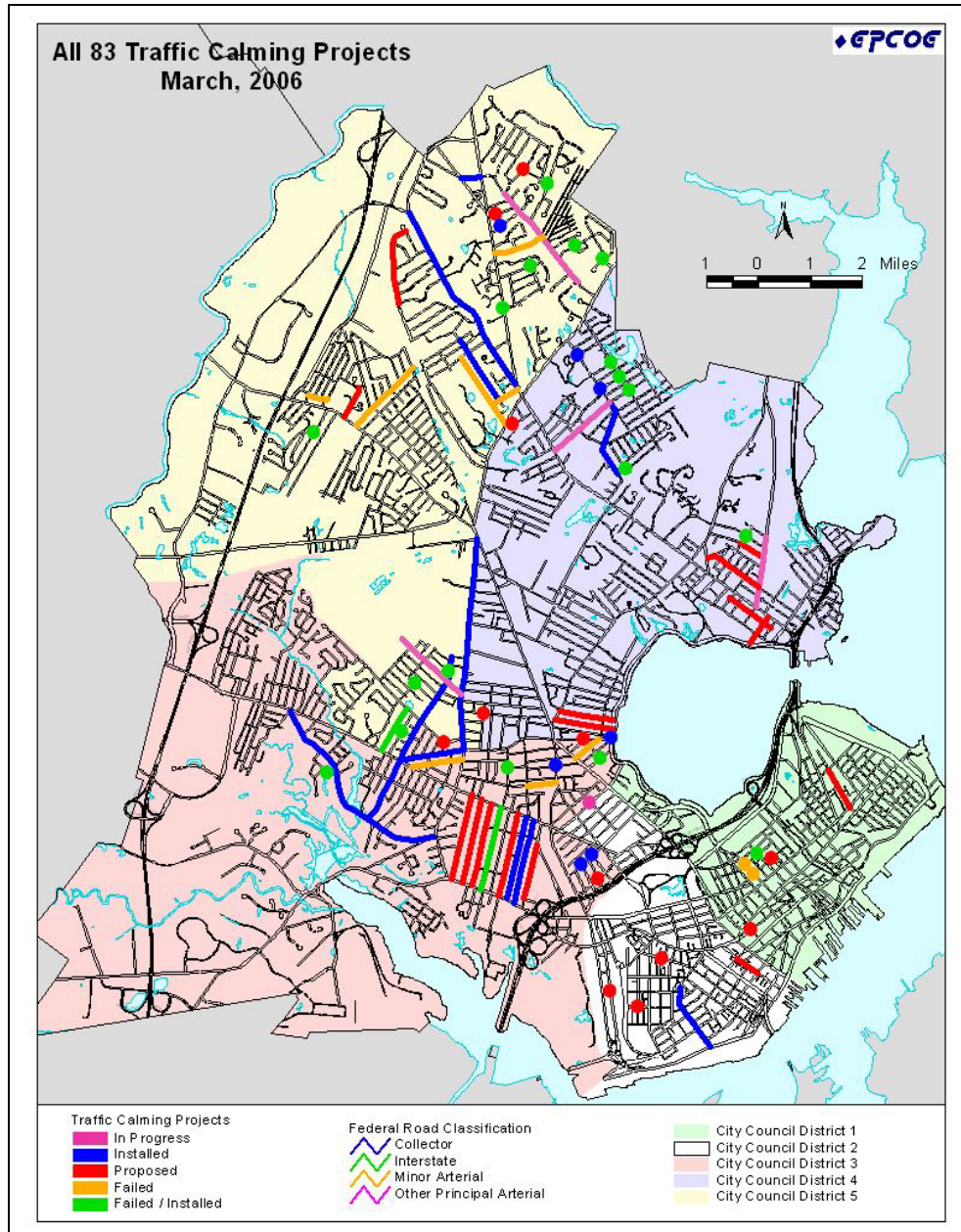


# Portland Traffic Calming Study



Greater Portland Council of Governments  
March 10, 2006

# **Portland Traffic Calming Study**

**Produced for:**

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**March 10, 2006**

## **Table of Contents**

<b>Executive Summary</b>	<b>3</b>
<b>I. Introduction</b>	<b>4</b>
<b>II. Existing Conditions</b>	<b>7</b>
<b>III. Findings and Recommendations</b>	<b>20</b>
<b>IV. Appendices</b>	<b>22</b>
<b>A. Portland Code of Ordinances, Chapter 28</b>	
<b>B. Existing Conditions Traffic Calming Project Tables</b>	
<b>C. Manual on Uniform Traffic Control Devices (MUTCD) Excerpt</b>	
<b>D. Multi-way Stops Article – W. Martin Bretherton Jr., PE, Feb 2006</b>	
<b>E. Traffic Calming Case Studies</b>	
1. Brooklyn, NY Action Program	
2. Greenville, NC	
3. Chapel Hill, N.C.	
4. Carlsbad, CA	
5. Charlottesville, Virginia	
6. Boulder, CO	

# Executive Summary

## Introduction

The City of Portland Public Works Department (PWD) contracted with the Greater Portland Council of Governments (GPCOG) to conduct this **Traffic Calming Study**. The purpose of the study was to evaluate Portland's existing Traffic Calming Ordinance, inventory existing traffic calming conditions, present examples from other cities and make recommendations for improvements.

## Existing Conditions

The types of traffic calming devices currently being employed by the City of Portland include (1) speed tables, (2) stop signs, (3) traffic islands, (4) traffic signals, (5) one-way streets and others. At this writing, there are a total of 83 traffic calming projects, including traffic calming devices installed, projects in progress, streetscapes, stop signs, projects submitted but failed certain criteria, projects that failed but were installed anyway, and projects currently being proposed.

### Traffic Calming Project Status

Project Status	Number
Installed	19
In progress	5
Failed	11
Failed, installed	20
Proposed	28
<b>Total Projects</b>	<b>83</b>

## Key Findings and Recommendations

- Install traffic calming devices only if they are warranted and pass engineering tests.
- Consider developing a stand alone stop sign policy.
- Consider changes to the ordinance based on examples from other cities.
- Update the *Portland Transportation Plan* and include a city-wide *Traffic Plan*. Ensure that traffic calming measures are consistent with the *Traffic Plan*.
- Dedicate appropriate staff to handle traffic calming requests, petitions and research.
- Conduct an annual traffic calming review to increase public awareness and ensure proposed projects are consistent with the *Portland Transportation Plan*.
- Coordinate requests for traffic calming projects with other transportation improvements, including sidewalks, signals, streetscapes and bus stops.

Full recommendations can be found on p. 19.

## I. Introduction

The City of Portland Public Works Department (PWD) contracted with the Greater Portland Council of Governments (GPCOG) to conduct a **Traffic Calming Study**. The purpose of the study was to evaluate Portland's existing Traffic Calming Ordinance, inventory existing traffic calming conditions, present examples from other cities and make recommendations for improvements.

### A. Planning Process

GPCOG staff met with Public Works Department (PWD) staff in June 2005 and completed an existing conditions summary to document the total number of traffic calming projects either installed or proposed. Four additional meetings were required during the summer and fall to update the list of changing projects. What began as 59 projects in June 2005 increased to 83 projects by November 2005. Staff also conducted a review of case studies to compare Portland with other U.S. Cities. GPCOG staff convened meetings with PWD staff every other month to provide study updates. GPCOG also presented preliminary findings of existing conditions at the July Portland Transportation Committee Meeting. A draft report was presented in November 2005, with the final report proposed for completion in January 2006.

### B. Traffic Calming Overview

Currently, all Portland traffic calming projects go through a petition process whereby residents must first present a petition to request a project. The PWD staff evaluates each project to determine if certain criteria are met before issuing a determination of finding. Some projects do not pass this test and are not considered further. Some projects have been installed anyway, at the request of a City Councilor. Other projects have passed the engineering tests and were installed. During the time this study was being done, a different process for installing stop signs outside the traffic calming ordinance process was established.



*Raised Intersection at Stevens and Pleasant*

The purpose of Title VI in Chapter 28 "Traffic and Motor Vehicles" of the Portland Code of Ordinances, or "traffic calming ordinance," is "to set forth a specific procedure and methodology for: citizen or council requested traffic calming plans. . ." There are also portions of the ordinance dedicated to the selection of traffic calming devices, monitoring and evaluating their effectiveness. In short, this is a "bottom up" approach which allows citizens to petition for this specific type of street design.

The difficulty with allowing citizens to petition for a portion of the street design and development process is this only addresses select projects without regard to the bigger transportation picture. Urban planning, street design and the shaping of neighborhoods involves more than the installation of devices to slow or deter traffic in residential neighborhoods. The

whole design of the street is part of the design of the space that includes residential and commercial buildings, places to walk, landscaping and other elements. By promoting citizen-based traffic calming, City Officials are only addressing part of the problem.

Installing a traffic calming device is one of the many tools available to engineers and planners to address such problems as speeding or cutting through residential neighborhoods. Traffic calming is one way to re-design a street to force motorists to slow down or take a different route. In short, *traffic calming* measures are, in effect, types of *traffic improvements*.

Therefore, many traffic improvements could be introduced using the same method and not be limited to simply traffic calming measures. For example, in other cities, a citizen could request a type of pedestrian refuge island, a bus stop, or an improved sidewalk in addition to a traffic calming device.<sup>1</sup>



#### Lessons Learned from Stevens Avenue

One of the most controversial set of projects was installed along Steven's Avenue in 1997. Initially, numerous devices were proposed, including a serpentine shift in the roadway (to slow traffic), curb extensions to define on-street parking and define turning movements, raised crosswalks, speed platforms, and one raised intersection. After vocal and visible protests by neighbors and concerned citizens, PWD removed all of the devices except the six raised crosswalks and raised platforms.

Proponents of the Stevens Avenue Traffic Calming experiment contend vehicle speeds and incidents between pedestrians and vehicles have been reduced since the devices were installed.<sup>2</sup>

Opponents contend vehicle speeds have not changed but just become erratic, emergency vehicle response times have been reduced, and air quality mitigation funds used to design and construct the raised speed platforms were not justified. Regardless of the outcome, City Officials created the Portland Traffic Calming Ordinance in response to the Stevens Avenue Traffic Calming Project to avoid future situations in which there was mixed neighborhood support for such a project.

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<sup>1</sup> City of Brooklyn, NY: Traffic Management Themes.

<sup>2</sup> Stevens Avenue Traffic Monitoring Report, DeLucca Hoffman, 1999.

## II. Existing Conditions

The types of traffic calming devices currently being employed by the City of Portland include (1) speed tables, (2) stop signs, (3) traffic islands, (4) traffic signals, (5) one-way streets and others. Businesses and citizens have employed other measures, including “no access” signs and chains, “slow down” signs and “children playing” signs. Traffic calming measures are usually implemented to slow traffic, prevent or reduce cut-through traffic, and improve safety conditions in neighborhoods.

In Chapter 28 “Traffic and Motor Vehicles” of the Portland Code of Ordinances, or “ the traffic calming ordinance,” citizens can request traffic calming measures for their neighborhood if they produce a petition with signatures from more than 2/3 of residents. The Public Works Department (PWD) reviews petition requests, conducts traffic analysis studies to determine if devices are warranted, then installs devices as funding and time allows. Due to staffing shortages and steady requests for traffic calming measures, the backlog of proposed projects has grown to 27. Over the past six months, city councilors and the PWD instituted a streamlined process for installing stop signs. Under this new process, a city councilor may request a stop sign without the petition signed by neighbors. This led to a flurry of stop sign requests to city councilors and subsequent stop sign installations.

There are many types of traffic calming devices being tested and installed in other areas of the country and around the world. In Appendix C, see case studies and more information on traffic calming, street designs, streetscapes, neighborhood designs and other urban planning resources.

### A. Traffic Calming Projects by Type

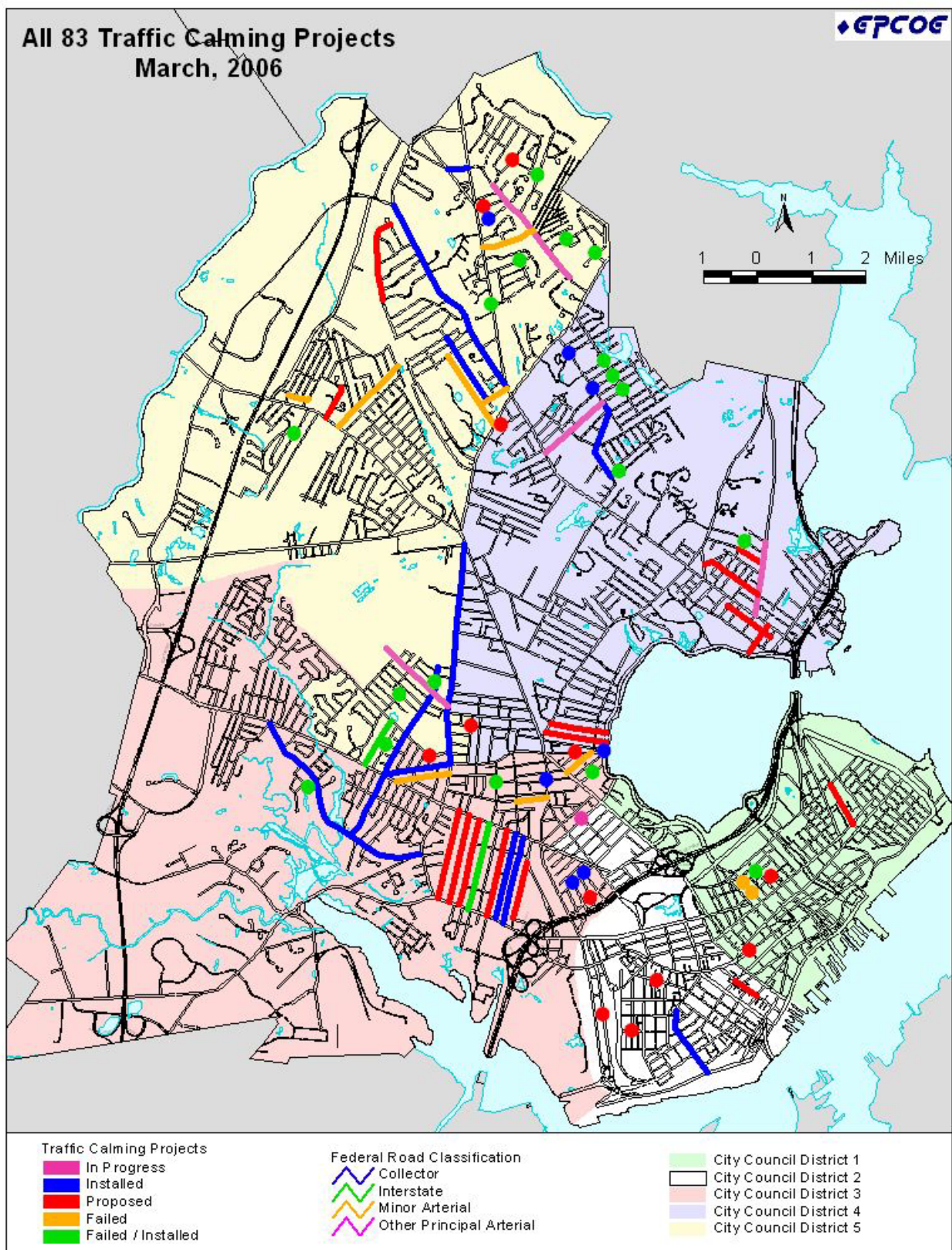
At this writing, there are a total of 83 traffic calming projects, including traffic calming devices installed, projects in progress, streetscapes, stop signs, projects submitted but failed certain criteria, projects that failed but were installed anyway, and projects currently being proposed (see Table 1, below).

**Table 1**  
**Traffic Calming Project Status**

<b>Project Status</b>	<b>Number</b>
Installed	19
In progress	5
Failed	11
Failed, installed	20
Proposed	28
<b>Total Projects</b>	<b>83</b>

A complete list of all 83 Traffic Calming Projects can be found in Appendix B.







Due to the cumbersome and time-consuming nature of the petition process combined with the delay in the overall process, citizens and councilors have been using other means to install traffic calming devices. These include streetscape design and a new stop sign policy. Some projects are incorporated into the city's streetscape design process, which may include changes to the street width, medians, pedestrian refuge islands, signage and other roadway improvements. With the increased requests for stop signs to slow traffic on local roads, a stop sign policy was introduced during the summer. This resulted in 23 projects becoming "short-listed" to speed up the process and expedite installation. Some stop signs that did not meet the thresholds established in the ordinance were installed anyway.

## 1. Installed Projects

There have been 19 projects installed over the past 10 years, including 20 raised speed tables, more than 10 stop signs, two traffic signals (one later removed), raised islands, and on-street parking. During the past six months, 20 more stop signs were installed through a new councilor-initiated process, resulting in a total of 39 projects installed. Nearly all of the stop sign projects have been installed on local streets to discourage neighborhood cut-through traffic and reduce vehicle speeds. It is too early to know if the installation of these stop signs is having any effect on cut-through traffic and speeding.

The speed platforms measure between 15 and 22 feet in length and in most cases extend across all but the last two feet on either side of the roadway. The sloping sections of the platform are striped yellow. Some platforms, such as those on Steven's Avenue, are designed as part of a raised crosswalk (see Longfellow crosswalk, right).

One traffic signal was installed at Baxter and Vannah as part of a Traffic Calming Study. Another 4-way flashing red stop signal was installed in addition to stop signs on Deering Avenue at Coyle Street through the petition process. The same neighbors who petitioned to have this signal installed later petitioned to have the signal removed. The signal was subsequently removed in October 2005.



*Raised Platform w/Crosswalk on Stevens Avenue at Longfellow Elementary School (Willauer)*

Table 2, below, describes the 19 projects installed over the past 10 years.

**Table 2**  
**Installed Traffic Calming Projects**

<b>Project</b>	<b>Description</b>	<b>Dist</b>	<b>Device</b>
Baxter/Vannah	intersection	4	traffic signal
Bolton St	Entire length	3	3 speed tables installed
Capisic St	Entire length	3	3 speed tables - circles
Colonial Rd	Entire length	3	stop signs
Columbia Rd	Entire length	3	small islands, stops signs
Deering Ave	Deering @ Coyle	3	4-way flasher installed, removed
Emery St.	Pine to Spring	2	Added on-street parking
Falmouth St.	Falmouth @ Payson	3	stop signs
Falmouth St.	Falmouth @ Exeter	3	stop signs
Hennessy	Entire length	5	3 speed tables, 2 remain
Jackson St.	Entire length	5	stop signs and circle
Mass Ave.	Entire length	3	3 speed tables installed
Ray St	Ray @ Merrymeeting	4	stop signs
Ray St.	Ray @ Penn	4	stop signs
Ray St.	Maine to Ivaloo	4	speed tables installed
Stevens	Forest to Woodford	5	6 speed tables installed
Summit St.	Washington to Lambert	5	temporary island installed
Washington Ave.	Allen's Corner to Riverside	5	Raised islands, paint mid-process
Woodford St.	Brighton and Stevens	3	reconstruction, narrowing

Some of the projects were installed through the “streetscape” process (Washington and Woodford) to improve roadway design, including parking, landscaping, and other treatments.

A total of six projects include the installation of speed tables. These are often constructed with a raised crosswalk (such as Capisic Street (right)).

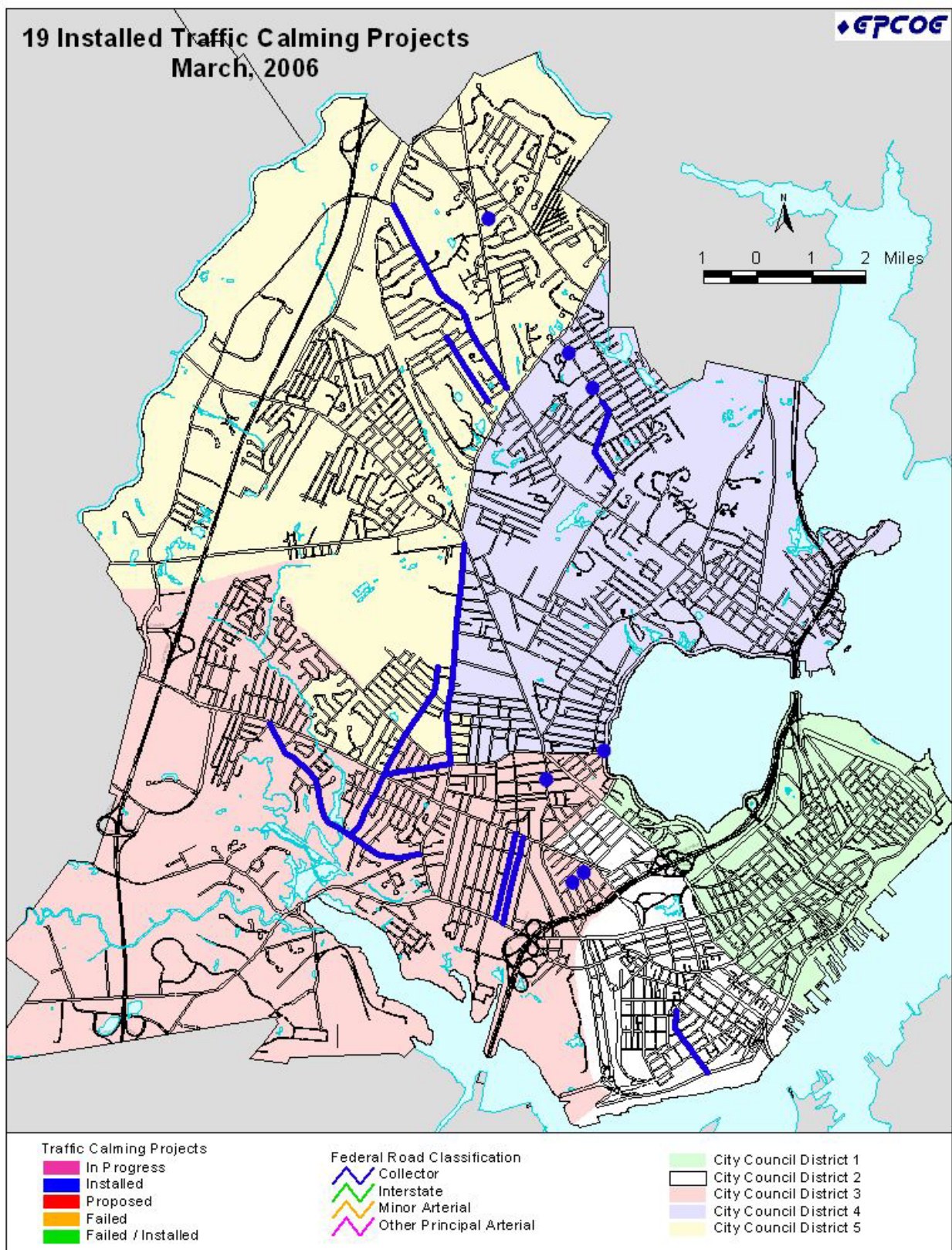
Seven projects included placement of stops signs. One traffic signal was installed at Vannah and Baxter. Another four-way flashing signal was installed at Deering and Coyle and later removed.

As you can see on the map on the next page, most of the projects are located between principal arterial avenues, such as between Congress and Brighton Avenues, and between Brighton and Forest Avenues.



*Speed platforms on Capisic Street  
(Willauer)*





## 2. Projects In-Progress

As of this writing, five projects are in progress, including a four-way stop sign, a speed table, and projects being completed as part of the streetscape process. See Table 3, below, and Map 3 of Projects in Progress on the next page.

**Table 3**  
**Projects In-Progress**

<b>Project</b>	<b>Description</b>	<b>Dist</b>	<b>Device</b>
Brentwood St	Entire length	5	none
Dartmouth St.	Deering to Forest	3	4-way stop proposed
Maine Ave.	Washington to Ray	4	speed tables proposed
Presumpscot St.	Washington to True	4	school streetscapes completed
Summit St.	Bramblewood to Abby	5	concept plan in progress

### **From Traffic Calming Case Studies (Appendix C)**

Boulder, CO has installed several types of traffic calming devices; among the most popular ones are speed humps, raised intersections and traffic circles. Studies produced by the city staff have shown favorable results. Speed humps decreased average daily traffic (ADT) up to 27% and reduced 85<sup>th</sup> percentile speeds by up to 8 mph. Raised intersections produced varied results with regard to ADT, yet reduced 85<sup>th</sup> percentile speeds by up to 8 mph. Traffic circles reduced 85<sup>th</sup> percentile speeds by up to 13 mph.<sup>3</sup>

In the context of reducing traffic impacts, the objectives of the Brooklyn, NY Traffic Calming Study contained the following objectives:

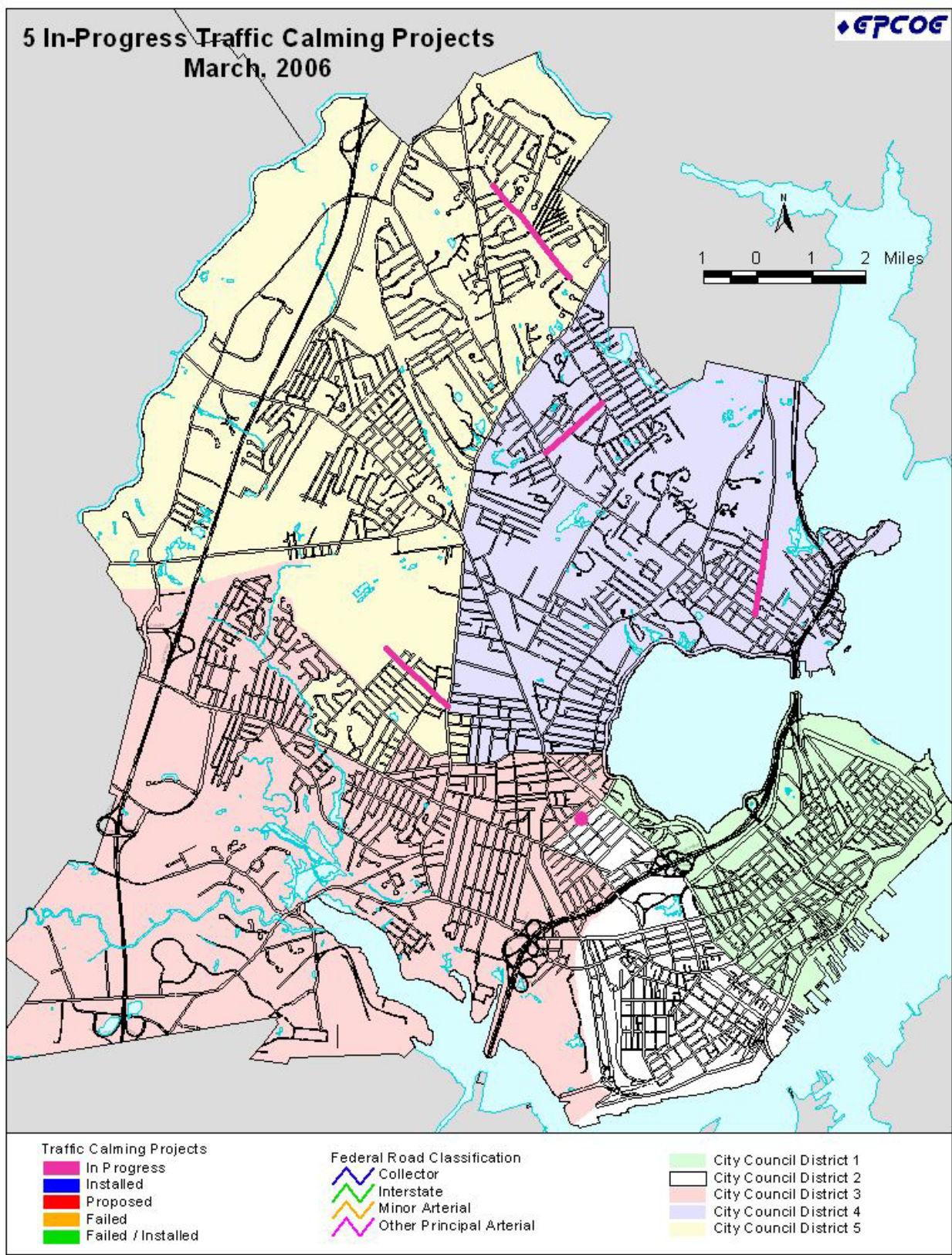
- Do not increase total traffic capacity through the area. Rather, improve efficiency of primary streets while discouraging through movement on other streets in order to redirect traffic from inappropriate routes.
- Reinforce appropriate travel patterns and street usage consistent with the Street Management Framework
- Examine and improve high pedestrian accident locations.
- Examine and reinforce the truck network.
- Examine and reinforce the bicycle network.
- Integrate specific treatments with area-wide strategies.<sup>4</sup>

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<sup>3</sup> Boulder, CO web site, Traffic Calming results, 2004.

<sup>4</sup> Brooklyn, NY Traffic Calming Study, 1997.







### 3. Failed Projects

After citizens submit a petition for traffic calming, Public Works staff conducts an engineering assessment to determine whether or not the proposed project will meet certain engineering standards and criteria as described in the ordinance. To date, 11 projects have failed this test and have not been installed. Table 4, below, lists the 11 failed projects to date. Note that 21 more “failed” projects have been installed. See Map 4 of Failed Projects on the following page.

**Table 4**  
**Failed Traffic Calming Projects**

<b>Project</b>	<b>Description</b>	<b>Dist</b>	<b>Device</b>
Alpine Rd	Entire length	5	none
Clifton St	Vannah to Forest	3	none
Cypress St	Entire length	5	none
Eastman Ave	Entire length	5	none
Elm St.	Elm and Lancaster	1	Stop sign request, signal?
Elm St.	Elm and Oxford	1	Stop sign request
Montrose Ave.	Entire length	3	none
Newton	Entire length	5	none
Pennell Ave.	Entire length	5	none
Prospect St.	Deering to Beacon	3	none
Stone St.	Entire length	1	none

The thresholds for determining eligible projects in Portland, ME include traffic volume (vehicles/day), speed (85<sup>th</sup> percentile speed of vehicles traveling at the posted speed limit), residential density (75-100%), truck volume (six axle trucks or larger), the presence of a school on the street, accident history, the number of children under 12 years old living on the street, and, for traffic control devices, MUTCD warrant analysis. PWD staff scores each proposal using a point system to determine eligibility.<sup>5</sup>

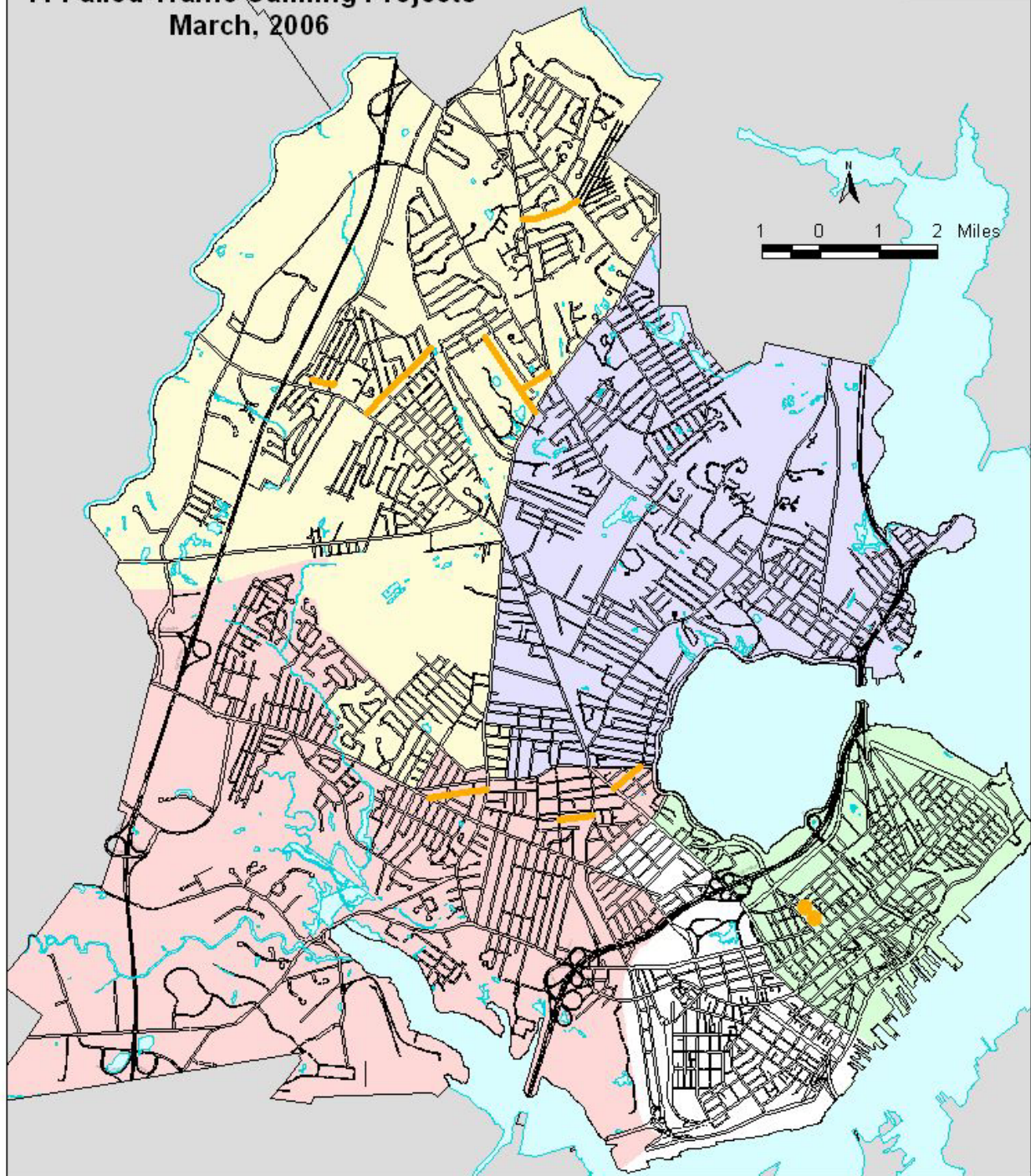
In order to qualify for traffic calming devices under the City of Greenville, NC Neighborhood Traffic Calming Program, the roadway being considered for the traffic calming device(s):

- Must be a City-maintained public street classified as a two-lane standard residential, minor residential, or collector street under the City of Greenville’s *Manual of Standard Designs and Details (MSDD)*.
- Must have a roadway width of less than or equal to 40 feet (back-of-curb to back-of-curb).
- Must have average daily traffic volumes greater than or equal to 1,000 vehicles per day.
- Must have speeds of the 85<sup>th</sup> percentile equal to or greater than 10 miles over the posted speed limit. The speed limit must already be posted at 25 mph.<sup>6</sup>

<sup>5</sup> Portland Code of Ordinances, Chapter 28, Section 28-2.

<sup>6</sup> Greenville, North Carolina [Traffic Calming Program](#).

# **11 Failed Traffic Calming Projects** **March, 2006**



**Traffic Calming Projects**  
 In Progress  
 Installed  
 Proposed  
 Failed  
 Failed / Installed

**Federal Road Classification**  
 Collector  
 Interstate  
 Minor Arterial  
 Other Principal Arterial

City Council District 1  
 City Council District 2  
 City Council District 3  
 City Council District 4  
 City Council District 5

#### 4. Failed Projects Installed

A total of 20 projects (all stop signs) did not meet the thresholds established for project eligibility or pass MUTCD warrant analysis, but were installed at the request of a City Councilor. This has created several problems. First, citizens have bypassed the petition process in order to speed up the process and perhaps install a device for which there may not be neighborhood support. Second, traffic devices are being installed that do not meet the thresholds established in the Traffic Calming Ordinance or meet warrant analysis. Finally, the proliferation of stop signs that did not meet warrant analysis has had a detrimental impact on PWD staff morale. Staff is trained to follow accepted standards for roadway design and the installation of traffic control devices as described in the *Manual for Uniform Traffic Control Devices (MUTCD)*<sup>7</sup>. This departure from “best practices” has created the perception that the process is more political than practical. Table 5, below, and Map 5, depicts these projects.

**Table 5**  
**Failed Traffic Calming Projects Installed**

<b>Project</b>	<b>Description</b>	<b>Dist</b>	<b>Device</b>
Bartley	Bartley @ Junior	5	Stop sign
Belmont St.	Belmont and Melrose	3	stop sign
Chestnut	Chestnut and Oxford	1	Stop sign
Curtis Rd	Entire length	5	stop signs
Deepwood Dr.	Deepwood and R. Brook	5	Stop sign
East Kidder	East Kidder @ Provid	4	Stop sign
Edgeworth Ave	Entire length	5	none
Edwards St.	Entire length	3	Original request 6/14/1999
Highland St.	Fairmont to Prospect	3	stop signs at one intersection
Lane	Lane and Pari Place	5	Stop sign
Leland	Leland and Richardson	5	Stop sign
Little Rd	Little and Starbird	3	Stop Sign
Madeline	Madeline and Fuller	5	Stop sign
Maine Ave.	Maine and Virginia	4	Stop sign
Marlborough	Marlborough @ Ivaloo	4	3-way stop installed via policy*
Pineloch Dr.	Pineloch & Heather	5	stop signs
Rustic Ln	Rustic @ Fall	5	Stop sign, petition 4/19/02
Virginia	Virginia @ Nevada	4	Stop sign request
Virginia	Virginia @ Penn Ave	4	Stop sign request
Westminster	Westminster @ Leeman	5	Stop sign request

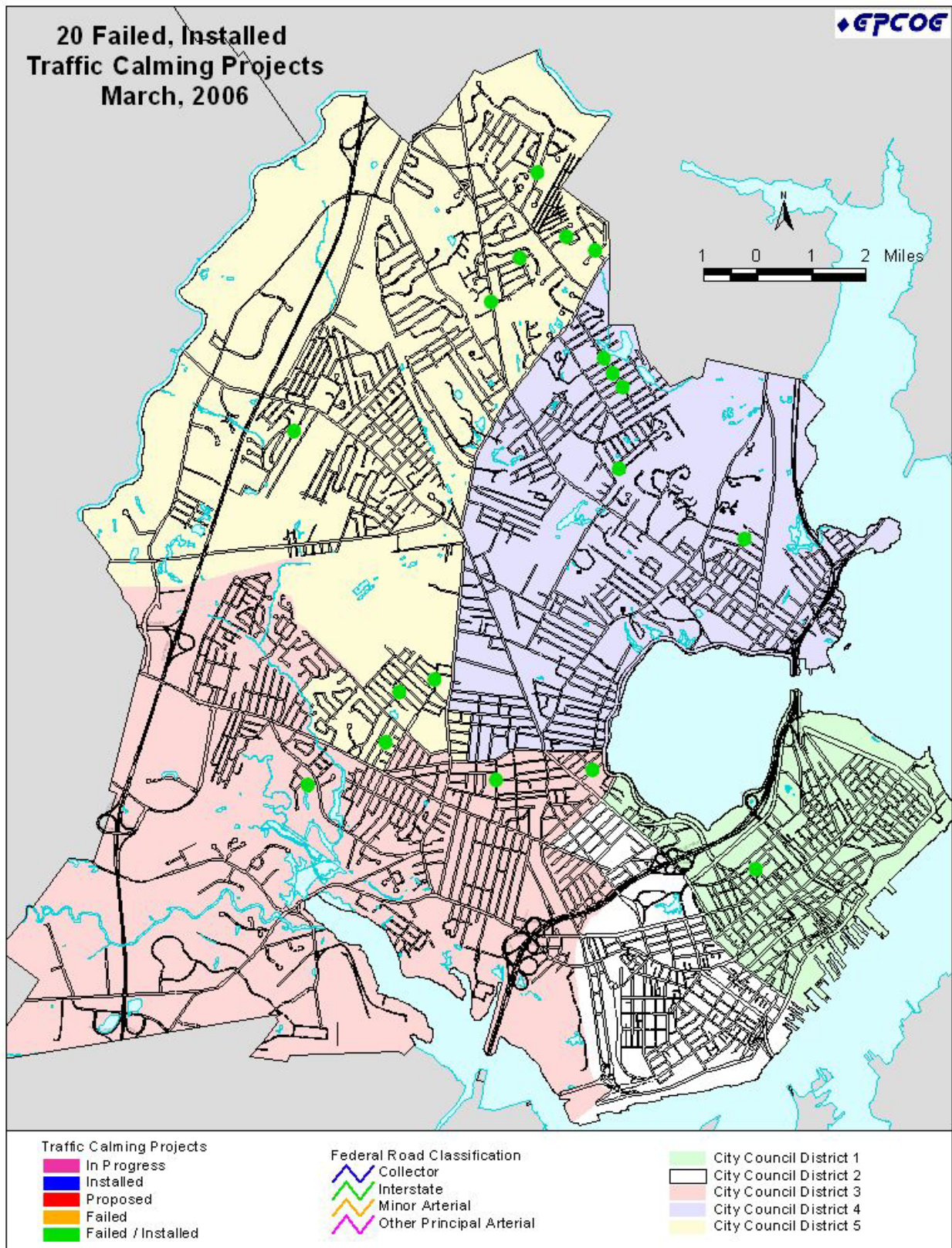
**Example from Case Studies: Stop sign installation will normally NOT be recommended:**

1. At mid-block locations.
2. Solely for the purpose of controlling vehicular speeds.
3. At locations where a stop would create a high likelihood of rear-end collisions.
4. On major arterials or thoroughfares.
5. At locations where yield signs will provide adequate control without requiring full stops.
6. At railroad crossings.<sup>8</sup>

<sup>7</sup> An excerpt from the MUTCD describing multi-way stop sign standards can be found in the Appendix

<sup>8</sup> Chapel Hill, NC Stop Sign Policy, 2005





## 5. Proposed Projects

At this writing, a total of 28 traffic calming projects have not been reviewed and are still considered proposed. Most of these are stop sign requests. See Table 6, below and Map 6 on the following page:

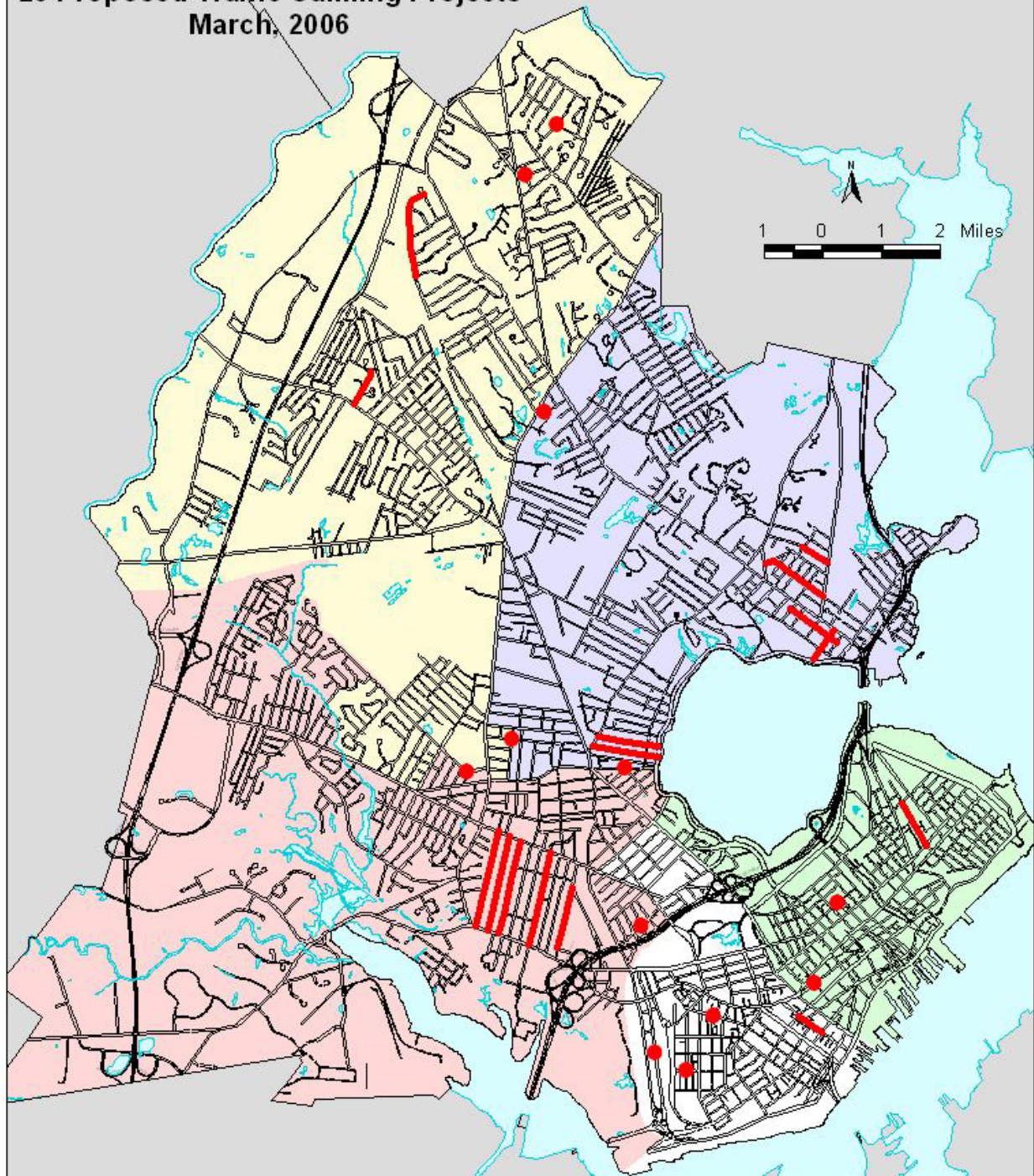
**Table 6**  
**Proposed Traffic Calming Projects**

<b>Project</b>	<b>Description</b>	<b>Dist</b>	<b>Device</b>
Abby Lane	at Pamel Rd	5	Stop sign request
Brackett St.	Brackett and Neal	3	Stop sign request, petition 1/12/04
Bradley		3	Congress to Brighton
Caleb St.		3	
Chadwick	Chadwick & Carroll	2	Stop sign request
Codman	study done	4	study done
Concord	Concord and Lawn Ave	4	Stop sign request
Craigie	Petition - Traffic Calming	3	Petition for traffic calming
Douglas	St. James to West Sch	3	Petition for traffic calming
Frances St.	Congress and Brighton	3	
Free St.	Free @ Oak	1	Stop sign request
Gilman St	Congress to MMC	2	
Granite	Granite @ Dean	3	Stop sign request
Hersey St.		4	speed bumps proposed
Illsley St.		4	
Knight Street	Maplewood @ Knight	4	Stop sign request
Ludlow St.	Ludlow @ Marlow	5	Stop Sign
Oxford St.	Oxford @ Stone	1	Stop sign request
Palmer Ave	Allison to Shepherd	5	none
Park St.	Spring to Danforth	2	
Providence	Lower E. Kidder to Presu	4	
Randall St.	Entire length	4	none
Sheridan St.	Walnut and Cumberland	1	
Sherwood St.	Ocean to Presumpscot	4	4-way stops proposed
Stuart St.	Entire length	5	none
Valley St.	Valley and "D" Street	2	On hold
Whitney Ave	Entire length	3	speed tables requested
Woodford	Woodford @ Melrose	3	Stop sign request

The proposed projects depicted on Map 6 (next page) illustrate several patterns of traffic calming requests based on past installed projects. First, citizens are requesting more streets between Brighton Avenue and Congress Street be candidates for speed platforms. Second, new projects are being proposed on the Portland peninsula in District 1. Third, more projects are being requested between Washington Avenue and Presumpscot Street, and between Washington Avenue and Baxter Boulevard. These patterns confirm the fact that residents are using local streets to create shortcuts between principal arterial roadways.



# 28 Proposed Traffic Calming Projects March, 2006



**Traffic Calming Projects**  
 In Progress  
 Installed  
 Proposed  
 Failed  
 Failed / Installed

**Federal Road Classification**  
 Collector  
 Interstate  
 Minor Arterial  
 Other Principal Arterial

City Council District 1  
 City Council District 2  
 City Council District 3  
 City Council District 4  
 City Council District 5

### III. Findings and Recommendations

A total of 83 projects have been either installed or proposed in Portland and they represent primarily stop signs and speed platforms. Staff shortages in the Traffic Division have resulted in delayed projects and long waiting periods for citizen petition requests. City Councilors have become more involved in traffic calming requests, leading to new ways of requesting projects and departures from the engineering standards set forth in Chapter 28 “Traffic and Motor Vehicles” of the Portland Code of Ordinances. In particular, stop signs have been installed that do not meet the thresholds established in the ordinance and do not meet MUTCD warrant analysis.<sup>9</sup> The following findings and recommendations are intended to address this growing problem of traffic control, roadway design and the overall traffic calming process.

A. Traffic Calming Ordinance. The Portland traffic calming ordinance in its current form is serving its intended purpose by ensuring strong citizen support for traffic calming measures. However, staff shortages have delayed the administration of the petition process. These delays have resulted in citizens turning to city councilors for more immediate solutions to the perceived problems of excessive speed and cut-through traffic. During the time that this study has been conducted, City Officials have approved the installation of traffic control devices in lieu of requesting a traffic calming plan through the petition process set forth in the ordinance. .



1. Install traffic calming devices only if they meet the thresholds established in the ordinance and meet MUTCD warrant analysis.
2. Develop a separate stop sign policy. An example from Chapel Hill, NC, can be found in Appendix. Excerpts from selected U.S. Cities are presented below:
  - a. Deny requests for mid-block stop signs (Chapel Hill, NC).
  - b. Deny multi-way stops if they are within 800 feet of another intersection having stop control (Greenville, NC).
  - c. Deny multi-way stops when the side street is less than 400 feet in length (Greenville, NC.)
  - d. Install temporary measures for 3-4 months (Charlottesville, NC).
  - e. Use speeds of the 85<sup>th</sup> percentile equal to or greater than 10 miles over the posted speed limit.<sup>10</sup> (Greenville, NC).

<sup>9</sup> MUTCD=Manual of Uniform Traffic Control Devices, 2003 Edition.

<sup>10</sup> The Portland Ordinance uses speeds of the 85<sup>th</sup> percentile equal to or greater than the posted speed limit.

3. Publish a compendium of *Traffic Calming Best Practices* and post on the City Web Site or provide links to traffic calming resources on line to educate citizens and to illustrate different types of traffic calming devices.
4. Remove principal arterials and minor arterials as eligible roadways for traffic calming.<sup>11</sup>
5. Accident history is referenced as part of the traffic calming analysis on p.22 of the Code of Ordinances, but not referenced as part of the thresholds for a traffic calming plan on p.27.

B. Transportation Plan. Traffic calming projects should be installed in the context of the *Portland Transportation Plan*.<sup>12</sup> Traffic “calming” in one area of the city may have an adverse impact on another area. Traffic calming measures should be considered in conjunction with other traffic and streetscape improvements, including the placement of bus stops, sidewalk improvements and landscaping. Urban planning, street design and the shaping of neighborhoods involves more than the installation of devices to slow or deter traffic in residential neighborhoods. The whole design of the street is part of the design of the space that includes residential and commercial buildings, places to walk, landscaping and other elements.

1. Update the *Portland Transportation Plan* to include traffic calming.
2. Conduct an annual traffic calming review to increase public awareness and ensure new projects are consistent with the *Portland Transportation Plan*.
3. Coordinate traffic calming projects with other transportation improvements, including sidewalks, traffic signals, streetscapes and bus stops.

C. Staffing. Throughout this study, the delays in processing traffic calming requests have been exacerbated by a shortage of staff. The Traffic Division has suffered since the loss of the City Traffic Engineer. Traffic calming requests have been addressed only after the day-to-day problems have been solved and the on-going maintenance and operational issues have been addressed. The PWD hired Wilbur Smith & Associates to provide engineering analysis during this staff shortage. During this whole process, City Officials have modified the traffic calming petition process, particularly with regard to stop sign installations. The political nature of this process and departures from the thresholds and standards set forth in the traffic calming ordinance and the MUTCD have had a detrimental effect on staff morale.

1. Dedicate appropriate staff to handle the petition process, traffic calming proposals and questions from City Officials.
2. Coordinate the annual review of sidewalk and streetscape projects with traffic calming projects.

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<sup>11</sup> Note: Capasic St. was recently re-classified as a minor arterial – this should be re-evaluated with MaineDOT.

<sup>12</sup> The *Portland Transportation Plan* was published in 1993.

# Appendix A

City of Portland  
Code of Ordinances  
Sec. 28-3

Traffic and Motor Vehicles  
Chapter 28  
Rev. 2-17-05

## ARTICLE VI. TRAFFIC CALMING.

### Sec. 28-250. Statement of Purpose.

The purpose of this Ordinance is to set forth a specific procedure and methodology for: citizen or council requested traffic calming plans; determining that a problem exists and the need for traffic calming devices to solve it; selecting the proper device or devices to correct the problem; and monitoring the effectiveness and impact of installed devices on traffic on both the subject street and abutting streets. The Ordinance shall be interpreted and applied in a manner that is consistent with the City of Portland's Transportation Plan.  
(Ord. No. 234-99, 3-29-99)

### Sec. 28-251. Definitions.

(a) "City Manager" means the City Manager or the Manager's designee.

(b) "Public Works Director" means the Public Works Director or the Director's designee.

(c) "Street" means a city-accepted street or a portion of such a street.

(d) "Resident" means a person at least 18 years of age who lives in a dwelling unit that is the person's principle place of living or home.  
(Ord. No. 234-99, 3-29-99)

Sec. 28-252. Petition or request for determination of preliminary eligibility.

(a) Petition procedure. Any ten or more residents or business owners on a specific City street may file a petition with the City Clerk on a form supplied by the Clerk a petition stating:

- (1) That the signers are at least 18 years of age and residents or business owners on the specific street;
- (2) The printed names and addresses of the person signing the petition and the person's signature;

- (3) The address and name of the individual to whom all notices or correspondence to the petitioners are to be sent;
- (4) That the signators of the petition seek a determination of preliminary eligibility for traffic calming from the City's Traffic Engineer for a specified street.

(b) Forwarding of Petition. Copies of the petition shall be sent forthwith by the Clerk to the City's Traffic Engineer and to each member of the City Council.

(c) Councilor Initiated Process. Any City Councilor may file a written request with the Clerk seeking a determination of preliminary eligibility from the City's Traffic Engineer for a specified street. That request will initiate the process for the determination of preliminary eligibility of such street. Copies of the request shall be sent forthwith by the Clerk to the City's Traffic Engineer and to each member of the City Council. The request may designate a person or persons to whom notices or decisions shall be sent that would otherwise be sent to petitioners. In the absence of such a designation, all such notices or decisions shall be sent to the Councilor.

(Ord. No. 234-99, 3-29-99; Ord. No.198-03/04, 6-7-04)

Sec. 28-253. Action by City Traffic Engineer upon receipt of petition or request seeking determination of preliminary eligibility.

(a) Upon receipt of a petition from the Clerk or a written request from a Councilor, the Traffic Engineer shall determine whether the street is in a category identified in Sec. 28-264 as eligible for traffic calming.

(b) If the street is in a category eligible for traffic calming, pursuant to paragraph (a), the Traffic Engineer shall send a written inquiry to the Chief of Police, the Chief of the Fire Department, the Director of MEDCU, and the Director of Public Works asking whether there are public safety or convenience factors which render the petitioned street inappropriate for traffic calming.

(c) The Traffic Engineer shall make a determination as to whether the street is eligible for traffic calming. As part of the analysis, the Traffic Engineer shall consider the speed, volume, and accident history of the street. A street shall be deemed eligible for traffic calming if it is in a category for which traffic calming is appropriate as identified in Sec. 28-265 and the designated departments conclude that traffic calming could take place in a manner consistent with public safety and convenience.

(d) The Traffic Engineer shall notify the petitioners in writing sent by regular mail, whether the street is eligible or ineligible for traffic calming within forty-five (45) days of receiving the petition from the City Clerk. If the street is ineligible, the decision must state the reasons for the determination. A copy of such notice shall be provided to each Councilor residing within the district where the street is located.

(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)



Sec. 28-254. Appeal of decision of ineligibility following petition for determination of preliminary eligibility.

(a) If the determination by the Traffic Engineer under Section 28-253(c) is that the street is ineligible because the street is not in a category that is eligible for traffic calming, the determination may not be appealed.

(b) If the street is determined ineligible by the Traffic Engineer under section 28-253(c) due to public safety or convenience factors identified by one or more of the officials designated to review the petition, the petitioners may appeal the decision to the City Manager or designee within twenty (20) days of the date upon which the decision is mailed to the petitioners under section 28-253(d). Any such appeal must be in writing and must state the grounds upon which the appealing petitioners disagree with the public safety or convenience determination. The City Manager or designee shall hold a hearing within ten (10) business days of receiving the written appeal and shall issue a written decision within twenty (20) days of the hearing unless either time period is extended by agreement. In the event the City Manager or designee overturns a decision on ineligibility for traffic calming, a street shall be deemed eligible for traffic calming. The decision of the Manager or the Manager's designee may not be appealed to court.

For the purpose of this ordinance, "convenience factors" means factors that would adversely affect the ability of the traveling public to use a street, would interfere with construction or maintenance activities on the street, or would divert an unreasonable amount of traffic to other streets. (Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-255. Development of traffic calming plan.

Within forty-five (45) days after a final determination that a petitioned street is eligible for traffic calming, the Traffic Engineer will develop a proposed traffic calming plan for the particular street which may integrate several traffic calming methods and options as set forth in section 28-265(b). In developing a plan, the Traffic Engineer shall consider the potential for traffic diversion and other possible impacts on the broader neighborhood in which the street is located, as well as other related public safety and convenience factors that may result from particular traffic calming measures. The Traffic Engineer will submit the proposed traffic calming plan and any options in writing to the Director of Public Works, and any Councilor residing in the district of such street, for review and comment prior to issuing a final traffic calming plan. (Ord. No. 198-03/04, 6-7-04)

Sec. 28-256. Neighborhood Meeting

The Traffic Engineer will hold a public hearing in or near the neighborhood affected by the proposed traffic calming plan within forty (40) days after issuing the proposed plan. Notice of the hearing shall be published in a newspaper having general circulation in the City at least ten (10) business days prior to the hearing. In addition, a notice of the hearing shall be mailed by regular mail to each petitioner, to the head of all residential households, and businesses on the petitioned street and within

five hundred (500) feet of the petitioned street and to the president or designated representative of any area Neighborhood Association. The failure of an individual or entity to receive the notice of Public Hearing shall have no effect on the process or decision on traffic calming. At the meeting the Traffic Engineer will explain the proposed plan and options and take a vote on them of those in attendance who claim to be age 18 or older and who reside or who have a business on the petitioned street and announce the results. The results shall be advisory only to the Traffic Engineer. Following the meeting, the Traffic Engineer will issue a final plan within thirty (30) days and mail a copy by certified mail return receipt requested to the petitioners, the City Manager, and to any Councilor residing in the district where the street is located. (Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-257. Petition approving traffic calming plan.

(a) In all zones except the R-4 and R-6 zones, following receipt from the Traffic Engineer of a final traffic calming plan, the plan shall be classified as approved if a petition accepting the plan is filed with the City Clerk containing a number of signatures of residents and business owners on the petitioned street who are eighteen (18) years of age or older equal to or exceeding sixty percent (60%) of the base number applicable to that zone.

(b) In the R-4 and R-6 zones, following receipt from the Traffic Engineer of a final traffic calming plan, the plan shall be classified as approved if a petition accepting the plan is filed with the City Clerk containing a number of signatures and residents and business owners on the petitioned street who are eighteen (18) years of age or older equal to or exceeding fifty one percent (51%) of the base number applicable to that zone.

(c) The petition process in (a) or (b) must be initiated within ninety (90) days of the date of mailing of the traffic calming plan.

(d) The petitioners shall follow the process established in Section 9-36(c) of this Code and the Clerk shall provide the petitioners with appropriate petition forms pursuant to that Section except that the Clerk shall have twenty (20) days to prepare the petition forms to be circulated. Prior to providing the forms the Clerk shall verify the number of dwelling units on the street and the base number for the purpose of establishing the number of signatures needed for a petition. The Clerk shall inform the Petitioners' Committee in writing of both numbers. In all zones except the R-4 and R-6 zones, the base number shall equal the number of dwelling units multiplied by one and one-half (1.5). In the R-4 and R-6 zones, the base number shall equal the number of dwelling units multiplied by one. The one and one-half (1.5) multiplier shall apply to any traffic calming petitions with a filing deadline on or after May 1, 2003.

(e) The petition shall be circulated, filed and processed pursuant to Section 9-36(c) and (d) except that the petitioners shall have 120 calendar days to circulate the petition and file it.

(f) The petition shall be verified pursuant to the process in Section 9-36(e) with the additional requirement that the Clerk's Certificate of Sufficiency shall be sent to the City Traffic Engineer as well as to the City

Council. In verifying the petition the Clerk shall only have to verify that it contains the necessary number of signatures and is timely filed.

(Ord. No. 234-99, 3-29-99; Ord. No. 21 03/04, 7-21-03; Ord. No. 198-03/04, 6-7-04)

Sec. 28-258. Financing traffic calming plans.

(a) Approved traffic calming plans under section 28-257 shall be submitted to the City Council for financing in accordance with subsections (b) and (c).

(b) The cost of traffic calming plans approved by petitioners shall be included by the Director of Public Works with the Department's annual CIP budget requests in the same manner that funding is requested for sidewalk work.

(c) In its preparation of the annual City budget and Capital Improvement Program, the City Council may provide such funding for traffic calming projects as it deems appropriate. Funds allocated for traffic calming shall be disbursed on a District basis in the same manner that sidewalk funds are disbursed.

(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-259. Elimination or modification of traffic calming plan.

(a) After six (6) months from the date on which a traffic calming plan was installed or implemented, any ten or more residents or business owners on a specific City street or a City Councilor may file a written petition or request to eliminate or modify the traffic calming plan with the City Clerk. The petition or request shall meet the requirements of Sec. 28-252.

(b) If at any time following the installation of a traffic calming plan the Public Works Director or the Director's designee determines that such measure is creating a hazard to public health and safety, the Public Works Director may take immediate steps to remove or modify a traffic calming plan accordingly. There is no right to appeal such a determination; however, further modifications to a traffic calming plan on such affected street may be undertaken as provided in section 28-258.

(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-260. Process following filing of petition or request for elimination or modification of a traffic calming plan.

(a) Following receipt of a petition or a written request from a councilor for the elimination or modification of a traffic calming plan that has been forwarded by the Clerk, the Traffic Engineer will call and conduct a neighborhood meeting on that issue pursuant to Sec. 28-256.

(b) Following the neighborhood meeting, the Traffic Engineer will issue a written decision regarding the elimination or modification of a traffic calming plan and file it with the Clerk who shall forward copies forthwith to the petitioners and each member of the City Council.

(c) If the decision of the Traffic Engineer calls for the elimination or modification of the traffic calming plan, the decision shall go into effect if a petition is filed and certified following the process established in §28-257, that supports the decision and that contains the signatures of fifty one percent (51%) or more of the residents and business owners on the same street that was the subject of the traffic calming plan, regardless of the zone where the street is located.

(d) If the decision of the Traffic Engineer is to leave the traffic calming plan in place, the decision may be appealed by the petitioners or any ten residents or business owners, age eighteen (18) or over, who reside or have a business on the petitioned street pursuant to Sec. 28-257. If the appeal is successful, the appellants must follow the petition process in (c) above in order to eliminate or modify the traffic calming plan.  
(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-261. Funding for elimination or modification of traffic calming plans.

Funding for the elimination of traffic calming plans shall be done in accordance with Sec. 28-258.  
(Ord. No. 234-99, 3-29-99)

Sec. 28-262. Installation of traffic calming devices.

(a) The physical installation of traffic calming devices shall be consistent with the traffic calming plan approved by the Traffic Engineer. The associated traffic control devices must conform to design standards established by the Traffic Engineering Department.  
(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-263. Limitation on petitions or requests.

The same street or one that is substantially the same may not be the subject of a petition or request for a traffic calming plan for a period of two (2) years from the date of a final decision rejecting or denying a plan pursuant to Sec. 28-253. If a plan is implemented, a petition or request to eliminate or modify it cannot be initiated for six (6) months from the date on which the plan is in place. If a plan is eliminated, a petition or request to implement a plan cannot be initiated for two (2) years from the date on which the elimination was complete.  
(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-264. Street categories for determining preliminary eligibility.

(a) Streets eligible for traffic calming.

- (1) Principal arterials, minor arterials and collector streets as defined in the Federal Classification system and shown on a map on file in the Clerk's Office and the Public Works Office.
- (2) Local streets: a street that is in a zone that permits residential dwelling units and on which seventy five (75%)

percent or more of the abutting properties have residential structures.

(b) Streets not eligible for traffic calming.

(1) Limited access freeways and expressways that are part of an Interstate System as defined in the Federal Classification System.

(2) Streets that score less than 200 points on the threshold eligibility table in Sec. 28-265(a).

(Ord. No. 234-99, 3-29-99)

Sec. 28-265. Tables.

(a) Thresholds for traffic calming plan.

Threshold	Criteria	Max. Pts.
Volume	Vehicles per day X .05	100 pts.
Speed Warrant	(85 <sup>th</sup> percentile speed- Posted Speed Limit)	100 pts.
Children	1 pt./child for each child less than 12 years of age living on street (75 max.) 25 pts. For school on the street	100 pts.
Heavy Vehicles (HVPD)	2 pts. For each heavy vehicle defined as 2 axle-6 tire and larger. Applicable only to residential streets	100 pts.
Residential Density	75% - 25 pts. 80% - 30 pts. 85% - 35 pts. 90% - 40 pts. 95% - 45 pts. 100% - 50 pts.	50 pts.
	Total Points (max.)	450 pts.

Minimum of 200 pts. Required to qualify for traffic calming.



(b) Guidelines for use of traffic calming devices.

Type of Road	Description of Problem	Potential Solution (In Order of Preference)
Local/collector	Speed	Review speed limit
		Review or modify stop sign locations
		Check warrants for traffic signals
		Neighborhood watch
		Road humps
		Speed tables
		Colored paving/textured paving
		Raised intersections
		Medians
		Curb extensions or vegetation
		Traffic circle/roundabout
	Cut-through traffic	Review or modify stop sign locations
		One way streets
		Road humps
		Speed tables
		Turn or entry prohibited
	Pedestrian Safety	Check warrants for traffic signals
		Colored and textured paving
		Barrels
		Raised crosswalk
		Curb extensions
		Medians
		Raised intersection
		One way street
		Traffic circles/roundabout
		Turn or entry prohibited
Arterial	Speed	Review Speed limit
		Review or modify stop sign locations
		Check warrants for traffic signals
		Medians, curb extensions, or vegetation
	Cut-through traffic	Review or modify stop sign locations
		One way streets
		Turn or entry prohibited
	Pedestrian safety	Check warrants for traffic signals
		Barrels
		Medians
		One way streets

(Ord. No. 234-99, 3-29-99; Ord. No. 198-03/04, 6-7-04)

Sec. 28-266. Applicability.

This Ordinance shall not apply to any traffic calming projects implemented before the effective date of this Ordinance.

(Ord. No. 234-99, 3-29-99)

# Appendix B

## Portland Traffic Calming Projects

### Existing Conditions

#### Traffic Calming Project Status

<b>Project Status</b>	<b>Number</b>
Installed	19
In progress	5
Failed	11
Failed, installed	20
Proposed	28
<b>Total Projects</b>	<b>83</b>

Portland Traffic Calming Projects by Status										
Monday, January 09, 2006										
ID	Status	Project	Description	Dist	Device	How	Requested	Installed	Notes	
1	Installed	Baxter/Vannah	intersection	4	traffic signal	P			Study done	
36	installed	Bolton St	Entire length	3	3 speed tables installed	P			pre-ordinance	
37	installed	Capisic St	Entire length	3	3 speed tables - circles	P			circles to tables	
38	installed	Colonial Rd	Entire length	3	stop signs	P	6/1/1999	9/9/2003	Colonial/Rockland	
39	installed	Columbia Rd	Entire length	3	small islands, stops signs	P	3/27/2002	9/9/2003	Gay and Leeman	
40	installed	Deering Ave	Deering @ Coyle	3	4-way flasher installed, removed	P			Petition no flasher	
41	installed	Emery St.	Pine to Spring	2	Added on-street parking	P	9/30/1999	9/27/2001	On street parking	
42	installed	Falmouth St.	Falmouth @ Exeter	3	stop signs	P	8/20/2002	4/1/2003		
43	installed	Hennessy	Entire length	5	3 speed tables, 2 remain				pre-ordinance	
44	installed	Jackson St.	Entire length	5	stop signs and circle	P	5/1/2001	7/1/2002	Jackson/Kenneth	
45	installed	Mass Ave.	Entire length	3	3 speed tables installed	P	11/29/2001	11/17/2004	installed fall 2004	
46	installed	Ray St	Ray @ Merrymeeting	4	stop signs	P	4/1/2001	6/26/2002		
47	Installed	Ray St.	Maine to Ivaloo	4	speed tables installed	P	7/1/1999	7/1/2000	Speed tables	
48	installed	Stevens	Forest to Woodford	5	6 speed tables installed			10/1/1997	10/1/1997, pre-ord	
85	Installed	Falmouth St.	Falmouth @ Payson	3	stop signs	P	8/20/2002	4/1/2003		
86	installed	Ray St.	Ray @ Penn	4	stop signs	P	4/1/2001	6/26/2002		
49	removed	Summit St.	Washington-Lambert	5	temporary island installed				no further action	
2	Streetscape	Washington	Allen's Corner - R-side	5	Raised islands					
3	Streetscape	Woodford St.	Brighton and Stevens	3	reconstruction, narrowing				In progress	
50	in progress	Brentwood St	Entire length	5	none	5			review # children	
51	in progress	Dartmouth St.	Deering to Forest	3	4-way stop proposed	3	6/11/2003		qualifies, no action	
52	in progress	Maine Ave.	Washington to Ray	4	speed tables proposed	4			awaiting Capisic	
53	in progress	Presumpscot	Washington to True	4	school streetscapes completed	4			petition status ?	
54	in progress	Summit St.	Bramblewood to Abby	5	concept plan in progress	5			now safety	
5	failed	Elm	Elm and Oxford	1	Stop sign request		2/10/2004			
55	failed	Alpine Rd	Entire length	5	none		10/1/2002		did not qualify	
56	failed	Clifton St	Vannah to Forest	3	none		5/11/2001		did not qualify	
57	failed	Cypress St	Entire length	5	none		3/25/2001			
58	failed	Eastman Ave	Entire length	5	none		7/24/2003		vocal group	
61	failed	Montrose Ave.	Entire length	3	none	P	7/18/2001			
62	failed	Newton	Entire length	5	none		4/1/2001			
64	failed	Prospect St.	Deering to Beacon	3	none		4/17/2001			
65	failed	Stone	Entire length	1	none		7/21/2003			
4	failed	Elm	Elm and Lancaster	1	Stop sign request, signal?		12/19/2003			

63	failed	Pennell Ave.	Entire length	5	none				cut-through traffic	
18	Failed installed	Marlborough	Marlborough @ Ivaloo	4	3-way stop installed via policy*		7/1/2003	9/29/2005		
6	failed, installed	Bartley	Bartley @ Junior	5	Stop sign	C	8/1/2005	10/11/2005		
7	failed, installed	Belmont St.	Belmont and Melrose	3	stop sign	P/C	7/1/2004	8/20/2004	two petitions	
8	failed, installed	Chestnut	Chestnut and Oxford	1	Stop sign	MGR	2/10/2004	6/30/2004		
9	failed, installed	Curtis Rd	Entire length	5	stop signs	C	7/30/2003	9/30/2003	Curtis/Abby	
10	failed, installed	Deepwood Dr.	Deepwood-R. Brook	5	Stop sign	C	6/23/2003	7/21/2003		
11	failed, installed	East Kidder	East Kidder @ Provid	4	Stop sign	C	?	11/19/2004		
12	failed, installed	Lane	Lane and Pari Place	5	Stop sign	C	8/1/2005	9/27/2005		
13	failed, installed	Leland	Leland and Richardson	5	Stop sign	C	9/1/2005	11/8/2005		
14	failed, installed	Little Rd	Little and Starbird	3	Stop Sign	P	9/1/2004			
16	failed, installed	Madeline	Madeline and Fuller	5	Stop sign	C	9/1/2005	10/17/2005		
17	failed, installed	Maine Ave.	Maine and Virginia	4	Stop sign	P/C	7/25/2005	9/27/2005		
19	failed, installed	Pineloch Dr.	Pineloch & Heather	5	stop signs	C	7/30/2003	9/15/2003		
20	failed, installed	Rustic Ln	Rustic @ Fall	5	Stop sign, petition 4/19/02	C	9/1/2005	10/11/2005		
21	failed, installed	Virginia	Virginia @ Nevada	4	Stop sign request	C	10/1/2005	11/7/2005		
22	failed, installed	Virginia	Virginia @ Penn Ave	4	Stop sign request	C	10/1/2005	11/7/2005		
33	failed, installed	Westminster	Westminster-Leeman	5	Stop sign request	C	11/1/2005	12/1/2005		
59	failed, installed	Edgeworth	Entire length	5	none	P	7/1/2002	10/22/2001	stop signs	
60	failed, installed	Edwards St.	Entire length	3	Original request 6/14/1999	P	7/1/2002	11/25/2003	stop signs	
66	failed, installed	Highland St.	Fairmont to Prospect	3	stop signs at one intersection	P/C	7/9/2003	7/1/2004	Highland/Fairmont	
23	proposed	Brackett St.	Brackett and Neal	3	Stop sign request, petition 2004	P	12/1/2004			
24	proposed	Chadwick	Chadwick & Carroll	2	Stop sign request		11/1/2005			
25	proposed	Concord	Concord and Lawn Ave	4	Stop sign request		9/1/2005			
26	Proposed	Douglas	St. James to West Sch	3	Petition for traffic calming	P	9/28/2005			
27	proposed	Craigie	Traffic Calming	3	Petition for traffic calming	P	7/22/2005			
28	proposed	Knight Street	Maplewood @ Knight	4	Stop sign request	C	11/1/2005			
15	failed, installed	Ludlow St.	Ludlow @ Marlow	5	Stop Sign	P	1/1/1999	?	parking and issues	
29	proposed	Free St.	Free @ Oak	1	Stop sign request	Cit	11/1/2005			
30	proposed	Oxford St.	Oxford @ Stone	1	Stop sign request	Cit	11/1/2005			
31	proposed	Providence	Lower E. Kidder to Pres	4			9/6/2005			
32	proposed	Valley St.	Valley and "D" Street	2	On hold	Cit	2/12/2004			
34	proposed	Whitney Ave	Entire length	3	speed tables requested					
35	proposed	Woodford	Woodford @ Melrose	3	Stop sign request		9/14/2004			
69	proposed	Caleb St.		3			6/11/2004			
70	proposed	Frances St.	Congress and Brighton	3		P	9/26/2003			
71	proposed	Gilman St	Congress to MMC	2			3/14/2002		petition submitted	

72	Proposed	Granite	Granite @ Dean	3	Stop sign request		9/1/2005			
73	proposed	Hersey St.		4	speed bumps proposed		9/5/2000		cut through	
74	proposed	Illsley St.		4			7/1/2004			
76	proposed	Palmer Ave	Allison to Shepherd	5	none				counts were done	
77	proposed	Park St.	Spring to Danforth	2			10/12/2004			
78	proposed	Randall St.	Entire length	4	none		10/9/2001			
79	proposed	Sheridan St.	Walnut-Cumberland	1			4/19/2005		speeding	
80	proposed	Sherwood St.	Ocean to Presumpscot	4	4-way stops proposed				2002 data collected	
81	proposed	Stuart St.	Entire length	5	none				data collected 2001	
82	proposed	Codman	study done	4	study done		1998			
83	proposed	Bradley		3	Congress to Brighton		11/1/2004			
84	proposed	Abby Ln	at Pamel Rd	5	Stop sign request		10/1/2005			



# **Appendix C**

## **Excerpt from**

### **Manual of Uniform Traffic Control Devices, 2003 Edition**

#### **Section 2B.07 Multi-way Stop Applications**

Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multilayer stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal. The restrictions on the use of STOP signs described in Section 2B.05 also apply to multi-way stop applications.

The decision to install multi-way stop control should be based on an engineering study. The following criteria should be considered in the engineering study for a multi-way STOP sign installation:

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. A crash problem, as indicated by 5 or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.
- C. Minimum volumes:
  - 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day, and
  - 2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour, but
  - 3. If the 85th-percentile approach speed of the major-street traffic exceeds 65 km/h or exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the above values.
- D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Other criteria that may be considered in an engineering study include:

- A. The need to control left-turn conflicts;
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless conflicting cross traffic is also required to stop; and
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

# Appendix D

## Multi-way Stops - The Research Shows the MUTCD is Correct!

W. Martin Bretherton Jr., P.E.(M)

### Abstract

*This paper reviewed over 70 technical papers covering all-way stops (or multi-way stops) and their success and failure as traffic control devices in residential areas. This study is the most comprehensive found on multi-way stop signs*

*The study looked at how multi-way stop signs have been used as traffic calming measures to control speed. There have been 23 hypotheses studied using multi-way stop as speed control. The research found an additional 9 hypotheses studied showing the effect multi way stops have on other traffic engineering problems.*

*The research found that, overwhelmingly, multi-way stop signs do NOT control speed except under very limited conditions. The research shows that the concerns about unwarranted stop signs are well founded.*

### Introduction

Many elected officials, citizens and some traffic engineering professionals feel that multi-way stop signs should be used as traffic calming devices. Many times unwarranted stop signs are installed to control traffic. The Manual on Uniform Traffic Control Devices (MUTCD)(16) describes warrants for installing multi-way stop signs. However, it does not describe many of the problems caused by the installation of unwarranted stop signs. These problems include concerns like liability issues, traffic noise, automobile pollution, traffic enforcement and driver behavior.

This paper is a result of searching over 70 technical papers about multi-way stop signs. The study concentrated on their use as traffic calming devices and their relative effectiveness in controlling speeds in residential neighborhoods. The references found 23 hypotheses on their relative effectiveness as traffic calming devices. One study analyzed the economic cost of installing a multi-way stop at an intersection. The reference search also found 9 hypotheses about traffic operations on residential streets.

The literature search found 85 papers on the subject of multi-way stops. There are probably many more references available on this very popular subject. The seventy-one references are shown in Appendix A. There was a problem finding the 14 papers found in literature searches. The 14 papers are listed in Appendix

B for information only. Most of the papers were from old sources and are probably out of print.

### **Multi-Way Stop Signs as Speed Control Devices**

A summary of the articles found the following information about the effectiveness of multi-way stop signs and other solutions to controlling speeds in residential neighborhoods.

1. Multi-way stops do not control speeds. Twenty-two papers were cited for these findings. ( Reference 1, 2, 7, 8, 10, 12, 13, 14, 15, 16, 17, 19, 20, 39, 45, 46, 51, 55, 62, 63, 64, 66 and 70).
2. Stop compliance is poor at unwarranted multi-way stop signs. Unwarranted stop signs means they do not meet the warrants of the MUTCD. This is based on the drivers feeling that the signs have no traffic control purpose. There is little reason to yield the right-of -way because there are usually no vehicles on the minor street. Nineteen references found this to be their finding. ( Reference 7, 8, 10, 12, 13, 14, 15, 17, 19, 20, 39, 45, 46, 51, 55, 61, 62, 63 and 64 ).
3. Before-After studies show multi-way stop signs do not reduce speeds on residential streets. Nineteen references found this to be their finding. (Reference 19 (1 study), 55 (5 studies), 60 (8 studies) and 64(5 studies)).
4. Unwarranted multi-way stops increased speed some distance from intersections. The studies hypothesizing that motorists are making up the time they lost at the "unnecessary" stop sign. Fifteen references found this to be their finding.( Reference 1, 2, 7, 8, 10, 13, 14, 17, 19, 20,39, 45,46, 51, 55, 70 and 71).
5. Multi-way stop signs have high operating costs based on vehicle operating costs, vehicular travel times, fuel consumption and increased vehicle emissions. Fifteen references found this to be their finding. (Reference 3, 4, 7, 8, 10, 14, 15, 17, 45, 55 ,61, 62, 63, 67 and 68).
6. Safety of pedestrians is decreased at unwarranted multi-way stops, especially small children. It seems that pedestrians expect vehicles to stop at the stop signs but many vehicles have gotten in the habit of running the "unnecessary" stop sign. Thirteen references found this to be their finding. (References 7, 8, 10, 13, 14, 15, 17, 19, 20, 45, 51, 55 and 63).
7. Citizens feel "safer" in communities "positively controlled" by stop signs. Positively controlled is meant to infer that the streets are controlled by unwarranted stop signs. Homeowners on the residential collector feel safer on a 'calmed' street. Seven references found this to be their finding. (Reference 6, 14, 18, 20, 51, 58 and 66).  
Hypothesis twelve (below) lists five references that dispute the results of these studies.
8. Speeding problems on residential streets are associated with" through" traffic. Frequently homeowners feel the problem is created by 'outsiders'. Many times the problem is the person complaining or their neighbor. Five references found this to be their finding. (References 2, 15, 45, 51 and 55).

9. Unwarranted multi-way stops may present potential liability problems for undocumented exceptions to accepted warrants. Local jurisdictions feel they may be incurring higher liability exposure by 'violating' the MUTCD. Many times the unwarranted stop signs are installed without a warrant study or some documentation. Cited by six references. (Reference 7, 9, 19, 46, 62 and 65).

10. Stop signs increase noise in the vicinity of an intersection. The noise is created by the vehicle braking noise at the intersection and the cars accelerating up to speed. The noise is created by the engine exhaust, brake, tire and aerodynamic noises. Cited by five references. (Reference 14, 17, 20, 45, 55).

11. Cost of installing multi-way stops are low but enforcement costs are prohibitive. many communities do not have the resources to effectively enforce compliance with the stop signs. Five references found this to be their finding. (Reference 1, 10, 45, 51, 55 ).

12. Stop signs do not significantly change safety of intersection. Stop signs are installed with the hope they will make the intersection and neighborhood safer. Cited by five references. (Reference 55, 60, 61, 62, 63).

Hypothesis seven (above) lists seven references that dispute the results of these studies.

13. Unwarranted multi-way stops have been successfully removed with public support and result in improved compliance at justified stop signs. Cited by three references. (Reference 8, 10, 12).

14. Unwarranted multi-way stops reduce accidents in cities with intersection sight distance problems and at intersections with parked cars that restrict sight distance. The stop signs are unwarranted based on volume and may not quite meet the accident threshold. Cited by three references. (Reference 6, 18, 68).

15. Citizens feel stop signs should be installed at locations based on traffic engineering studies. Some homeowners realize the importance of installing 'needed' stop signs. Cited by two references. (References 56, 57 ).

16. Multi-way stops can reduce cut-through traffic volume if many intersections along the road are controlled by stop signs. If enough stop signs are installed on a residential or collector street motorists may go another way because of the inconvenience of having to start and stop at so many intersections. This includes the many drivers that will not stop but slowly 'cruise' through the stop signs. This driving behavior has been nicknamed the 'California cruise'. Cited by two references. (Reference 14, 61).

17. Placement of unwarranted stop signs in violation of Georgia State Law 32-6-50 (a) (b) (c). This study was conducted using Georgia law. Georgia law requires local governments to install all traffic controls devices in accordance with the MUTCD. This is probably similar to traffic signing laws in other states. Cited by two references. (Reference 19, 62).

18. Special police enforcement of multi-way stop signs has limited effectiveness. This has been called the 'hallo' effect. Drivers will obey the 'unreasonable' laws as long as a policeman is visible. Cited by two references. (Reference 39, 46).

19. District judge orders removal of stop signs not installed in compliance with city ordinance. Judges have ordered the removal of 'unnecessary' stop signs. The problem begins when the traffic engineer and/or elected officials are asked to consider their intersection a 'special case'. This creates a precedent and results in a proliferation of 'special case' all-way stop signs. Cited by two references. (Reference 59, 62).

20. Some jurisdictions have created warrants for multi-way stops that are easier to meet than MUTCD. The jurisdiction feel that the MUTCD warrants are too difficult to meet in residential areas. The reduced warrants are usually created to please elected officials. Cited by two references. (Reference 61 and 70).

21. Citizens perceive stop signs are effective as speed control devices because traffic "slows" at stop sign. If everybody obeyed the traffic laws, stop signs would reduce speeds on residential streets. Cited by one reference. (Reference 55).

22. Removal of multi-way stop signs does not change speeds but they are slightly lower without the stop signs. This study findings support the drivers behavior referenced in item #4, speed increases when unwarranted stop signs are installed. Speed decreases when the stop signs were removed! Cited by one reference. (Reference 64).

23. Multi-way stops degrade air quality and increase CO, HC, and Nox. All the starting and stopping at the intersection is bad for air quality. Cited by one reference. (Reference 68).

### **Speed Control Issues**

24. There are many ways to "calm" traffic. Cited by twenty-two references. (Reference 1, 14, 20, 32, 33, 34, 35, 36, 37, 38, 40, 41, 42, 44, 45, 46, 47, 48, 50, 51, 53 and 66).

They include:

(a) Traffic Chokers (f) Sidewalks and Other Pedestrian Solutions

(b) Traffic Diverters (g) Neighborhood Street Design

(c) Speed Humps (h) On-Street Parking

(d) Roundabouts (i) One Way Streets

(e) Neighborhood Speed Watch (j) Street Narrowing

25. Other possible solutions to residential speed. Most speeding is by residents - Neighborhood Speed Watch Programs may work. This program works by using the principle of 'peer' pressure. Cited by seven references. (Reference 2, 30, 31, 36, 42, 48 and 53).

26. Reduced speed limits are not effective at slowing traffic. Motorists do not drive by the number on the signs, they travel a safe speed based on the geometrics of the roadway. Cited by five references. (Reference 1, 20, 39, 46 and 69).

27. Local streets should be designed to discourage excessive speeds. The most effective way to slow down traffic on residential streets is to design them for slow speeds. Cited by two references. (Reference 43, 52).

28. Speeding on residential streets is a seasonal problem. This is a myth. The problem of speeding is not seasonal, it's just that homeowners only see the problem in 'pleasant' weather. That's the time they spend in there front yard or walking the neighborhood. Cited by one reference. (Reference 2).

29. Speed variance and accident frequency are directly related. The safest speed for a road is the speed that most of the drivers feel safest driving. This speed creates the lowest variance and the safest road. Cited by one reference. (Reference 47).

30. The accident involvement rate is lowest at the 85th percentile speed. The 85th percentile speed is the speed that most drivers feel comfortable driving. The lowest variance is usually from the 85th percentile speed and the 10 mph less. Cited by one reference. (Reference 47).

31. Psycho-perceptive transverse pavement markings are not effective at reducing the 85th percentile speed but do reduce the highest speed percentile by 5 MPH. Cited by one reference. (Reference 47).

32. The safest residential streets would be short (0.20 miles) non-continuous streets that are 26 to 30 feet from curb to curb width. The short streets make it difficult of drivers to get up to speed. Cited by one reference. (Reference 52).

### **Economics of Multi-Way Stop Signs**

Studies have found that installing unwarranted stop signs increases operating costs for the traveling public. The operating costs involve vehicle operating costs, costs for increased delay and travel time, cost to enforce signs, and costs for fines and increases in insurance premiums.

The total costs are as follows (Reference 55):

Operating Costs (1990) (\$ .04291/Stop)	\$ 111,737/year
Delay & Travel Costs (1990) (\$ .03401/Stop)	\$ 88,556 /year
Enforcement Costs (1990)	\$ 837/year
Cost of Fines (19 per year)	\$ 1,045/year
Cost of 2 stop signs (1990)	\$ 280



Costs of increased insurance (1990)    \$7,606/year

**Total (1990)    \$210,061/year/intersection**

The cost to install two stops signs is \$280. The cost to the traveling public is \$210,061 (1990) per year in operating costs. This cost is based on about 8,000 vehicles entering the intersection per day.

Another study (62) found that the average annual road user cost increased by \$2,402.92 (1988 cost) per intersection when converting from two to four way stop signs for low volume intersections.

### **Summary of Stop Signs as Speed Control Devices**

Researchers found that multi-way stop signs do not control speed. In analyzing the 23 hypotheses for multi-way stop signs, five were favorable and 18 were unfavorable toward installing unwarranted all-way stop signs. The Chicago study (6) was the only research paper that showed factual support for "unwarranted" multi-way stop signs. They were found to be effective at reducing accidents at intersections that have sight distance problems and on-street parking.

It is interesting to note that residential speeding problems and multi-way stop sign requests date back to 1930 (63). The profession still has not "solved" this perception problem.

### **Summary of Economic Analysis**

Benefits to control speeds by installing multi-way stop signs are perceived rather than actual and the costs for the driving public are far greater than any benefits derived from the installation of the multi-way stop signs.

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## Appendix E

### Case Studies

Staff researched comparable cities around the United States to present traffic calming case studies. These include the following:

City	2000 Population <sup>13</sup>	Page
Brooklyn, NY Action Program		31
Greenville, NC	60,476	33
Chapel Hill, N.C. (swells to 75,000 during school)	48,715	36
Carlsbad, CA	78,245	39
Charlottesville, Virginia (swells to 60,000 during school)	45,049	41
Boulder, CO	94,673	44

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<sup>13</sup> U.S. Census 2000.

# 1. BROOKLYN, NEW YORK ACTION PROGRAM

The Action Program in Brooklyn, NY is a good example of traffic calming measures presented in the context of other transportation improvements, including bicycle and pedestrian circulation, transit improvements, truck and bus movements and through traffic.

## ACTION PROGRAM

### E6.1 Traffic Management Themes

A number of themes underlie the traffic calming strategy for Downtown Brooklyn. These themes, and the appropriate traffic calming tools to address them, are introduced briefly below. Each of these themes was considered in the development of the traffic calming action plan for each corridor. Note that these are not site-specific recommendations, but rather generic actions available to planners in the development of the area wide traffic calming strategy.

#### E6.1.1 Pedestrian circulation and connectivity

Because Brooklyn's surface streets carry large volumes of vehicles, some high-traffic streets are difficult for pedestrians to cross during peak hours and logical pedestrian desire lines go unserved. Strategy recommendations that address pedestrian connectivity issues include:

- **neckdowns** and **medians** to shorten crossing distances,
- signalized **mid-block crossings** to introduce connections on long blocks, and
- **leading pedestrian intervals, all-pedestrian phases, and turn restrictions** to build pedestrian confidence and visibility at key intersections.

#### E6.1.2 Improving transit operations

Although eighteen New York City Transit bus routes serve Downtown Brooklyn, roadway congestion slows bus speeds, causes bus bunching, and hinders the ability of buses to merge back into traffic after stopping. Illegal parking and standing in bus stops create difficulties for bus drivers and for boarding and exiting passengers. Strategy recommendations that address transit operations issues include:

- **bus bulbs** to simplify bus maneuvers and improve the bus-to-sidewalk interface, and
- improved **subway/sidewalk passenger** connection.

#### E6.1.3 Developing the bicycle network

Although many neighborhoods in Downtown Brooklyn have dedicated bicycle lanes, critical gaps still exist in the area-wide cycling network. Strategy recommendations that address bicycle network issues include:

- **new bike lanes** to give cyclists safe, dedicated routes to ride,
- **neckdowns, gateways, and other measures** aimed at slowing traffic, and
- **enhanced bike lanes** to clearly delineate routes

Since the Downtown Brooklyn Traffic Calming Project began, NYCDOT has developed a

policy regarding using high-visibility treatments to enhance bicycle lanes. Lanes adjacent to the curb will receive priority for high-visibility bicycle treatments; this will clearly indicate that the lane is designated for movement of bicycles and should not be blocked by parked vehicles. This is a higher priority than “non-curbside” lanes because violations by parked vehicles in curbside lanes result in blockage of cyclists’ movement. The Department’s goal is to implement bicycle lanes identified in this report and the New York City Bicycle Master Plan in as expeditious a manner as possible. Therefore, “non-curbside” lanes will be implemented using standard treatments.

#### **E6.1.4 Truck access and routing**

While trucks are blamed for many traffic problems in Downtown Brooklyn, they are the primary mode of freight access in the City. Maintaining a clear and logical truck network is critical to the local economy. Strategy recommendations that mitigate truck impacts while maintaining truck access to Downtown Brooklyn include:

- **neckdowns and gateways** to keep trucks off Living Streets, and
- **improved street management** to improve conditions for trucks on Travel and Community Streets.

#### **E6.1.5 Managing through traffic**

The concept of a Street Management Framework argues that Travel Streets are the appropriate places to accommodate through traffic in Downtown Brooklyn. At the same time, through traffic should be discouraged from using Community and Living Streets, and its impacts should be mitigated on all streets.

### **Traffic Calming**

In the context of reducing traffic’s impacts, the objectives of the study were refined to more closely meet achievable goals. Specific objectives were as follows:

- Do not increase total traffic capacity through the area. Rather, improve efficiency of primary streets while discouraging through movement on other streets in order to redirect traffic from inappropriate routes.
- Reinforce appropriate travel patterns and street usage consistent with the Street Management Framework
- Examine and improve high pedestrian accident locations.
- Examine and reinforce the truck network.
- Examine and reinforce the bicycle network.
- Integrate specific treatments with area-wide strategies.



## **2. GREENVILLE, NORTH CAROLINA TRAFFIC CALMING**

### **City of Greenville - Neighborhood Traffic Calming Guidelines**

Presented by:

The City of Greenville

Public Works Department

Engineering Division

September 28, 2001

2

### **Table of Contents**

Purpose 3

Qualifying Criteria for Traffic Calming Devices 3

Procedure for Applying for Traffic Calming Devices 4

Funding 5

Types of Traffic Calming Devices 5

Requirements for Specific Traffic Calming Devices 6

Placement of Traffic Calming Devices 7

### **Appendices**

Appendix A: Sample Letter from the City Enclosing a Petition and Other Materials 8

Appendix B: Traffic Calming Request Form 9

Appendix C: Sample Petition 10

Appendix D: Sample Insufficient Number of Petition Signatures Letter 11

Appendix E: Sample Petition Acceptance Letter 12

Appendix F: Speed Hump Specifications 13

Appendix G: Speed Hump Markings 14

Appendix H: Traffic Circle Specifications 15

Appendix I: Placement of a Traffic Circle 16

3

### **City of Greenville**

### **Neighborhood Traffic Calming Guidelines**

#### **Purpose**

The City of Greenville continually strives to strengthen and protect its neighborhoods by improving the quality of life in residential areas. Traffic conditions on residential streets can greatly affect neighborhood livability. Speeding traffic and unnecessary through traffic in neighborhoods create safety hazards on residential streets. When traffic problems become a daily occurrence, our sense of community and personal well-being are threatened.

In 1997, the City of Greenville began its *Traffic Calming Pilot Program* to assess the methods of studying, planning with neighborhood residents, and applying traffic calming strategies. The *City of Greenville Neighborhood Traffic Calming Guidelines* was developed to guide City staff and inform residents about the processes and procedures for implementing traffic calming on residential streets.

#### **Qualifying Criteria for Traffic Calming Devices**

In order to qualify for traffic calming devices under the City of Greenville Neighborhood Traffic Calming Program, the roadway being considered for the traffic calming device(s):

- Must be a City-maintained public street classified as a two-lane standard residential, minor residential, or collector street under the City of Greenville's *Manual of Standard Designs and Details (MSDD)*.
- Must have a roadway width of less than or equal to 40 feet (back-of-curb to back-of-curb).
- Must have average daily traffic volumes greater than or equal to 1,000 vehicles per day.
- Must have speeds of the 85<sup>th</sup> percentile equal to or greater than 10 miles over the posted speed limit. The speed limit must already be posted at 25 mph.

### **Requirements for Specific Traffic Calming Devices**

#### **1. Speed Humps**

- The grade of the roadway must be less than or equal to 8 percent.
- The roadway should have a horizontal radius of less than or equal to 300 feet.
- If this treatment is recommended by staff, all adjacent property owners must approve the location.
- The roadway is not the primary emergency vehicle route. The City Traffic Engineer will contact the Police and Fire/Rescue Departments to determine if the speed hump will interfere with the response to emergency calls.

#### **2. Traffic Circles**

- If landscaping is installed, the residents must agree to install and maintain vegetation via an agreement with the City.
- This must be a 4-way intersection.

#### **3. Multi-way Stops**

- No intersections should receive multi-way stops if they are within 800 feet of another intersection having stop control.
- No intersections should receive multi-way stops when the side street is less than 400 feet in length.
- If this treatment is recommended by staff, there must be at least a 75 percent endorsement from households within a radius of 1,200 feet from the intersection proposed to receive a multi-way stop. This may not require a second petition if the original petition already shows a 75 percent endorsement.
- The major roadway should be a minimum length of 0.50 miles.
- There should be a 60-40 percent volume split between the two roads for a 4-way intersection.
- There should be a 75-25 percent volume split between the two roads for a 3-way intersection.

#### 4. Diverters

- If landscaping is installed, residents agree to install and maintain vegetation via an agreement with the City.
- A documented significant cut-through problem should exist.

#### 5. Edge Line Pavement Markings

- Streets should have a minimum width of 36 feet (back-of-curb to back-of-curb).
- On-street parking should show underutilization.
- The marking should be a maximum of 8 feet from edge line to face of curb (or 6 feet from edge of pavement) to prevent confusing the outside area with a travel lane.

### Placement of Traffic Calming Devices

#### 1. Speed Humps

- Humps should be placed at least 400 feet apart.
- The stopping sight distance should be greater than or equal to 200 feet.
- Speed humps should be at least 200 feet from an intersection.
- They should be as close to property lines as possible.
- If possible, the humps should be placed under streetlights for greater visibility.
- They should be placed at least 10 feet from driveways.

#### 2. Traffic Circles

- The typical placement of a traffic circle is in the middle of a four-way intersection. The size of the intersection determines the exact placement and size of the traffic circle.

### 3. Chapel Hill, North Carolina

**<http://www.townofchapelhill.org/documents/Engineering/Traffic%20Engineering%20Program/Traffic%20Calming%20Policy.pdf>**

**Chapel Hill TC Ordinance policy excellent example of the following:**

- Annual TC request process
- Only neighborhood streets
- Specific criteria for stop signs (not mid block)

#### **Contact Information**

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#### **Related Links**

[Traffic Calming Devices](#)

[Traffic Calming Policy](#)

[Traffic Calming Request Form](#)

[Traffic Impact Analysis Procedures](#)

#### **Responsibilities**

To request review of traffic congestion or traffic safety concerns for drivers, cyclists or pedestrians, please call the Engineering Department at 968-2833. Most of the major streets in Chapel Hill are part of the State highway system. For requests regarding these roads, Town staff will be glad to contact the NC Department of Transportation on your behalf.

For safety concerns related to maintenance of streets, bikeways and sidewalks, please call the Public Works Department at 919-968-2796. For emergency repair needs, please call the Public Works Department or, after normal hours and on weekends, the Police Department at 919-968-2760.



## **Traffic Control and Parking Operations**

To request consideration of a new ordinance or a change in a present ordinance on parking, stop regulations, speed limits, etc., please call the Town's Engineering Department at 919-968-2833.

## **Traffic Calming Devices**

Traffic calming devices are meant only as speed reduction devices in residential neighborhoods where traditional police enforcement is not consistently available. Speed humps and raised pedestrian crosswalks are in place on several streets in Chapel Hill. Speed humps have reduced speeds by an average of 5 mph. However, they have not reduced traffic volumes significantly. The Town Council approved Policy and Procedures for Traffic Calming Devices in Chapel Hill and to request a copy of the policy and express interest in traffic calming in your neighborhood, please call Engineering Department at 919-968-2833 or visit the [Traffic Calming Policy](#) page.

## **Traffic Signals**

The traffic signal system in Chapel Hill includes approximately 100 traffic signals, on both State roads, and on the town's street system. All of the signals are maintained by the Town. The Town operates and maintains all traffic signals in Chapel Hill and Carrboro. Most of the traffic signals are owned by the State but maintained by the Town through a municipal agreement.

## **Signs and Markings**

The Town installs and maintains traffic control signs and pavement markings on the Town streets. Signs and markings on State roads are installed and maintained by the State. However, all street name signs on both Town and State roads are installed and maintained by the Town.

If you have noticed a road sign that is damaged, missing or where one is needed, contact Town's Public Works Department at 919-968-2800 (7:00 am – 5:00 pm) or 919-968-2760 (After Hours).

# Stop Sign Policy

## Chapel Hill, North Carolina

### **STOPS SIGNS**

**Stop sign(s) may be warranted at an intersection where one or more of the following conditions exist:**

1. Intersection of less important road with a main road where application of the normal right-of-way rule is unduly hazardous.
2. Intersection of a minor street entering a through highway or street.
3. Un-signalized intersection in a signalized area.
4. Intersection where a combination of high speed, restricted sight distance and serious accident record indicates a need for control by stop sign(s).
5. Intersection which intercepts identified pedestrian route(s) carrying significant pedestrian volume.
6. Intersection on a street without curbs or sidewalks when such streets are carrying traffic volume significantly above that for which the street was designed.
7. Intersection with existing irregular stop sign placement, where additional sign(s) would improve safety.
8. Un-signed intersection within an existing series of intersections with stop signs.
9. Where the interest of public safety dictates.
10. Intersection of two collector streets that provide primary service to an area and carry nearly equal traffic volumes, which makes clear assignment of right-of-way difficult.
11. Intersection adjacent to facilities such as parks, pools, schools, or other facilities which significantly increase and concentrate pedestrian and vehicular traffic in a localized area.
12. Intersection within a specific street network that carries through traffic on a route which is less desirable than on an alternative route or designated thoroughfare.

**Stop sign installation will normally NOT be recommended in the following situations:**

7. At mid-block locations.
8. Solely for the purpose of controlling vehicular speeds.
9. At locations where a stop would create a high likelihood of rear-end collisions.
10. On major arterials or thoroughfares.
11. At locations where yield signs will provide adequate control without requiring full stops.
12. At railroad crossings.

Stop sign installations will be evaluated by Town Engineering staff and judged in accordance with these guidelines to avoid potentially detrimental use of this highly restrictive traffic control measure. Evaluations will consider alternatives to stop sign installations which may include construction of sidewalks, improvement of sight distance, construction or improvement of alternative traffic routes, or other site-specific improvements in lieu of stop sign placement.

## 4. CARLSBAD, CALIFORNIA - TRAFFIC CALMING

Along with addressing traffic issues in new neighborhoods, Carlsbad's Residential Traffic Management Program is designed to make streets in existing neighborhoods safer for pedestrians and children. When motorists cut quickly through residential streets to escape traffic on

major thoroughfares, it disturbs tranquility and decreases safety.

In response to the twin problems of high volumes and excessive speeds in neighborhoods, the City Council, which was cognizant of the new engineering approach called traffic calming, elected to obtain solid citizen input before proceeding. It appointed a seven-person committee to work with traffic engineering staff to develop solutions for Carlsbad neighborhoods seriously affected by traffic. The committee worked diligently for almost one year to develop a three-phase approach to meet its three objectives.

- To obtain support of the residents in any neighborhood needing traffic
- To make sure any measures implemented meet the approval of emergency agencies concerned about response times and of utilities whose large vehicles could be adversely affected or damaged by the
- To ensure that residents will be willing to live with the traffic calming
- The first phase of the program is designed to investigate problems and
- The second phase is devoted to studying the specific traffic problems in a neighborhood and to designing measures needed to solve those problems, ranking them by priority.
- The third phase, which involves allocation of funds, begins with the permanent installation of the specific traffic calming measure and culminates with the monitoring of the program for effectiveness.

### ***The program can be customized to fit the needs of the neighborhood***

- The transportation division has a big toolbox of traffic calming approaches, including but not limited to speed monitoring, traditional police enforcement, medians and entry/raised islands.
- If a majority of homeowners on a street desire a traffic calming program, a temporary tool can be put in place to determine viability before a permanent solution is installed.

### **PLANNED DEVELOPMENT ORDINANCE**

Approved by the City Council in 2001, this ordinance, by changing previous development standards, will make an extraordinary difference in the "people friendliness" of tomorrow's communities. The ordinance ...

- Doubles the outdoor passive meeting, active recreation and neighborhood gathering space within the entire project.
- Increases the minimum size of each home's backyard.
- Requires a home's interior square footage to be proportional to the size of the lot.
- Greatly reduces and discourages "snout house" design where multiple-car garages take visual precedence over the home.
- Private, gated communities are discouraged. Cumbersome cul-de-sacs will give way to interconnected grids that are easier to navigate and

much safer in times of an emergency.

#### NEIGHBORHOOD DESIGN STANDARDS

Architects and designers are enthusiastic promoters of the “neotraditional”

## 5. CHARLOTTESVILLE, VIRGINIA

In 1999, the City of Charlottesville began an innovative initiative to become more responsive to the needs and concerns of its citizens. In an effort to consolidate planning and development services into a manageable and more accessible agency, the Department of Community Development, Public Works' Division of Engineering and the Fire Department's Division of Building and Life Safety have been consolidated into a new department called **NEIGHBORHOOD DEVELOPMENT SERVICES**.

### TRAFFIC ENGINEERING **NEIGHBORHOOD TRAFFIC CALMING**

Traffic calming is a proactive attempt to improve the livability of residential neighborhoods and promote pedestrian activity in service districts.

#### **Traffic Calming Process:**

1. CIP Meetings to obtain consensus on project.
2. City creates design options.
3. Neighborhood picks design.
4. City ballots affected property owners.
5. 50% response required with 2/3 in favor.
6. Temporary measures installed for 3-4 months.
7. Permanent measures installed.
8. One year after permanent installed, evaluation of how well measure has worked.

Links:

[City Traffic Calming Project Updates](#)

[City Traffic Calming Guidelines](#)

PLEASE CALL (434) 970-3182 IF YOU HAVE ANY QUESTIONS.

*LAST UPDATED: 02/22/2005*

ANGELA TUCKER

## Table of Contents

<u>Introduction</u> .....	1
<b>Traffic Calming - Process</b>	
<u>Chapter 1 Review of Traffic Calming Programs</u>	
Boulder, Colorado .....	3
Seattle, Washington .....	4
Portland, Oregon .....	5
<u>Chapter 2 Existing Traffic Calming Procedure</u> .....	6
<u>Chapter 3 Recommended Traffic Calming Procedure</u> .....	7
<b>Traffic Calming - Device Details</b>	
<u>Chapter 4 Procedural/Administrative/Regulatory Techniques</u>	
Turn or Entry Prohibitions .....	20
Neighborhood Speed Watch Program .....	21
Radar Trailer .....	22
<b>Chapter 5 Physical Techniques</b>	
<u>Horizontal Deflection Services</u>	
Narrowing Treatments	
Striping Treatments .....	24
Median Treatments .....	26
Curb Extension Treatments	
One-Lane Slow Points .....	29
Two-Lane Slow Points .....	30
Curb Bulb-Outs .....	35
<u>Weaving Treatments</u>	
Chicanes .....	38
Serpentine .....	40
Traffic Circles .....	42
Roundabouts .....	48
Traffic Diverters Turning Movement Diverters .....	51
Residential Neighborhood Gateway Treatments .....	53
<u>Vertical Deflection Devices</u>	
Rumble Strips .....	56
Road Bumps .....	60



Road Humps .....	60
Speed Tables .....	66
Raised Intersections .....	69
<u>Roadway Closures</u>	
Full Roadway Closure .....	71
Diagonal Roadway Closure .....	74
Partial Roadway Closure .....	75
Open Roadway Closure .....	

## Charlottesville, Virginia - Chapter 2:

### Existing Traffic Calming Procedure

The existing traffic calming procedures that guide Charlottesville’s program are fundamentally sound (see Appendix A). The guidelines provide for the identification a problem, defining an impact area, city representatives and citizens working together to solve the problem and evaluating the effectiveness of the solution. However, there are areas that could be improved upon that would provide all participants with a more level playing field and allow the city to effectively administer the program. The paragraphs that follow address the shortcomings of the current procedure.

***Impact Area Definition*** – The method for defining the impact area is well suited to deal with traffic calming projects planned for local roads in the Charlottesville area. The Charlottesville Road Classification Map (shown on Page 2, Figure 1) shows a city that is fairly well sectioned by collectors and arterials. Due to this the establishment of “neighborhoods” and impact areas is fairly straightforward. The use of a one block radius and attached cul-de-sacs allows for impacted residents to be included in the decision making process.

When projects are slated for collectors or minor arterials, the “one block” rule should also be employed. However, in certain cases, it may be appropriate to expand the impact area boundaries. This should be done on a case-by-case basis, with the city and project proponents working together to determine the boundaries.

## 6. Boulder, CO – Neighborhood Traffic Mitigation Program

The Neighborhood Traffic Mitigation Program (NTMP) was developed in 1994 in response to citizens' demands to address speeding on residential streets. The program was not designed to address dangerous intersections, mitigate noise from major arterials, redesign the overall transportation/street classification system or effect a modal shift. The Police Department, Transportation Division, Neighborhood Liaison's Office and Fire Department, each played vital roles in its conception.

The NTMP assists neighborhoods with developing a specific approach and selecting the appropriate speed reduction tools. The program works best when the neighborhood works together through a three-tiered process beginning with **education**, followed by **enforcement** and then **engineering** as the final tool.

Neighborhoods begin to solve the speeding problem by using the **education** tools. For example, the Neighborhood Speed Watch and the Radar Speed Monitoring Trailer help drivers become aware of their speeds. These tools tell drivers that the neighborhood is concerned about speeding. They also educate the residents on the extent of the speeding problem in their neighborhood.

In addition, the speed data can be used to support a request for more **enforcement** activities in the neighborhood. Photo radar is an example of an enforcement tool. The City of Boulder currently has one photo radar van that operates in residential neighborhoods, where physical measures are not possible, on an "as needed" basis.

If a severe speeding problem still exists following the education and enforcement strategies, a neighborhood can request to installation of **engineering** treatments.

Boulder, CO has installed several types of traffic calming devices; among the most popular ones are speed humps, raised intersections and traffic circles. Studies produced by the city staff have shown favorable results with regard to each of the aforementioned devices. Speed humps decreased average daily traffic (ADT) up to 27% and reduced 85<sup>th</sup> percentile speeds by up to 8 mph. Raised intersections produced varied results with regard to ADT, yet reduced 85<sup>th</sup> percentile speeds by up to 8 mph. Traffic circles reduced 85<sup>th</sup> percentile speeds by up to 13 mph.