What Works for Traffic Calming and What Doesn't - An Interactive Approach to Identifying Best Practices

Presented by
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Nazirlalani1@gmail.com

ASCE | KNOWLEDGE & LEARNING

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Meet Your Instructor

- Course instructor for UC Berkeley on classes concerning on traffic calming
- Reviewer of many traffic calming projects for public agencies
- Responsible for implementing many traffic calming measures
- Developed several NTMPs for public agencies including the Greater London Area
- Made presentations and wrote papers on traffic calming
- Researched many sources of information for preparing webinar materials

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Webinar Goals

- Become familiar with how to use to use the tools already in existence to design traffic calming measures and avoid controversy
- Learn about the most critical components of the traffic calming process and where potential pitfalls may be
- Become familiar with the tool box – what works and what doesn't
- Become familiar with the most current research about on traffic calming from various sources
- Learn from the backlashes of traffic calming measures and why they happen

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Webinar Format

- Duration: 90 minutes
- Follow along with pdf of slides
- Create a folder of slide pdfs and all technical report free downloads
- Feel free to ask questions
- Instructor may ask audience a question at a specific slide
- **Webinar Quiz Questions**

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https://www.washingtonpost.com/local/traffic-weary-homeowners-and-waze-are-at-war-again-guess-whos-winning/2016/06/05/c466df46-299d-11e6-b989-4e5479715b54_story.html

NOTE: Waze will be getting a new feature to warn of speed bumps on your route.

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Three Biggest Process Issues That Work

- Structured vs. Flexible
- Proactive vs. Reactive
- Area wide vs. Localized
- Residents Must Understand Impacts to Themselves

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Plan Initiation – What Works

❖ Who starts process?	Individual Residents	Neighborhood Association	City Staff
❖ How process is started?	Petition Complaint	Contact with City staff	Review of data Review of complaints
❖ Minimum level of support?	# households % of street % of neighborhood	Board vote Neighborhood survey	Based on need

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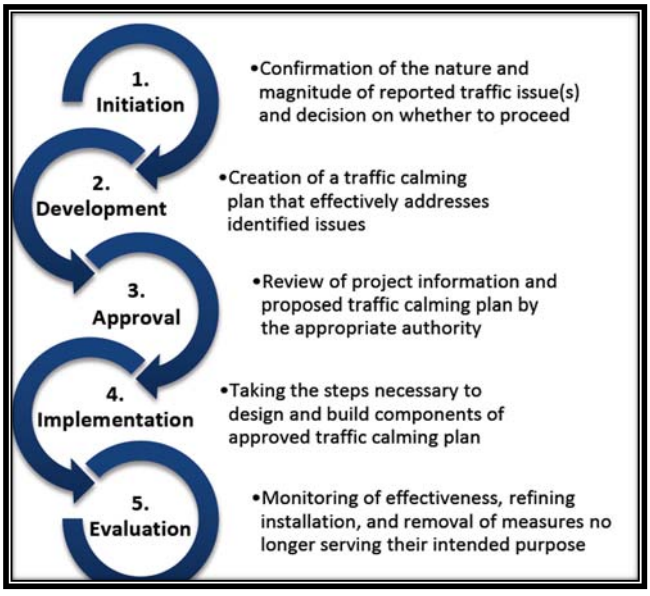

Source: Primer on Traffic Calming – Canadian ITE and Transportation Association of Canada

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Establishing Priorities – What Works

- How are priorities established?
  - First come, first served
  - Based upon technical data
  - Prioritize by district
  - Council/County Commissioners decision
  - Resident funding qualifies neighborhood

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Technical Data – What Works?

- If using a technical analysis, then consider which factors?:
  - Traffic volume
  - Cut-through volume
  - Functional class
  - Speed
  - Collisions
  - Pedestrian generators
  - Sidewalk availability

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Critical Questions - What Works

- Staff or Resident Committee Develops the Plan?
- Is the process phased?
- Should each neighborhood have a budget?

- How is the budget determined?
  - Same for every neighborhood
  - Vary according to size/population
  - Varying based on another factor

- Do the residents contribute?
  - Residents required to fund a certain percentage
  - Residents allowed to fund upgrades

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Interaction with Residents – What Works

Visualization

- Site Visits/Guided Tours
- Computer Imaging
- Visual Preference Surveys

Participation

- Design Charrettes
- Focus Groups
- Neighborhood Traffic Committees

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Plan Support – What Works

- How is the impact/study area defined?
  - One street and connecting streets
  - Entire neighborhood
  - Vary by type of device
- Who gets surveyed?
  - Homeowners and/or occupants
  - Businesses too
- What is required to move the plan forward?
  - Minimum Response Rate: 90%
  - Minimum Approval Rate: 67%


City proposal for roundabout gets mixed reviews

Some Cove residents express doubts, but others like the plan

ROUNDABOUT IN THE COVE

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Plan Support Process That Did Not Work

Dandelion Drive

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MILES AVE
Topaz Community
Amelia Earhart Elem. School
John Glenn Middle School
DUNE PALMS RD
CITY OF LA QUINTA
CITY OF INDIO
Indian Springs C.C.

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September 14, 2012

Timothy R. Jonasson
Director of Public Works
City of La Quinta
PO Box 1504
La Quinta, CA 92247-1504

Mr. Jonasson:

Attached is a list of signatures from the homeowners in the Wildflower/Sunflower developments of La Quinta, requesting "No Student Drop Off or Pick Up" signs for Dandelion Dr., Verbena, and Morning Glory Ct.

We are in desperate need of a resolution to the traffic problems we endure as a result of John Glenn Middle School. It is our hope that you will expedite the installation of these signs.

Sincerely,

"NO STUDENT DROP OFF OR PICK UP" Signs

Property Address	Propery owner Signature	Date
79558 DANDELION DR.		9-11-12
79578 Dandelion Dr.		9-11-12
79593 DANDELION DR.		9/11/12
79598 Dandelion Dr		9-11-12
79613 Dandelion Dr		9/11/12
79613 Dandelion Dr		9/11/12
79693 Dandelion Dr		9/11/12
79678 DANDELION DR.		9/11/12
79718 DANDELION DR		9/11/12
79584 Morning Glory Ct		9/12/12
79-773 - DR.		9-11-12
79673 Dandelion		9/11/12
79546 DANDELION DR		9/11/12

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Complaint Letter

agreed to enforce the signs. Now, I find that the police are only ticketing the residents and not the parents picking up children from John Glenn. I live on the corner of Dandelion and Verbena and watch for law enforcement daily. I have yet to see an officer ticketing the school traffic. However many residents have been ticketed. I find that puzzling!! Could it be that Public Works is jesting with us.

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Response from City

As I understand it as part of collecting signatures you were to inform your neighbors that the City would have to enforce these restrictions on the homeowners as well as the parents dropping off students since the police department cannot selectively enforce laws. To that end I have discussed this with our police lieutenant and believe the restrictions are being enforced uniformly on both the homeowners and parents who choose to ignore the signs.

Because these signs were installed at that request of the majority of the homeowners and were paid for by the City it is now necessary for the majority of the property owners request their removal for the City to act. Once this is done the City will no longer be able to restrict stopping or parking on these streets. Dandelion Drive is a public right-of-way for the use of the public which includes parking and drop off for students. We will continue to monitor the situation to insure the safe use of the street by motorists and pedestrians however we know of no other solution to your stopping and drop off issue other than the signage that is currently installed on your street.

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So What Did Not Work?

- The residents did not realize that the signs would apply to them
- Many who signed the petition said so later
- Even attorneys who signed the petition did not understand the signs applied to everyone
- Signs did not solve the problem so the problem continued but changes by school reduced problem
- What would have avoided all of this wasted effort – having a meeting and provide refreshments moderated by a professional?

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Possible Process Changes – Would They Work?

- Required the resident leading the effort for the sign installation to provide a full disclosure sheet approved by the City? (Resident said that was done but apparently not or not effective)
- Held a neighborhood meeting to explain that signs would impact residents as well? (Not sure how many would attend)
- Sent out a letter verifying that each person who signed the petition understood what they were signing? (Very difficult with the available staff resources)

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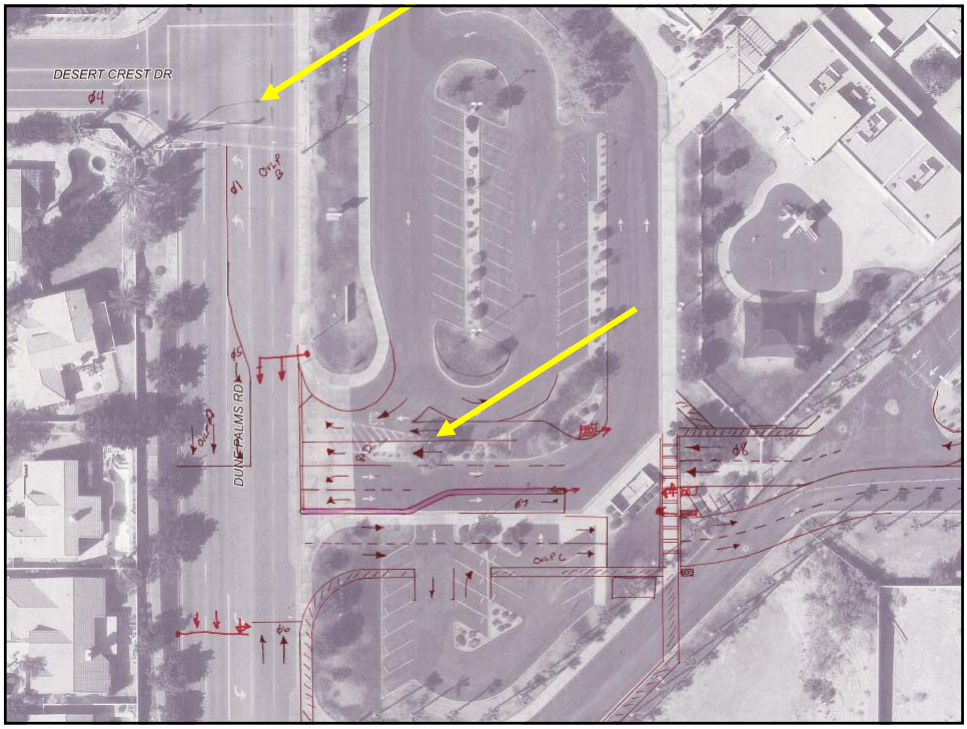
DESERT CREST DR
DUNE PALMS RD

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Crossing guard has
taken to directing traffic

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School
New loading zone to be created (30 spaces)

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High Schools Are The Worst

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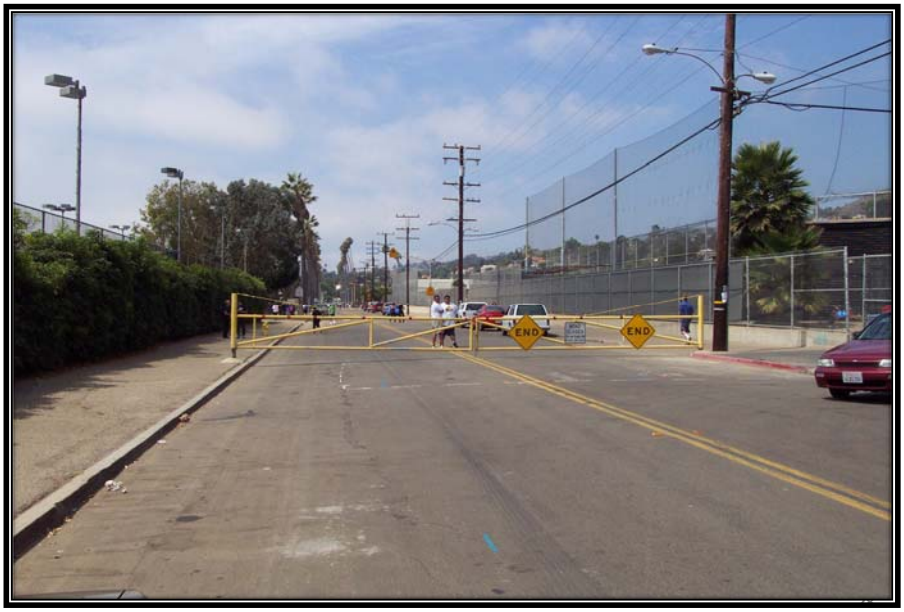
You can always close the street – part time



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Webinar Quiz

What is it that makes residents most resentful of changes to their street for traffic calming?

a. Lack of understanding of the toolbox
b. Not being involved in the decision making process
c. Cost impacts
d. Aesthetics
e. Waze software traffic diversions

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Toolbox Options – What Works?

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U.S. Department of Transportation
National Highway Traffic Safety Administration

NHTSA

DOT HS 810 648 August 2006

Pilot Test Of Heed The Speed, A Program To Reduce Speeds In Residential Neighborhoods

HEED THE SPEED!

This document is available to the public from the National Technical Information Service, Springfield, Virginia 22161

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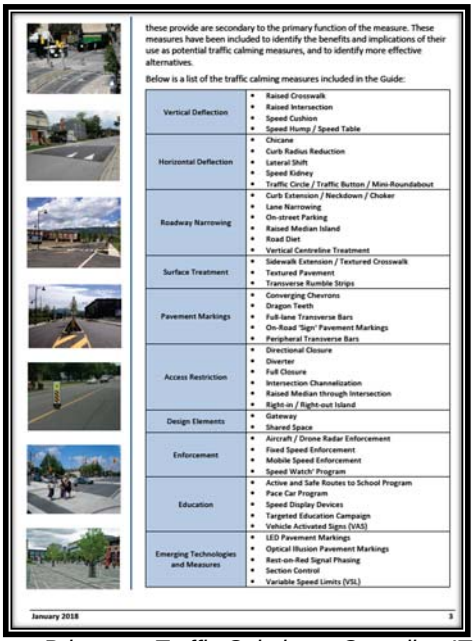

these provide are secondary to the primary function of the measure. These measures have been included to identify the benefits and implications of their use as potential traffic calming measures, and to identify more effective alternatives.

Below is a list of the traffic calming measures included in the Guide:

Vertical Deflection	• Raised Crosswalk • Raised Intersection • Speed Cushion • Speed Hump / Speed Table
Horizontal Deflection	• Chicane • Curb Radius Reduction • Lateral Shift • Speed Kidney • Traffic Circle / Traffic Button / Mini-Roundabout
Roadway Narrowing	• Curb Extension / Neckdown / Choker • Lane Narrowing • On-street Parking • Raised Median Island • Road Diet • Vertical Centreline Treatment
Surface Treatment	• Sidewalk Extension / Textured Crosswalk • Textured Pavement • Transverse Rumble Strips
Pavement Markings	• Converging Chevrons • Dragon Teeth • Full-lane Transverse Bars • On-Road 'Sign' Pavement Markings • Peripheral Transverse Bars
Access Restriction	• Directional Closure • Diverter • Full Closure • Intersection Channelization • Raised Median through Intersection • Right-in / Right-out Island
Design Elements	• Gateway • Shared Space
Enforcement	• Aircraft / Drone Radar Enforcement • Fixed Speed Enforcement • Mobile Speed Enforcement • Speed Watch' Program
Education	• Active and Safe Routes to School Program • Pace Car Program • Speed Display Devices • Targeted Education Campaign • Vehicle Activated Signs (VAS)
Emerging Technologies and Measures	• LED Pavement Markings • Optical Illusion Pavement Markings • Rest-on-Red Signal Phasing • Section Control • Variable Speed Limits (VSL)

January 2018 3

Source: Primer on Traffic Calming – Canadian ITE and Transportation Association of Canada

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What Works - First Try Measures Without Major Geometric Changes

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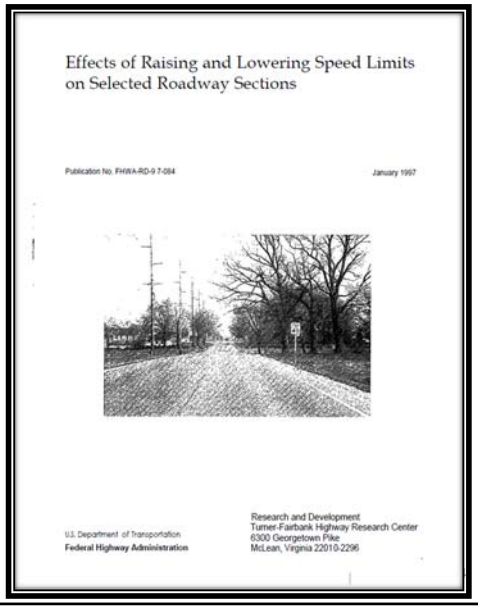
Non-Physical Control Measures

- Targeted Speed Enforcement
- Signage
- Radar Trailers
- Color on Pavement
- Optical Bars
- Speed Legends


Effects of Raising and Lowering Speed Limits on Selected Roadway Sections

Publication No. FHWA-RD-97-084 January 1997

U.S. Department of Transportation
Federal Highway Administration

Research and Development
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, Virginia 22101-2296

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Targeted Speed Enforcement

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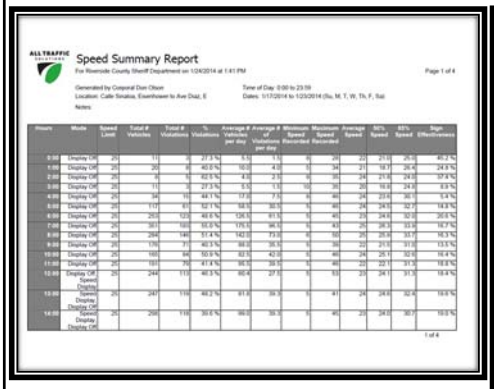
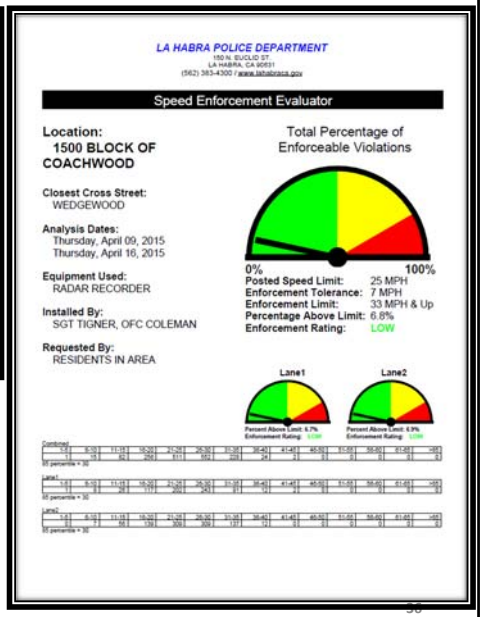
Targeted Speed Enforcement



Speed Summary Report



LA HABRA POLICE DEPARTMENT
150 N. EUCLID ST
LA HABRA, CA 90631
(562) 383-4300 / www.lahabraca.gov

Speed Enforcement Evaluator

Location:
1500 BLOCK OF COACHWOOD

Closest Cross Street:
WEDGEWOOD

Analysis Dates:
Thursday, April 09, 2015
Thursday, April 16, 2015

Equipment Used:
RADAR RECORDER

Installed By:
SGT TIGNER, OFC COLEMAN

Requested By:
RESIDENTS IN AREA

Total Percentage of Enforceable Violations

0% 100%

Posted Speed Limit: 25 MPH
Enforcement Tolerance: 7 MPH
Enforcement Limit: 33 MPH & Up
Percentage Above Limit: 6.8%
Enforcement Rating: LOW

Lane1 Lane2

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Speed Feedback Devices

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What Works - Physical Changes
Use Temporary Materials First

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Temporary V. Permanent

Temporary measures may cause new issues

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Temporary V. Permanent

- Residents want to keep temporary installation
- Temporary installation so unsightly that residents want it removed within days of installation
- Temporary installations require more day to day maintenance
- Temporary installations prone to vandalism

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Temporary Speed Humps, Tables and Cushions

Web Site: www.trafficlogix.com

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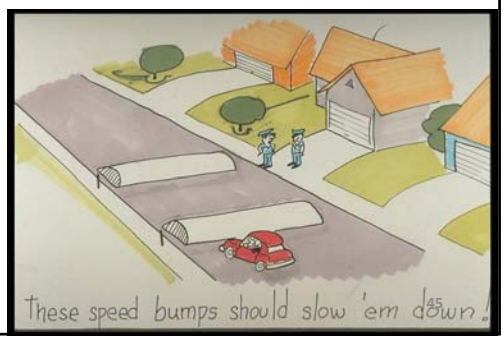
Webinar Quiz

When polling for consensus before implementing traffic calming measures, which stakeholders should be included? :

a. Residents
b. Residents and property owners
c. Residents, property owners and renters
d. Business owners
e. All of the above



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What Works -Physical Changes with Minimal or No Vertical Deflection

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A Matter of Choosing the Right Tools

- Identifying the nature and extent of traffic-related problems on a given street or in given area; and
- Selecting and implementing cost-effective measures for solving identified problems.
- Using an area wide approach or the problem may shift

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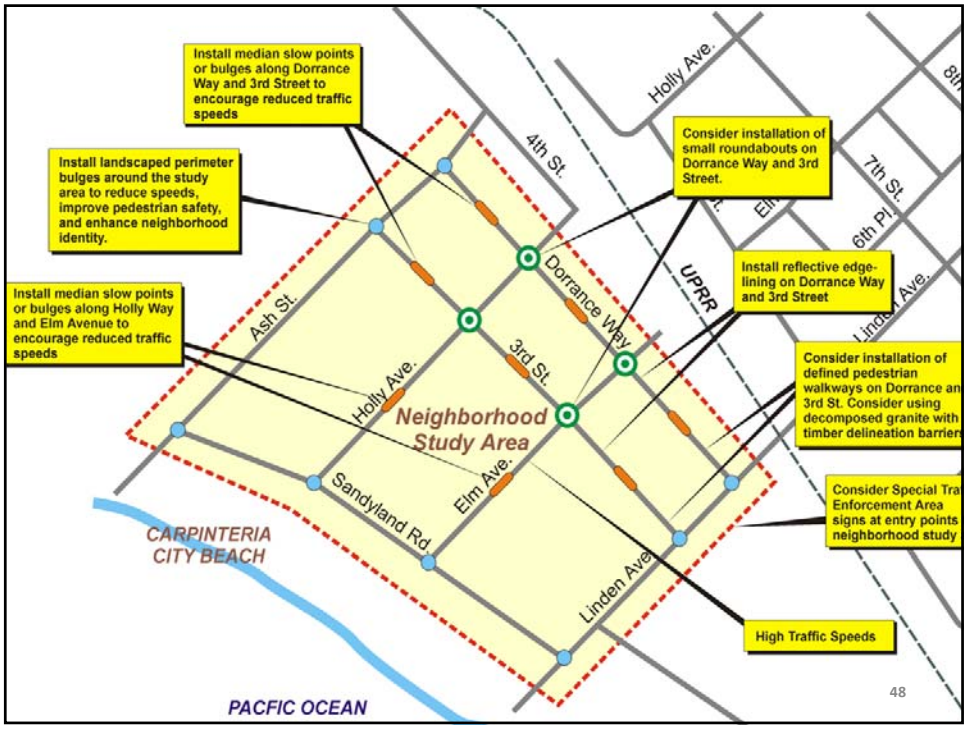

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Horizontal Speed Control Measures

- Traffic Circles
- Roundabouts
- Chicanes
- Lateral Shifts
- Realigned Intersections

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Narrowings

- Neck downs/bulb outs
- Angled Parking
- Center Island Narrowings
- Chokers
  - Two Lane
  - One Lane
  - Impellers

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Slow Points with Color Treated Pavement

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Volume Control Measures

- Full Closures
- Half Closures
- Diagonal Diverters
- Median Barriers
- Forced Turn Islands

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What Works - Designing Measures Right

- Choosing a design speed and design vehicle
- Tailoring geometrics to that speed and vehicle
- Worrying about aesthetics, emergency access, bicyclists and pedestrians, etc.

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Where Can I find Detailed Information?

- Typical location applications
- Potential benefits – volume and speed reduction
- Approximate cost
- Proper signing and striping
- Design details
- Other considerations

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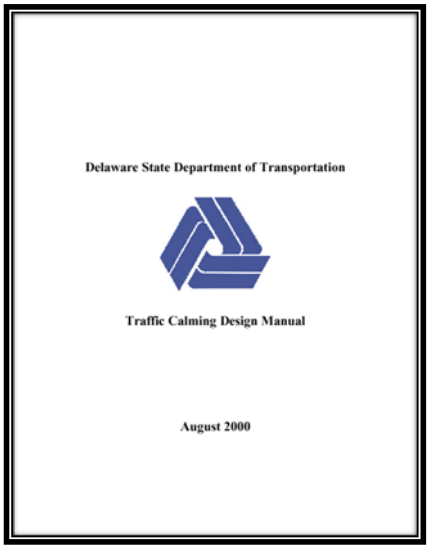
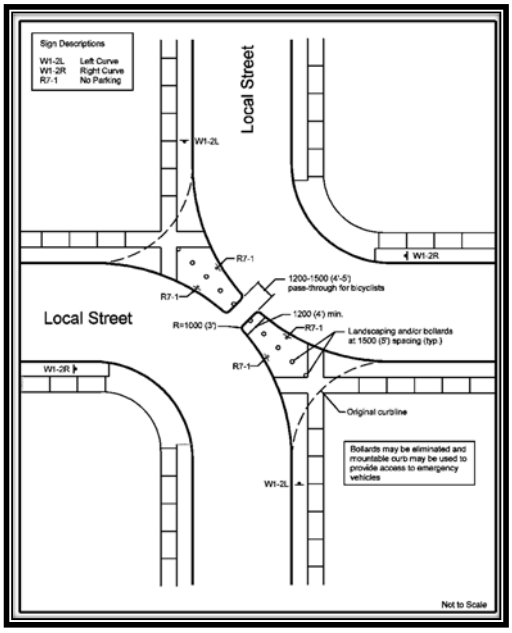
Delaware Design





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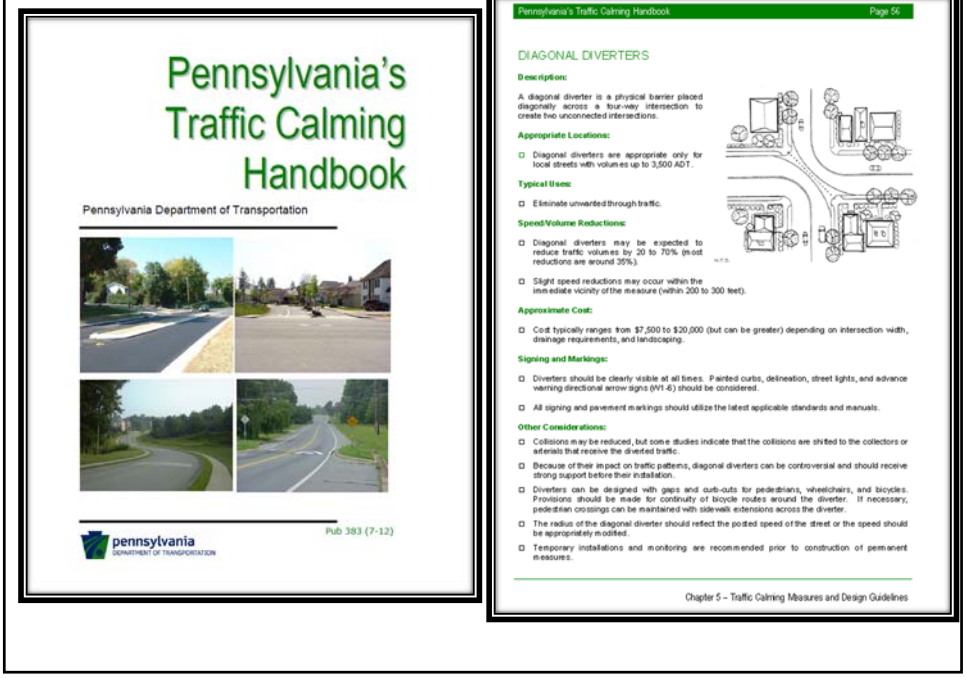
Pennsylvania's Traffic Calming Handbook
Pennsylvania Department of Transportation
Pub 383 (7-12)
pennsylvania
DEPARTMENT OF TRANSPORTATION
Pennsylvania's Traffic Calming Handbook
Page 56
DIAGONAL DIVERTERS
Description:
A diagonal diverter is a physical barrier placed diagonally across a four-way intersection to create two unconnected intersections.
Appropriate Locations:
Diagonal diverters are appropriate only for local streets with volumes up to 3,500 ADT.
Typical Uses:
Eliminate unwanted through traffic.
Speed/Volume Reductions:
Diagonal diverters may be expected to reduce traffic volumes by 20 to 70% (most reductions are around 35%).
Slight speed reductions may occur within the immediate vicinity of the measure (within 200 to 300 feet).
Approximate Cost:
Cost typically ranges from $7,500 to $20,000 (but can be greater) depending on intersection width, drainage requirements, and landscaping.
Signing and Markings:
Diverters should be clearly visible at all times. Painted curbs, delineation, street lights, and advance warning directional arrow signs (W1-6) should be considered.
All signing and pavement markings should utilize the latest applicable standards and manuals.
Other Considerations:
Collisions may be reduced, but some studies indicate that the collisions are shifted to the collectors or arterials that receive the diverted traffic.
Because of their impact on traffic patterns, diagonal diverters can be controversial and should receive strong support before their installation.
Diverters can be designed with gaps and curb-cuts for pedestrians, wheelchairs, and bicycles. Provisions should be made for continuity of bicycle routes around the diverter. If necessary, pedestrian crossings can be maintained with sidewalk extensions across the diverter.
The radius of the diagonal diverter should reflect the posted speed of the street or the speed should be appropriately modified.
Temporary installations and monitoring are recommended prior to construction of permanent measures.
Chapter 5 – Traffic Calming Measures and Design Guidelines

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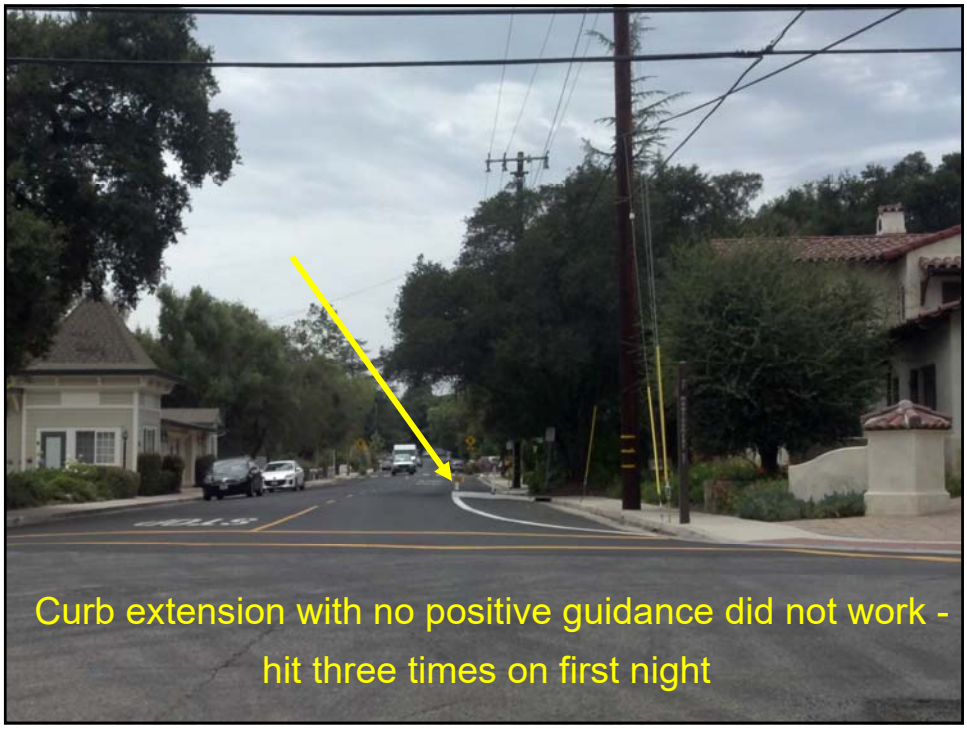
Curb extension with no positive guidance did not work - hit three times on first night

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Vertical Speed Control Measures

- Avoid speed humps
- Use speed cushions/lumps
- Speed tables
- Raised crosswalks
- Raised intersections
- Split devices

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Why Not Speed Humps?

- Noise from vehicles bottoming out
- Noise from vehicles braking and accelerating
- Loss of parking
- Impacts to emergency response personnel
- Not transit friendly
- Drivers do their best to try to avoid speed humps

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If Decision is to Use Speed Humps……

- No more than 3 inches high.. prefer less
- Curbs on both sides/away from driveways
- Comply with MUTCD markings and signs
- Avoid curved sections of roadway
- Place at locations with good sight distance and 300 foot spacing
- Place near street lights
- **Use Speed Cushions**

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Webinar Quiz

What is the most important reason for implementing traffic calming measures using temporary materials?

a. They are cheaper
b. They last longer
c. They are more effective
d. They can be moved/modified/removed more easily
e. They are easier to see at night

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What Doesn't Work for Pedestrians and Bicyclists

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Diverter with Pedestrian and Bicycle Access

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Closure with NO Pedestrian and Bicycle Access

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What Works on Major Arterials?

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Narrowing Travel Lanes By Re-striping

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Curb Extensions and Legends

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Raised Crosswalk on Arterial Street in West Seattle

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What Works for Rural Communities?

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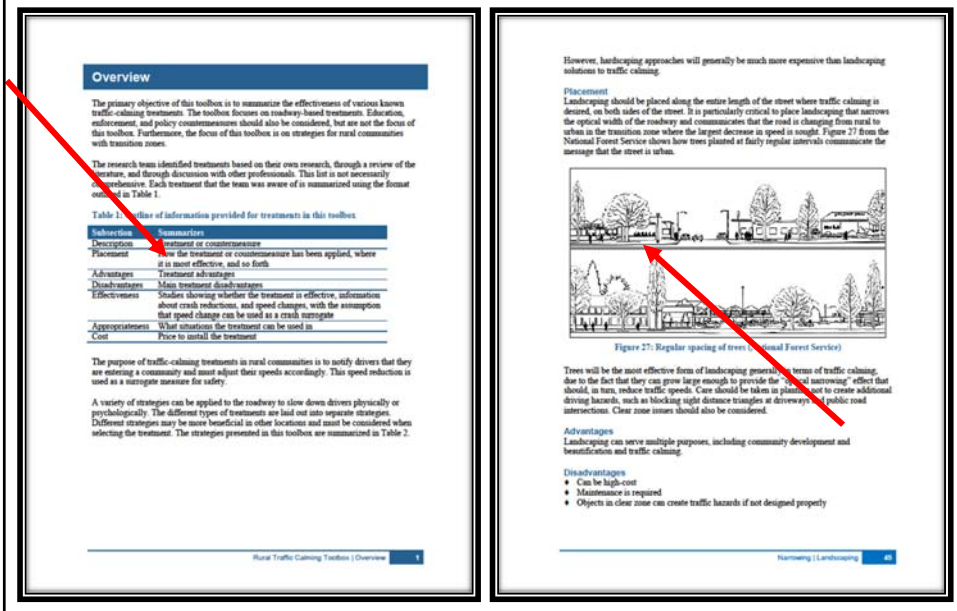

Overview

The primary objective of this toolbox is to summarize the effectiveness of various known traffic-calming treatments. The toolbox focuses on roadway-based treatments. Education, enforcement, and policy countermeasures should also be considered, but are not the focus of this toolbox. Furthermore, the focus of this toolbox is on strategies for rural communities with transition zones.

The research team identified treatments based on their own research, through a review of the literature, and through discussion with other professionals. This list is not necessarily comprehensive. Each treatment that the team was aware of is summarized using the format outlined in Table 1.

Table 1. Outline of information provided for treatments in this toolbox

Subsection	Summarizes
Description	Treatment or countermeasure
Placement	How the treatment or countermeasure has been applied, where it is most effective, and so forth
Advantages	Treatment advantages
Disadvantages	Main treatment disadvantages
Effectiveness	Studies showing whether the treatment is effective, information about crash reductions, and speed changes, with the assumption that speed change can be used as a crash surrogate
Appropriateness	What situations the treatment can be used in
Cost	Price to install the treatment

The purpose of traffic-calming treatments in rural communities is to notify drivers that they are entering a community and must adjust their speeds accordingly. This speed reduction is used as a surrogate measure for safety.

A variety of strategies can be applied to the roadway to slow down drivers physically or psychologically. The different types of treatments are laid out into separate strategies. Different strategies may be more beneficial in other locations and must be considered when selecting the treatment. The strategies presented in this toolbox are summarized in Table 2.

Rural Traffic Calming Toolbox | Overview 1

However, hardscaping approaches will generally be much more expensive than landscaping solutions to traffic calming.

Placement

Landscaping should be placed along the entire length of the street where traffic calming is desired, on both sides of the street. It is particularly critical to place landscaping that narrows the optical width of the roadway and communicates that the road is changing from rural to urban in the transition zone where the largest decrease in speed is sought. Figure 27 from the National Forest Service shows how trees planted at fairly regular intervals communicate the message that the street is urban.

Figure 27: Regular spacing of trees (National Forest Service)

Trees will be the most effective form of landscaping generally in terms of traffic calming, due to the fact that they can grow large enough to provide the "visual narrowing" effect that should, in turn, reduce traffic speeds. Care should be taken in planting trees not to create additional driving hazards, such as blocking sight distance triangles at driveways and public road intersections. Clear zone issues should also be considered.

Advantages

Landscaping can serve multiple purposes, including community development and beautification and traffic calming.

Disadvantages

- Can be high-cost
- Maintenance is required
- Objects in clear zone can create traffic hazards if not designed properly

Narrowing | Landscaping 45

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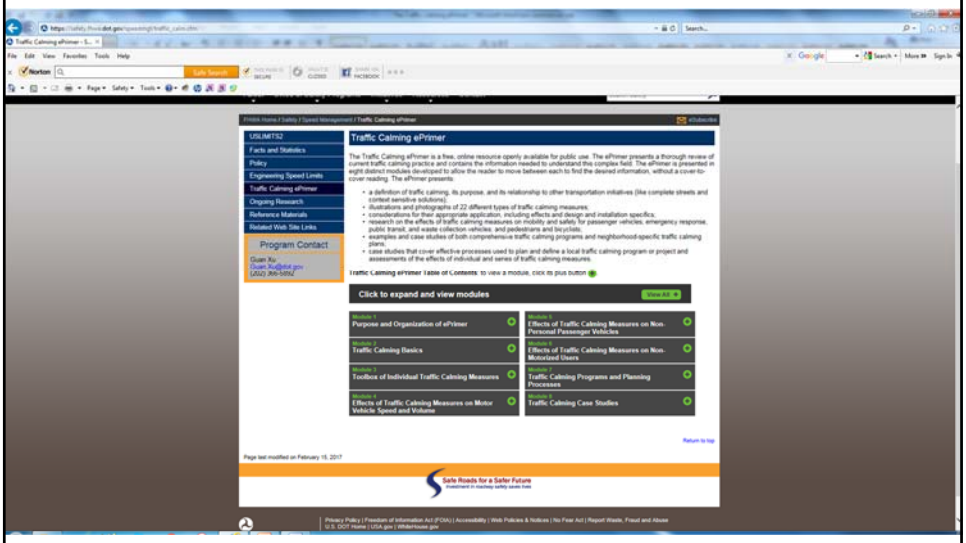

https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

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Aesthetics – What Works

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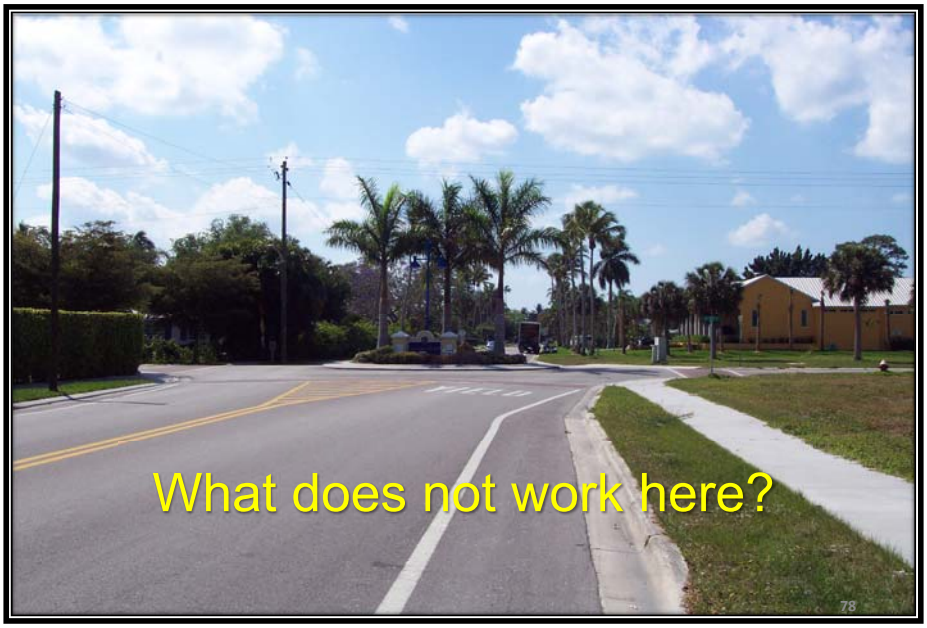
Landscaping Enhancement at Mini



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Diverter Could Be Done Much Better

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Landscaping Policies

	Agency	Neighborhood
Dayton, OH	install	maintain
Eugene, OR	install	maintain till volunteer dies/moves
Gainesville, FL	install	maintain choose plants from city nursery
Howard Co, MD	install & maintain	
Montgomery Co	install	maintain choose landscape palette
San Diego, CA	install	maintain choose plants from approved list
Tallahassee, FL		install & maintain reconsidering because of "uglies"

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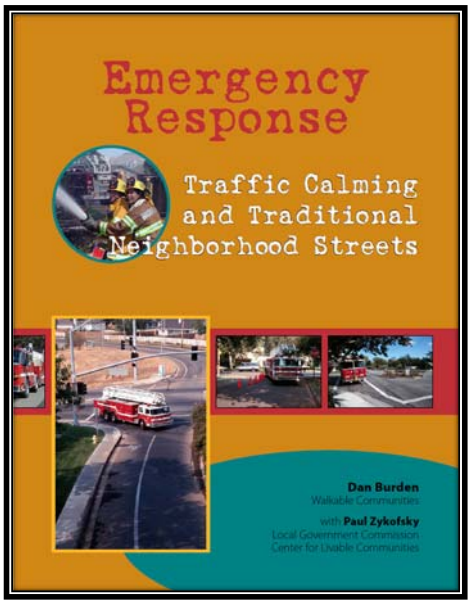

What Are The Impacts to First Response Vehicles?

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City of Mobile, Alabama

Average Delay per Measure

- Tables 7.47 Sec.
- Humps 7.07 Sec.
- Circles 9.10 Sec.
- Lumps 5.31 Sec.

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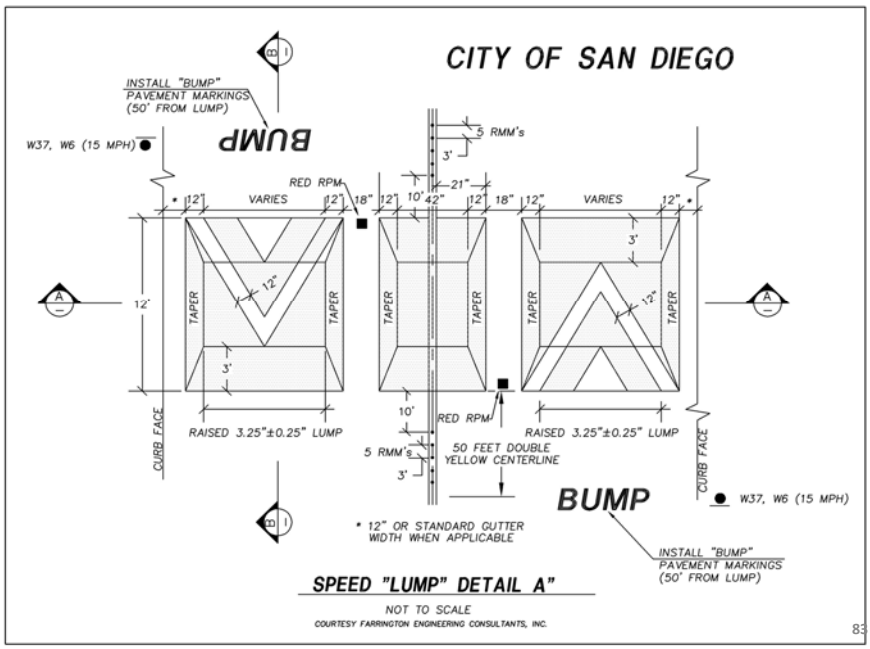

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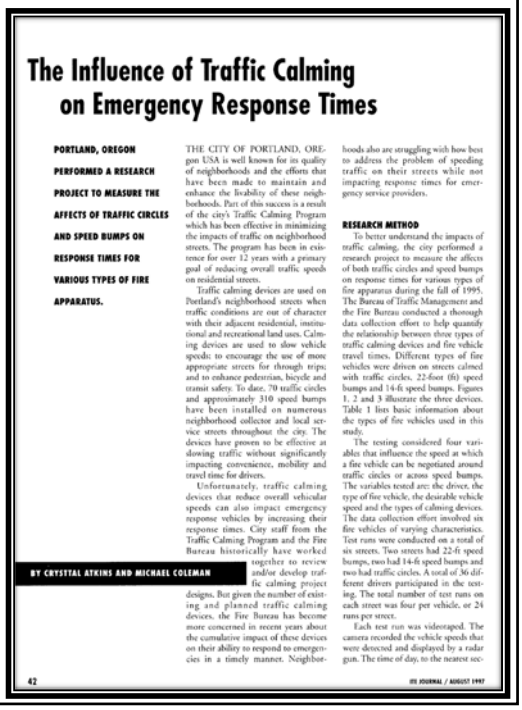
City of Glendale, CA

- Increased tire cut-outs from 12” to 18”
- Defined cut-out areas by striping for emergency vehicles
- Changed shape of speed lumps from parabolic to speed table shape
- Found 66” center lump to be most effective



The Influence of Traffic Calming on Emergency Response Times

PORTLAND, OREGON PERFORMED A RESEARCH PROJECT TO MEASURE THE AFFECTS OF TRAFFIC CIRCLES AND SPEED BUMPS ON RESPONSE TIMES FOR VARIOUS TYPES OF FIRE APPARATUS.

THE CITY OF PORTLAND, OREgon USA is well known for its quality of neighborhoods and the efforts that have been made to maintain and enhance the livability of these neighborhoods. Part of this success is a result of the city's Traffic Calming Program which has been effective in minimizing the impacts of traffic on neighborhood streets. The program has been in existence for over 12 years with a primary goal of reducing overall traffic speeds on residential streets.

Traffic calming devices are used on Portland's neighborhood streets when traffic conditions are out of character with their adjacent residential, institutional and recreational land uses. Calming devices are used to slow vehicle speeds; to encourage the use of more appropriate streets for through trips; and to enhance pedestrian, bicycle and transit safety. To date, 70 traffic circles and approximately 310 speed bumps have been installed on numerous neighborhood collector and local service streets throughout the city. The devices have proven to be effective at slowing traffic without significantly impacting convenience, mobility and travel time for drivers.

Unfortunately, traffic calming devices that reduce overall vehicular speeds can also impact emergency response vehicles by increasing their response times. City staff from the Traffic Calming Program and the Fire Bureau historically have worked together to review and/or develop traffic calming project designs. But given the number of existing and planned traffic calming devices, the Fire Bureau has become more concerned in recent years about the cumulative impact of these devices on their ability to respond to emergencies in a timely manner. Neighborhoods also are struggling with how best to address the problem of speeding traffic on their streets while not impacting response times for emergency service providers.

BY CRYSTAL ATKINS AND MICHAEL COLEMAN

RESEARCH METHOD

To better understand the impacts of traffic calming, the city performed a research project to measure the affects of both traffic circles and speed bumps on response times for various types of fire apparatus during the fall of 1995. The Bureau of Traffic Management and the Fire Bureau conducted a thorough data collection effort to help quantify the relationship between three types of traffic calming devices and fire vehicle travel times. Different types of fire vehicles were driven on streets calmed with traffic circles, 22-foot (ft) speed bumps and 14-ft speed bumps. Figures 1, 2 and 3 illustrate the three devices. Table 1 lists basic information about the types of fire vehicles used in this study.

The testing considered four variables that influence the speed at which a fire vehicle can be negotiated around traffic circles or across speed bumps. The variables tested are: the driver, the type of fire vehicle, the desirable vehicle speed and the types of calming devices. The data collection effort involved six fire vehicles of varying characteristics. Test runs were conducted on a total of six streets. Two streets had 22-ft speed bumps, two had 14-ft speed bumps and two had traffic circles. A total of 36 different drivers participated in the testing. The total number of test runs on each street was four per vehicle, or 24 runs per street.

Each test run was videotaped. The camera recorded the vehicle speeds that were detected and displayed by a radar gun. The time of day, to the nearest sec-

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ITE JOURNAL / AUGUST 1997

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Video at http://traffexengineers.com/traffic-calming

85

85

Curb extension retrofit

86

86

Table 9.1 A "Toolbox" of Traffic Calming Measures

Traffic Calming Measure	Approximate Cost (Year 2000 Dollars)	Reduces Traffic Speed?	Reduces Traffic Volume?	Reduces Accidents?
Bulb Outs (also called curb extensions and intersection chokers)	$36,000 per 4-way intersection	Yes	No	Yes
Traffic Circles, Rotaries, Roundabouts	$5,000-$15,000	Yes	No	Yes
Mid-Block Curb Extensions, Chokers	$16,000 for pair	Yes	No	Yes
Speed Humps	$2,500 Each	Yes	Generally Not	Yes
Speed Tables	$3,000 each	Yes	Generally Not	Yes
Entrance Treatments (textural or raised pavement treatments)	$5,000 to $20,000	Yes	No	Possibly
Diagonal Diverters (prevents through movements at an intersection)	$15,000 to $35,000	No	Yes	Possibly
Semi-Diverters (prevents through movements for an approach)	$5,000 to $20,000	No	Yes	Possibly
Median Barriers (prevents left and through moves depending on placement)	$10,000 to $20,000	No	Yes	Possibly
Crosswalk (raised, special color treatment, lighted pavement)	$5,000 to $40,000 for lighted pavement)	No	No	Studies show mixed results
Crosswalk (striping only)	$250 to $800	No	No	Generally Not
Pedestrian Refuge	$5,000 to 6,500 per intersection leg	Possibly if designed as a choker as well	No	Yes
4-way STOP controlled intersection	$1,500 to $2,000	Only if STOP pattern contributes to speeding	No	Yes

Source: Provo City Transportation Master Plan 87

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What Works – Changes Included with Road Resurfacing Projects

88

88

Lanes narrowed and bike lane added

89

89

Does Any of it Really Work?

90

90

Speed and Volume Impacts -- Somewhat Predictable

38 -> 23 mph
224 -> 92 vpd

40 ->37 mph
13,000 -> 10,300 vpd

91

91

Speeds Between Slow Points

(85th Percentile)

	No. Sites	Speed After	Change in Speed	Percent Change
•12' Humps	184	27.3 mph	-7.6 mph	-22%
•14' Humps	15	25.6	-7.7	-23
•Speed Lumps	50	27.0	-8.9	-25
•22' Tables	78	29.2	-7.3	-20
•Circles	45	30.3	-3.9	-11
•Narrowings	7	32.3	-2.6	- 4
•Half Closures	16	26.3	-6.0	-19

92

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Volume Impacts of Traffic Calming Measures

	No. Sites	Average Change in Volume	Percent Change
•12' Humps	143	-355	-18%
•14' Humps	15	-529	-22
•Lumps	18	-165	-7
•22' Tables	46	-415	-12
•Circles	49	-293	-5
•Narrowings	11	-263	-10
•Half Closures	53	-1611	-42

93

93

What is the center lump size that the City of Glendale, CA found to be the best for slowing traffic but minimizing impacts to Emergency Vehicles?

a. 56 inches
b. 62 inches
c. 70 inches
d. 66 inches
e. 80 inches

94

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Potential Liability – What Works and What DOES NOT

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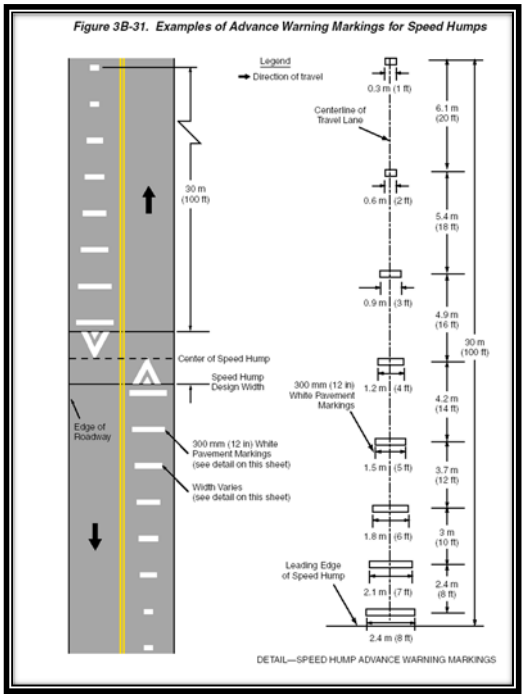
Source: MUTCD



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Warning Signs Clearly Visible

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Speed Hump Case

- Speed humps installed on road leading to park off state highway
- Visitor to city loses way and turns onto road at night in foggy conditions
- Signs and markings are faded or obscured
- Driver crosses humps at speed in excess of 30 mph

99

99

Speed Hump Case

- Vehicle is a imported camper minivan type vehicle with a bouncy suspension system
- Driver's head hit the roof of the vehicle
- Spinal injuries leave driver a quadriplegic
- City settles out of court for unknown sum

100

100

Damage Claims

- The Most Common Bases for Paid Claims:
  - -Inadequate Signage
  - -Flawed Design of Measures
- Arguably Both Involve Failure of Local Governments to Perform Ministerial Duties

101

101

Webinar Quiz

What is the most important reason first response personnel often come out against implementing traffic calming measures?

a. Makes snow removal more difficult
b. Impacts to their emergency response times
c. Potential damage to their equipment
d. Potential injury to their personnel
e. They prefer straight streets

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What REALLY Doesn't Work

103

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1. Lack of Consensus

104

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Temporary Traffic Circle Installation

105

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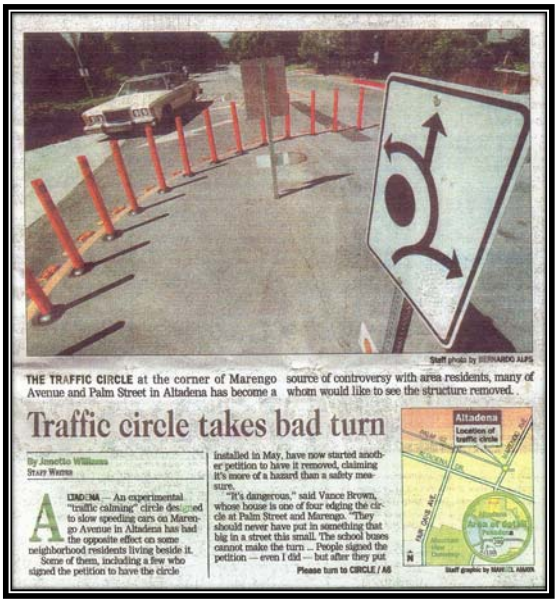
A few weeks later (Pasadena Star-News)



Staff photo by BERNARDO ALPS

THE TRAFFIC CIRCLE at the corner of Marengo Avenue and Palm Street in Altadena has become a source of controversy with area residents, many of whom would like to see the structure removed.

Traffic circle takes bad turn

By Jeanette Williams
Staff Writer

ALTADENA — An experimental "traffic calming" circle designed to slow speeding cars on Marengo Avenue in Altadena has had the opposite effect on some neighborhood residents living beside it.

Some of them, including a few who signed the petition to have the circle installed in May, have now started another petition to have it removed, claiming it's more of a hazard than a safety measure.

"It's dangerous," said Vance Brown, whose house is one of four edging the circle at Palm Street and Marengo. "They should never have put in something that big in a street this small. The school buses cannot make the turn ... People signed the petition — even I did — but after they put

Please turn to CIRCLE / A6

Staff graphic by MANUEL ARMIN

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A few more weeks later (Pasadena Star-News)

Traffic circle safety issues divide citizens

Rumors swirl about possible council recall

By Becky Oskin
Staff Writer

ALTADENA — A standing-room only crowd packed the Town Council meeting Tuesday as residents debated the merits of the Marengo traffic circle and passed rumors about the recall of Town Council member the Rev. C.R. Tillman.

The traffic circle, designed to slow speeders on Marengo Avenue, had an almost evenly divided number of supporters and detractors.

Several residents complained that the circle is difficult and confusing to negotiate, and that it should be modified or removed.

"If a petition can put it up, a petition should be able to take it down," said Vance Brown, who feels worrying about the traffic circle has damaged his wife's already poor health.

Councilman Tillman jokingly suggested to one dissenter that she begin a recall petition over the issue.

Those in favor of the circle said it works and should be permanent.

Please turn to COUNCIL / A8

Traffic circle to disappear

By Becky Oskin
Staff Writer

ALTADENA — A sharply divided Town Council voted to remove a controversial traffic circle at the intersection of Marengo Avenue and Palm Street.

The council initially voted 9 to 5 to reject an amended proposal that would decrease the circle's

Please turn to ALTADENA / A8

Staff

COUNCILMAN C.R. TILLMAN, center, spea
Altadena Town Council meeting. Tillman
election.

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Going Going Gone…

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2. Suggest NOT Leaving Old Traffic Control Devices Visible

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Traffic signal turned off but left in place…

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Traffic signal back in operation….

111

3. Avoid Closing the Street

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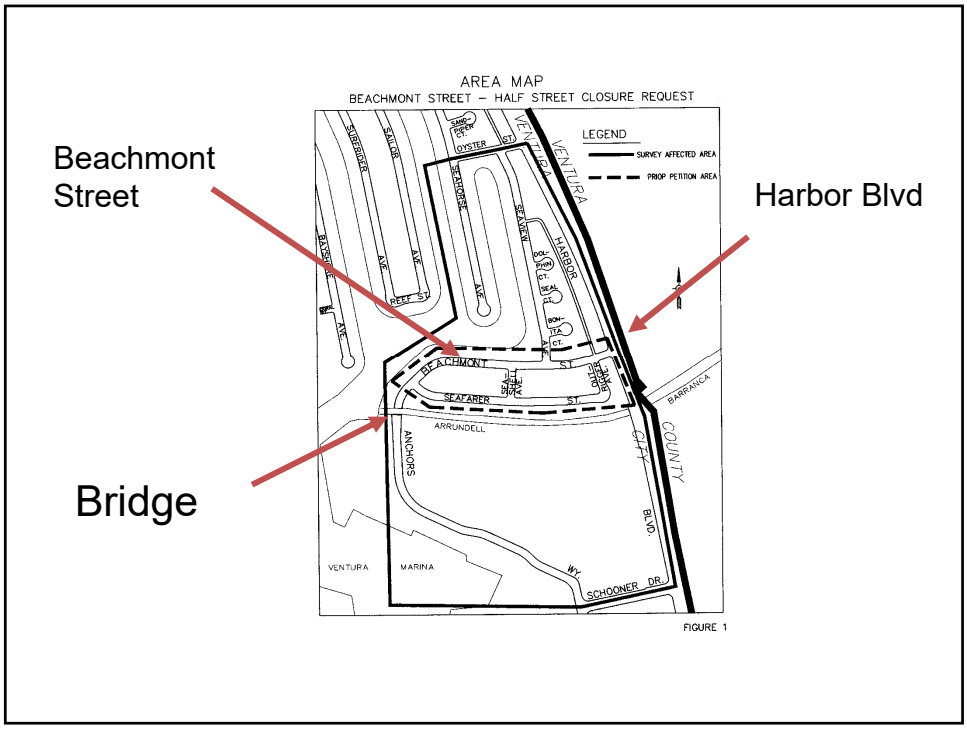
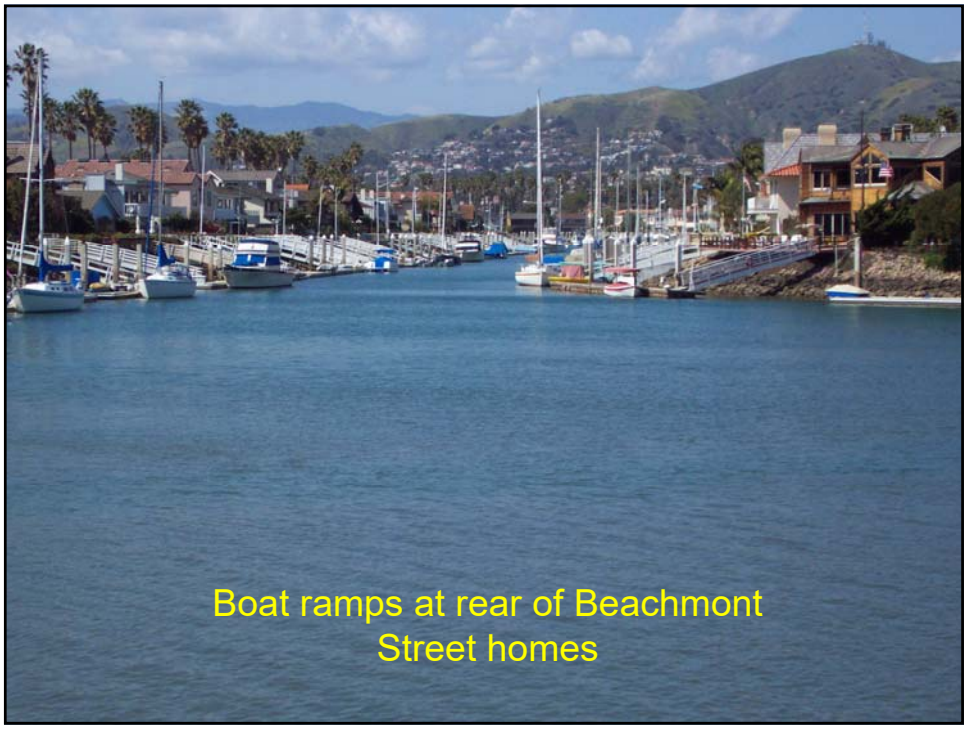

Beachmont Street
Harbor Blvd
Bridge
AREA MAP
BEACHMONT STREET – HALF STREET CLOSURE REQUEST
LEGEND
SURVEY AFFECTED AREA
PROP PETITION AREA
VENTURA
HARBOR
BEACHMONT
SEAFARER
ARRUNDELL
ANCHORS
BARRANCA
COUNTY
BLVD.
VENTURA
MARINA
SCHOONER DR.
FIGURE 1

113


Beachmont Street

114



Boat ramps at rear of Beachmont Street homes

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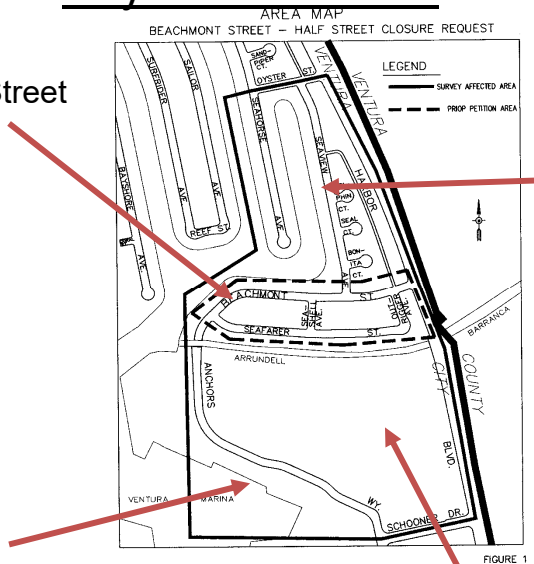
Key Stakeholders



Beachmont Street Residents

Other Keys Residents

Businesses and Boat Ramp users

Marina Mobile Home Park

116

Important to Collect Data

- Average daily volume –1, 800 vehicles per day
- Speeds in 30 – 40 mph range
- License plate survey shows through traffic from Harbor Blvd is 30%
- 30% originates from other homes in the Keys
- 40% is traffic from Beachmont area residents

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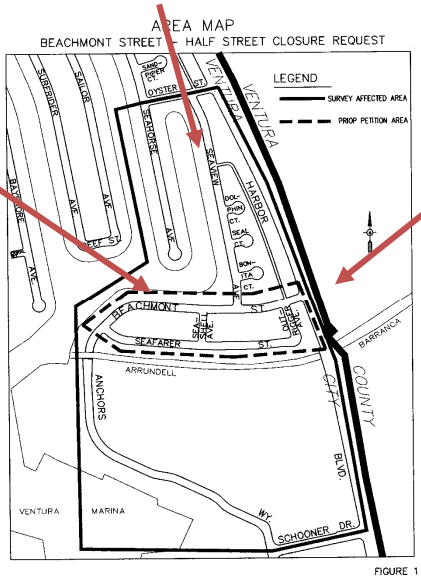
30 % from other keys residents

40 % from Beachmont residents

30% from Harbor Blvd



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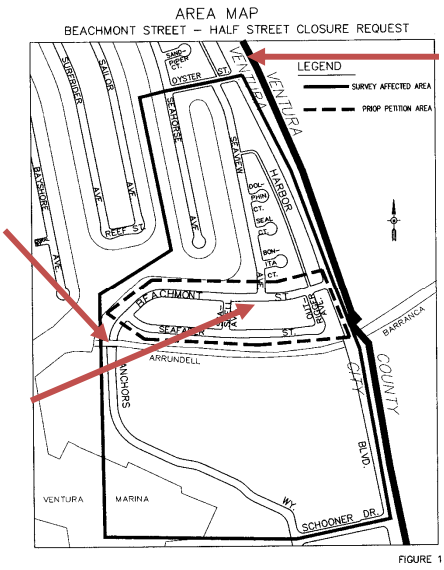
Areas of Conflict

Beachmont residents favor bridge closure

Beachmont residents favor smaller impact area



Other stakeholders favor larger area & no bridge closure

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Solutions Considered

- Turn islands at Beachmont/Harbor to discourage traffic entering the street
- Speed humps – too much vibration
- Roundabouts/curb extensions - too much loss of parking!

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PROHIBITED
On Beachmont Street
Vehicles Transporting Trash
or Recycled Materials
(Scheduled Pick-ups Exempted)
Trailers, and
Tandem Wheel Trucks
S.B.O.C. Section 7256(b)
NO
PARKING
8 A.M. - 12 NOON
3RD TUESDAY
STREET SWEEPING

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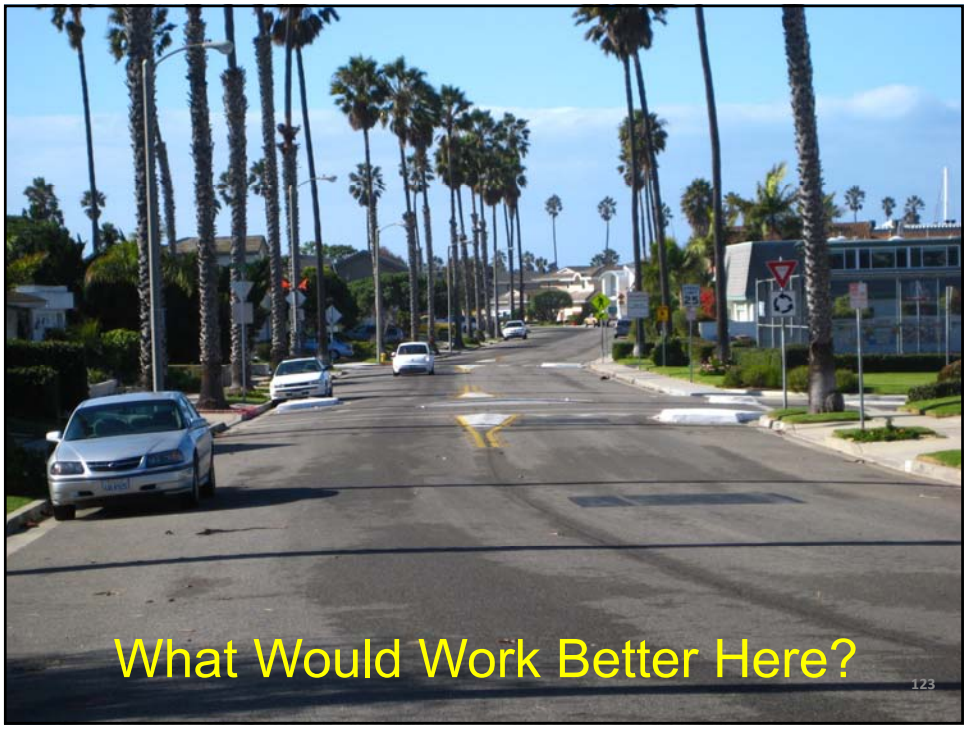

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Lessons Learned

- Definition of impact area is difficult
- Stakeholders hold very strong opinions
- Tool box not universally accepted
- Problems caused by poor planning decisions
- Requests for traffic calming do not always produce satisfied customers

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Traffic Calming Prompts Backlash

MICHELE SAGER msager@tampatrib.com The Tampa Tribune

Published: February 25, 2009 | Updated: March 24, 2013 at 02:53 AM CARROLLWOOD -

Newly installed speed bumps in Carrollwood neighborhoods are slowing traffic and tearing a community apart.

That's why Hillsborough County commissioners have halted a traffic-calming project in one neighborhood until a compromise can be reached.

Commissioners discussed the controversial project at last week's meeting. Through the traffic-calming plan, various devices such as speed bumps, raised intersections and signs have been installed in Carrollwood Village and Original Carrollwood.

Although many residents welcome any measure to slow traffic, many others think the devices are excessive and want them removed.

The topic has become so controversial that a recent neighborhood meeting on the issue had to be broken up by police because of fighting.

"Traffic calming is one of the most divisive issues," said Commissioner Ken Hagan. "I'm saddened that it is tearing a community apart."

At the meeting, several people spoke out both in support and against the project. Hagan said he put the item on the agenda because of a letter he received from Mark Snellgrove, president of the Carrollwood Civic Association. The group that had once championed the project is now asking that it be halted and partially removed from Original Carrollwood.

"When I saw this, I knew we needed to at least take a look at what the residents are asking," Hagan said.

But Commissioner Mark Sharpe said he's hesitant to stop a project the majority of residents wanted when the decision was made several years ago.

"I'm not going to be happy if you have to pull them out because that's going to be very expensive," he said.

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4. Lack of Maintenance - No Change in Traffic Speeds

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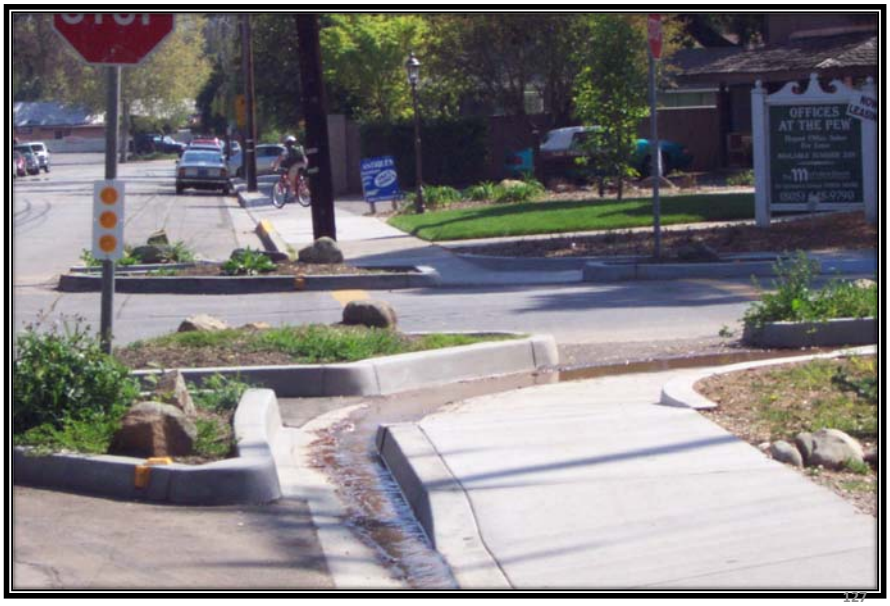
Poorly Maintained Curb Extensions



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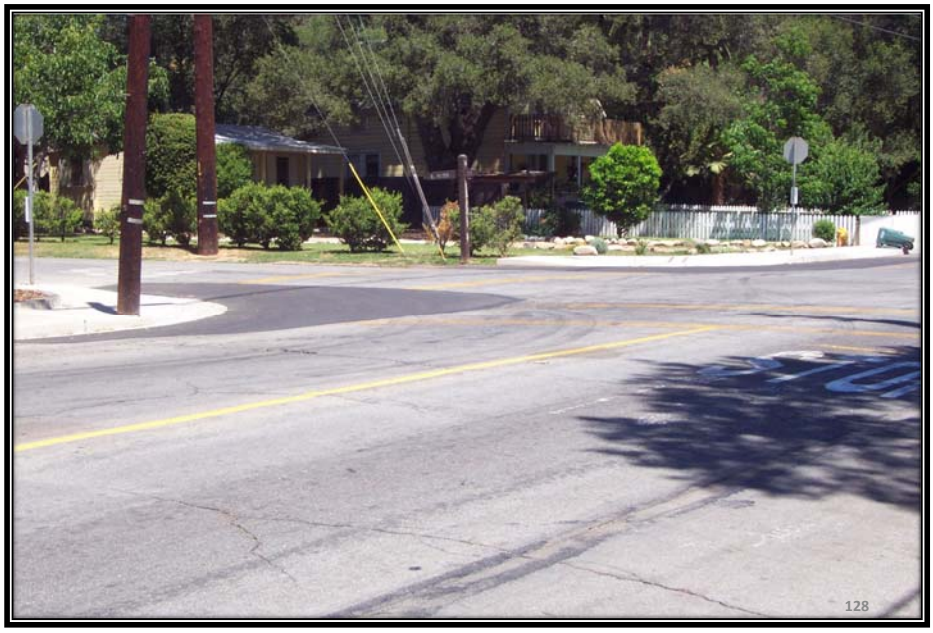
Today



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Where Can I find Good Technical Resources?

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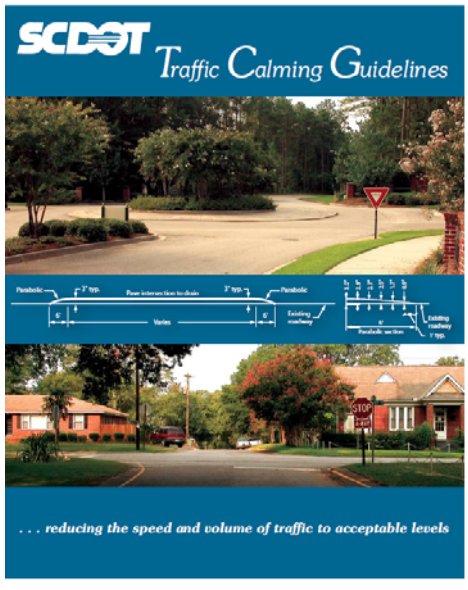

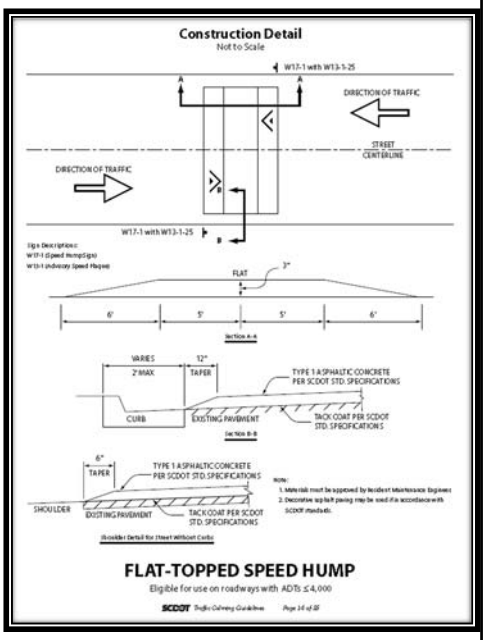

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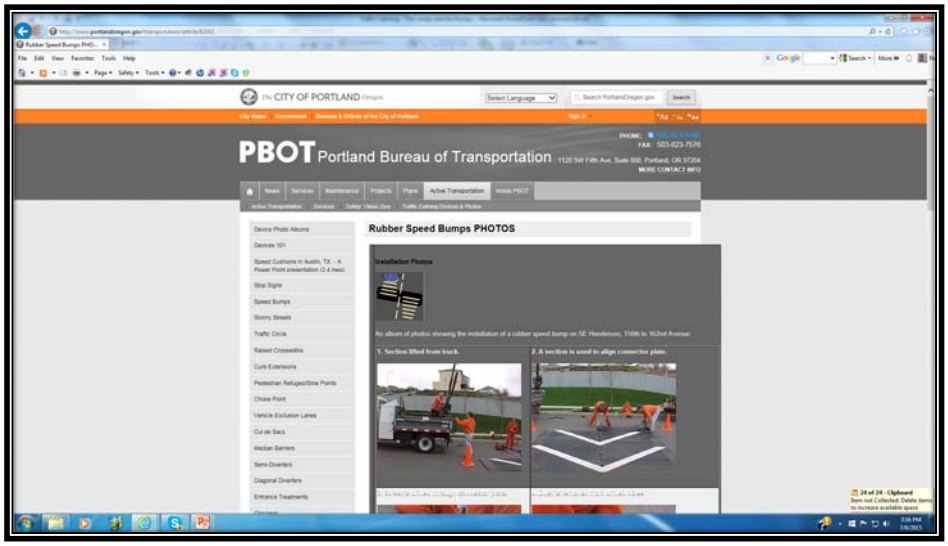
www.portlandoregon.gov/transportation/35929



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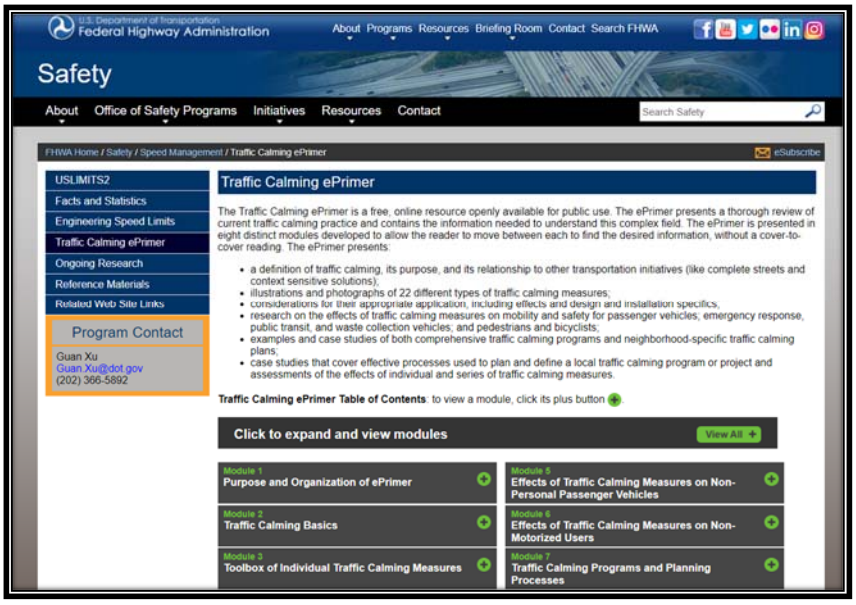

https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

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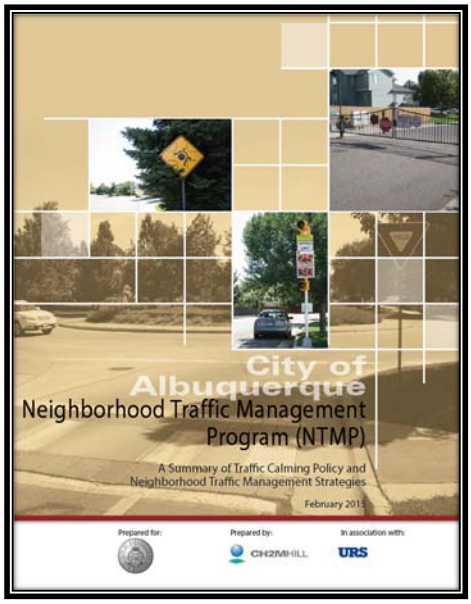

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Webinar Quiz

For slow points such as the one shown in the picture, what is the most important design feature to accomplish traffic calming?

a. Yield Sign
b. Angle Parking
c. No Parking Double Yellow Lines
d. Width of the one way travel lane
e. Size of the Parklets

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Case Study
Lane Diet on Avenida Bermudas
Worked - Eventually

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Roadway Striping as a Traffic Calming Option
Robert Kahn, PE
Allison Kahn Goedecke, MBA

Introduction

Traditional traffic calming techniques include vertical and horizontal displacement of the roadway surface, which can be effective in reducing speeds and cut-through traffic on roadways. These roadway design features can include speed humps, cushions, chokers, chicanes, medians, mini traffic circles, diverters, and full/partial roadway closures. While these features can have significant benefits to a community, they are sometimes difficult to implement as a result of potential negative impacts to local residents, emergency service departments, the disabled community, and may not be consistent with public agency policies.

In lieu of many of the traditional traffic calming devices, roadway striping can be implemented as a traffic calming option that is a viable, low cost alternative to vertical/horizontal displacement traffic calming features. The roadway striping alternatives:

- have less detrimental impacts upon emergency services
- are less costly to construct
- provide greater flexibility to meet future changes
- have no adverse impact to highway drainage
- are recognized by local residents as standard traffic control devices
- can provide bike/parking lanes
- can successfully reduce speeds from one to over seven miles per hour. Even greater speed reductions have been documented in some case studies
- can be implemented quickly

A number of roadway striping calming alternatives have been successfully installed in Southern California with positive results. In many cases, these have been implemented on private streets and have resulted in reduced speeds in these communities. These private streets have been designed to public street standards. Traffic calming striping has also been utilized on public streets in Southern California. The calming alternatives that have been implemented follow standard California Manual on Uniform Traffic Control Devices (CMUTCD) requirements. These traffic calming options have been implemented in a timely and cost effective manner, and are easily understood by the local residents and driving public. They have resulted in some speed reductions which were desired by the local residents. While more traditional traffic calming devices (e.g. speed humps) may be required in certain instances to obtain greater speed or volume reductions, roadway striping is a viable traffic calming option in many cases.

Traffic Striping as an Alternative to Standard Traffic Calming Techniques

Striping as a traffic calming technique has less disruption to emergency service vehicles, since no vertical or horizontal displacement occurs within the roadway surface. Emergency

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Striping Before

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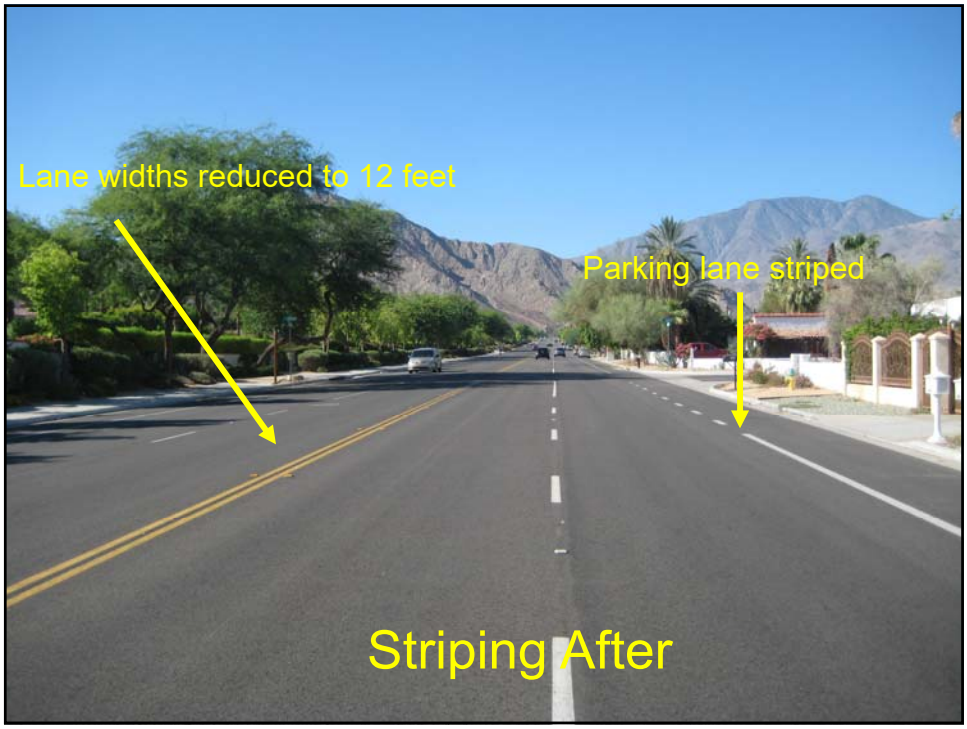
Lane widths reduced to 12 feet
Parking lane striped
Striping After

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Vocal Resident Hurls Insults at Elected Official Via Emails

- Says speeds are too high
- Wants four way stop signs every two blocks
- City staff meets with resident
- City cites various studies about unwarranted stop signs and possible backlash
- Resident identifies key problem is turning into and backing out of driveway
- City proposes alternate solutions that resident likes


STOP SIGNS

GENERAL

Each year, the City of La Quinta receives many inquiries about installing stop signs as a way to reduce speeding. However, research shows that other measures are often more effective than adding stop signs. The purpose of installing stop signs is to assign right-of-way at an intersection, not to control speeding.

STOP

Public understanding of the function of stop signs is one of the most critical elements in reducing speeding and traffic accidents.

The following information explains the City's policies on traffic controls and the correct use of stop control at City maintained intersections.

INSTALLATION POLICIES FOR TRAFFIC CONTROL DEVICES

The California Manual on Uniform Traffic Control Devices (CAMUTCD) determines the size, shape and color of all traffic signs. This manual has criteria for installing signs and thus creates uniformity from state to state. The criteria are also known as "traffic warrants".

These warrants identify specific traffic, bicycle and pedestrian volumes, accident history, and any unusual conditions, which must be present at the intersection, before these traffic control devices may be installed.

TWO-WAY STOP CONTROL

Stop signs are installed only after a careful engineering evaluation of the following criteria:

- Stopping the direction that conflicts the most with established pedestrian crossing activity or school walking routes.
- Stopping the direction that has obscured views, dips, or bumps that already require drivers to use lower operating speeds.
- Stopping the direction that has the longest distance of uninterrupted flow approaching the intersection; and
- Stopping the direction that has the least sight distance to conflicting traffic.
- At highway-railroad grade crossings without gates or flashing signals.

Experience has shown that simply improving the intersection visibility by prohibiting parking near the intersection is often more effective in reducing traffic accidents. This often reduces the need to install more restrictive intersection controls.

Overuse of stop signs reduces their effectiveness and if installed where not justified, causes drivers to speed up between stop sign controlled intersections rather than slow down and to ignore them altogether.

MULTIWAY STOP CONTROL

The City frequently receives requests to install multi-way stop control at intersections where two-way stop control exists. Multi-way stop control is used where the volume of traffic on the intersection roads is approximately equal.

Requests are carefully evaluated using the following established warrants provided in the Manual on Uniform Traffic Control Devices:

Responding to Citizen Requests for Multiway Stops

BY PATRICIA B. NOYES

The use of multiway stops for speed control is a subject that has received a great deal of attention from citizens and far too little conclusive discussion by traffic engineers. In an effort to address the ongoing surge of citizen requests to install four-way stops for speed control, the staff of the Boulder (Colo.) Transportation Division conuses. In addition to these issues, there are several other areas that need to be examined and discussed in considering the use of multiway stops. A number of these are outlined below.

Compliance

Stop signs are used to improve the safety of an intersection by assigning flic. These locations experienced 39 percent to 40 percent compliance. The one other location that exceeded the average compliance level experienced 26 percent compliance. This location would require tree trimming for sight distance in order to remove the stops from the main street.

Three-way stops showed the lowest

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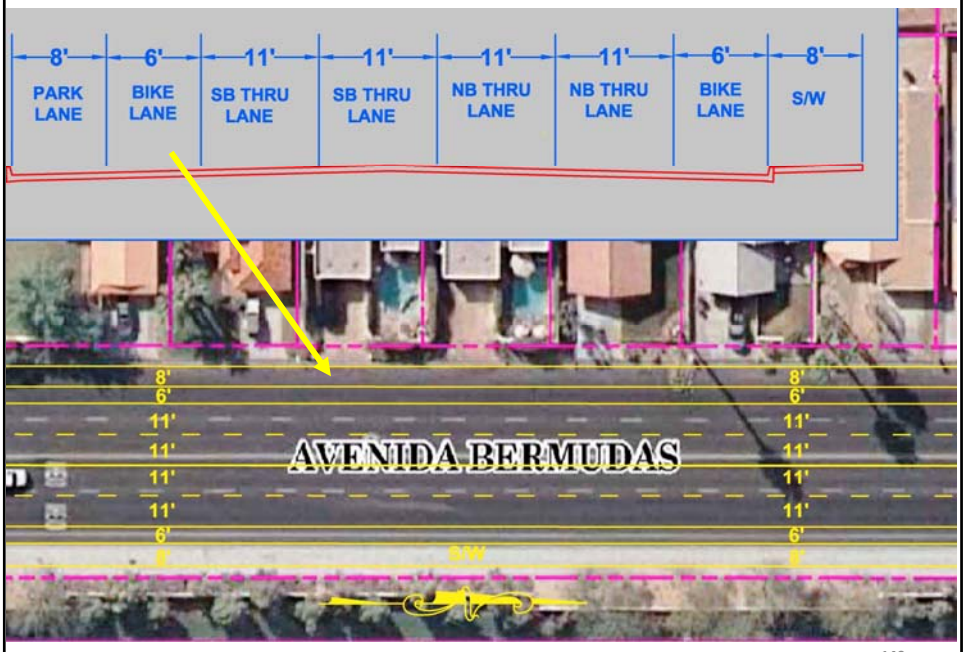

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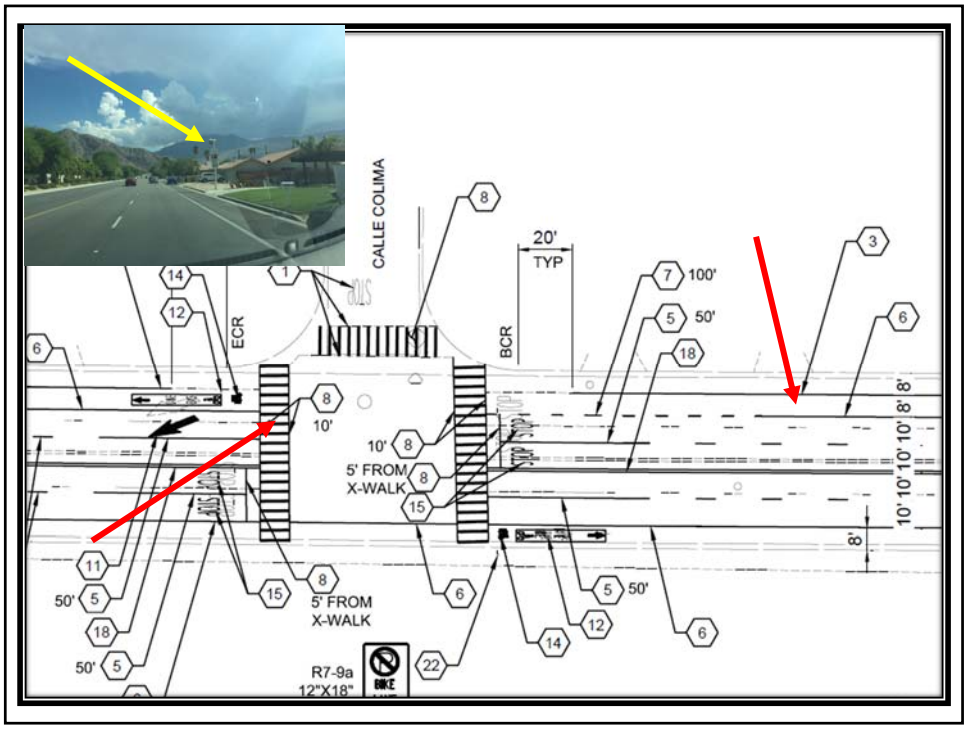
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ASCE | KNOWLEDGE & LEARNING

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