



# Town of Moraga Traffic Calming Guide

September 2008 *(Updated September 1, 2010)*



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## Introduction

The Town of Moraga is committed to providing safe streets for everyone. There are many methods of accomplishing this under the rubric of traffic calming—devices and methods used to improve traffic safety.

# Purpose, Goals, and General Policies

## Purpose

The purpose of this guide is to provide:

The goal and policy framework for implementing traffic calming measures in Moraga

An outline of the key program elements for identifying and executing specific traffic calming methods

A description of the major implementation steps

An understanding of the varied tools available for traffic calming

The success of traffic calming relies on the cooperation of concerned citizens. The program described in this guide is intended to help citizens become involved and team with Town staff to address traffic problems.

*Some of the terms used in this guide are specific to traffic engineering or the Town of Moraga. To learn more about a particular term, see the Glossary on page 23.*

## Goals

The Town of Moraga intends to achieve the following goals through the provisions of the traffic calming program:

- Improve driver attention, awareness and behavior
- Promote safe and pleasant conditions for motorists, pedestrians and bicyclists, with attention to streets, bike trails, and sidewalks
- Preserve and enhance pedestrian and bicycle access to destinations within the town
- Encourage citizens to be involved in traffic management activities
- Provide a process to equitably address citizen requests
- Preserve safe response times for Police and Fire Departments

## Policies

A number of overarching policies create the framework for traffic calming as described in this guidebook. The town supports the following policies:

- The town will work cooperatively with residents, local businesses, and schools to implement a variety of measures to reduce traffic speeds and/or volumes on town streets
- In accord with Police and Fire Department guidelines, impacts on emergency vehicle response times will be minimized
- Permanent traffic calming measures will be designed and installed in conformance with sound engineering and planning practices, and should complement the character of the town
- Consideration will be given to the effect traffic calming measures on one street may negatively impact other streets

## Traffic Safety Advisory Committee (TSAC)

TSAC is a liaison among council, staff, and citizens to address traffic, pedestrian, and bicycle safety issues. TSAC members are local residents selected by the Town Council to serve one or two year terms.

TSAC hears requests that cannot be handled administratively by staff, and is responsible for recommending actions to the Town Council for final evaluations and decisions concerning traffic safety device implementation and costs.

TSAC meets the first Wednesday of each month at 6:00 p.m. in the Hacienda. All meetings are open to the public, and offer opportunity for public comment.

# The Four Es

Education, Enforcement, Engineering, and Emergency response are commonly accepted elements of traffic calming programs.

## Education

The foundation of an effective traffic calming program is an educated community. Effective traffic education begins in the family and the neighborhood, with the end result being everyone driving appropriately and safely. The Town helps by providing educational materials and facilitating citizen discussions and meetings, but the responsibility at this level is with the community.

## Enforcement

Targeted police enforcement supplements community education in areas where traffic problems are evident. Police enforcement increases community awareness of traffic issues. Deployment is always subject to resources, staffing, and scheduling.

## Engineering

Where education and enforcement are not sufficient, alterations to street design may be appropriate. Each issue is evaluated individually with consideration given to possible unintended consequences. Engineering measures are generally costly to design, construct, and maintain.

## Emergency Response

Emergency response must be considered in any level of traffic calming. Both police and fire departments must be engaged in such discussions. Their issues, concerns, and guidelines must be considered, and where specified their approvals obtained, before proceeding with any projects.

# Traffic Calming Measures

Every traffic calming measure considered by the Town falls into one of three program levels, each requiring varying degrees of community involvement and Town oversight.

With each successively higher level, traffic calming measures and their implementation become more complex, difficult to implement, and expensive. Where significant capital and operating expenses are involved, the Town Council has the ultimate decision and funding responsibility.

## **Level 1: Education and Enforcement.**

Level 1 is community driven; residents can take action to address immediate concerns. They can work together, with Town staff assistance to design and carry out actions to educate themselves and their neighbors on traffic safety and to heighten neighborhood awareness of safe driving habits. Typical methods include neighborhood education and increased police presence.

## **Level 2: Changes to signage or pavement markings.**

Level 2 tools typically include stop signs or crosswalk improvements, or other tools depending on needs.

## **Level 3: Generally physical modifications to a street.**

Level 3 measures typically alter street geometry by diverting or otherwise altering traffic flow. This level usually requires engineering and traffic studies. Typical Level 3 devices could be curb extensions or raised crosswalks.

# Implementation Process

## Getting Started

The implementation of a traffic calming tool begins at the community level, with local citizens initiating the process.

### Process

Define the specific traffic, vehicle, bicycle, or pedestrian safety issue.

Send a request (as an individual or group) to the Police Department, TSAC, or the Town Council, describing the traffic safety issue. A useful way to voice your concern is via the Transportation Action Request (TAR) form. You may also send a letter, or describe your request during the public comment segment of Town Council or TSAC meetings. The TAR form is available in the town office and on the town web site: [www.moraga.ca.us](http://www.moraga.ca.us).

Police and Town staff will review requests and strive to resolve them via maintenance or enforcement.

Requests not immediately solvable will be prioritized by Town staff and added to the TSAC meeting agenda. TSAC will evaluate the safety complaints, hear public input, and make recommendations to staff, council, citizen or citizen group.

TSAC may recommend the requester(s) assemble a Community Action Team (CAT) to begin determining which level of traffic calming will be pursued. TSAC will act in an advisory role to help determine appropriate level and solutions.

**For maintenance requests, such as filling a pothole, sign maintenance, tree trimming for driver visibility, or street re-striping, please call the 24-hour Maintenance Hotline at (925) 888-7026.**

## Level 1 Implementation

### Level 1: Education and Enforcement.

Examples		
Community traffic education campaign Community pledge program	Community sign campaign Trash can brigade Local area maintenance and pruning	Speed watch and warning letters Speed display units Targeted police enforcement

### Level 1 Implementation Process

Hold a community meeting to review problems, identify goals, and discuss education tools to implement.

Discuss issue with Police Department and/or Town staff, and work with them to assist in providing educational materials and enforcement.

### Level 1 Notification and Approval

Group	Notification	Approval
Fire District	Not required	Not required
Police Department	Required	Recommended
Town Council	Not required	Not required
Town Staff	Recommended	Not required
TSAC	Not required	Not required

## Level 2 Implementation

### Level 2: Typically changes to signage or pavement markings.

Examples		
Moveable slow down signs	Neighborhood signs	Supplemental signs and pavement markings
Moveable speed display units	Crosswalk improvements	New regulatory signs
Botts dots and rumble strips	Striping narrow lanes and center-lines	Landscaping

### Level 2 Implementation Process

Continued from *Getting Started*.

Hold a community meeting to review problems, identify goals, determine the study area, identify affected citizens, and establish a community action team (CAT).

Collect data as relevant to measures being considered on roadway users, traffic performance, and driver behavior, using the Street Inventory Form, Community Traffic Audit and/or Speed Evaluation Form (see *Forms*).

Hold local CAT meetings to review data, evaluate solutions, collect input from citizens, and draft a plan of action and possible funding solutions.

Work with staff on studies and engineering if requested.

Secure input from Police Department and Fire District.

Conduct a workshop with TSAC or a TSAC member to hear public input, review and refine the plan.

Secure approvals from citizens.

Present the plan at a TSAC meeting for deliberation and public comment and/or recommendation to Town Council.

Submit the plan to the Town Council to hear public and staff input, and vote on approval and funding.

## Level 2 Notification and Approval

Group	Notification	Approval
<b>Fire District</b>	Required (in writing)	Not required, but allow review and comment
<b>Police Department</b>	Required (in writing)	Not required, but allow review and comment
<b>Citizens Abutting Change</b>	Required (via mail with proof of mailing)	75% of citizens via petition
<b>Citizens within 300 ft of Change</b> (or further as determined by Town staff)	Required (via A-frame for 10 days)	70% of citizens via petition
<b>TSAC</b>	Required	Required (recommendation for Council consent agenda or recommendation for Council regular agenda or disapprove)
<b>Town Council</b>	Recommended	Required via consent agenda unless escalated by staff or TSAC

## Level 3 Implementation

### Level 3: Generally physical modifications to a street.

Examples		
Gateway	Traffic circle and roundabout	Restricted movement signage
Landscaping	Speed hump (bump) and speed	Traffic signals and permanent
Median island	table	regulatory signage
Curb extension	Speed cushions	Street closure
Chicane	Raised crosswalk	Forced turn barrier and diverter
Choker and slow pinch point	Raised intersection	Forced turn island

### Level 3 Implementation Process

Continued from *Getting Started*.

Hold a community meeting to review problems, identify goals, determine the study area, identify affected citizens, and establish a community action team (CAT).

Collect data as relevant to measures being considered on roadway users, traffic performance, and driver behavior, using the Street Inventory Form, Community Traffic Audit and/or Speed Evaluation Form (see *Forms*).

Hold local CAT meetings to review data, evaluate solutions, collect input from citizens, and draft a plan of action and possible funding solutions.

Work with Town staff on studies and engineering.

Secure input and approvals from Police Department and Fire District.

Conduct a workshop with TSAC to hear public input, review and refine the plan.

Secure approvals from citizens.

Present the plan at a TSAC meeting for deliberation and public comment and/or recommendation to Town Council.

Submit the plan to the Town Council to hear public and staff input, and vote on approval and funding.

### Level 3 Notification and Approval

Group	Notification	Approval
<b>Fire District</b>	Required (in writing)	Required
<b>Police Department</b>	Required (in writing)	Required
<b>Citizens Abutting Change</b>	Required (via certified mail)	75% of citizens via petition
<b>Citizens within 300 ft of Change</b> (or further as determined by Town staff)	Required (via mail with proof of mailing and A-frame for 20 days)	70% of citizens via petition
<b>Other Affected Citizens</b>	Required (via A-frame for 20 days)	Not required, but allow comment in public meetings
<b>TSAC</b>	Required	Required (recommend for Council regular agenda or disapprove)
<b>Town Council</b>	Required	Required

## Implementation Suggestions

### **Be clear, concise, and quantitative.**

- Use the TAR as a tool to clearly define a problem, and illustrate the level of community involvement and support.
- Use speed and traffic measurement and evaluation forms available at the town office and Police Department to show a quantitative view of the problem.

### **Take it one step at a time.**

- Level 1 tools—education and enforcement—should be the first step in resolving a traffic concern.
- Don't focus on a single device. Look at the complete range of solutions to achieve an optimal result.

### **Take advantage of available assistance.**

- Use TSAC as a resource. The group is made up of local citizens acting in an advisory capacity to assist in traffic safety and calming issues. Meeting times are posted in the town office and on the town web site.
- Use the MOFD as a resource. They are open to discuss problems and solutions.
- Work with the Town staff on problem assessment, studies, engineering concepts, or to help support community meetings.

### **Keep neighboring citizens involved for their support and ideas.**

- Get neighbors involved in the process.
- Give ample, widespread notice for community meetings to ensure that neighbors can participate and provide input.
- Community meetings should include citizens from all sides of an issue, and should be solution-focused.
- Calming plans that have strong, widespread support and the support of diverse groups carry greater weight in TSAC evaluations and recommendations, and should carry greater weight in Town Council decisions.

# Funding

## Who pays?

Funding traffic calming measures in Moraga requires varied levels of contribution from residents, businesses, and town government. Each plan will be evaluated separately on merit and scope in line with the current town resources. While it would be ideal for local government to fund every measure, the town's limited budget may necessitate citizen contribution.

Measures that are warranted with state traffic safety standards may be funded largely by the town.

Measures that do not meet warrant levels are considered discretionary, and usually require neighborhood funding.

Information on traffic warrant levels, as defined in the Manual of Uniform Traffic Control Devices, is available at <http://www.dot.ca.gov>

## Alternative Funding Sources

The Town can assist the CAT with identification of grant opportunities that the CAT might pursue for direct grant awards to the community group.

Other funding sources include:

- Resident contributions
- Neighborhood block grants
- National, state, and county grants
- Local and special interest foundation grants
- Local organizations and civic groups

# Town-Sponsored Projects

In addition to traffic calming proposals that are generated by the community, the Town of Moraga will from time to time generate projects that are 1) included as a part of a capital improvement project, 2) discretionary projects brought forth by the Town staff, or Town Council members, and 3) mandatory projects that are necessary to meet federal or state warrants based upon findings and recommendations of a licensed traffic engineer.

In the first two instances, projects shall be subject to a process consistent with the process defined in this Traffic Calming Guide for community driven projects. Although the actual steps in the process may be accomplished in a somewhat different manner (e.g. Town staff and/or Town Council members may refer a request directly to TSAC with a CAT not be required to drive the projects, etc.) the critical procedural steps for Level 2 and 3 projects set forth in this Guide shall be followed, including providing notice to affected residents, obtaining Police Department and Fire District approvals, initiating studies as dictated by the nature of the project, and obtaining signatures of residents, as required, to verify community input and consent.

In the case of projects to meet federal or state warrants, much of the normal process may be waived, if it is deemed by the Town Council that not executing the project will jeopardize the safety of the community.

In the event of a critical, urgent traffic safety need requiring immediate action of the town, the town, with traffic engineering and public safety review, has the right to take whatever action it deems necessary to mitigate the problem; provided, however, that such measures or solutions imposed by the town shall be for a period of not more than 120 days, to allow the town time to propose more permanent solutions, if needed, through the regular procedures set forth in this guide. If the nature of the mitigating measures are such that more than 120 days are required, the measures shall be reviewed by the Town Council every 120 days.

Nothing in this guide shall prevent the town from repairing or maintaining existing traffic-related installations or facilities, nor prevent the town from ordering and installing curb striping or colored curb zones to regulate parking and other curb-use rules.

# Additional Information

## Common Questions

### Is it possible to get a street posted for lower speed?

A common belief is that posting a speed limit will influence motorists to drive at that speed. The facts indicate otherwise. Research over several decades has shown that drivers are influenced more by the appearance of the roadway itself and prevailing traffic conditions than by posted speed limit.

Certain speed limits are established by law and include the 25 MPH limit in business and residential districts, the 15 MPH limit at blind intersections, and a part-time 25 MPH limit in school zones when children are going to and from school. These speeds are not always posted but California motorists are expected to know them and are enforceable.

Speed limits may be established by local authorities on the basis of traffic engineering surveys. Such surveys include analysis of road conditions, accident records, and the prevailing speeds of prudent drivers. It has been shown that if speed limits are posted lower than needed to safely meet road conditions, many drivers will simply ignore them. Thus, artificially lowering the speed limit does not necessarily produce a traffic calming effect.

It must be noted that police cannot legally use radar to enforce speed limits that are not justified by traffic engineering surveys.

### Are stop signs effective?

A stop sign is one of the most valuable and effective traffic control tools when used at the right place and under the right conditions. The intent is to help drivers, pedestrians and bicyclists focus on right-of-way at an intersection. Misplaced stop signs can create a false sense of security for pedestrians.

It is a misuse of stop signs when the intent is to arbitrarily stop through traffic. The resulting inconvenience can often force the traffic to use other routes which in turn can cause other traffic problems.

Where stop signs are installed as “nuisances” or “speed breakers,” drivers often intentionally ignore them—slowing rather than stopping—and making up for lost time by speeding between intersections.

### What are “warrants” and how are they used?

Warrants are national guidelines for traffic safety measures which are based on hard research data, not anecdotal evidence.

In stop sign considerations, warrants have been developed to indicate when and where a stop sign should be installed. Among other issues, warrants take into consideration the probability of vehicles

arriving at an intersection simultaneously, the length of time traffic must wait to enter the intersection, and the availability of safe crossing opportunities for pedestrians.

The warrants for determining whether traffic calming measures should be considered for a specific location or corridor are listed below by problem type:

**Speeding**—85th percentile motor vehicle speeds (the speed at which 85 percent of vehicles are traveling at or below) exceed the posted speed limit by more than 6 MPH on that street or corridor. For a 25 MPH street, this warrant would be met when the 85th percentile speed is 32 MPH or greater.

**Traffic Volumes**—Traffic volumes exceed 2,500 vehicles per day on a local residential street, or 5,000 vehicles per day on a collector street serving primarily residential neighborhoods.

**Pedestrian Travel**—Where pedestrian volumes at a particular street crossing location, or along a stretch of roadway, exceed 40 pedestrians during a one-hour period or 25 pedestrians per hour for a four-hour period and sidewalks or stop-controlled crossings (such as a STOP sign or traffic signal) are not provided for the pedestrian's primary path of travel. This warrant is not applicable for arterial streets.

**Safety**—three or more collisions per year (involving motor vehicles, bicycles or pedestrians) that may be correctable through traffic calming measures are reported over a three-year period at a specific location, such as at an intersection.

Information on traffic warrant levels, as defined in the Manual of Uniform Traffic Control Devices, is available at <http://www.dot.ca.gov>.

### **When are temporary measures used?**

The Town of Moraga generally avoids installing temporary Level 2 or Level 3 traffic calming measures. The town prefers to implement traffic calming measures that are immediately effective and permanent. In addition, the issue of resources must also be considered. It's not unusual for the cost of designing and installing a permanent measure to be only marginally greater than the cost of a temporary one.

Another consideration is that temporary measures are often less attractive than permanent ones, especially where landscaping could be used to soften the visual impact of a permanent measure. Citizens are concerned that town roadways are attractive, especially those in their own neighborhoods.

It should be noted that all traffic calming measures, temporary or permanent, require processing in the manner described in this guide.

### **What is the Moraga-Orinda Fire District's position on Level 3 devices?**

Meeting response time goals is the top priority. However, the MOFD recognizes the community's desire for pedestrian safety. As a result, the MOFD will work with neighborhood groups to find solutions that meet both needs.

The MOFD's position on Level 3 devices is that they should be considered on a case-by-case basis, as some treatments would be acceptable on certain roadways and not on others. Level 3 measures should generally be considered only after less aggressive measures have been tried and have been proven unsuccessful.

### **MOFD Policy Statement on Traffic Calming Devices**

*A critical concern about the use of traffic calming devices is the delay they may create for emergency response vehicles, including fire engines, fire trucks, ambulances and command vehicles. It is important to be aware of the trade-offs when making decisions about the use of traffic calming devices. The more aggressive devices for slowing traffic (Level 3) will slow emergency vehicle responses, and in some cases may be cause for safety concerns.*

*The MOFD has an adopted "Standards of Coverage" document that identifies its emergency response goals. The District has set a standard of 6 minutes or less total response time to emergencies in urban areas and 10:30 seconds to rural areas. The 6 minute figure is based on its correlation to rapid fire progression and flashover for structure fires, and is a time after which survivability is unlikely for cardiac arrest events. The total response time is measured from receipt of the 911 call, to the arrival of a fire unit at the incident.*

*It is important to note that both fire engines/trucks and ambulances respond to many life threatening emergencies within the communities such as heart attacks and strokes in addition to all types of fire responses. Fire stations have been spaced throughout the District to be as far apart as practical, while attempting to still meet the MOFD's response time goals. Thus, for responses to areas already at the limits or exceeding current response time goals, the installation of any significant traffic calming device will cause response time failures.*

*Recognizing the importance of achieving this emergency response time standard as a necessary service to the public's safety and well being, all traffic calming devices should be designed to accommodate all emergency vehicles and to minimize impacts on emergency vehicle response times. Most arterial and collector streets are considered primary emergency vehicle response routes, and are used to access various parts of the District from the fire stations. In order to minimize impacts to emergency vehicle response times, particular attention should be paid to the types of devices used on arterials and collector streets. Devices that considerably limit, restrict, or slow emergency vehicle access on these type streets should only be allowed with the approval of the Fire District.*

### **Emergency Response Policies**

*Traffic calming measures should be designed to accommodate all emergency vehicles and to minimize their impacts on emergency vehicle response times.*

*Level 3 traffic calming measures should be limited on primary emergency response routes, arterials, and collector streets and allowed only after approval of the MOFD.*

*The MOFD will establish and maintain a list of primary emergency response routes, arterials and collectors for reference use by the communities within its response jurisdiction.*

*Emergency vehicle access and response times should be preserved within the adopted District Response standards. If current emergency vehicle access or response times to an area do not meet the existing response standard, traffic calming measures should not further degrade response times.*

*The Fire District must be involved in the development and review of traffic calming measures within its response jurisdiction.*

# Forms

Document	Purpose	
<p><b>Transportation Action Request (TAR) Form</b> <i>(Updated 5/6/09)</i></p>	<p>Define a problem, make a request, illustrate community support</p>	 <p>The form is titled 'TOWN OF MORAGA Transportation Action Request Form'. It includes fields for Name, Date, City, and Organization of Assistance. It has sections for 'Description of problem' and 'Suggested change or improvement'. There are checkboxes for 'I would like to provide' and 'I would like to receive' services. A table lists 'Signatories' with columns for Name, Street Address, and City. At the bottom, it has checkboxes for 'Requester' (City Council, Staff, etc.) and a 'Date' field.</p>
<p><b>Street Inventory Form</b></p>	<p>Define existing street structure</p>	 <p>The form is titled 'STREET INVENTORY FORM'. It includes fields for Name, Address, and City. It has a section for 'Please check or write in your responses' with a grid for 'Street Type' (e.g., Residential, Commercial, Industrial) and 'Street Condition' (e.g., Good, Fair, Poor). There is a 'Please draw a typical street section below' section with a drawing area and a 'Sample Drawing'.</p>
<p><b>Community Traffic Audit</b></p>	<p>Define neighborhood needs and concerns</p>	 <p>The form is titled 'COMMUNITY TRAFFIC AUDIT'. It includes fields for Name, Address, and City. It has a section for 'Please describe specific traffic issues in your area and the concerns within this area'. There is a table for 'For the list below, write the number that best describes the concern in your area' with columns for 'Concern' and 'Frequency'. At the bottom, it has checkboxes for 'Requester' (City Council, Staff, etc.) and a 'Date' field.</p>
<p><b>Speed Evaluation Form</b></p>	<p>Quantitative indication of problem through traffic timing data</p>	 <p>The form is a grid for recording speed evaluation data. It has columns for 'Date', 'Time', 'Location', 'Speed', and 'Comments'. The grid is mostly empty, with a 'DRAFT' watermark overlaid.</p>

# Contact Information

*(Updated 9/1/10)*

For issues relating to ...	Department	Contact
Reviewing current issues, downloading forms	<b>Town of Moraga web site</b>	<a href="http://www.moraga.ca.us">http://www.moraga.ca.us</a>
Maintenance	<b>Public Services</b>	Travis McCord (925) 888-7026  <a href="mailto:tmccord@moraga.ca.us">tmccord@moraga.ca.us</a>
Traffic engineering, TSAC	<b>Public Services</b>	Jill Mercurio (925) 888-7026  <a href="mailto:jmercurio@moraga.ca.us">jmercurio@moraga.ca.us</a>
Fire district inquiries	<b>Moraga-Orinda Fire District</b>	Battalion Chief Randy Trumpf (925) 258-4511  <a href="mailto:RTrumpf@mofd.org">RTrumpf@mofd.org</a>
Police inquiries	<b>Moraga Police Department</b>	Chief Robert Priebe (925) 888-7055  <a href="mailto:police@moraga.ca.us">police@moraga.ca.us</a>
Town of Moraga general inquiries	<b>Town Administration</b>	Town Clerk (925) 888-7022  <a href="mailto:info@moraga.ca.us">info@moraga.ca.us</a>

# Glossary

## **Traffic Calming**

The management of vehicular traffic speeds and volumes by means of educational, enforcement and/or engineering measures

## **Traffic Safety Advisory Committee (TSAC)**

Committee of local residents selected by the Town Council to act as a liaison between Council, staff, and citizens to address traffic, bicycle and pedestrian safety issues. Members serve one- and two-year terms.

## **Transportation Action Request Form (TAR)**

Form used by citizens to describe perceived safety problems related to traffic, bicycles, and pedestrians. TAR forms are available from town offices and the Moraga Police Department. The TAR can also be downloaded from the town web site.

## **Community Petition**

Use of a TAR by of a group of citizens, a neighborhood or other group (homeowners association, business, school, or church) to present a perceived traffic, bicycle or pedestrian problem to TSAC, the Town staff, Police Department and/or Town Council.

## **Community Action Team (CAT)**

Group of citizens working together to identify, manage and/or solve traffic issues by working with TSAC and staff using varied traffic calming methods.

## **85th Percentile**

The speed at or below which 85 percent of vehicles are traveling as documented by a speed survey.

## **Community**

A number of people residing, frequenting, or working in a specific area that comes together for a given purpose.

## **Warrant**

A traffic condition analyzed to determine if a specific improvement is justified. For example, there are eight "warrants" for installation of a traffic signal, such as minimum pedestrian movement, or the number of vehicles using the intersection in a four hour period. While meeting the warranting criteria for a signal does not mean that a signal is justified at a given location, meeting a warrant should be considered when analyzing whether or not a signal would be effective in the proposed location.

This chapter describes traffic calming tools that are available to address traffic and safety issues and that are appropriate for the Town of Moraga. This traffic calming “toolbox” will be updated as experience better defines the effectiveness and appropriateness of the various tools, or as new methods are developed

### **Application of Tools**

A wide variety of traffic calming measures are available, some subtle, some very aggressive. Some measures are aimed at modifying driving behavior, others are intended to force traffic patterns and behaviors by altering the physical characteristics of streets. Some tools are effective alone, others work best when used in combination. The effectiveness of some measures is short-lived, for others effectiveness can be permanent. Some measures cost very little, if anything, to implement; others can be very expensive to install and maintain.

Given the wide variety of measures that can be applied, it is critical that selection of traffic calming solutions be done with considerable thought, and be carefully implemented. It is important to be aware that traffic calming measures installed in one location can alter traffic patterns such that undesirable impacts might develop in other areas. Such unintended consequences can usually be avoided through careful planning.

# Level 1 Tools

Level 1 measures are all community-driven, and allow community groups to take immediate steps to address its concerns. Residents take the initiative in forming speed watch groups, taking community group pledges, maintaining landscaping to improve street visibility, conducting education workshops, and undertaking other simple measures aimed at elevating traffic safety consciousness. Additionally, community groups can request use of the Town’s radar speed display unit and ask for targeted enforcement.

## Community Traffic Education

Community traffic education campaigns can include:

- Meeting and workshops
- Personalized letters, blanket flyers and newsletters
- Speed awareness signs and banners
- Block parties
- School programs (Middle and High School).

Campaigns focus on pedestrian, bicycle and vehicular safety. The objective is to heighten community awareness through combinations of education and enforcement.

## Advantages

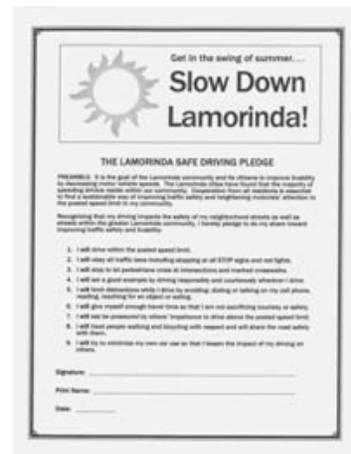
- Allows residents to discuss their views
- Information is aimed to a specific audience
- Can be applied quickly without format review process

## Disadvantages

- Effectiveness may be limited
- Potentially time consuming
- Block parties require police and fire approval
- Enforcement likely still required

## Community Pledge Program

Pledge programs promote safe and courteous driving habits by encouraging community members to agree to alter their driving habits and set good examples for others. Use of written pledges and bumper stickers can be effective. The hope is that neighbors will set examples for one another, and others within the wider community.



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**Community Sign Campaign**

Special signs conveying traffic safety messages can be effective when posted within a community area. These signs are more effective if they are moved from time to time. The town maintains a limited supply of special use signs that are much different in appearance than usual regulatory and warning signs. These signs are intended for temporary or semi-permanent installation in yards or within rights-of-way.

**Advantages**

- Novelty of new signs draws attention to the message
- Requires multiple neighbors to support, therefore broadening the reach of the message
- Short duration of sign placement helps keep the message fresh

**Disadvantages**

- Signs could be vandalized
- Effectiveness will diminish with prolonged usage

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**Trash Can Brigade**

Residents place stickers on their curbside trash and recycling containers encouraging safe driving. Stickers remind passers-by of safe driving habits. Since the trash containers are placed curbside weekly, the presence of these signs has less potential for becoming stale than do stationary signs.

**Advantages**

- Heightens neighborhood awareness of driving behaviors
- Residents “set the pace” for drivers following them
- Demonstrates local support for courteous driving habits

**Disadvantages**

- Effectiveness may be limited
- May create ill will and tension among community members



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**Local Area Maintenance**

Residents organize work parties to prune overgrown vegetation that is blocking signs or sidewalks, or blocking vision of pedestrians, bicyclists and motorists. The town provides guidelines on proper pruning methods, when asked.

**Advantages**

- Limited appearance of stickers heightens impact
- Demonstrates a neighbor's value and support for appropriate driving behavior
- Message may reach motorists driving through the local area who aren't usually reached by other education efforts

**Disadvantages**

- Messages appear only once a week
- Receptacles left at curb for long periods may diminish effectiveness of message
- As they deteriorate, old stickers will need to be replaced
- May require coordination with trash and recycling companies



## Speed Watch and Warning Letters

Several trained residents monitor vehicle speeds using radar units furnished by the town, or speed trailers set up by town staff. License plate numbers, time and date and location of speeding observation are recorded and turned over to town staff. In some instances, town staff can do the monitoring. Staff then runs plate numbers and sends warning letters to the most egregious speed offenders. Included with the warning letter are educational materials encouraging offenders to drive more safely.

### Advantages

- High-speed vehicles are identified and owners receive educational information
- Letter from local law enforcement may increase driver awareness and compliance
- A good way to get education materials to speeding offenders
- May help parents become aware of their child's driving habits

### Disadvantages

- Registered vehicle owner who received letter may not be the high-speed driver
- Some drivers may object to over-zealous persons doing the speed monitoring, engendering community ill will
- Program requires careful monitoring by staff to avoid potential abuse or harassment
- Requires accurate notation of vehicle license number



## Speed Display Units

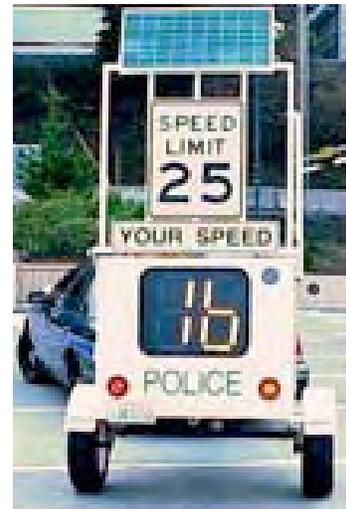
A common kind of radar speed display is a portable trailer equipped with a radar unit that detects the speed of a passing vehicle and displays vehicle speed on a reader board. Radar units are also available that are mounted inside a vehicle. Most displays flash measured speed if a speed is detected over the posted speed limit. The units discourage speeding along routes where the units are used, and are very effective when used in conjunction with enforcement by police officers on motorcycles or other vehicles. Multiple trailers can be pooled from adjacent cities as part of saturation campaign, a practice that has been used with good effect in Lamo-rinda.

### Advantages

- Effective educational tool and good public relations for Police
- Encourages speed compliance and can reduce speeds temporarily
- Provides immediate feedback to drivers on their driving speed
- Allows residents to see how fast vehicles are moving on their neighborhood streets
- Has no adverse impact on emergency vehicles
- Easily to deploy

### Disadvantages

- Effectiveness may be temporary
- Less useful on multi-lane streets and less effective on high volume streets
- Subject to vandalism
- Requires town staff for set-up and removal
- Aesthetics unacceptable to some persons



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**Targeted Police Enforcement**

The Police Department deploys officers to perform Targeted enforcement on streets where problems have been reported. Unmanned parked police cruisers positioned as decoys have proven remarkably effective when used on an occasional basis. On inter-city arterials, pooled police resources can saturate problem areas. Since all police vehicles in the Lamorinda area look alike (black and white), motorists tend to respond to the force-multiplier effect of a larger apparent police presence. Repeated use of enforcement is often necessary, since many motorists don't get the message or have short memories. Even when it is prominently announced that certain streets will be targeted on certain days, some motorists will still speed as though no enforcement were in effect.

**Advantages**

- Visible enforcement may be very effective, especially when combined with other actions such as Speed Trailers
- Driver awareness is increased
- Can be deployed on short notice, consistent with police resources
- Can reduce speeds temporarily
- May have lasting impact if citations are upheld and penalties are sufficiently severe
- May influence the behavior of other drivers who see citations being issued to arrested offenders

**Disadvantages**

- Temporary measure
- Requires repeated use to be effective
- Disrupts traffic on high volume streets
- Subject to officer availability/resource intensive



## Level 2 Tools

Level 2 measures focus on measures that are easy to implement yet relatively low-cost, such as enhancing visibility of street markings, provision of informational signage, speed limit and other traffic control, and traffic control signage. Traffic control signage usually requires some engineering study to meet engineering standards and accepted safety warrants.

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### **Moveable/Temporary Slow Down Signs**

Moveable, temporary signs are an alternative to permanent signs. Signs can feature unusual designs and bright colors that are eye-catching. However, with prolonged exposure, even highly unusual permanent signs become part of the landscape and become increasingly ineffective the longer they are in place. The town can install permanent posts at selected locations, which can be used for temporary signs (and also for speed monitoring devices, discussed below).

### **Advantages**

- Novelty of new signs attracts attention of motorists
- Avoids long-term clutter
- Posts can be used for portable Speed Monitoring devices

### **Disadvantages**

- Long-term benefits may be negligible
- Could result in excessive clutter, if not controlled
- Requires Town staff to install and remove
- Advisory only, not enforceable



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**Moveable/Temporary Speed Monitoring Devices**

Speed monitoring devices are battery- or solar-powered units that detect vehicle speed by radar, and flash “YOUR SPEED” at approaching vehicle (similar to a Speed Trailer, p 22). These devices are an effective alternative to signs. The town can install permanent posts at selected locations for moveable speed monitoring devices, such that the monitoring devices can be relocated to different locations with relative ease.

**Advantages**

- Shows speed with flashing display
- Novelty of device attracts attention of motorists
- Avoids long-term clutter
- Posts can be used for portable Temporary Signs

**Disadvantages**

- Long-term benefits may be negligible
- Requires Town staff to install and remove
- Batteries usually require frequent charging
- Solar power is high-maintenance



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**Neighborhood Signs**

Neighborhood signs are custom made and are placed on local streets within neighborhood, often at the entrances to the neighborhood. They display messages designed by the neighborhood. The signs often-times are permanent, and require conformance to the town’s sign ordinance.

**Advantages**

- Notifies drivers that they are entering a neighborhood or residential area
- Signifies to drivers the residents’ concern for safe driving
- If well-designed, signs can be eye catching

**Disadvantages**

- Are not standard signage, and can cause some confusion
- Might not have much impact on speeding
- Could be vandalized
- Require Town staff to install



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### Crosswalk Improvements

These can be crosswalks designed for high visibility, or crosswalks created by painted “zebra” stripes, in-pavement flashing lights, or other stark markings. Distinctive crosswalks can be built with especially stamped/colored pavements materials, which can be very effective and quite durable.

### Advantages

- Indicates preferred pedestrian crossing location
- When pedestrians are present, drivers are likely to slow
- Focuses crossing by pedestrian at particular location
- Can be designed to increase visibility under low-visibility conditions



### Disadvantages

- Pedestrians may be lulled into false sense of security
- Must be carefully applied at mid-block locations
- May require more maintenance than traditional crosswalks



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### Striping Narrow Lanes and/or Centerlines

Striping can create narrower travel lanes—often 10 feet wide—which causes most drivers instinctively to slow down. Centerline stripes help drivers stay on the “right” side of road. Striping is an effective way to mark pavement outside of travel lanes that are designated for bicycle use and/or parking.

### Advantages

- Can be implemented quickly
- Relatively inexpensive, especially if done as part of re-paving project
- Can slow vehicle speeds
- Can delineate bicycle lanes and/or parking areas on pavement



### Disadvantages

- Not always perceived as an effective traffic calming tool
- Some might object to striping on neighborhood streets

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### Supplemental Signs and Pavement Markings

Permanent pavement markings can help provide motorists advance warning, provide supplemental directions, etc. These can include such messages as “PEDESTRIAN CROSSING AHEAD”, “LIMITED SIGHT DISTANCE”. Optical Speed Bars can help drivers gauge their speed (see the white “hash” marks in the center photo). This style of marking usually requires engineering study and design to be done effectively.

### Advantages

- Might highlight lesser known roadway features
- Increases awareness
- Can help reduce driver confusion where roadway configuration is not clear
- Relatively inexpensive to install

### Disadvantages

- Adds additional signage and markings
- Potential clutter in neighborhoods
- Pavement markings can be slippery for pedestrians and/or bicyclists when wet
- Flexible signs mounted in the pavement are often treated as Targets by motorists that make sport out of running them down



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### New Regulatory Signs

Stop signs can be installed when based on warrants determined by engineering study. New speed limit postings must be properly justified in order for radar enforcement to be admissible. Certain classes of vehicles can be excluded from specific streets if approved by the Town Council. Similarly, parking restrictions can be posted if properly authorized.

### Advantages

- Can improve safety if warranted

### Disadvantages

- May degrade safety if not warranted
- May require police enforcement in order to be effective



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**Landscaping**

Abundant street trees, median treatment, corner treatments, decorative signs, park benches, pathways, and contrasting colors are all elements of landscaping that can provide a calming effect on traffic. If properly installed, and well maintained, landscaped streets will appear narrower than in reality, thereby causing motorists to lower their speed.

Moraga-Orinda Fire District has noted that landscaping can be considered Level 2 if it does not obscure sight lines.

**Advantages**

- Can be used to make drivers aware of their speed
- Improves aesthetics combined with provides opportunities to be creative with response to traffic concerns
- Alerts drivers to changed road conditions

**Disadvantages**

- Can entail high installation costs
- Requires continual maintenance



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**Botts Dots and Rumble Strips**

Botts Dots and raised reflectors (raised pavement markers) are small bumps lining the centerline or edgeline of the roadway. Often they are used on curves where vehicles have a tendency to deviate outside of their travel lane, risking collision. Pavement reflectors improve nighttime visibility of roadway edges, and are helpful for defining pavement limits during periods of poor visibility.

Dots and reflectors can be arranged in arrays that span width of roadway, creating a “rumble strip”. Rumble Strips can be useful at approaches to traffic signals or other traffic controls where driver’s attention is important.

**Advantages**

- Relatively inexpensive
- Best installed during a pavement re-paving or striping project
- Does not slow service or emergency vehicles
- Can improve safety by helping motorists stay within travel lanes
- Can help “awaken” drivers when approaching traffic signals and controls
- Improve nighttime visibility and visibility when conditions are otherwise poor

**Disadvantages**

- Create noise when vehicles pass over dots or reflectors
- Can be dangerous for bicycles if riders are not paying attention



## Level 3 Tools

Level 3 measures typically alter the configuration, and possibly the visual character, of streets. Some Level 3 measures are intended to control traffic flow through signalization or diversion methods. Whatever their purpose, Level 3 measures require more engineering and landscaping design, cost much more, and require more community input than Level 2 measures.

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### Gateway

Gateway treatments consist of physical, textural and visual changes to streets and are located at an entryway to a neighborhood. Treatments are commonly designed to make a statement that a neighborhood is being entered. They can be combined with Chokers to improve traffic calming impact. A complex gateway treatment might serve as a checkpoint to a gated community.

### Advantages

- Can reduce vehicle speed
- Announces a difference in driving environments
- Creates an identity for neighborhood
- Can discourage cut-through traffic
- Opportunity for landscaping

### Disadvantages

- Can create maintenance and irrigation needs
- May eliminate some parking
- May create a physical obstruction



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### Landscaping

Abundant street trees, median treatment, corner treatments, decorative signs, park benches, pathways, and contrasting colors are all elements of landscaping that can provide a calming effect on traffic. If properly installed, and well maintained, landscaped streets will appear narrower than in reality, thereby causing motorists to lower their speed.

### Advantages

- Can be used to make drivers aware of their speed
- Improves aesthetics combined with provides opportunities to be creative with response to traffic concerns
- Alerts drivers to changed road conditions

### Disadvantages

- Can entail high installation costs
- Requires continual maintenance



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### Median Island

Raised islands in the center of a street can be used to narrow lanes for speed control. Islands can also be used for controlling left turns into or from a side street. When placed across an intersection, an island serves to force traffic entering from a side street to make a right turn. And a Median Island can serve as pedestrian refuge in the middle of a crosswalk. Median Islands can also support attractive landscaping.

### Advantages

- Effective speed reducing method
- Can reduce collision potential
- Effective for channeling traffic
- Effective for blocking crossing traffic
- Shortens pedestrian crossing distance
- Opportunity for significant landscaping
- Can be part of effective neighborhood entrance feature

### Disadvantages

- Potential loss of on-street parking
- Could adversely impact emergency vehicles
- Could result in unwanted traffic diversions
- Requires continual maintenance, especially if planted



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### Curb Extension

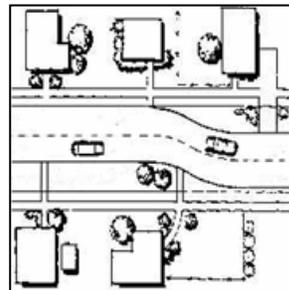
Curb Extensions on otherwise straight streets can be designed such that traffic lanes are altered to bend one way and then bend back the other way. If properly designed, curb extensions can be used on collector streets, and even arterials, where traffic volumes are relatively high. Curb Extensions can be designed to provide additional on-street parking on pavement that has been eliminated from travel use. Curb Extensions provide opportunities for breaking up long stretches of otherwise barren streets with attractive landscaping.

### Advantages

- Can accommodate higher traffic volumes than many other traffic calming measures
- Need not impede emergency vehicles
- Where a wide roadway is narrowed, on-street parking opportunities might be available
- Improves sight distances for pedestrians
- Offers landscaping opportunities

### Disadvantages

- Not as effective as some other traffic calming measures
- If applied to a narrow roadway, on-street parking might be lost
- Must be designed carefully to discourage drivers from deviating out of the travel lanes



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**Chicane**

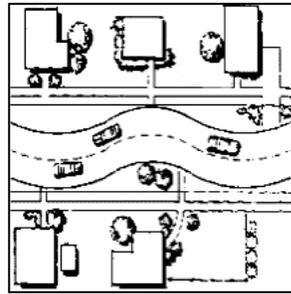
A street that features curb extensions that alternate from one side of the street to the other, creating a serpentine curve, is called a chicane. A chicane can be created by alternating on-street parking on either side of street. They can also be created by arrangements of chokers as well as curb extensions.

**Advantages**

- Discourages high speeds by forcing traffic through horizontal deflection
- Suitable for high volume streets where speeding is an issue
- Easily negotiable by emergency vehicles
- Does not restrict access to and from side streets
- Can make pedestrian crossing easier

**Disadvantages**

- Not as effective as some other traffic calming measures
- If applied to a narrow roadway, on-street parking might be lost
- Must be designed carefully to discourage drivers from deviating out of the travel lanes
- Can be costly to install, especially if there are drainage issues created by the roadway realignment



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### Choker and Slow Pinch Point

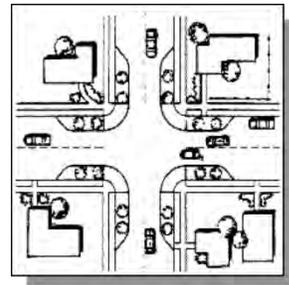
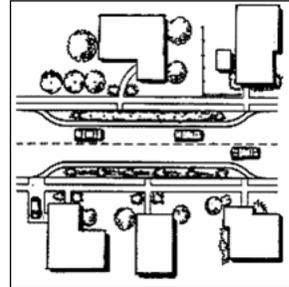
Curb Extensions at intersections, or mid-block, that narrows a street on both sides by extending the sidewalks or widening planting strips are effective measures for reducing vehicle speeds and, in some cases, traffic volumes. The usual purpose is to reduce traffic volumes and speed by making lanes narrow so vehicles will slow down. Suitable for streets where speed limits are under 35 MPH.

### Advantages

- Discourages high speeds by forcing traffic through horizontal deflection
- Suitable for high volume streets where speeding is an issue
- Easily negotiable by emergency vehicles
- Does not restrict access to and from side streets
- Can make pedestrian crossing easier

### Disadvantages

- Not as effective as some other traffic calming measures
- If applied to a narrow roadway, on-street parking might be lost
- Must be designed carefully to discourage drivers from deviating out of their travel lanes
- Can be costly to install, especially if there are drainage issues created by the roadway realignment



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**Traffic Circle and Roundabout**

These measures are based on a raised circular island at intersections. Circles are usually modest in size relative to a Roundabout (also called a “Rotary”), which is usually much larger. Both traffic circles and roundabouts require drivers to slow down to comfortably maneuver around. Both measures are suitable for relatively flat terrain and for low volume streets where speeds are 35 MPH or less. If thoughtfully designed, they can provide opportunities for attractive landscaping.

**Advantages**

- Very effective in reducing vehicle speeds
- Provides better side street access
- Stop signs not always necessary
- Can add aesthetic value, especially through well designed landscaping

**Disadvantages**

- Generally unsuitable for steep grades
- Difficult for large emergency vehicles to maneuver, particularly small diameter circles
- Can impede large service vehicle access
- Can create motor vehicle/bicycle conflicts
- Crosswalks need to be modified
- On-street parking loss is possible
- Landscaping requires maintenance by town, neighborhood groups, or service groups



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### Speed Hump (Bump) and Speed Table

Speed Humps (also called “Speed Bumps”) typically are asphalt mounds constructed on residential streets, placed in series or spaced 300 to 600 feet apart; they are usually about 3 inches high, 2-3 feet wide, stretching across width of street. Speed Tables are much wider (about 10 feet) and provide a smoother ride for larger vehicles (such as fire trucks). Both measures are effective for reducing speed, but require adequate sight distance to allow approaching motorists to respond. Generally these measures are not installed on streets with considerable grades.

#### Advantages

- Effectively reduces speeds
- Does not require parking removal
- Impact on bicycles may be minimized through design
- Speed Tables can serve as raised crosswalks and can be attractively textured and colored

#### Disadvantages

- Impacts all drivers, even those driving appropriately
- Increases noise in vicinity of device
- Traffic may be inadvertently diverted to other streets that do not have these measures
- Not always aesthetically pleasing
- Can create drainage issues that can be costly to mitigate
- Can adversely impact emergency vehicles and response times
- Can adversely impact school busses and public transit vehicles



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### Speed Cushion

Speed Cushions are usually fabricated from rubberized materials, usually about 3 inches high. The cushions are wider than the width of a standard automobile, yet less than width of standard fire truck axle. Thus, large emergency vehicles can pass through without any effect. Speed Cushions are intended to be laid on the pavement temporarily, but can be installed permanently.

#### Advantages

- Provides softer ride than asphalt humps
- Can be used for testing purposes, since they are removable
- Can be removed easily for re-surfacing
- Reduces impact on emergency vehicles, public transit and school busses

#### Disadvantages

- Increased noise and air pollution as vehicles speed slow down and speed up either side of device
- Not especially attractive



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**Raised Crosswalks**

These are usually constructed about 3-4 inches above pavement grade, about 10 feet wide (in direction of vehicle travel), with ramps on either side. Raised Crosswalks are intended to reduce vehicle speeds, much as is the Speed Table.

**Advantages**

- Provides softer ride than asphalt humps
- Can be used for testing purposes, since they are removable
- Can be removed easily for resurfacing
- Reduces impact on emergency vehicles, public transit and school buses

**Disadvantages**

- Increased noise and air pollution as vehicles speed slow down and speed up either side of device
- Not especially attractive

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**Raised Intersection**

A Raised Intersection is a flat raised area, usually 4 inches high, spanning an entire intersection. Ramps are installed on all approaches. Pavement of the raised portion is oftentimes brick, pavers, or textured asphalt or concrete, which is intended to make the intersection highly visible. These pavement treatments are not appropriate for steep grades or where speeds exceed 35 MPH.

**Advantages**

- Effective in reducing vehicle speeds
- Improves safety for pedestrians
- If designed thoughtfully, can be aesthetically pleasing
- Does not affect street access

**Disadvantages**

- Increased noise and air pollution as vehicles speed slow down and speed up either side of device
- Can create drainage issues that can be costly to mitigate
- Adversely impacts emergency vehicles and response times

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**Restricted Movement Signage**

Permanent signs posted that state prohibitions such as "NO LEFT TURN", "NO RIGHT TURN", "DO NOT ENTER", "ONE WAY" are intended to prevent undesired turning movements onto certain residential streets. Oftentimes these restrictions can apply for only certain times of the day, such for peak hour limitations. In most cases, Restricted Movement Signage is used to restrict cut-through traffic.

**Advantages**

- Redirects traffic to main streets and reduces cut-through traffic
- Can address time-of-day problems, such as peak hour congestion
- Low cost measure

**Disadvantages**

- Can adversely impact emergency responders by complicating access routes
- May divert traffic onto other residential streets
- Requires enforcement



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### Traffic Signals and Permanent Regulatory Signing

Traffic signals are primarily for regulating traffic flow, not for traffic calming. Traffic signals are appropriate only where traffic control warrants are backed by traffic flow studies. As such, they require detailed study.

#### Advantages

- Can improve safety if justified
- Can be used for warning drivers of intersections and crosswalks where sight distances are limited

#### Disadvantages

- May degrade safety if misused
- Could expose town to additional liability
- Requires enforcement
- Traffic signals are costly to install and require maintenance



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### Street Closure

Partial street closures block one way of traffic at an intersection, leaving the rest of the street for two-way traffic way traffic. They are an effective way to reduce the volume of through traffic, while retaining access to residences on the street that is partially closed. A partial closure is an effective way to reduce cut-through traffic.

Any degree of street closure will impede access by emergency vehicles, and any closure needs to be thought through before selecting this measure.

Street closures work especially well on a grid pattern of streets. However, grids are not common in Moraga, where neighborhood streets are usually small loops and cul-de-sacs off larger collector streets.

Full street closures would rarely be appropriate in Moraga, where multiple routes into most neighborhoods are rare. In some areas, partial closures might be appropriate.

#### Advantages

- Effective way to reduce traffic volumes and cut-through traffic
- Does not impact bicycle traffic
- Does not eliminate on-street parking

#### Disadvantages

- Makes intra-neighborhood circulation more difficult
- Complicates and degrades emergency and service vehicle access
- Drivers can easily circumvent/ignore the barrier



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**Forced Turn Barriers/Diverters**

Diagonal diverters are barriers placed diagonally across an intersection, blocking through traffic because vehicles are forced to make turn. These barriers create circuitous routes through neighborhoods. They can be constructed with removable obstacles, such as attractive planters, and arranged such that pedestrian and bicycle traffic is unaffected. Diverters do complicate emergency vehicle access, and must be carefully considered for this reason.

**Advantages**

- Does not require a full closure, only a redirection
- Bicycle and pedestrian access need not be effected
- Reduces traffic volumes
- Opportunities for attractive landscaping

**Disadvantages**

- Causes circuitous routes for all vehicles
- Can adversely impact emergency responder access routes
- May be expensive to build and maintain

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**Forced Turn Island**

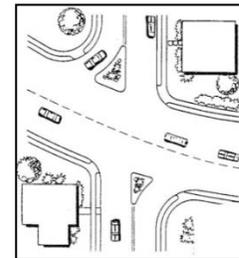
These are raised islands that block certain movements at an intersection, forcing turns in directions intended to improve circulation. They are useful for crosswalks, since pedestrian crossing distances can be reduced.

**Advantages**

- Can improve safety at an intersection by prohibiting dangerous turning movements
- Reduces traffic volumes
- Appropriate method for safety admitting side street traffic onto an artery or collector street
- Can provide mid-crossing refuge for pedestrians

**Disadvantages**

- Drivers can circumvent an improperly design island
- May simply divert traffic problem to another street
- May require acquisition of additional Right of Way



# Acknowledgements

Thanks are due to Fehr & Peers Transportation Consultants for granting permission to use a large number of their graphics related to traffic calming methods for this guidebook. Additionally, it is acknowledged that many of the engineering concepts cited in this guidebook come directly from Fehr & Peer published material contained on their website ([www.trafficcalming.org](http://www.trafficcalming.org)), and from their report “Citywide Guidelines for Traffic Calming and Neighborhood Traffic Management”, prepared for the City of Napa, July 2005.

Recognition is also due to the City of Lafayette, whose “Traffic Calming Guidebook” provided many of the concepts and ideas for the Moraga Traffic Calming Guide. The Lafayette guidebook is accessible through their website ([www.ci.lafayette.ca.us](http://www.ci.lafayette.ca.us)).

Finally, the City of Orinda’s “Neighborhood Traffic Management Program” offered some further ideas on the content of this guide. The Orinda document is accessible through their website ([www.ci.orinda.ca.us](http://www.ci.orinda.ca.us)).

## Note

This document will be reviewed intermittently by Moraga’s Traffic Safety Advisory Committee (TSAC) in order that it is appropriately updated as necessary. Any such review sessions will be conducted as public hearings at which interested citizens may contribute to the review process. TSAC will recommend any resulting revisions to the Town Council which ultimately will approve any changes to the document.

## Change Log

Revision History	
Sep 10, 2008	Approved by Town Council
Jun 25, 2008	Delivered to Town Council for review
Jun 4, 2008	Edited during regular TSAC meeting
May 19, 2008	Edited in committee workshop for completion of deliverable draft
May 7, 2008	Edited during regular TSAC meeting
Apr 28, 2008	Edited in committee workshop
Apr 24, 2008	Edited as per committee comments
Apr 16, 2008	Reformatted for simplification of structure
Apr 14, 2008	Edited in committee workshop
Mar 19, 2008	Edited in committee workshop
Feb 29, 2008	Received request to revise 2007 draft document with past council and public comments