

DISTRICT OF COLUMBIA TRANSPORTATION AUDIT GUIDELINES



District Department of Transportation

Emeka Moneme, Director



**GOVERNMENT OF
THE DISTRICT OF COLUMBIA
Adrian M. Fenty, Mayor**

TABLE OF CONTENTS

Introduction	1
Definitions	1
Objectives	3
Policies	4
Guidelines	6
Transportation Audit Process	7
Traffic Calming Measures Approved for use in the City	11
Effectiveness of Traffic Calming Measures	12

LIST OF TABLES

1. Level of Service Operating Conditions	2
2. Effectiveness of Traffic Calming Measures	12

APPENDIX

Center Pull-out Forms	
Form 1: Request form for Transportation Audit	A-1
Form 2: Request form for Removal	A-2
Traffic Calming Schematics	
Schematic 1: Traffic Calming Measures	B-1
Schematic 2: Traffic Calming Measures, Continued	B-2
Schematic 3: Traffic Calming Measures, Continued	B-3

Last updated 2006

INTRODUCTION

A transportation audit is a transportation engineering and planning study that involves a thorough review of the existing conditions as well as consideration of a number of potential approaches to improve the safety, mobility and quality of our transportation systems which includes vehicular traffic as well as pedestrian and bicycle safety in a given neighborhood. Transportation Audits utilize a variety of methods to improve safety, including traffic control devices (stop signs, traffic signals, etc.), design measures, traffic calming measures (speed humps, chicanes, etc.), education, and enforcement. These solutions can be used individually or in some combination to achieve effective results.

In most neighborhoods, residents are concerned about their safety as well as the quality of life that is the result of vehicle noise, speeding and cut-through traffic, exhaust emissions, traffic-induced residential vibrations and limited availability of curb parking. The use of traffic control and/or calming measures, education and enforcement can reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street and roadway users.

The District of Columbia is committed to reducing the negative impacts of traffic and to ensuring the overall safety and livability of residential neighborhoods. The *District of Columbia Transportation Audit Guidelines* (Guidelines) provides *a general outline on how Transportation Audits will be conducted and how their recommendations will be implemented. The guidelines provide several opportunities for community involvement in the development of the Transportation Audit and in implementing solutions to mitigate transportation problems.*

Any questions or requests regarding this program should be directed to the District Department of Transportation (DDOT) Transportation Policy and Planning Administration (TPPA) at (202) 671-2730.

DEFINITIONS

Arterial Street – Roadways that conduct vehicular traffic between collector streets and expressway/freeways. Traffic is supposed to move in a progression through the hierarchy of streets: local to collector to arterial to freeway, and then back down the hierarchy between the origin and destination of a trip

ADT – Average Daily Traffic

ANC - Advisory Neighborhood Commission

Collector Streets – Intermediary streets that funnel vehicular traffic from local streets to arterial streets and back. They are typically 40 feet wide

Cut-through traffic – Through traffic diverted from arterial streets and collector streets onto local streets to avoid congestion

DDOT - District Department of Transportation

Level-of-Service (vehicles) – A qualitative measure describing operational conditions within a traffic stream, generally in terms of such factors as speed, travel, and delay time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. It ranges from A to F as shown in the table below:

Table 1: Level of Service Operating Conditions

Level of Service	General Operating Conditions
A	Free flow
B	Reasonable free flow
C	Stable flow
D	Approaching unstable flow
E	Unstable flow
F	Breakdown flow

Note: Specific definitions of levels-of-service A through F vary by facility type.

Median – An island in the center of a street or intersection to protect pedestrians and provide landscaping. Medians prevent passing and left turns, separate opposing travel lanes and provide visual enhancement

Speed Study – A study using equipment to measure, collect and statistically analyze the speeds of vehicles

Study Area – The boundary of the problem area. A study area may cross traditional neighborhood boundaries

TSA – Traffic Services Administration. DDOT administration responsible for traffic engineering and parking.

TPPA – Transportation Policy and Planning Administration. DDOT administration responsible for undertaking transportation studies and developing policies

Transportation Audit – Transportation engineering and planning study that makes a comprehensive evaluation of existing transportation conditions. Transportation audits look at vehicle, pedestrian and bicycle traffic as well as roadway classification, neighborhood, etc.

Traffic Calming Measure – An engineering design element used to reduce vehicular speed and volume and increase the sharing of streets by pedestrians and other users. Generally refers to physical measures and roadway design changes

Median Slow Points – Center-located barriers dividing opposing roadway travel lanes at either intersections or midblock

Warrants – The minimum criteria necessary to call for a roadway solution, such as installation of a stop sign, traffic signal or other traffic control device. These criteria are outlined in both federal and local engineering manuals and standards. Typically required are objective measures such as speed surveys, traffic volume studies and accident records

85th Percentile Speed – The speed at or below which 85% of the vehicles are moving

OBJECTIVES

The overall objectives of the Guidelines are to ensure the safe, efficient and economical movement of persons and goods while maintaining the livability and environmental quality of our neighborhoods. The more detailed objectives are:

- Solicit comment from residents and stakeholders (ANC's, police, fire & emergency services, etc.) throughout the Transportation Audit process.
- Strive to meet the goals, objectives and policies contained in the Transportation Plan for the District of Columbia.
- Implement best practices context sensitive solutions to improve mobility and safety.
- Promote conditions that provide safe neighborhoods for motorists, bicyclists, pedestrians and residents while maintaining access and services to the neighborhood.

GENERAL PROCESSES

The following processes are established as part of the *District of Columbia Transportation Audit Guidelines*:

- Requests for a transportation audit may be initiated by the residents of the area in coordination with the local ANC.

- All requests shall be in the form of a formal application submitted on the “Request for Transportation Audit” form, obtainable from DDOT by calling (202) 671-2730 or on DDOT’s website at www.ddot.dc.gov
- As an option and at DDOT’s discretion, DDOT may establish neighborhood working groups to review the traffic audit information and comment on recommended solutions.
- Transportation audit requests will be accepted at any time. Transportation Audits will be conducted by DDOT or consultants hired by DDOT based upon the order in which they are received and the potential severity of the transportation concern that needs to be addressed, subject to the availability of funding. DDOT maintains the right to expand the study area of a transportation audit due to potential adverse impacts to areas adjacent to the original request.-
- Completed applications should be sent to the appropriate Ward Planner at the following address:
 District Department of Transportation
 Transportation Policy and Planning Administration
 2000 14th Street, NW, 7th Floor, Washington, DC 20009
- DDOT maintains the right to conduct a transportation audits without a request from the community based upon safety and mobility considerations. Before proceeding with a DDOT-initiated audit, DDOT will send notification to the community, through the ANC, of its intentions to conduct the Transportation Audit. DDOT may decide to move forward on an audit due to safety issues, construction plans or any other purpose stated by the Director or his representatives.
- Each request for a transportation audit shall contain a list of signatures and addresses of residents in the block or blocks where a study is desired. These signatures will ensure that there is an awareness of the request among the neighbors in the block(s).

POLICIES

- A Transportation Audit shall be the basis for deciding the appropriate solution(s) for a traffic safety or mobility situation or need.
- DDOT shall be responsible for conducting Transportation Audits and making recommendations for implementation.
- Traffic control devices and traffic calming measures shall conform to engineering and procedural standards established by DDOT.

- Through traffic should be encouraged to use higher classification streets (i.e. arterial and collector streets), as designated in the Transportation Plan for District of Columbia.
- In areas where speeding is determined to be a problem, traffic calming measures, design measures, traffic control devices, education or enforcement, or some combination thereof shall be implemented *to* reduce speeds.
- Ingress and egress of police and emergency vehicles shall be maintained or not substantially hindered.
- DDOT shall determine if it is necessary to install traffic controls, design measures, and traffic calming installations. DDOT shall also determine the final location of all traffic controls, design measures, and traffic calming installations.
- The design of traffic calming measures should reflect the requirements of all pedestrians.
- The application of standard traffic control devices, use of synchronized traffic signals, provision of bus preemption at designated traffic signal locations and the use of other Intelligent Transportation Systems (ITS) should be encouraged.
- Transportation audit recommendations measures should not result in a significant reduction of the capacity of intersections and roadways where they are placed.
- Transportation Audits should not inadvertently divert significant volumes of vehicular traffic onto adjacent residential streets.
- Recommended transportation audit solutions for identified problems should be cost-effective.
- DDOT may consider the deployment of a traffic calming measure or traffic control device on a trial basis. All such deployments should be evaluated for effectiveness within three to six months of installation. Although in some cases a twelve-month duration may be required.
- Only traffic calming measures approved by DDOT shall be considered as an audit tool for implementation in the City.

GUIDELINES

The Traffic Services Administration (TSA) shall recommend traffic calming measures and/or traffic control device(s), design improvements, and/or enforcement based on a Transportation Audit that will consider the guidelines (or criteria) outlined below. TSA shall review and approve the recommendations provided in the audit if the audit is performed by a consulting firm. Periodically, TPPA, and TSA will review these guidelines to determine whether they are appropriate for current conditions.

- Traffic calming measures implemented at intersections and on roadways shall not result in lowering the overall level of service below “D”.
- Physical traffic calming measures such as speed bumps/humps should generally not be considered on:
 - (i) Emergency and evacuation routes
 - (ii) Roadways with grades of 7% or more
 - (iii) Arterial and collector streets
 - (iv) Through truck routes
- DDOT will only implement a transportation audit that is based on sound engineering principles.
- In general, Traffic calming measures shall be considered if the average daily traffic (ADT) exceeds 1,500 vehicles per day (vpd) or if the peak hour volume is greater than 150 vehicles for the roadway. However, if the ADT exceeds 5,000 vpd, traffic calming measures shall not be considered.
- As a general guideline, when the 85th percentile speed on a street segment exceeds the posted speed limit by at least 10 mph, traffic calming measures shall be considered.
- Traffic calming measures or traffic control devices shall have no significant adverse impact on fire, police and ambulance services.
- DDOT officials shall define the study area based on the Transportation Audit application submitted and the transportation issues in that area.
- As a general guideline, traffic calming measures may be justified if cut-through volumes represent at least 30% of the total daily traffic for local streets.

- Crash (accident) data for the most recent three years shall be analyzed by type, severity, location, roadway condition, and time of crash. Accident rates shall be considered problematic when there are three (3) or more reported cases involving pedestrian, bicycle and automobiles along a local residential street within a one year period.
- In cases where parking may have to be removed, the effect(s) on other parking facilities within the neighborhood as well as alterations to traffic patterns shall be analyzed.
- Transportation audits data collection shall not be conducted during holidays or at times of the day that does not reflect “typical” traffic conditions within the neighborhood, unless specific verified statistical adjustment factors are available. To the greatest extent possible, transportation audits should examine traffic during times when potential conflicts or problems are most likely to occur.

TRANSPORTATION AUDIT PROCESS

(1) *Request Procedure*

DDOT will accept Transportation Audit requests from residents or community organizations at any time. Persons requesting a Transportation Audit shall obtain signatures from residents on the block where the Transportation Audit is requested. As a general guideline, DDOT recommends that 50 percent of the residents on the block support the request for a Transportation Audit. A formal request should be submitted using the form attached on page A-1(see center pages).

DDOT shall work with the community, through the ANC, to address preliminary and possible solutions to traffic problem(s) and offer residents the opportunity to provide their input on the transportation audit study, scope of work and proposed study area.

After the audit is completed, DDOT will notify the ANC of the recommendations and obtain ANC comment on the recommendations. Implementation will occur based upon the availability of funding.

(2) *Transportation Audit*

A traffic engineering and planning study shall be conducted by DDOT or a consultant hired by DDOT. The audit process shall involve study area determination, data collection and analyses. A report developed by coordination between the Transportation Policy and Planning, Traffic Services and Infrastructure Program Management Administrations will summarize findings on the following parameters:

- Vehicular volume
- Speeds

- Cut through traffic
- Crash rates
- Road alignment and grade
- Street or segment classification
- Parking
- Pedestrian activities
- Bicyclist activities
- Existing traffic calming measures/traffic control devices
- Other physical conditions on roadway or street segment.

The report shall also contain recommendations to improve the existing conditions.

(3) *Recommendations*

DDOT staff shall provide a copy the findings and recommendations of the transportation audit to the appropriate ANC and any community groups or residents that request a copy of the Transportation Audit findings and recommendations. These recommendations could include other possible solution(s) that were not requested but may be warranted based on the factors surrounding each case. The ANC, community groups and residents may comment upon the findings and recommendations of the Transportation Audit. Comments shall be sent to the appropriate Ward Planner at the following address:

District Department of Transportation
Transportation Policy and Planning Administration
2000 14th Street, NW, 7th Floor
Washington, DC 20009

DDOT will use its professional discretion to decide whether or not to proceed with implementation based on the traffic calming study's recommendations and community comments.

(4) *Approval Process*

All projects recommended by a Transportation Audit that require engineering design and construction must fit into the capital improvement budget of the DDOT. Thus, a recommendation for implementation of a complex engineering solution to a transportation problem may take several years to schedule, design and construct. DDOT may approve a recommended traffic calming or control measure based on factors including, but not limited to, budget and cost considerations. Since the capital improvement budget for any year is based on projects identified in previous years, funding for implementing the recommended solutions may have to be appropriated in the budget in the following fiscal year.

In addition, traffic calming projects shall fit into the priority schemes for the capital improvement budget. Thus, funding availability and timing are critical in the implementation of a traffic calming measure. DDOT shall assess the opportunity for implementation during a specific fiscal year and notify the ANC accordingly. Where possible, DDOT will attempt to implement low cost solutions that meet the transportation safety needs identified in the Transportation Audit, and shall include implementation of more costly solutions in existing budgeted road construction projects among the priority projects.

(5) *Design and Implementation*

When a transportation audit is programmed into the capital budget, DDOT shall schedule and proceed with the design and implementation of any traffic calming measures/traffic control devices that have been recommended in the audit. The designs shall follow all nationally recognized standards (e.g. MUTCD, HCM, ITE, AASHTO guidelines, etc.), and other traffic engineering standards for the District of Columbia.

Some measures may be installed on a temporary basis for a test period. These temporary measures should be implemented if traffic flow may be severely reduced by the installation of permanent measures. Following the temporary installation period, DDOT must decide whether to install the measure on a permanent basis. This decision shall be made after the measure has been monitored and evaluated regarding its effectiveness in solving the identified traffic problem.

The District Department of Transportation (DDOT) strives to achieve environmental excellence. In this vein, all designs and implementations of recommended traffic calming devices shall take into account the environmental impact on the area. For example, speed humps and bumps shall be constructed so that they do not cause additional runoff; traffic circles (mini roundabouts) shall be constructed with the option of landscaping the center of the circle.

(6) *Monitoring and Evaluation*

The test period for monitoring and evaluating the implemented measures should usually be between three and six months, although in some cases a twelve-month duration may be required. This period (in some cases) should be extended into the snow season, if possible, in order to provide the opportunity to detect any snow removal (or snow related) problems that may exist due to the installation of the measure. The length of the test period will be outlined in the Audit recommendations.

During the test period, DDOT shall evaluate residents' and motorists' reactions, conduct field observations, perform traffic counts, speed studies, and collect and analyze other data as needed. The analysis of the data collected should determine whether the measure or solution has met its desired objective. If the traffic calming or control measure does not meet the desired or intended objective based on the analyses or other factors,

DDOT will notify the ANC about removal. Alternative solutions may be considered.

(7) *Modification or Removal of Traffic Calming or Control Measures*

DDOT may consider the removal or modification of a traffic calming measure if it fails to meet the intended objective or if it leads to the development of unsafe traffic operations.

If the ANC seeks to have a traffic calming or control measure modified or removed, it must submit a formal request for the removal by using the form on page A-2.

TRAFFIC CALMING MEASURES APPROVED FOR USE IN THE CITY

The following physical traffic calming measures, defined below, may be installed in residential neighborhoods in the District of Columbia. IN addition, several of these measures are shown in the figures presented in Appendix B. Other measures including turn prohibitions, striping, and addition of bicycle lanes, etc., may also be considered.

Bulb-out – An extension of a curb in the form of a bulb, usually at an intersection, that narrows the vehicular pathway and inhibits fast turns, and shortens the crossing distance for pedestrians. Also called *Curb Extension* or *Neckdown*.

Chicane – A series of fixed objects, usually extensions of the curb, which alter a straight roadway into a zigzag or serpentine path to slow vehicles.

Choker – A narrowing of the fixed street, often in mid-block and sometimes near an intersection. May be done with curb extensions, landscaping or islands in the street.

Circle – A small circular island, usually less than 26 ft in diameter, used in the middle of intersections and intended to force vehicular traffic to slow and negotiate around it. When used in residential areas, they can be landscaped for aesthetic or barrier purposes, and may have mountable curbs to facilitate movement of emergency vehicles. Also called *Neighborhood Traffic Circle*.

Diagonal Diverter – A partition that connects two diagonally opposite curbs, bisecting the intersection, to force motor vehicles to slow down and turn. A *traversable barrier* allows emergency vehicles, as well as bicyclists and pedestrians, to cross over.

Forced Turns – These are islands used on approaches to an intersection that force drivers to turn in only one direction (usually right).

Full Street Closures – Barriers placed across an entire width of the street to completely close the street to through-traffic, usually leaving only sidewalks open. Full street closures are also referred to as cul-de-sacs or dead ends.

Gateways – Alterations in the pavement surface, with bricks, stamped concrete, or other colored materials intended to signal to drivers that they are entering a neighborhood or community that requires lower speeds. Pillars and archways are sometimes used to complement gateways. Also known as *entry treatments*.

Half Closures –Barriers that block travel in one direction for a short distance on an otherwise two-way street. Also called *semi-diverters*.

Median Barriers –Narrow islands constructed between travel lanes through an intersection. Median barriers are intended to prevent left turns from the major street and through movements along the minor street.

Raised Crosswalk – A traditional pedestrian crossing area purposely raised above the normal pavement surface level in order to give motorist and pedestrians a better view of the crossing area. Similar to a *speed table*.

Rumble Strips – Pavement surface treatments intended to cause drivers to experience vehicular vibrations signaling the drivers to slow down.

Speed Bumps – Narrow mountable obstructions installed on the pavement surface, across the traveled lanes, and intended to cause vehicles to slow to almost stop. Speed bumps are usually less than 14 inches wide and 4 inches high.

Speed Humps – Similar to speed bumps, but utilize larger vertical radii that result in wider widths and a more gentle crossing by vehicles.

Speed Tables – Wide mountable obstructions installed on the pavement surface across the travel lanes, and intended to cause vehicles to slow. Speed tables are similar to speed humps, except for the flat-topped section located between the approach and far edges; are generally wider than speed humps and are more gentle on vehicles.

EFFECTIVENESS OF TRAFFIC CALMING MEASURES

The effectiveness of some of the traffic calming measures mentioned in this chapter in addressing problems involving volume, speed, traffic conflicts and emergency services are summarized in Table 2.

Table 2: Effectiveness of Typical Traffic Calming Measures

Traffic Calming Measures and Traffic Control Devices	Volume Reduction	Speed Reduction	Conflict Reduction	Emergency Response
<i>Speed Bump</i>	M	S	M	S
<i>Speed Hump</i>	M	S	M	S
<i>Speed Table</i>	N	M	N	M
<i>Circle</i>	M	M	S	S
<i>Chicane</i>	M	M	N	M
<i>Raised Crosswalk</i>	M	S	M	S
<i>Raised Intersection</i>	N	M	M	S
<i>Neckdown</i>	N	M	M	N
<i>Chokers</i>	N	M	M	M
<i>Textured Pavement</i>	N	N	N	N
<i>Rumble Strip</i>	N	M	N	M
<i>Gateway</i>	N	N	N	N
<i>Pedestrian Refuge</i>	N	M	M	N
<i>Median Barrier</i>	S	N	M	S
<i>Street Closure</i>	S	M	S	S
<i>Diagonal Diverter</i>	S	M	M	M
<i>Forced-turn Island</i>	M	N	M	M
<i>Speed Limit Signing</i>	N	M	N	N
<i>Multi-way Stop Control</i>	N	M	M	M
<i>Turn Prohibitions</i>	M	N	M	N
<i>One-way streets</i>	S	N	M	M

N = Minimal or no effect, M = Moderate effect, S = Significant effect.



**THE DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION**

2000 14th Street, NW, 7th Floor
Washington, DC 20009

REQUEST FOR TRANSPORTATION AUDIT

INTRODUCTION

The following is a request for a traffic calming study. The request shall be processed according to procedures in the *District of Columbia Transportation Audit Guidelines*. Please complete both Parts A and B.

A. STREET INFORMATION

Please provide the name(s) of the street(s) on which a study is requested as well as the boundaries of the street segment. (Note: Boundaries may change at DDOT's discretion).

Requested Street: _____ Traffic Problem(s): _____
From: _____
To: _____

B. CONTACT PERSON INFORMATION

Each request must provide a contact person who lives on the (or one of the) requested street segments. The contact person shall receive all relevant correspondence *related to the Transportation Audit*.

Name of Representative: _____ ANC: _____

Address: _____

Zip Code: _____ Phone #: _____

I agree to be the contact person for the above request

Signature: _____ Date: _____

Evidence of support attached? Yes No



**THE DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION**

2000 14th Street, NW, 7th Floor
Washington, DC 20009

**REQUEST FOR REMOVAL OF A TRANSPORTATION AUDIT
IMPLEMENTATION**

INTRODUCTION

The following is a request for the removal of a traffic calming or control measure(s). The request will be processed according to procedures in the *District of Columbia Transportation Audit*. Please complete both Parts A and B.

A. STREET INFORMATION

Please provide the name(s) of the street(s) on which the traffic calming measure is located.

Street Name(s): _____

From: _____

To: _____

Description/Type of Measure: _____

B. CONTACT PERSON INFORMATION

Each request must provide a contact person who lives on the (or one of the) requested street segments within the study area boundary or is an ANC representative. The contact person shall receive all relevant correspondence and be responsible for gathering evidence of support when requested.

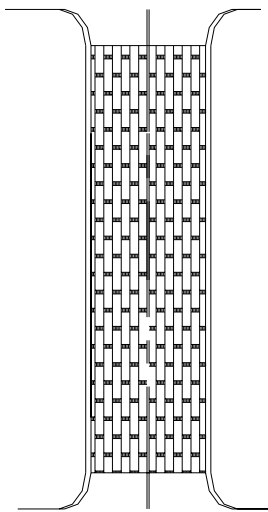
Name of Representative: _____ ANC: _____

Address: _____

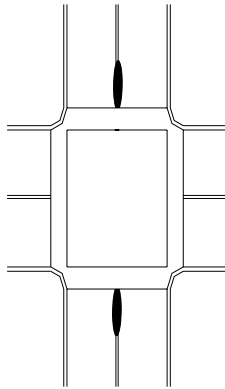
Zip Code: _____ Phone #: _____

I agree to be the contact person for the above request

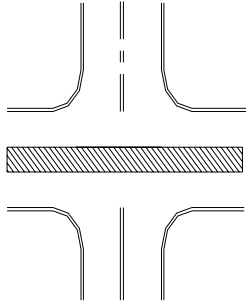
Signature: _____ Date: _____



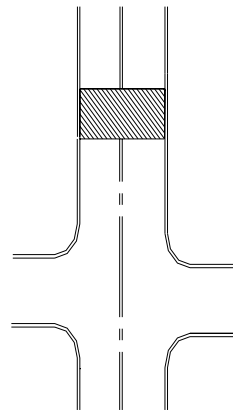
Textured Pavement



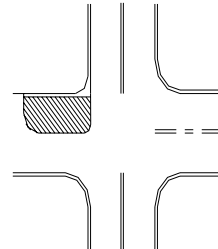
Pedestrian Refuges



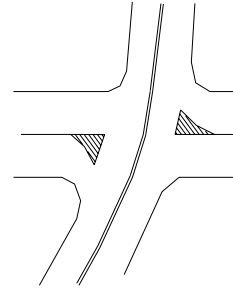
Median Barrier



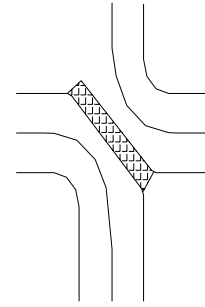
Full Closure



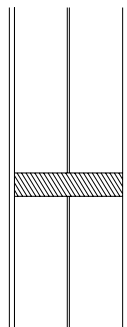
Half Closure



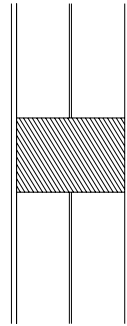
Forced Turn Island



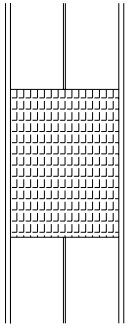
Diagonal Diverter



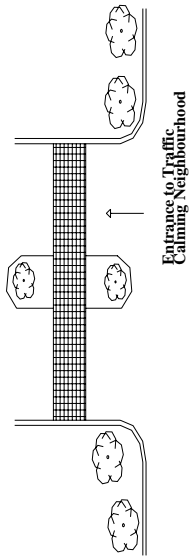
Speed Bump



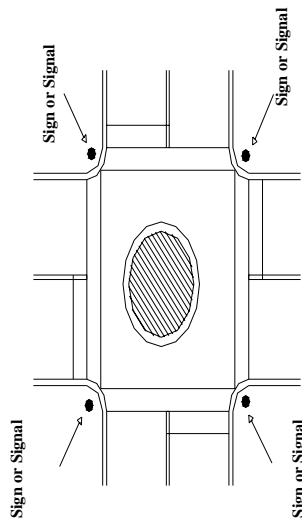
Speed Hump



Speed Table



Gateway



Traffic Circle



Chicane

