Martinez, Ruben

From:	Sven <saknauth@gmail.com>
Sent:	Monday, November 16, 2020 12:38 PM
To:	PublicComment-AutoResponse
Subject:	SPECIAL CITY COUNCIL MEETING FOR NOVEMBER 16, 2020
Attachments:	Traffic Calming ePrimer - Safety _ Federal Highway Administration.PDF

Hi,

Please include the attached pdf and comments in the meeting record as referenced in the comment provided to be read out loud for the revised speed hump policy.

https://safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module3.cfm

Before recommending the revised speed hump policy, please consider that while humps slow some traffic, they also increase wear & tear on vehicles and increase vehicle emissions. Living in front of a speed hump I can tell you from experience that they slow those doing 5-over the limit to 5-under, but people doing 40 hit the bumps without a care in the world. The constant sounds of vehicles braking and accelerating, as well as the scrapes of body panels hitting the bump are not a great tradeoff for slowing some speeders.

I submitted a public comment at the transportation advisory commission, and in response staff stated that although speed humps are just one tool in their tool chest and not always the preferred solution, it is the only traffic calming measure that residents have a defined process and allocated budget for requesting. Instead of just increasing the streets eligible for speed humps I request that you also consider expanding the allowed requests to other traffic calming measures. Chicanes, lateral shifts, corner extensions, and chokers can also effectively slow traffic without the negative effects of humps. They can also increase urban greenspace and urban forest, stormwater infiltration, and beautify a neighborhood. If you are already expanding the request system, it makes sense to bring it up to date to allow all the modern traffic calming measures to be considered.

For example, Navarro Ave just north of the city boundary has a wider parkway (narrower street) and a lateral shift. This effectively slows cars without bumps. The east-west streets, between Fair Oaks and Lincoln, also see less speeding in my experience than the north/south streets since they are more narrow so that cars have to slow to let others pass. Chicanes and lateral offsets can also increase greenspace making it more pleasant to walk, as well as increasing separation between cars and pedestrians.

If you are interested, the federal highway administration has a fantastic showcase of all the different traffic calming options and where they can be deployed.
https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Thanks for taking the time to listen to my concerns,

Kind Regards,
Sven

U.S. Department of Transportation
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590
202-366-4000

Safety

Traffic Calming ePrimer – Module 3

Toolbox of Individual Traffic Calming Measures

For each of the traffic calming measures covered in this ePrimer, the following four sections are provided:

1. A description of the measure and its general purpose,
2. An overview of the setting where each measure is appropriate,
3. A summary that highlights the key effects and issues associated with the measure that are essential to address, and
4. A sampling of additional key design considerations for the measure.

[The descriptions of various traffic calming measures on the following pages mention the need for appropriate signs and pavement markings. The MUTCD, supplemented by state and local practice, should be the source for specific traffic control device guidance.]

3.1 Applicability and Acceptability of Individual Traffic Calming Measures

Table 3.1 presents a simplified summary of the potential applicability of each individual traffic calming measure and the likelihood of its acceptability for a particular setting. The screening is presented in terms of the location (intersection or roadway segment), the roadway functional classification, and other attributes of the roadway function (emergency services access requirements, presence of a transit route). It is critical to remember that the applicability of a particular traffic calming measure has as much to do with the problem to be addressed as the physical setting elements listed in the table.

A more comprehensive assessment of measure applicability is presented in a distinct table for each individual measure. Table 3.1 can be used as an initial screening tool to identify whether a particular traffic calming measure has a likely fatal flaw in terms of its overall applicability and acceptability. For example, the table illustrates that neither a speed hump nor traffic circle is an appropriate measure along a thoroughfare or major street.

Table 3.1. Likelihood of Acceptability of Traffic Calming Measure

Traffic Calming Measure	Segment or Intersection	Functional Classification			Street Function	
		Thoroughfare or Major	Collector or	Local or Local Residential	Emergency Access	Transit Route

			Residential Collector			
Horizontal Deflection						
Lateral Shift	Segment	3	5	5	5	5
Chicane	Segment	1	5	5	3	3
Realigned Intersection	Intersection	1	5	5	5	5
Traffic Circle	Intersection	1	3	5	3	3
Small Modern & Mini-Roundabout	Intersection	3	3	5	5	5
Roundabout	Intersection	5	3	1	5	5
Vertical Deflection						
Speed Hump	Segment	1	5	5	1	3
Speed Cushion	Segment	1	5	5	5	5
Speed Table	Segment	3	5	5	1	3
Offset Speed Table	Segment	3	5	5	5	3
Raised Crosswalk	Both	3	5	5	1	3
Raised Intersection	Intersection	3	5	5	3	3
Street Width Reduction						
Corner Extension	Intersection	5	5	5	5	5
Choker	Segment	5	5	5	5	5
Median Island	Both	5	5	5	5	5
On-Street Parking	Segment	5	5	5	5	5
Road Diet	Both	5	5	3	5	5
Routing Restriction						
Diagonal Diverter	Intersection	1	3	3	1	3

Full Closure	Both	1	3	3	1	1
Half Closure	Intersection	1	5	5	3	3
Median Barrier	Intersection	3	5	5	1	3
Forced Turn Island	Intersection	3	5	5	3	3

Legend:

5 – traffic calming measure may be appropriate
3 – caution; traffic calming measure could be inappropriate
1 – traffic calming measure is likely inappropriate

Note: Refer to individual traffic calming measure section for a complete description of the appropriate application of each measure.

3.2 Cost of Individual Traffic Calming Measures

Table 3.2 presents a range of cost estimates for each individual traffic calming measure. The cost of a measure is an important consideration in its evaluation and, ultimately, selection. The wide variance in the cost estimate for each measure is due to the following five key factors:

- **Size** – the area covered by a traffic calming measure can significantly influence the cost (for example, a forced turn island at a local residential street intersection is likely to be smaller than one provided at a collector/arterial intersection);
- **Scale** – the overall project scale and number of measures constructed has a significant impact on the cost of a project (for example, the unit cost per speed hump for a single installation can be significantly more than for a series of speed humps);
- **Landscaping** – the extent and type of landscaping (and the cost of providing the appropriate environment in which to flourish) can have a wide cost range;
- **Drainage** – the addition of a traffic calming measure may influence the drainage of the roadway and improvements would be required to maintain proper roadway drainage; and
- **Utility access points** – the relocation or redesign of access to drains, valves, etc. can represent a significant cost

The Pedestrian and Bicycle Information Center provides a link to a document that also provides cost estimates for a variety of measures that encompass pedestrian and bicycle infrastructure improvements, including some traffic calming measures (www.pedbikeinfo.org/planning/facilities.cfm).

Table 3.2. Approximate Implementation Cost for a Traffic Calming Measure

Traffic Calming Measure	Typical Cost for Implementation[1]			Comments
	Low (<$6k)	Medium ($6k-$15k)	High (>$15k)	
Horizontal Deflection				

Lateral Shift		Medium		
Chicane		Medium		Between $8,000 and $10,000 for typical small chicane with simple design; as much as $25,000 for replacement of existing curbing or modifying drainage structures
Realigned Intersection		Medium		
Traffic Circle		Medium		Typical unit cost around $15,000 with common range between $10,000 and $25,000[2]
Mini-Roundabout		Medium	High	Typical range between $15,000 and $60,000
Roundabout			High	Typical range between $150,000 and $2 million
Vertical Deflection				
Speed Hump	Low			Typical unit cost ranges between $2,000 and $4,000; costs ranging between $1,000 and $8,000 have been reported[3]
Speed Cushion	Low			Typical cost for set of rubber cushions ranges between $3,000 and $4,000; for asphalt set, range between $2,500 and $6,000[4]
Speed Table		Medium		Requires more material than speed hump; typical unit cost ranges between $2,500 and $8,000
Offset Speed Table		Medium		
Raised Crosswalk		Medium		Typically requires more material than a speed hump; cost ranges between $4,000 and $8,000
Raised Intersection			High	Wide range for typical cost – between $15,000 and $60,000 (and higher depending on width of intersecting roads and drainage requirements)
Street Width Reduction				
Corner Extension		Medium	High	If drainage is not an issue, typical cost for four corner extensions ranges between $8,000 and $12,000; if drainage alteration is required, cost can increase to $40,000
Choker		Medium	High	Typical cost ranges between $10,000 and $25,000, depending on size of choker and drainage considerations
Median Island		Medium	High	Typical cost can range between $15,000 and $55,000; cost is direct function of length and width of median island[5]

On-Street Parking	Low			
Road Diet	Low			Requires pavement markings, signs, and potential reconfiguration or adjustment of signals at intersections
Routing Restriction				
Diagonal Diverter	Low	Medium		Typical cost for single diverter with limited drainage modifications is around $6,000; costs can vary widely based on size, drainage, materials, and landscaping
Full Closure		Medium	High	Simple closure can cost less than $10,000; complex closure with drainage modifications can cost as much as $100,000
Half Closure	Low	Medium	High	Cost can range from $3,000 for asphalt, pre-cast curb bulb with no drainage modifications to $40,000 for measure fully integrated into streetscape with poured-in-place concrete corner extensions, landscaping and drainage modifications
Median Barrier & Forced Turn Island	Low	Medium	High	Typical cost can range between $1,500 and $20,000, depending on length and width of barrier, construction materials, and landscaping[6]

[1] Includes costs for design, materials, and construction; does not include right-of-way costs

[2] Source: Seattle WA experience

[3] Source: ITE *Guidelines for the Design and Application of Speed Humps*

[3] Source: ITE Journal article "New Traffic Calming Device of Choice"

[5] Source: Costs for Pedestrian and Bicyclist Infrastructure Improvements, Pedestrian and Bicycle Information Center (PBIC), Robert Wood Johnson Foundation's Active Living Research Program, Federal Highway Administration

[6] Source: Costs for Pedestrian and Bicyclist Infrastructure Improvements

3.3 Temporary Versus Permanent Installation

It may be appropriate to install a temporary version of a traffic calming measure under certain circumstances. Examples include:

- When there is a need to verify that the location, configuration, and geometry of a traffic calming measure will produce the desired effect (e.g., vehicle speed change, motorist compliance, vehicle maneuverability), before investment in a permanent feature
- When there are insufficient funds available for permanent construction

- When there is a desire to gauge community reaction to, or opinion of, the measure before investment in a permanent feature; or
- A short-term initiative is needed to provide traffic calming on a local street during a major traffic generating event or nearby construction on the highway system.

Typical materials used in a temporary traffic calming feature include delineators, precast concrete curbing, removable rubber speed humps, precast or wood planters, rolled asphalt, pavement markings and signage.

The potential effectiveness of a traffic calming measure can likely be affected by the quality of its design and implementation. Therefore, the limitations introduced in a temporary installation may likewise limit the effectiveness of the measure.

3.4 Lateral Shift

Description and General Purpose

A lateral shift is a realignment of an otherwise straight street that causes travel lanes to shift in one direction. The primary purpose of a lateral shift is to reduce motor vehicle speed along the street. A typical lateral shift separates opposing traffic through the shift with the aid of a median island. Without the island, a motorist could cross the centerline in order to drive the straightest path possible, thereby reducing the speed reduction effectiveness of the lateral shift. In addition, a median island reduces the likelihood a motorist will veer into the path of opposing traffic, further improving the safety of the roadway for motorists. The schematic in Figure 3.4.1 illustrates the lateral shift concept. Figure 3.4.2 shows a lateral shift in conjunction with on-street parking.

> *[A chicane is a variation of a lateral shift and is treated as a separate type of measure in this ePrimer; a chicane shifts alignment more than once.]*

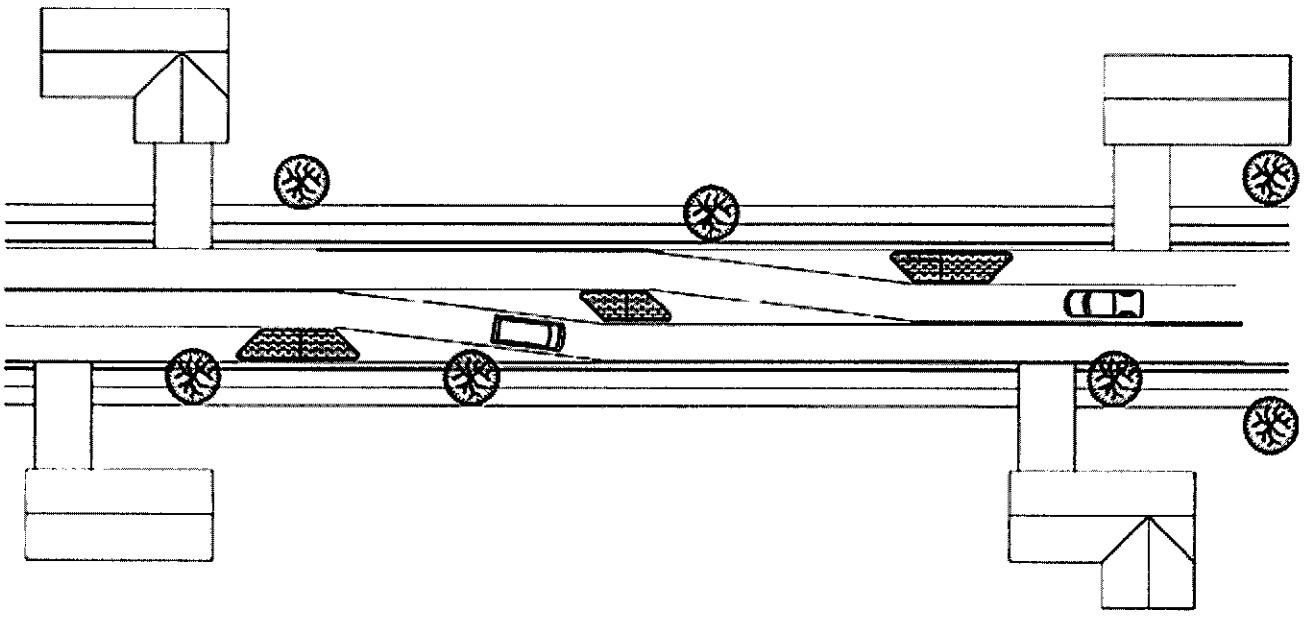

Figure 3.4.1. Lateral Shift Schematic
(Source: Delaware Department of Transportation)

Figure 3.4.2. Lateral Shift with On-Street Parking
(Source: Google Street View)

APPROPRIATE APPLICATION

Appropriate Application – Lateral Shift	
Type of Street	With the proper degree of horizontal curvature, can be an appropriate traffic calming measure for a local road, a collector road or even an arterial roadway (or major thoroughfare), where high traffic volumes and high-posted speeds preclude many of the other traffic calming measures Can be appropriate in both an urban and suburban setting
Intersection or Roadway Segment	Applicable only midblock (see photograph in Figure 3.4.3)
Roadway Cross-Section	Appropriate for use on a single-lane, one-way street and on a two-lane, two-way street Can be installed on a roadway with either an open or urban cross-section (i.e., curb and gutter) Can be applied on a cross-section both with and without a bicycle facility
Speed Limit	Can be appropriate across a range of speed limits, provided the lateral shift has an adequate taper and an adequate shy distance is provided between the travel lane and the lateral shift curb In practice, maximum speed limit is typically 35 mph

Vehicle Traffic Volume	Can be appropriate at all levels of traffic volume
Emergency Route	Can be appropriate along a primary emergency vehicle route or on a street that provides access to a hospital or emergency medical services A low narrow median can be straddled by a fire truck if needed
Transit Route	Can be appropriate along a bus transit route
Access Route	Can be appropriate along a primary access route to a commercial or industrial site
Grade	Can be installed on a crest vertical curve only if there is adequate stopping sight distance or warning signs are provided Maximum acceptable grade for a street with a lateral shift should be established based on local standards and experience; as an example, Delaware recommends a maximum grade of 6 percent

Figure 3.4.3. Midblock Lateral Shift
(Source: Google Street View)

EFFECTS AND ISSUES

Effects and Issues – Lateral Shift	
Vehicle Speed	Can slow traffic by encouraging a motorist to moderate vehicle speed through the horizontal deflection; amount of speed reduction (or the final speed) depends on the length of the alignment shift, as well as the volume and distribution of traffic

	Less effective in reducing vehicle speed (1) when the volume of traffic is significantly higher in one direction than the other or (2) when volumes are so low that the likelihood of a motorist encountering an opposing motorist within the lateral shift zone is low Expected speed reduction through a lateral shift is typically less than that observed through a chicane
Vehicle Volume	Amount of traffic diversion depends on the amount of speed reduction, the increased travel time for non-local traffic and the availability of a quicker, alternative route As a single installation, there is little traffic diversion from the street
Pedestrian Safety and Mobility	Can be a location for a crosswalk
Bicyclist Safety and Mobility	On a street with a bicycle lane or substantial bicycle traffic, should either (1) provide a bypass lane for a bicyclist, separated from the main travel lane by a curb extension or (2) provide shared lane markings (sometimes known as a sharrow) and "bike may use full lane" signage
Motorist Safety and Mobility	Likely to have minimal effect on motorist mobility and safety Minimal impact on motorist comfort
Emergency Vehicle Safety and Mobility	Retains sufficient width to allow for the continued flow of emergency vehicles Refer to Module 5 for additional discussion
Large Vehicle Safety and Mobility	Retains sufficient width to allow for the continued flow of large vehicles like combination trucks Refer to Module 5 for additional discussion
Accessibility of Adjacent Property	May require removal of some on-street parking and may, therefore, slightly reduce the accessibility of adjacent property
Environment	Physical features can also be used as a landscaping opportunity (as shown in Figure 3.4.4)
Design Issues	Attention needed to avoid need to relocate drainage features (catch basins, concrete channels, valley gutters, inlets, and trench drains) Should not require relocation of above- and below-ground utilities

Figure 3.4.4. Lateral Shift Downstream of Signalized Intersection
(Source: Ian Lockwood)

ADDITIONAL DESIGN CONSIDERATIONS

A typical lateral shift separates opposing traffic with a median island (as illustrated in the sample design in Figure 3.4.5). Without a median island, a motorist can cross the centerline to negate the designed horizontal deflection and maintain a higher travel speed.

The expected level of speed reduction is a function of the amount of the lateral shift and the angle of deflection. A lateral shift of at least one-lane width and an angle of deflection of at least 45 degrees is a common target.

A lateral shift can be created by means of either a curb extension or an edge island. A curb extension offers a better opportunity for aesthetic enhancement through landscaping. But an edge island can leave an existing drainage channel open and tends to be less costly to construct.

Edge line tapers should conform to the MUTCD. The curb extension or edge island should have 45 degree tapers to reinforce the edge lines.

A curb extension or edge island that forms the lateral shift should have a vertical element (e.g., signs, landscaping), a reflector or some measure to draw attention to it.

Either a barrier or mountable curb can be used on an island that forms a lateral shift. The use of a mountable curb is more forgiving to motorists and is acceptable because the island is not expected to serve as a pedestrian refuge.

For a low speed street, the mountable curb may be placed at the edge of the travel lane rather than offset by 1 foot or more as is required for a barrier curb.

A midblock location near a streetlight is preferred.

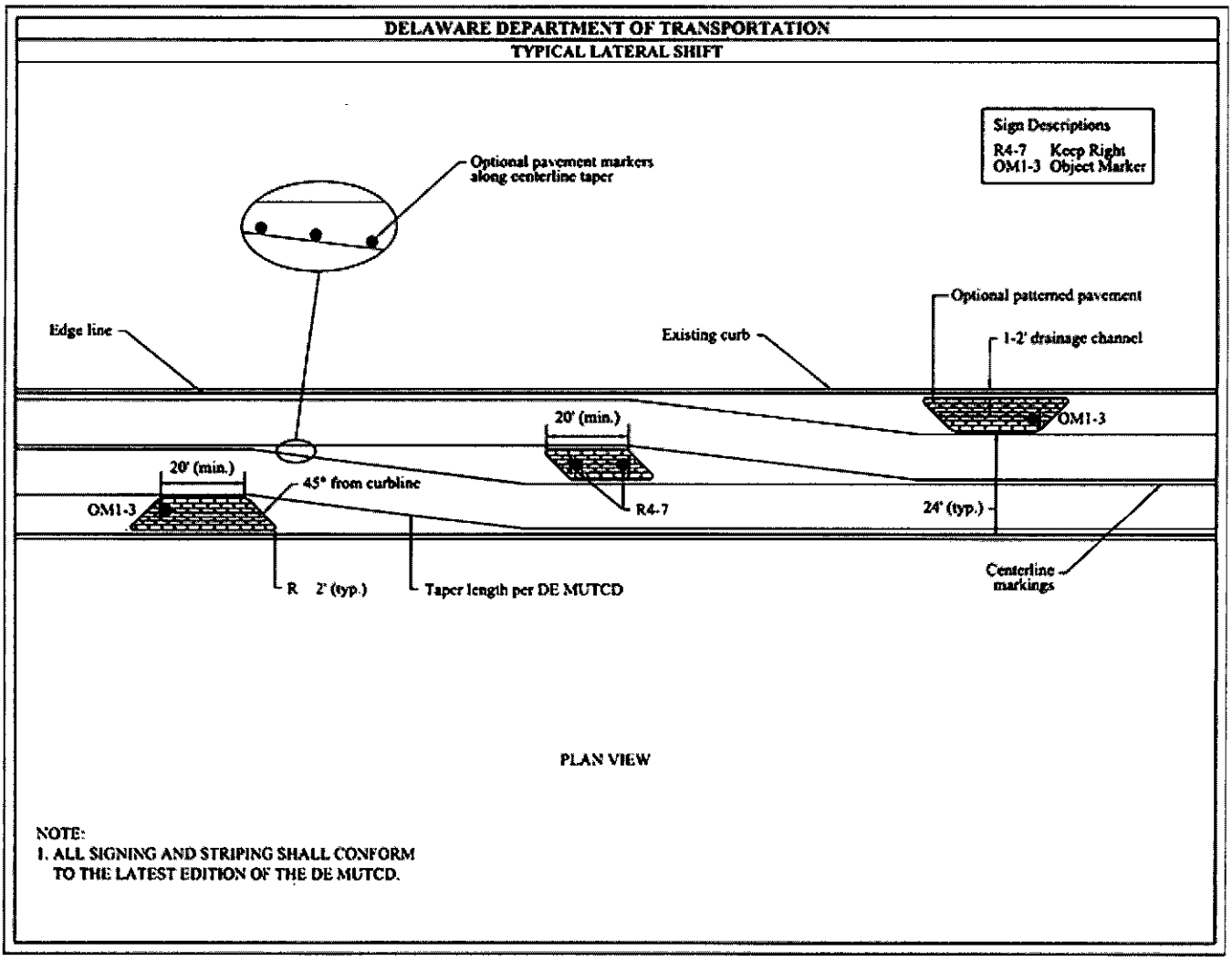

Figure 3.4.5. Sample Design for Lateral Shift
(Source: Delaware Department of Transportation)

3.5 Chicane

DESCRIPTION AND GENERAL PURPOSE

A chicane is a series of alternating curves or lane shifts that are located in a position to force a motorist to steer back and forth out of a straight travel path. The curvilinear path is intended to reduce the speed at which a motorist is comfortable travelling through the feature. The lower speed could in turn result in a traffic volume reduction.

> *[A chicane is also known as a deviation, serpentine, reversing curve, or twist.]*
>
> *[A lateral shift is a variation of the chicane and is treated as a separate traffic calming measure in this ePrimer. A lateral shift involves only a single shift in the travelway alignment.]*

The chicane curves can be created with a curb extension that alternates from one side of the street to the other.

A chicane-like effect can also be achieved by alternating on-street parking from one side of the street to the other. Parking can create the chicane effect as long there is sufficient demand so that a majority of the on-street spaces are occupied during the times when vehicle speed is perceived to be a safety issue for pedestrians. Parallel parking, angled parking, or a combination may be used. Or it can also include landscaped curb extensions to beautify the street, screen the parked vehicles, and create protected parking bays.

> *[Three field studies of seven chicanes measured reductions between 3 and 9 mph for 85th percentile speeds (Source: FHWA, Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed, July 2014)*
> *http://www.safety.fhwa.dot.gov/speedmgt/ref_mats/eng_count/2014/reducing_speed.cfm]*

The schematic in Figure 3.5.1 illustrates the chicane concept. Figure 3.5.2 shows an example of a chicane.

A stop-animation film that demonstrates a chicane can be accessed at the following hyperlink:

http://www.streetfilms.org/chicane-animated-traffic-calming/ (Source: Streetfilms)

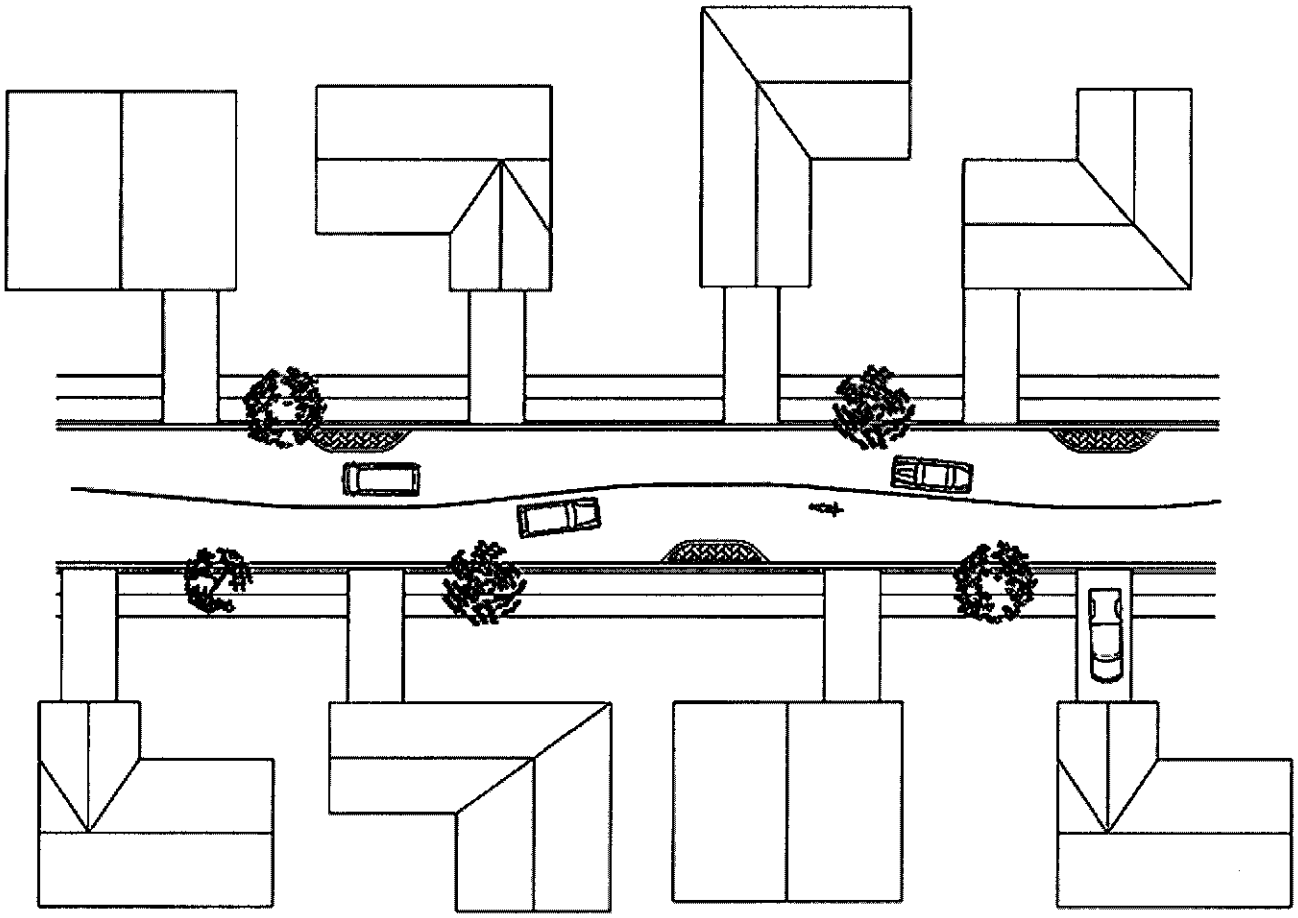

Figure 3.5.1. Chicane Schematic
(Source: Delaware Department of Transportation)

Figure 3.5.2. Chicane with Median
(Source: Scott Wainwright)

APPROPRIATE APPLICATION

Appropriate Application – Chicane	
Type of Street	With the proper degree of horizontal curvature, can be appropriate for a local road or low-volume collector Can be appropriate in both an urban and suburban setting
Intersection or Roadway Segment	Applicable midblock or the entire block if the block length is short (see Figure 3.5.3 for an example)
Roadway Cross-Section	Can be used on a one-lane, one-way and two-lane, two-way road Can be installed with either an open or urban cross-section (i.e., curb and gutter) Can be applied both with and without a bicycle facility
Speed Limit	Can be appropriate if the speed limit is typically 35 MPH or less; in Delaware the recommended speed limit maximum is 25 mph

Vehicle Traffic Volume	Can be appropriate if traffic volume is relatively low; Pennsylvania sets a maximum of 3,500 vehicles per day Most effective in reducing speeds if traffic volumes are relatively balanced in each direction
Emergency Route	Can be appropriate along a primary emergency vehicle route or on a street that provides access to hospital/emergency medical services, provided traffic volumes are low enough to allow an emergency vehicle to straddle the street centerline
Transit Route	Can be appropriate along a bus transit route[7]
Access Route	Not typically appropriate along a primary access route to a commercial or industrial site
Grade	Can be installed on a crest vertical curve only if there is adequate stopping sight distance or warning signs are provided Maximum acceptable grade should be based on local standards and experience; examples include Pennsylvania with maximum grade of 8 percent and Delaware with a 6 percent maximum

[7] As a transit vehicle travels through a chicane, the vehicle motion can decrease passenger comfort or contribute to slips or falls for standing transit passengers. Loose personal articles can also be dislodged within a transit vehicle.

Figure 3.5.3. Chicane between Intersections
(Source: Kristen Langley)

EFFECTS AND ISSUES

Effects and Issues – Chicane	
Vehicle Speed	Can slow traffic by encouraging a motorist to moderate vehicle speed through a series of horizontal deflections; amount of speed reduction (or the final speed) depends on the length of the alignment shift, as well as the volume and distribution of traffic Less effective in reducing vehicle speed (1) when the volume of traffic is significantly higher in one direction than the other or (2) when volumes are so low that the likelihood of a motorist encountering an opposing motorist within the chicane zone is low May still permit speeding by motorists who cut a straight path across the center line; placement of a median island to channel traffic may be necessary
Vehicle Volume	As a single installation, there is little traffic diversion from the street
Pedestrian Safety and Mobility	Typically, not a preferred location for a crosswalk because motorist attention should be focused on the horizontal deflection
Bicyclist	Can narrow the travelway and force a bicyclist and motor vehicle to share a

Safety and Mobility	travel lane or provide shared lane markings (sometimes known as a sharrow) within the chicane, with appropriate signage
Motorist Safety and Mobility	Likely to have minimal effect on motorist mobility and safety Minimal impact on motorist comfort Aggressive motorist may view a chicane as an "obstacle course" with sharp cornering, braking and acceleration
Emergency Vehicle Safety and Mobility	Should retain sufficient width to allow for the continued easy flow of emergency vehicles; should have little effect on emergency response times Refer to Module 5 for additional discussion
Large Vehicle Safety and Mobility	Retains sufficient width to allow for the continued easy flow of large vehicles Refer to Module 5 for additional discussion
Accessibility of Adjacent Property	May require removal of some on-street parking within the chicane and may, therefore, reduce the accessibility of adjacent property Placement needs to consider the accessibility of driveways
Environment	Opportunity for landscaping Attention needs to be given to appearance to counter potential for visual clutter
Design Issues	Attention needed to avoid need to relocate drainage features such as catch basins, concrete channels, valley gutters, inlets, and trench drains (see Figure 3.5.4) Should not require relocation of above- and below-ground utilities

Figure 3.5.4. Chicane Designed to Retain Drainage Features
(Source: Google Street View)

ADDITIONAL DESIGN CONSIDERATIONS

The typical chicane separates opposing traffic by means of double solid yellow lines with recessed pavement markers. Even this may not be enough to discourage some motorists from cutting across the centerline to minimize deflection. To discourage this behavior, a raised median may be installed. The median may be narrow and mountable without landscaping. An alternative, if right-of-way permits, is to provide a wider and landscaped median.

A chicane can be created by means of either curb extensions or edge islands (an example application is shown in Figure 3.5.5). An edge island can leave an existing drainage channel open and tends to be less costly to construct than a curb extension. The typical chicane uses trapezoidal islands because experience has demonstrated the shape is more effective in reducing speeds than a semi-circular shape.

A curb extension or edge island that forms a chicane should have vertical elements (e.g., signs, landscaping) to draw attention to it.

The edge line taper should conform to the MUTCD taper formula. A curb extension or edge island with a 45 degree taper tends to reinforce the edge lines.

A mountable curb should be used on a curb extension or edge island that forms a chicane. A mountable curb is more forgiving than a barrier curb for a motorist that traverses the chicane and the edge island or curb extension that form the chicane is not an appropriate location for a pedestrian crossing (and therefore should not serve as a pedestrian refuge). For a low-speed roadway, a mountable curb may be placed at the edge of the travel lane rather than offset by 1 foot or more as with barrier curbs.

A sample chicane design is illustrated in Figure 3.5.6.

Figure 3.5.5. Chicane in Residential Area
(Source: Scott Wainwright)

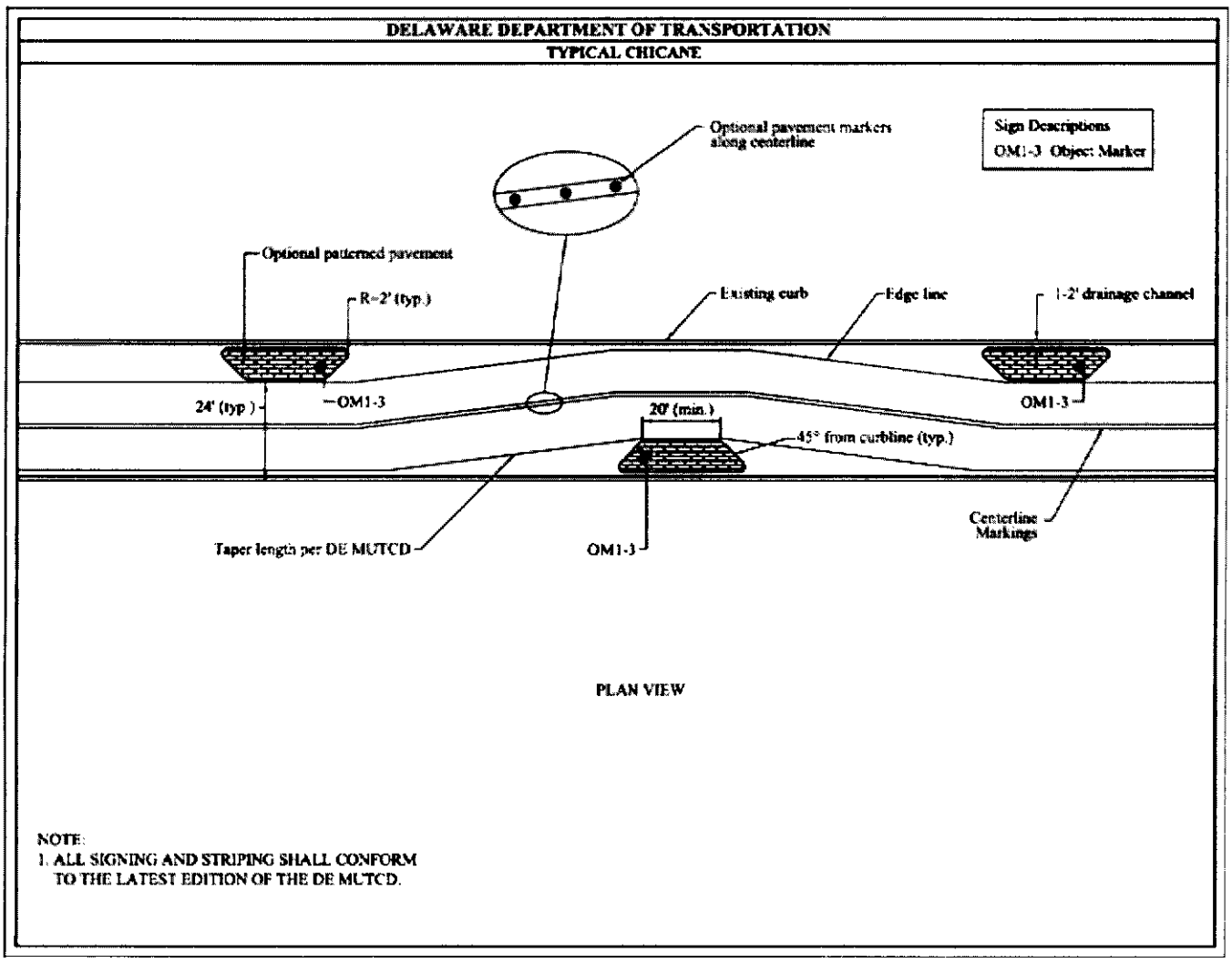

Figure 3.5.6. Sample Design for Chicane
(Source: Delaware Department of Transportation)

3.6 Realigned Intersection

DESCRIPTION AND GENERAL PURPOSE

For the purpose of traffic calming, a realigned intersection is the reconfiguration of an intersection with perpendicular angles to have skewed approaches or travel paths through the intersection (as illustrated in the Figure 3.6.1 schematic). The expectation is that these physical features will remove or discourage fast vehicle movements through the intersection.

The most common application is the conversion of a T-intersection with straight approaches into curving streets meeting at right angles. The result is the removal of all straight paths through the intersection.

[A realigned intersection is sometimes called a modified intersection]

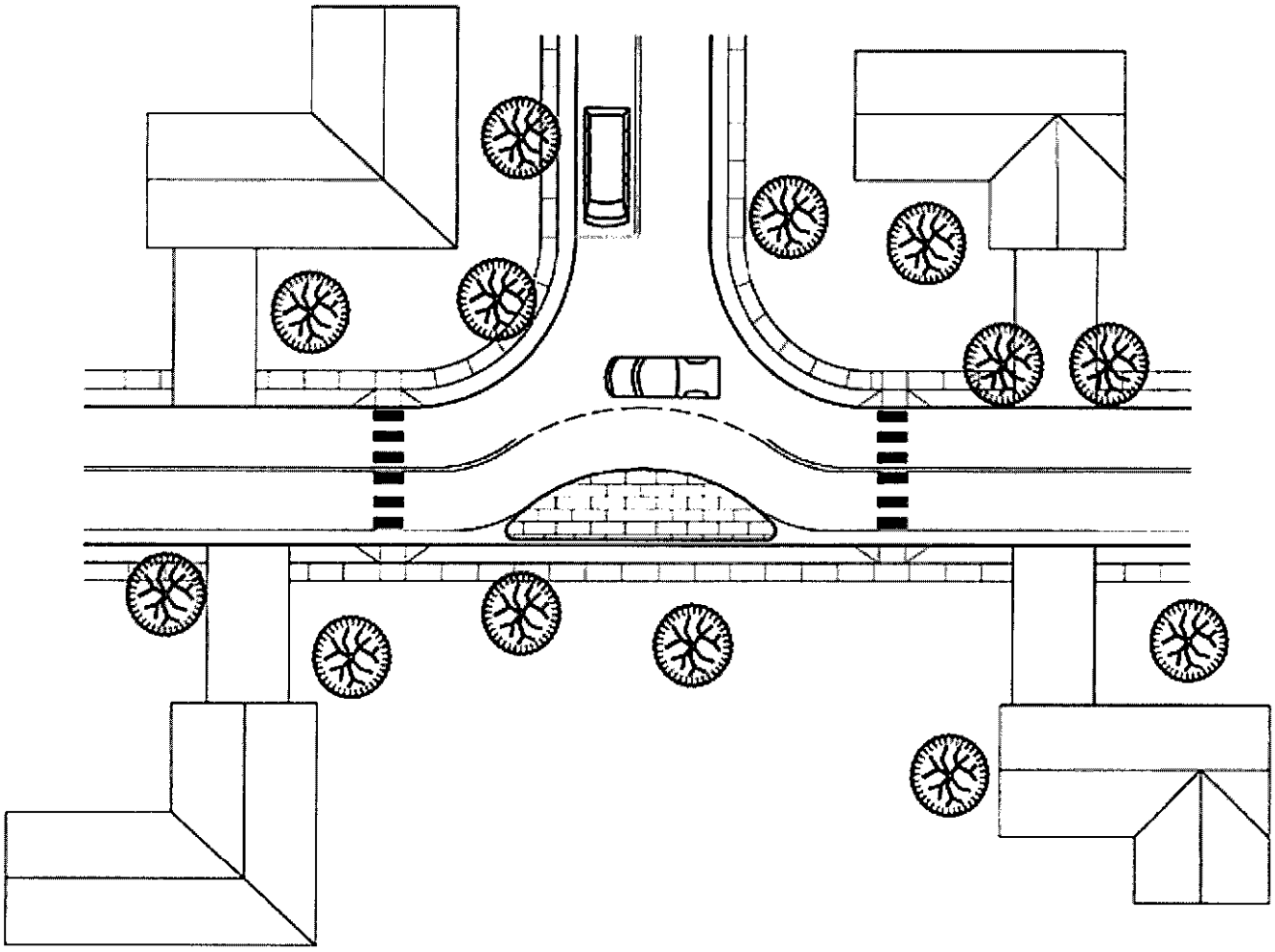

Figure 3.6.1. Realigned Intersection Schematic
(Source: Delaware Department of Transportation)

APPROPRIATE APPLICATION

Appropriate Application – Realigned Intersection	
Type of Street	Appropriate for collector, local, and subdivision streets (see Figure 3.6.2) Can be appropriate in both an urban and suburban setting
Intersection or Roadway Segment	Typically applicable only at a T-intersection
Roadway Cross-Section	Can be used on both one-way and two-way streets Most commonly installed on a roadway with an urban cross-section (i.e., curb and gutter); could be acceptable for an intersection with shoulders only Can be applied both with and without a bicycle facility Can be applied on a roadway with or without on-street parking
Speed Limit	Should be in line with the nature of the street network; 25 mph speed limit

	is the most common maximum
Vehicle Traffic Volume	Not typically a direct consideration in determination of applicability
Emergency Route	Can be appropriate along a primary emergency vehicle route or street that provides access to a hospital or emergency medical services if appropriate turning radii can be provided
Transit Route	May be appropriate along a bus transit route if adequate turning radii can be provided
Access Route	Typically not appropriate along primary access route to a commercial or industrial site if adequate turning radii are not provided
Grade	Can be installed on a crest vertical curve only if there is adequate stopping sight distance or warning signs are provided Maximum grade should comply with local standards and criteria; as an example, Delaware uses a maximum grade of 6 percent

Figure 3.6.2. Realigned Intersection in Residential Area
(Source: Google Street View)

EFFECTS AND ISSUES

Effects and Issues – Realigned Intersection	
Vehicle Speed	Slows traffic by introducing horizontal deflection to an otherwise straight path of travel (see Figures 3.6.3 and 3.6.4)

	Can reduce speeds within intersection limits between 5 and 13 mph and between 1 and 6 mph in the vicinity
Vehicle Volume	As a single installation, there is little traffic diversion from the street
Pedestrian Safety and Mobility	Introduction of stop- or signal-control reduces pedestrian/vehicle conflicts and improves pedestrian safety Median island can be placed on the intersection approach and serve as a pedestrian refuge (if its width is at least six feet)
Bicyclist Safety and Mobility	No direct effect on bicyclists
Motorist Safety and Mobility	Likely introduces delay on the major (i.e., realigned) leg of the intersection Minimal impact on motorist comfort
Emergency Vehicle Safety and Mobility	Little effect on emergency vehicle safety or on emergency response time Refer to Module 5 for additional discussion
Large Vehicle Safety and Mobility	Little effect on a large vehicle, provided the realigned curb has an adequate turn radius Refer to Module 5 for additional discussion
Accessibility of Adjacent Property	Should not require the removal of on-street parking
Environment Could be used as a landscaping opportunity	
Design Issues	Attention needed to avoid need to relocate drainage features (catch basins, concrete channels, valley gutters, inlets, and trench drains) Should not require relocation of above- and below-ground utilities