

# Memorandum



CITY OF DALLAS

DATE May 11, 2018

TO Honorable Members of the Mobility Solutions, Infrastructure and Sustainability Committee

SUBJECT **Neighborhood Traffic Management Program**

On Monday, May 14, 2018, you will be briefed on the Neighborhood Traffic Management Program. The briefing materials are attached for your review.

Please feel free to contact me if you have any questions or concerns.

A handwritten signature in blue ink, appearing to read 'Majed A. Al-Ghafry'.

**Majed A. Al-Ghafry**  
Assistant City Manager

[Attachment]

- c: Honorable Mayor and Members of the City Council  
T.C. Broadnax, City Manager  
Larry Casto, City Attorney  
Craig D. Kinton, City Auditor  
Billierae Johnson, City Secretary  
Daniel F. Solis, Administrative Judge  
Kimberly Bizer Tolbert, Chief of Staff to the City Manager  
Jo M. (Jody) Puckett, Assistant City Manager (Interim)
- Jon Fortune, Assistant City Manager  
Joey Zapata, Assistant City Manager  
M. Elizabeth Reich, Chief Financial Officer  
Nadia Chandler Hardy, Chief of Community Services  
Raquel Favela, Chief of Economic Development & Neighborhood Services  
Theresa O'Donnell, Chief of Resilience  
Directors and Assistant Directors

# Neighborhood Traffic Management Program

Mobility Solutions,  
Infrastructure and  
Sustainability Committee

May 14, 2018

Tanya Brooks  
Assistant Director  
Department of Transportation



# Presentation Overview

- Neighborhood Traffic Management (NTM)
- Current NTM Practices
- Traffic Calming Purpose and Options
- Next Steps
- Appendix
  - Draft Traffic Calming Manual

# What is the Neighborhood Traffic Management Program and Purpose?

- The Neighborhood Traffic Management (NTM) program provides traffic calming measures to reduce or eliminate cut-through traffic, help control speeds, and address other traffic related problems in residential neighborhoods.
- Cut-through and/or speeding traffic is viewed by residents as degrading to their neighborhood and quality of life

# Traffic Calming Purpose and Definition

Traffic calming is a component of the NTM Program and is intended to improve quality of life in residential neighborhoods by:

- Reducing speeding and potential traffic accidents
- Increase safety & convenience for pedestrians & cyclists

Institute of Transportation Engineers (ITE) defines traffic calming as “the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.”

# Current NTM Policies

1. Road Humps – Resolution #91-0894
2. Street closures – Resolution #93-4028
3. All-way stops for NTM – Ordinance # 24177
4. Alley Rumble Strips – Ordinance #17828
5. Parking Restrictions – Ordinance #20012, 20269
6. Resident Only Parking – Ordinance #21598, 23863

# Current NTM Policies & Eligibility Criteria

Eligibility Criteria	(1) Road Humps	(2) Street Closures	(3) All-way Stops	(4) Alley Rumble Strips	(5) No Parking Zones	(6) Resident-Only Parking
Neighborhood Type	Primarily single family	Predominately residential	Residential	Primarily single family	Residential	Primarily single family
Street Type	Local/not an Emergency Route	Local/not an Emergency Route	Local/not an Emergency Route	Paved alley	Neighborhood street	Residential local
Application Fee	None	\$150-\$500	None	None	\$50	\$50
Basic Technical Screening Criteria	>500 but less than 6000 vehicles/day ≥ 35 mph or 31-34 mph if approved upon appeal	N/A	< 6000 vehicles/day	N/A	N/A	> 60% of spaces used and > 20% of used spaces business-related
Initiating Requirement	Petition from ≥ 2/3 of residents	Petition from ≥ 1/2 of residents	Petition from ≥ 2/3 of residents within 900'	Petition with 80% uses on alley	Petition with 80% of uses on block face	Petition with 2/3 uses on block face
Ballot Area	Owners within 200' of street	Primary affected area	None	None	None	None
Community Consensus Determination	Petition with 2/3 residents & not more than 20% opposition	Ballots from ≥ 2/3 of property owners in support	Petition with 2/3 of residents within 900'	Petition with 80% uses on alley	Petition with 51% of uses on block face	Petition with 2/3 uses on block face
Approval	Staff	Council	Staff	Staff	Staff	Staff
Appeal Process	Staff/Council	None	CPC/Council	None	None	None
Cost to Applicant	Full	Full	None	Full	Full	Full



# Traffic Calming Manual - Purpose

- One of the goals for the City of Dallas is to improve mobility safety across all modes of travel in a way that fits within a neighborhood's context; and
- The Traffic Calming Manual (draft) provides information on traffic calming options for residential and mixed use streets; and
- The guidelines in this manual are aligned with the street design recommendations in the City of Dallas Complete Streets Design Manual adopted by City Council January 27, 2016.



# Traffic Calming Options

## 1. Striping/Pavement Markings

- Pavement Markings
- Bike Lanes
- Road Diets

## 2. Horizontal Design Components

- Curb extensions/Bumpouts/Chokers
- Chicanes
- Half-Street closures
- Medians Islands
- Neighborhood Mini-Roundabouts

## 3. Vertical Design Components

- Road Humps
- Raised crosswalk
- Raised intersections

## 4. Signage

- Turn Restrictions
- Speed Limit Radar Unit Signs
- Flashing Beacons
- Two-Way Conversion

## 5. Enforcement

# Traffic Calming Options:

## 1) Striping/Pavement Markings

- Road Diets/Bike Lanes
  - Reduces number of lanes by adding medians
  - Converts travel lanes to parking or bicycle lanes
  - Cost ~\$50,000/lane mile



# Traffic Calming Option:

## 2a) Horizontal Design Components

- Chicanes/Chokers
  - A series of narrowings or curb extensions that alternate from one side of the street to the other forming S-shaped curves
  - Appropriate for midblock locations only
  - Cost ~\$15,000-\$25,000



# Traffic Calming Options:

## 2b) Horizontal Design Components (continued)

- Partial Street Closures
  - Entrance or ingress barriers that block travel in one direction for a short distance on otherwise two-way streets
  - Cost ~\$40,000



# Traffic Calming Options:

## 2c) Horizontal Design Components (continued)

- Traffic Calming Circles
  - Not Roundabouts which are intended for higher traffic volumes
  - Raised island located in the center of an intersection
  - Requires drivers to slower their speed
  - Provides space for landscaping and storm water treatment
  - Cost ~\$10,000-\$25,000



# Traffic Calming Options:

## 3) Vertical Design Components

- Speed Cushions
  - Serve same purpose as Road Humps
  - Typically do not impact emergency response times
  - Cost – Speed Cushions ~ \$5,000 per location
  - Cost – Road Humps ~ \$5,000 per location

Speed Cushion



Road Hump



# Traffic Calming Options:

## 4) Signage

- Speed Limit Radar Unit Signs
  - Do not negatively impact emergency times
  - Alert driver of their speeds and provides opportunity to correct immediately to a slower/safer speed
  - Cost \$8,000 each



# Traffic Calming Options:

## 5) Enforcement

- Police Enforcement
  - Reduces vehicle travel speeds and crashes
  - Requires significant resources to sustain
  - Requires coordination with Dallas Police Department





# Traffic Calming Matrix

Traffic Calming Tool	Reduce Speeding	Reduce Cut-Thru Traffic	Enhance Safety
Road Diets/Bike Lanes	X		X
Chicanes/Chokers	X	X	
Partial Street Closures	X	X	
Traffic Circles	X		X
Speed Cushions	X	X	
Speed Limit Radar Unit Signs	X		x

# Next Steps

- City Council adopts Traffic Calming Manual
- Staff will incorporate into the Strategic Mobility Plan

# Neighborhood Traffic Management Program

Mobility Solutions,  
Infrastructure and  
Sustainability Committee

May 14, 2018

Tanya Brooks  
Assistant Director  
Department of Transportation



# Appendix

- Draft Traffic Calming Manual

# City of Dallas Traffic Calming Manual Draft

One of Dallas City’s goals is to improve mobility safety across all modes of travel in a way that fits within a neighborhood’s context. The Traffic Calming Handbook provides information on traffic calming options on residential and mixed use streets with the goal of improving neighborhood quality of life. The guidelines in this manual also build off of the street design recommendations of the Dallas City Complete Streets Manual and provide relatively low-cost ways to implement many recommendations of the plan.

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## Introduction and Background

Traffic calming refers to improving street features to reduce the negative effects of speeding and cut-through traffic while enhancing safety for pedestrians and bicyclists. These efforts are typically aimed at reducing vehicle speeds and/or the volume of non-local traffic in residential areas. Some traffic calming components can also provide new or expanded active mobility infrastructure and increase opportunities for walking, biking and transit use.

Speed humps have historically been the most commonly used solution for traffic calming issues in Dallas, although other measures are now available. Recent traffic calming projects in the United States focus on striping and horizontal measures which slow traffic while providing better safety and access for all modes of travel. Traffic calming measures such as neighborhood traffic circles and median chockers have been shown to reduce neighborhood traffic volumes and average speeds.<sup>1</sup> This handbook details alternative traffic management measures that also address specific traffic issues and provides guidance on selecting the most appropriate measure that addresses specific traffic issues.

Traffic speed has been shown to heavily influence the safety of our streets. According to the National Transportation Safety Board, about 30% of all traffic fatalities involve speeding.<sup>2</sup> Higher speed traffic is also far more likely to cause pedestrian fatalities.

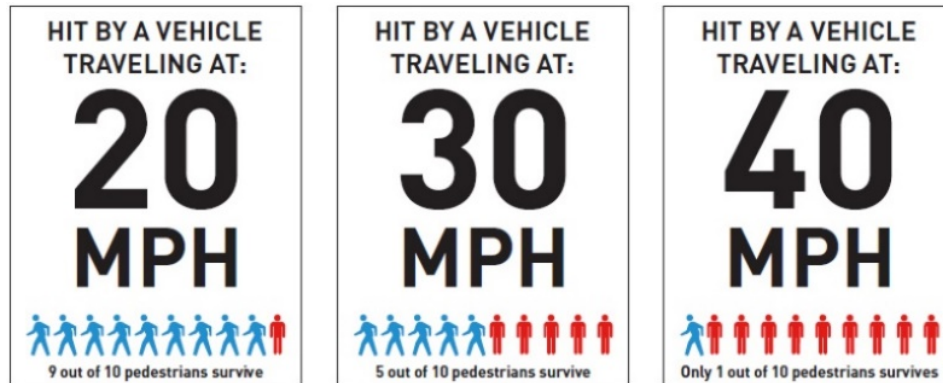
“The speed of a vehicle is a major determinant in the severity of a crash. According to one study (and several other studies have found similar results), a pedestrian hit at 40 miles per hour has an 85 percent chance of fatality, while a pedestrian hit at 20 miles per hour has only a 5 percent chance of fatality”<sup>3</sup>

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<sup>1</sup> Institute of Traffic Engineers: <http://library.ite.org/pub/e278324d-2354-d714-51c4-9535e9724566>

<sup>2</sup> NTSB: <https://www.nts.gov/safety/safety-studies/Pages/SS1701.aspx>

<sup>3</sup> FHWA: [https://safety.fhwa.dot.gov/ped\\_bike/pssp/background/psafety.cfm](https://safety.fhwa.dot.gov/ped_bike/pssp/background/psafety.cfm)



Traffic calming measures are typically appropriate on two-lane local residential streets with lower traffic volumes. Certain traffic calming measures may not be used on major collector or arterials roadways. Traffic calming measures should be used to address extraordinary traffic problems within residential areas, like unusually high traffic volumes and/or high operating speeds. Traffic count collection or other studies may need to be completed to determine the nature and severity of the traffic problem when evaluating alternative treatments. **Who makes final recommendation on implementation?**

The design recommendations in the manual are based on the most recent best practices from the Institute of Traffic Engineers (ITE), the North American City Transportation Official organization (NACTO), Federal Highway Administration (FHWA) and already-built traffic calming projects in cities across the United States.

### Complete Streets

On January 28, 2016, Dallas City passed a Resolution adopting the Complete Streets Design Manual. The manual provides design and policy guidance for creating streets which are safe, comfortable and accessible for all modes of travel, regardless of one's age or ability. The Complete Streets Manual will be referenced when traffic calming measures are being identified.

One of the most important principles of the Complete Streets concept is that each street improvement will consider all users. This includes people driving



cars, riding bikes, walking, using transit, and using wheelchairs. There is not a “one-size fits all” approach to Complete Streets. The function of the road and the level of vehicular, pedestrian, and bicycle traffic will be considered. The use of the land next to the road (e.g. residential or commercial) will also be considered to determine the best range of options for each situation. Traffic calming projects which can meet active mobility goals while also reducing traffic speeds will be prioritized and serve as low-cost implementation strategies for the Complete Streets Design Manual.

Recent complete streets initiatives have made the street design process more inter-disciplinary and democratic with planners, engineers and communities working together to determine appropriate design solutions. This trend has continued with traffic calming projects.

<b>Problem</b>	<b>Previous Treatments</b>	<b>More Effective Treatments</b>
Speeding traffic	Stop signs, speed bumps, enforcement.	Horizontal street components, geometric changes, narrower lanes, bumpouts, etc.
Stopping cut through traffic	Close street to traffic, stop signs	Traffic calming devices which discourage through traffic while not putting traffic burden entirely on adjacent streets.
Traffic Calming Design Process	Top down. Traffic engineer decides proposal	Bottom up. Planners, engineers and community work together and discuss array of options.
Implementation	Siloed with limited budget for implementation.	Dedicated funding still exists but traffic calming measures are incorporated into other capital transportation projects and private developer-led initiatives.

## Traffic Calming Request Process

What is our traffic calming request process?

## Maintenance

Any necessary maintenance on traffic improvements will be the responsibility of the City with the exception of any landscaping that is installed as a result of the measure. All landscaping will be maintained by the neighborhood.

## Monitoring and Evaluation

A post implementation evaluation of the measure may be conducted by the City to include field observations, traffic counts, speed studies and other data collection as deemed necessary. If a project has not met its objectives, additional needs or changes can be considered but additional funding may be required. A measure not fully meeting its objectives does not automatically justify removal.

## Measures of Effectiveness

Several different traffic calming features and other devices are employed to affect traffic volume, vehicle speeds, or accident problems. Neighborhood residents view effective devices/treatments as those that provide conditions that are amenable to neighborhood living, e.g., operating speeds approximately equal to the regulatory speed. Therefore, the effectiveness of each device or calming feature is based on the result achieved irrespective of the original condition. The following table will be used as a guide to grade treatments/devices after installation:

MOE	Good	Fair	Poor
Speed	$\leq 31$ mph	32-34 mph	$\geq 35$ mph
Cut-through Traffic	0-14% over baseline traffic volumes	15-24% over baseline traffic volumes	$\geq 25\%$ over baseline traffic volumes

## Removal of Traffic Calming Improvement

If the City of Dallas determines that a measure needs to be removed for health or safety reasons, the City shall proceed to remove or modify the installation after notifying the neighborhood representatives.

If the neighborhood itself would like to have a traffic calming measure removed or significantly altered, the process is the same as the process for installation. **A Traffic Calming Request Application with signatures from property owners representing a least 2/3 of the properties whose property is next to the street segment in question in support of the removal or alteration is required. (keep this process?)** The neighborhood may be required to fund the removal or alteration of the measure. The cost to remove or relocate the measure may include the cost to repair the pavement by milling and overlaying the section of roadway.

## Expected Impact

The various traffic calming measures can help decrease operating speeds, traffic volumes and/or accident problems. Typically measures that are viewed as successful by residents are those that provide better conditions for neighborhood living such as slower speeds or lower traffic volumes. In this handbook, the positive impact of each measure is based on a four-star scale, with four stars indicating the best results. The bottom of each page includes a scale that rates the reduction of speed, reduction of traffic volume, safety enhancement and projected maintenance for each measure.

### Reduced Speed

Measures that keep operating speeds at or below the lawful speed will have more stars than measures that have little or no impact on operating speeds.

### Reduced Traffic Volume

Measures that have a greater impact on reducing the volume of traffic will have more stars than measures which have no impact on reducing traffic volumes.

#### Enhanced Safety

Measures which have the potential to reduce crashes will have more stars than measures which would not necessarily reduce crash potential.

#### Projected Maintenance

Most traffic calming measures will require some level of maintenance depending on the level of use, weather, soil stability, material and/or weight of the vehicle traffic. Measures which require little to no maintenance will have more stars than measures which require frequent maintenance or replacement.

#### Thoroughfare Plan

While most traffic calming projects will be installed on local streets, some projects like road diets and bike lanes may change the cross section of Dallas City Thoroughfares. The Dallas Thoroughfare Plan provides the basis for classifying streets based on projected traffic volumes and dictates the number of lanes and right of way requirements for these streets. If a traffic calming project proposes a change to the cross section of a thoroughfare, the project will need to go through the Thoroughfare Plan amendment process to receive final approval by Dallas City Council.

#### Organization

Traffic calming components are organized into four categories:

## Striping/Pavement Markings

Relatively low cost roadway changes which involve restriping and other non-construction modifications. Striping projects can also provide improved multi-modal access and safety for cyclists and pedestrians.

## Horizontal Measures

Higher-cost traffic calming measures which provide effective road way narrowing, landscaping opportunities, and other neighborhood-enhancing features. Horizontal measures can also provide improved multi-modal access and safety for cyclists and pedestrians.

## Vertical Measures

Medium-cost traffic calming measures which provide vertical deflection to slow drivers but which offer few neighborhood-enhancing features or multi-modal improvements.

## Signage

Standard reflective signs or electronic signs which give notice to drivers to slow down.

Average Effectiveness by Application	
Zero Impact	★ ★ ★ ★
Poor	★ ★ ★ ★
Fair	★ ★ ★ ★
Good	★ ★ ★ ★
Best	★ ★ ★ ★

# Traffic Calming Toolbox - Striping/Pavement Markings

## Improved Shoulders/Parking Lane Delineation/Lane Narrowing

Narrowing lanes has been shown to reduce traffic speeds<sup>4</sup>. Lane narrowing can include:

- Delineating parking areas (min 8' wide) with a solid white stripe which can formalize on-street parallel parking while narrowing visually narrowing traffic lanes.
- Narrowing traffic lanes and using the remainder of the right-of-way for bike lanes or a curb-side shoulder.



### Advantages

- Narrows the motor vehicle travel lane which may cause motorists to reduce their operating speeds
- Seven to eight foot improved shoulders may serve as a parking lane
- Keeps vehicles further away from the side of the roadway providing a buffer area next to the sidewalk

### Disadvantages

- Markings require continuous maintenance
- Not as effective when markings are faded
- Level of speed reduction is usually minimal

<sup>4</sup> NACTO: <https://nacto.org/publication/urban-street-design-guide/street-design-elements/lane-width/>

# Eligibility Considerations

- Street width must exceed 36 feet

Reduced Speed      ★★☆☆  
Enhanced Safety    ★★☆☆

Reduced Volume    ★☆☆☆  
Maintenance      ★☆☆☆



## Bicycle Lanes

Bicycle lanes are areas along the edge of the roadway created by marking an eight-inch wide, solid white pavement markings approximately five feet from the curb or edge of the pavement. In addition to the white pavement markings on the road, bike symbols and arrows are placed on the pavement within the bike lane and appropriate signage is placed adjacent to the roadway.



### Advantages

- Provides a place for bicyclists to ride in their own designated lane
- Narrows the motor vehicle travel lane which may cause motorists to reduce their operating speeds

### Disadvantages

- Markings require continuous maintenance



- Signs are a requirement
- Excessive signs can cause visual clutter
- Level of speed reduction is usually minimal

### Eligibility Considerations

- Street width must exceed 34 feet
- Connectivity to local venues or other bike lanes should be present

Reduced Speed      ★★☆☆

Enhanced Safety    ★★★☆

Reduced Volume    ★☆☆☆

Maintenance      ★☆☆☆

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## Rumble Strips

Rumble strips are patterned sections of rough pavement or topical applications of raised material, which when driven over cause vibration and noise in a vehicle. This treatment is intended to direct the attention of the motorist back to the roadway.



Source:  
<https://ops.fhwa.dot.gov/wz/workersafety/wzfrwebinar/fl/index.htm>

### Advantages

- Rumble strips may be used to heighten motorists' awareness of certain conditions like a stop sign, curve or speed limit change

### Disadvantages

- Rumble strips are noisy and may be annoying to nearby residents

### Eligibility Considerations

- Accident history that would support the installation of rumble strips
- Unusual or unexpected condition that requires particular attention by the motorists
- Adjacent property owners must agree to installation

Reduced Speed



Reduced Volume



Enhanced Safety



Maintenance



## Road Diet

Road diets reduce the number of lanes of traffic for streets that meet traffic threshold requirements. Road diets can include:

- Reducing a 4 lane road to a 3 lane road (2 bi-direction travel lanes and a middle turn lane)
- Reducing a 5 lane road (4 lanes a middle turn lane) to a 3 lane road

The remaining right-of-way can be used for bike lanes, bump outs, on-street parking or wider sidewalks. Road diets have been shown to reduce speeds and traffic crashes significantly.<sup>5</sup>



## Advantages

- Reduction in traffic speeds
- Reduction in automobile and pedestrian crashes
- Possible pedestrian/cycling enhancements

## Disadvantages

- Markings require continuous maintenance
- Needs to meet traffic volume requirements
- May require Thoroughfare Plan amendment if street is on a thoroughfare

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<sup>5</sup> NYC DOT Street Design Manual: <http://www.nyc.gov/html/dot/downloads/pdf/nycdot-streetdesignmanual-interior-lores.pdf>

## Eligibility Considerations

- Street must not exceed traffic threshold volumes as determined by city staff.

Reduced Speed      ★★☆☆

Reduced Volume      ★★☆☆

Enhanced Safety      ★★☆☆

Maintenance      ★★☆☆

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# Traffic Calming Toolbox – Horizontal Design Components

## Intersection Curb Extensions/Bumpouts/Chokers

Curb extensions are roadway features that narrow the roadway width from curb to curb. They can also replace free right turn slip lanes in order to slow turning traffic and improve pedestrian safety. Bumpouts are typically installed at intersections, while “chockers” can be installed mid-block. Curb extensions can consist of traditional curb and gutter or be delineated with asphalt paint, bollards or planters.



FIGURE 1: TRADITIONAL BUMPOUT (SOURCE: NACTO)



**FIGURE 2: CHOCKERS, OR MID-BLOCK BUMPOUTS**



**FIGURE 3: BUS BUMPOUT (SOURCE: NACTO)**

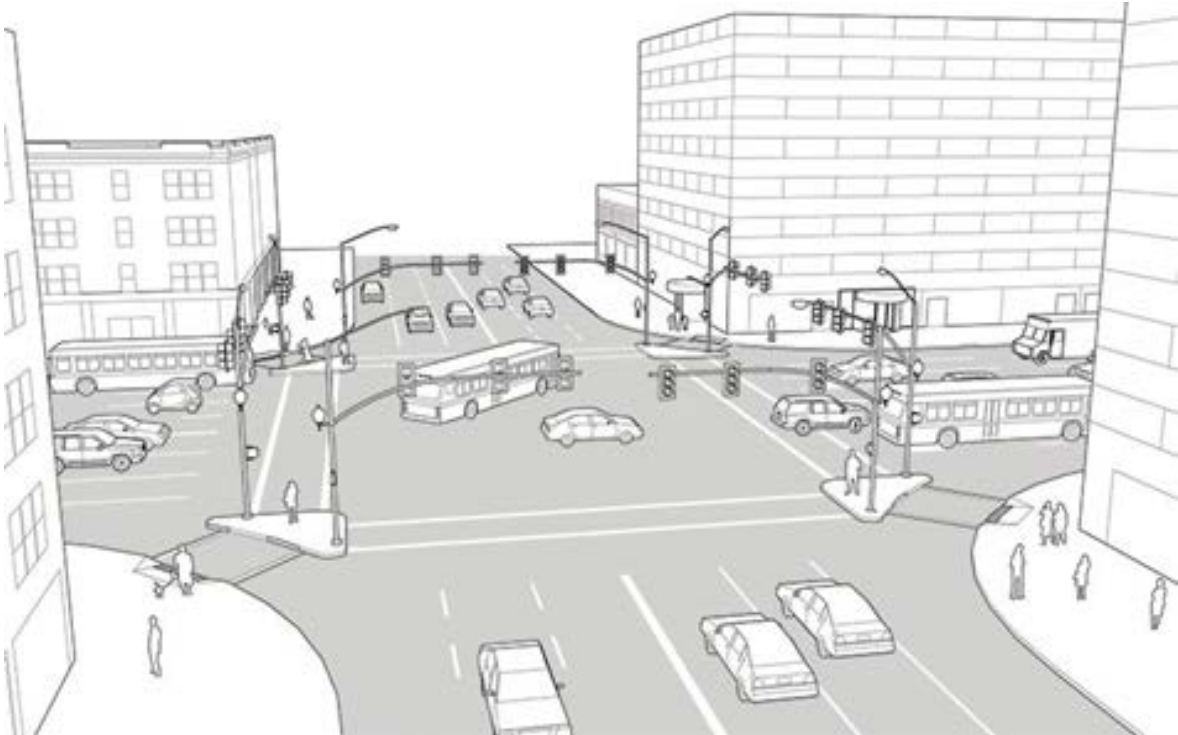


FIGURE 4: BEFORE: WIDE TURN RADII (SOURCE: NACTO)



FIGURE 5: AFTER: SHORTER PEDESTRIAN CROSSING DISTANCES, SLOWER TURNING VEHICLES. (SOURCE: NACTO)





FIGURE 6 CURB EXTENSIONS USING ASPHALT TREATMENT, BOLLARDS:



FIGURE 7: BUMPOUT WITH LANDSCAPING/SWM

## Advantages

- Improves pedestrian safety by shortening crossing distance
- Creates protected on-street parking bays
- Reduces the speed of turning vehicles, especially for right turn movements
- Can provide landscaping opportunities
- Can be used as bus bulbs at high-boarding bus stops

## Disadvantages

- Some on-street parking near the intersection may be eliminated
- Bicyclists may briefly have to merge with vehicular traffic
- Local street drainage may be impacted

## Eligibility Considerations

- Minimum of 36 feet wide streets where significant pedestrian crossings occur

Reduced Speed ★★☆☆

Enhanced Safety ★★☆☆

Reduced Volume ★☆☆☆

Maintenance ★★☆☆

## Chicanes

Chicanes are mid-block curb extensions that alternate from one side of the street to the other, forming S-shaped curves. This measure should be only used on residential roadways with less than 500 vehicles per day if reducing the street width to only one lane.



## Advantages

- Narrows the roadway which may cause motorists to reduce their operating speeds and may reduce volume
- If landscaped, reduces impervious cover and has a positive environmental impact

## Disadvantages

- Curb realignment and landscaping may be costly
- Some on-street parking may be eliminated
- Bicyclists may briefly have to merge with vehicular traffic
- Local street drainage may be impacted

## Eligibility Considerations

- Measured operating speed of 35 mph or greater
- No more than one travel lane in each direction

Reduced Speed



Reduced Volume



Enhanced Safety



Maintenance



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## Diagonal Diverters

Diagonal diverters are barriers placed diagonally across an intersection, blocking through movement; they are sometimes called full diverters or diagonal road closures. These types of street closures are most appropriate for neighborhood areas with grid network streets where cut-through traffic is a significant problem.



FIGURE 8: DIAGONAL DIVERTER (SOURCE: NACTO)



Source:  
<https://nacto.org/publication/urban-bikeway-design-guide/bicycle-boulevards/volume-management/>

## Advantages

- Maintains full pedestrian and bicycle access
- Reduces the volume of vehicles

## Disadvantages

- Reduces access options for local residents and emergency services
- Reconstruction of corner curbs may be necessary
- Local street drainage may be impacted
- Requires 2/3 approval of the affected neighborhood

## Eligibility Considerations

- Cut-through traffic should represent 25 percent or more of the total daily street volume

Reduced Speed      ★★☆☆

Reduced Volume      ★★★★★

Enhanced Safety      ★★★★★

Maintenance      ★★★★★

## Half Street Closures

Half street closures are barriers that block travel in one direction for a short distance on otherwise two-way streets. They are sometimes called partial closures, entrance barriers, or one-way closures.



### Advantages

- Maintains two-way bicycle access
- Reduces the volume of vehicles

### Disadvantages

- Limits access for local residents and emergency services
- Drivers may disregard the barrier and drive into oncoming traffic
- Local street drainage may be impacted
- Requires 2/3 approval of the affected neighborhood

### Eligibility Considerations

- 70/30 or greater directional split of cut-through traffic in one direction only

- No more than one lane of travel in each direction
- Minimum daily traffic of 500 vehicles per day is required

Reduced Speed      ★★☆☆

Reduced Volume      ★★☆☆

Enhanced Safety      ★★★☆

Maintenance      ★★★★★

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## Raised Pedestrian Refuge Islands

Raised pedestrian refuge islands can be located mid block or at intersections. The island allows for pedestrians to cross the street in two stages while tightening the turn radius when installed at intersections.



**FIGURE 9: MID-BLOCK PEDESTRIAN REFUGE ISLAND**



FIGURE 10: PEDESTRIAN REFUGE ISLAND AT INTERSECTION (SOURCE: FHWA)

### Advantages

- Reduces pedestrians' crossing distance
- May reduce vehicle operating speeds
- Allows the pedestrian to cross the street in two stages
- Intersection pedestrian refuge island prevents automobiles from making U-turns through crosswalks

### Disadvantages

- May impair access and encourage wrong-way traffic if blocking driveways
- Some on-street parking may be eliminated
- Local street drainage may be impacted

### Eligibility Considerations

- Minimum of 36 feet wide street
- Minimum of 50 pedestrian crossings per hour for any four hours of the day or minimum of 100 pedestrian crossings in any single hour of the day
- Minimum traffic volume of 500 vehicles per day

Reduced Speed ★★☆☆

Enhanced Safety ★★★★★

Reduced Volume ☆☆☆☆

Maintenance ★★★★★

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## Median Islands

Median islands are raised areas located mid-block in the center of a roadway. Median islands narrow the travel lanes, separate opposing traffic flows, and require motorists to maneuver around the median island.



### Advantages

- May reduce the speed of vehicles as motorists travel around the median

### Disadvantages

- Some on-street parking may be eliminated
- May require right-of-way acquisition
- Local street drainage may be impacted

### Eligibility Considerations

- No more than one travel lane in each direction
- Measured operating speed is 35 mph or greater
- Minimum traffic volume is 500 vehicles per day

Reduced Speed ★★★★★

Enhanced Safety ★★★★★

Reduced Volume ★★★★★

Maintenance ★★★★★

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## Mini-Roundabout

Traffic circles are raised, circular islands that are used within intersections in residential areas in an effort to reduce vehicle operating speeds. They can also provide landscaping and gateway signage opportunities for neighborhoods.



**FIGURE 11: MINI-ROUNDBOUT IN CONTEXT (SOURCE: NACTO)**



### Advantages

- Effective in reducing vehicle speeds and improving safety at intersections
- Provides traffic calming devices for two or more streets
- May reduce right angle crashes

### Disadvantages

- Large vehicles may have difficulty negotiating the center island
- Some on-street parking may be eliminated
- Ineffective designs may impede emergency vehicle response time
- May not eliminate left-turn cut-through violations
- May require right-of-way acquisition at corners
- Local street drainage may be impacted

### Eligibility Considerations

- Measured operating speed is 35 mph or greater
- At least three correctable crashes in a 12 month period
- Minimum traffic volume of 3,000 vehicles per day
- Intersection needs to be large enough to accommodate circle while maintaining 12'-15' clearance from the corner to the widest point on the circle.

Reduced Speed ★★☆☆

Enhanced Safety ★★☆☆

Reduced Volume ★☆☆☆

Maintenance ★★★★★

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# Traffic Calming Toolbox – Vertical Design Components

## Speed Humps

Speed humps are raised physical features that are uncomfortable to negotiate at high operating speeds.



## Advantages

- Effective in reducing vehicle speeds
- Does not require the removal of on-street parking
- No minimum roadway width requirement

## Disadvantages

- Makes traveling on the roadway uncomfortable for motorists and may increase noise
- Increases emergency vehicle response time by 8-10 seconds when installed in pairs
- Requires continuous maintenance
- Local street drainage may be impacted

## Eligibility Considerations

- Street segment must be primarily a residential street which provides direct access to abutting single family, duplex, triplex or quadplex residential properties

- Street segment must have no more than one moving lane of traffic in each direction
- Street segment must be ¼ mile or more in length. The measured length must be continuous without interruption by a traffic control device.
- Measured operating speed is 35 mph or greater
- Minimum traffic volume is 500 vehicles per day
- Street segment may not be designated as a major or arterial street
- Street must have a speed limit of 30 mph as determined in accordance with State Law
- Street segment must not be within ¼ mile from a Fire Department Facility as to significantly interfere with emergency vehicle operations

Reduced Speed



Reduced Volume



Enhanced Safety



Maintenance



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## Raised Crosswalks

Speed tables are flat-topped speed humps covering the entire width of the roadway. When outfitted with crosswalk markings and signage, the speed table becomes a raised crosswalk.





Source: <https://nacto.org/publication/urban-street-design-guide/street-design-elements/vertical-speed-control-elements/speed-table/>

## Advantages

- Raised crosswalks improve safety for pedestrians
- Effective in reducing vehicle speeds

## Disadvantages

- May increase noise
- Local street drainage may be impacted

## Eligibility Considerations

- Street segment must be primarily a residential street or provide access to abutting residential properties
- Street must not have more than one lane of travel in each direction
- Measured operating speed must be at least 35 mph or higher
- Minimum traffic volume of 500 vehicles per day
- Minimum of 25 pedestrian crossings per hour for any 4 hours of the day or minimum of 50 pedestrian crossings in any single hour of the day

Reduced Speed      ★★☆☆  
Enhanced Safety    ★★☆☆

Reduced Volume    ★★☆☆  
Maintenance       ★☆☆☆

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## Raised Intersections

Raised intersections provide vertical deflection at all sides of an intersection to reduce vehicle speeds and visually turn the space into a pedestrian-oriented zone. The roadway within the intersection is typically raised to sidewalk elevation. Raised intersections also enhance access for people with disabilities and improve driver awareness of pedestrian crossings.



### Advantages

- Creates a visual pedestrian space
- Slows traffic effectively
- Enhances neighborhood character and can serve as a visual gateway

### Disadvantages

- May impact drainage
- Not appropriate for truck routes

Eligibility considerations

- Stop-controlled intersections with a high volume of pedestrian crossings, speeding issues and pedestrian crashes

Reduced Speed      ★★☆☆  
Enhanced Safety    ★★☆☆

Reduced Volume    ★☆☆☆  
Maintenance      ★★☆☆

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# Traffic Calming Toolbox – Signage

## Turn Restrictions

Turn restrictions may be used on local streets to reduce traffic congestion or a pattern of crashes.



### Advantages

- Deters cut-through traffic on residential streets
- Addresses crash problems such as rear-end or right angle crashes

### Disadvantages

- Turn restrictions require regular enforcement to be effective
- Residents, Dallas Police and Fire Departments may be inconvenienced by the turn restrictions

### Eligibility Considerations

- Documented cut-through traffic should represent 25 percent or more of the total daily street volume
- History of crashes that can be corrected by a turn restriction



Reduced Speed ★★☆☆

Enhanced Safety ★★☆☆

Reduced Volume ★★☆☆

Maintenance ★★☆☆

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## Speed Limit Radar Unit Signs

Speed limit radar unit signs are supplemental traffic control devices which inform motorists of their operating speed on a digital display.



### Advantages

- Alerts motorists of their operating speed, which may encourage them to slow down

### Disadvantages

- Compliance may only be temporary
- Radar unit signs may require regular enforcement to be effective
- Radar unit signs will require continuous maintenance

### Eligibility Considerations

- Measured operating speed is 10 mph or more over the posted speed limit
- Must have sufficient right-of-way for placement of the unit
- May be used in conjunction with school zones

Reduced Speed      ★★☆☆  
Enhanced Safety    ★★☆☆

Reduced Volume    ☆☆☆  
Maintenance       ★★☆☆

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## Flashing Beacons

A flashing beacon operates in a flashing mode to supplement regulatory or warning signs in order to increase awareness.



### Advantages

- Draws attention to regulatory or warning sign, such as reduced speed school zone signs
- For school zones, it informs motorists when the reduced speed zone is in effect

### Disadvantages

- Solar panel powered devices cannot be placed close to trees
- Must have sufficient right-of-way for placement of the unit

### Eligibility Considerations

- School zone locations
- Pedestrian crossing locations
- Overhead flashing beacons are required for school zones on streets with two or more lanes of traffic in each direction or posted speed limit greater than 35 mph

Reduced Speed ★★☆☆

Enhanced Safety ★★★★★

Reduced Volume ★☆☆☆

Maintenance ★★☆☆

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## Two Way Conversion

Converting one way streets to two way can increase “friction” on a street, slow traffic down, improve commercial property visibility and make navigation through the neighborhood easier for motorists

### Advantages

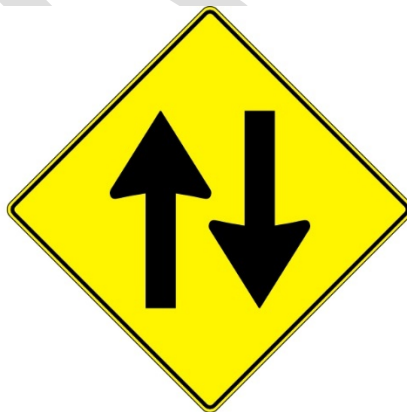
- More convenient navigation through neighborhood
- Slower traffic speeds
- Predictable traffic flow – no possibility of driving in the wrong direction

### Disadvantages

- Possibility of more through traffic

### Eligibility Considerations

???



Reduced Speed      ★★☆☆  
Enhanced Safety    ★★☆☆

Reduced Volume    ☆☆☆  
Maintenance       ★★☆☆

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