

LOWER PROVIDENCE TOWNSHIP



Neighborhood Traffic Calming Program

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CHAPTER 1 – INTRODUCTION

What is Traffic Calming?

Lower Providence Township often times receives concerns and complaints from its residents about speeding and cut-through traffic on neighborhood streets. Neighborhood livability and safety are recognized as important issues to address through the officials of the Township. In response to the public's concerns, the Lower Providence Township Board of Supervisors organized a Traffic Calming Advisory Committee comprised of our residents and Township staff, police, fire, and engineering consulting representatives to develop a Neighborhood Traffic Calming Program.

The term "traffic calming" is defined differently throughout the United States and the world. The Institute of Transportation Engineers (ITE), an international association of transportation professionals, defines traffic calming as follows:

*"Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users."*¹

Lower Providence Township expands this definition to also include consideration of non-physical measures, such as educational programs and enhanced enforcement as the first measure to be sought toward resolving neighborhood traffic issues. The Township has also identified those street classifications and situations in which the Township shall consider such measures.

Several resources have been written on the practice of traffic calming which detail design policies and procedures, as well as effectiveness and implementation. Specifically, the publications entitled "Traffic Calming – State of Practice" developed by ITE, PennDOT's Publication No. 383 entitled "Pennsylvania's Traffic Calming Handbook", last dated January 2001, and the City of Concord (Oregon) Transportation Division's developed program entitled "Neighborhood Traffic Calming Program" form the foundation and details for Lower Providence Township's traffic calming program. This program, combined with the jurisdictional rights of PennDOT to their roadways, provides guidance to the Township when considering any type of traffic calming measures. While this program will also outline the acceptable study and approval process for implementing traffic calming measures, the Township, to be effective, may need to modify its process at times to best reflect specific local conditions.

Multiple Purposes of Traffic Calming

The immediate purpose of traffic calming is to reduce the speed and volume of traffic to "acceptable" levels. Reductions in traffic speed and volume, however, are just means to other ends such as traffic safety and active street life.² Traffic calming is undertaken for many different reasons, including, but not limited to:

- Reducing through traffic
- Reducing truck traffic

¹ "ITE Traffic Calming Definition," ITE Journal, Vol. 67, July 1997.

² "Traffic Calming, State of the Practice," ITE, August 1999.

- Reducing the occurrence of excessive speeding
- Reducing noise, vibration and air pollution
- Reducing accidents
- Providing safer environment for pedestrians, children, and bicyclists
- Reducing crime
- Supporting redevelopment

As is discussed later in this program, many different traffic calming tools or measures are available to achieve the above goals, and are also recognized by the Pennsylvania Department of Transportation.

An Integrated Approach to Traffic Calming

Lower Providence Township's Traffic Calming Program is intended to help address the "too many cars, going too fast by my house" syndrome by working closely with residents to identify existing problems, define neighborhood goals, and garner community support. The program relies heavily on community participation and action, as well as the ability to fund and maintain implemented measures of traffic calming.

After the identification of a neighborhood problem, Township staff and residents will use an integrated approach to develop reasonable measures that consider the "4 Es":

Education
Enforcement
Engineering
Enhancement

- **Education:** Residents are provided with information and tools necessary to make informed decisions about neighborhood traffic concerns.
- **Enforcement:** Community identified strategies can be put into effect through targeted traffic enforcement.
- **Engineering:** Through a Township staff and resident partnership, physical traffic calming strategies are developed based on accepted standard engineering principles, community input and acceptance, financial constraints for design, construction, and maintenance, and also legal implications.
- **Enhancement:** Design and landscaping features can be used to improve the aesthetics and livability of neighborhoods and to enhance many physical measures.

Elements of one or more of the "4 Es" are incorporated into all of the traffic calming tools considered by the Township. After development of a community-driven, neighborhood traffic calming plan, actions may be implemented using a staged approach upon Township's approval and prioritization through a systematic selection process.

Level 1 actions will typically be implemented first, unless historic documented attempts of such actions have proven unsuccessful. Level 1 measures consist of more easily implementable, low-cost, and often less controversial tools such as neighborhood traffic safety campaigns, radar speed display units, neighborhood speed watch programs, targeted police enforcement, sign installation, and pavement marking changes.

If it is determined, after reviewing the effectiveness of Level 1 actions within a designated time period that more assertive measures will likely be needed, then Level 2 improvements may be considered. Level 2 actions often physically alter the configuration or use of neighborhood streets, so they require engineering, are more costly, require more maintenance, and require community acceptance prior to installation. Level 2 measures consist of physical devices such as speed humps, traffic circles, curb extensions, median islands, and a host of other measures described in the toolbox within this program.

The Township's integrated traffic calming approach includes an essential community involvement program. Community involvement and "buy-in" is a requisite. Because for every action there is an opposite reaction – be it diversion of traffic to another roadway, or neighborhood opposition to particular traffic calming devices – all Township traffic calming projects invite the need for resident involvement.

Future Program Updates

Lower Providence Township's Neighborhood Traffic Calming Program should be considered a "living document," that is, it will be updated from time to time as new traffic calming techniques are developed and tested, and accepted for use within the Commonwealth of Pennsylvania. Procedures locally may then be revised as the Township's staff, officials, and consultants gain more exposure and "hands-on" experience with traffic calming local to our community. In addition, traffic calming device installation and maintenance guidelines may be added and/or modified as they are developed and/or tested.

What's Included in this Report?

Lower Providence Township's Neighborhood Traffic Calming Program is divided into the following chapters:

- **Chapter 1 – Introduction:** this chapter, which provides an overview of Lower Providence Township's Traffic Calming Program.
- **Chapter 2 – Funding and Legal Issues in Traffic Calming:** Provides guidance to Township on these subjects.
- **Chapter 3 – Traffic Calming Toolbox:** Presents descriptions of various Level 1 and Level 2 traffic calming tools. The chapter also suggests accepted installation guidelines by the Township and Commonwealth of Pennsylvania.
- **Chapter 4 – Traffic Calming Impacts:** Provides discussion of travel speed and volume, collision potential, and emergency response impacts.

- **Chapter 5 – Implementation Process:** Designated procedure for Lower Providence Township's integrated and community-driven traffic calming approach.
- **Chapter 6 – Criteria for Installation and Maintenance:** This chapter provides suggested guidelines for the installation and maintenance of various traffic calming tools within the Township.

CHAPTER 2 – FUNDING AND LEGAL ISSUES IN TRAFFIC CALMING

Funding

No money to date has been designated at the State or Federal levels specifically to fund the implementation of traffic calming projects. The Pennsylvania Liquid Fuels fund (see 72 P.S. §2615.4(1)) may be used for several of the traffic calming measures described in the toolbox of the Lower Providence Township Traffic Calming program (see Chapter 3), provided that a well-defined “Traffic Calming Study and Approval Process” (see Chapter 5) has been followed. For any project that involves State or Federal money, or Liquid Fuel funds, the processes outlined in PennDOT’s Design Manual Parts 1 and 1A must be followed. Whenever Liquid Fuel funds are being considered for a traffic calming project, Lower Providence Township will need to contact PennDOT’s Municipal Services representative at PennDOT District 6-0. The Township also recognizes that in order to utilize Liquid Fuels funds for traffic calming, it may not be depriving the road of its public character by limiting its use, thus making it ineligible to use these funds.

Most of Lower Providence Township’s Liquid Fuels funding is earmarked for maintenance of existing roads. It is unlikely that Lower Providence Township will have additional Liquid Fuels funding available for implementation of traffic calming measures. Therefore, in order to secure funding for the design, installation, and maintenance of various traffic calming measures, Lower Providence Township will routinely call upon the neighborhood residents, where traffic calming is requested, to pay some or all of the costs associated with the traffic calming measures. This funding plan is common throughout the nation for communities developing traffic calming programs. In some cases, a traffic calming measure may be planned and budgeted into future capital improvement programs or funded with general funds, or other available source, as determined by the Lower Providence Board of Supervisors, whenever feasible.

Other sources of potential funding may include pursuing ISTEA (TEA-21) funds from the Federal government. This funding must be justified as to a project’s “significance” under federal funding criteria to use for traffic calming. Likewise, if the criteria can be satisfied for a Community Development Block Grant (CDBG) from the County for funding of traffic calming measures, Lower Providence Township can and will pursue that funding.

Alternatively, Lower Providence Township may choose to pursue less common, and sometimes less favorable, funding sources for implementation of traffic calming measures. These sources may include raising property taxes in a specific local improvement district, developing bond initiatives specific to traffic calming, seeking funds from grants that support traffic management programs, or utilizing tax-increment funds to name a few.

Furthermore, Lower Providence Township may also choose to seek developer contributions to help fund traffic calming measures on existing streets when current traffic problems could be exacerbated by additional development. These contributions, of course, should not be confused with funds collected from developers for traffic impact fees as required by the Capital Improvement Program for development impact as noted in the Township’s Roadway Sufficiency Analysis of its most recent Act 209 study.

The specific type of funding to be utilized for a traffic calming measure is included as a question on the **Community Action Request Form** (found in Chapter 5) for the neighborhood requesting the potential implementation of a traffic calming measure in their neighborhood. The funding source should be greatly considered by those requesting traffic calming studies and/or measures due to the limited financial resources available to the Township. The Request Form question also asks the community what their financial commitment toward implementation of a traffic calming measure will be, should the request favorably make it through the process. Given that each Community Action Request for a traffic calming measure will also be subject to a ranking system to prioritize potential projects, the Lower Providence Township Board of Supervisors, under advisement from its appointed local Traffic Calming Advisory Committee, will determine the appropriate source of funding for each traffic calming project.

Lastly, if traffic calming measures are proposed for installation on PennDOT's designated roadways, a written agreement, as outlined in Chapter 2 of "Pennsylvania's Traffic Calming Handbook" between Lower Providence Township and PennDOT is necessary to outline funding responsibilities.

Legal

The legal issues outlined in Chapter 3 of the "Pennsylvania's Traffic Calming Handbook" are considered to be part of this document, as well. Reference to these issues can be found in that resource. In summary, they provide general guidance for installation of traffic calming measures pursuant to the laws of Pennsylvania and the Vehicle Code (which should also be referenced). Changes in the law may affect the principles outlined in "Pennsylvania's Traffic Calming Handbook," and the laws should be checked prior to implementation during the planning stage when traffic calming devices are being sought for use in Lower Providence Township.

Many local governments across the United States and overseas have successfully implemented traffic calming programs. To help avoid liability issues, a municipality must maintain documentation that illustrates that their program is appropriate, install their traffic calming measures based on objective data, and follow procedures when considering and installing such measures. Lower Providence Township has thus adopted a traffic calming study and approval process (see Chapter 5) to accomplish the goal of minimizing liability issues.

Through its implementation process, Lower Providence Township will design, implement, and maintain the accepted traffic calming measures so that drivers, pedestrians, and bicyclists acting reasonably and exercising ordinary care are able to perceive the intent of the measure and safely negotiate it. Acceptable traffic calming measures shall conform to standard engineering principles, as best as possible.

CHAPTER 3 – TRAFFIC CALMING TOOLBOX

Application of Tools

Before considering any traffic calming tool or a combination of tools, it is important to clearly understand residents' concerns and the factors or conditions that generated those concerns. Traffic calming tools come in all shapes and sizes, from the subtle to the very aggressive. Each tool has appropriate applications, limitations on its use, advantages, disadvantages, and costs associated with it. Sometimes all that may be needed to alleviate high speeds along a residential street is increased neighborhood awareness or police enforcement of speed limits. Physical devices, such as speed humps, may be often well-suited for speed control, but may create increased noise and possibly produce maintenance or safety concerns. Therefore, if residents are concerned with both speed and noise, the installation of speed humps may not be the best choice at particular locations. It is important to understand all of the issues associated with each tool to identify the most appropriate one for the circumstances.³

It is also important to recognize that if cut-through traffic is the problem (as determined by traffic counts in the traffic study phase of the Township process), it suggests one set of measures. If speeding is the problem (as determined by speed measurements), it suggests another set. High collision rates, crime, or urban blight may suggest a third set.⁴

In any case, Lower Providence Township has established a hierarchy and classification of its roadways. Certain types of traffic calming tools may not be applicable or acceptable to place on roadways designated for their purposeful use. The Township will help to guide those decisions on their roadways, while PennDOT will need to approve any form of traffic calming measures on their highways.

Traffic calming measures may be considered on the following Lower Providence Township roadway types (local or State-owned) based on functional classification, land use patterns, and posted speed limits:

- Local residential access streets
- Residential collector streets with predominantly residential land uses and limited driveways/frontages
- Arterial roads within downtown districts or commercial areas (with posted speeds of 40 mph or less)

Whenever necessary, the Lower Providence Planning & Development director, traffic consultant, and/or engineer may be required to provide assistance in identifying the functional classification of project area roadways. Only specific circumstances with documented and presented engineering evidence for the safety and benefit of use of traffic calming measures on other types of road classifications will be considered by the Township Supervisors.

³ "Traffic Calming Primer," Pat Noyes & Associates, 1998.

⁴ "Traffic Calming, State of the Practice," ITE, August 1999.

Although traffic calming measures may be appropriate in downtown districts and commercial areas, the applications are typically limited to less intrusive types of traffic calming measures, such as bulb-outs, mid-block islands and textured crosswalks. In locations where posted speed limits are 30 mph or less, a wider variety of measures may be appropriate, especially where pedestrian activity is high.

Many Pennsylvania and U.S. numbered traffic routes are intended to serve a large percentage of through traffic. On these routes, traffic calming measures may be inappropriate. State and U.S. routes where truck volumes are five (5) percent or greater may indicate that goods movement is an important function of the highway and traffic calming measures are likely undesirable.

As previously stated, if traffic calming is requested for a State road, or if State, Federal, or Liquid Fuels funds are used (even on Township roads), approval from PennDOT District 6-0 is required. Preliminary discussions between Lower Providence Township and PennDOT should occur prior to beginning the community involvement process identified in the Implementation Process of Chapter 5. This way major DOT concerns can be addressed before the community becomes involved.

Most traffic calming measures being used do not have “hard and fast” design criteria specified for them. PennDOT has its accepted measures in some cases to suit the State’s jurisdictional guidelines. Where specific design criteria are recommended by PennDOT, the specific design requirements are provided in this document, or should be as they are updated and amended in “Pennsylvania’s Traffic Calming Handbook.”

Table 3.1 provides a general assessment of traffic calming measures. Chapter 4 provides more specific detail on various measures’ effects on traffic speeds and volumes, vehicle collisions, and other quality of life measures.

Level 1 Traffic Calming Tools

Level 1 measures consist of easily implementable and low-cost tools, such as neighborhood traffic safety campaigns, radar speed display units, targeted police enforcement, sign installation, pavement marking changes, etc. Level 1 measures, as discussed in Chapter 5, will typically be implemented and tested prior to consideration of more restrictive (Level 2) measures. Level 1 actions primarily consist of education and enforcement tools.

The pages following Table 3.1 provide a description to potential Level 1 traffic calming measures.

Level 2 Traffic Calming Tools

Level 2 actions alter the configuration of neighborhood streets, so they often require engineering, are higher-cost, and require community acceptance prior to installation. Level 2 measures are only used after Level 1 measures have been implemented and proven ineffective in addressing particular neighborhood traffic needs. Before Level 2 traffic calming actions are constructed, the neighborhood and Township staff must carefully evaluate the benefits and disadvantages of each action.

The pages following Table 3.1 and Level 1 measures provide a gallery of potential Level 2 traffic calming measures. It is often possible to combine elements of various Level 2 actions or to slightly modify treatments.

Combining Traffic Calming Measures

Often, the most effective traffic calming programs use a variety of traffic calming tools. Combinations of traffic calming measures can be used, and are often encouraged, in different neighborhoods and even along the same street. As shown in the toolbox of Level 1 and Level 2 applications, many of the measures complement each other. For instance, speed humps and chokers can be used effectively together, as can traffic circles and curb extensions. Center median islands and chokers are often installed as a set. Raised crosswalks and curb extensions work well together. Many other combinations of traffic calming tools can be effective.

Use of Temporary Measures

Whenever feasible and determined appropriate, Lower Providence Township will install temporary Level 2 traffic calming devices subject to an assessment of impacts and support of the residents. It should be noted that while the use of temporary devices help determine the resulting travel speed and traffic volume changes, temporary devices may usually not be aesthetic. Because of this, there is always the risk that residents will criticize the device's appearance instead of its effectiveness in traffic calming. However, the use of attractive materials, colors and composition can create acceptable temporary devices. For example, planters, which provide greenery as well as access control, can be used as temporary street closures.

Table 3.1 Generalized Assessment of Traffic Calming Measures

Measure	Reduces Speed	Reduces Traffic	Noise	Loss of Parking	Conflict Resolution	Restrict Access	Emrgny. Impacts	Main-tenance	Estimate of Cost ⁽²⁾
Level 1 Measures:									
Traffic Education Campaign	Maybe	Maybe	No change	None	No	None	None	No	Varies
Speed Display	Yes	No	No change	None	No	None	None	No	\$250/day
Neighborhood Signs/ Education Program	Maybe	Minimal	No change	None	No	None	None	No	\$200/sign
High Visibility Crosswalks	Maybe	No	No change	None	Some	None	None	Yes	\$50-\$150 /sq. yd.
Police Enforcement	Yes	Maybe	No change	None	No	None	None	No	\$75/hour
Narrowing Lanes	Yes	Minimal	No change	None	No	None	None	Yes	\$1K-\$3K
Defined On-Street Parking	Maybe	No	No change	None	No	None	Maybe	Yes	Varies
Speed Limit Signing	Maybe	No	No change	None	No	None	None	No	\$200/sign
Stop Signs (Multi-Way)	Maybe	No	Increase	None	Yes	None	Maybe	No	\$200/sign
Signing Restrictions/ Turn Prohibitions	No	Yes	No change	None	Yes	Yes	None	No	\$200/sign
Commercial Vehicle Prohibitions ⁽¹⁾	Maybe	Maybe	Decrease	None	Some	Yes	None	No	\$200/sign
Level 2 Measures:									
One-way Streets	No	Yes	No change	None	Some	Yes	Yes	No	\$5K
Median Island/ Pedestrian Refuge	Maybe	No	Decrease	Maybe	Some	Yes	None	No	\$5K-\$75K
Gateway	Yes	Yes	Decrease	Maybe	No	Yes	None	No	\$5K-\$20K
Curb Extension/ Bulb Out	Maybe	No	No change	Yes	Some	None	Some	Yes	\$5K-\$20K
Choker	Yes	Maybe	No change	Yes	Some	None	Some	No	\$15K
Speed Hump	Yes	Maybe	Increase	Maybe	Some	None	Yes	Yes*	\$1.5K-\$5K
Raised Crosswalk	Yes	Maybe	Increase	Yes	Some	None	Yes	Yes*	\$2K-\$10K
Raised Intersection	Yes	No	Increase	Yes	Some	None	Yes	Yes	\$15K-\$60K
Traffic Circle	Yes	Maybe	No change	Yes	Yes	None	Yes	Yes	\$18K-\$25K
Intersection Channelization	Yes	Maybe	No change	Yes	Some	None	None	Maybe	\$15K-\$20K
Chicane	Yes	Maybe	Maybe	Yes	No	None	Some	Maybe	\$6K-\$40K
Restricted Movement Barrier	Maybe	Yes	Decrease	None	Some	Yes	Yes	Yes	\$5K
Raised Median Through Intersection	No	Yes	No change	None	Yes	Yes	Yes	No	\$1.5K-20K
Right-in/Right-out Island	No	Yes	No change	None	Some	Yes	No	No	\$3.5K-\$7.5K
Diagonal Diverter	Yes	Yes	Decrease	Maybe	Some	Yes	Yes	No	\$7.5K-35K
Semi-Diversers	Maybe	Yes	No change	Maybe	Yes	Yes	Some	No	\$3K-\$20K
Street Closure	Yes	Yes	Decrease	Yes	Yes	Total	Yes	No	\$1.5K-35K

⁽¹⁾ Commercial vehicle restrictions on State highways may not be permissible.

*Speed humps and raised crosswalks must be reinstalled each time a street is resurfaced.

⁽²⁾ Opinion of cost is estimated from 2002 public wage rates and material costs for construction. Engineering and other potential costs are not included, and should be estimated on a project-by-project basis. These cost estimates should be periodically updated by the Township's Department of Public Works.

Sources: "Neighborhood Traffic Management & Calming Program," City of San Buenaventura, CA, 1997 and Parisi Associates.

TOWNSHIP-WIDE TRAFFIC EDUCATION CAMPAIGN

Level 1

Description: Township-wide traffic education flyers, citywide meetings, school meetings, rotating neighborhood banners, trash can stickers, and other tools that can be applied on a citywide basis.

Application: The intended benefit of conducting Township-wide traffic education campaigns is to educate residents and non-residents about traffic laws, speed limits, safety, conditions near schools, and other traffic-related conditions.



Advantages:

- + Township-wide application.
- + Various educational tools.
- + Involves community.
- + Involves schools.

Disadvantages:

- Requires substantial staff resources.
- Effectiveness may be limited.
- Meetings need to stay focused.
- Enforcement still likely required.

Special Considerations:

- Includes information on all Township transportation programs, including traffic calming, application of speed limits, stop signs and traffic signals, marked crosswalks, pedestrian signals, children at play, and traffic safety tips.
- Enables Township staff to understand areas of potential concern.
- Educational materials can be presented to neighborhood groups and schools.
- Speed awareness banners, rotated about the Township, are sometimes used.
- Yard signs or trashcan stickers (e.g., “Slow Down in our Neighborhood”) can be made available to the community.
- The Township’s Traffic Calming Program manual can be discussed.

Cost:

- See Table 3.1

Education

Enforcement

Engineering

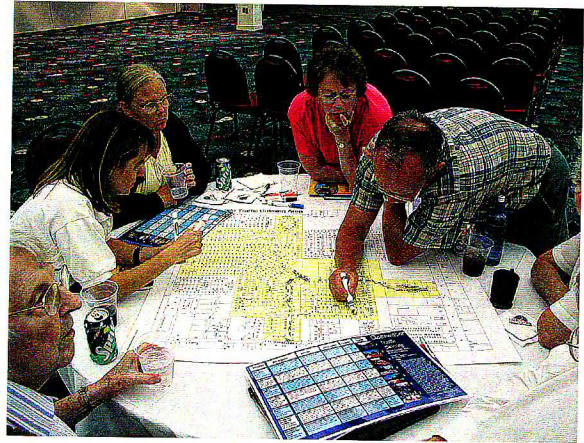
Enhancement

NEIGHBORHOOD TRAFFIC EDUCATION CAMPAIGN

Level 1

Description: Neighborhood traffic safety campaigns include: personalized letters, neighborhood flyers, meetings, workshops, specific school programs, and neighborhood speed awareness signs or banners.

Application: The intended benefit of conducting neighborhood traffic safety campaigns is usually to make residents aware of local speed limits and other traffic and safety concerns.



Advantages:

- + Allows residents to discuss views.
- + Identifies issues of concern.
- + Enables staff to see concerns.
- + Reduces speeds temporarily.

Disadvantages:

- Effectiveness may be limited.
- Meetings need to stay focused.
- Potentially time consuming.
- Enforcement still likely required.

Special Considerations:

- Neighborhood traffic safety campaigns can consist of letters and/or flyers.
- Often, neighborhood meetings or workshops are conducted.
- Any meetings or workshops need to stay focused on specific traffic issues.
- Neighborhood speed awareness signs or banners are sometimes used.
- Sometimes only effective over a short duration

Cost:

- See Table 3.1

Education

Enforcement

Engineering

Enhancement

SPEED DISPLAY UNIT

Level 1

Description: The most common form of radar speed display unit is a portable trailer equipped with a radar unit that detects the speed of passing vehicles and displays it on a reader board, often with a speed limit sign next to the display.

Application: The primary benefit of speed display units is to discourage speeding along neighborhood streets.



Advantages:

- + Effective educational tool.
- + Good public relations tool.
- + Encourages speed compliance.
- + Can reduce speeds temporarily.

Disadvantages:

- Not an enforcement tool.
- Ineffective on multi-lane roadways.
- Less effective on high volume streets.
- Subject to vandalism.

Special Considerations:

- Used throughout the Township on an ongoing basis.
- The purpose of the units is to remind drivers that they are speeding.
- Encourage compliance with the posted speed limit.
- Usually only effective in reducing speeds when actually being used.
- In longer term (30 days), speeds can decrease by 6% on low volume roads.
- Effect usually negligible on higher volume streets serving through traffic.
- Some motorists may speed up to try to register a high speed.
- Should not be used in remote areas.

Cost:

- See Table 3.1

Education

Enforcement
Engineering
Enhancement

HIGHER VISIBILITY CROSSWALKS

Level 1

Description: Higher visibility crosswalks can be created by using paving blocks or contrasting color concrete, or painting “zebra” stripes in lieu of or between the crosswalk’s outer boundary stripes.

Application: The primary benefit of higher visibility crosswalks is to increase crosswalk visibility to drivers.

Advantages:

- + More visible than traditional x-walks.
- + Indicates preferred crossing location.
- + Can slow travel speeds.
- + Can be aesthetically pleasing.



Disadvantages:

- Pedestrians may ignore traffic more.
- Only used at uncontrolled crosswalks.
- Usually require more maintenance than traditional crosswalks.
- Virtually no effect on reducing traffic speeds or volumes.
- Extra noise may be produced from vehicles passing over the textured surface.
- Heavily textured surface may present a traction problem for bicyclists, wheelchairs, or disabled persons.

Special Considerations:

- Higher visibility crosswalks indicate preferred crossing location to pedestrians.
- Pedestrians may place too high a reliance on ability to control driver behavior.
- Specially paved types require more maintenance than traditional crosswalks.
- Should only be used at uncontrolled crosswalks.
- Less expensive, but not as effective as raised crosswalks (Level 2).
- Textured crosswalks are generally flush with the surrounding street. Jurisdictions that have used slightly raised surfaces – $\frac{1}{2}$ to $\frac{3}{4}$ inch above street level – have seen no added benefit in reducing vehicle speeds.

Cost:

- See Table 3.1

Education

Enforcement

Engineering

Enhancement

TARGETED POLICE ENFORCEMENT

Level 1

Description: The Police Department deploys motorcycle or automobile officers to perform targeted enforcement on residential streets for at least an hour a day.

Application: The intended benefit of targeted police enforcement is to make drivers aware of local speed limits and to reduce speeds.

Advantages:

- + Visible enforcement very effective.
- + Driver awareness increased.
- + Can be used on short notice.
- + Can reduce speeds temporarily.

Special Considerations:

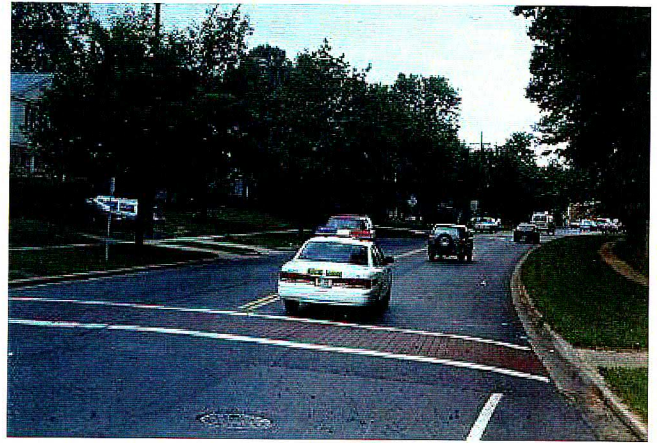
- Police enforcement is continually in effect throughout the Township.
- Usually used only on neighborhood streets with documented speeding problems.
- Typically only effective while officer is actually monitoring speeds.
- Often helpful in school zones.
- May be used during “learning period” when new devices first implemented.
- Long-term benefits unsubstantiated without regular periodic enforcement.
- Expensive.

Cost:

- See Table 3.1

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Disadvantages:

- Temporary measure.
- Requires long-term use to be effective.
- Fines lower than enforcement cost.
- Disrupts traffic on high volume streets.

NARROWING LANES

Level 1

Description: On this Level 1 type of measure, striping is usually used to create narrow lanes – often about 10 feet wide. The “unused” pavement can be used to stripe bicycle and/or parking lanes.

Application: The primary benefit of narrowing lanes through striping is to slow vehicle speeds.

Advantages:

- + Can be quickly implemented.
- + Slows travel speeds.
- + Improves safety.
- + Can be easily modified.
- + If parking lanes are striped, a buffer is provided between traffic and pedestrians on sidewalks.

Special Considerations:

- Narrowed travel lanes provide “friction” and can slow vehicle speeds.
- Can be installed quickly and easily revised over time.
- Designated bicycle lanes and/or parking lanes can be created.
- Adds centerline and edgeline striping to neighborhood streets.
- Can be used around curves to “force” vehicles to stay within lanes.
- On curves, raised dots are usually most effective in centerline.

Cost:

- See Table 3.1

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Disadvantages:

- Increases regular maintenance.
- Not always perceived as effective tool.
- Adds striping to neighborhood streets.
- Increases resurfacing costs.
- On-street parking can reduce the visibility of pedestrians and vehicles to each other.

SPEED LIMIT SIGNING

Level 1

Description: 25 miles per hour speed limit signs are installed along neighborhood streets.

Application: The primary benefit of installing speed limit signing is to encourage slower vehicle speeds along residential streets. Signs are only installed along streets where speeding is a problem.



Advantages:

- + Clearly defines legal speed limit.
- + Can reduce speeds if enforced.
- + Usually popular with neighborhood.
- + Low cost installation.

Disadvantages:

- Requires on-going police enforcement.
- Not effective solely by themselves.
- Low speed limits may be unreasonable.
- Adds additional signs in neighborhood.

Special Considerations:

- Should only be used on streets where speeding is a documented problem.
- Requires police enforcement to remain effective.
- Speed limits lower than 25 mph can only be set by engineering analysis.
- Unrealistically low speed limits tend to be disregarded.
- Increases cost of sign maintenance.
- Should be posted at the beginning and end of each speed zone and at intervals not greater than one-half mile.

Cost:

- See Table 3.1

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STOP SIGNS

Level 1

Description: Stop signs are either installed on the “side street” where no signs currently exist – or on the “main street” at an intersection where the “side street” already has stop signs.

Application: Stop signs should only be considered when warranted based on established criteria. PennDOT Publication 201 and the Vehicle Code reference these procedures.

Advantages:

- + Requires traffic to stop.
- + Assists pedestrian crossings.
- + May slightly reduce cut-thru traffic.
- + Lowers speeds at stop sign.



Disadvantages:

- May lead to increased mid-block speeds.
- Increases noise and air pollution.
- Can create problems if unwarranted.
- May increase emergency response time.

Special Considerations:

- Stop signs should only be installed if warranted based on established and acceptable criteria (see PennDOT Pub. 201 and PA Vehicle Code).
- Drivers may not comply with stop signs if installation is unwarranted.
- Mid-block speeds can increase to make up for “lost” time.
- At low volume, unwarranted locations, many drivers will “roll” through.
- Can create safety problems for pedestrians when compliance is poor.
- Stop signs may increase certain types of collisions, e.g., rear-ends.
- Stop signs may reduce other types of collisions, e.g., broadsides.
- May increase emergency response times.
- Increases noise near intersection due to vehicle deceleration and acceleration.

Cost:

- See Table 3.1

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RESTRICTED MOVEMENT SIGNING

Level 1

Description: Turn prohibition signs involve the use of standard “No Left Turn,” “No Right Turn,” or “Do Not Enter” signs to prevent undesired turning movements onto residential streets. They may include peak period limitations.

Application: The primary benefit of restricted movement signing is to reduce cut-through traffic volumes along residential streets.



Advantages:

- + Redirects traffic to main streets.
- + Reduces cut-through traffic.
- + Can address time-of-day problems.
- + Low cost.

Disadvantages:

- May divert traffic to other streets.
- Require enforcement.
- Adds more signs to neighborhood.
- Usually not effective all day.

Special Considerations:

- Restricted movement signing is best used on major or collector streets.
- Most effective at periphery of a neighborhood to prevent entering traffic.
- Has little or no effect on speeds for through vehicles.
- Turn prohibitions can be used on a trial basis.
- Violation rates are about 50% without enforcement.
- With active enforcement, violation rates are reduced to about 20%.
- Turn restrictions are most effective when limited to peak hours.
- Less effective when applied around-the-clock.
- 24-hour turn restrictions better served with closures than with signing.

Cost:

- See Table 3.1

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ONE-WAY STREETS

Level 2

Description: This measure converts a segment of a two-way street to one-way operations.

Application: The primary benefit of two-way to one-way street conversions is reduction in cut-through traffic.

Advantages:

- + Redirects traffic to other streets.
- + Reduces cut-through traffic.
- + Improved safety with one-way.
- + Emergency services can bypass.

Special Considerations:

- Restrict movements into street while allowing resident access within block.
- Potential use must consider how residents will gain access.
- Bicycles are typically permitted to travel through in both directions.
- In effect at all times, even when cut-through volumes may be low.
- Can be accomplished with just signing and pavement markings.
- Possible to landscape channelizing islands, but maintenance required.
- Often used in combination with other one-way street conversions.

Cost:

- See Table 3.1

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Disadvantages:

- Can encourage increased speeds.
- Redirects traffic to other streets.
- Will increase trip lengths.
- Requires signage.

MEDIAN ISLAND

Level 2

Description: Median islands are raised islands in the center of a street that can be used to narrow lanes for speed control and/or to create a barrier to prohibit left-turns into or from a side street. They can also be used for pedestrian refuges in the middle of a crosswalk.

Application: Median islands are used on wide streets to lower travel speeds and/or to prohibit left-turning movements. They are also often used to provide a mid-point refuge area for crossing pedestrians.

Advantages:

- + Effectively reduces vehicle speeds.
- + Can reduce collision potential.
- + Reduces pedestrian crossing.
- + Opportunity for landscaping.
- + Can be used on curves to prevent vehicles from swinging wide at excessive speeds.

Special Considerations:

- Median islands, when used to block side street access, may divert traffic.
- In this condition, they may impact emergency response times.
- Median islands may visually enhance the street through landscaping.
- Median islands used for lane narrowing should result in at least 12' lanes.
- Fire departments usually prefer median islands to some other measures.
- Bicyclists prefer not to have travel way narrowed.
- Median islands should be 6 to 8 feet wide to comfortably accommodate pedestrians.
- Islands should be at least 12 feet, and preferably 20 feet, in length.
- Lighting should be provided for islands, along with landscaping, trees and reflectors to ensure motorists can see it.

Cost:

- See Table 3.1 (dependent on size).

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Disadvantages:

- Could require parking removal.
- May reduce driveway access.
- Could impact emergency vehicles.
- May divert traffic volumes.

GATEWAY

Level 2

Description: Gateway entrance treatments consist of physical and textural changes to streets and are located at key entryways into a neighborhood. They often consist of features, like chokers, that narrow a street in order to reduce the width of the street's right-of-way.

Application: The primary benefit of gateway treatments is speed reduction. They provide visual cues that tell drivers they are entering a local residential area or that the surrounding land uses are changing.

Advantages:

- + Can reduce vehicle speeds.
- + Creates identity for neighborhood.
- + Can discourage cut-through traffic.
- + Opportunity for landscaping.
- + Can discourage truck entry, depending on the extent of narrowing and inclusion of median islands at the intersection.

Special Considerations:

- Gateways have minimal influence on driver's routine behavior.
- Overall speeds and volumes are usually only minimally influenced.
- Gateway treatments make drivers more aware of neighborhood environment.
- Can incorporate neighborhood identification signing and monumentation.
- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk.
- Textured pavements could introduce some new noise.
- A number of traffic calming measures such as bulb-outs at the intersection, textured pavement treatments and median islands may be included in a gateway design.

Cost:

- See Table 3.1

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Disadvantages:

- Maintenance and irrigation needs.
- May require removal of parking.
- Can impede truck movements.
- Creates physical obstruction.

CURB EXTENSION

Level 2

Description: Curb extensions narrow the street by extending the curbs toward the center of the roadway or by building detached raised islands to allow for drainage and bike lanes passage.

Application: Curb extensions are used to narrow the roadway and to create shorter pedestrian crossings. They also improve sight distance and influence driver behavior by changing the appearance of the street. May also be used at mid-block locations with significant pedestrian activity, school children or senior citizens, or where speed humps are not permitted.



Advantages:

- + Better pedestrian visibility.
- + Shorter pedestrian crossing.
- + Can decrease vehicle speeds.
- + May encourage pedestrians to cross at designated locations.
- + Can improve neighborhood appearance with landscaping and/or textured treatments.
- + Increase pedestrian sight distance
- + Prevent illegal parking close to intersections.

Disadvantages:

- Can require removal of parking.
- May create hazard for bicyclists.
- Can create drainage issues.
- Difficult for truck turns to right.

Special Considerations:

- Curb extensions can be installed at intersections or mid-block (see chokers).
- Mid-block chokers are often used with pedestrian crossing treatments.
- Curb extensions should not extend into bicycle lanes, where present.
- Curb extensions at transit stops enhance service.
- No noise or emergency service impacts.
- May require landscape maintenance to preserve sight distances.

Cost:

- See Table 3.1

Education
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Curb Extension/Bulb-Out Design

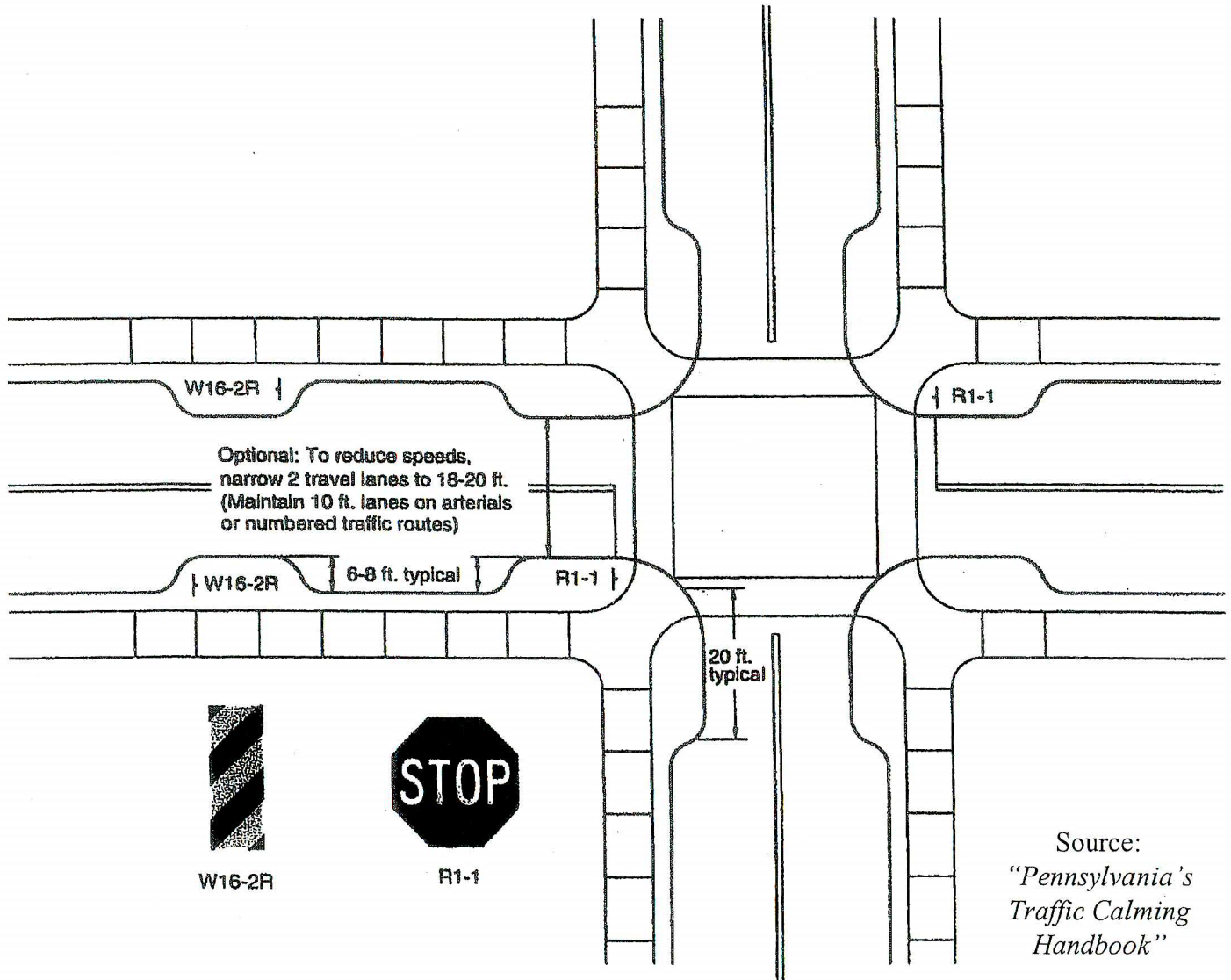


FIGURE 3.1

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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CHOKER

Level 2

Description: Chokers are mid-block curb extensions that narrow a street by extending the sidewalk or widening the planting strip. The remaining cross-section can consist of one lane or two narrow lanes.

Application: Chokers are intended to reduce traffic volumes by making the roadway narrow so that only one car at a time can pass through it, or two cars can pass very slowly in opposite directions.

Advantages:

- + Effectively reduces vehicle speeds.
- + Shorter pedestrian crossing.
- + Provides improved sight distance.
- + Opportunity for landscaping.

Special Considerations:

- Chokers can be designed with protected bike lane next to original curb.
- Chokers with exclusive bike lanes can collect debris in bike lane.
- Can impact driveway access.
- Also reduce travel speeds when cross-section reduced substantially.
- Preferred by many emergency response agencies to other measures.
- Provide excellent opportunities for landscaping.

Cost:

- See Table 3.1



Disadvantages:

- Can require removal of parking.
- May create hazard for bicyclists.
- Can create drainage issues.
- May impede truck movements.

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SPEED HUMP

Level 2

Description: Speed humps are asphalt mounds constructed on residential streets. They are usually placed in a series and spaced 300 to 600 feet apart. Speed humps are typically 12 to 14 feet long and 3 to 6 inches high. Their vertical deflection encourages motorists to reduce speed.

Application: The primary benefit of speed humps is speed control. They work well in conjunction with curb extensions.



Advantages:

- + Effectively reduces vehicle speeds.
- + Does not require parking removal.
- + Can reduce vehicular volumes.
- + Easily tested on temporary basis.
- + Relatively inexpensive to install and maintain.
- + Does not pose problems for bicyclists or motorcyclists, except at high speeds.

Disadvantages:

- Slows emergency vehicles.
- Increases noise near speed humps.
- May divert traffic to parallel streets.
- Not aesthetically pleasing.
- Should be avoided on major transit routes.
- Drainage could be a concern.

Special Considerations:

- Vehicle speeds between humps have been shown to decrease by up to 25%.
- Volumes may decrease if parallel route, without measures, is available.
- Possible increase in traffic noise from braking and accelerating.
- Highest noise increase from buses and trucks.
- Speed humps reduce emergency vehicle response times.
- 3-5 second delay per hump for fire trucks, 10 seconds for ambulances.
- Speed humps require advance warning signs and object marker at hump.
- Difficult to construct precisely, unless pre-fabricated.
- Two most popular designs are the Watts speed hump and the Seminole County speed hump; Watts speed hump is recommended only for local streets while Seminole County speed hump can be used on local roads as well as collector roads.
- Similar designs can be used as raised pedestrian crosswalks.
- Primarily used at mid-block locations.
- Normally, no hump should be placed within 150 feet of an unsignalized intersection or 250 feet of a signalized intersection.

SPEED HUMP (continued)

Level 2

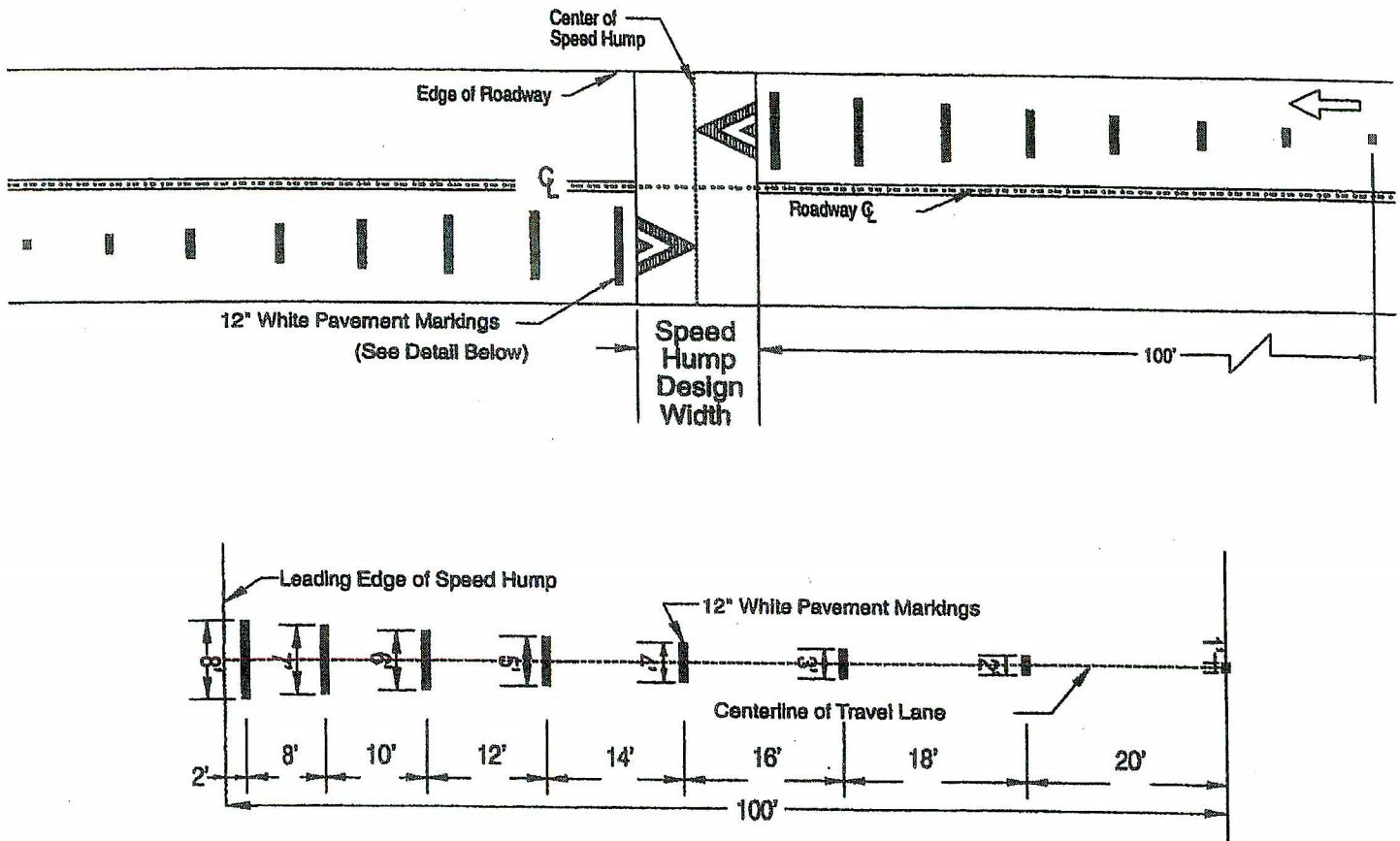
- Speed humps should not be used on curves unless the radius is greater than 300 feet.
- Humps should not be installed on streets with a grade exceeding 8%.
- Humps should not be installed on streets without curbing unless obstructions such as signing, flexible delineator posts, or bollards prevent drivers from driving around the hump. Rocks, boulders, and other objects of this nature should not be used for this application.
- Ideally, speed humps should extend across the roadway from curb to curb. This design is generally preferred by bicyclists, and it prevents motorists from driving with one wheel in the gutter (this may happen with tapered edges). If drainage cannot be accommodated under curb-to-curb conditions, it is recommended that humps end before bike lanes or continue across the bike lane without tapering off.
- Humps usually have a parabolic cross section. A sinusoidal cross section is harder to construct but may better facilitate snow removal.
- Although speed humps may create noise from vehicles passing over them, the overall noise levels on the street may be reduced due to lower vehicle speeds.
- Traffic may divert to other parallel streets that are not traffic calmed.
- In areas with snow removal problems, a measure such as a flexible delineator post may be needed at each hump to alert snowplow operators to lift their blades.
- Has minimal effect on trucks and sport utility vehicles and may worsen speeding with problem drivers.
- Can be used as a series of two humps to impact all vehicle types.

Cost:

- See Table 3.1

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Speed Hump Advance Warning Design



Source:
"Pennsylvania's Traffic Calming Handbook"

FIGURE 3.2

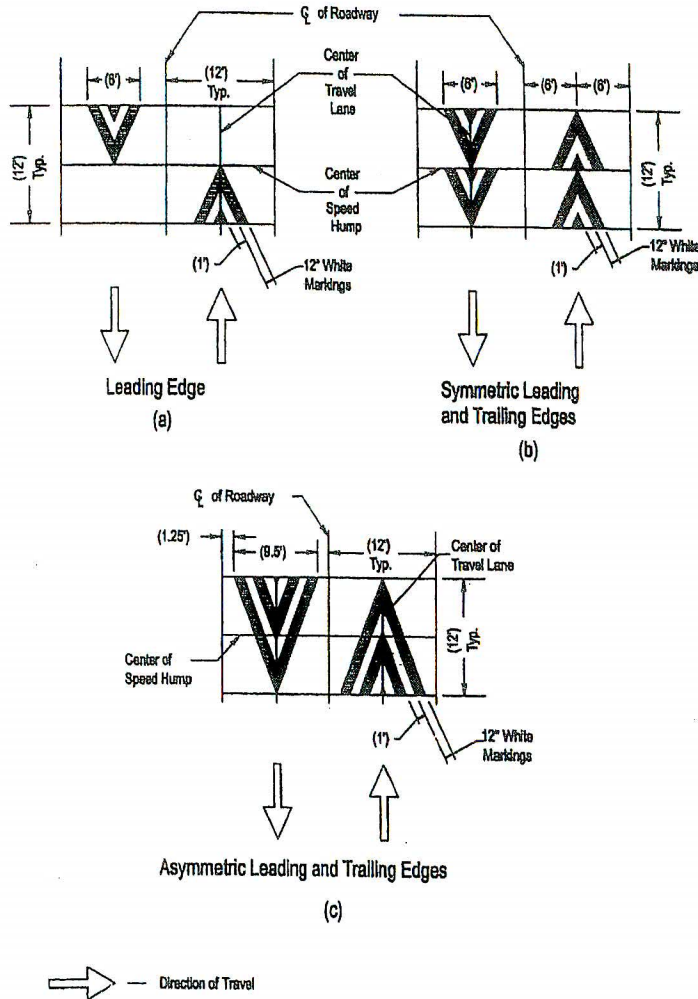
NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



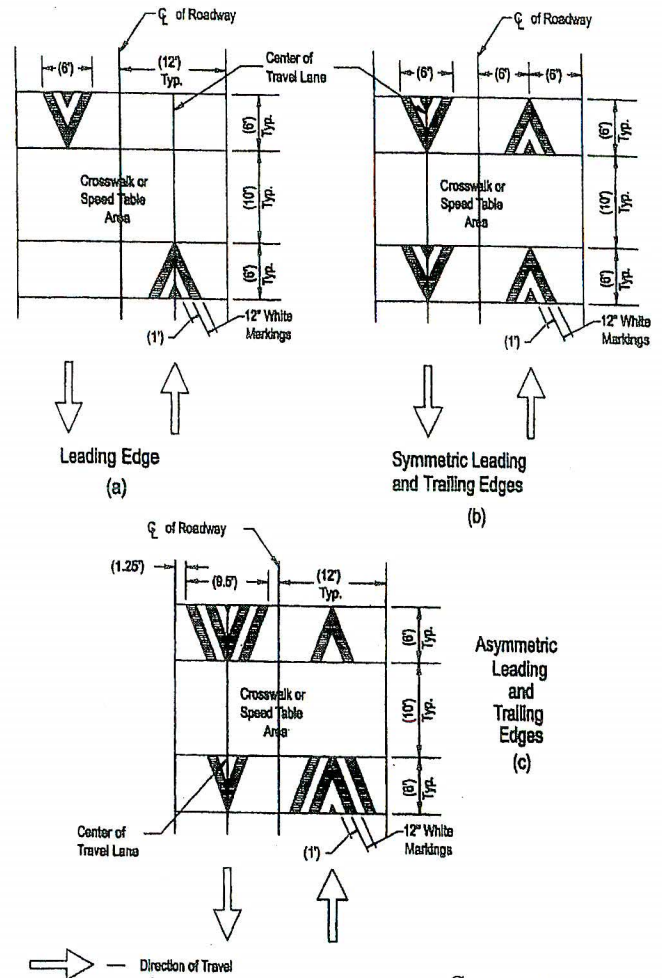
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Speed Hump Pavement Markings Design

Watts Speed Hump



Seminole County Speed Hump (w/Crosswalk or Speed Table)



Source:
"Pennsylvania's
Traffic Calming
Handbook"

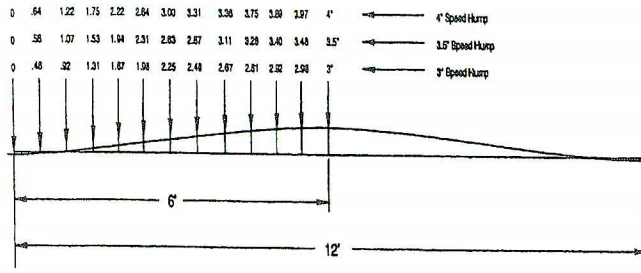
FIGURE 3.3
NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX
LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA

McM **McMAHON ASSOCIATES, INC.**
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TRANSPORTATION
SOLUTIONS

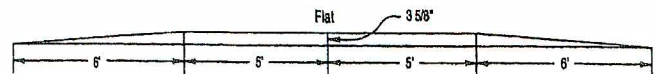
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Speed Hump Cross Section Design

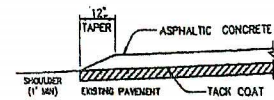
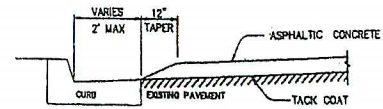
Watts (TRRL Profile) Speed Hump



Gwinnett County Speed Hump/Table



Gwinnett County Speed Hump/Table Shoulder Detail



Shoulder Detail For Streets Without Curb

Source: Gwinnett County, Georgia

Seminole County Speed Hump/Table

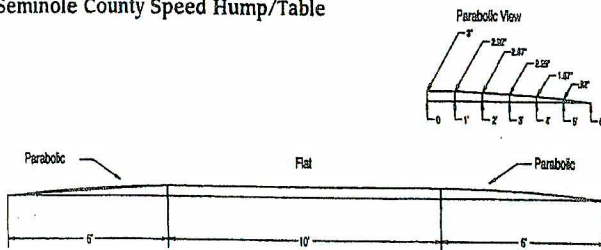


FIGURE 3.4

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA

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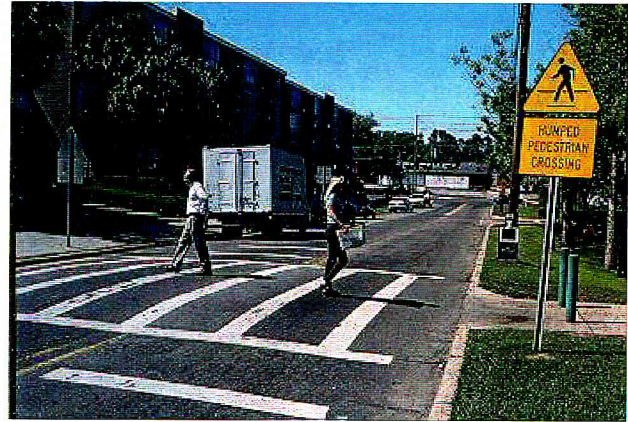
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RAISED CROSSWALK

Level 2

Description: Raised crosswalks are crosswalks constructed 3 to 6 inches above the elevation of the street. They are usually about 22 feet long, with a flat section in the middle and ramps on the ends. Sometimes the flat portion is constructed with brick or other textured materials.

Application: Raised crosswalks are intended to reduce vehicle speeds specifically where a high amount of pedestrians cross the street.



Advantages:

- + Effectively reduces vehicle speeds.
- + Good pedestrian safety treatment.
- + Does not affect access.
- + Flat portion can be textured.
- + Improves visibility of pedestrians.
- + May reduce volumes.

Disadvantages:

- May generate increased noise and emissions.
- Can require drainage modifications.
- Only 3 seconds delay for fire trucks.
- Often require signage and markings.
- Require more maintenance than traditional crosswalks.
- Icing can be a problem if snow is not properly removed.

Special Considerations:

- Raised crosswalks are usually 22 feet long, with a 10-foot wide flat section.
- Usually a lower elevation than sidewalk to alert visually impaired it's a crosswalk.
- Careful design is needed due to potential drainage issues.
- Usually preferred by Fire Departments over standard speed hump.
- Work well in combination with curb extensions and curb radius reductions.
- Do not affect access.
- Increases pedestrian visibility and likelihood that driver yields to pedestrian.
- Often referred to as speed tables or speed platforms.
- If the raised pedestrian crossing is the same height as the curb, the edge of the raised crosswalk should be differentiated with a tactile measure to warn visually impaired people.
- Most appropriately used at areas with significant pedestrian crossing activity.
- Effectiveness of the measure is increased when used with textured crosswalks or curb extensions.
- A catch basin should be installed for drainage on the uphill side of the raised crosswalk.
- All ADA requirements must be met.
- In areas with snow removal problems, a measure such as a flexible delineator post may be needed at each hump to alert snowplow operators to lift their blades.

Cost:

- See Table 3.1

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Raised Crosswalk Design

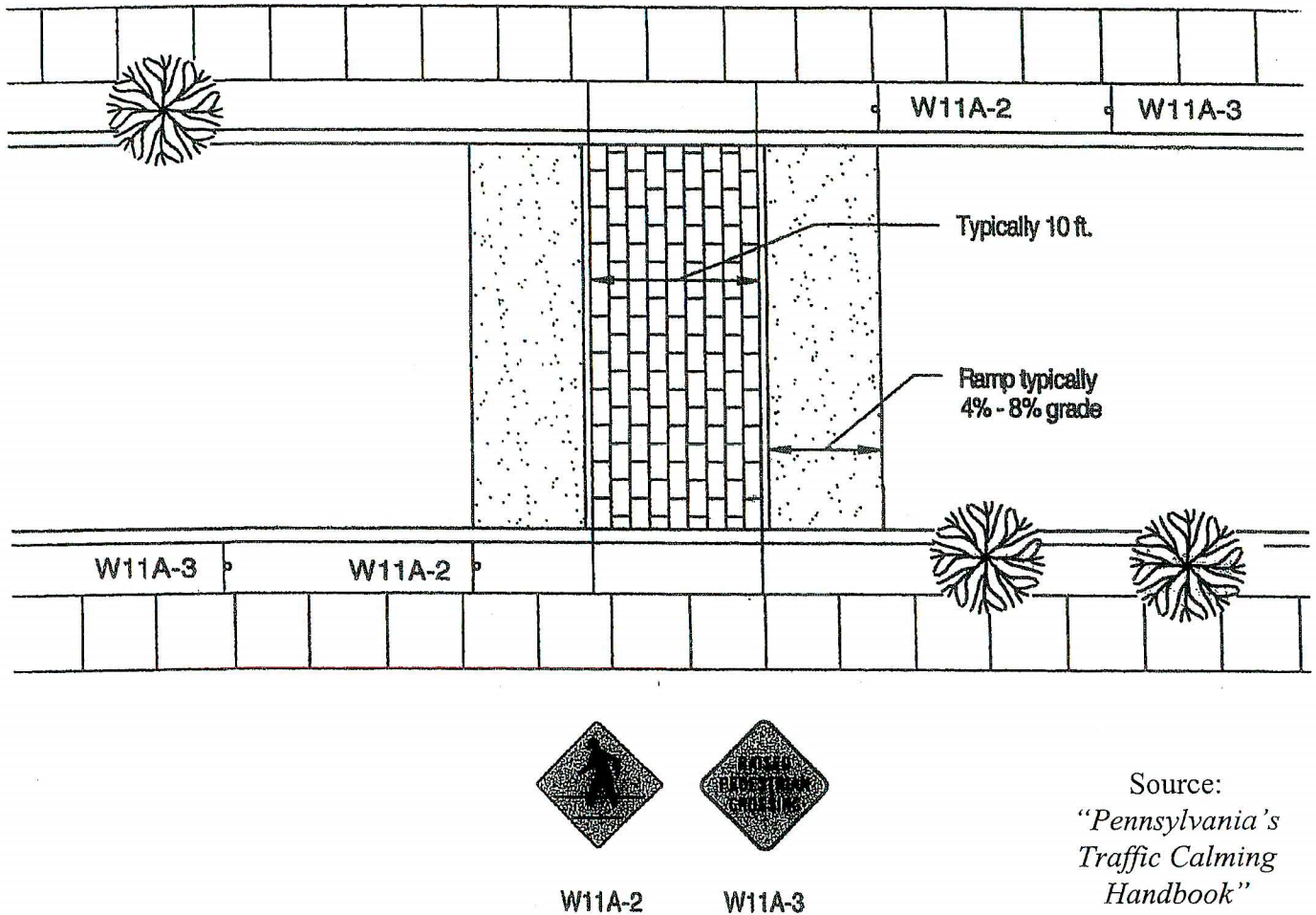


FIGURE 3.5

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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RAISED INTERSECTION

Level 2

Description: A raised intersection is a flat, raised area covering an entire intersection. There are ramps on all approaches. The plateau is usually about 4" high. Usually, the raised intersection is finished in brick or other textured materials.

Application: Raised intersections are used to reduce through movement speeds and provide safer street crossings to pedestrians.



Advantages:

- + Effectively reduces vehicle speeds.
- + Good pedestrian safety treatment.
- + Can be aesthetically pleasing.
- + Does not affect access.
- + Reduces vehicle-pedestrian conflicts by providing better visibility for pedestrians.

Special Considerations:

- Raised intersections usually used in urban areas.
- Make entire intersections more pedestrian-friendly.
- Work well with curb extensions and textured crosswalks.
- Often part of an area-wide traffic calming scheme involving both streets.
- Expensive.
- Special signing often required.
- If raised intersections are the same height as the surrounding curb, a slight lip or other tactile measure should be used as a warning to visually impaired people.
- In areas with snow removal problems, a measure such as a flexible delineator post may be needed at each hump to alert snowplow operators to lift their blades.

Cost:

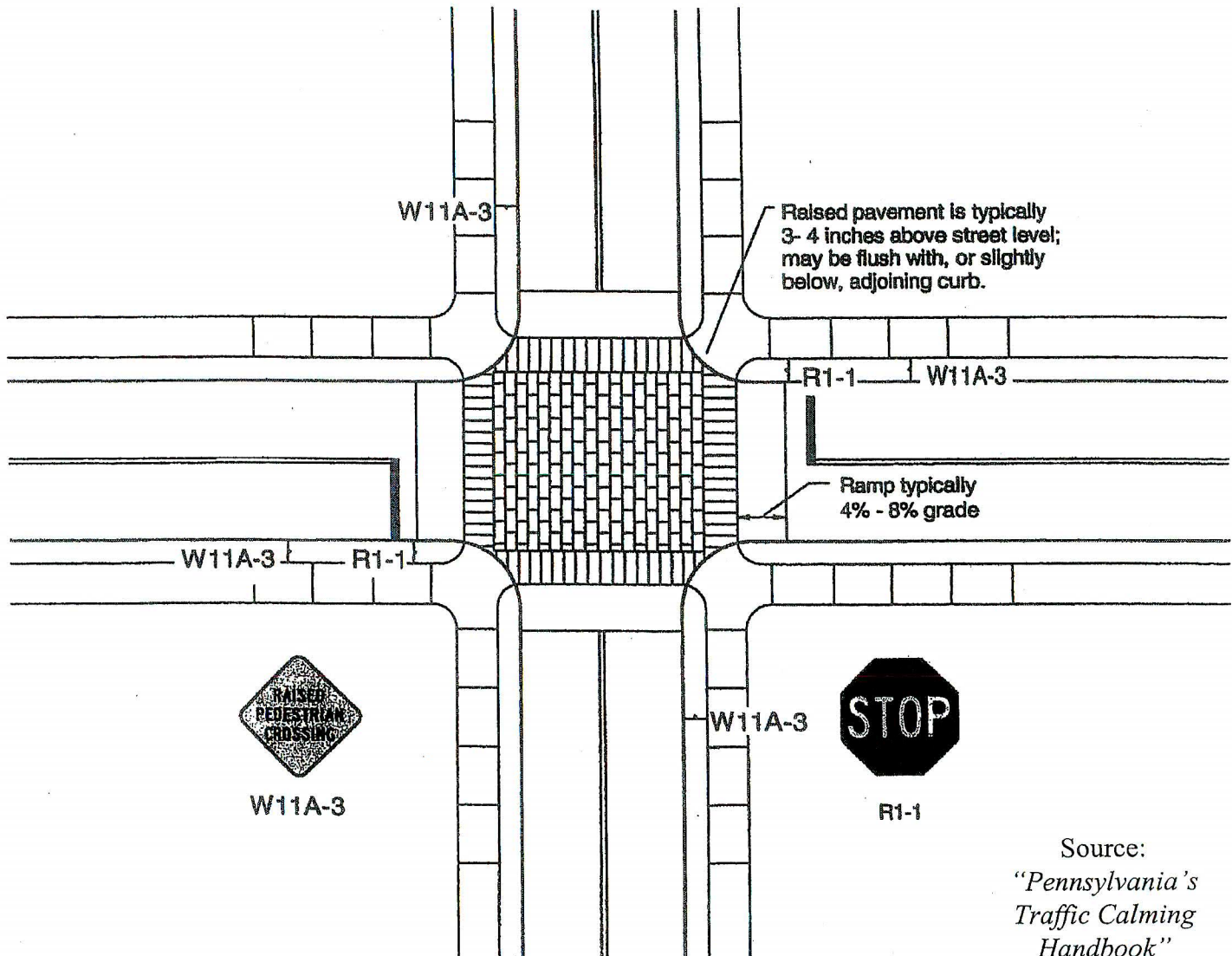
- See Table 3.1

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Disadvantages:

- Expensive to construct and maintain.
- Requires drainage modifications.
- Affects emergency vehicle response.
- May require bollards to define corners.

Raised Intersection Design



Source:
"Pennsylvania's
Traffic Calming
Handbook"

FIGURE 3.6
NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX
LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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TRAFFIC CIRCLE

Level 2

Description: Traffic circles are raised circular islands in an intersection. They are typically landscaped with ground cover and/or street trees. Traffic circles require drivers to slow down to a speed that allows them to comfortably maneuver around the circle in a counterclockwise direction.

Application: The primary benefit of traffic circles is speed control and reduction in angle and turning collisions.



Advantages:

- + Effectively reduces vehicle speeds.
- + Reduces collision potential, particularly right-angle conflicts.
- + Provides better side-street access.
- + Opportunity for landscaping.
- + Reduces the number of potential conflict points at an intersection.

Disadvantages:

- Parking removal required.
- Can increase bike/auto conflicts.
- Can impede emergency vehicles.
- Can restrict large vehicle access.

Special Considerations:

- Traffic circles are best used in a series or with other devices.
- About 30 feet of curbside parking must be prohibited in advance of circle.
- Buses and trucks maneuver around traffic circles at slow speeds.
- Noise impacts are minimal.
- If well maintained, traffic circles can be attractive.
- However, there are also a lot of signs and pavement markings required.
- Traffic circles are less effective at T-intersections and offset intersections.
- Turning analysis should be completed to ensure that the design vehicle can negotiate the circle.
- May require additional street lighting.
- Drainage works best if the cross-section slopes away from the circle, despite the fact that this creates a reverse superelevation.
- It may be necessary to move crosswalks further away from the traffic circle to prevent vehicles from encroaching on the crosswalk.

Cost:

- See Table 3.1

Education

Enforcement

Engineering

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TRAFFIC CIRCLE (continued)

Level 2

ROUNDAABOUTS

Description:

Roundabouts are measures similar to traffic circles, but they must have all of the following characteristics:

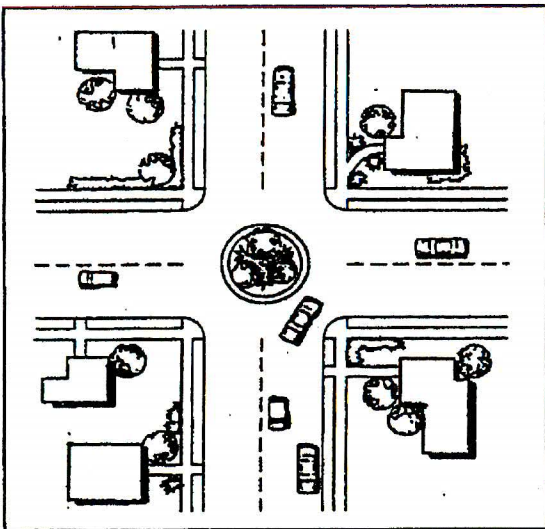
- Yield control is used on all entries and the circulatory roadway has no control.
- Circulating vehicles have the right-of-way.
- Pedestrian access is allowed only across the legs of the roundabout, behind the yield line.
- No parking is allowed within the circulatory roadway or at the entries.
- All vehicles circulate counter-clockwise and pass to the right of the central island.

If any of the roundabout characteristics are not met, the circular intersection is considered a traffic circle.

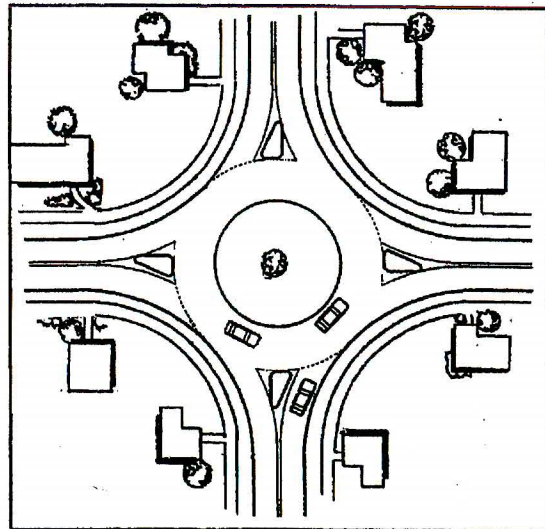
In the near future, PennDOT will be developing standards for roundabouts. Additional information concerning the use of roundabouts can also be found in the Federal Highway Administration (FHWA) publication "Roundabouts: An Informational Guide" (FHWA-RD-00-067).

The following pictures depict the difference between a traffic circle and a roundabout.

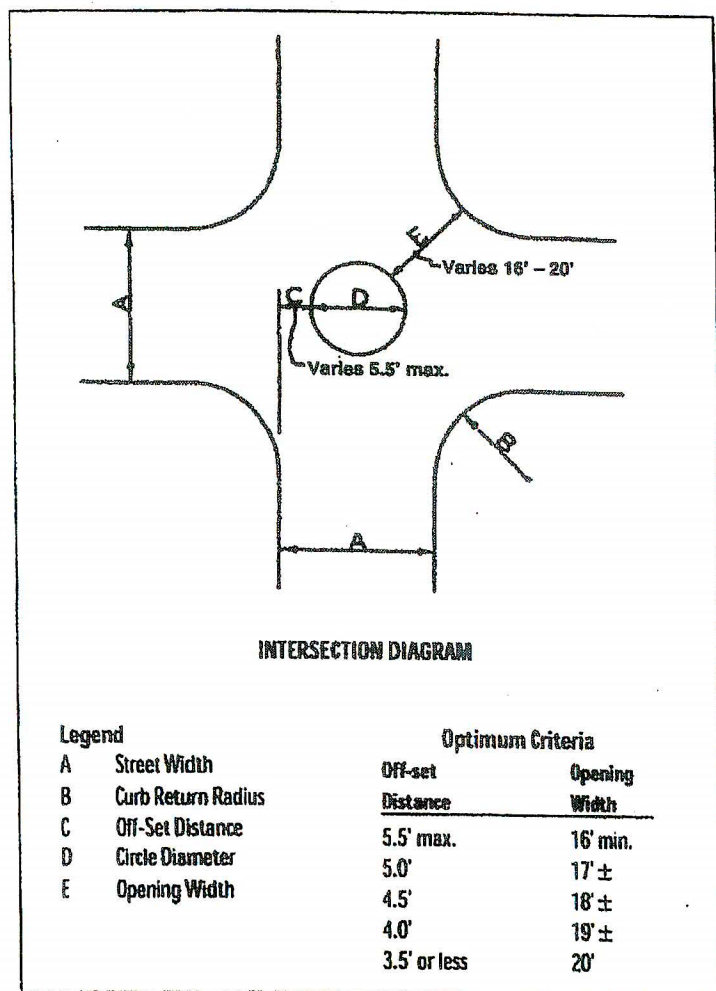
Traffic Circle



Roundabout



Traffic Circle Design



(Source: City of Seattle, Washington)

Street Width (feet)	Corner Radius (feet)	Circle Diameter (feet)
24	<12	Reconstruct curbs
	12	13
	15	14
	20	15
	25	17
30	10	19
	12	20
	15	20
	20	22
	25	24
36	10	26
	12	26
	15	27
	18	28
	20	29
	25	33

(Source: City of Seattle, Washington)

FIGURE 3.7

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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INTERSECTION CHANNELIZATION

Level 2

Description: Providing channelization at three-legged intersections forces previous straight-through movements to make slower turning maneuvers. Channelization is usually raised.

Application: The primary benefit of realigning intersections is to slow traffic down. Can also be used to redirect to another facility or to provide neighborhood gateway.



Advantages:

- + Effectively reduces vehicle speeds.
- + Low impact to emergency services.
- + Can discourage through traffic.
- + Opportunity for landscaping.

Disadvantages:

- Parking removal required.
- May direct traffic to other street(s).
- Maintenance responsibility.
- Fairly expensive.

Special Considerations:

- Intersection channelization slows traffic down near the intersection.
- Improvement may also discourage some cut-through traffic.
- No significant impedance to fire and transit service.
- Provide landscaping opportunities and potential gateway treatments.
- Can require drainage modifications.
- Possible to vary traffic control with stop signs on one or all three legs.
- Works best for low to moderate traffic volumes (up to 1,200 ADT).

Cost:

- See Table 3.1

Education

Enforcement

Engineering

Enhancement

CHICANE

Level 2

Description: A chicane is a series of two or more staggered curb extensions on alternating sides of a roadway. Horizontal deflection influences motorists to reduce speed through the serpentine roadway.

Application: The primary benefit of chicanes is speed control without a significant impact to emergency vehicle mobility.



Advantages:

- + Effectively reduces vehicle speeds.
- + Low impact on emergency vehicles.
- + Does not restrict resident access.
- + Opportunity for landscaping.
- + May reduce traffic noise due to lower speeds and volume.
- + Reduces traffic volumes.
- + May reduce collisions.

Disadvantages:

- Significant parking loss.
- Increased maintenance.
- May require right-of-way.
- Expensive.
- May cause an increased number of motorists to cross the centerline in order to maintain a straight line of travel.

Special Considerations:

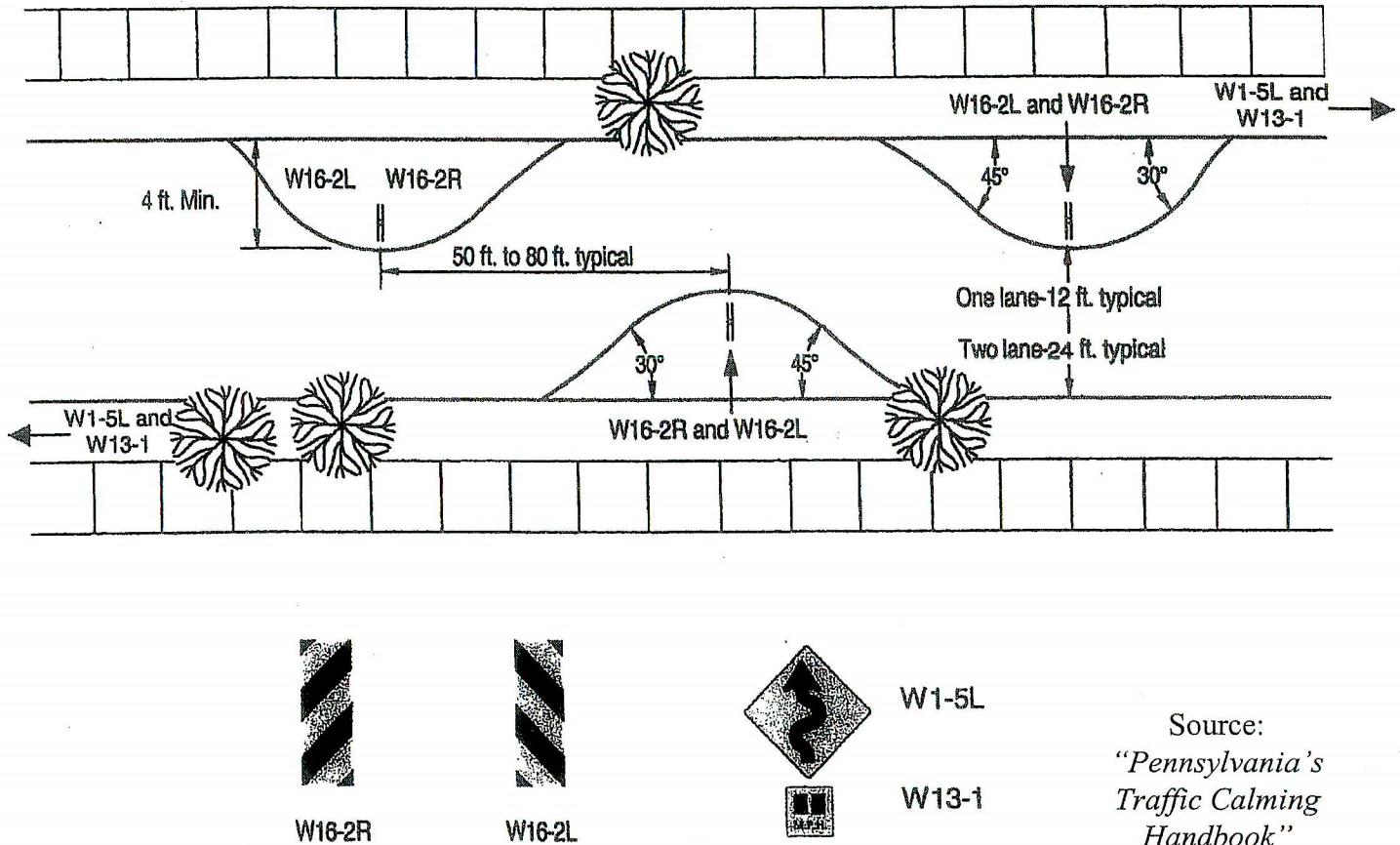
- Chicanes cannot usually be used where right-of-way is limited.
- May require removal of substantial amounts of on-street parking.
- Alternatively, on-street parking can be used to create a chicane.
- Most effective with equivalent traffic volumes along both approaches.
- May increase conflicts with pedestrians and bicyclists.
- Chicanes provide landscaping opportunities.
- Most residents would have their driveways affected by type of installation.
- No expected noise impacts.
- May not be appropriate in areas with high truck traffic.
- Avoid locations where grades exceed 8 percent.
- Devices used to construct chicanes typically include curb extensions, planters, trees, barrels, fences, or barricades. Care must be taken to ensure that these devices do not create a safety hazard through the introduction of fixed objects on or along the roadway.
- Intended for use only on residential streets or quiet portions of a downtown with low traffic volumes (under 1,500 cars per day).

Cost:

- See Table 3.1

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Chicane Design



Source:
*"Pennsylvania's
 Traffic Calming
 Handbook"*

FIGURE 3.8

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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RESTRICTED MOVEMENT BARRIER

Level 2

Description: Restricted movement barriers are raised islands that prevent certain movements at an intersection. They are often landscaped.

Application: The primary benefit of restricted movement barriers is to reduce cut-through traffic levels. They also provide pedestrian refuge areas for street crossings.

Advantages:

- + Redirects traffic to other streets.
- + Reduces cut-through traffic.
- + Provides pedestrian refuge area.
- + Opportunity for landscaping.

Special Considerations:

- Barriers have little or no effect on speeds for through vehicles.
- Should not be used on critical emergency response routes.
- Reduces number of potential conflict points for turning vehicles.
- Possibility for landscaping.
- Many variations are possible, including prohibiting turns to/from main street.
- Design needs to consider drainage needs.
- Usually require signing.

Cost:

- See Table 3.1

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Enhancement



Disadvantages:

- Redirects traffic to other streets.
- Will increase trip lengths.
- May impact emergency response.
- Creates physical obstruction.

RAISED MEDIAN THROUGH INTERSECTION

Level 2

Description: A raised median through an intersection is a barrier which prevents left turns and through movements to and from a local street at an intersection with a major street.

Application: These measures are typically used to prohibit through traffic in a residential area.



Advantages:

- + Reduce traffic volumes on the local street.
- + Improves intersection safety by removing conflicting movements.
- + When landscaped, can improve appearance of the street.

Disadvantages:

- May shift traffic to other locations where left-turn opportunities remain.
- May affect emergency vehicle access and response.
- Increases trip length for motorists, including neighborhood residents.

Special Considerations:

- Median barriers can be constructed in various ways, including a closely spaced row of flexible delineator posts, a series of pre-cast curb sections, and a barrier constructed on a curbed island with landscaping.
- Given access restrictions, this measure is not recommended for use on a primary fire response route.
- To avoid shifting traffic from one local street to another, intersection medians should be installed at all local street intersections potentially impacted along the major street.
- Designs should incorporate gaps that permit access by bicyclists and pedestrians.

Cost:

- See Table 3.1

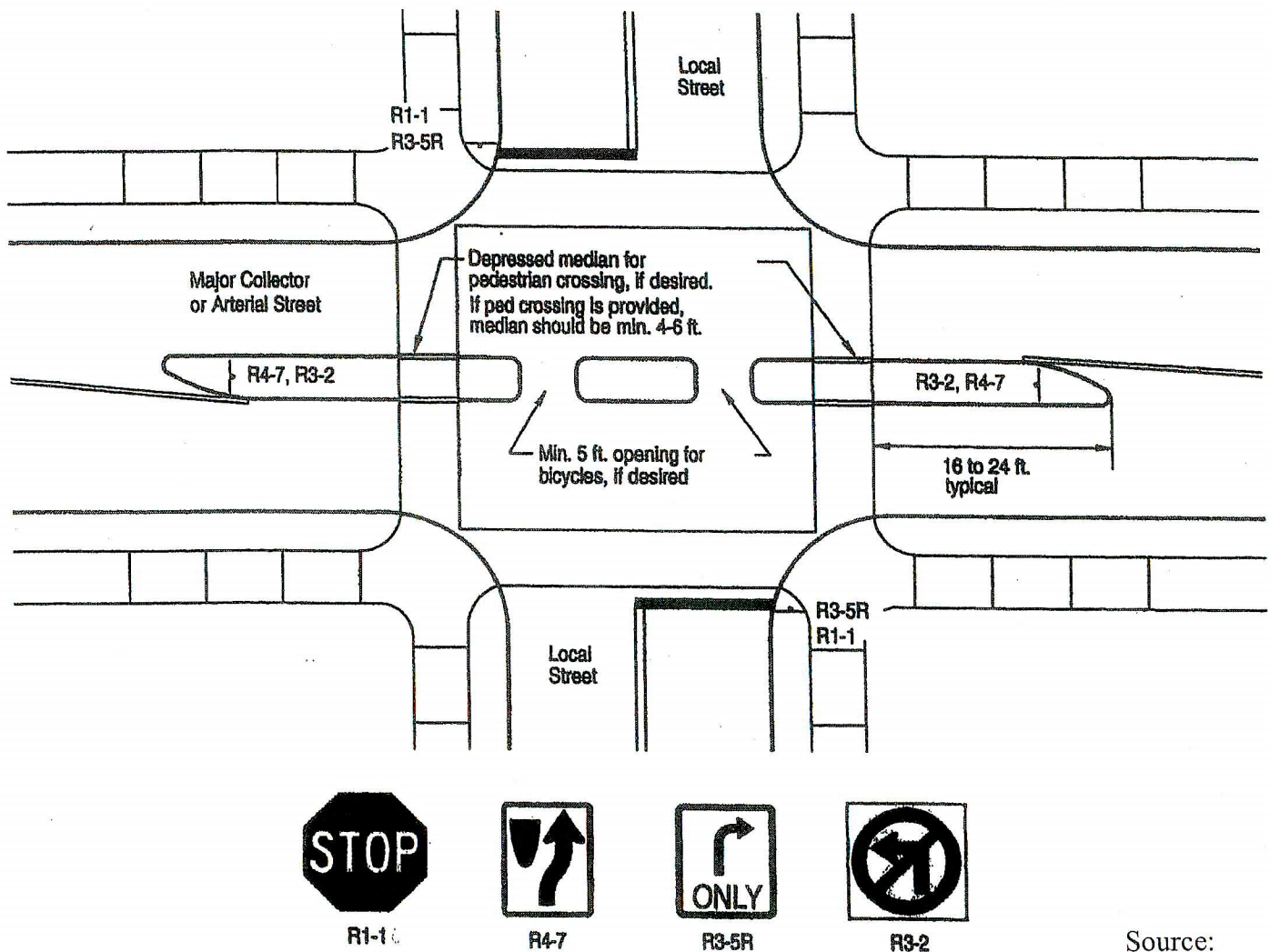
Education

Enforcement

Engineering

Enhancement

Raised Median Through Intersection Design



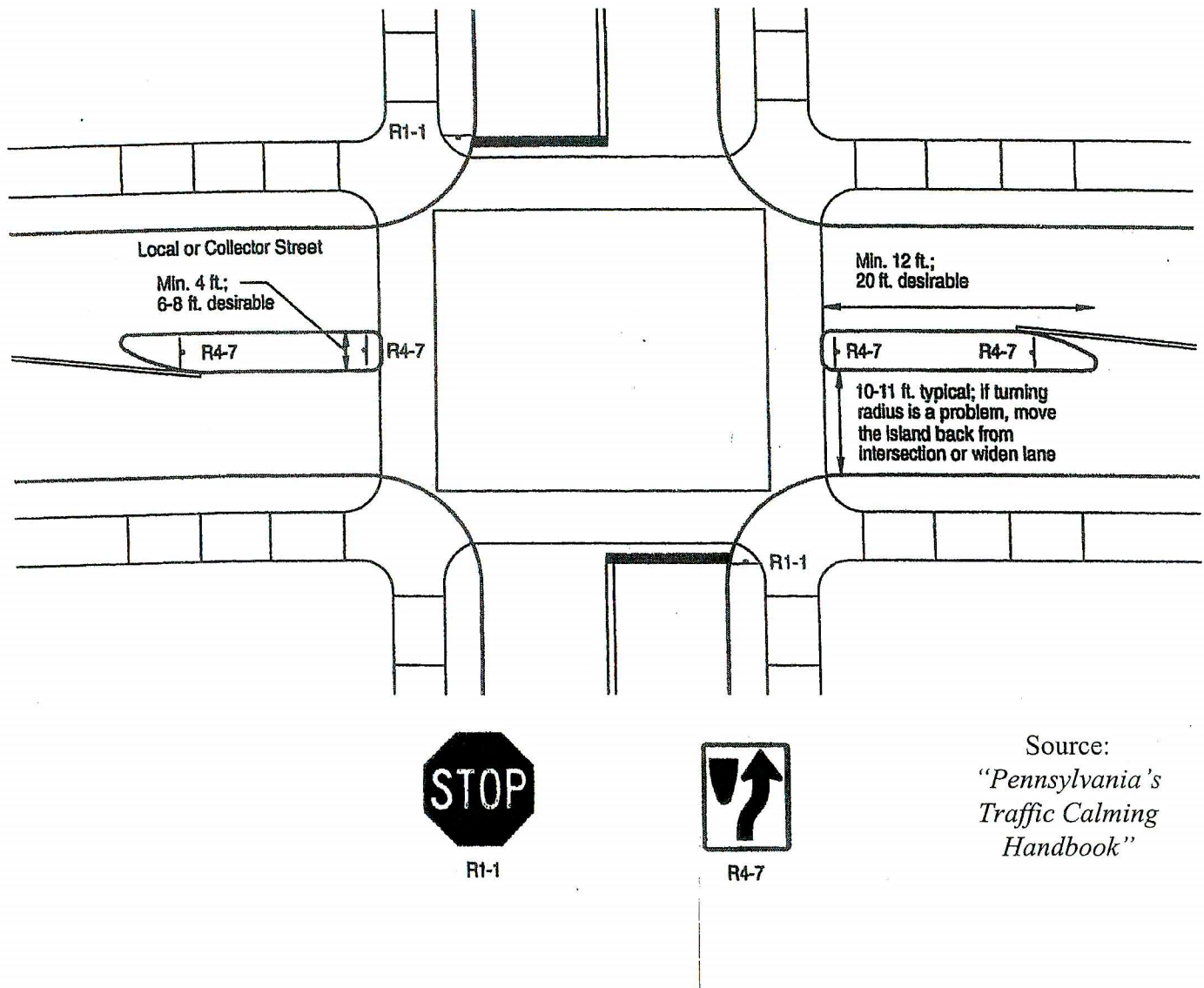
Source:
*"Pennsylvania's
 Traffic Calming
 Handbook"*

FIGURE 3.9
 NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX
 LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



(12/2/02): I:\Eng\8021121\Lower Providence.ppt

Raised Median Island Design



Source:
"Pennsylvania's
Traffic Calming
Handbook"

FIGURE 3.10

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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Mid-Block Raised Median Island Design

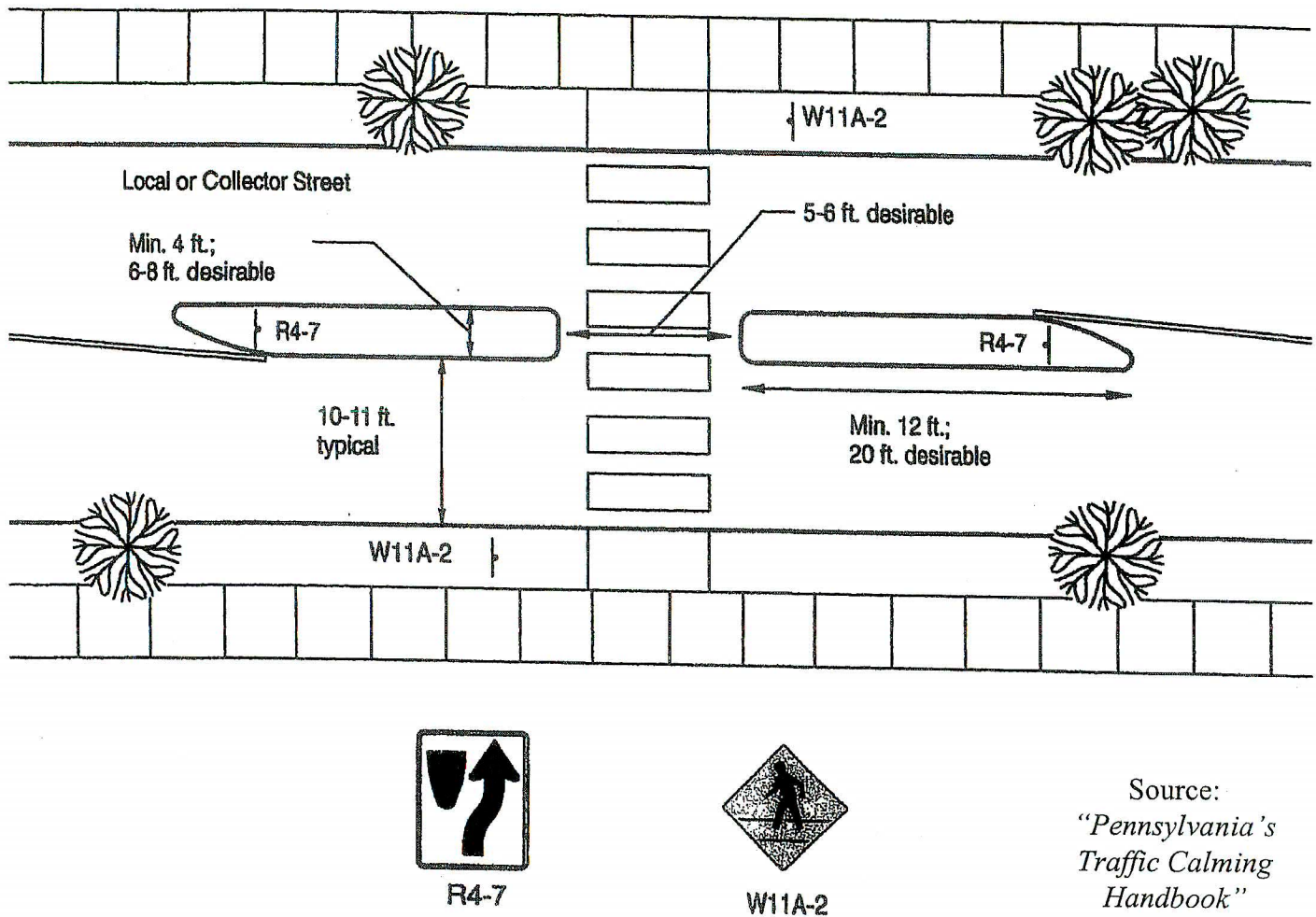


FIGURE 3.11
NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX
LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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RIGHT-IN / RIGHT-OUT ISLAND

Level 2

Description: Right-in/right-out islands are a form of intersection channelization that prevents left turns and through movements to and from a side street at an intersection with a major street.

Application: Many jurisdictions employ them as a less intrusive (and less expensive) version of a median barrier through an intersection. The primary purpose of this type of channelization is to reduce cut-through traffic on local streets.

Advantages:

- + Reduce through traffic on local streets.
- + Can improve pedestrian safety by reducing crossing distances and providing refuge areas.

Special Considerations:

- Designs can include depressed or mountable curbs to accommodate oversized vehicles.
- The island's effectiveness in reducing cut-through traffic will improve when used in combination with other measures on an area-wide-basis.

Cost:

- See Table 3.1

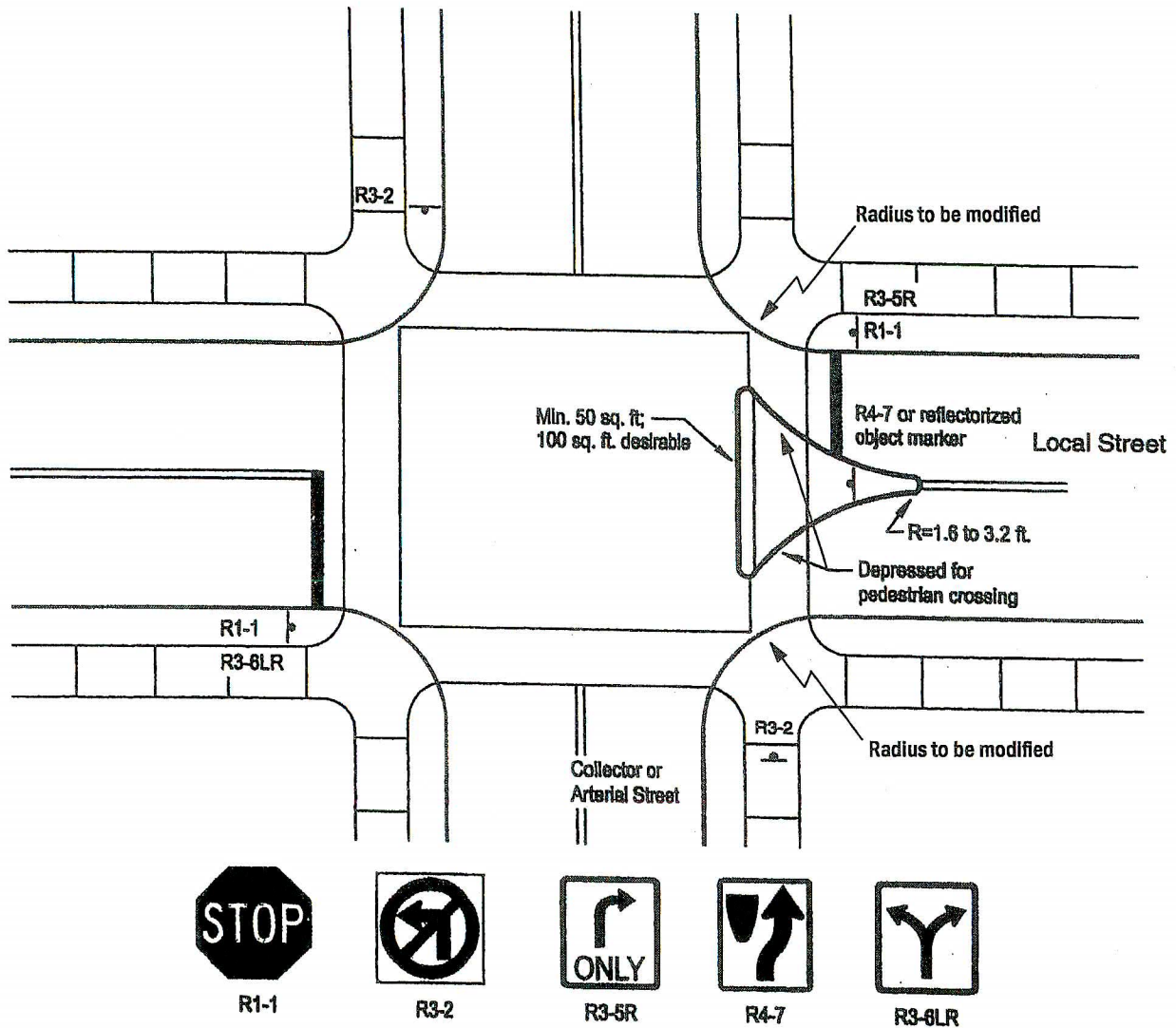
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Disadvantages:

- Restrict resident access.
- May divert traffic to parallel streets without traffic calming measures.

Right-In/Right-Out Island Design



Source:
*"Pennsylvania's
 Traffic Calming
 Handbook"*

FIGURE 3.12

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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DIAGONAL DIVERTER

Level 2

Description: Diagonal diverters are raised areas placed diagonally across a four-legged intersection. They prohibit through movements by creating two “L” shaped intersections.

Application: The primary benefit of diagonal diverters is reduction in traffic volumes. These types of diverters also minimally decrease speeds near the intersection.



Advantages:

- + Reduces cut-through traffic.
- + Self-enforcing.
- + Reduces collision potential by eliminating conflicting traffic movements
- + Opportunity for landscaping.
- + May reduce speeds.
- + Lesser impact on traffic circulation when compared to a street closure.

Disadvantages:

- Redirects traffic to other streets.
- May increase trip lengths.
- Can impede emergency vehicles.
- Always in effect.

Special Considerations:

- Diagonal diverters can be designed to allow emergency vehicle access using gates, bollards or mountable curbs.
- Can be designed to allow pedestrian and bicycle access.
- They may shift problems elsewhere unless strategic program developed.
- Provide advantage over complete street closure as circulation less impacted.
- Can be attractively landscaped.
- Has little or no effect on speeds for local traffic.
- Because of their impact on traffic patterns, diagonal diverters can be controversial and should receive strong support before their installation.
- The radius of the diagonal diverter should reflect the posted speed of the street or the speed should be appropriately modified.
- Temporary installations and monitoring are recommended prior to construction of permanent measures.
- Unless the neighborhood is confined to a limited area, installing a single diverter may merely shift through traffic to other local streets. As a result, diagonal diverters generally need to be installed in a group or cluster to effectively route traffic to collector and arterial roadways.

Cost:

- See Table 3.1

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Enforcement
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Enhancement

SEMI-DIVERTERS

Level 2

Description: Sometimes referred to as half-closures or partial diverters, semi-diverters prevent travel in one direction on a street by blocking half the street with a physical barrier. Semi-diverters, normally 16 to 23 feet in length, create a one-way roadway at the point of construction while two-way traffic is maintained on the remaining portions of the roadway.

Application: By eliminating movements, semi-diverters serve to reduce through traffic.

Advantages:

- + Reduce cut-through traffic without restricting bicycle and pedestrian access.
- + May lower travel speeds.
- + Semi-diverters permit emergency vehicles to go around them in the wrong direction (provided there is adequate sight distance), thus allowing a higher degree of emergency access than street closures or diagonal diverters.
- + Can visually enhance a neighborhood if landscaping is included.

Special Considerations:

- Traffic barricades can be used to test the effectiveness of a temporary installation.
- On a permanent basis, semi-diverters can be constructed with curb and gutter or sidewalks and landscaping.
- A safe bypass for bicycles and wheelchairs should be incorporated in the design.
- Semi-diverters intended to prevent exit are more readily violated.
- Semi-diverters at mid-block locations are more frequently violated than end of block measures.
- A six to twelve-month trial period is recommended before a measure is made permanent.
- Enforcement may be necessary to keep traffic from violating the directional closure.
- Semi-diverters should not be used on transit routes or major emergency response routes.
- Violations may be reduced by extending the length of the semi-diverter.

Cost:

- See Table 3.1

Education

Enforcement

Engineering

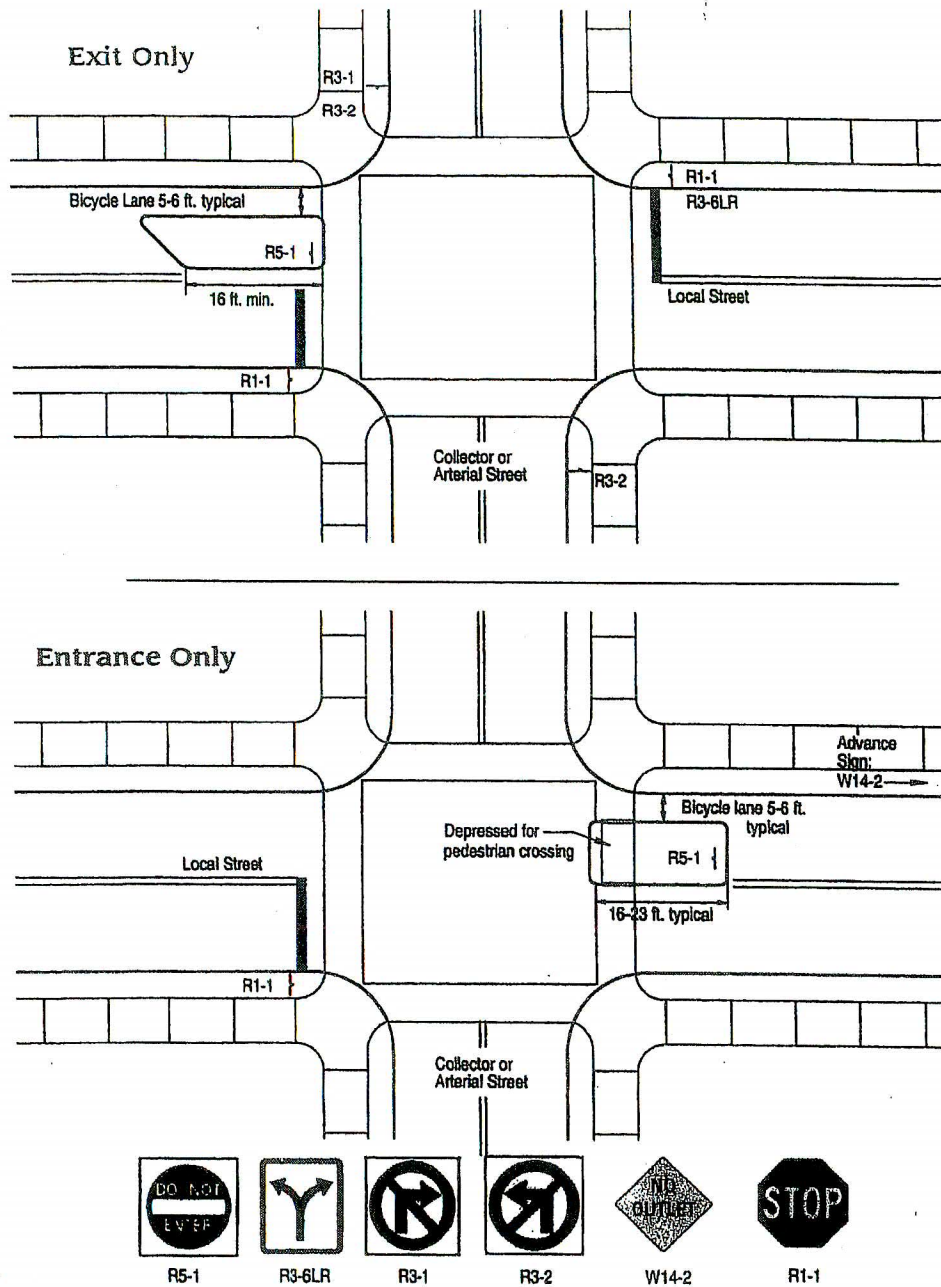
Enhancement



Disadvantages:

- Could be violated, especially in the late evening, and particularly on low volume streets.
- May require loss of on-street parking opposite the measure to permit emergency vehicle access.
- Reduce access for residents.

Semi-Diverter Design



Source:
"Pennsylvania's
Traffic Calming
Handbook"

FIGURE 3.13

NEIGHBORHOOD TRAFFIC CALMING PROGRAM TOOLBOX LOWER PROVIDENCE TOWNSHIP, MONTGOMERY COUNTY, PA



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STREET CLOSURE

Level 2

Description: Full street closures are barriers placed across a street to completely close the street to through-traffic, usually leaving only sidewalks open. They are sometimes called cul-de-sacs or dead-ends.

Application: Cul-de-sacs and street closures are intended to change traffic patterns. They are very effective at reducing cut-through and general traffic volumes.

Advantages:

- + Reduces cut-through traffic.
- + Reduces speeding near device.
- + Self-enforcing.
- + Opportunity for landscaping.



Disadvantages:

- Directs traffic to other streets.
- Increases trip lengths for motorists, including neighborhood residents.
- Affects emergency response time.
- May lose some on-street parking.
- May require acquisition of property to provide a turnaround area of sufficient diameter.

Special Considerations:

- Cul-de-sacs/street closures typically used after other measures have failed.
- Often used in sets to make travel circuitous – typically staggered.
- Require strategic pattern of devices to not shift problem elsewhere.
- Can be placed at an intersection or mid-block.
- Not used on major emergency response routes or transit routes.
- May be designed to allow emergency vehicle access.
- Usually designed with small opening to allow bicyclists and pedestrians.
- Often consist of landscaping.
- When converting an existing residential street, consider the design criteria for cul-de-sacs and dead-end streets in the AASHTO “Green Book” (“A Policy on Geometric Design of Highways and Streets”).
- Parking bans on approaches to the turning area can also help facilitate turning movements.
- The barrier closing the street should be placed at an intersecting through street rather than in the interior of a neighborhood.
- Temporary measures can be created with barricades or other devices and are recommended to test the closure before it is permanently installed.
- Road closures can serve to deprive the road of its public character by limiting its use, rendering the road ineligible for assistance from the Liquid Fuels fund.

Cost:

- See Table 3.1

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CHAPTER 4 – TRAFFIC CALMING IMPACTS

This chapter describes some documented impacts of several types of traffic calming measures by the Institute of Transportation Engineers. Using qualitative and quantitative data available from before-and-after studies, the ability of various Level 2 devices to reduce travel speeds, cut-through traffic volumes, and collision potential are discussed. In addition, traffic calming measures' impact on emergency responsiveness is presented. Level 1 impacts are not discussed since very few before-and-after studies have been conducted on these types of traffic calming improvements.

As traffic calming measures are accepted from a "before" study and implemented within the Lower Providence Township community, the Township officials and staff may often find it desirable to capture "after" implementation results for additional and more local data to monitor effectiveness. This "after" study is made part of the implementation process.

Travel Speeds

One of the primary goals of traffic calming is to reduce travel speeds on residential streets. In traffic engineering, speed distributions are typically represented by 85th percentile speeds since it is generally felt that at least 85 percent of the drivers operate at speeds which are reasonable and prudent for the conditions pertaining in each situation. Most of the speed data available from before-and-after studies of traffic calming are 85th percentile speeds.

Table 4.1 summarizes the speed impacts of various traffic calming measures. The data shown in the table is based on the results of hundreds of before-and-after studies.

Table 4.1 Speed Impacts Downstream of Traffic Calming Measures

Sample Measure	Sample Size	85 th Percentile Speed (mph)*			
		Avg. Before Calming	Avg. After Calming	Change After Calming	Percentage Change*
Speed hump	179	35.0	27.4 (4.0)	-7.6 (3.5)	-22 (9)
Raised crosswalk	58	36.7	30.1 (2.7)	-6.6 (3.2)	-18 (8)
Raised intersection	3	34.6	34.3 (6.0)	-0.3 (3.8)	-1 (10)
Traffic circle	45	34.2	30.3 (4.4)	-3.9 (3.2)	-11 (10)
Narrowing	7	34.9	32.3 (2.8)	-2.6 (5.5)	-4 (22)
Entrance barrier	16	32.3	26.3 (5.2)	-6.0 (5.2)	-19 (11)
Diagonal diverter	7	29.3	27.9 (5.2)	-1.4 (4.7)	-4 (17)

* Measures within parentheses represent the standard deviation from the average.

Source: "Traffic Calming, State of the Practice," ITE, August 1999.

As shown in Table 4.1, speed humps have the greatest impact on 85th percentile speeds, reducing them by an average of more than seven miles per hour (mph), or 20 percent. Raised intersections and traffic circles have the least impact.

It should be noted that the speed impacts of traffic calming measures rely not only on the geometrics of the device, but the spacing between successive devices. Previous studies indicate that speeds increase about 0.5 to 1.0 mph for every 100 feet of separation for speed hump spaces up to 1,000 feet.

Traffic Volumes

Another primary goal of traffic calming is to reduce cut-through volumes on appropriate residential streets. Traffic volume impacts are much more complex and site-specific as compared to speed impacts because of the availability of alternative routes and the split of traffic between localized trips (that need to travel along the traffic calmed location) and through traffic (which can often take another route.)

Although traffic volume changes are difficult to assess, based on previous studies, two measures of impact are summarized in Table 4.2. The table provides information on average percentage change in daily traffic after treatment. The results shown in Table 4.2 should be viewed as representative only.

Table 4.2 Volume Impacts of Traffic Calming Measures

Sample Measure	Sample Size	Average Percent Change in Volume* (vehicles per day)
Speed hump	143	-18 (24)
Raised crosswalk	46	-12 (20)
Traffic circle	49	-5 (46)
Narrowing	11	-10 (51)
Entrance barrier	53	-42 (41)
Diagonal diverter	27	-35 (46)
Full closure	19	-44 (36)

* Measures within parentheses represent the standard deviation from the average.

Source: "Traffic Calming, State of the Practice," ITE, August 1999.

Traffic volume changes are usually the greatest when roadway closure devices are used, such as entrance barriers, diagonal diverters and cul-de-sacs. Of Level 2 measures, traffic circles typically have the least effect in reducing traffic volumes.

It should also be pointed out that while implementation of certain traffic calming devices can reduce traffic volumes along the intended route, they may also increase traffic volumes along nearby residential streets. This potential impact must be considered before deciding on which traffic calming tools are to be implemented.

Collisions

By slowing traffic, eliminating conflicting movements, and increasing drivers' attention, traffic calming can result in fewer collisions. And, due to lower speeds, they are often less serious when collisions do occur.

Table 4.3 compares before-and-after collision frequencies for various Level 2 traffic calming measures. As shown, several traffic calming devices reduce the potential for collisions. Traffic circles are very effective, as they lower the number of potential vehicle conflict points (since no left-turn or straight-through movements are allowed).

**Table 4.3 Average Annual Collision Frequencies
Before and After Traffic Calming**

Sample Measure	Sample Size	Average Annual Collisions		
		Before Calming	After Calming	Percentage Change
Speed hump	50	2.62	2.29	-13
Raised crosswalk	8	6.71	3.66	-45
Traffic circle	130	2.19	0.64	-71

Source: Unpublished documents supplied by traffic calming programs.

Many traffic calming measures not only reduce the potential for collisions between two or more vehicles, but also between vehicles and pedestrians or between vehicles and bicyclists. Several treatments improve the sign distance between these modes, and/or provide safe refuge areas for crossing non-motorized users. On the other hand, some measures that reduce travel lane widths could increase the potential for conflicts between vehicles and bicyclists.

Emergency Responsiveness

Any traffic calming tools that are effective due to their ability to physically control traffic could also negatively impact several classes of emergency vehicles. Lower Providence Township and its residents place a very high priority on minimizing emergency response times.

Several localities have performed controlled tests of speed humps, raised crosswalks, and traffic circles to see how much delay they produce. Table 4.4 presents the test results.

Table 4.4 Emergency Response Time Study Results

Community	Measure	Delay at Slow Point (seconds)
Austin, TX	12-foot speed hump	2.8 (fire engine) 3.0 (ladder truck) 2.3 (ambulance w/out patient) 9.7 (ambulance with patient)
Berkeley, CA	12 foot speed hump	10.7 (fire engine) 9.2 (ladder truck)
	22-foot raised crosswalk	3.0 (fire engine) 13.5 (ladder truck)
Boulder, CO	12-foot speed hump	2.8 (fire engine)
Montgomery Co., MD	25 foot traffic circle	7.5 (fire engine)
	12-foot speed hump	2.8 (ladder truck) 3.8 (ambulance) 4.2 (fire truck) 7.3 (pumper truck)
	18-foot traffic circle	5.4 (ladder truck) 3.2 (ambulance) 5.0 (fire truck) 7.0 (pumper truck)
Portland, OR*	14-foot speed hump	5.2 (fire engine) 2.9 (custom rescue vehicle) 6.6 (ladder truck)
	22-foot raised crosswalk	3.0 (fire truck) 0.3 (customer rescue vehicle) 3.0 (ladder truck)
	16 to 24-foot traffic circle	6.1 (fire engine) 3.1 (custom rescue vehicle) 8.4 (ladder truck)
Sarasota, FL	12-foot speed hump	9.5 (ambulance)

* Assumes a 35-mph response cruising speed.

Source: "Traffic Calming, State of the Practice," ITE, August 1999

As shown in Table 4.4, regardless of the traffic calming measure or fire-rescue vehicle, the delay per traffic calming measure is nearly always under 10 seconds. Traffic circles appear to create longer delays than speed humps, but speed humps have a greater probability of damage to fire-rescue vehicles and injury to patients in ambulances. Finally, speed tables, because they are longer, create shorter delays than speed humps.

Consideration of traffic calming devices by Lower Providence Township and its emergency services will always include a review of possible negative impacts, including emergency response times. On major designated emergency response routes, the Township, with input from its emergency service providers, may recommend that only traffic calming measures that will have little or no impact

on emergency response routes be permitted or provision of an acceptable altered design that improves emergency vehicle maneuvering and emergency access be completed.

Other items to be considered in selecting appropriate traffic calming measures are issues such as landscaping, snow removal, drainage, and ADA requirements to name a few. Detailed discussion of these potential issues can be found in PennDOT's "Traffic Calming Handbook."

CHAPTER 5 – IMPLEMENTATION PROCESS

The success of Lower Providence Township's Neighborhood Traffic Calming Program depends on support by the community and participation in the process. Because residents are primarily the initiators of traffic calming requests and must live day-to-day with the resulting actions, the Township includes neighborhood participation throughout the process. Development of successful traffic calming programs depends on strong interaction between the community, Township staff and consultants, and elected Township officials. A standing committee in Lower Providence Township, known as the Traffic Calming Advisory Committee (TCAC), comprised of the Director of Planning & Development (Chairperson), the current members of the Township Planning Commission comprised of residents, the Township Traffic Consultant, the Police Chief, the Fire Marshall/Emergency Services, the Director of Public Works, and a representative from the Board of Supervisors will coordinate all requests for traffic calming measures.

One of the intents of the program is to provide a clear structure for addressing traffic concerns in the Township's neighborhoods. Traffic concerns may exist throughout an entire neighborhood, or may be specific to a particular street, segment of roadway, or at a spot location. The Township's implementation process consists of two levels. Both levels require, as a first step, community identification of existing problems. The process allows implementation of traffic calming tools in a timely manner in conditions where problems could be addressed with fairly routine solutions. The Township's prioritization process provides the Township with clear guidelines on how to manage its limited resources effectively and appropriately when dealing with township-wide traffic calming needs. It also allows the Township to work with the neighborhoods that have the most pressing problems first. When a particular location reaches the top of the Township's prioritization list, it may enter into the next phase of the traffic calming implementation process. However, and most importantly, before any traffic calming measure is implemented, the Township Board of Supervisors will make the final approval as to if the traffic calming is appropriate, and what is approved to be installed in each particular situation.

A summary checklist of the traffic calming program is provided at the end of Chapter 5 (Table 5.1) and will be used to track any community request for traffic calming by the Township. It can also be used by the neighborhood requesting the need for traffic calming as a supplemental summary of the program that follows.

Step 1: Process Initiation – Identification/Request for Study with Supporting Data

- A. The traffic calming process begins once the Township's Director of Planning & Development receives a request from a neighborhood to initiate a study. Neighborhoods must complete a **Community Action Request form**. The form must include a discussion of the current traffic problem and the names and signatures of at least six other affected property owners supporting the request to initiate a study, the source of funding recommended, and the financial commitment of the neighborhood toward the traffic calming measure, if any. *A blank Community Action Request form is provided at the end of this section.*
- B. Upon receipt of the Community Action Request form, the Township's Director of Planning & Development will either 1) pass along the request to the Traffic Calming Advisory Committee (TCAC) for review, will document the neighborhood concern, and will notify the Board of Supervisors, or 2) if it is an incomplete application or is a questionable application requiring

the input from the Township Manager, then the group requesting the study will be sent a letter indicating that traffic calming is or may be inappropriate and state such reasons. If the project is determined to warrant further study, the Township will then gather preliminary information such as project area, street classification, and land use, as necessary.

- C. If the TCAC concludes that the preliminary requirements have been satisfied for further study, some essential base data will then be gathered by the Township's traffic consultant or other qualified technical personnel, such as the traffic safety officer of the police department. All traffic studies conducted for a potential traffic calming program shall be conducted in accordance with the 67 PA Code, Chapter 201 (PennDOT Pub. 201 – **Engineering and Traffic Studies**), whenever applicable. To be considered for traffic calming measures, the following shall be considered as the minimum threshold requirements by the Township:

1. **Average Daily Traffic (ADT) volume:** The two-way ADT should exceed 1,000 vehicles per day OR the peak hour, two-way volume should exceed 100 vehicles.
2. **Speed:** When speeding is a primary concern, the 85th percentile speed should exceed five (5) mph over the posted speed limit before traffic calming is considered. The 85th percentile speed should be obtained in the off-peak hours per Pub. 201. If the number of vehicles cannot be reasonably obtained for the 85th percentile speed, then average speed during off-peak hours can be used.
3. **Cut-Through:** When cut-through traffic is a primary concern, the cut-through traffic on the residential collector or residential access street should be 40% or more of the total one-hour, single-direction volume. In addition, a minimum of 100 documented cut-through trips, through conduct of an origin-destination (license plate) study, in one hour, in a single direction will be the minimum requirement
4. **Collision Data:** If collisions are a primary concern, accident records covering the most recent, past three years in their entirety should be retrieved through Township police and/or State records. The State's definition of reportable accidents shall be applied when reviewing the data, although all accidents shall be considered in the review.

The Township Supervisors may need to modify this minimum criteria for special situations or when local conditions in certain portions of the Township require a modification upon seeking the advice from the TCAC.

- D. The Township will prioritize the level of the neighborhood traffic issue based on several factors, including traffic volumes, travel speeds, collision history, cut-through traffic levels, presence of schools and public facilities, and neighborhood impact. The Township's **Neighborhood Traffic Calming Priority Worksheet** will be used to accomplish this task. *A copy of this worksheet is also provided within this chapter.*
- E. If upon review of the preceding data, the TCAC concludes that the neighborhood's identified problem can possibly be reduced or alleviated with a Level 1 action (e.g., easily implementable, low cost tools, primarily consisting of education and enforcement techniques), the TCAC will recommend those to the Board of Supervisors to program the implementation of the most appropriate Level 1 improvements as funding is available. The TCAC may also

recommend for certain Level 1 measures that the Supervisors pass a motion allowing the TCAC to move to Step 2. However, if “no action” for traffic calming is determined, or Level 2 measures must instead be sought to resolve issues, then these recommendations will be made to the Board.

- F. Upon review of the TCAC’s recommendations during the Process Initiation phase, the Board of Supervisors shall approve a resolution to allow the process to continue for Level 1, move to the Level 2 process, or recommend that no action be taken on the Community Request. To demonstrate Lower Providence Township government support for traffic calming projects on residential/local roads which may then have an impact on State roads, or projects on State roads, the Township should include this with any resolution approving further study. If the project for traffic calming is on a State road, the resolution must first be reviewed by PennDOT before proceeding.

Step 2: Level 1 – Low Cost/Low Impact Measures Plan Development

- A. Once the neighborhood traffic calming program priority process is reviewed by the TCAC and presented and accepted by the Supervisors, which may occur only twice per year (early Spring and early Fall), and a specific neighborhood(s) is/are approved and budgeted by the Supervisors for further study, the Director of Planning & Development, upon direction from the Township Manager, will arrange a kick-off neighborhood meeting with the assistance of those residents that signed the original Community Action Request form. At the meeting, representatives of the TCAC will present findings from the initial field investigation and data collection phase, and provide an overview presentation of Lower Providence Township’s Neighborhood Traffic Calming Program.

Note: If Level 1 measures have general concurrence by the residents and are approved by the Supervisors for implementation (See 1E), then Step 2 may not be necessary.

- B. A volunteer group of residents will form the project’s Neighborhood Traffic Calming Committee (NTCC). The goal is to have members of this committee represent the various geographical areas and interests within the neighborhood.
- C. The NTCC will work with at least three representatives of the TCAC and will meet to review existing problems, determine community goals, confirm the neighborhood study boundaries, discuss and evaluate the various Level 1 measures, and gain community acceptance on which Level 1 measures to implement as means of first addressing the problems. The group will also determine how long to implement the recommended Level 1 improvements, although a minimum testing period of three months will be required, with a minimum preferred of six months.
- D. Upon recommendation of the TCAC and approval by the Lower Providence Board of Supervisors, the appropriate Level 1 improvements will then be installed. Following the pre-established implementation period, the Director of Planning & Development for the Township will have new data collected by its traffic consultant or other qualified technical personnel to determine the effectiveness of the measures put into place. The NTCC will then meet to discuss if their goals have been met.

- E. If the prescribed Level 1 actions have proven effective in addressing the goals, the improvements will stay in place, or more permanent devices will be installed.
- F. If the actions are ineffective, the NTCC may consider reapplying for a traffic calming plan (in two years) or pursue potential implementation of Level 2 measures. The Level 2 process is provided as the next step.

Step 3: Level 2 Traffic Calming Plan Development

- A. Level 2 traffic calming improvements will only be considered if Level 1 measures do not meet the goals established by the Neighborhood Traffic Calming Committee (NTCC), as previously discussed. The prioritization process will be used for any implementation of Level 2 measures. In special circumstances, the TCAC or Board of Supervisors may determine from documented past history, or complexity of the situation, that Level 1 measures cannot achieve the desired outcomes, and may then recommend consideration of Level 2 measures from the outset. The Board of Supervisors in Step 1.F will pass a resolution for further study of Level 2 traffic calming measures. Projects that move into Level 2 consider physical condition, travel speed, and traffic volume reduction measures; and therefore, require increased neighborhood consensus.
- B. Utilizing the main project area boundaries identified and/or verified by the TCAC, based on the specific project traffic calming measures possible, the requesting neighborhood will be required to take the lead to compile, with some assistance from the Township, a list of all residents and businesses in the project area. Representatives of the NTCC shall then conduct either a mail or door-to-door inquiry to obtain documented/signed interest in the Level 2 traffic calming project. A 30 percent disapproval response (with all non-responses being recorded as favorable), will be the maximum allowable basis for continuing with Level 2 traffic calming studies and the implementation process. The traffic calming process for Level 2 action should not move forward unless there is a minimum 70 percent approval for traffic calming. In all cases, the NTCC must provide evidence to the TCAC that all residents and businesses in the area have received the notice by supplying signatures for door-to-door visits and/or registered mail receipts to ensure complete study area notification has been made.

If the vote supports consideration of Level 2 measures, the NTCC will be re-established. It may be necessary to expand or otherwise alter the composition of the group due to the likely greater impacts that could result under a Level 2 traffic calming plan.

In addition, all members of the Traffic Calming Advisory Committee (TCAC) should be part of the process, as well as appointed additional technical members when needed. The stakeholders in this group include Township officials and staff, police, fire, and emergency service providers, the Township traffic consultant, and others such as local schools, transit agencies, County or State planners and engineers, etc., that may be directly impacted by any changes to neighborhood streets. Their perspective is essential for developing a plan that effectively addresses existing concerns without creating new problems that cannot be mitigated or that keep the ultimate plan from being implemented. A resolution shall be passed appointing the representatives of the TCAC and necessary outside technical personnel per Level 2 plan development selection.

C. The NTCC and full TCAC will meet to review the results from the Level 1 program (when applicable), revisit existing problems and community goals, and identify the appropriateness of various Level 2 measures in addressing the existing problems. The Director of Planning & Development, upon approval from the Township Manager and then Supervisors, will engage the Township's traffic consultant or appropriate technical personnel, sometimes with neighborhood (NTCC) support, to collect additional data, as needed, to support the process, as follows:

1. **Collect and Analyze Data:** The following data may be helpful when determining appropriate solutions to the traffic problems at a particular location:

- Speed – average speed and 85th percentile speed (previously discussed).
- Volume – daily and peak hour volumes on the project street and other streets that could be affected within the project area. If cut-through traffic volumes are believed to be excessive, a license plate survey could be conducted along with turning movement counts.
- Alternative route analysis – speeds, volumes, convenience of use, etc., of parallel or adjacent local streets in order to bypass potential Level 2 traffic measures should be considered in the expanded study.
- Adjacent arterial roads – determine if problems on area streets are significantly related to poor traffic conditions on adjacent arterial roads. In this case, deficiencies on the arterial streets should be addressed through the Township's Act 209 Capital Improvement Program, possibly before implementing traffic calming.
- Crashes – crash data, by type, for the most recent three years.
- Parking – location, capacity, and use.
- Pedestrian and bicycle activity – identify vulnerable groups like children and the elderly.
- Emergency service routes.
- Transit routes.
- Locations of schools, parks, and other such facilities.

D. The Township Traffic Consultant compiles and analyzes the data, and then identifies appropriate traffic calming measures to meet the neighborhood's goals. The consultant then preliminarily presents them to the TCAC in a draft report. Chapter 3 provides information about a number of different traffic calming measures to assist in this effort. Identifying appropriate measures includes the following:

- Identification of which traffic calming measures are designed to solve the documented problems.
- Appropriateness of a particular traffic calming measure to the location where it will be installed.

E. Next, the Township's Traffic Consultant and designated Police (Safety) Officer will present the findings of the data analysis to the NTCC and TCAC. Notification of such a meeting will be duly advertised by the Township to the residents and businesses within the project area identified in 3B above. Also, the traffic engineer will describe which traffic calming measures may best be able to address the problems identified, and discuss neighborhood opinions about

traffic calming. Lower Providence Township officials, the NTCC, and the TCAC will work towards a consensus on the most appropriate traffic calming measures, their design, and specific locations through a series of meetings, each being duly advertised by the Township to the residents and businesses within the project area identified in 3B above, before taking it to a larger forum, such as a public meeting or open house.

- F. Upon consensus at these work sessions and in advance of the Level 2 public approval process, the draft report will be summarized into a final draft report of the data, findings, issues to be addressed and the proposed traffic calming program with estimates of probable costs and a construction timeframe after the approval process is complete. This effort will be undertaken by the Township Traffic Consultant as the lead, and supported by members of the TCAC. A visual plan depicting the traffic calming locations and preliminary design will typically also be prepared by the TCAC and NTCC for the public meeting.

Step 4: Approval Process

- A. Once consensus has been reached by Lower Providence Township and the traffic calming committees, the preliminary and/or final traffic calming plans will then be presented at a single open house or public meeting. A “special” public meeting outside a regularly scheduled Township meeting may work best. Notices for these meetings may be distributed door-to-door, mailed, or announced via a press release, along with a description and schematic of the plan whenever possible. The Township will assist in mailings or written press releases with the guidelines for notification of public meetings per the Municipal Planning Code. Signs within the project area along roadways proposed for traffic calming shall be posted. It is recommended that the community typically be presented with a single plan, with options for specific locations. Then, if necessary, plans may be modified before they are submitted to the community for final approval.
- B. Following the public review, any necessary modifications are made to the traffic calming plan. Additional public meetings can be held at the discretion of the Supervisors if the changes are very substantial. Otherwise, the plan is ready for a vote on community approval.
- C. After the Neighborhood Open House or Public Meeting and final modifications completed on the plan, residents and property owners will vote on whether or not to conduct a temporary test of the proposed Level 2 traffic calming plan. An executive summary of the report and a reduced-size version of any plans depicting the traffic calming measures will be sent/delivered to all on the list. A minimum of 70 percent of the residents and property owners (household locations will be determined by Township staff) that could be affected by the proposed changes in traffic flow must favor implementation of Level 2 measures in order to proceed. In addition, a minimum of 80 percent of the residents and property owners immediately adjacent to each proposed device (locations to be determined by Township staff) must favor implementation. One vote will be granted to each residence and/or property owner. The voting period will last up to four weeks and the deadline for voting will be specified clearly in the mailing. A non-response will be considered an affirmative vote for the plan at the end of the specified voting period, and this too will be specified clearly in the mailing.

Note: In some cases, neighborhood participation in funding a proposed Level 2 plan may be necessary. If a financial commitment is required from the neighborhood, this stipulation must be included in the ballot/ mailing.

After conclusion of the voting process, Township staff will notify residents and property owners about the ballot results. If the Level 2 traffic calming plan does not receive enough votes for testing, the proposed devices will not be installed. The community may re-apply for a traffic calming plan in two years or sooner if special circumstances indicate that further review should be considered.

- D. After the appropriate community approval is obtained, the traffic calming plan must be officially approved by the local government. At this point, the funding source should be clearly identified and money set aside for implementation and maintenance. A final set of construction plans with details of design and installation should be engineered and become part of the official, final BOS approval. If the project involves a State road, or if State, Federal, or Liquid Fuels funds are requested, PennDOT approval is also required of the plans. This approval will include the issuance of a highway occupancy permit. When a State road is involved, a legal agreement between PennDOT and the local municipality identifying the installation and maintenance responsibilities must be established.

Step 5: Installation and Evaluation

- A. Once approved by all agencies required, the proposed Level 2 traffic calming plan may be implemented on a test basis using temporary control devices, where possible, for a period determined by the Township's Director of Planning & Development, municipal engineering, Township traffic consultant, Director of Public Works, police chief, and the Supervisors' representative to the TCAC. In most cases, the test program for Level 2 measures will last six to twelve months – with the ultimate duration agreed to by the NTCC and full TCAC.
- B. Following the test period (e.g., often 90 days or whatever has been decided), Township staff will collect new data (e.g., traffic volume counts, speed surveys, etc.) to determine the effectiveness of the measures put into place. These results will be available for review by all of the neighborhood's residents and property owners. Then, residents and property owners will again vote, using the same process as described previously, to determine whether permanent traffic calming devices should be installed, the temporary devices removed, or if a slight modification to the traffic calming plan is needed. Again, Township staff will notify residents and property owners about the ballot results. If permanent measures are voted in, the Level 2 traffic calming plan will be fully implemented with permanent devices and notification will be given to the NTCC by Township staff prior to construction.
- C. After construction of the permanent Level 2 measures, the Township's Director of Planning & Development, Director of Public Works, and engineering consultants will continue monitoring the effectiveness of the plan for up to one year. Depending on the particular traffic calming measures and objectives of the project, Lower Providence Township may monitor traffic speeds, traffic volumes, crashes, or diversions to other routes. The Township may choose to use the following parameters in determining the benefits derived from the installation of traffic calming measures, which may aid in the decision process on these measures in other parts of

Table 5.1
Lower Providence Township – Traffic Calming Program
Implementation Process Summary Checklist

Name of Neighborhood/Group: _____

Roadways to be Included: _____

*** Note: Refer to Chapter 5 of the program for details to the steps outlined in this checklist.**

<u>Completed⁽¹⁾</u>		<u>Person(s) Responsible⁽²⁾</u>
<u>Process Initiation</u>		
<input type="checkbox"/>	A. Complete "Community Action Form" – submitted to Township.	Res.
<input type="checkbox"/>	B. 1) Director of Planning & Development reviews for completeness.	LPT
<input type="checkbox"/>	a) Sent to Traffic Calming Advisory Committee.	TCAC
OR <input type="checkbox"/>	b) Inappropriate or incomplete request, letter to Community (no further action).	LPT
<input type="checkbox"/>	C. Base Data Collection	LPT
	1) ADT Volumes	LPT
	2) Speed data	LPT
	3) Cut-through traffic data	LPT
	4) Accident (collision) data	LPT
	5) Other (specify): _____	LPT
<input type="checkbox"/>	D. Complete "Neighborhood Traffic Calming Priority Worksheet" for file and use in process	TCAC
	E. Traffic Calming Advisory Committee evaluates base data and information, determines appropriate process, if any, and process recommended to BOS by TCAC:	TCAC/BOS
<input type="checkbox"/>	1) Pursue Level 1 measures first, or	TCAC
OR <input type="checkbox"/>	2) Pursue Level 2 measures, or	TCAC
OR <input type="checkbox"/>	3) No action	TCAC
<input type="checkbox"/>	F. 1) Supervisors approve resolution to allow process for Level 1, or Level 2, or No traffic calming measures.	LPT/BOS
<input type="checkbox"/>	BOS Resolution Number _____	
<input type="checkbox"/>	2) PennDOT approves resolution for State road (as applicable).	DOT
<u>Level 1 – Low Cost/Low Impact Measures Plan Development</u>		
<input type="checkbox"/>	A. Neighborhood kick-off meeting held – Residents informed they need to organize Neighborhood Traffic Calming Committee (NTCC) to represent the neighborhood and establish goals.	LPT
_____	B. NTCC notifies TCAC that they are organized and prepared to meet with TCAC.	NTCC/TCAC
_____	C. NTCC and TCAC work sessions to evaluate and recommend acceptable Level 1 traffic calming measures.	TCAC/NTCC
	Date(s) of working sessions: _____	

⁽¹⁾ Note completion date or N/A for not applicable.

⁽²⁾ Key: Res. = Resident; LPT = Lower Providence Twp.; TCAC = Traffic Calming Advisory Committee; BOS = Board of Supervisors; DOT = PennDOT; NTCC = Neighborhood Traffic Calming Committee; TC = Twp. Traffic Consultant

<u>Completed⁽¹⁾</u>		<u>Person(s) Responsible⁽²⁾</u>
_____	D. 1) TCAC recommends Level 1 measures to BOS.	TCAC
_____	2) BOS approves Level 1 measures for implementation/installation.	BOS
_____	Resolution Number _____	
_____	a) Funding mechanism identified as: _____	NTCC/BOS
_____	3) Level 1 measures installed.	LPT
_____	4) Data collected after 6 weeks and analyzed.	LPT/TC
_____	5) Meeting with NTCC to determine if goals are being met. YES NO	TCAC/NTCC
<input type="checkbox"/>	E. Level 1 measures determined effective and upgraded to permanent status. No further action required at this time.	LPT
OR <input type="checkbox"/>	F. 1) Level 1 measures determined to be ineffective.	NTCC/TCAC
<input type="checkbox"/>	2) NTCC reapplies for alternate Level 1 measures OR	NTCC
OR <input type="checkbox"/>	3) TCAC recommends Level 2 measures to BOS.	TCAC
 <u>Level 2 – Traffic Calming Plan Development (Level 2 efforts initiated either by BOS, TCAC or completion of Level 1 efforts)</u>		
_____	A. Township passes resolution for further study at Level 2 traffic calming.	BOS
_____	Resolution Number _____	
_____	B. 1) List of all residents and businesses in project area compiled by NTCC.	NTCC/LPT
_____	2) NTCC provides signatures of at least 70% of residents/business owners in designated neighborhood supporting possible installation of Level 2 measures. Evidence must be supplied to Township on communications.	NTCC/TCAC
_____	C. 1) Township, with Supervisors' approval, collects and analyzes additional data, as needed:	LPT/BOS
_____	a) Volumes	LPT/TC
_____	b) Speeds	LPT/TC
_____	c) Alternative route analysis	LPT/TC
_____	d) Adjacent arterial road issues	LPT/TC
_____	e) Accidents	LPT/TC
_____	f) Parking	LPT/TC
_____	g) Pedestrian/Bicycle Activity	LPT/TC
_____	h) Emergency Service Routes	LPT/TC
_____	i) Transit/School Bus routes	LPT/TC
_____	j) Locations of schools, parks, and other facilities	LPT/TC
_____	k) Other (specify): _____	LPT/TC
_____	D. Township traffic consultant analyzes data and identifies appropriate options to meet the neighborhood's goals, then shares them with TCAC.	TC/TCAC
_____	1) Meeting duly advertised to residents and businesses in the project study area	LPT
_____	E. NTCC and full TCAC work sessions to evaluate and identify appropriate Level 2 calming measures to meet goals.	TCAC/NTCC
_____	1) Each workshop meeting advertised to residents and businesses in project study area	LPT
_____	Date(s) of working sessions: _____	
_____	_____	
_____	_____	

⁽¹⁾ Note completion date or N/A for not applicable.

⁽²⁾ Key: Res. = Resident; LPT = Lower Providence Twp.; TCAC = Traffic Calming Advisory Committee; BOS = Board of Supervisors; DOT = PennDOT; NTCC = Neighborhood Traffic Calming Committee; TC = Twp. Traffic Consultant

<u>Completed⁽¹⁾</u>		<u>Person(s) Responsible⁽²⁾</u>
	F. TCAC prepares summary report of data, issues to be addressed and proposed program for meeting the neighborhood's traffic calming goals.	TCAC/TC
<u>Level 2 – Approval Process</u>		
	A. Public meeting scheduled to present TCAC report. Personal invitations sent to all resident/business owners on list compiled from project area. Meeting advertised to general public per Municipal Planning Code guidelines.	LPT/BOS TCAC/NTCC
	1) Signs posted along roadways proposed for traffic calming measures	LPT
	B. Report and plans finalized per discussions at public meeting.	LPT/TCAC
	C. Executive summary of report and ballot regarding the final proposal sent to all residents/business owners on project area list.	LPT/NTCC
<input type="checkbox"/>	1) Ballot results support proposed traffic calming program. (70% of all residents/business owners on project area list support proposed program, <u>AND</u> 80% of residents/business owners immediately adjacent to proposed devices support program.)	
OR <input type="checkbox"/>	2) Ballot results do not support proposed traffic calming program. NTCC can re-apply.	
	D. 1) The final traffic calming construction plans engineered for the BOS final approval, and reviewed by the TCAC and with the NTCC.	TC/LPT
	2) Township officially approves traffic calming plan for implementation. Resolution Number _____	BOS
	3) Funding sources for engineering, implementation & maintenance clearly identified and agreement written.	BOS/LPT
	4) DOT approval for permits and/or funding obtained for work on state roads.	LPT/DOT
	5) Legal agreement established between Township and DOT for installation and maintenance responsibilities on state roads, as necessary.	LPT/DOT
<u>Level 2 – Installation and Evaluation</u>		
	A. Temporary Level 2 measures installed, where possible, per approved traffic calming plan.	LPT/BOS TCAC/NTCC
	B. 1) Data collection performed following the "test period."	LPT/TC
	2) Results of data collection compared to pre-traffic calming measure conditions.	LPT
	3) TCAC and NTCC determine if installed measures are meeting designated goals.	LPT/NTCC
	4) Level 2 measures either permanently constructed, slightly modified and constructed, or removed entirely.	LPT
	C. 1) Data collection performed within 12 months after measures are finalized. Benefits/issues evaluated for future decision-making information.	LPT
	D. 1) Modify or remove Level 2 measure(s) if not working properly upon notifying neighborhood (NTCC).	LPT
	2) Safety-related problems related to the traffic calming measure(s) implemented, can be modified or removed by the Township (or PennDOT on their roads) at any time with their discretion.	LPT/DOT

⁽¹⁾ Note completion date or N/A for not applicable.

⁽²⁾ Key: Res. = Resident; LPT = Lower Providence Twp.; TCAC = Traffic Calming Advisory Committee; BOS = Board of Supervisors; DOT = PennDOT; NTCC = Neighborhood Traffic Calming Committee; TC = Twp. Traffic Consultant

Today's Date: _____

COMMUNITY ACTION REQUEST FORM

The purpose of this form is to enable neighborhood to request the possible initiation of a traffic study in accordance with Lower Providence Township's Neighborhood Traffic Calming Program. The form must be filled out in its entirety, including a short description of current problems, and names of residents and/or property owners from at least six different residences within the affected area. Use back or additional sheets, as necessary.

After completing this form, please submit it to:

Lower Providence Township
Attn: Director of Planning & Development
100 Parklane Drive, Eagleville, PA 19403
Phone: (610) 539-8020/Fax: (610) 539-6347

1. Name of Neighborhood or organized group name: _____
2. Please describe any traffic or safety issues that concern residents in your neighborhood. Use the back side of this sheet or additional sheets, if necessary.

3. Please describe the specific location of concern, as well as the limits of your neighborhood and/or area of concern. Feel free to provide a sketch and attach to this sheet as well as identify your thoughts for specific traffic calming measures and their locations in accordance with the Township's Traffic Calming Toolbox.

4. Please provide the names and signatures of at least six residents and/or property owners from six separate properties who are requesting that this neighborhood and location be considered in the Township's Neighborhood Traffic Calming Program. Additional names can be placed on the back of this sheet. Place a check mark by the main contact person.

Signature	Printed Name	Address	Phone No. (Optional)
1.			
2.			
3.			
4.			
5.			
6.			

5. Source of funding recommended for Traffic Calming Measure (i.e., Liquid Fuels, Township General Funds, Grant, Private/Neighborhood funded, etc.).

6. Discuss financial commitment (\$) of neighborhood, if any, toward implementing the measure, if selected.

For Township Use

Date Received: _____

Date given to TCAC: _____

Date Community Action Request Received: _____

NEIGHBORHOOD TRAFFIC CALMING PROGRAM PRIORITIZATION WORKSHEET

This worksheet will be completed by Lower Providence Township Traffic Calming Advisory Committee (TCAC) in accordance with Lower Providence Township's Neighborhood Traffic Calming Program. It will be used to prioritize the potential initiation of specific neighborhood traffic calming processes for controversial Level 1 measures, or for Level 2 measures.

Name of Neighborhood (as applicable): _____

1. Traffic Volumes

- Greater than 2,000 vehicles per day = 5 points
 - 1,500 to 2,000 vehicles per day = 4 points
 - 1,000 to 1,500 vehicles per day = 3 points
- _____

2. Travel Speeds

- 80% - 100% of traffic exceeds speed limit = 5 points
 - 60% - 80% of traffic exceeds speed limit = 4 points
 - 40% - 60% of traffic exceeds speed limit = 3 points
 - 30% - 40% of traffic exceeds speed limit = 2 points
 - 20% - 30% of traffic exceeds speed limit = 1 point
- _____

3. Cut-through Traffic Levels

- Greater than 25% of vehicles are cut-through = 5 points
 - 20% to 25% of vehicles are cut-through = 4 points
 - 15% to 20% of vehicles are cut-through = 2 points
- _____

4. Collision History (most recent, past 3 years)

- More than 5 collisions in a one year period = 8 points
 - 2 to 4 collisions in a one year period = 4 points
- _____

5. Schools and Public Facilities (Pedestrian Generators)

- Each school and public facility (i.e., park, community center, neighborhood commercial use) adjacent to street = 1 point
- _____

6. Neighborhood Impact

- Each 500 linear feet of street experiencing above problems = 1 point
- _____

Total Score: _____

Date Preliminary Information Completed by Township: _____

Completed by: (Print Name) _____ (Sign Name) _____

CHAPTER 6 – CRITERIA FOR INSTALLATION AND MAINTENANCE

Lower Providence Township will continually develop recommended guidelines for the installation and maintenance of various traffic calming tools. This chapter will be updated from time to time to provide new and/or revised guidelines for traffic calming devices, and should be considered a living document as the Township gains more “hands-on” knowledge of various measures. The guidelines discussed below can be used in most circumstances; however, special situations may sometimes apply since many streets have differing characteristics.

Speed Hump Installation Criteria

The following criteria should be followed when considering the installation of speed humps within Lower Providence Township:

1. Speed humps will generally *not* be installed on State roadways.
2. The street or street segment shall be a two-lane residential collector or access street, where its primary function is to provide access to abutting residences.
3. The legally posted speed limit on the street shall not exceed 30 mph.
4. The minimum length of the street, or portion thereof, measured from the nearest intersection street, shall be at least 750 feet.
5. The two-way average daily traffic (ADT) shall not be less than 1,000 vehicles per day or more than 3,000 vehicles per day, which shall be determined by a seven (7) day automated traffic count conducted by the Township. Manual counts may be instituted at the Township’s discretion.
6. The 85th percentile vehicle speed shall not be less than 5 mph over the legally posted speed limit.
7. At least 50 percent of the daily traffic should exceed the posted speed limit.
8. The Township will analyze the number of accidents on the affected roadway, over the most recent three year period, to ascertain the extent to which excessive or unsafe speeds were a major contributing factor.
9. The distance between speed humps shall not be less than 275 feet or greater than 600 feet apart.
10. Speed humps shall not be less than 150 feet from an unsignalized intersecting roadway and 300 feet from a signalized roadway.
11. Speed humps shall not be installed on hills greater than 8 percent or curves less than 300 feet that could affect the safe control of vehicles.
12. Speed humps shall traverse the entire roadway, allowing one foot on each side for the flow of storm water.
13. Speed humps physical design and associated markings/signing should be as depicted in Chapter 3 of the Lower Providence Township Traffic Planning Program.
14. The installation of speed humps shall not adversely affect response times for emergency service vehicles, as determined by the potentially affected emergency service providers and Township municipal and traffic engineer.

Speed Hump Maintenance Guidelines

These guidelines are currently being developed.

Crosswalk Guidelines

Crosswalk installation guidelines are currently being developed.

Stop Sign Guidelines

Stop sign installation guidelines are currently being developed.