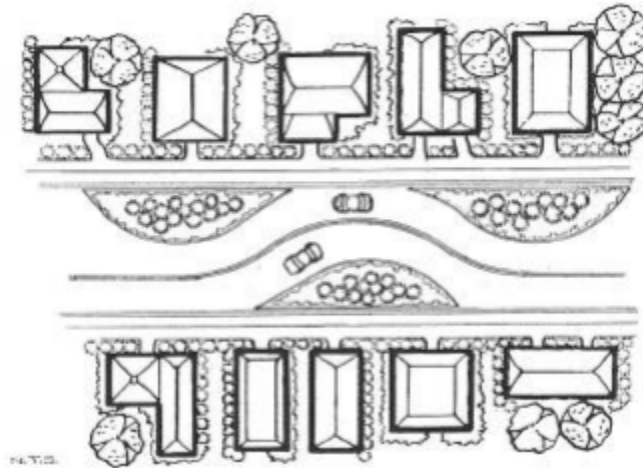
**Advantages:**

- Can be aesthetically pleasing
- Reduces speed
- Opportunity for landscaping

**Tradeoffs:**

- May increase conflicts between drivers, bicyclists, and pedestrians
- Increases emergency response times
- May necessitate removal of parking

**Cost: \$\$\$\$\$**



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## Chokers

**Description:** Raised islands on one or both sides of the roadway creating a narrower roadway.

**Purpose:** To reduce vehicle speed

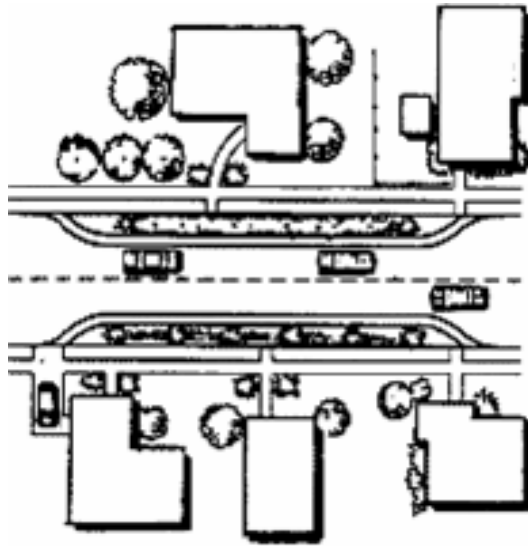
**Advantages:**

- Reduces vehicle speed
- Reduces crossing distance for pedestrians
- Breaks up drivers line of sight

**Tradeoffs:**

- May create problems with maintenance and snow removal
- May necessitate removal of parking
- May reduce cyclist comfort

**Cost:** \$\$\$\$\$



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## Curb Extensions

**Description:** Intersections where curbs are extended toward the center of the roadway.

**Purpose:** To slow traffic at intersections and improve pedestrian safety

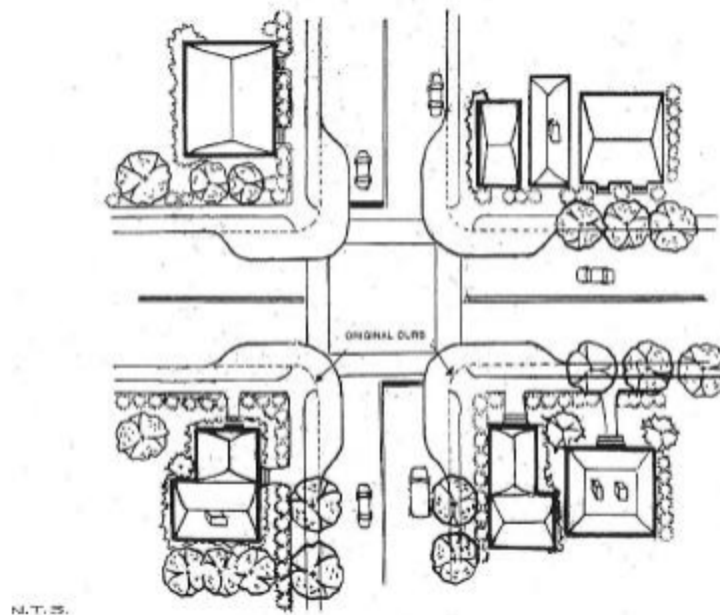
**Advantages:**

- Reduces vehicle speed
- Reduced crossing distance for pedestrians
- Breaks up drivers line of sight

**Tradeoffs:**

- May impact drainage paths
- May necessitate removal of parking
- Will likely involve drainage modifications
- Can impede truck movements

**Cost: \$\$\$\$\$**



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## Raised Intersection

**Description:** A raised section of roadway at an intersection where the pavement is elevated flush with the curb and the approaches are ramped like speed humps.

**Purpose:** To slow traffic at intersections and improve pedestrian safety

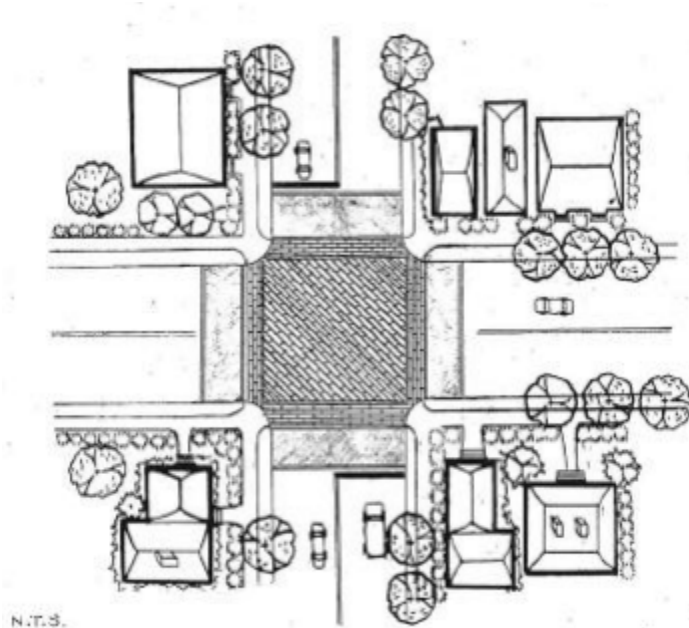
**Advantages:**

- Reduces vehicle speed
- Improved pedestrian safety
- Highlights intersection

**Tradeoffs:**

- May impact drainage paths
- May increase emergency response times
- May increase turning difficulty
- May be more disruptive for large vehicles
- May increase noise

**Cost: \$\$\$\$\$**



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## Realigned Intersections

**Description:** Realigns T-intersection to make the “through movement” a turning movement.

**Purpose:** To slow traffic at intersections and redirect traffic

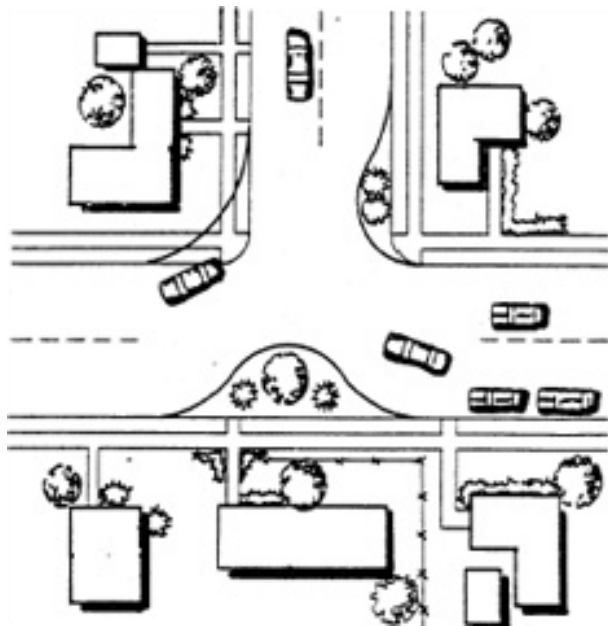
**Advantages:**

- Provides landscaping opportunity
- Discourages traffic continuing through a neighborhood
- Slows traffic as it enters a neighborhood
- Breaks up line of sight

**Tradeoffs:**

- May impact drainage paths
- May increase emergency response times

**Cost:** \$\$\$\$\$



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## Traffic Circle

**Description:** Traffic circles are raised circular medians in an intersection. Vehicles must change their travel path to maneuver around the circle.

**Purpose:** To slow traffic at intersections.

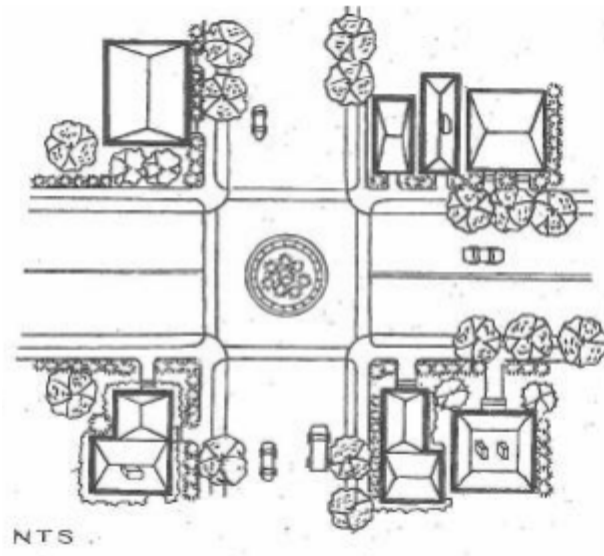
**Advantages:**

- Provides landscaping opportunity
- Breaks up line of sight

**Tradeoffs:**

- Increases emergency response times
- May impede left turns by large vehicles
- Increases maintenance costs
- May impact snow removal operation
- May require driver education due to similarities with round-a-bouts
- Driver expectation issues due to similar look of a round-a-bout but different design characteristics

**Cost:** \$\$\$\$\$-\$\$\$\$\$



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### Level 3 Traffic Calming Devices (Reduce Volume)

Level 3 traffic calming devices are intended primarily to reduce the volume of traffic on certain streets and re-direct traffic back to the main streets. These traffic control devices are intended to reduce cut-through traffic from using residential streets. Level 3 traffic control devices may be used in conjunction with Level 1 and Level 2 traffic control devices. Level 3 devices tend to impact the neighborhood residents the most, but also can impact a substantial amount of the general public. Use of Level 3 devices should be approached with caution.



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## Restricted Movement Barrier

**Description:** Barrier island that prevents certain movement at an intersection.

**Purpose:** To redirect traffic a certain direction.

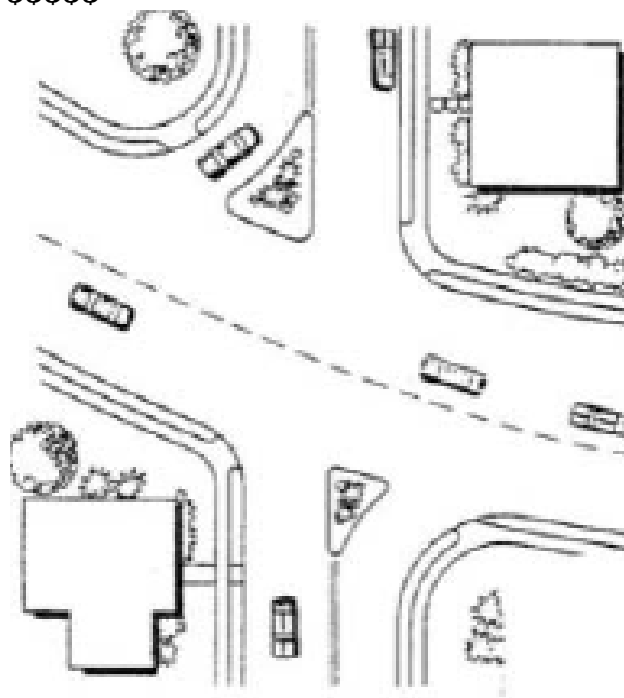
**Advantages:**

- Redirects traffic to main streets
- Reduces volume
- Provides landscaping opportunity

**Tradeoffs:**

- Increases emergency response times
- May increase trip length for some drivers
- Increased maintenance costs

**Cost:** \$\$\$\$\$-\$\$\$\$\$



## Entrance Barrier/Half Closure

**Description:** Physical barrier that restricts turns into or from a street. The opposite lane is left open to allow vehicles to exit (or enter). Two-way traffic is maintained for the rest of the block.

**Purpose:** To reduce traffic volume

### Advantages:

**Restricts movements into (or exit from) a street**

## Reduces volume

Provides landscaping opportunity

## Tradeoffs:

May redirect traffic to other local streets

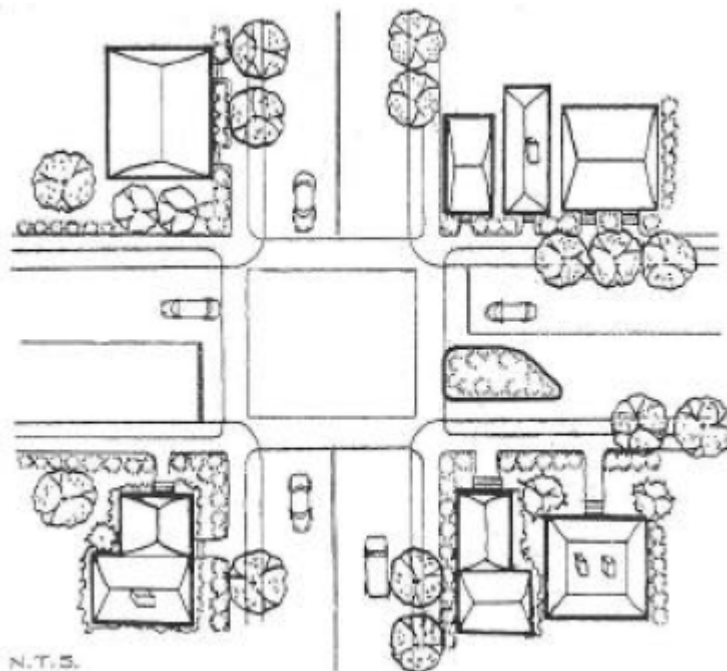
### May increase trip length for some drivers

In effect at all times even if cut-through problem exists only at certain times of day

Increases emergency response times

May result in parking modifications

**Cost: \$\$\$\$**



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## Diagonal Diverter

**Description:** Barriers placed diagonally across an intersection blocking through movement.

**Purpose:** To reduce traffic volume

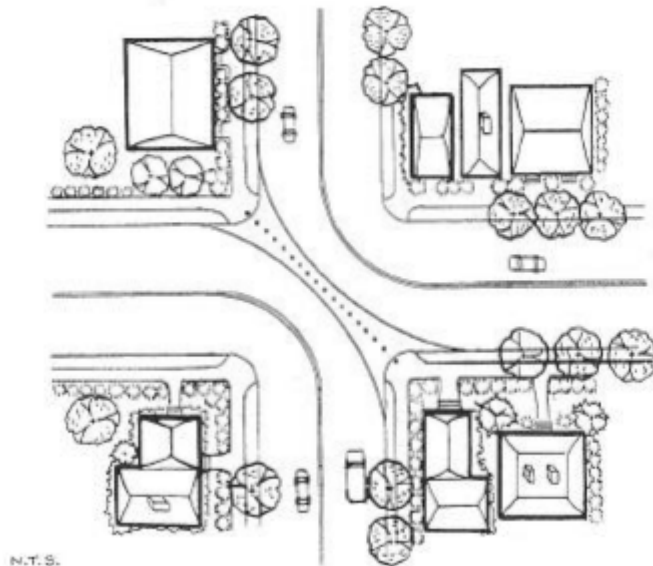
**Advantages:**

- Reduces volume
- Provides landscaping opportunity
- Can be designed to preserve emergency vehicle access

**Tradeoffs:**

- May redirect traffic to other local streets
- May increase trip length for some drivers
- In effect at all times even if cut-through problem exists only at certain times of day
- Impacts emergency response time

**Cost:** \$\$\$\$\$



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## Full Closure

**Description:** Full closure of a street.

**Purpose:** To reduce traffic volume

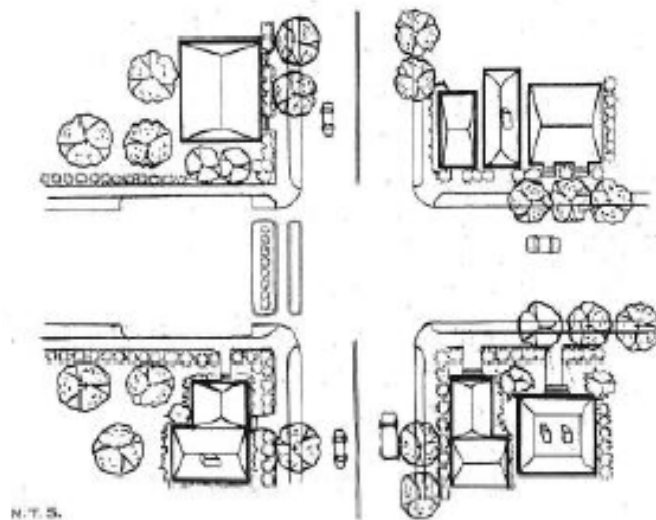
**Advantages:**

- Reduces volume
- Self enforcing

**Tradeoffs:**

- Redirects traffic to other local streets
- May increase trip length for some drivers
- In effect at all times even if cut-through problem exists only at certain times of day
- Increases emergency response times
- Most intrusive
- Reduces connectivity

**Cost:** \$\$\$\$



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## Open Road Closure

**Description:** Raised area of pavement in the roadway with a hole in the middle for bicycle and pedestrian access. Raised areas have a ramp to allow for larger vehicles to mount the pavement accompanied with “DO NOT ENTER” signs.

**Purpose:** To reduce traffic volume

**Advantages:**

- Reduces volume

- Preserves connectivity for emergency response and some other users

**Tradeoffs:**

- Use depends on driver behavior

- Increases trip length

- In effect at all times even if cut-through problem exists only at certain times of day

- Reduces connectivity

**Cost:**

\$\$\$\$\$-\$\$\$\$\$

