Loudoun County Department of Transportation and Capital Infrastructure

Residential Traffic Management Guide

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LOUDOUN COUNTY VIRGINIA | Transportation and Capital Infrastructure

Residential Traffic Management Guide

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LIST OF ACRONYMS

AADT	Annual Average Daily Traffic
BOS	Board of Supervisors
CA	Civic Association
DFREM	Department of Fire, Rescue & Emergency Management
DGS	Department of General Services
DTCI	Department of Transportation and Capital Infrastructure
HOA	Homeowners Association
LCPS	Loudoun County Public Schools
LCSO	Loudoun County Sheriff's Office
LEx	Loudoun Express Request
LMIS	Land Management Information System
MPH	Miles Per Hour
PMSD	Pole-Mounted Speed Display Sign
SRO	School Resource Officer
TMC	Turning Movement Count
VDOT	Virginia Department of Transportation
WFC	Watch for Children Sign

Residential Traffic Management Guide

1. INTRODUCTION

Loudoun County, Virginia, is home to more than 400,000 residents with neighborhood communities varying in size, make-up, and physical design characteristics. The county has experienced significant population growth in the recent 20 years and continued growth is expected with the future Silver Line Metrorail extension to Loudoun County by 2020. This residential growth has led to an increase in vehicular travel on local streets in residential communities.

The Department of Transportation and Capital Infrastructure (DTCI) is responsible for addressing resident concerns regarding speed, safety, noise, and overall quality of life related to vehicular traffic on neighborhood streets. The Virginia Department of Transportation (VDOT) owns and maintains public roads including the local connectors that allow for local trips within communities or between adjacent developments. DTCI works closely with VDOT and community stakeholders to address residential traffic concerns and implement traffic management and safety measures on local, state-maintained streets.

DTCI has experienced an increase number of traffic-related requests from varying residential communities with different challenges and identified the need for a streamlined and consistent traffic management process across the county.

The *Residential Traffic Management Guide* is a tailored document to meet the county's need for consistency and managing expectations across various communities with defined processes while adhering to VDOT guidance. The document promotes an organized approach to identify and develop improvements using a uniform set of criteria for local, state-maintained streets. The process is based on citizen and stakeholder involvement as well as technical analyses in problem identification and problem solving.

1.1 Purpose

The purpose of the *Residential Traffic Management Guide* is to:

- Define processes available to identify neighborhood traffic concerns associated with speed and volume
- Identify the appropriate measures to mitigate traffic concerns
- Manage expectations for the various parties involved

This county-specific guide serves as a resource for staff, stakeholders, and communities. The content adheres to VDOT guidance and does not circumvent the state's requirements. Instead, this document expands upon the VDOT guidance and defines certain thresholds for staff to apply for the purposes of consistency and the prioritizing project requests.

As of 2019, the guide primarily focuses on the *Residential Traffic Calming Program* and the *Residential Cut-Through Traffic Program*. Each program is based on guidance from VDOT and relies on participation

from the community and various stakeholders to identify appropriate measures to mitigate traffic concerns. This guide provides an overview of the programs, processes, resources, and stakeholder involvement. It serves as a tool for county staff, residents, and stakeholders responsible for addressing traffic concerns in the local community. The following resources were used to develop content:

- **VDOT Traffic Calming Guide for Neighborhood Streets (2018)** provides guidance that Loudoun County applies to assess speeding concerns and implement appropriate measures.

- **VDOT Residential Cut-Through Traffic Policy (May 1996)** provides guidance for studying concerns of cut-through traffic on local residential streets and implementing recommended measures.

This document may be updated on a biennial basis to include revisions from VDOT or further enhancements identified by DTCI.

Residential Traffic Calming Program

A typical concern of residents is speeding along neighborhood streets. Motorists that exceed the posted speed limit along neighborhood streets often include neighborhood residents and nonresidents. While some motorists exceed the posted speed limit, other motorists find themselves invited to exceed the posted speed limit because of the road's design features. Such features may include excessively wide pavement or straight sections of the road.

Excessive traffic speeds can threaten a neighborhood's feeling of safety. The community may develop concerns about walking or biking on the street. Traffic calming measures provide solutions to address speeding concerns and consider streets as multimodal links.

The *Residential Traffic Calming Program* seeks to reduce vehicle speeds through a combination of intrusive measures and nonintrusive measures to improve the quality of life in residential areas by making walking, cycling, and other activities safer, more viable, and more enjoyable for residents. In some cases, traffic calming measures may reduce total vehicular volume. Details on the *Residential Traffic Calming Program* are available in *Chapter 2*.

Residential Cut-Through Traffic Program

Residential cut-through traffic is traffic passing through a specific residential area without stopping or without at least one trip end within the area. Motorists may travel through the community to shorten driving distances, decrease travel times, or avoid traffic signals. This traffic would be better served by the arterial or collector street system intended for through traffic, but for various reasons, such as avoiding congested arterial or preferring a more direct path, uses the residential street system.

The *Residential Cut-Through Traffic Program* addresses vehicular cut-through traffic on residential streets, where motorists use neighborhood streets to avoid congestion on main thoroughfares. Details on the *Residential Cut-Through Traffic Program* are available in *Chapter 3*.

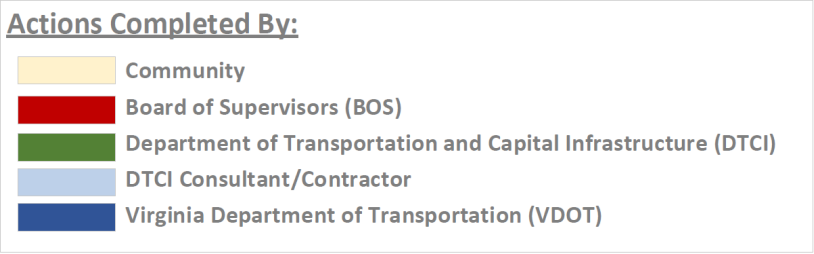
1.2 Document Overview

This chapter includes background on residential community concerns, the purpose and need for traffic management guidance, an overview of stakeholders involved in the process, and preliminary review of common residential traffic management requests.

Subsequent chapters are reserved for each individual part of the traffic management program. *Chapter 2* addresses the *Residential Traffic Calming Program* and *Chapter 3* addresses the *Residential Cut-Through Traffic Program.* Each chapter includes an overview of the traffic management program and associated steps and an 11"x17" step-by-step work flow diagram illustrating the process to address traffic concerns. Following the overall work flow diagram is a narrative describing each individual step, and figures of substeps with a matrix of responsibility for each step.

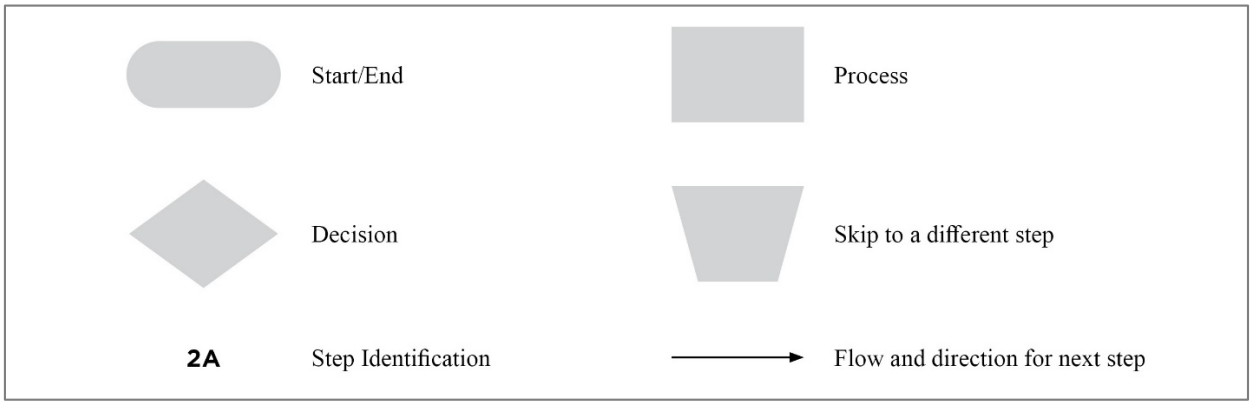
Matrices of responsibility indicate which stakeholder entity is expected to lead or support a substeps during the process of addressing traffic concerns. **A lead role indicates that the stakeholder is responsible for facilitating the actions described for the designated action. Supporting roles are expected to actively participate by attending meetings to discuss traffic concerns and providing input or feedback.** Only one lead role is denoted for each substep. Multiple stakeholders may be identified in a supporting role. Each action in the work flow diagrams are color coded to reflect the entity responsible for leading the effort. The color scheme summarized below in **Figure 1** is applied to all actions in the guide.

Figure 1. Legend of Responsibility for Actions in Traffic Management Processes



Each step is illustrated by one of four different shapes to identify where in the process the action takes place, as shown in **Figure 2**. Each step and associated substeps has a unique identification number that is referenced on subsequent pages along with responsibilities.

Figure 2. Legend of Actions in Traffic Management Processes



Appendices A and B document a toolbox of traffic management solutions for traffic calming and cut-through traffic, respectively.

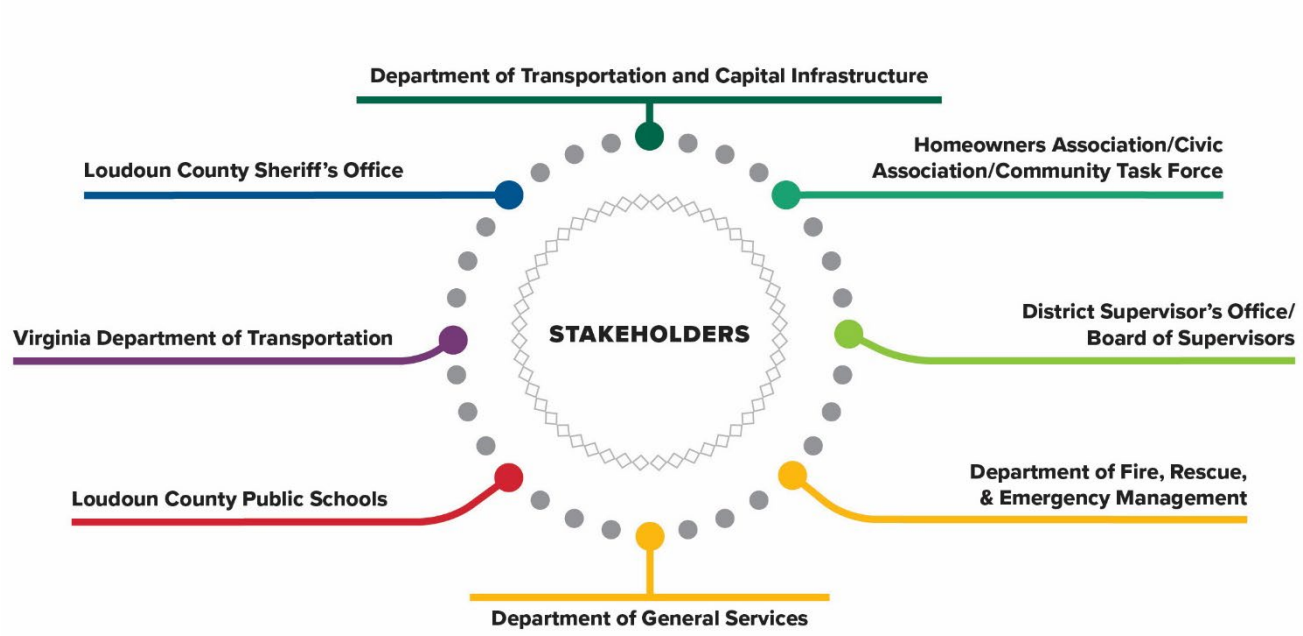
1.3 Stakeholders

Each traffic management process includes problem recognition, identification of context-sensitive solutions, citizen involvement, and coordination with several stakeholders. There is an understanding that each residential street or community is unique and will present its own set of circumstances. All-inclusive active participation from the community and stakeholders is essential to devising the best solutions for each specific need.

Stakeholders typically includes representatives from DTCI, Homeowners Associations (HOA)/Civic Association (CA)/Community Task Force, District Board of Supervisor's Office/Board of Supervisors (BOS), Department of Fire, Rescue & Emergency Management (DFREM), Department of General Services (DGS), Loudoun County Public Schools (LCPS), VDOT, Loudoun County Sheriff's Office (LCSO), and/or other interested stakeholders. If the impact of traffic calming measures could extend beyond the area of impact, representatives outside this area may be included.

Primary stakeholders are identified in **Figure 3**. This section summarizes each stakeholder's role in the residential traffic management process.

Figure 3. Stakeholders for Residential Traffic Management



Department of Transportation and Capital Infrastructure

DTCI administers the traffic calming and cut-through traffic programs. All inquiries related to residential traffic management are sent to DTCI. As described in the next section, DTCI is responsible for reviewing traffic concerns on a case-by-case basis and facilitating the processes to address concerns. DTCI performs engineering reviews, conduct speed and volume studies, identify eligibility for traffic calming or cut-through traffic programs, develop traffic calming plans, identify mitigation measures, and implement the engineering measures with the support of VDOT and other county stakeholders.

Homeowners Association/Civic Association/Community Task Force

HOAs or CAs represent the residential communities when there is a need for traffic calming or a request to address cut-through traffic on local neighborhood streets. Community members most often contact their HOA or CA to collectively express traffic concerns to DTCI or VDOT. If an HOA or CA does not exist, a Community Task Force may be established. The Community Task Force is ten (10) percent of residents in the impacted area, with a minimum of two (2) residents and a maximum of ten (10) residents. For example, if there are 300 households, ten (10) residents (one resident per household) would be required to form the community task force. The HOA, CA, or Community Task Force representatives may submit an official request to DTCI for a traffic calming study. Once a traffic calming plan is proposed, community representatives support DTCI with gathering resident input through ballot surveys.

District Supervisor's Office/Board of Supervisors

In some cases, a District Supervisor's Office is the initial point of contact for community members with a traffic-related concern. The District Supervisor's Office sends traffic-related concerns to DTCI for further evaluation. The final traffic management plan or improvement must be endorsed and funded by the BOS for improvements to advance to implementation.

Department of Fire, Rescue & Emergency Management

DFREM provides DTCI input regarding the traffic calming measures impact to designated emergency response routes. They evaluate each project on a case-by-case scenario based on the traffic calming measures and the impact to response times within a community.

Department of General Services

DGS provides support to DTCI through implementation and post construction maintenance of some agreed upon traffic calming measures.

Loudoun County Public Schools

When traffic calming requests are expressed near schools, LCPS provides DTCI input regarding proposed traffic calming measures as they align with LCPS's programs and operations. They also help identify and distribute educational materials for the community.

Virginia Department of Transportation

VDOT representatives confirm the eligibility and feasibility of streets proposed for traffic calming and the proposed traffic calming plan. VDOT also reviews and approves traffic calming plans for state-maintained roads. VDOT validates that the traffic calming plans meet state requirements and that the community support is properly assessed and documented. Once the engineering measures are implemented, VDOT evaluates the projects to make sure they are installed as agreed upon in plans.

Loudoun County Sheriff's Office

The LCSO monitors and enforces the posted speed limits on residential roadways. LCSO monitors vehicular speeds and the observance of stop signs, issuing citations in response to violations. In response to some speeding concerns, officers will conduct initial speed studies on residential roadways and provide any data collected to community members and DTCI. LCSO often installs temporary radar trailers to inform motorists of the speed they are traveling compared to the posted speed limit.

Engineering Consultant or Contractor

DTCI may use an engineering consultant or contractor for traffic data collection or assessment of mitigation measures for some residential traffic projects. Depending on the specific traffic calming measures identified in the traffic calming plan, an engineering consultant may provide professional services to develop traffic control device and/or roadway design plans. Contractors provide services for installation of traffic calming measures.

1.4 Preliminary Review of Traffic Requests

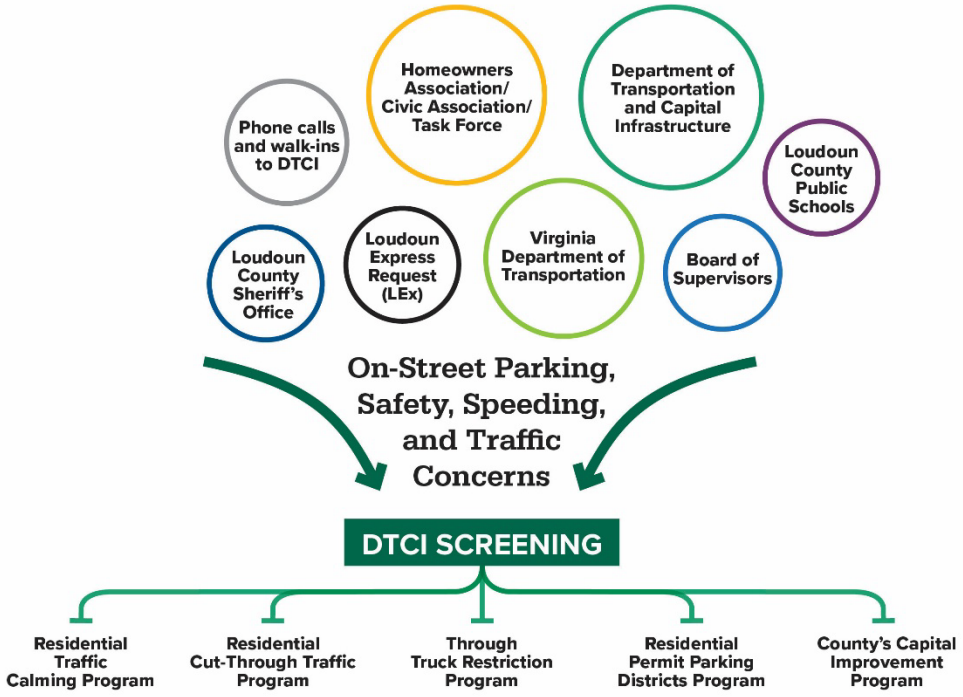
DTCI evaluates each traffic-related concern on a case-by-case basis. All residential traffic concerns related to curbside or on-street parking, safety, speeding, and traffic are submitted to DTCI for preliminary review. Residents, community groups, or organizations express residential traffic concerns through email, phone calls, in-person meetings, and the Loudoun Express Request online portal.

Each inquiry is vetted by DTCI to better understand the concern and appropriate next steps. The screening process may include a site visit, research, or preliminary review of available data. DTCI identifies the program to evaluate the traffic inquires. As illustrated in

Figure 4, programs to further evaluate the traffic concern may include:

1. **Residential Traffic Calming Program** – See *Chapter 2*
2. **Residential Cut-Through Traffic Program** – See *Chapter 3*
3. **Through Truck Restriction Program** – This program allows Loudoun County to request that VDOT restrict the use of through trucks on any part of a primary or secondary highway that is under the jurisdiction of VDOT if a reasonable alternate route is provided. Such restrictions may apply to any truck, truck and trailer, or semitrailer combination, except a pickup or panel truck, that travels from one point to another and having no origin or destination along the route(s) traveled.
4. **Residential Permit Parking Districts Program –** The Residential Permit Parking Districts Program seeks to manage parking in residential areas, protect those areas from the environmental impacts of commuting, and allow access to properties. This is accomplished by creating on-street parking restrictions on public roadways for residents of the community.
5. **County's Capital Improvement Program –** Other studies such as intersection improvements and corridor safety studies may be considered for larger study areas where the residential neighborhood network includes collectors or arterials. More comprehensive analysis of safety and traffic data, and evaluation of multiple improvement alternatives may be needed. Such studies may be appropriate on roadways with significant traffic volumes that exceed thresholds of the *Residential Traffic Calming Program* and the *Residential Cut-Through Traffic Program.*

Figure 4. Preliminary Review of Traffic Concerns



As of 2019, the focus of the *Residential Traffic Management Guide* is traffic calming and cut-through traffic. The document may be updated on a biennial basis or more frequently to incorporate revised VDOT guidance. Future amendments to the guide may accommodate other traffic management programs.

Under unique circumstances and with VDOT approval, DTCI reserves right to deviate from the documented process to address community traffic concerns.

2. RESIDENTIAL TRAFFIC CALMING PROGRAM

Loudoun County's *Residential Traffic Calming Program* seeks to reduce vehicle speeds through a combination of intrusive measures and nonintrusive measures to improve the quality of life in residential areas by making walking, cycling, and other activities safer, more viable, and more enjoyable for residents. In some cases, traffic calming measures also may reduce total vehicular volume. As vehicular volumes increase on a residential street, there is an adverse effect on the actual and perceived quality of life for the residents who live on that street.

The traffic calming process is based on citizen involvement, both in identifying speeding problems and supporting solutions to lower vehicle speeds. Neighborhood streets maintained by the Virginia Department of Transportation (VDOT) are eligible for traffic calming measures. *VDOT Traffic Calming Guide for Neighborhood Streets (2018)* provides guidance that Loudoun County applies to assess speeding concerns and implement appropriate measures.

The Department of Transportation and Capital Infrastructure (DTCI) manages the Residential Traffic Calming Program. Working closely with the neighborhood community and other stakeholders, including the Board of Supervisors (BOS) and VDOT, they implement the traffic calming process and develop a plan for addressing speeding concerns in a community.

2.1 Goals and Objectives

Reducing vehicular speed is particularly important on streets where pedestrian and bicycle use is prevalent in residential communities. Vehicles traveling at higher speeds may present a safety challenge for all users. Fortunately, traffic calming measures may be applied as a solution in residential communities. The County's traffic calming program is intended to reduce vehicular speeds on local residential roads with a posted (or unposted speed limit) of 25 miles per hour (mph) or less without restricting vehicular access. The statutory speed limit on residential streets is typically 25 mph, as defined by Code of Virginia 46.2-874.

Residential Traffic Calming Program Goals

- Improve the quality of life
- Create safe and attractive streets
- Offset the negative effects of motor vehicles on the environment
- Promote alternative modes of travel (walking, biking, and transit)

Traffic Calming Program Objectives

The overall objectives of the County's *Residential Traffic Calming Program* are as follows:

- Establish consistency in traffic calming process while adhering to VDOT guidance
- Encourage citizen and stakeholder involvement in the traffic calming program
- Identify cost-effective and context-sensitive solutions to address speeding

When a new traffic management measure is introduced, questions often arise from those who are affected. As a result, the traffic calming process is based on citizen involvement, both in problem recognition and problem solving. It is intended to provide residents who live along the impacted street(s) or area(s) of impact with an opportunity to participate by initiating a request for traffic calming and indicating support for proposed solutions via public participation.

The *Residential Traffic Calming Program* encourages constructive discussions with residents and their respective Homeowners Associations (HOA), Civic Associations (CA), or Community Task Force regarding speeding problems in their communities. Active participation from the community and stakeholders is essential to devising the best solutions for each specific need.

The statutory speed limit on residential streets is typically 25 mph, as defined by Code of Virginia 46.2-874. The County's *Residential Traffic Calming Program* approach is to provide traffic calming measures or roadway modifications that influence motorists to observe the legal speed limit without creating an additional burden on the Loudoun County Sheriff's Office (LCSO). This approach is found to be the most cost-effective way to control speeds in residential areas because it minimizes reliance on law enforcement resources.

In an effort to be mindful of managing County resources effectively, DTCI seeks to use the most cost-effective traffic calming measures to appropriately address any identified speeding problems. The purpose of this program is to reduce vehicular speeding in residential areas. Therefore, it is important that the measures adopted in any particular traffic calming project are designed to reduce speeds in the professional judgment of the County and VDOT Traffic Engineering staff.

2.2 Education, Enforcement, and Engineering

To successfully address speeding in residential communities, DTCI partners with stakeholders to leverage a three-pronged approach: education, enforcement, and engineering.

Education

It is important that motorists understand the need to obey the posted speed limit and the importance of driving safely. When there is a perceived speeding problem within the neighborhood, the residents themselves are commonly contributing to this problem. Education efforts can help remind motorists of the potential risks speeding poses to neighborhood children and other residents through community meetings, emails, social media, newsletters, and public events regarding speeding and safety in residential communities such as these:

- Within Loudoun County, there are various programs and information sessions available to improve safety. Loudoun County Public Schools (LCPS) promotes the Safe Routes to School program to educate K-8th grade students on walking and biking safety. LCPS also collaborates with School Resource Officers (SRO) to teach high school students proper and safe driving.

- LCSO hosts bimonthly meetings for their "S.A.F.E." (Safe and Firm Enforcement) program at one of the four substations to educate drivers on roadway safety. The meeting location rotates bimonthly.

County and VDOT staff are available to discuss the various traffic calming measures and help raise the community awareness of its benefits, drawbacks, and associated costs.

Enforcement

Enforcement is traditionally the primary means of addressing speeding problems. Deputies with the LCSO are the usual source for increased enforcement of traffic laws. Law enforcement can monitor vehicular speeds and the observance of stop signs, issuing citations in response to violations. Residents can assist law enforcement efforts by making the LCSO aware of persistent speeding or traffic violations in their area. The temporary placement of a radar trailer or a dynamic speed display sign can be used to inform motorists of the speed they are traveling compared to the posted speed limit.

All enforcement efforts should be considered prior to the implementation of the traffic calming initiative, and the results of these efforts are shared with the stakeholders throughout the process. Potential community resources related to enforcement are available through LCSO:

- Community members may submit traffic complaints via the citizen feedback portal on the LCSO website (www.sheriff.loudoun.gov).
- LCSO received the Department of Motor Vehicle's Highway Safety Program "Enhanced Enforcement" grant to fund identified roadways with additional enforcement to address speeding, failure to obey traffic signs, enhanced fines, and driving under the influence.

Engineering

Through proper engineering, a neighborhood street can be physically modified in some manner with the purpose of encouraging a change in motorist behavior by reducing speed, increasing awareness of pedestrians and cyclists, or diverting traffic to a more appropriate street (arterial or collector). There are two types of traffic calming measures: (1) nonintrusive measures and (2) intrusive measures. Nonintrusive applications are devices that do not physically constrain vehicles to reduce speed such as warning signs in the public right-of-way. Intrusive measures are horizontal, vertical, and narrowing devices installed on the pavement surface that physically narrow or create vertical or horizontal shifts in the travel way to reduce vehicle speeds.

Typical engineering solutions include Watch for Children signs, Additional $200 Fine signs, pole-mounted speed display signs, speed humps, raised crosswalks, just to name a few. Existing traffic calming measures in Loudoun County are shown on the next page in **Figure 5** and **Figure 6**. More information on potential traffic calming measures can be found in the Appendix A. **Note that stop signs are no longer permissible by the Federal Highway Administration for use as traffic calming devices.**

Engineering solutions should be considered after education and enforcement solutions have been implemented and speeding persists. Engineering solutions are implemented through a standard process identified in the *VDOT's Traffic Calming Guide for Neighborhood Streets (2018)* that includes community involvement and stakeholder engagement. Roles of various stakeholders were described in **Section 1.3**. The traffic calming process is described in the following section.

Figure 5. Pole-Mounted Sign Display Sign on Potomac Station Drive in Potomac Station Community

Figure 6. Speed Hump on Farmingdale Drive in Ashburn Farm Community

2.3 Residential Traffic Calming Process

The traffic calming process described in this section represents a community-based, "problem-oriented" approach for deciding how to address speeding problems in residential communities. The structured eight-step process promotes open and continuous dialogue with stakeholders through a uniform set of criteria.

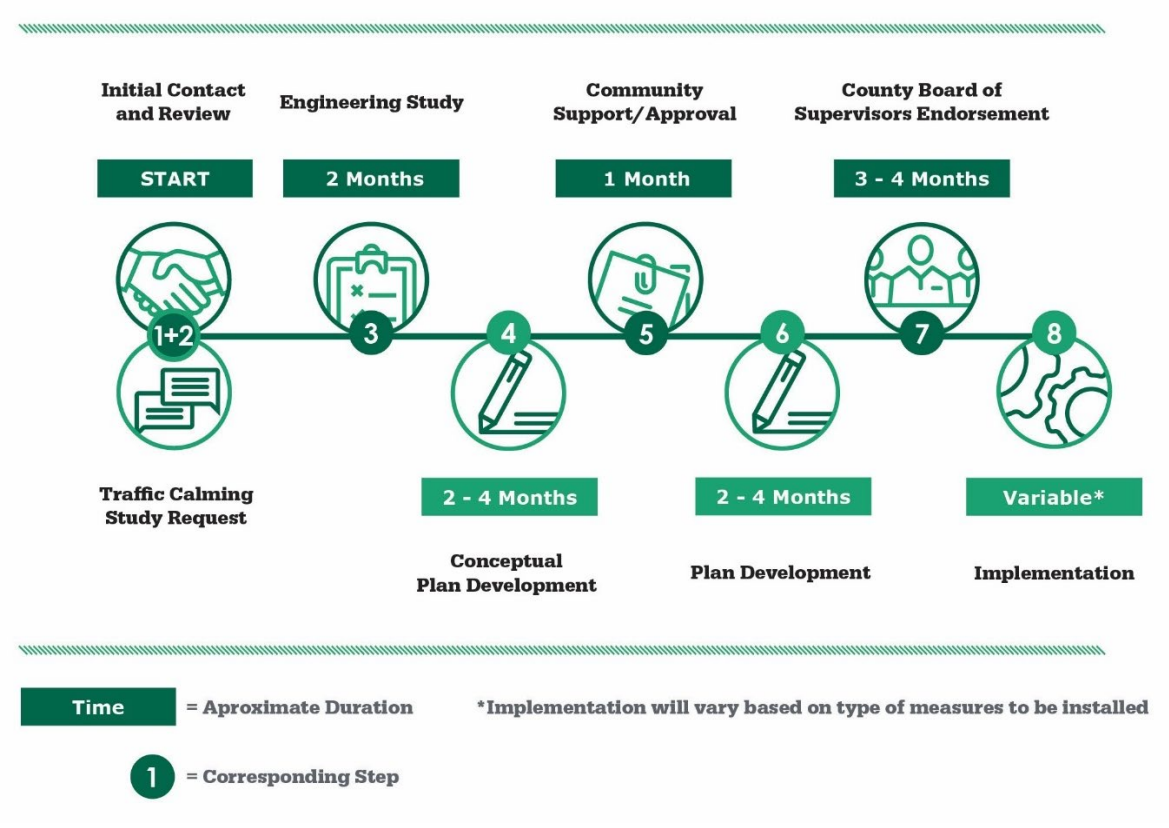
- Step 1: Initial Contact and Review
- Step 2: Traffic Calming Study Request
- Step 3: Engineering Study
- Step 4: Conceptual Plan Development
- Step 5: Community Support/Approval
- Step 6: Plan Development
- Step 7: County Board of Supervisors Endorsement
- Step 8: Implementation

This process applies standards to determine the existence and severity of traffic problems and a defined approach to address those concerns. The criteria used herein corresponds to the *VDOT's Traffic Calming Guide for Neighborhood Streets (2018)* guidelines for traffic calming.

The most challenging problems to address are those where road users and affected residents have conflicting but equally valid needs. Regardless of the scope of the traffic situation, the problem-oriented process is the same. The difference is in how broad the community participation must be.

Figure 7 shows an overview of the traffic calming process and approximate durations for each step. The process may range from 12 to 24 months, or longer, depending on the size of the impacted area, community involvement, and the type of traffic calming measures being implemented.

Figure 7. Traffic Calming Process Timeline



The work flow diagram on the next page is an overview of all the steps associated with the traffic calming process. All steps are consecutive, but each step may have multiple paths a request can flow through. Following the overall work flow diagram is additional guidance for each step in the process including a narrative description of the expectations and a matrix of responsibilities.

Residential Traffic Management Guide

Loudoun County Residential Traffic Calming Process

The following is an overview of the various steps needed to establish a Residential Traffic Calming Measure in Loudoun County, Virginia.

1. Initial Contact and Review

1A Community contacts DTCI with speeding concerns

1B DTCI conducts site visit and completes review of eligibility

1C Meets initial eligibility review?

- No → End Traffic Calming Process*
- Yes → 1D

1D Is it a special request for Watch for Children (WFC) sign only?

- Yes → 1E DTCI identifies cost for WFC sign → 1F DTCI prepares BOS item → Skip to Step 6.1 Sketch Plan
- No → 2

2. Traffic Calming Study Request

2A HOA/CA/Community Task Force submits an official letter requesting a traffic calming study to Loudoun County

2B DTCI leads an initial stakeholder meeting to gather information

3. Engineering Study

3A DTCI collects speed and traffic count data

Traffic Data Criteria
- Daily traffic volumes between 600 to 4,000 and
- 85th percentile observed speed must be greater than 10 MPH than the posted speed limit

3B Traffic Data Criteria Met?

- Yes → 4
- No → Special Exceptions

4. Conceptual Plan Development

4A DTCI drafts conceptual Traffic Calming Plan

4B VDOT reviews conceptual plan

4C DTCI sets a stakeholder meeting to present and discuss plan

VDOT and DTCI agree on plan

5. Community Support/ Approval

5A HOA/CA/Community Task Force sets up a community meeting to present final proposed plan to residents

5B DTCI gathers support from residents through ballot process

5C More than 50% of occupied residents in survey area support conceptual plan?

- Yes → Only a speed hump OR a pole-mounted speed display sign proposed?
- No → End Traffic Calming Process*

Only a speed hump OR a pole-mounted speed display sign proposed?

- Yes → 6.1
- No → 6.2

6. Plan Development

6.1 Sketch Plan

6.1A DTCI obtains cost estimate for implementation and construction of traffic calming measure

6.1B DTCI prepares Board item documenting proposed improvements and community support

6.2 Scoping for Engineering Services

6.2A DTCI requests cost proposal for engineering design services

6.2B Consultant provides cost estimate for engineering design services

6.2C DTCI evaluates estimate for implementation

6.2D DTCI prepares Board item documenting proposed improvement, community support, and request funds for design and construction

7. County Board of Supervisors Endorsement

7.1 Endorsement for Sketch Plan

BOS approves implementation of traffic calming plan

7.2 Endorsement for Engineering Services

BOS approves cost and funding source for engineering design services and construction services for improvements

8. Implementation

8.1 Implementation for Sketch Plan

8.1A DTCI procures contractor through Request for Quote (RFQ) or Request for Bid (RFB)[a]

8.1B DTCI issues purchase order to contractor; Notice to Proceed

8.1C DTCI requests VDOT Land Use Permit

8.1D Contractor installs

8.1E VDOT inspects traffic calming measure

8.2 Implementation for Engineering Design

8.2A DTCI initiates engineering design services

8.2B Consultant prepares engineering plans and construction estimate

Typically 2-3 rounds of review

8.2C VDOT and County's Building and Developments review engineering design

VDOT and County approve engineering design

8.2D DTCI procures a contractor through Request for Quote (RFQ), Request for Bid (RFB), or on-call contractor

8.2E DTCI requests VDOT Land Use Permit

8.2F Contractor installs

8.2G VDOT inspects traffic calming measure

Traffic Calming Process Completed

Special Exceptions

	Traffic Data Result Scenarios	
	1	2
Daily Volume	< 600	> 4,000
85th Percentile Observed Speed	> 35 MPH	> 35 MPH
	Additional $200 Fine Sign or WFC Sign	Additional $200 Fine Sign Or Pole-Mounted Speed Display Sign

Possible solutions to Special Exceptions. DTCI decides on solutions on a case-by-case scenario.

Actions Completed By:
- Community
- Board of Supervisors (BOS)
- Department of Transportation and Capital Infrastructure (DTCI)
- DTCI Consultant/Contractor
- Virginia Department of Transportation (VDOT)

**If applicable, DTCI may consider an alternative process to address traffic concerns. If not applicable, community can request another evaluation for traffic calming after 5 years.*
***A more comprehensive study and engineering analysis may be completed*

Residential Traffic Management Guide

Step 1. Initial Contact and Review

Step 1: Initial Contact and Review is the first step of the traffic calming process. Residents, community groups, or organizations submit requests to address speeding through email, phone calls, in-person meetings, or the Loudoun Express Request (LEx) online portal. Sometimes communities will submit speeding concerns to their respective District Supervisor's Office, the LCSO, or VDOT. All traffic calming requests are forwarded to the DTCI Traffic Engineering staff for review.

DTCI reviews the traffic calming concern and conducts a site visit to the subject street. Per VDOT guidance, traffic calming program eligibility requirements include:

1. The roadway must be VDOT Secondary Roadway System.
2. The roadway must be a neighborhood street. See the box below for more information regarding neighborhood streets.
3. The roadway must have a posted speed limit of 25 mph or less.

Neighborhood streets are within a neighborhood setting where the residences and businesses face the street rather than reverse-frontage (where houses along a street do not face or generally have access to the street). A typical neighborhood street for traffic calming is in a subdivision where there is a high density of residences and the street has a functional classification of "local". A neighborhood street with similar characteristics may have a functional classification of "collector" or "arterial" and thus be appropriate for consideration of traffic calming. Typical land uses found adjacent to neighborhood streets are community centers, neighborhood parks, and schools. Communities with a neighborhood business (physical establishment) must consult with the business owners during the traffic calming process. The HOA or CA is responsible for securing written approval from all businesses affected by potential traffic calming process.

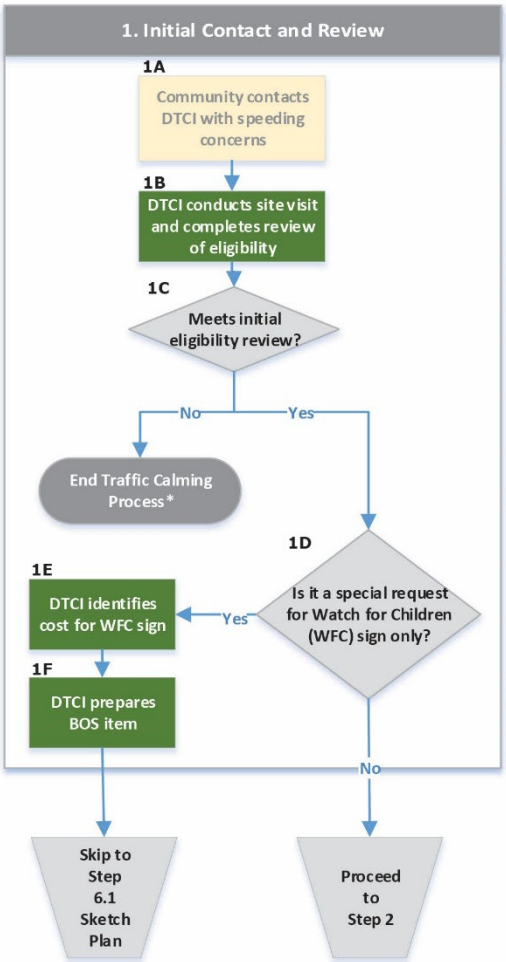
To determine the entity that is responsible for maintaining each road in Loudoun County, please visit the Loudoun County Road Maintenance Map an interactive online tool.

If eligibility requirements are not met, the traffic calming process ends. DTCI may then consider an alternative process to address traffic concerns. If eligibility is not met, the community can request another evaluation for traffic calming after five (5) years.

If eligibility requirements are met and the request is a Watch for Children sign(s) ONLY, then DTCI will proceed with identifying costs and a funding source for implementation. DTCI will draft a Board Item requesting approval from the BOS for implementation of the sign(s). If eligibility requirements are met and the request does not include only a Watch for Children sign(s), then DTCI will proceed to ***Step 2: Traffic Calming Study Request***.

Process and stakeholder responsibilities for ***Step 1: Initial Contact and Review*** are summarized in **Figure 8** and **Table 1**, respectively.

Figure 8. Process for Traffic Calming
Step 1: Initial Contact & Review



*If applicable, DTCI may consider an alternative process to address traffic concerns.
If not applicable, community can request another evaluation for traffic calming after five (5) years.

Table 1. Responsibilities for Traffic Calming
Step 1: Initial Contact & Review

1. Initial Contact and Review	1A	1B	1C	1D	1E	1F
District Supervisor's Office/Board of Supervisors	Support					
Department of Transportation and Capital Infrastructure	Support	Lead	Lead	Lead	Lead	Lead
Homeowners Association/Civic Association/Community Task Force	Lead					
Virginia Department of Transportation	Support	Support	Support	Support	Support	Support
Loudoun County Sheriff's Office	Support					
Loudoun County Public Schools						
Department of Fire, Rescue & Emergency Management						
Department of General Services						
Contractor/Consultant						

Step 2. Traffic Calming Study Request

Under ***Step 2: Traffic Calming Study Request***, the HOA or CA must submit an official letter requesting a traffic calming study to Loudoun County. The letter should state the speeding concern, specific location within the neighborhood, time of day speeding occurs, and any other pertinent information that would be helpful with reviewing the speeding issue. DTCI will provide an example traffic calming request letter to communities upon request.

In some cases, multiple HOAs or CAs may be represented to address a speeding concern and a joint letter may be submitted. If an HOA or CA does not exist within the community, a Community Task Force must be established to represent the residents of the impacted area and submit the official letter requesting a traffic calming study. The letter from the Community Task Force should include a minimum of ten resident signatures (one resident per household) supporting the request for a traffic calming study.

What is a Community Task Force? A Community Task Force is a group of residents that represents the community to address residential traffic concerns. To establish the task force, ten (10) percent of residents in the impacted area (minimum of two [2] residents and a maximum of ten [10] residents) is required. For example, if there are 300 households, ten (10) households (one resident per household) would be required to form the Community Task Force.

After receiving the official letter, DTCI will schedule an initial meeting with the HOA, CA, or Community Task Force and other stakeholders to gather information related to the speeding concern. Information gathered may be an overview of existing speeding concerns, contributing factors, and any available traffic data. Other stakeholders may include VDOT, LCSO, DFREM, and LCPS - if a school is in the vicinity of the identified study area. During the stakeholders meeting, DTCI will discuss the three-pronged education, enforcement, and engineering approach and process for addressing speeding concerns and solicit input from other stakeholders.

Process and stakeholder responsibilities for ***Step 2: Traffic Calming Study Request*** are summarized in **Figure 9** and **Table 2,** respectively.

After the stakeholders meeting, DTCI will proceed to Step 3 to complete an engineering study.

Figure 9. Process for Traffic Calming
Step 2: Traffic Calming Study Request

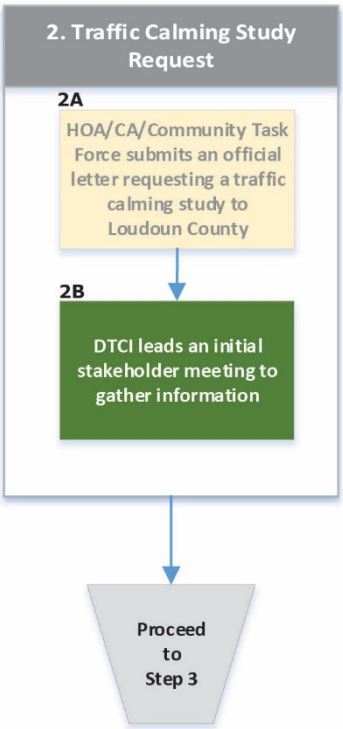


Table 2. Responsibilities for Traffic Calming
Step 2: Traffic Calming Study Request

2. Traffic Calming Study Request	2A	2B
District Supervisor's Office/Board of Supervisors	Support	
Department of Transportation and Capital Infrastructure	Support	Lead
Homeowners Association/Civic Association/Community Task Force	Lead	Support
Virginia Department of Transportation	Support	
Loudoun County Sheriff's Office	Support	Support
Loudoun County Public Schools		Support
Department of Fire, Rescue & Emergency Management		Support
Department of General Services		
Contractor/Consultant		

Step 3. Engineering Study

In ***Step 3: Engineering Study,*** DTCI conducts an engineering study to evaluate traffic data and determine if traffic calming is the most appropriate program for the requested roadway. An engineering field review is performed to assess geometric characteristics including horizontal curves, sight distance, visible utilities, storm drainage, and adjacent access points.

DTCI collects and evaluates the traffic volume and speed data on the residential street(s). Volume and speed data are typically collected over a 48-hour period on Tuesdays, Wednesdays, or Thursdays, and when public schools are in session, on a nonholiday weeks, and weather permitting.

DTCI evaluates the data to determine if the roadway qualifies for traffic calming measures. According to the *VDOT Traffic Calming Guide for Neighborhood Streets (2018)*, staff must review and confirm the following criteria for each qualifying street:

1. Traffic volumes between 600 and 4,000 vehicles per day
    a. Streets with less than 600 vehicles per day may be considered appropriate for $200 Additional Fine signs or Watch for Children signs.
    b. Streets with greater than 4,000 vehicles per day may be considered for $200 Additional Fine signs or Pole-Mounted Speed Display signs. DTCI decides on solutions on a case-by-case scenario.
2. The 85th percentile observed speed must be 10 mph or more than the posted speed limit
3. Street geometry must be suitable for traffic calming (e.g., horizontal and vertical curves, steep grades, sight distance, storm drainage location, driveway and other access points)

What is the 85th percentile speed? The 85th percentile speed is the speed where 85 percent of the drivers drive at or below this speed; and 15 percent of motorists drive faster than this speed.

What is the Average Daily Traffic (ADT)? A traffic count determines the average daily traffic (ADT) volume on the street for both travel directions. Typical in order to determine the average daily traffic for a weekday, a 48-hour traffic count conducted on a Wednesday or Thursday.

DTCI shares collected traffic data with local agencies including LCSO, DFREM, and LCPS.

Process and stakeholder responsibilities for ***Step 3: Engineering Study*** are summarized in **Figure 10** and **Table 3,** respectively.

If the engineering field review and traffic data meet the stated criteria, DTCI proceeds with developing a traffic calming plan in Step 4. Alternatively, DTCI will consider special exceptions when the field review and traffic data do not meet the stated criteria.

Figure 10. Process for Traffic Calming
Step 3: Engineering Study

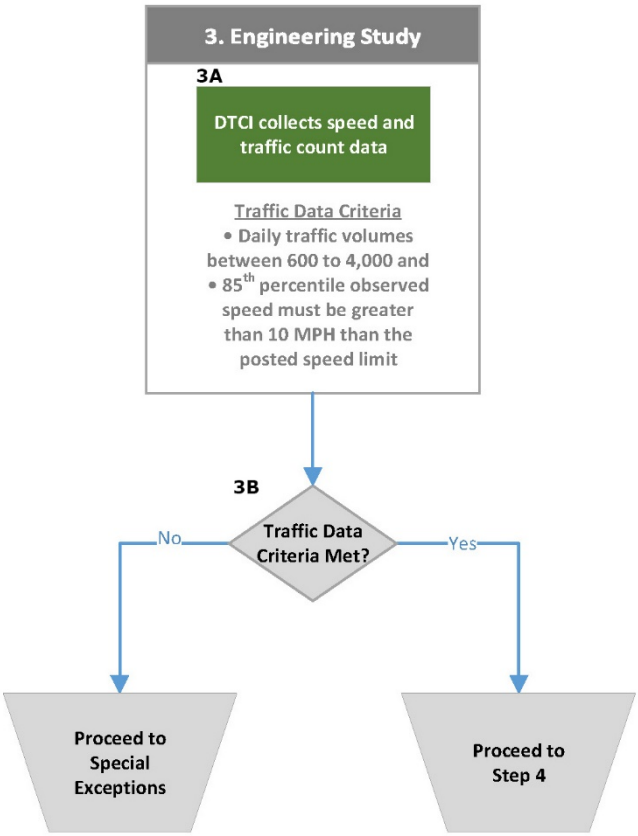


Table 3. Responsibilities for Traffic Calming
Step 3: Engineering Study

3. *Engineering Study*	3A	3B
District Supervisor's Office/Board of Supervisors		
Department of Transportation and Capital Infrastructure	Lead	Lead
Homeowners Association/Civic Association/Community Task Force		
Virginia Department of Transportation		
Loudoun County Sheriff's Office		
Loudoun County Public Schools		
Department of Fire, Rescue & Emergency Management		
Department of General Services		
Contractor/Consultant		

Special Exceptions

DTCI evaluates if traffic calming is appropriate for the requested roadway through an engineering study. When a roadway's speed and/or volume criteria does not meet traffic calming program qualifying criteria, DTCI may consider alternative means to address the speeding concerns. Alternative solutions may include nonintrusive measures.

Nonintrusive Measures: Special exception projects consist of measures that are less intrusive devices that are not installed in the travel way to physically constrain vehicles to reduce speed. Examples are pavement marking and signage (e.g., Watch for Children). Pavement markings can delineate a parking or a bicycle lane, or simply stripe out an area of pavement, all of which effectively narrow the travel lane.

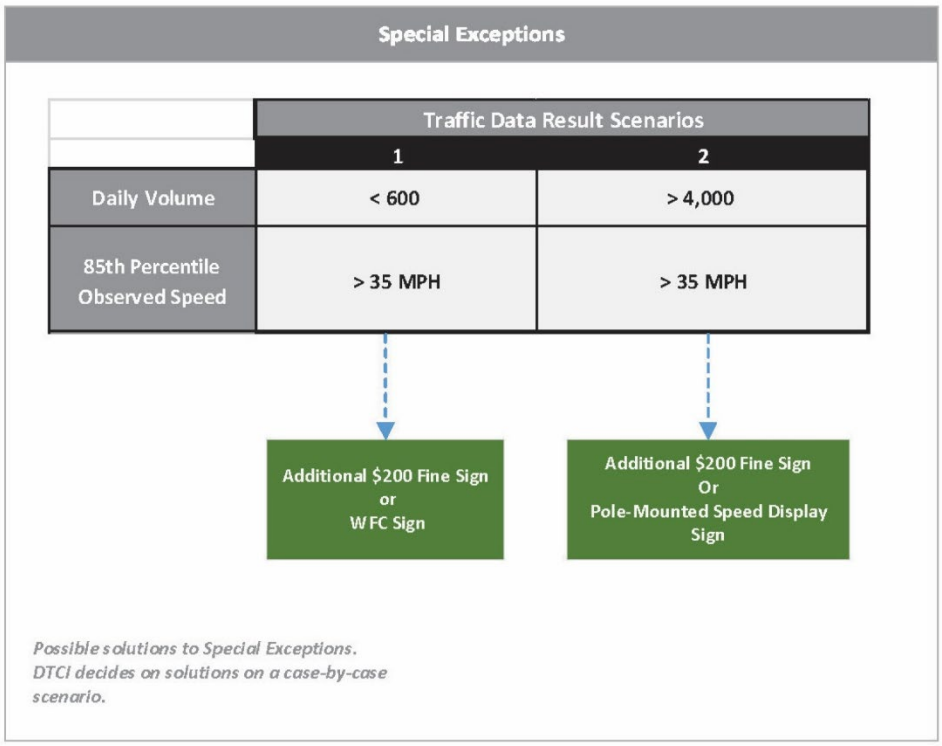
There are two different traffic data result scenarios that a roadway may qualify for if traffic calming criteria is not met.

- **Scenario 1:** Daily traffic volume is less than the required 600 vehicles and the 85th percentile observed speed is greater than 35 mph. Additional signage may be considered including $200 Additional Fine signs or Watch for Children signs.

- **Scenario 2:** Daily traffic volume is greater than the maximum 4,000 vehicles threshold and the 85th percentile observed speed is greater than 35 mph. Additional signage may be considered including $200 Additional Fine signs or pole-mounted speed display signs.

DTCI decides on special exception projects on a case-by-case scenario and may end the traffic calming process at that time. When the traffic calming process ends, the community may request another evaluation specific for traffic calming after 5 years. The process for each scenario is shown in **Figure 11**.

Figure 11. Process for Traffic Calming – Special Exceptions



Step 4. Conceptual Plan Development

Under ***Step 4: Conceptual Plan Development,*** DTCI develops a conceptual traffic calming plan in coordination with VDOT. Developing the traffic calming plan requires striking a balance between the need to provide an efficient transportation network and maintaining a livable and safe environment for all users and other street or street-adjacent users. At this stage in the process, DTCI will select the appropriate traffic calming measures and locations to achieve that balance. Information on the types of traffic calming measures, associated benefits and implementation strategies can be found in the Appendix A.

DTCI submits the conceptual traffic calming plan to VDOT Traffic Engineering for review and comment. A checklist of items to review prior to submission to VDOT is available for DTCI. Based on VDOT's review, DTCI may need additional coordination with stakeholders to update the conceptual traffic calming plan.

After VDOT reviews the proposed conceptual plan, DTCI schedules a meeting with stakeholders to present and discuss the proposed traffic calming plan. Community awareness and education regarding regulatory speed limits on residential streets, traffic calming, and the impact of the traffic calming measures are an important part of this step. The HOA or community representatives are highly encouraged at this junction to provide notifications to residents via community newsletters and social media about the statutory speed limit of 25 mph on neighborhood streets and the importance of driving safely.

After DTCI and VDOT reach agreement on a conceptual traffic calming plan, the HOA, CA, or Community Task Force proceed to Step 5 to gather community support for the plan. DTCI, with support of the HOA, CA, or Community Task Force, issues the ballot to gather community support.

Process and stakeholder responsibilities for ***Step 4: Conceptual Plan Development*** are summarized in **Figure 12** and **Table 4,** respectively.

Figure 12. Process for Traffic Calming
Step 4: Conceptual Plan Development

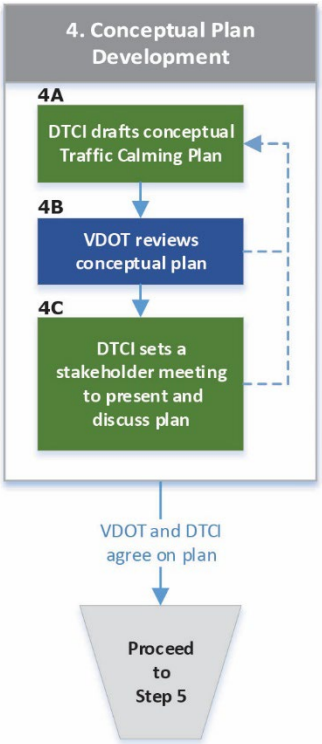


Table 4. Responsibilities for Traffic Calming
Step 4: Conceptual Plan Development

4. *Conceptual Plan Development*	4A	4B	4C
District Supervisor's Office/Board of Supervisors			
Department of Transportation and Capital Infrastructure	Lead	Support	Lead
Homeowners Association/Civic Association/Community Task Force			
Virginia Department of Transportation	Support	Lead	Support
Loudoun County Sheriff's Office			
Loudoun County Public Schools			
Department of Fire, Rescue & Emergency Management			
Department of General Services			
Contractor/Consultant			

Step 5. Community Support/Approval

In ***Step 5: Community Support/Approval,*** DTCI, in coordination with stakeholders, identify the appropriate survey area. After the complete development of the traffic calming plan, the HOA, CA, or Community Task Force hosts a community meeting where DTCI is available to present the proposed traffic calming plan and supporting material to the community. After the community meeting, the HOA, CA, or Community Task Force will have up to six months to decide if they will advance forward with the ballot process.

What is the survey area? The survey area includes residences on the street identified for traffic calming and residences on other streets whose primary access point is on the street identified for traffic calming. Prior to the community meeting, DTCI and VDOT assess the location where speeding occurs and decides on a survey. This region encompasses all affected property owners in the survey area.

It is the responsibility of DTCI to collect resident input via ballot survey. Survey requirements include the following:

1. Only occupied residences in the survey area are included in measuring and documenting community support.
2. Each residence address is allowed a single signature or vote to indicate agreement or disagreement with the comprehensive traffic calming plan. Individuals must be 18 years or older to provide a signature.
3. More than 50 percent of the occupied residences in the survey area must support the conceptual traffic calming plan to advance to the next step.
4. Survey must be completed within 30 days after receiving the ballot.

DTCI, with support from the HOA, CA, or Community Task Force, is responsible for gaining community consensus. HOA, CA, or Community Task Force will secure agreement from any affected property owners of a residence where the location of the proposed traffic calming measure (excluding warning signs) is positioned within the roadway frontage of the property boundary. If the minimum number of signatures are not obtained from residents, the HOA, CA, or Community Task Force must approve or decline to move forward with project.

Affected Property Owners: HOA, CA, or Community Task Force will secure agreement from any affected property owners where the location of the proposed traffic calming measure (excluding warning signs) is positioned within the roadway frontage of the property boundary.

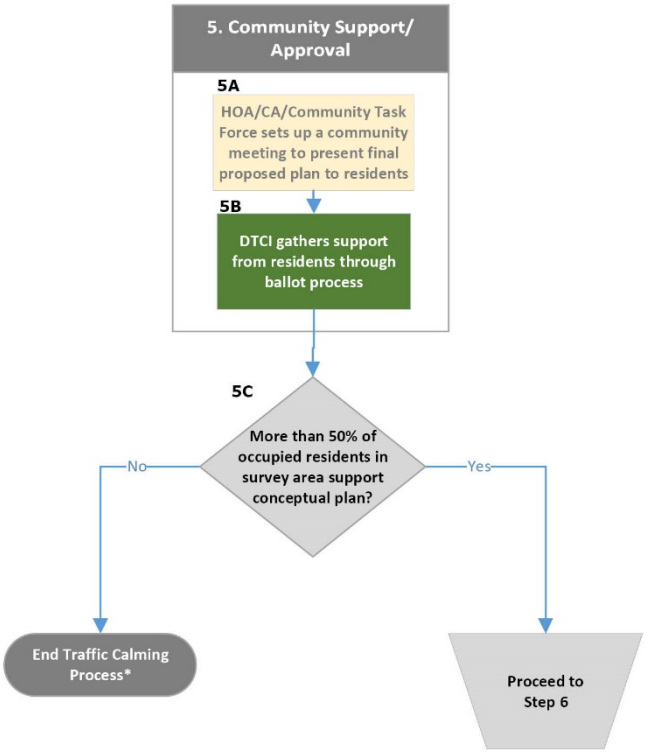
Each signature or vote by a residence is in full support or opposition of the conceptual traffic calming plan in its entirety. Residences may not support/oppose portions of the plan.

If community support is not met, the traffic calming process ends. The community may request another evaluation for traffic calming after five (5) years. If more than 50 percent of the occupied households support the conceptual plan, the project proceeds to the next step. Specific elements of the conceptual

traffic calming plan may be modified in the future based on preliminary engineering or as required for implementation.

Process and stakeholder responsibilities for ***Step 5: Community Support/Approval*** are summarized in **Figure 13** and **Table 5,** respectively.

Figure 13. Process for Traffic Calming
Step 5: Community Support/Approval



*If applicable, DTCI may consider an alternative process to address traffic concerns.
If not applicable, community can request another evaluation for traffic calming after five (5) years.

Table 5. Responsibilities for Traffic Calming
Step 5: Community Support/Approval

5. *Community Support/Approval*	5A	5B	5C
District Supervisor's Office/Board of Supervisors			
Department of Transportation and Capital Infrastructure	Support	Lead	Lead
Homeowners Association/Civic Association/Community Task Force	Lead	Support	Support
Virginia Department of Transportation			
Loudoun County Sheriff's Office			
Loudoun County Public Schools			
Department of Fire, Rescue & Emergency Management			
Department of General Services			
Contractor/Consultant			

Step 6. Plan Development

Depending on the proposed improvements in the conceptual traffic calming plan, DTCI may proceed with either a sketch plan or a preliminary engineering design. DTCI may develop a sketch plan when **ONLY** a speed hump or pole-mounted speed display sign is proposed in the traffic calming plan, as outlined under ***Step 6.1: Sketch Plan***. If proposed traffic calming measures are other than speed hump or pole-mounted speed display signs, DTCI proceeds to ***Step 6.2: Scoping for Engineering Services.***

Step 6.1. Sketch Plan

Under ***Step 6.1: Sketch Plan,*** DTCI develops a sketch plan that is a graphic depicting proposed traffic calming improvements and locations. The following minimum elements should be included on the sketch plan.

- Aerial imagery showing curb, driveways, streams, and structures
- Existing and proposed sign(s)
- Fire hydrant location(s)
- Manholes and/or drainage inlets labeled with distance to propose measure
- North arrow
- Project title/community name
- Properties labeled with residence owner and address, from Loudoun County's Land Management Information System (LMIS)
- Scale
- Speed limit
- Streets names
- Vicinity inset map showing the study area within context of nearby major roadways

Appendix A provides technical guidance on implementing traffic calming measures and may be used to develop the sketch plan.

DTCI prepares cost estimates for implementation of the traffic calming measures. Using the estimates, DTCI prepares a Board Item to document the proposed improvement, community support, and request authorization from the Board to approve proposed traffic calming measures and the use of County funds for its implementation.

Step 6.2. Scoping for Engineering Services

If proposed traffic calming measures are other than speed hump or pole-mounted speed display signs, DTCI proceeds to ***Step 6.2: Scoping for Engineering Services.*** Under this step, DTCI seeks professional engineering services to develop preliminary engineering design of the proposed traffic calming measures. DTCI obtains a cost proposal for the engineering design services from an on-call consultant. DTCI evaluates the engineering cost estimates for implementation. Using the engineering cost estimates, DTCI prepares a Board Item to document the proposed improvement, community support, and request

authorization from the Board to approve use of County funds for engineering design and implementation services at an upcoming BOS Business Meeting.

Process and stakeholder responsibilities for ***Step 6.1: Sketch Plan*** and ***Step 6.2. Scoping for Engineering Services*** are summarized in **Figure 14** and **Table 6,** respectively. After preparing the funding request for implementation, DTCI will proceed to ***Step 7: County Board of Supervisors Endorsement***.

Figure 14. Process for Traffic Calming
Step 6: Plan Development

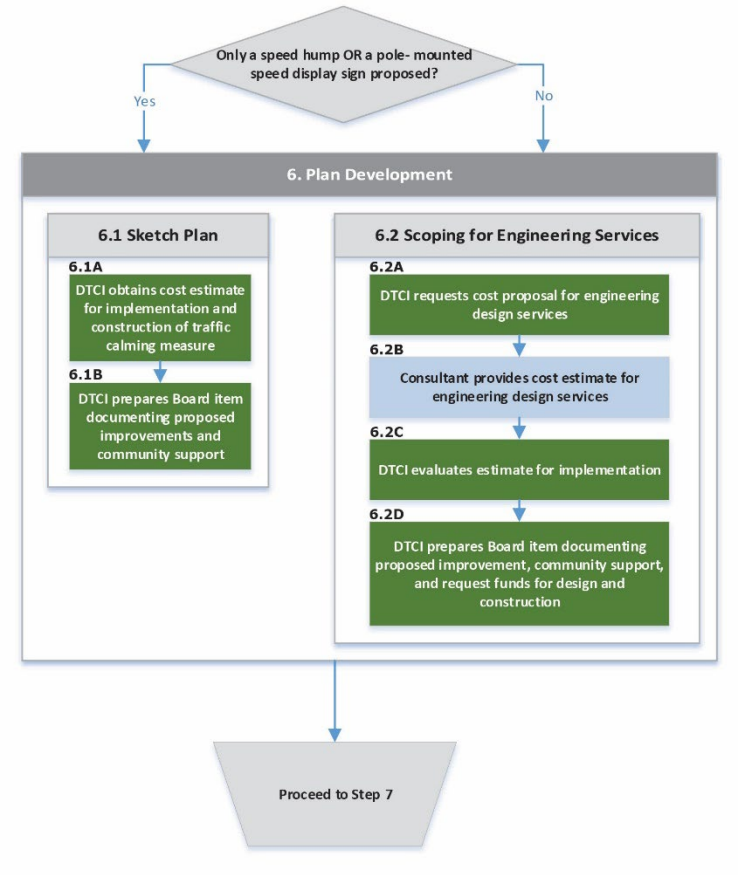


Table 6. Responsibilities for Traffic Calming
Step 6: Plan Development

6. Plan Development	*Sketch Plan*		*Scoping for Engineering Services*			
	6.1A	6.1B	6.2A	6.2B	6.2C	6.2D
District Supervisor's Office/Board of Supervisors		Support				
Department of Transportation and Capital Infrastructure	Lead	Lead	Lead	Support	Lead	Lead
Homeowners Association/Civic Association/Community Task Force						
Virginia Department of Transportation	Support	Support	Support	Support	Support	Support
Loudoun County Sheriff's Office		Support				Support
Loudoun County Public Schools		Support				Support
Department of Fire, Rescue & Emergency Management		Support				Support
Department of General Services	Support	Support	Support			Support
Contractor/Consultant	Support		Support	Lead	Support	

Step 7. County Board of Supervisors Endorsement

If the proposed traffic calming plan includes **ONLY** speed humps and/or pole-mounted speed display signs, then a sketch plan may be prepared by DTCI for implementation. Endorsement for a traffic calming plan with a sketch plan is outlined under ***Step 7.1: Endorsement for Sketch Plan***. If proposed traffic calming measures are other than speed hump or pole-mounted speed display signs, DTCI proceeds to ***Step 7.2: Endorsement for Engineering Services.***

Step 7.1. Endorsement for Sketch Plan

Under ***Step 7.1: Endorsement for Sketch Plan,*** DTCI presents the recommended plan and funding source to the BOS for review and approval. BOS Business Meetings are established at the beginning of the calendar year and each Business Meeting agenda is largely developed two months in advance of the meeting date. The BOS then decides whether to endorse the plan for implementation.

Step 7.2. Endorsement for Engineering Services

If the proposed traffic calming plan **DOES NOT** include only speed humps and/or pole-mounted speed display signs, then preliminary engineering design services will be required for implementation.

Under ***Step 7.2: Endorsement for Engineering Services,*** DTCI presents the recommended plan and funding source to the BOS for review and approval. BOS Business Meetings are established at the beginning of the calendar year and each Business Meeting agenda is largely developed two months in advance of the meeting date. The BOS then decides whether to endorse the plan for implementation.

Process and responsibilities for ***Step 7: County Board of Supervisors Endorsement*** are summarized in **Figure 15** and **Table 7,** respectively.

After receiving the Board of Supervisors endorsement, DTCI may proceed to ***Step 8: Implementation.***

Figure 15. Process for Traffic Calming
Step 7: County Board of Supervisors Endorsement

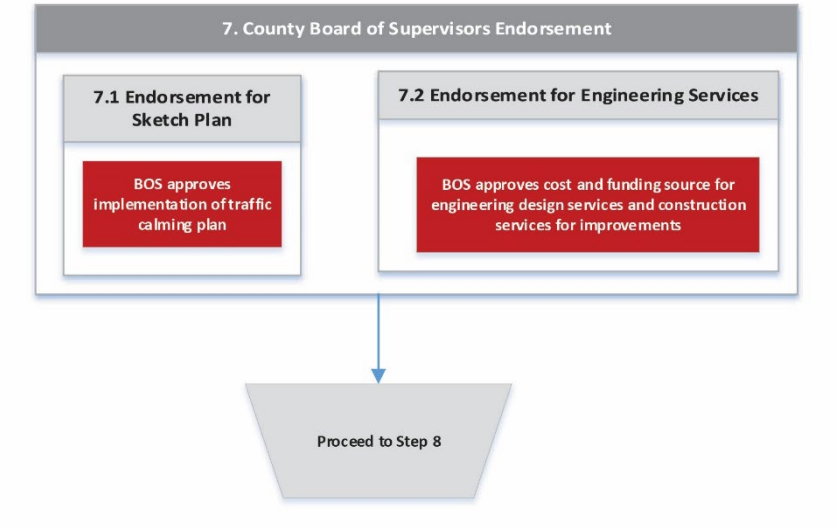


Table 7. Responsibilities for Traffic Calming
Step 7: County Board of Supervisors Endorsement

7. *County Board of Supervisors Endorsement*	7.1	7.2
District Supervisor's Office/Board of Supervisors	Lead	Lead
Department of Transportation and Capital Infrastructure	Support	Support
Homeowners Association/Civic Association/Community Task Force		
Virginia Department of Transportation		
Loudoun County Sheriff's Office		
Loudoun County Public Schools		
Department of Fire, Rescue & Emergency Management		
Department of General Services	Support	Support
Contractor/Consultant		Support

Step 8. Implementation

There are two different implementation processes based on the type of plan developed. If the proposed traffic calming plan includes **ONLY** speed humps and/or pole-mounted speed display signs, then a sketch plan prepared by DTCI is implemented. If the traffic calming plan includes other traffic calming measures, DTCI initiated engineering design services are used for implementation.

Step 8.1. Implementation for Sketch Plan

Under ***Step 8.1: Implementation for Sketch Plan,*** after BOS endorsement, DTCI completes the following actions for implementation of a sketch plan:

- DTCI procures a contractor through a procurement process. If available, DTCI can use an on-call contractor.
- DTCI initiates the process for a purchase order for the contractor and issues a Notice to Proceed for installation.
- DTCI requests a VDOT Land Use Permit for the contractor to implement the traffic calming measures.

DTCI has an internal checklist of items to consider and confirm prior to requesting a Land Use Permit from VDOT. Upon the completion of the traffic calming measure's installation, VDOT assesses and confirms proper installation according to the approved traffic calming plans.

Step 8.2. Implementation for Engineering Design

Following the endorsement for engineering services, DTCI initiates the design services and contracts a consultant to prepare engineering plans and detailed construction estimates in ***Step 8.2: Implementation for Engineering Design***. The plans are reviewed by VDOT, DTCI, and the County's Department of Building and Development until both VDOT and the County approve the design. DTCI and VDOT will use engineering judgement to identify the best design and location for the traffic calming measure, building upon the conceptual plan drafted in Step 4.

After receiving VDOT and County approval, DTCI may procure a contractor through a procurement process. If available, DTCI may use an on-call contractor. DTCI also requests a VDOT Land Use Permit to implement the traffic calming measures.

DTCI coordinates with an engineering consultant and VDOT for the development of engineering design plans. DTCI then coordinates with contractor to construct and install the traffic calming measures as well as provide construction management. Upon the completion of the traffic calming measure's installation, VDOT assesses and confirms proper installation according to the approved traffic calming plans.

Process and stakeholder responsibilities for ***Step 8: Implementation*** are summarized in **Figure 16** and **Table 8,** respectively. The traffic calming process is completed after implementation.

Figure 16. Process for Traffic Calming
Step 8. Implementation

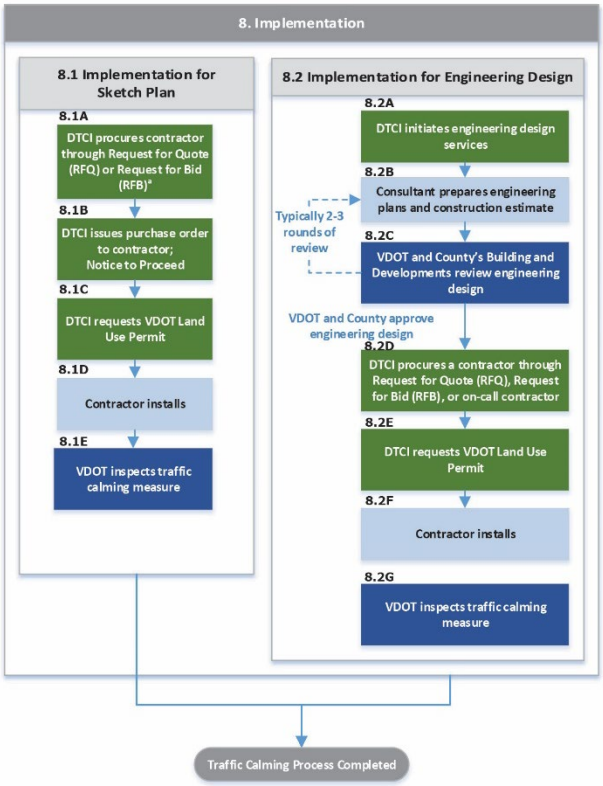


Table 8. Responsibilities for Traffic Calming
Step 8: Implementation

8.*Implementation*	*Implementation for Sketch Plan*					*Implementation for Engineering Design*						
	8.1A	8.1B	8.1C	8.1D	8.1E	8.2A	8.2B	8.2C	8.2D	8.2E	8.2F	8.2G
District Supervisor's Office/Board of Supervisors												
Department of Transportation and Capital Infrastructure	Lead	Lead	Lead	Support		Lead	Lead	Support	Lead	Lead	Support	
Homeowners Association/Civic Association/Community Task Force												
Virginia Department of Transportation			Support		Lead		Support	Lead	Support	Support		Lead
Loudoun County Sheriff's Office												
Loudoun County Public Schools												
Department of Fire, Rescue & Emergency Management												
Department of General Services				Support								
Contractor/Consultant	Support	Support		Lead		Support	Support	Support	Support		Lead	

3. RESIDENTIAL CUT-THROUGH TRAFFIC PROGRAM

Residential cut-through traffic is traffic passing through a specific residential area without stopping or without at least one trip end within the area. It is traffic that would be better served by an arterial or collector street system intended for through traffic, but for various reasons, such as avoiding congested arterial or preferring a more direct path, uses the local residential street network.

Loudoun County's *Residential Cut-Through Traffic Program* seeks to address cut-through traffic on local residential streets by implementing remedial measures. The *Virginia Department of Transportation's (VDOT) Residential Cut-Through Traffic Policy (dated May 1996)* provides guidance for studying the concerns of cut-through traffic on local residential streets and implementing recommended measures. The residential cut-through traffic process is based on citizen involvement, both in identifying cut-through problem and supporting solutions to reduce cut-through traffic.

3.1 Residential Cut-Through Traffic Process

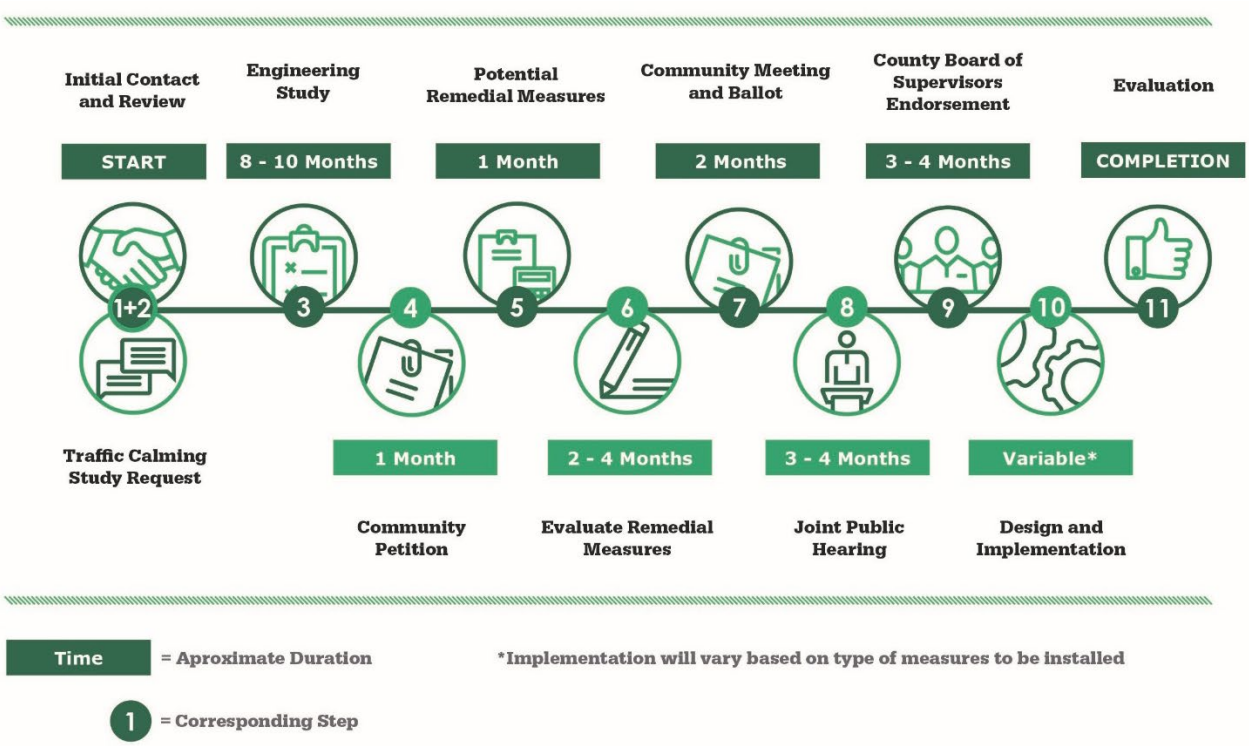
The cut-through traffic process described below represents a community-based approach to address cut-through traffic in residential communities. The structured 11-step process promotes open and continuous dialogue with stakeholders through a uniform set of criteria.

- Step 1: Initial Contact
- Step 2: Cut-Through Traffic Study Request
- Step 3: Engineering Study
- Step 4: Community Petition
- Step 5: Potential Remedial Measures
- Step 6: VDOT Evaluates Remedial Measures
- Step 7: Community Meeting and Ballot
- Step 8: Joint Public Hearing
- Step 9: County Board of Supervisors Endorsement
- Step 10: Design and Implementation
- Step 11: Evaluation

This process applies standards to determine the existence and severity of traffic problems and a defined approach to address those concerns. The criteria used herein correspond to the VDOT's Residential Cut-Through Traffic Policy *(dated May 1996).*

The most challenging problems to address are those where road users and affected residents have conflicting but equally valid needs. Regardless of the scope of the traffic situation, the problem-oriented process is the same. The difference is in how broad the community participation must be. **Figure 17** shows an overview of the cut-through traffic process and approximate durations for each step. The process may range from 20 to 32 months depending on the type of cut-through traffic mitigation measures implemented and community involvement.

Figure 17. Cut-Through Traffic Process Timeline

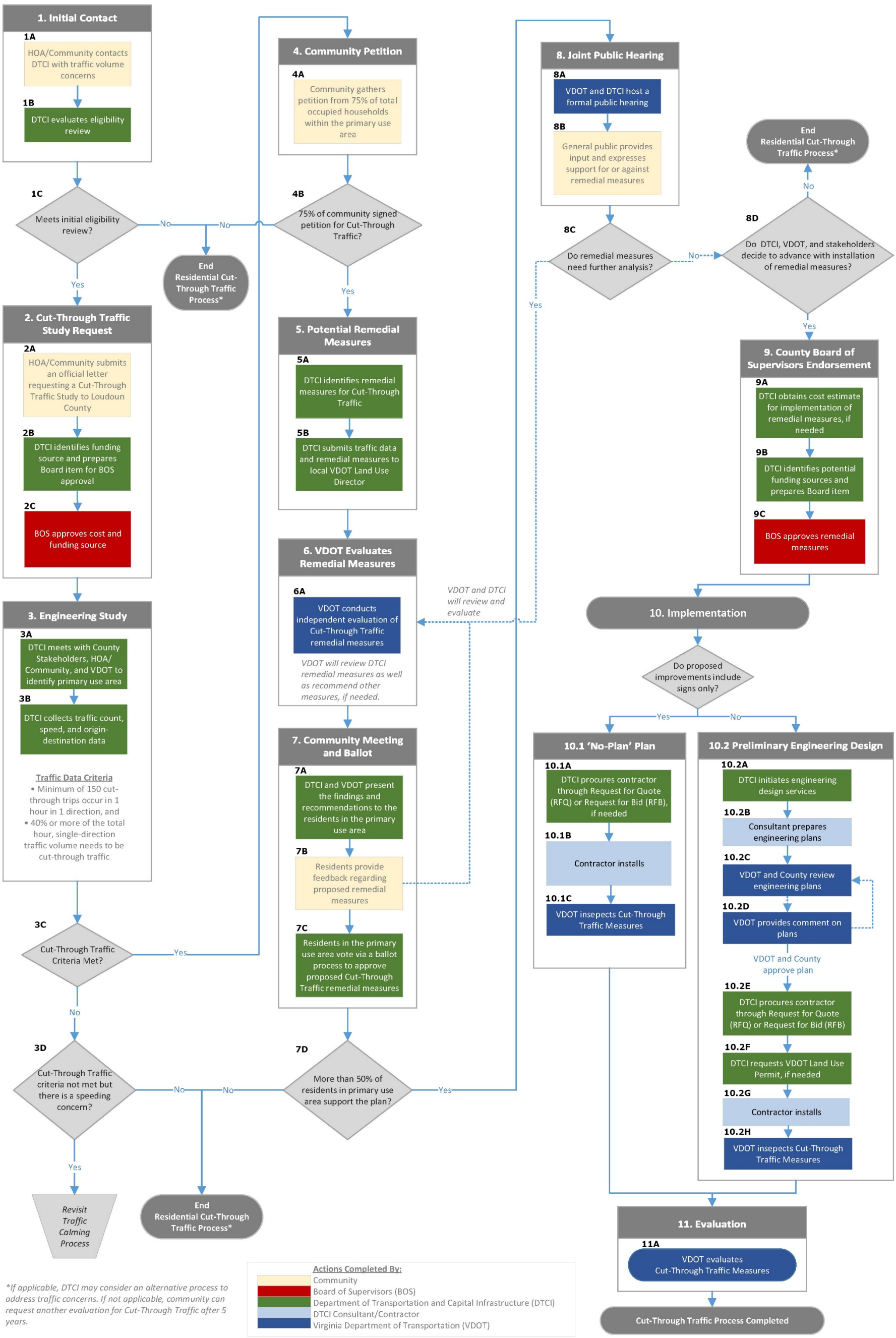


The work flow diagram on the next page is an overview of all the steps associated with the cut-through traffic process. All steps are consecutive but have several directions a request can flow through. Following the overall work flow diagram is additional guidance for each step in the process including a narrative description of the expectations and a matrix of responsibilities.

Residential Traffic Management Guide

Loudoun County Residential Cut-Through Traffic Process

Residential Cut-Through Traffic Studies are second step solutions to other projects such as Residential Traffic Calming. They are not considered a stand-alone project, unless necessary.



**If applicable, DTCI may consider an alternative process to address traffic concerns. If not applicable, community can request another evaluation for Cut-Through Traffic after 5 years.*

Residential Traffic Management Guide

Step 1. Initial Contact

Step 1: Initial Contact is the first step of the cut-through traffic process. Individual residents, community groups, or organizations submit requests to address vehicle volume concerns through email, phone calls, in-person meetings, or the Loudoun Express Request (LEx) online portal. Sometimes communities will submit traffic volume concerns to their respective District Supervisor's Office, the Loudoun County Sheriff's Office (LCSO), or VDOT. All residential traffic volume concerns are forwarded to the Department of Transportation and Capital Infrastructure (DTCI) for review.

DTCI reviews the residential traffic volume concerns for eligibility for the cut-through traffic program. The functional classification of the street(s) in question must be a local residential street to be considered for the *Residential Cut-Through Traffic Program*. Cut-through traffic eligibility requirements include:

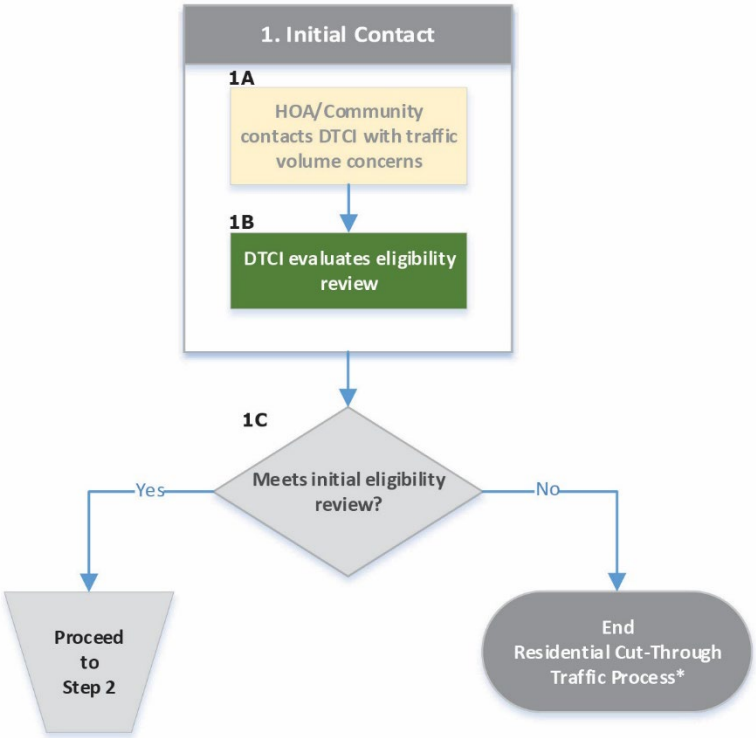
1. The roadway must be in the VDOT Secondary Roadway System.
2. The roadway must be a local residential street within a neighborhood that provides direct access to abutting land uses. See the box below for more information regarding neighborhood streets.

What is a local residential street? Local residential streets are streets within a neighborhood that provide direct access to abutting land uses and serve only to provide mobility within that community.

To determine the entity that is responsible for maintaining each road in Loudoun County, please visit the Loudoun County Road Maintenance Map an interactive online tool.

Process and stakeholder responsibilities for ***Step 1: Initial Contact*** are summarized in **Figure 18** and **Table 9**, respectively.

Figure 18. Process for Cut-Through Traffic
Step 1: Initial Contact



*If applicable, DTCI may consider an alternative process to address traffic concerns.

Table 9. Responsibilities for Cut-Through Traffic
Step *1: Initial Contact*

1. *Initial Contact*	1A	1B	1C
District Supervisor's Office/Board of Supervisors	Support		
Department of Transportation and Capital Infrastructure	Support	Lead	Lead
Homeowners Association/Civic Association/Community Task Force	Lead		
Virginia Department of Transportation	Support	Support	
Loudoun County Sheriff's Office	Support		
Loudoun County Public Schools			
Department of Fire, Rescue & Emergency Management			
Department of General Services			
Contractor/Consultant			

Step 2. Cut-Through Traffic Study Request

Under ***Step 2: Cut-Through Traffic Study Request***, the Homeowners Association (HOA), Civic Association (CA), or Community Task Force submits an official request letter requesting a cut-through traffic study to Loudoun County. The letter should state the traffic concern, specific location within the neighborhood, and any other pertinent information that would be helpful with reviewing the traffic volume issue.

In some cases, multiple HOAs or CAs may be represented to address a traffic volume concern and a joint letter may be submitted. If an HOA or CA does not exist within the community, a Community Task Force must be established to represent the residents of the impacted area. The Community Task Force may submit the official letter requesting a cut-through traffic study on behalf of the residents in the impacted area.

What is a Community Task Force? A Community Task Force is a group of residents that work together to improve safety within the community. To establish the task force, ten (10) percent of residents in the impacted area (minimum of two [2] residents and a maximum of ten [10] residents) is required. For example, if there are 300 households, ten (10) residents would be required to form the community task force.

DTCI obtains a cost proposal from a consultant to evaluate the cut-through traffic request for the residential area, identifies a potential funding source, and presents the funding request to the Board of Supervisors (BOS) for review and approval. BOS Business Meetings are established at the beginning of the calendar year and each Business Meeting agenda is largely developed two months in advance of the meeting date. The BOS then decides whether to support the cut-through traffic study request.

Process and stakeholder responsibilities for ***Step 2: Cut-Through Traffic Study Request*** are summarized in **Figure 19** and **Table 10**, respectively.

If the cut-through traffic study request is approved by the BOS, DTCI proceeds to ***Step 3: Engineering Study***.

Figure 19. Process for Cut-Through Traffic
Step 2: Cut-Through Traffic Study Request

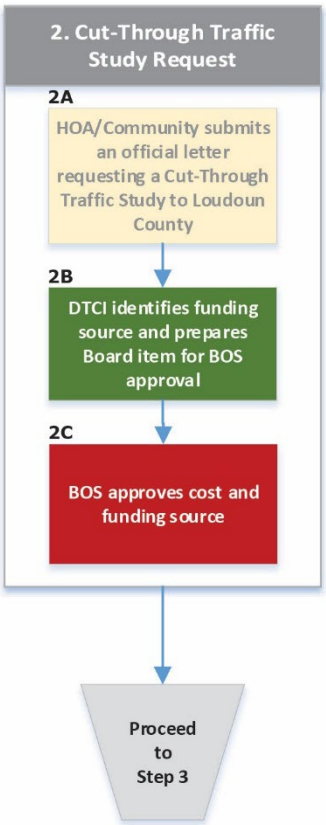


Table 10. Responsibilities for Cut-Through Traffic
Step 2: Cut-Through Traffic Study Request

2. *Cut-Through Traffic Study Request*	2A	2B	2C
District Supervisor's Office/Board of Supervisors	Support		Lead
Department of Transportation and Capital Infrastructure	Support	Lead	Support
Homeowners Association/Civic Association/Community Task Force	Lead		
Virginia Department of Transportation	Support	Support	Support
Loudoun County Sheriff's Office	Support		
Loudoun County Public Schools			
Department of Fire, Rescue & Emergency Management			
Department of General Services			
Contractor/Consultant		Support	

Step 3. Engineering Study

In ***Step 3: Engineering Study***, DTCI will schedule an initial meeting with the HOA, CA, or Community Task Force and other stakeholders to gather information related to the traffic volume concern. Information gathered may be an overview of existing traffic concerns, contributing factors, and any available traffic data. Other stakeholders may include VDOT, LCSO, Department of Fire, Rescue & Emergency Management (DFREM), and Loudoun County Public Schools (LCPS) if a school is in the vicinity of the identified study area. At the stakeholders meeting, the primary use area will be identified.

> **What is a primary use area?** The primary use area is all local residential streets whose traffic operational characteristics may be altered by operational changes to the candidate street(s) for residential cut-through traffic study or by a change to any street that provides access to that community.

Following the stakeholder meeting, DTCI begins the traffic engineering study to determine the cut-through traffic program is appropriate for the requested roadway. The traffic study includes an engineering field review, evaluation of traffic count data, and completion of an origin-destination study to identify travel patterns. Volume and speed data are typically collected during a 48-hour period on Tuesdays, Wednesdays, or Thursdays, and when public schools are in session, on a nonholiday week, and weather permitting.

Qualifying streets **must** meet both of the following criteria to be considered in the *Residential Cut-Through Traffic Program*:

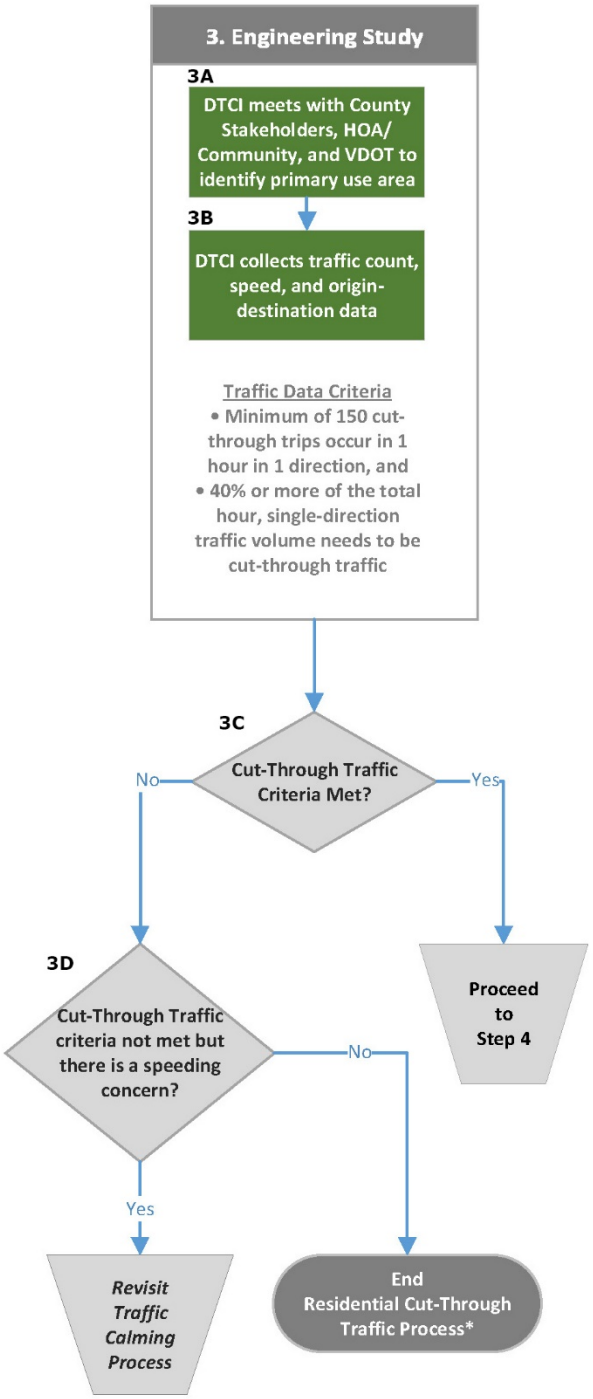
1. A minimum of 150 cut-through trips occur in one hour in one direction, **AND**
2. Forty percent or more of the total one-hour, single-direction volume must be cut-through traffic.

DTCI shares data with local agencies including LCSO, DFREM, and LCPS.

If the cut-through traffic criteria is not met, but there is a speeding concern, the project may be considered in the traffic calming process. If the cut-through traffic criteria is met, DTCI proceeds to ***Step 4: Community Petition.***

Process and stakeholder responsibilities for ***Step 3: Engineering Study*** are summarized in **Figure 20** and **Table 11** respectively.

Figure 20. Process for Cut-Through Traffic
Step 3: Engineering Study



*If applicable, DTCI may consider an alternative process to address traffic concerns.

Table 11. Responsibilities for Cut-Through Traffic
Step 3: Engineering Study

3. *Engineering Study*	3A	3B	3C	3D
District Supervisor's Office/Board of Supervisors	Support			
Department of Transportation and Capital Infrastructure	Support	Lead	Lead	Lead
Homeowners Association/Civic Association/Community Task Force	Lead			
Virginia Department of Transportation	Support	Support	Support	Support
Loudoun County Sheriff's Office	Support			
Loudoun County Public Schools				
Department of Fire, Rescue & Emergency Management				
Department of General Services				
Contractor/Consultant				

Step 4. Community Petition

If the traffic volume requirements are met, the next step is ***Step 4: Community Petition.*** A petition outlining the perceived problem and signed by at least 75 percent of the total occupied households within the primary use area must be obtained. DTCI coordinates with the community and VDOT to identify the primary use area. Petition requirements include the following:

1. Only occupied residences in the survey area are included in measuring and documenting community support.
2. Each residence address is allowed a single signature or vote to indicate agreement or disagreement with the comprehensive cut-through traffic management plan. Individuals must be 18 years or older to provide a signature.

What is a primary use area? The primary use area is all local residential streets whose traffic operational characteristics may be altered by operational changes to the candidate street(s) for residential cut-through traffic study or by a change to any street that provides access to that community.

The community is responsible for gathering at least 75 percent of residents in support of pursuing cut-through traffic measures. DTCI then identifies alternative routes for through traffic if travel is restricted on the streets in question.

Process and stakeholder responsibilities for ***Step 4: Community Petition*** are summarized in **Figure 21** and **Table 12**, respectively.

Figure 21. Process for Cut-Through Traffic
Step 4: Community Petition

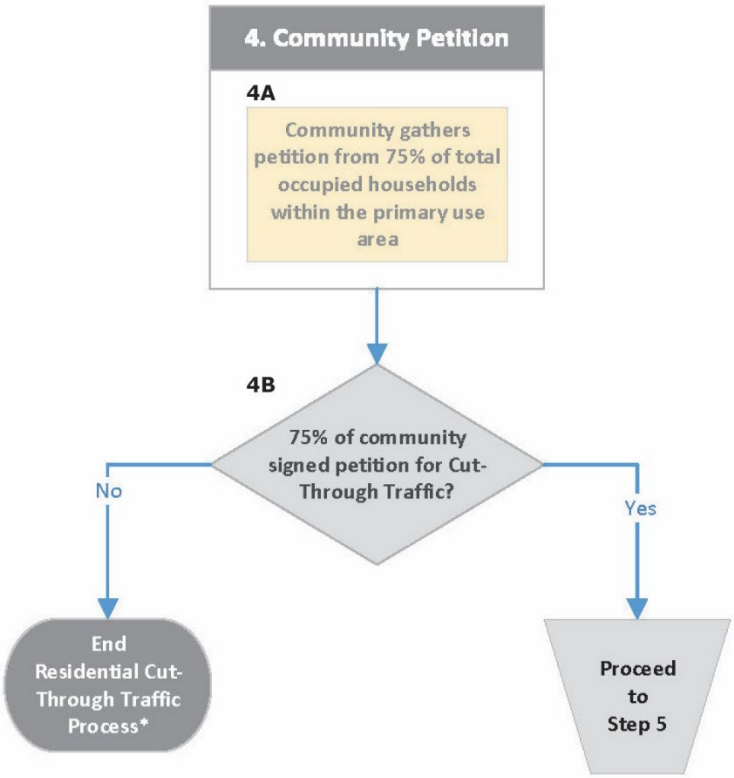


Table 12. Responsibilities for Cut-Through Traffic
Step 4: Community Petition

4. *Community Petition*	4A	4B
District Supervisor's Office/Board of Supervisors		
Department of Transportation and Capital Infrastructure	Support	Support
Homeowners Association/Civic Association/Community Task Force	Lead	Lead
Virginia Department of Transportation		
Loudoun County Sheriff's Office		
Loudoun County Public Schools		
Department of Fire, Rescue & Emergency Management		
Department of General Services		
Contractor/Consultant		

Step 5. Potential Remedial Measures

In ***Step 5: Potential Remedial Measures,*** DTCI identifies remedial measures for cut-through traffic using traffic data and feedback from the HOA, CA representatives, and VDOT. Once potential remedial measures are developed, DTCI submits the traffic data and proposed remedial measures to the local VDOT Land Use Director for initial support and review. Potential cut-through traffic mitigation measures can be found in the Appendix B.

The following supporting documentation should be included with submission to VDOT:

- Functional classification of the street(s) in question as a local residential street
- Identification of the primary use area boundaries and the functional classification of all roadways in that area
- Vehicle volume data
- Verification that cut-through traffic on the local residential street is 40 percent or more of the total 1-hour, single-direction volume, and that a minimum of 150 cut-through trips occur in 1 hour in one direction
- An acceptable description of the planning technique used to determine the amount of cut-through traffic
- Alternative routes for through traffic if travel is restricted on the street(s) in question

Process and stakeholder responsibilities for ***Step 5: Potential Remedial Measures*** are summarized in **Figure 22** and **Table 13**, respectively.

Figure 22. Process for Cut-Through Traffic
Step 5: Potential Remedial Measures

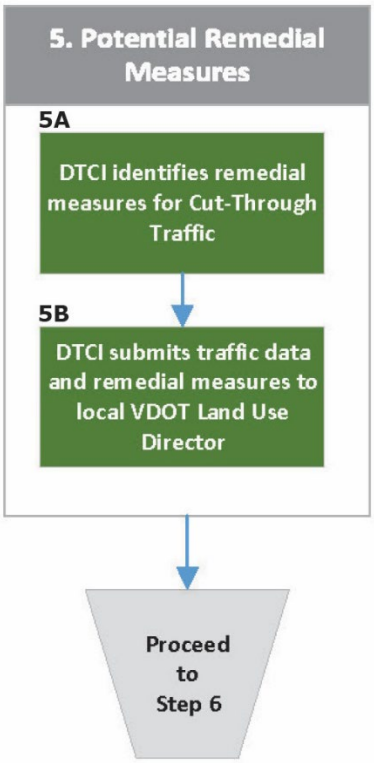


Table 13. Responsibilities for Cut-Through Traffic
Step 5: Potential Remedial Measures

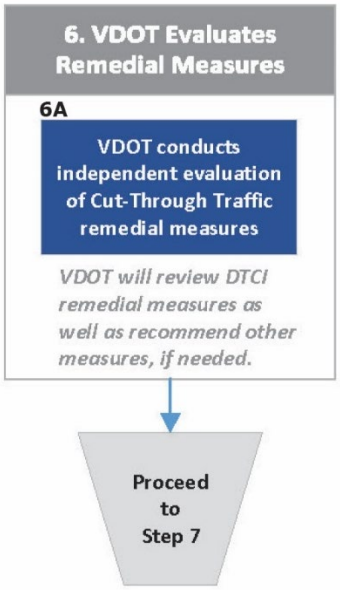
5. *Potential Remedial Measures*	5A	5B
District Supervisor's Office/Board of Supervisors		
Department of Transportation and Capital Infrastructure	Lead	Lead
Homeowners Association/Civic Association/Community Task Force		
Virginia Department of Transportation	Support	Support
Loudoun County Sheriff's Office		
Loudoun County Public Schools		
Department of Fire, Rescue & Emergency Management		
Department of General Services		
Contractor/Consultant		

Step 6. VDOT Evaluates Remedial Measures

In ***Step 6: VDOT Evaluates Remedial Measures,*** VDOT then conducts an independent evaluation of the cut-through traffic mitigation measures proposed by DTCI. The VDOT analysis evaluates proposed impacts on the existing roadway network and impacts to motorists travel time. VDOT may recommend enhanced modifications to the proposed measures.

Process and stakeholder responsibilities for ***Step 6: VDOT Evaluates Remedial Measures*** are summarized in **Figure 23** and **Table 14**, respectively.

Figure 23. Process for Cut-Through Traffic
Step 6: VDOT Evaluates Remedial Measures



*If applicable, DTCI may consider an alternative process to address traffic concerns.

Table 14. Responsibilities for Cut-Through Traffic
Step 6: VDOT Evaluates Remedial Measures

6. *VDOT Evaluates Remedial Measures*	6A
District Supervisor's Office/Board of Supervisors	
Department of Transportation and Capital Infrastructure	Support
Homeowners Association/Civic Association/Community Task Force	
Virginia Department of Transportation	Lead
Loudoun County Sheriff's Office	
Loudoun County Public Schools	
Department of Fire, Rescue & Emergency Management	
Department of General Services	
Contractor/Consultant	

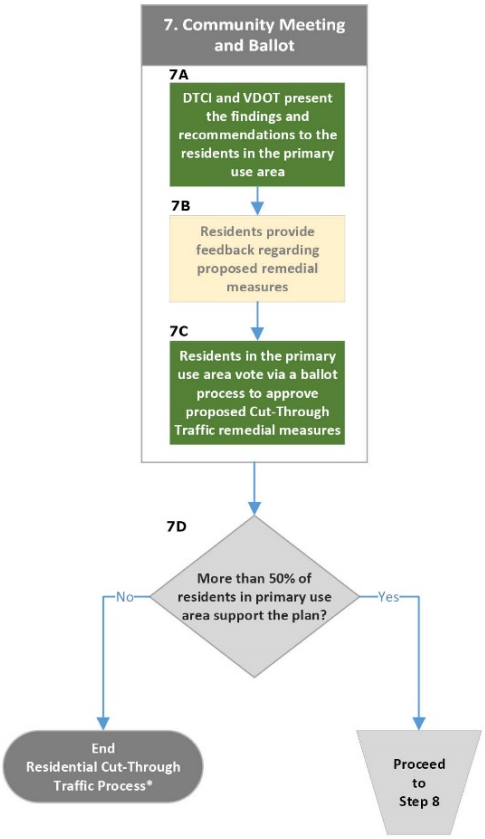
Step 7. Community Meeting and Ballot

Upon finalizing the VDOT remedial evaluation step, DTCI, with support from VDOT, leads a community meeting with residents to present results of the study as defined in ***Step 7: Community Meeting and Ballot.*** Residents in the primary use area vote via a ballot to approve proposed cut-through traffic remediation measures (plan). 50 percent or more of the community must return ballots supporting proposed cut-through traffic mitigation measures.

If community support criteria are met, DTCI proceeds to ***Step 8: Joint Public Hearing***. If the criteria are not met, the residential cut-through traffic process ends.

Process and stakeholder responsibilities for ***Step 7: Community Meeting and Ballot*** are summarized in **Figure 24** and **Table 15**, respectively.

Figure 24. Process for Cut-Through Traffic
Step 7: Community Meeting and Ballot



*If applicable, DTCI may consider an alternative process to address traffic concerns.

Table 15. Responsibilities for Cut-Through Traffic
Step 7: Community Meeting and Ballot

7. *Community Meeting and Ballot*	7A	7B	7C	7D
District Supervisor's Office/Board of Supervisors				
Department of Transportation and Capital Infrastructure	Lead	Support	Lead	Support
Homeowners Association/Civic Association/Community Task Force	Support	Lead	Support	Lead
Virginia Department of Transportation	Support			
Loudoun County Sheriff's Office				
Loudoun County Public Schools				
Department of Fire, Rescue & Emergency Management				
Department of General Services				
Contractor/Consultant				

Step 8. Joint Public Hearing

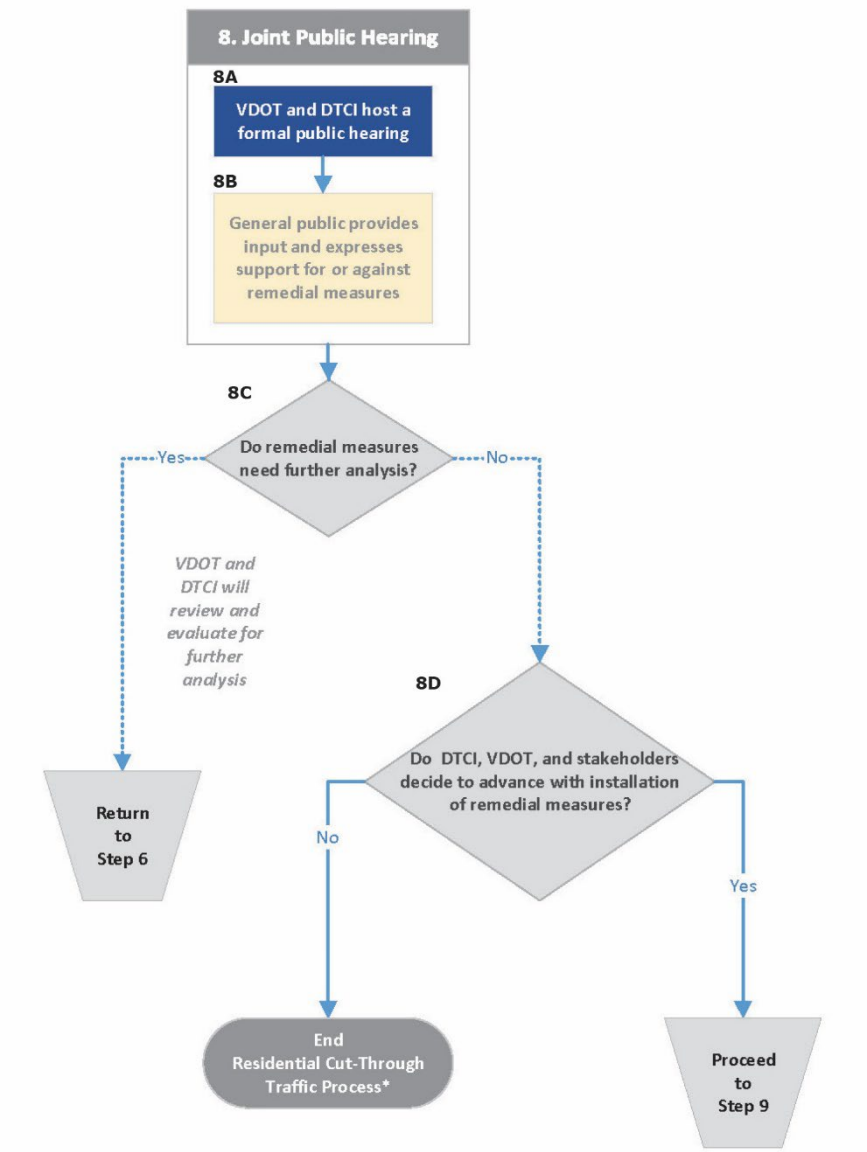
In ***Step 8: Joint Public Hearing,*** VDOT and DTCI will hold a formal public hearing with the general public to gather input on the remedial measures. VDOT adheres to specific instructions for formal public hearings and the meeting is advertised to the general public. Advance notice of the public hearing must be provided by VDOT and will consist of:

- VDOT publishing notice in a newspaper or having general circulation in the County once a week for two successive weeks.
- County posting notice of the proposed hearing at the front door of the courthouse of the County ten days prior to the hearing.
- VDOT placing signs on the affected street(s) identifying, by name and telephone number or address, an individual to answer questions concerning the findings and recommendations.

Based on the input, VDOT and DTCI may review and re-evaluate the remedial measures, if needed, by returning to ***Step 6: VDOT Evaluates Remedial Measures***. After DTCI, VDOT, and stakeholders agree to install remedial measures, DTCI proceeds to ***Step 9: County Board of Supervisors Endorsement*** to seek BOS approval for implementation of the cut-through traffic measures.

Process and stakeholder responsibilities for ***Step 8: Joint Public Hearing*** are summarized in **Figure 25** and **Table 16,** respectively.

Figure 25. Process for Cut-Through Traffic
Step 8: Joint Public Hearing



*If applicable, DTCI may consider an alternative process to address traffic concerns.

Table 16. Responsibilities for Cut-Through Traffic
Step 8: Joint Public Hearing

8. *Joint Public Hearing*	8A	8B	8C	8D
District Supervisor's Office/Board of Supervisors	Support			
Department of Transportation and Capital Infrastructure	Support	Support	Lead	Lead
Homeowners Association/Civic Association/Community Task Force	Support	Lead	Support	
Virginia Department of Transportation	Lead	Support	Support	Support
Loudoun County Sheriff's Office	Support			
Loudoun County Public Schools				
Department of Fire, Rescue & Emergency Management				
Department of General Services				
Contractor/Consultant				

Step 9. County Board of Supervisors Endorsement

Upon the completion of community meeting and public hearing, DTCI obtains cost estimates for implementation of cut-through traffic remedial measures, if needed. DTCI then identifies potential funding sources and prepares a Board Item for review and approval an upcoming BOS Business Meeting.

BOS Business Meetings are established at the beginning of the calendar year and each Business Meeting agenda is largely developed two months in advance of the meeting date. The BOS then decides whether to support implementation of the cut-through traffic remedial measures.

Process and stakeholder responsibilities for ***Step 9: County Board of Supervisors Endorsement*** are summarized in **Figure 26** and **Table 17,** respectively.

Figure 26. Process for Cut-Through Traffic
Step 9: County Board of Supervisors Endorsement

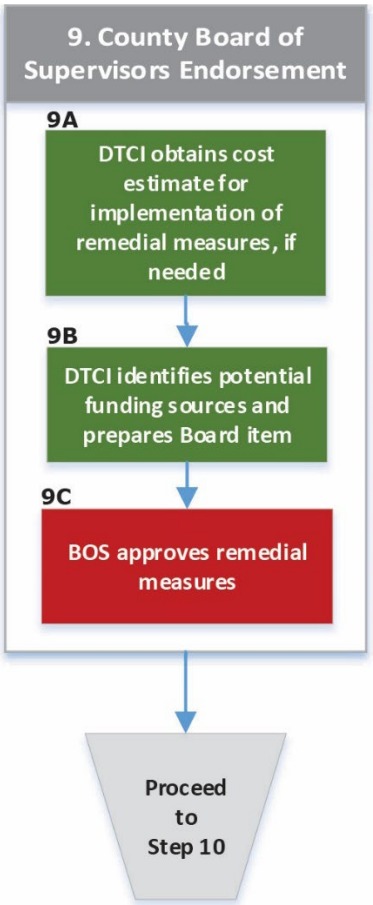


Table 17. Responsibilities for Cut-Through Traffic
Step 9: County Board of Supervisors Endorsement

9. *County Board of Supervisors Endorsement*	9A	9B	9C
District Supervisor's Office/Board of Supervisors			Lead
Department of Transportation and Capital Infrastructure	Lead	Lead	Support
Homeowners Association/Civic Association/Community Task Force			
Virginia Department of Transportation			
Loudoun County Sheriff's Office			
Loudoun County Public Schools			
Department of Fire, Rescue & Emergency Management			
Department of General Services			
Contractor/Consultant			

Step 10. Implementation

Depending on the proposed cut-through traffic measures, DTCI may proceed with either a 'No-Plan' Plan or a Preliminary Engineering Design. DTCI may develop a 'No-Plan' Plan when **ONLY** signs are proposed in the cut-through traffic remediation plan and proceed to ***Step 10.1: 'No-Plan' Plan***.

Step 10.1. Implementation: 'No-Plan' Plan

Under ***Step 10.1: Implementation: 'No-Plan' Plan,*** DTCI pursues the 'No-Plan' Plan for only installing signs or non-intrusive traffic controls as identified in Appendix B. Should the BOS endorse the community-approved and recommended cut-through traffic plan, DTCI secures a contractor through a procurement process to implement approved remedial measure(s), if needed. Upon the completion of the installation, VDOT assesses and confirms proper installation according to the approved cut-through traffic plans.

Process and stakeholder responsibilities for ***Step 10.1: Implementation: 'No-Plan' Plan*** are summarized in **Figure 27** and **Table 18,** respectively.

Figure 27. Process for Cut-Through Traffic
Step 10.1: Implementation – 'No-Plan' Plan

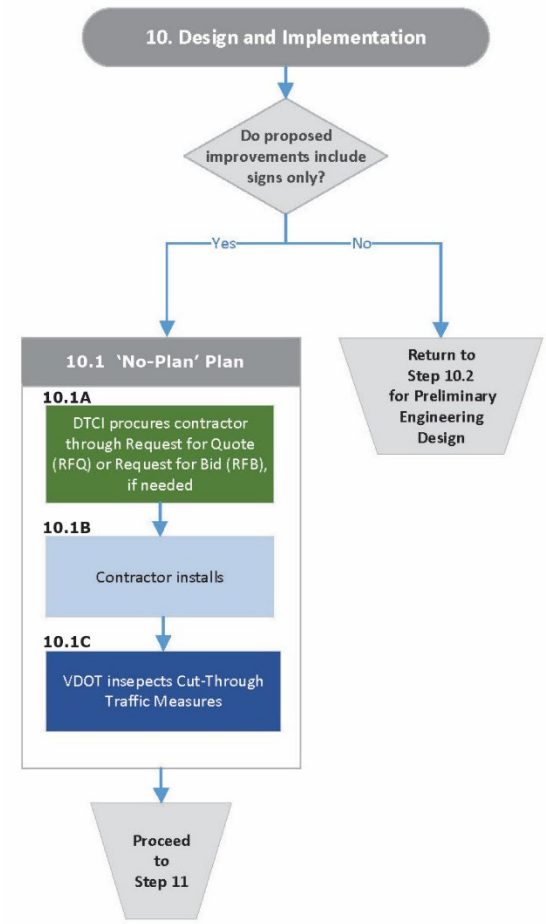


Table 18. Responsibilities for Cut-Through Traffic
Step 10.1: Implementation – 'No-Plan' Plan

10.1 *Implementation: 'No-Plan' Plan*	10.1A	10.1B	10.1C
District Supervisor's Office/Board of Supervisors			
Department of Transportation and Capital Infrastructure	Lead	Lead	Support
Homeowners Association/Civic Association /Community Task Force			
Virginia Department of Transportation		Support	Lead
Loudoun County Sheriff's Office			
Loudoun County Public Schools			
Department of Fire, Rescue & Emergency Management			
Department of General Services			
Contractor/Consultant		Support	Support

Step 10.2. Implementation: Preliminary Engineering Design

If remedial measures require more than the installation of a new sign or non-intrusive traffic controls, as identified in Appendix B, then the next step is ***Step 10.2: Implementation: Preliminary Engineering Design.*** Under this step, DTCI coordinates with an engineering consultant and VDOT for detailed design plans. Should the BOS endorse the community-approved and recommended cut-through traffic plan, DTCI secures a contractor through a procurement process to implement approved remedial measure(s), if needed. Upon the completion of the installation, VDOT assesses and confirms proper installation according to the approved cut-through traffic plans.

Process and stakeholder responsibilities for ***Step 10.2: Implementation: Preliminary Engineering Design*** are summarized in **Figure 28** and **Table 19,** respectively.

Figure 28. Process for Cut-Through Traffic
Step 10.2: Implementation – Preliminary Engineering Design

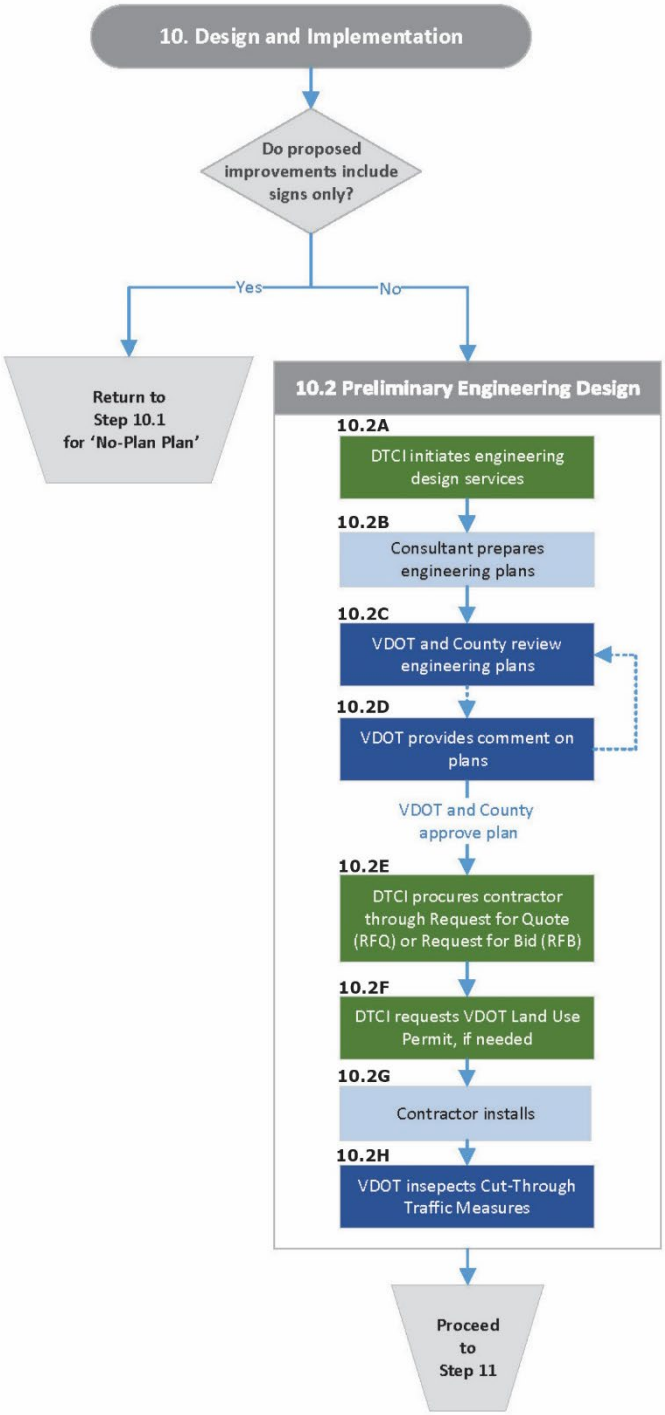


Table 19. Responsibilities for Cut-Through Traffic
Step 10.2: Implementation – Preliminary Engineering Design

10.2 Design and Implementation: Preliminary Engineering Design	**10.2A**	**10.2B**	**10.2C**	**10.2D**	**10.2E**	**10.2F**	**10.2G**	**10.2H**
District Supervisor's Office/Board of Supervisors								
Department of Transportation and Capital Infrastructure	Lead	Support	Support	Support	Lead	Lead	Support	Support
Homeowners Association/Civic Association/Community Task Force								
Virginia Department of Transportation		Support	Lead	Lead				Lead
Loudoun County Sheriff's Office								
Loudoun County Public Schools								
Department of Fire, Rescue & Emergency Management								
Department of General Services								
Contractor/Consultant		Lead	Support	Support	Support	Support	Lead	Support

Step 11. Evaluation

After the remedial measures have been in place for generally not less than 30 days, but not more than 6 months, VDOT will evaluate and re-study the roadway network and convey the findings to VDOT leadership and the District Supervisor's Office under ***Step 11: Evaluation.***

If it is determined that the implemented remedial measures are not appropriate, VDOT District Administrator may terminate such measures and may consider alternate measures, with notification of such action to the appropriate stakeholders.

Process and stakeholder responsibilities for ***Step 11: Evaluation*** are summarized in **Figure 29** and **Table 20,** respectively.

Figure 29. Process for Cut-Through Traffic
Step 11: Evaluation

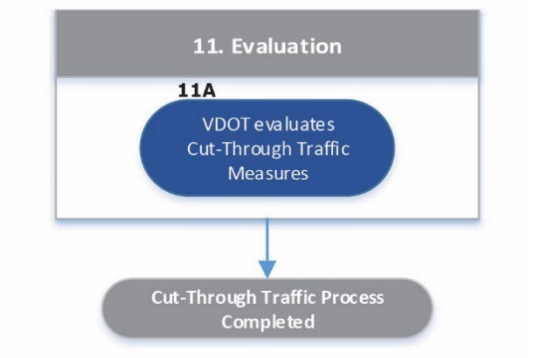


Table 20. Responsibilities for Cut-Through Traffic
Step 11: Evaluation

11. Evaluation	**11.A**
District Supervisor's Office/Board of Supervisors	
Department of Transportation and Capital Infrastructure	Support
Homeowners Association/Civic Association /Community Task Force	
Virginia Department of Transportation	Lead
Loudoun County Sheriff's Office	
Loudoun County Public Schools	
Department of Fire, Rescue & Emergency Management	
Department of General Services	
Contractor/Consultant	

References

Loudoun County Road Maintenance Map

https://va-loudouncounty2.civicplus.com/3919/Road-Maintenance-Information

Maximum speed limit in business and residence districts (Code of Virginia 46.2-874)

https://law.lis.virginia.gov/vacode/title46.2/chapter8/section46.2-874/

VDOT Residential Cut-Through Traffic Policy (May 1996)

http://www.virginiadot.org/programs/resources/CUTTHRUPOLICY.pdf

VDOT Traffic Calming Guide for Neighborhood Streets (2018)

http://www.virginiadot.org/programs/resources/Traffic-Calming-Guide-For-Neighborhood-Streets.pdf

Residential Traffic Management Guide

APPENDIX A:
Potential Traffic Calming Measures

Potential Traffic Calming Measures

A neighborhood street can be physically modified in some manner with the purpose of encouraging a change in motorist behavior by reducing speed, increasing awareness of pedestrians and cyclists, or diverting traffic to a more appropriate street (arterial or collector). There are two types of traffic calming measures: (1) nonintrusive measures and (2) horizontal, vertical, and narrowing measures.

Per Virginia Department of Transportation (VDOT) guidance, nonintrusive traffic calming measures offer the advantage that they do not physically constrain vehicle maneuvers and are less invasive. Potential nonintrusive measures include:

- Additional $200 Fine Sign
- Pole-Mounted Speed Display Sign (PMSD)

Horizontal, vertical, and narrowing traffic calming measures are installed on the roadway surface to narrow the travel way or create horizontal or vertical shifts in the roadway. Potential horizontal, vertical, and narrowing measures:

- Chicane
- Choker
- Crosswalk Refuge
- Curb Refuge (Bulb-Out)
- Raised Crosswalk
- Raised Intersection
- Raised Median Island
- Speed Hump
- Speed Lump
- Speed Table

The following pages provide more detail including advantages, disadvantages, estimated costs, and estimated timeline for implement for each potential traffic calming measure.

Additional $200 Fine Sign

Description

An Additional $200 Fine sign allows for an additional $200 to be imposed to other related fines for speeding in residential areas. If the installation of these signs is the only measure taken for a roadway, the requirements set forth in Virginia Department of Transportation's (VDOT's) official policy[1] must be consulted. A formal acceptance process must include a request for the sign(s) by resolution of the local governing body including evidence of a speeding problem and support for increased penalties by the community.

Advantages

- **Easily recognizable**
- **Does not slow emergency vehicles and transit**

Disadvantages

- **Unclear effectiveness**

Additional $200 Fine Sign, Regency Community

Specifications and Placement

Additional $200 Fine signs are installed in conjunction with posted regulatory speed limit signs and should be placed at the beginning and end of a roadway. A minimum visibility distance of 200 feet must be provided upon approach and no less than 100 feet between other signs.

Effectiveness

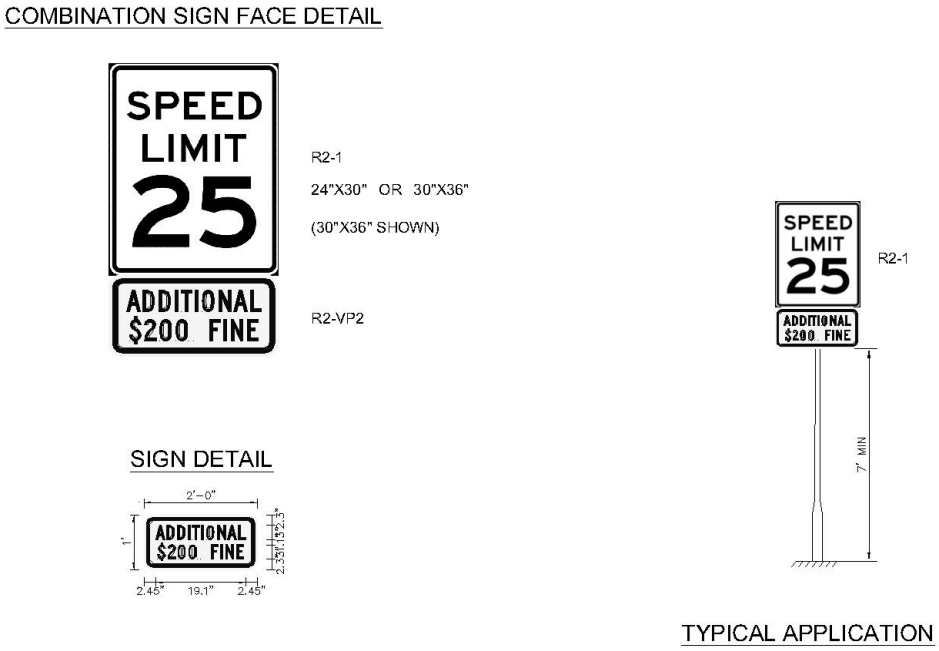
There is not clear, quantifiable evidence that these signs reduce operating speeds.

Timeline

Typical installation occurs less than 12 months after final approval and funding.

[1] VDOT - *Applicability of §46.2-878.2 of the Code of Virginia* - 1999

Additional $200 Fine Sign



Additional $200 Fine Sign

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Per the 2009 Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices* (MUTCD) **Section 2B.17**:
  - The supplemental sign panel indicating that an "Additional $200 Fine" applies shall be posted below the regulatory R2-1 speed limit sign panel as shown above.
  - The "Additional $200 Fine" sign assembly shall be installed at the beginning of the zone in each travel direction where the higher fines have been designated.
  - A sign indicating "End Higher Fines Zone" shall be erected in each travel direction at the locations where the designation of higher fines ends.
- Additional signs may be placed at interim locations between the beginning and ending of the designated higher fines. zone, where it is desired to further reinforce the posted speed limit and/or the existence of the additional fines.
- Sign should be located at least 100 feet from any other signs.
- The size requirements for the "Additional $200 Fine" signs are as shown above and as further indicated in the future version of the Virginia Standard Highway Signs book.

Chicane

Description

A chicane is a type of curb extension that is built in succession with other curb extensions on alternating sides of the street, often in sets of three, creating an S-shape travel path along an otherwise straight section of a roadway. This treatment forces a vehicle to slow down to navigate the curved section. Raised landscape islands may also be provided at both ends of a chicane to enhance a driver's awareness of the upcoming lateral shift.

Advantages

- **Discourages high speeds**
- **Easily negotiable by emergency vehicles**
- **Opportunity for landscaping**

Disadvantages

- **Narrows travel-way for bicyclists**
- **Potential loss of parking**
- **Drivers may deviate from lane**
- **Can be expensive**
- **Increased cost for maintenance of landscaping**
- **May be struck by vehicles**

Rendering of Typical Chicane Installation

Specifications and Placement

Chicanes are typically placed at mid-block where a median or other type of nontraversable barrier may be placed in a nearby corridor. A raised median or barrier may be placed along the centerline of the roadway to prevent centerline lane deviation by vehicles. In general, more closely spaced constructions and narrower travel way widths encourage greater reductions in speeds.

Effectiveness

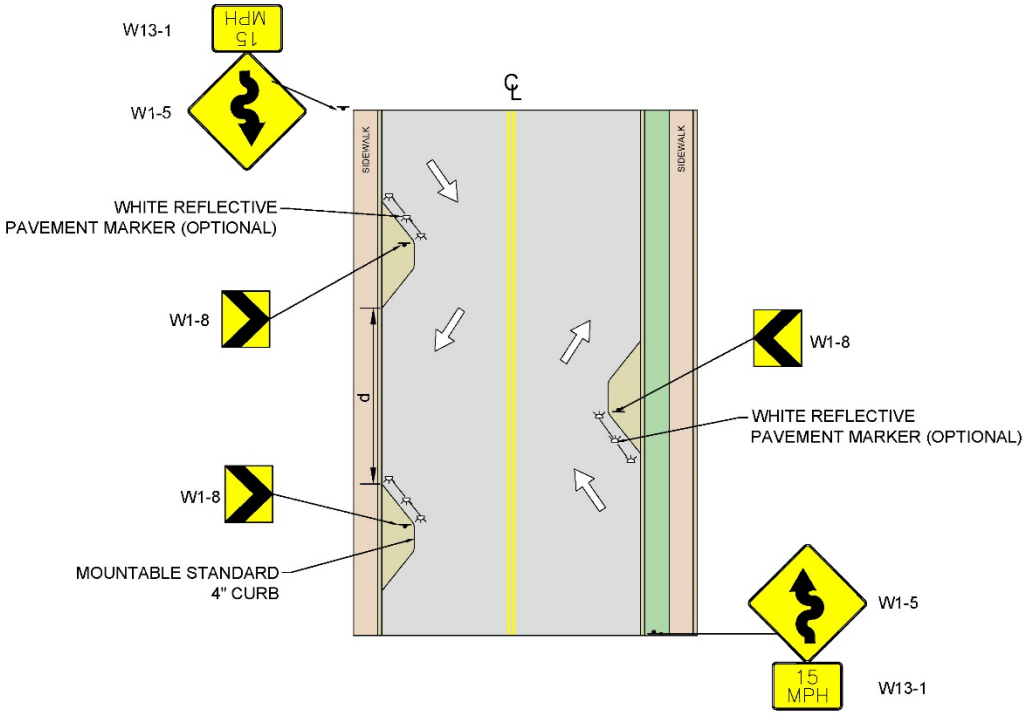
Although limited data is available, FHWA suggests operating speeds may be reduced by approximately 3 to 9 miles per hour on average.[2]

Timeline

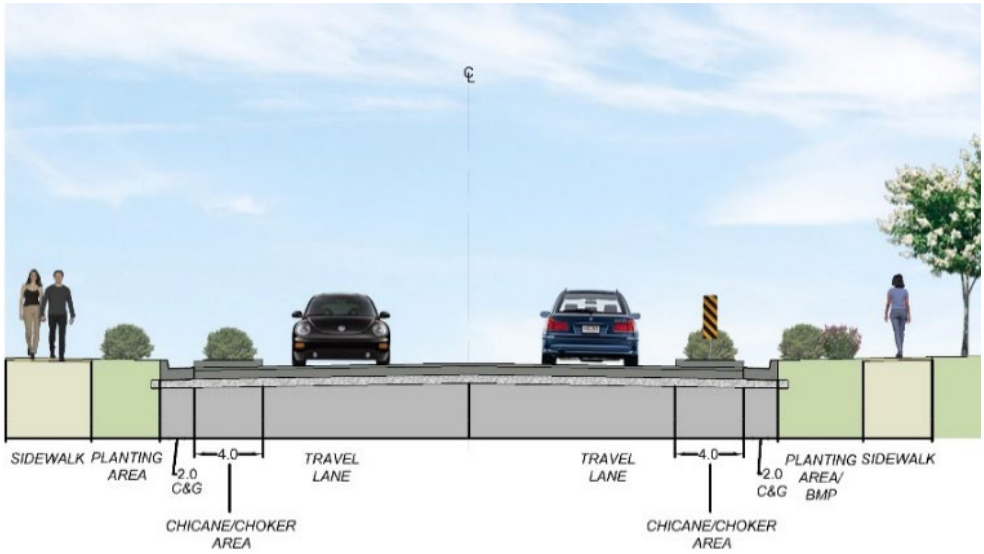
Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

[2]FHWA - *A Desktop Reference of Potential Effectiveness in Reducing Speed* - 2014

Chicane

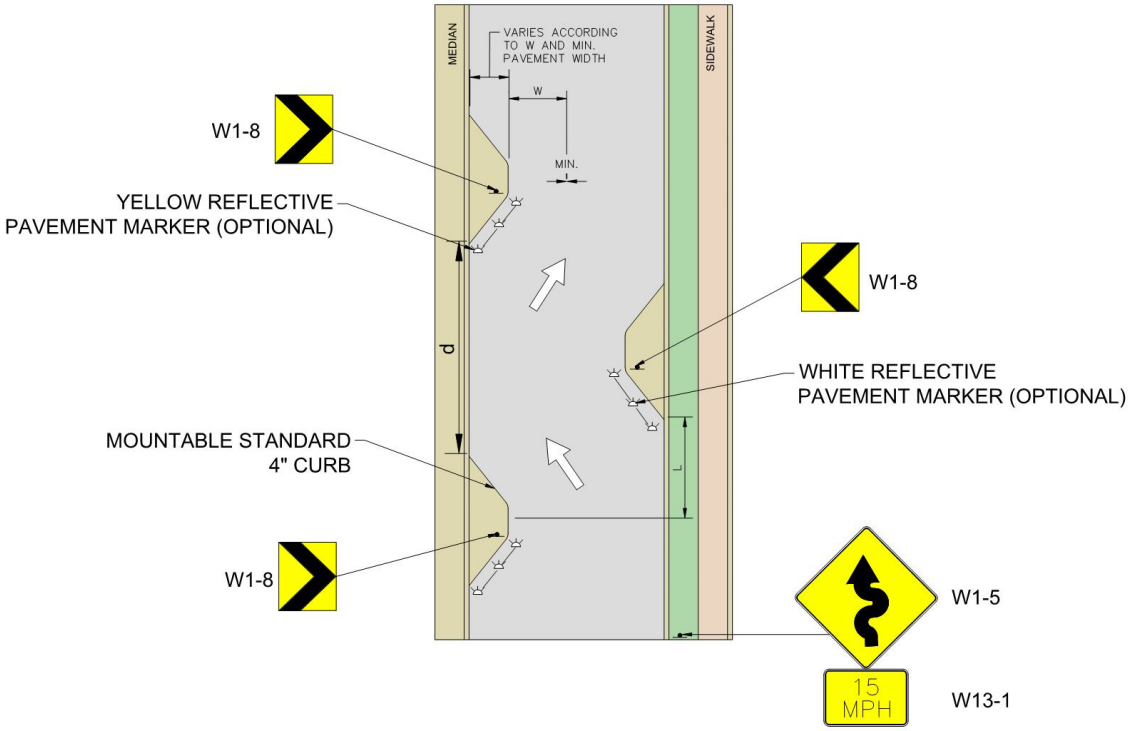


Two-Way Chicane Schematic



Two-Way Chicane Rendering

Chicane



One-Way Chicane Schematic

MAXIMUM STAGGER LENGTH (L) REQUIRED TO ACHIEVE INDICATED PASSENGER CAR SPEED FOR TRAVELWAY WIDTH OF 15 FT		
FREE VIEW WIDTH 'W' (FT)	STAGGER LENGTH 'L' (FT)	
	20 MPH	25 MPH
+3.5	23	30
0	30	40
-3.5	36	50

MINIMUM STAGGER LENGTH (L) FOR SU-30 TRUCK FREE WIDTH VIEW 'W' = 0 FT			
TRAVELWAY WIDTH (FT)	10	11	12
STAGGER LENGTH 'L' (FT)	40.0	34.0	29.0

Measurements Reference VDOT 2017 Traffic Calming Guide for Neighborhood Streets

Chicane

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Uses a minimum travel-way width of 10 feet for each travel direction at and through the chicane for average daily trips (ADT) less than 1,501 vehicles per day and truck traffic (in a mixed-used area) less than or equal to 5 percent. Otherwise, refer to Figure A in the appendix of VDOT's Traffic Calming Guide for Neighborhood Streets.
- To calculate the maximum stagger length (L) and free view width (W) to achieve the indicated passenger car speed through the chicane, use the corresponding chart in Figure A-11 in the appendix of VDOT's Traffic Calming Guide for Neighborhood Streets.
- To calculate the maximum stagger length (L) to accommodate a single-unit truck (AASHTO SU-30) for a free view width (W) of 0 feet, use the corresponding chart in Figure A-11 in the appendix of VDOT's Traffic Calming Guide for Neighborhood Streets.
- The transition of the approach curb and any accompanying raised pavement markers will be in conformance to the design or operating speed of the roadway, whichever is greater.
- Placement guidance:
    - 5 feet from any driveway, entrance, or curb cut on a local street (additional clearance may be required for curb cuts used by trucks
    - 15 feet from a fire hydrant, either side
    - 2 feet from a manhole or utility cover on approach or 6 feet after

Choker

Description

A choker is a mid-block curb extension that reduces the width of the travel lane and encourages drivers to operate at reduced speeds. It may also widen the adjacent planting strip, allowing for additional landscaping and increased aesthetic appeal. Moreover, chokers can be used to incorporate additional parking on the downstream side of the curb extension. Although concrete curbing is most often used, a line of bollards or other obstructions may also be appropriate for use.

Advantages

- **Discourages high speeds**
- **Negotiable by emergency vehicles**
- **Provides protection for parking and pedestrians leaving parking area**
- **Opportunity for landscaping**

Disadvantages

- **Narrows travel-way for bicyclists**
- **Potential loss of parking**
- **Increased cost for maintenance of landscaping**
- **May require modifications to drainage and utilities**
- **May be struck by vehicles**

Choker Installation, Fairfax County

Specifications and Placement

Chokers are typically 6 to 8 feet in width and offset from through traffic by approximately 1.5 feet. They should be at least 20 feet in length and be placed at mid-block near streetlights, if possible. If bollards or other obstructions are used rather than curbing, they should be between 4 and 6 feet apart such that vehicles may not fit between them. Chokers can be installed on one-lane, one-way and two-lane, two-way facilities and are appropriate for arterials, collectors, or local streets. Chokers are appropriate for any speed limit and can be placed along bus routes.

Effectiveness

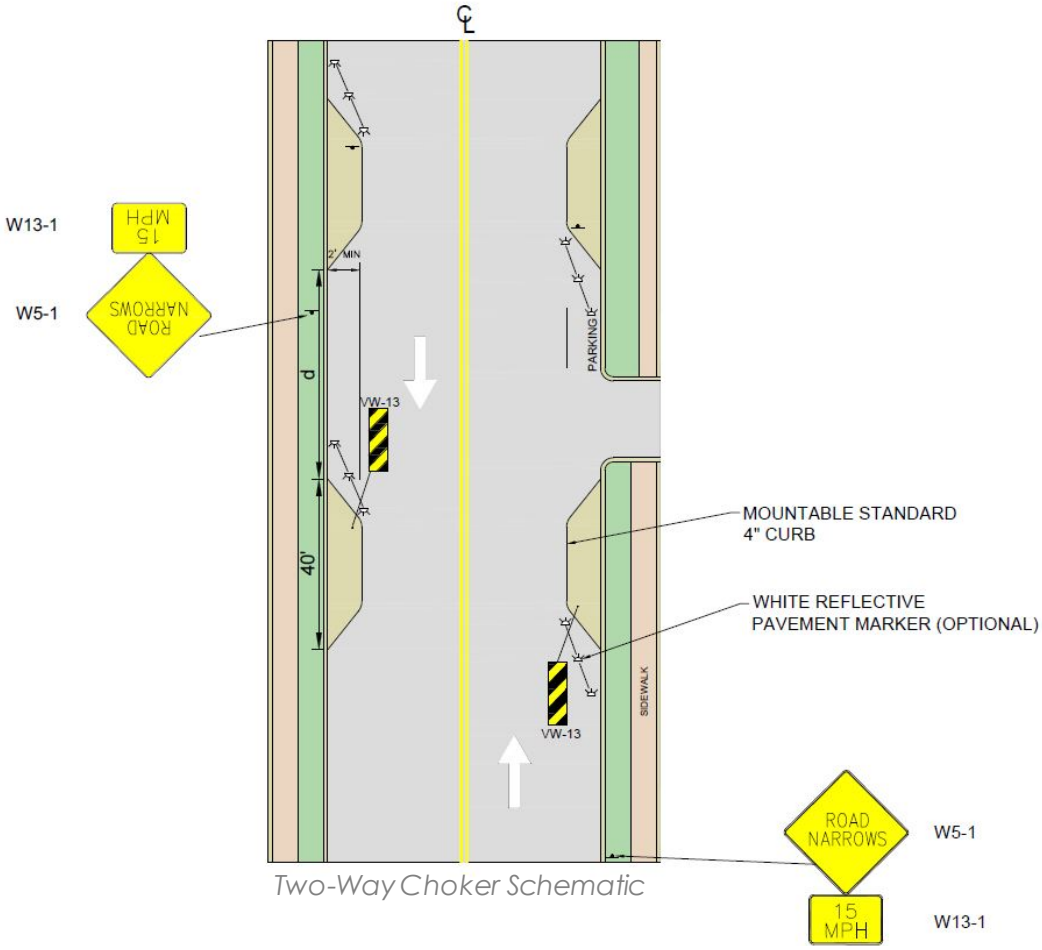
FHWA data suggest operating speeds may be reduced by approximately 1 to 4 miles per hour on average.[3]

Timeline

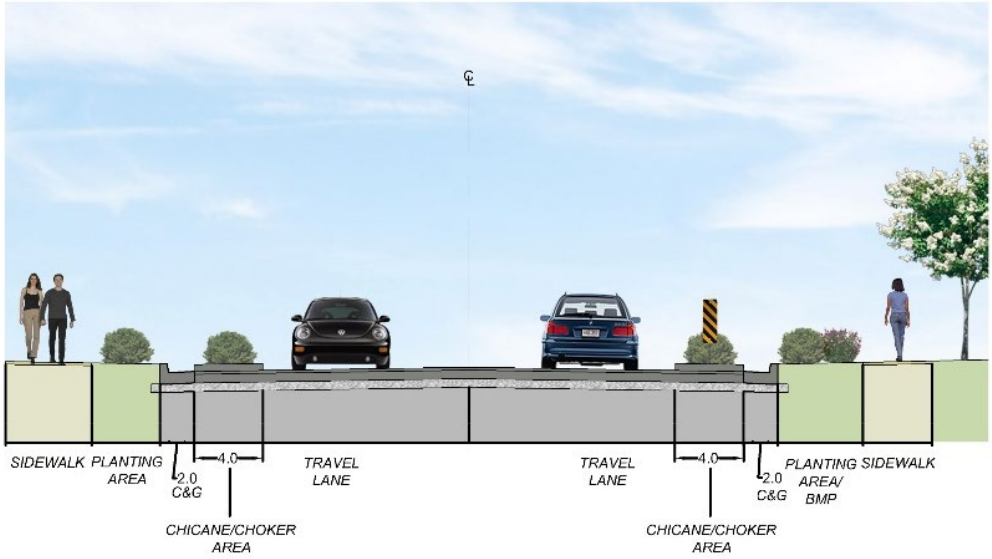
Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

[3]FHWA - *A Desktop Reference of Potential Effectiveness in Reducing Speed* - 2014

Choker

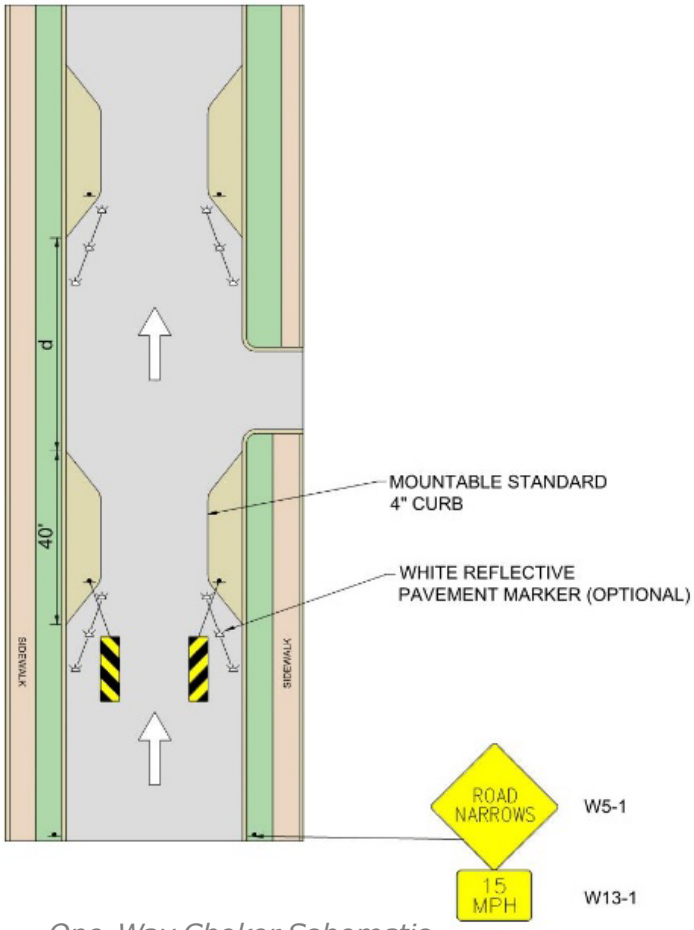


Two-Way Choker Schematic



Two-Way Choker Rendering

Choker



One-Way Choker Schematic

MAXIMUM STAGGER LENGTH (L) REQUIRED TO ACHIEVE INDICATED PASSENGER CAR SPEED FOR TRAVELWAY WIDTH OF 15 FT		
FREE VIEW WIDTH 'W' (FT)	STAGGER LENGTH 'L' (FT)	
	20 MPH	25 MPH
+3.5	23	30
0	30	40
-3.5	36	50

MINIMUM STAGGER LENGTH (L) FOR SU-30 TRUCK FREE WIDTH VIEW 'W' = 0 FT			
TRAVELWAY WIDTH (FT)	10	11	12
STAGGER LENGTH 'L' (FT)	40.0	34.0	29.0

Measurements Reference VDOT 2017 Traffic Calming Guide for Neighborhood Streets

Choker

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- May be placed along one or both sides of the road where there is sufficient pavement width.
- Uses a minimum travel-way width of 15 feet through the choker at mid-block locations for "give way to opposing vehicle" operations where ADT is less than 2,001 vehicles per day and truck traffic (in a mixed-used area) is less than or equal to 5 percent. Otherwise, refer to Figure A in VDOT's Traffic Calming Guide for Neighborhood Streets.
- May be combined with a speed table, speed hump, or speed lump.
- Do not stripe the centerline if the travel-way width is less than indicated in the table above for normal operation.
- Leave gutter pan open to facilitate drainage.
- Per the 2009 MUTCD **Section 2C.19** – Advisory warning sign W5-1 is optional according to the following (if used may also include the advisory speed plaque W13-1):
    - Where the minimum travel-way width allows two-way travel without requiring vehicles to use the adjacent lane or to give way to opposing traffic
    - On low-volume roadways where the speed limit is 30 miles per hour or less
- Placement guidance:
    - 5 feet from any driveway, entrance, or curb cut on a local street (additional clearance may be required for curb cuts used by trucks
    - 15 feet from a fire hydrant, either side
    - 2 feet from a manhole or utility cover on approach or 6 feet after

Crosswalk Refuge

Description

A crosswalk refuge is a raised island with a cut for pedestrian refuge constructed in the middle of a roadway. These refuges can optionally include an offset on either side of the median or a raised crosswalk as well. The presence of such a refuge may narrow or give the appearance of narrowing vehicle lanes and thus reduce operating speeds.

Advantages

- **Additional pedestrian safety**
- **Shortens distance necessary for pedestrians to traverse traffic**
- **"Z"-option forces pedestrians to face approaching traffic on second approach**

Disadvantages

- **Narrows travel-way for bicyclists**
- **No vertical deflection**
- **May interrupt driveway access**
- **May require drainage and utilities to be relocated**
- **May be struck by vehicles**

Crosswalk Refuge in South Riding, Loudoun County

Specifications and Placement

Crosswalk refuges are generally appropriate where there is an existing, marked crosswalk or where one is warranted. As with any new crosswalk, an engineering study must be performed, and the new crosswalk must be approved by VDOT. Crosswalk refuges may be appropriate on arterial, collector, or local roads, and they are desirable where vehicle speeds or the required crossing distance do not provide sufficient time for pedestrians to cross the street in a single movement.

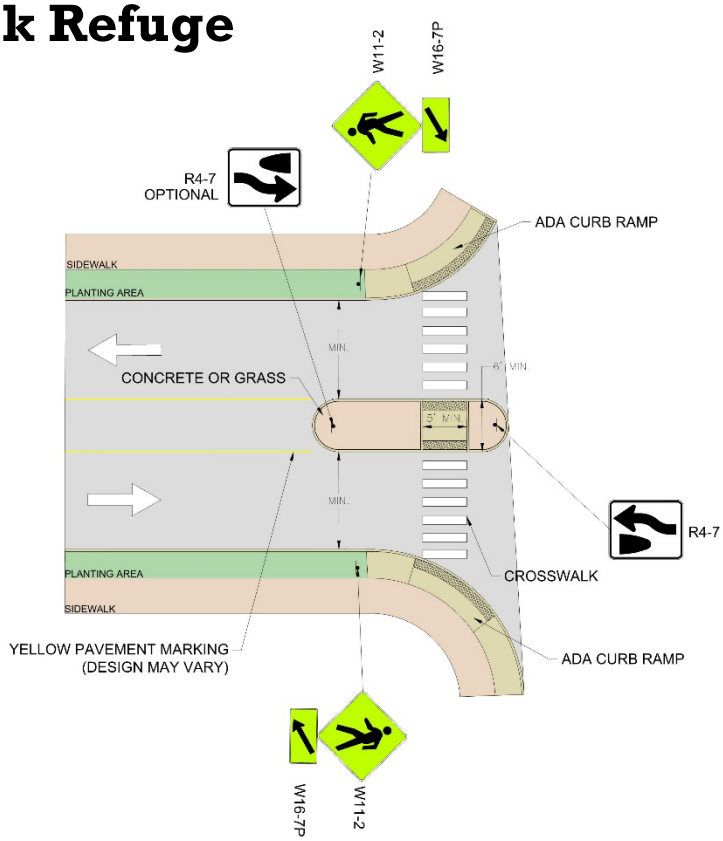
Effectiveness

Although no specific data is available for crosswalk refuges, FHWA suggests operating speeds may be reduced by approximately 4 miles per hour by raised median islands of very similar construction.

Timeline

Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

Crosswalk Refuge



Crosswalk Refuge Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Located at mid-block where there is an existing marked crosswalk to provide a refuge for crossing pedestrians.
- May also incorporate a raised crosswalk or be raised itself.
- New crosswalks or modifications to an existing crosswalk or any other pedestrian-related accommodations are governed by VDOT's Traffic Engineering & Informational Memorandum (M-TE-384.0 – Pedestrian Crossing Accommodations at Unsignalized Locations).
- Uses a minimum travel-way width of 10 feet for each travel direction through the crosswalk refuge for ADT less than 1,501 vehicles per day and truck traffic (in a mixed-use area) less than or equal to 5 percent. Otherwise, refer to Figure A in the appendix of VDOT's Traffic Calming Guide for Neighborhood Streets.
- Per the 2009 MUTCD:
    - **Section 2B.32** recommends R4-7 signs at locations where it is not clear that traffic is required to keep to the right
    - **Section 2C.50** – The W11-2 may be used in advance of a crosswalk and, if used, shall include supplementary plaques W16-9P or W16-2P. If used at the location of a crossing point, the W11-2 should include the supplemental W16-7P plaque

Curb Extension (Bulb-Out)

Description

A curb extension, otherwise known as a bulb-out or neckdown, extends the sidewalk or curb line into an adjacent parking lane, thus reducing the roadway width for vehicles as well as the crossing distance necessary for pedestrians. Curb extensions may use bollards or other obstructions rather than concrete curbing if deemed appropriate for the local context.

Advantages

- **Additional pedestrian safety**
- **Prevents parking too close to intersections**
- **Provides parking protection**
- **Opportunity for landscaping**

Disadvantages

- **Lack of vertical deflection limits effectiveness**
- **Difficult for right-turning emergency vehicles**
- **Increased cost for maintenance of landscaping**
- **May require bicyclists to merge with vehicular traffic**

Curb Extension Installation in South Riding, Loudoun County

Specifications and Placement

Curb extensions are typically 6 to 8 feet in width and offset from through traffic by approximately 1.5 feet. If bollards or other obstructions are used rather than curbing, these objects should be between 4 and 6 feet apart such that vehicles may not fit between them. Curb extensions can be installed a on one-lane, one-way and two-lane, two-way facilities and are appropriate for arterials, collectors, or local streets. Curb extensions are appropriate for any speed limit if an appropriate distance is provided between the extension and the travel lane.

Effectiveness

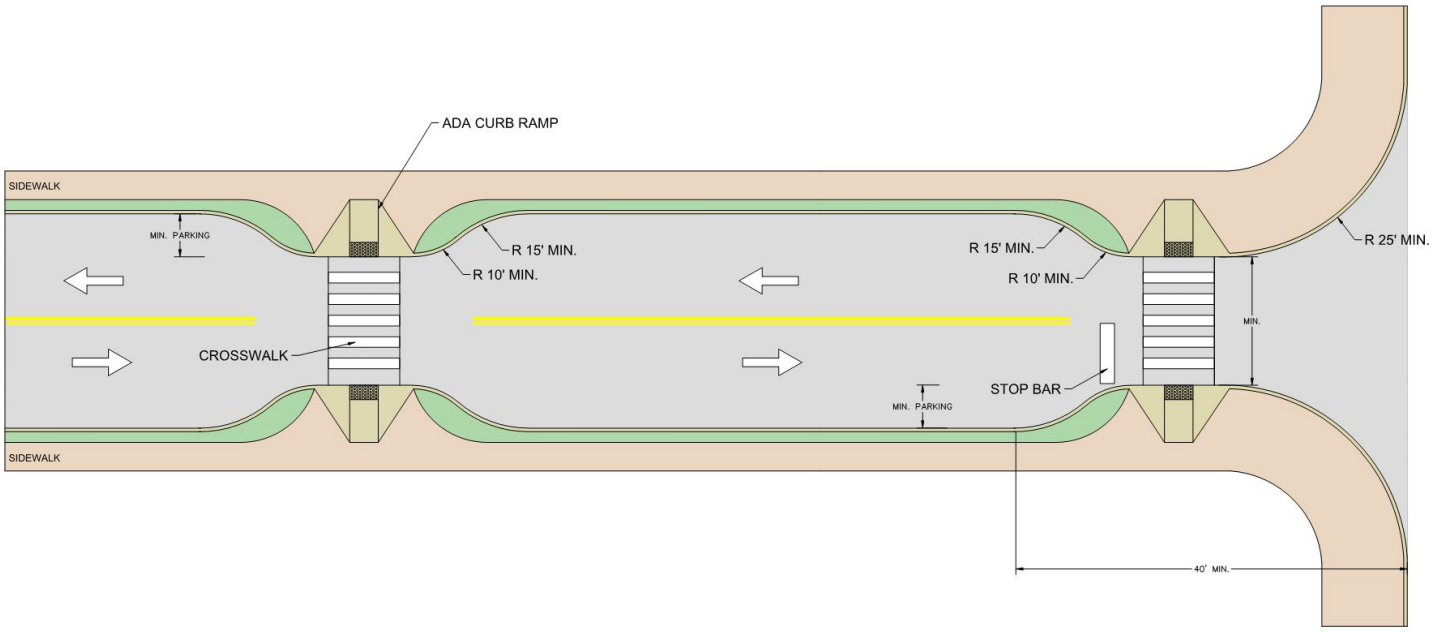
FHWA data suggest a decrease of vehicle operating speeds of 1 to 3 miles per hour; however, turning speeds may be reduced by 6 to 8 miles per hour.[4]

Timeline

Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

[4]FHWA - *A Desktop Reference of Potential Effectiveness in Reducing Speed* - 2014

Curb Extension (Bulb-Out)



Curb Extension Schematic

Implementation Guidance

(Guidance source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Located at an intersection with on-street parking and an existing marked crosswalk or where one is approved by VDOT.
- May also incorporate a raised crosswalk.
- Where a new crosswalk is proposed for installation or there are modifications to an existing crosswalk, consult VDOT's Traffic Engineering Instructional & Informational Memorandum (M-TE-384.0 – Pedestrian Crossing Accommodations at Unsignalized Locations).

- Use a minimum travel-way width of 15 feet through the choker at mid-block locations for "give way to opposing vehicle" operations where ADT is less than 2,001 vehicles per day and truck traffic (in a mixed-used area) is less than or equal to 5 percent. Otherwise, refer to Figure A in the appendix of VDOT's Traffic Calming Guide for Neighborhood Streets.
- See Appendix B(2), Section B(2)-3 of VDOT's Road Design Manual for additional considerations and design criteria.

Pole-Mounted Speed Display Sign (PMSD)

Description

A PMSD sign uses a regulatory speed limit sign alongside a radar speed feedback sign that shows drivers' vehicle speeds upon approach. The feedback sign may flash when detected speeds are above the regulatory speed limit, encouraging drivers to reduce speeds.

Advantages

- **Easily recognizable**
- **Option for portable assembly**
- **Does not slow emergency vehicles and transit**

Disadvantages

- **Requires power source**
- **No physical deterrent to slow vehicles**
- **Subject to vandalism**
- **5-10 years life expectancy**

Pole-Mounted Speed Display Sign in Potomac View Community

Specifications and Placement

PMSD signs should only be installed on roadways with a maximum of one through-travel lane in each direction. Signs should generally be installed in pairs of two, with each one strategically placed at the beginning of the roadway in each direction. A minimum visibility distance of 200 feet must be provided upon approach and no less than 100 feet between other signs.

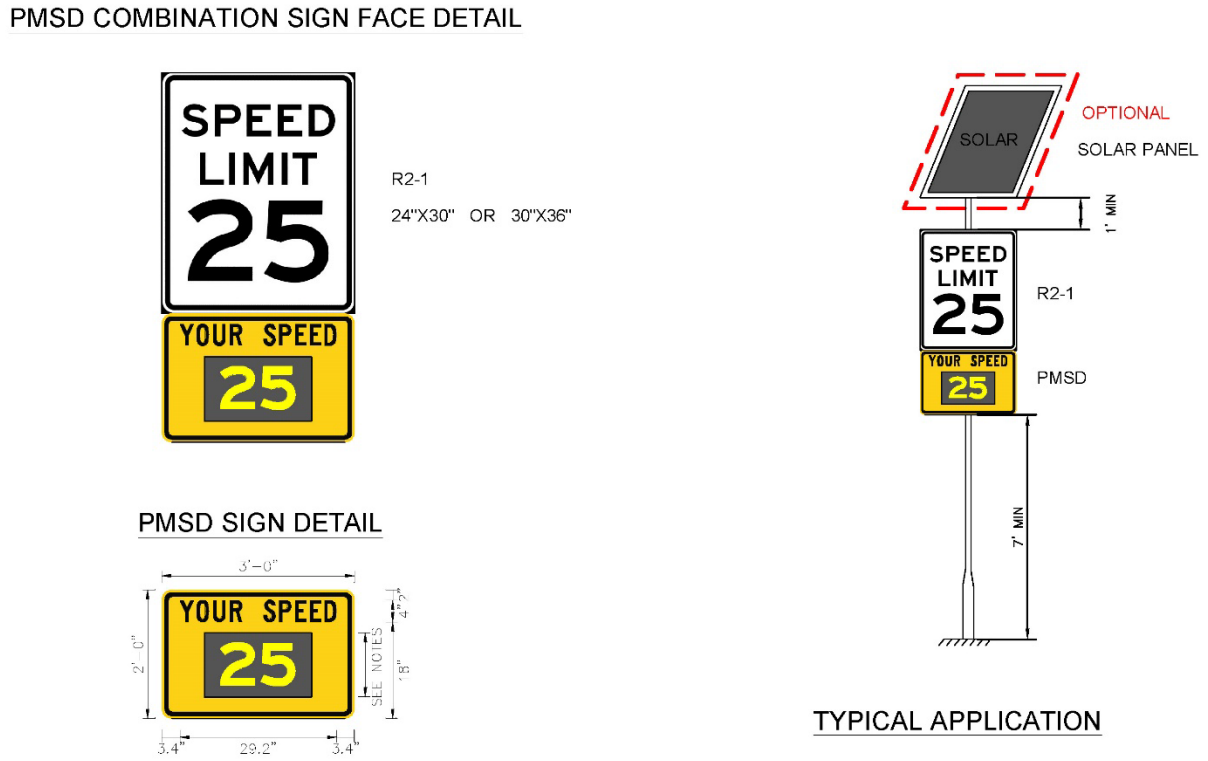
Effectiveness

It is generally suggested by various sources that operating speeds may be reduced by 5 miles per hour on the roadway.

Timeline

Typical installation occurs less than 12 months after final approval and funding.

Pole-Mounted Speed Display Sign (PMSD)



Pole-Mounted Speed Display Sign Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Sign is to be mounted on the same pole and directly below the speed limit (R2-1) sign as shown above.
- The changeable display will be programmed to go blank/no display when an approaching vehicle exceeds the posted speed limit by 20 miles per hour or more.
- The changeable display will be programmed to display two dashes when the system is not operating.
- Other than the speed display, the PMSD sign will not incorporate animation, flashing, or any dynamic elements.
- For full requirements on the operation, installation, size, specifications, and maintenance aspects of these signs, refer to VDOT TED Memorandum 374.1 – Pole-Mounted Speed Display Signs Requirements or the Virginia Supplement to the MUTCD.

Raised Crosswalk

Description

A raised crosswalk is nearly identical to a speed table, generally resembling a flattened speed hump; however, its flattened top section serves a multipurpose function as a vertical traffic calming device and a marked pedestrian crossing. This flattened section may be constructed with brick or other textured materials for aesthetic appeal.

Advantages

- **Additional pedestrian safety**
- **Improved aesthetic appeal with use of brick or textured materials**

Disadvantages

- **May not provide as much speed reduction as desired**
- **Increased noise to nearby residents**
- **More expensive than speed humps**
- **Increases emergency response time**
- **May be damaged by snow plows**

Typical Raised Crosswalk Application
Source: VDOT Traffic Calming Guide for Neighborhood Streets

Specifications and Placement

Raised crosswalks should generally be elevated to a height that matches the adjacent sidewalk. They are typically 22 feet in length with a flattened top section being approximately 10 feet in length with two ramped sections of approximately 6 feet in length. Raised crosswalks should be placed where there is an existing, marked crosswalk or where one is warranted. An engineering study must be performed for all new crosswalk locations and must be approved by VDOT. They should not be used on roads with speeds of 45 miles per hour or more and are most typically used with posted speed limits of 30 miles per hour or less.

Effectiveness

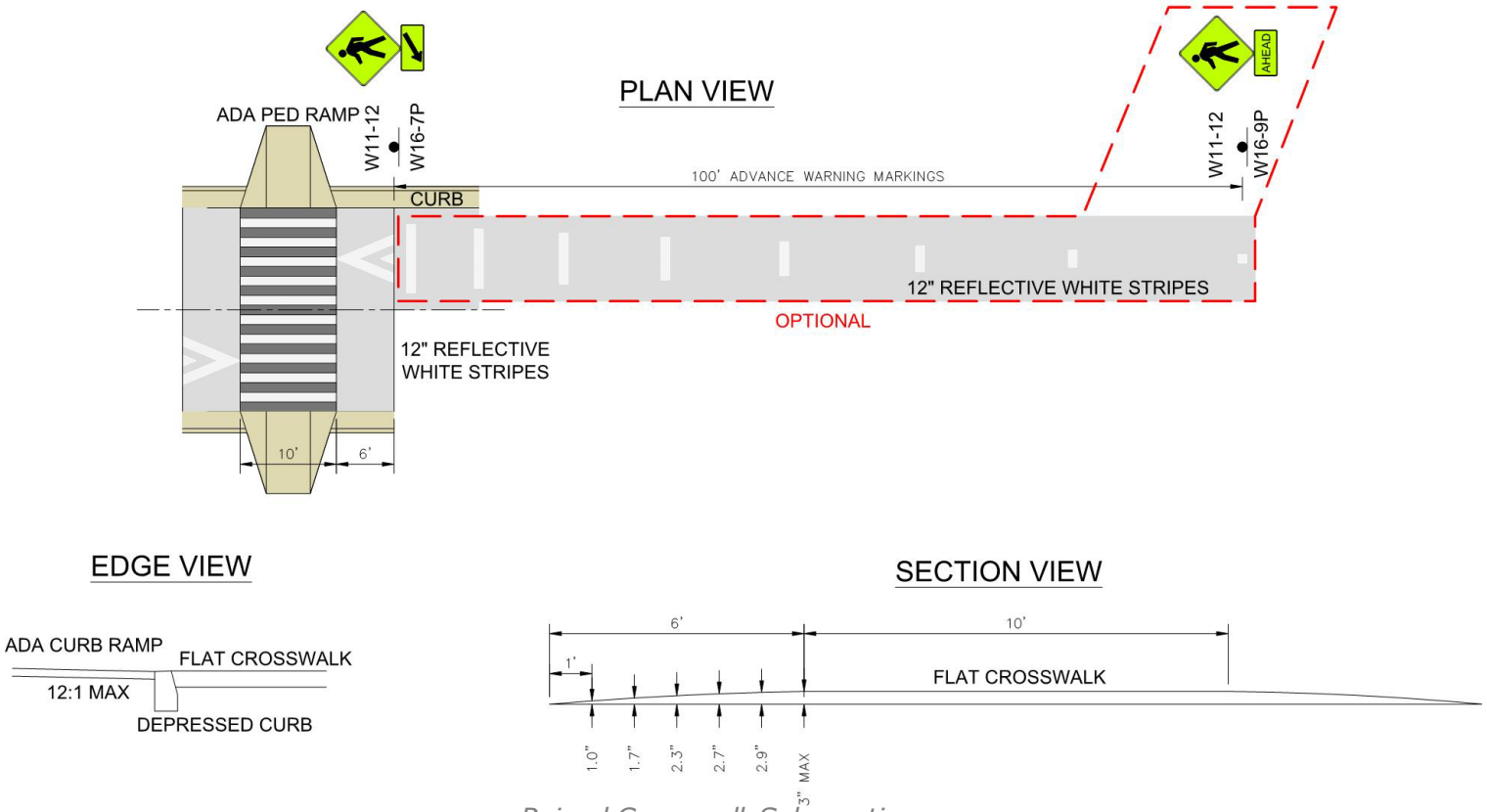
Average crash rates may be reduced by 45 percent on treated roadway facilities, while it is estimated that up to 20 percent of traffic may be diverted when a series of speed tables is implemented.[5]

Timeline

Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

[5] ITE - *Speed Table/Raised Crosswalks Traffic Calming Fact Sheet* - 2018

Raised Crosswalk



Raised Crosswalk Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Located at an existing marked crosswalk or where a new location has been approved by VDOT.
- New crosswalks or modifications to an existing crosswalk or any other pedestrian-related accommodations are governed by VDOT's Traffic Engineering Instructional & Information Memorandum (M-TE-384.0 – Pedestrian Crossing Accommodations at Unsignalized Locations).
- Cross section shows approximate maximum elevation of 3 inches for speed table or crosswalk.
- A 12-inch-wide and 1-inch-deep grind around the perimeter of the raised crosswalk is recommended to allow the surface course to be keyed into the pavement for a more durable application particularly for snow plowing.
- Leave gutter pan open to facilitate drainage.
- Per the 2009 MUTCD:
    - **Section 3B.25** – Speed hump markings are not required, but if used, they must comply with options per Section 3B.25
    - **Section 2C.50** – The W11-2 may be used in advance of a crosswalk and if used at the location of a crossing point, the W11-2 should include the supplemental W16-7P plaque
- Per the Virginia Supplement to the MUTCD, the W11-2 sign must be fluorescent yellow-green.

Raised Intersection

Description

A raised intersection is like a speed table or a raised crosswalk that covers an entire intersection. Ramped areas on all approaches lead to a flattened top section covering the entire expanse of the intersection, which may be constructed with brick or other textured materials for aesthetic appeal. Raised intersections are sometimes referred to as raised junctions, intersection humps, or plateaus.

Advantages

- **Additional pedestrian safety**
- **Traffic calming along two roadways**
- **Improved aesthetic appeal with use of brick or textured materials**

Disadvantages

- **Higher cost than raised crosswalk**
- **Increases emergency response time**
- **Increased noise to nearby residents**
- **Potential drainage impacts**
- **May be damaged by snow plows**

21st and 23rd Streets in Purcellville, Loudoun County

Specifications and Placement

Raised intersections, by definition, are located at the intersection of at least two streets and cover the entire intersection area. Therefore, the size of the raised intersection is determined by the size of the existing intersection. Raised intersections may be appropriate at the intersections of collector, local, and residential streets, and are typically installed at signalized or all-way stop controlled intersections with a heavy pedestrian presence and a speed limit at or below 35 miles per hour. They are often incorporated when traffic calming is being employed over an entire area rather than a single corridor.

Effectiveness

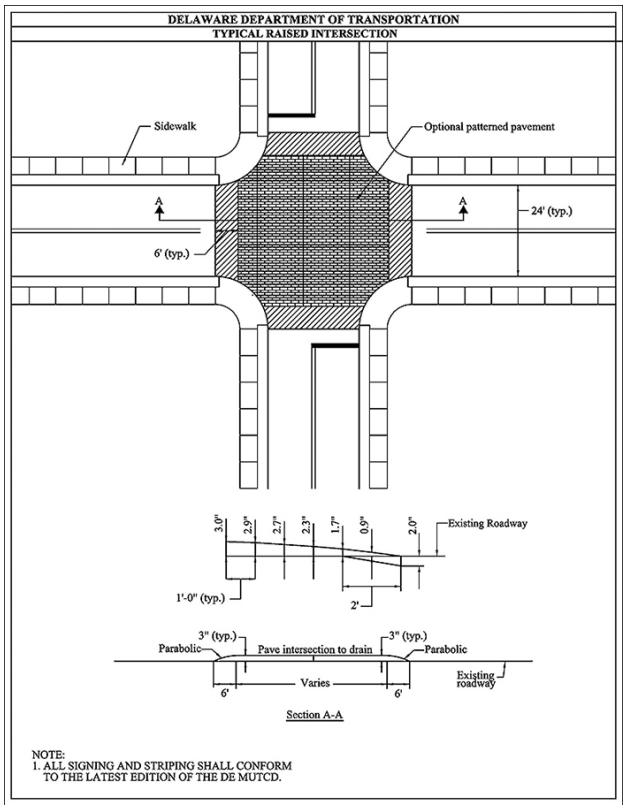
Through movement speeds are likely to be reduced and mid-block speeds may be reduced up to 10 percent.[6]

Timeline

Typical installation occurs more than 24 months after final approval and funding.

[6] ITE - *Raised Intersection Traffic Calming Fact Sheet* - 2018

Raised Intersection



Raised Intersection Schematic (Source: Delaware Department of Transportation)

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- A raised intersection mimics the speed table design for each approach where the ramp occurs prior to entering the intersection. The flat table area encompasses the entire area of the intersection for the approaching streets and there, in most cases, it will exceed 11 feet. Due to the larger scale of a raised intersection compared to a speed table, it should be able to accommodate all vehicle sizes on the top. If not, a length of 20 feet for the flat section accommodates the typical single unit truck (American Association of State Highway and Transportation Officials [AASHTO] SU-30).
- The ramped transition shows an approximate slope of 4.2 percent or a rise of 3 inches over a run of 6 linear feet.
- Leave gutter pan open to facilitate drainage.
- A grind with a width and depth of 12 inches and 1 inch, respectively, should cover the perimeter of the speed table to allow the surface course to be keyed into the pavement for a more durable application, particularly for snow plowing.
- Per the 2009 MUTCD:
    - **Section 3B.25** – Speed table markings are not required, but if used, they must comply with the options per Section 3B.25
    - **Section 2C.29** – Warning sign W17-1 is optional, but if used, it should include the advisory speed plaque (W13-1)

Raised Median Island

Description

A raised median island is a raised island constructed in the middle of a roadway to narrow or give the appearance of narrowing vehicle travel lanes and thus reduce operating speeds. These islands are often landscaped for increased aesthetic appeal, and they may function as a "gateway" when placed at the entrance of a neighborhood. Bollards and other obstructions may be used in construction, but concrete curbing is most commonly used.

Advantages

- **Improved aesthetic appeal with the use of landscaping**
- **Multipurpose function as a gateway to a neighborhood**

Disadvantages

- **No vertical deflection limits effectiveness**
- **May interrupt driveway access to adjacent properties**
- **Increased cost for maintenance of landscaping**
- **May require drainage and utilities to be relocated**

Raised Median Island in South Riding, Loudoun County

Specifications and Placement

Raised median islands are generally located at mid-block. If bollards or other obstructions are used in lieu of concrete curbing, the spacing of these objects should be between 4 and 6 feet such that a vehicle may not fit through the opening. Raised median islands may be appropriate on arterial, collector, or local roads, and maximum appropriate speed limits should be determined locally. Raised median islands should not be used near areas that attract large combination trucks.

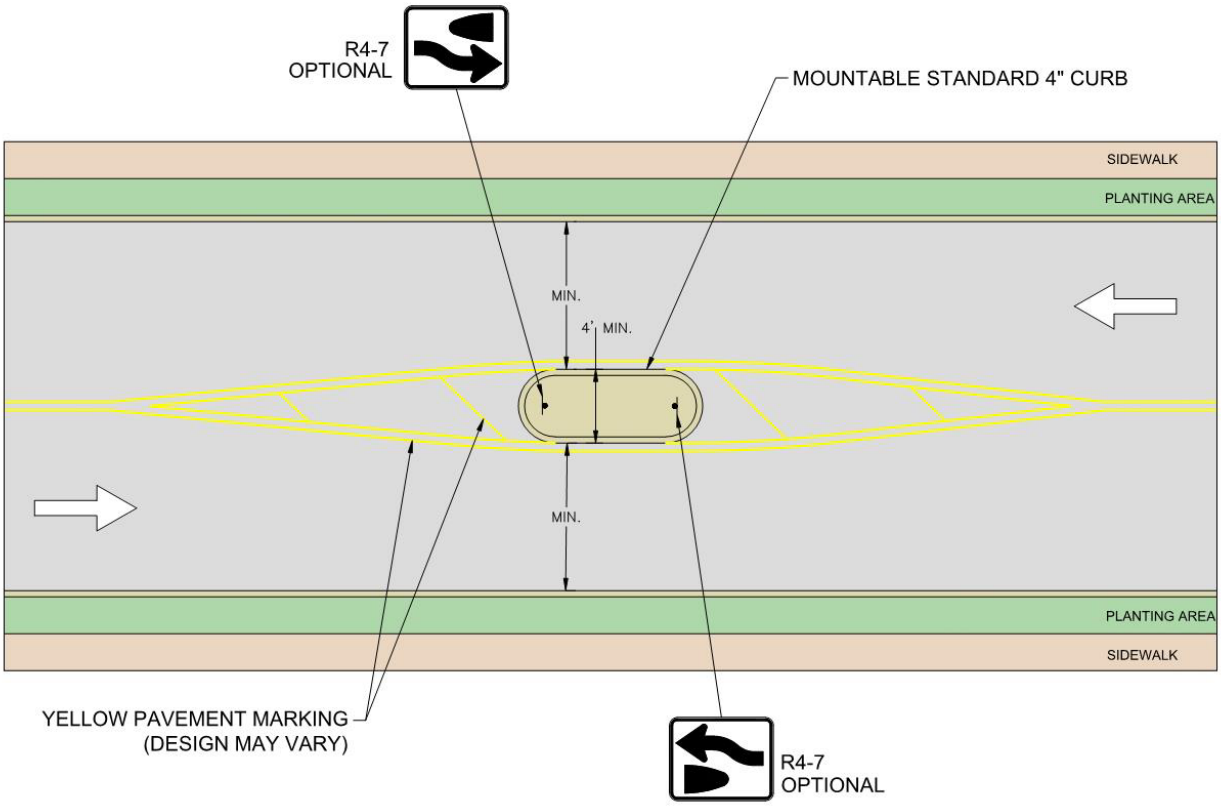
Effectiveness

FHWA suggests operating speeds may be reduced by approximately 4 miles per hour.

Timeline

Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

Raised Median Island



Raised Median Island Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Approaches to the intersection should not exceed 6 percent, and entrances should be a minimum of 75 to 100 feet away.
- The transition of the approach curb and any accompanying raised pavement markers will be in conformance to the design or operating speed of the roadway, whichever is greater.
- A minimum travel-way width of 10 feet should be used for each travel direction through the raised median island for ADT less than 1,501 vehicles per day and truck traffic (in a mixed-use area) less than 5 percent. Otherwise, refer to Figure A in the appendix of VDOT's Traffic Calming Guide for Neighborhood Streets.
- Per the 2009 MUTCD:
    - **Section 2B.32** – The R4-7 signs are recommended at locations where it is not clear that traffic is required to keep to the right

Speed Hump

Description

A speed hump is a vertical traffic calming device with a raised parabolic shape that extends across the roadway perpendicular to traffic. The raised surface is higher and occurs over a shorter distance than other vertical devices. The height and length of the device determines how fast it may be navigated without causing discomfort to a vehicle's driver. Speed humps are the most commonly used traffic calming devices and are sometimes referred to as road humps or undulations.

Advantages

- **Low cost**
- **Easily recognizable**
- **Effective in reducing speeds**

Disadvantages

- **Increased noise to nearby residents**
- **Impediment to bicyclists**
- **May slow emergency vehicles**
- **May be damaged by snow plows**

Speed Hump on Farmingdale Drive, Loudoun County

Specifications and Placement

Speed humps are generally 3 to 4 inches in height and 12 to 14 feet in length. They should be placed at mid-block and if in a series, the speed humps should be no more than 500 feet apart. Speed humps are most appropriate for residential local streets and collectors. They should not be used on major roads, bus routes, or primary emergency response routes and are not recommended on grades steeper than 8 percent.

Effectiveness

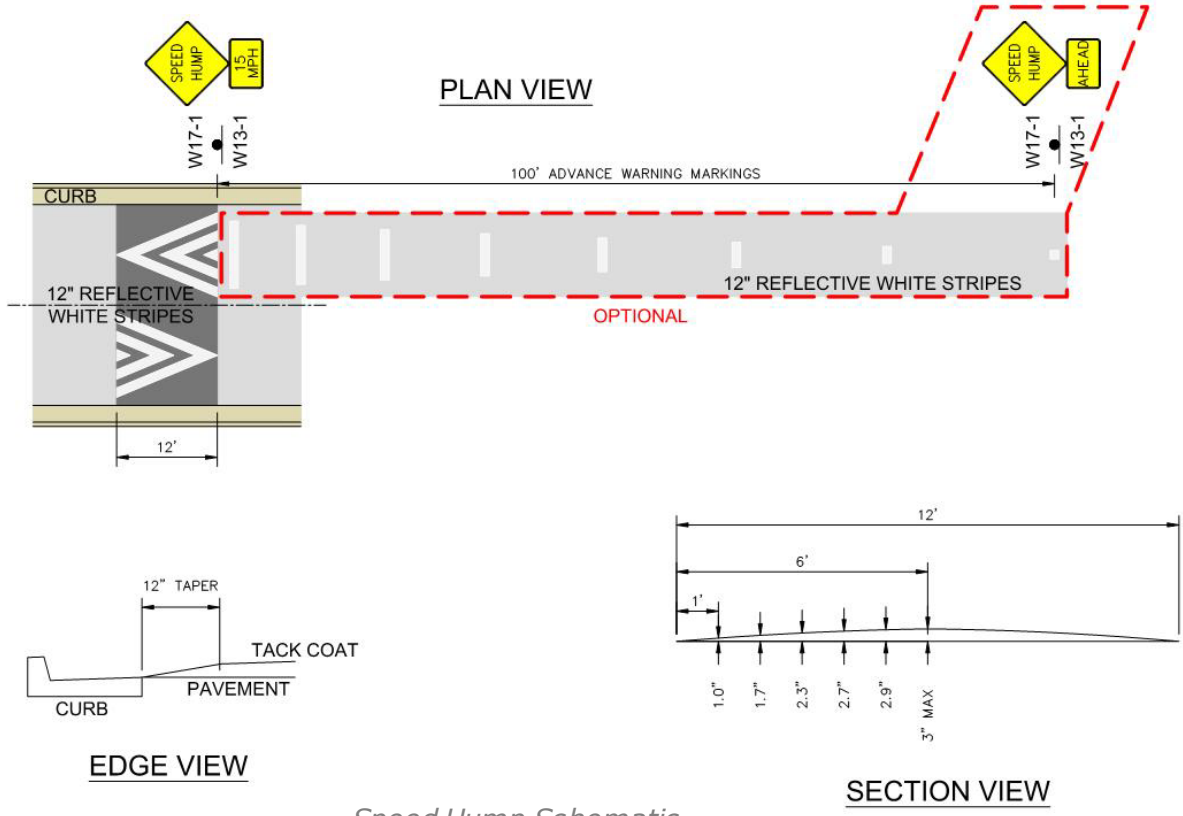
Speeds may be reduced by an average of 20-25 percent, while average crash rates may be reduced by 13 percent. Additionally, it is estimated that up to 20 percent of traffic may be diverted.[7]

Timeline

Typical installation occurs less than 12 months after final approval and funding.

[7] ITE - *Speed Hump Traffic Calming Fact Sheet* - 2018

Speed Hump



Speed Hump Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- Appropriate for mid-block placement, not at intersections.
- Avoid grades or horizontal curves.
- Leave gutter pan open to facilitate drainage; taper edge near curb to allow gap for drainage.
- Minimum placement 2 feet on either side of manhole or utility cover; 5 feet from any driveway, entrance, or curb cut on a local street; 15 feet on either side of fire hydrant.
- Cross section shows approximate maximum elevation rise of 3 inches.
- Per the 2009 MUTCD:
    - **Section 3B.25** – Speed hump markings are not required, but if used, they must comply per the available options in Section 3B.25
    - **Section 3B.26** – The 100 feet advanced warning pavement markings are an option, but if used, they must comply with the dimensions and spacing per Section 3B.26
    - **Section 2C.29** – The advanced warning sign (W17-1) is optional, but if used, it should include the advisory speed plaque (W13-1) and it may also use "Speed Bump" instead of "Speed Hump"
- Optional advance warning pavement markings may be considered for areas with high pedestrian volumes or need for heightened awareness to motorists.

Speed Lump

Description

A speed lump is a narrower speed hump with openings that allow emergency and transit vehicles to minimize speed reduction. The sizing and spacing of speed lumps still ensure that typical passenger vehicles must reduce speed to traverse the treated roadway facility. Speed lumps are also sometimes referred to as speed cushions.

Advantages

- **Effective in reducing speeds**
- **Minimally impacts emergency vehicles and transit**
- **Accommodates bicyclists**

Disadvantages

- **Increased noise to nearby residents**
- **Large passenger vehicles may be able to straddle**
- **May be damaged by snow plows**
- **Not favored by emergency vehicles**

Typical Speed Lump Application
Source: (VDOT Traffic Calming Guide for Neighborhood Streets)

Specifications and Placement

Speed lumps are generally 3 to 4 inches in height, 12 to 14 feet in length, and 7 feet in width. They should be placed at mid-block in sets of two or more, and if in a series, separate sets of speed lumps should be no more than 500 feet apart. Speed lumps are most appropriate for residential local streets and collectors. They should not be used on major roads, bus routes, or primary emergency response routes and are not recommended on grades steeper than 8 percent.

Effectiveness

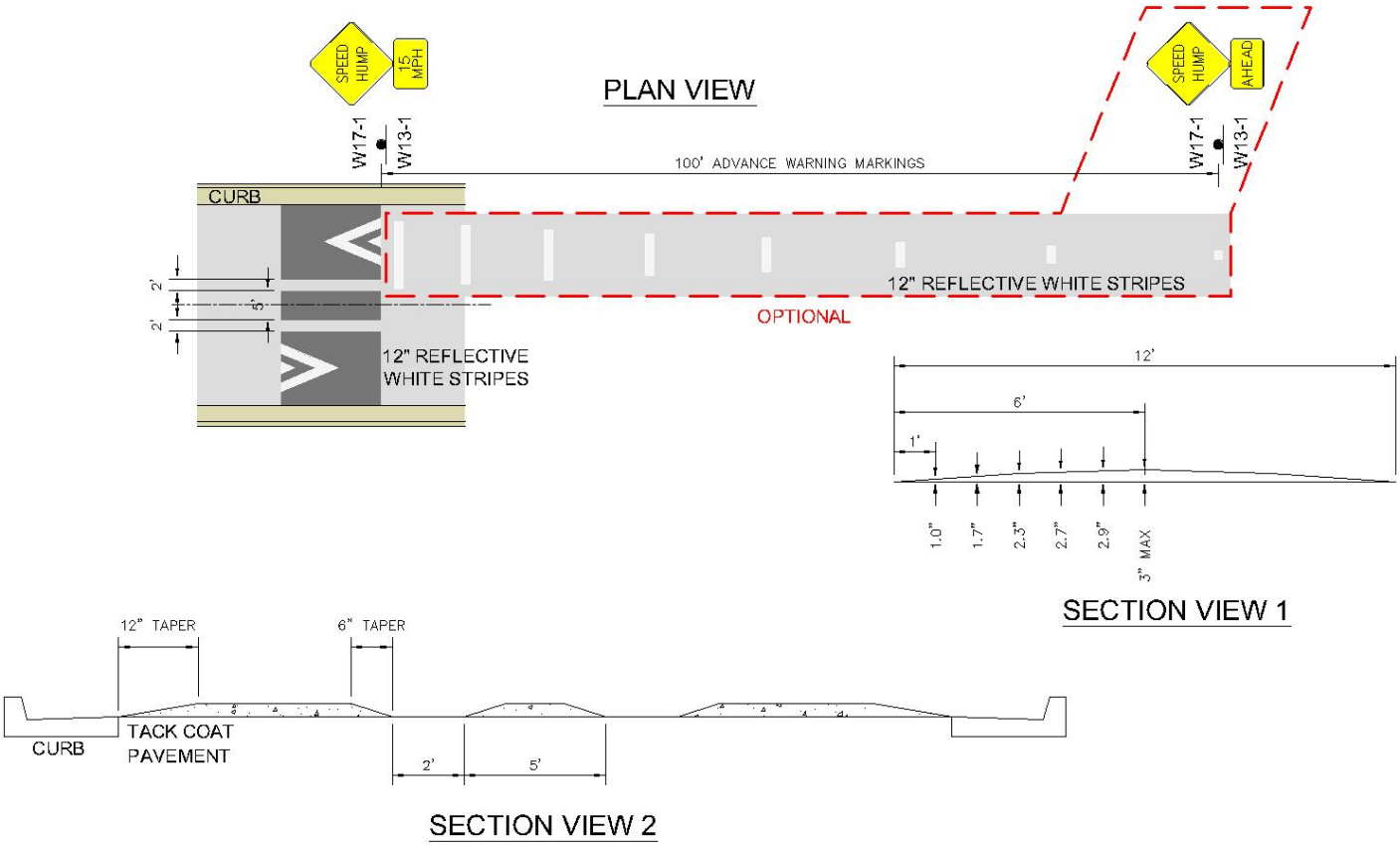
Speeds may be reduced by an average of 20-25 percent, while average crash rates may be reduced by 13 percent. Additionally, it is estimated that up to 20 percent of traffic may be diverted.[8]

Timeline

Typical installation occurs less than 24 months after approval and funding.

[8] ITE - *Speed Cushion Traffic Calming Fact Sheet* - 2018

Speed Lump



Speed Lump Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- All implementation guidance for speed humps also apply to a speed lump treatment.
- The width of a center lump is 7 feet with 2 feet of spacing between adjacent lumps. This accommodates trucks, school buses, transit buses, and other larger vehicles with a width of 8 feet and ensures that passenger vehicles with a typical width of 7 feet cannot avoid traveling over at least one set of lumps. However, the width of the center lump can vary based on dimensions of local emergency vehicles to be accommodated.
- Striping to delineate the street centerline is recommended to discourage vehicles from crossing into the opposing lane to straddle the lumps provided for emergency vehicles.

Speed Table

Description

A speed table is like a speed hump with a flattened top section, providing a gentler transition. This flattened section may be constructed with brick or other textured materials for aesthetic appeal, and it should accommodate the most typical vehicle wheelbase entirely on its top section, typically that of a passenger vehicle. If necessary, the flattened section can be extended to accommodate other vehicles.

Advantages

- **Effective in reducing speeds**
- **Improved aesthetic appeal with the use of brick or textured materials**

Disadvantages

- **May not provide as much speed reduction as desired**
- **Increased noise to nearby residents**
- **More expensive than speed humps**
- **Increases emergency response time**
- **May be damaged by snow plows**

Typical Speed Table Application
Source: VDOT Traffic Calming Guide for Neighborhood Streets

Specifications and Placement

Speed tables are generally 3 to 4 inches in height and 22 feet in length, with the flattened top section being approximately 10 feet in length with two ramped sections of approximately 6 feet in length. Speed tables should be placed at mid-block and are most appropriate for residential local streets and collectors. They should not be used on roads with speeds of 45 miles per hour or more and are most typically used with posted speed limits of 30 miles per hour or less.

Effectiveness

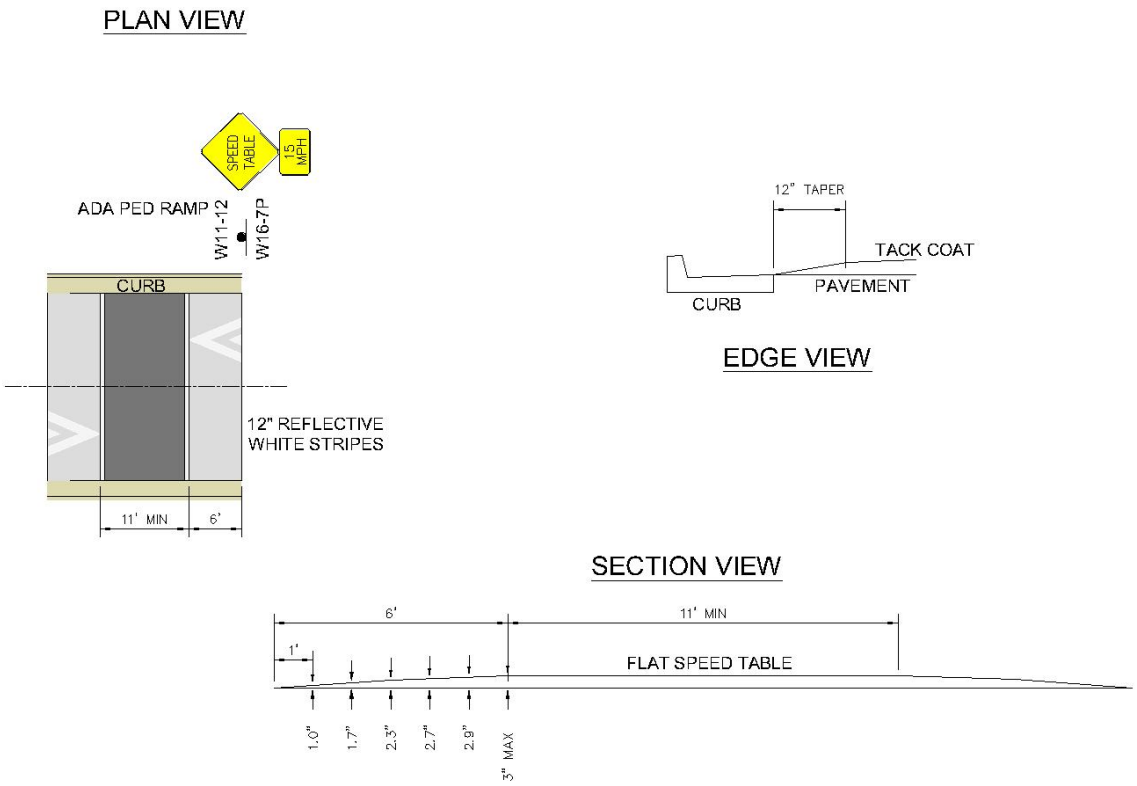
Average crash rates may be reduced by 45 percent on treated roadway facilities, while it is estimated that up to 20 percent of traffic may be diverted when a series of speed tables is implemented.[9]

Timeline

Engineering drawings are required for implementation. Typical installation occurs less than 24 months after final approval and funding.

[9] ITE - *Speed Table/Raised Crosswalks Traffic Calming Fact Sheet* - 2018

Speed Table



Speed Table Schematic

Implementation Guidance

(Guidance Source: VDOT Traffic Calming Guide for Neighborhood Streets)

- The flat table area length of 11 feet accommodates the typical passenger car wheelbase entirely on the top, but it can be extended to accommodate other vehicles if desired. A length of 20 feet accommodates the typical single-unit truck (AASHTO SU-30).
- The ramped transition shows an approximate slow of 4.2 percent or a rise of 3 inches over a run of 6 linear feet.
- Leave gutter pan open to facilitate drainage.
- A grind with a width and depth of 12 inches and 1 inch, respectively, should cover the perimeter of the speed table to allow the surface course to be keyed into the pavement for a more durable application, particularly for snow plowing.
- Per the 2009 MUTCD:
    - **Section 3B.25** – Speed table markings are not required, but if used, they must comply with the options per Section 3B.25
    - **Section 2C.29** – Warning sign W17-1 is optional, but if used, it should include the advisory speed plaque (W13-1)

Residential Traffic Management Guide

APPENDIX B:
Potential Cut-Through Traffic Measures

Non-Intrusive Traffic Controls

Non-intrusive traffic controls consist of warnings, regulations, and other similar measures that restrict traffic from entering certain roadways. Some examples are signs, pavement markings, and one-way streets. The benefits to non-intrusive traffic controls are that they are less expensive than intrusive traffic restrictions, can operate during limited hours of the day, and do not physically interfere with emergency vehicles. The disadvantage to non-intrusive controls is that they can be easily ignored by drivers and require increased enforcement. Periodic enforcement is suggested to ensure motorists adhere to restrictions after initial implementation.

Restricted Turn-Movements

Turn restrictions during specific days and times diverts peak period (rush hour) traffic from residential streets

Advantage:

- ✔ Gives residents full accessibility during the remainder of the day

Disadvantage:

- ✖ Restricts residential traffic from accessing the roadway during the peak period (rush hour)

One-Way Streets

Advantage:

- ✔ A limited entry roadway impedes traffic all together from entering the residential roadway
- ✔ It is a standard control that is accepted by the public

Disadvantage:

- ✖ Indefinitely restricts residential traffic from accessing the roadway

Source: An Operating Guide for the Control of Residential Cut-Through Traffic, Virginia Department of Transportation Research Council, 1990.

Intrusive Traffic Controls

Intrusive traffic controls restrict cut-through traffic by providing physical barriers on neighborhood streets to reduce or eliminate their use as through streets. Diverting traffic away from certain roads increases travel time and travel distance, which reduces the attractiveness of these streets to be used as cut-through.

Intersection Cul-de-sac

The most extreme barrier technique for restricting cut-through traffic

Advantage:

- ✔ Diverts cut-through traffic from the main circulation pattern

Disadvantage:

- ✖ Restricts all forms of traffic, including emergency vehicles

Diagonal Diverters

Physical barriers are placed diagonally through a four-legged intersection, creating two unconnected streets.

Advantage:

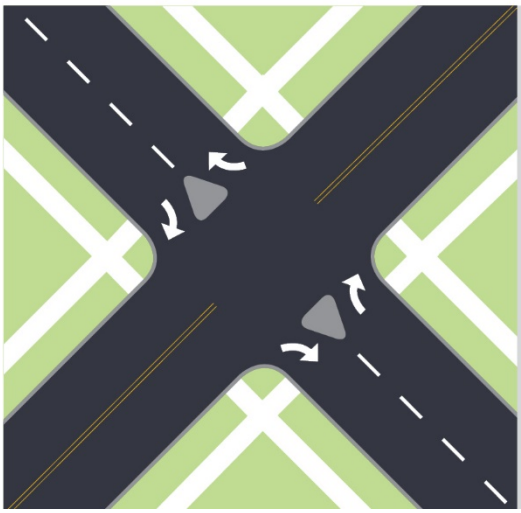
- ✔ Diverts cut-through traffic from the main circulation pattern

Disadvantage:

- ✖ Potential loss of neighborhood connectivity and restricts access for emergency vehicles

Intrusive Traffic Controls (Continued)

Forced-Turn Channelization



Concrete traffic islands or flexposts are implemented to prevent traffic from executing specific turn movements at an intersection

Advantage:

- Channelization at intersection of major and local streets may improve traffic flow on major street while preventing through traffic on local street

Disadvantage:

- Potential conflict with roadway maintenance