



***Taming
neighborhood
traffic***

**SLOW
DOWN
!**

Walk *San Diego*

in cooperation with

**San Diego County Air Pollution Control District
and Center for Injury Prevention Policy & Practice**

About WalkSanDiego

Since 1999, WalkSanDiego has been the region's primary voice promoting the needs of pedestrians. We are a non-profit, membership organization headed by a Board of Directors. Membership and other information may be obtained at www.walksandiego.org. WalkSanDiego is affiliated locally with the San Diego Coalition for Transportation Choices (www.movesandiego.org), California Walks (www.calwalks.org) and nationally with America Walks (www.americawalks.org).

About the San Diego County Air Pollution Control District

The Air Pollution Control District (www.sdapcd.co.san-diego.ca.us) administers state and federally mandated stationary source emission controls, and advises local agencies on strategies to reduce mobile source emissions. The District's Indirect Source Program promotes less-polluting modes of travel, including walking, bicycling, and transit use. These modes can be enhanced through strategic application of traffic calming techniques.

About the Center for Injury Prevention Policy and Practice

The mission of CIPPP (www.cippp.org) is to reduce the frequency and severity of injuries by assisting government agencies and community programs with incorporating injury prevention strategies into their regular on-going efforts. The Center is housed at San Diego State University, Graduate School of Public Health.

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A Note and A Dedication

This document represents the accumulated knowledge of the Board of Directors of WalkSanDiego and the professionals we consulted. It should not be construed to prescribe a particular approach for a given situation. Traffic calming and other street design elements should be implemented only after careful analysis by municipal traffic engineers. However, it is primarily the inhabitants of a neighborhood who should decide what role traffic calming plays in improving the accessibility, safety, and beauty of their streets. Many residents have called us, pleading for help, when conventional approaches failed. It is for these residents that this document was written, and to whom it is dedicated.

“WalkSanDiego is dedicated to enhancing the livability of communities, through promotion, education and advocacy, by making walking a safe and viable choice for all people.”



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SLOW DOWN!

Taming Neighborhood Traffic

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I Introduction

“Slow Down!” is a cry heard on neighborhood streets throughout San Diego County. Since World War II, streets and neighborhoods have been built with primarily motor vehicles in mind. What most influences the way people drive isn’t the speed limit, a caution sign, or the threat of a ticket. Rather, drivers take their cues from the design of the street and the buildings fronting it, and little else. Today many cities are returning to the street designs of yesteryear. Ironically, streets developed in the age of horses and streetcars provide the best balance of access to vehicles, pedestrians, and bicyclists.

WalkSanDiego has worked with national traffic calming experts, local traffic engineers, and individual neighborhoods to determine the best methods to eliminate speeding on neighborhood streets. We receive calls almost weekly for information and guidance from desperate residents. Since we cannot respond to all of them, we hope this manual will help fill the void. It reflects best practices we believe all communities should apply to create a more attractive, livable street environment.

Traffic Calming and Health Care Costs

How does traffic calming affect your healthcare premium? Consider:

- ◆ Twenty-five percent of daily trips are less than a mile – a walkable distance.
- ◆ Unfortunately 75% of these trips are made by automobile.
- ◆ Over the last 20 years, children walking or biking to school has declined more than 40%, and childhood obesity is epidemic.

The Centers for Disease Control in Atlanta believes obesity and diabetes, both stemming from inactivity, threaten to overwhelm the health care system:

- ◆ In 2000, 56.4% of Americans were overweight, compared to 45% in 1991.
- ◆ Obesity has increased over the same time from 12% to 19% of the population.
- ◆ Adult-onset diabetes exceeds 15 million cases, up from 9 million in 1991.
- ◆ Diabetes alone accounts for \$100 billion in annual health care spending.

But there is hope. Studies show:

- ◆ Walking or biking *for transportation* is up to six times higher in walkable neighborhoods (compact, mixed-use, pedestrian-friendly streets).
- ◆ Even modest increases in walking or bicycling significantly reduce disease risk. For example, coronary heart disease has been found to decrease by half with 30 minutes of walking per day or bicycling 1 hour per week.
- ◆ In a comparison of two otherwise similar San Diego neighborhoods, residents of the more walkable neighborhood not only walked more, but were also more fit.

Traffic calming can turn hostile streets into attractive, safe places to walk or bike. And ultimately reduce trips to the doctor.

Why Traffic Calming?

We're all vaguely aware of the dangers of traffic, but did you know...

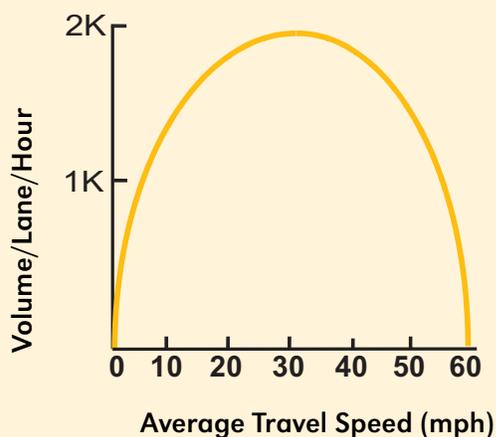
- ◆ A pedestrian is killed every 107 minutes in the United States?
- ◆ 600 pedestrian deaths and 13,000 injuries occur annually in California?
- ◆ Pedestrians comprise 12% of U.S. traffic deaths, and 18% in San Diego County?
- ◆ 32% of San Diego County pedestrian victims are under the age of 15?



In the San Diego region, neighborhoods old and new include streets far wider than necessary, encouraging speeding.

Despite the dangers, many people – transit users, downtown workers and residents, and non-drivers – walk anyway. Correspondingly, pedestrian collisions in San Diego County cluster around “walkable” downtowns and along transit lines. Tragically, far more people simply stay indoors to avoid the danger and suffer the health consequences of low activity. (See box page 4.) Children, the elderly, transit dependent, and the disabled languish or face harrowing conditions.

Figure 1
Lane Capacity vs. Average Speed



source: TRB, 1985 Highway Capacity Manual

Does traffic calming increase congestion?

As Figure 1 shows, more traffic is moved at 30 mph than any other speed, all else being equal. Above 30 mph, the spacing between cars increases substantially. By slowing vehicle speed, traffic calming has been found in some instances to reduce congestion, even where this was not the goal.

For these reasons, adequate provision for pedestrians is now recognized by both the California and Federal Departments of Transportation as a social equity issue requiring tangible remedies. San Diego residents are also looking for solutions. In fact, traffic engineers routinely report the greatest traffic concern of residents is not congestion but unsafe neighborhood streets.

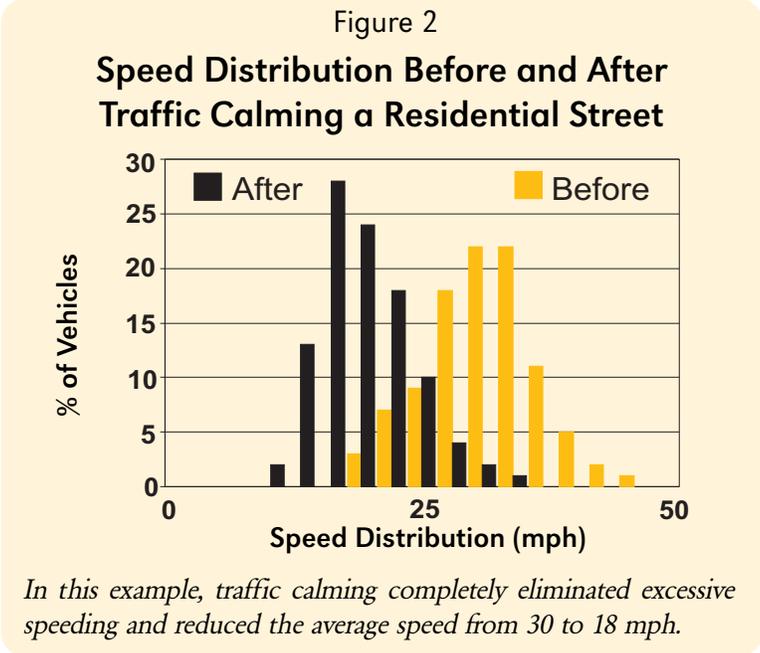
Traffic calming offers a way to increase the beauty and safety of neighborhood streets – not just for drivers but for everyone. Traffic calming originated in the United States but flourished mainly in Europe and Australia. The 1990's saw a surge in U.S. interest. Since the San Diego region is somewhat late to the game, we can benefit from the experience of other communities.

One lesson is that solutions require resources. Currently, less than 1% of California roadway safety investments go toward improving pedestrian safety. And yet, in San Diego County, 24% of traffic fatalities are pedestrians. The time has come to demand safer streets that serve all people, not just people in cars. No one should have to take their life in their hands crossing the street.

II What Traffic Calming Is . . . And Isn't

Traffic calming is defined as street design treatments that deflect vehicle flow either vertically or horizontally, inducing a reduction in speed. Some treatments are designed to discourage “cut-through” drivers. However, treatments designed only to eliminate speeding may also discourage cut-throughs.

Unfortunately, there is no standard formula for applying traffic calming. Measures employed in a given neighborhood depend entirely on staff expertise, the available budget, local conditions, and the mobility trade-offs residents decide to make. But when applied correctly, traffic calming measures can have dramatic results (Figure 2).



Popular “Fixes” To Avoid

One lesson learned from communities with traffic calming experience is to avoid popular “solutions” that either don’t work or cause other problems. These include, in the order residents usually request them:

Enforcement

Deploying enough police to monitor all problem streets would cost millions of dollars (and higher taxes). Further, enforcement has proven surprisingly ineffective. One study showed a decrease in average speed of just 4 mph following weeks of ticketing. In addition, since typically 85% of speeders are local residents, this approach quickly loses support.

Stop Signs



By law, the purpose of a stop sign is to assign right of way, not to slow vehicles. Motorists inherently know this, and many begin running stop signs installed simply to impede their progress. International traffic calming expert Michael Wallwork, P.E., suggests drivers run stop signs far more often than generally appreciated. Drivers also speed between stop signs to make up lost time. Every situation is unique, but stop signs risk making a street even more dangerous.

Radar Trailers

Mobile signs flashing the speed of a passing motorist can provide important information to drivers but do not effectively slow traffic.

Speed Bumps

Speed bumps generally do slow traffic. However, most residents consider them unattractive, uncomfortable, and noisy. Emergency responders complain they slow response and damage equipment. Speed bumps often are removed one year after installation in response to complaints.

Speed Limit Signs

Until recently, California law prohibiting “speed traps” limited posting lower speed limits. In any case, experience shows signs of all kinds have little impact on speeding.

III Traffic Calming Principles

Traffic Calming treatments vary in appearance and intention but follow common principles, many of which contradict accepted engineering practice.

A Traffic Calming device should...

Interrupt long, straight stretches of pavement and long sight lines.

Be well marked and well lit.

Include warning signs on all approaches.

Be attractive, using plenty of landscaping and visual contrast.

Not be installed without a plan for landscape maintenance.

Be designed to achieve a specific maximum speed. (Space devices every 250 feet to achieve 20 mph; every 400 feet to achieve 25 mph.)

Be constructed with strict adherence to design specifications.

Use “side friction” (parked cars, bike lanes, trees, pedestrians) to induce caution.

Include speed bumps, stop signs or street closures only as a last resort.

Be tailored to the specific situation.

Reflect the community’s values.

The standard engineering approach is...

Straighten curves, flatten hills, remove trees, and widen streets to ensure long sight lines. Induces speeding.

As practiced in San Diego, street lighting has not been a priority, although it is preferred at intersections and other points of conflict.

This is consistent with current practice. Any unusual or unexpected condition requires a warning sign. If anything, warning signs for many traffic calming installations are excessive.

Traffic engineers are rewarded for reducing project costs, and aesthetics is considered a “frill”. Actual costs for landscaping, maintenance and contrasting materials can be small.

This is consistent. However, landscaping is often left out because the small fraction this cost represents is considered “too high” or is frequently the responsibility of another city department and therefore not funded.

Vehicle travel interruptions are to be avoided. For the “safety” of speeding drivers, a street intended for 25 mph is typically designed for 35 mph with tolerances for the occasional 45 mph driver. See the problem?

Construction engineers and on-site crews sometimes shave a foot here or there. With traffic calming devices, this can negate their effect completely.

Side friction is considered a road hazard and a road capacity reduction and is frequently avoided.

Armed with few other tools, and no traffic calming budget or training, these cheap “fixes” are the most commonly used.

Most city engineers follow standard drawings, prepared decades ago. Designing from scratch is uncomfortable.

Generally, moving cars is considered the highest value with less regard for other modes and impacts to nearby land or people. Fortunately, this mindset is slowly changing.

IV Techniques & Local Examples

Vertical Deflection Devices

1. Speed Bump

Description A raised bump extending across the roadway.

Advantages Short and sharp, very aggressive, speed control device.
Best located in parking lots where speeds are low.
Works best in series.

Disadvantages Can damage vehicles more easily than other devices.
Painful jolt for some people.
Noisy.
Causes emergency vehicles to come to near complete stop.
Unpopular, unsightly, advertises a speeding problem.

Application Not recommended for public streets.

Local Examples Most cities in the county have examples.



This speed bump is combined with curb extensions.

2. Speed Hump

Description A longer, less abrupt bump.

Advantages Longer than the speed bump and less aggressive.
Has variable impact on different types of vehicles.
Works well in series, say, 10' apart.

Disadvantages Less likely to damage vehicles, but still requires low speed.
Causes emergency vehicles to come to near or complete stop.
Noisy.

Application Best reserved for parking lots and private streets.

Local Examples Most cities in the county have examples.



This Oceanside speed hump includes landscaped islands and allows bikes to go around it.

3. Raised Crosswalk or “Speed Table”

<i>Description</i>	Raised area long enough for both sets of wheels to be on top of the hump at once.
<i>Advantages</i>	Provides a good crossing point for pedestrians. Makes drivers come up to pedestrian level, giving psychological advantage to the pedestrian.
<i>Disadvantages</i>	Careful design of ends is required to prevent drivers from putting one wheel in the gutter and doing 40 mph over a speed table. Causes emergency vehicle to come to near or complete stop. Noisy.
<i>Application</i>	Residential, collector, and arterial streets.
<i>Local Examples</i>	Cedros Avenue, Solana Beach – Follows design principles well. Good signage, lighting, landscaping, and design. Steel planks bridge the curb pans to maintain drainage without expensive reconstruction.

A raised crosswalk enhances the popular Cedros Design District in Solana Beach.



4. Intersection Table

<i>Description</i>	Raised surface covering an entire intersection including crosswalk areas.
<i>Advantages</i>	Slows vehicles in the most critical area of conflict. Highlights intersection. Useful where large vehicles must turn.
<i>Disadvantages</i>	Increases difficulty of making a turn. Need to ensure vehicles do not intrude into pedestrian space. Causes emergency vehicles to come to almost a complete stop.
<i>Application</i>	Residential, collector, and arterial streets. Not on emergency vehicle response or bus routes.
<i>Local Examples</i>	None.



Although intersection tables are not used in San Diego, they are found elsewhere such as this one in Cambridge, Massachusetts.

Horizontal Deflection Devices

5. Roundabout

<i>Description</i>	Raised circular island in a major intersection with deflector islands to slow approaching vehicles and provide crossing areas.
<i>Advantages</i>	<p>Increases intersection capacity by eliminating stops.</p> <p>Relieves need for street widening to accommodate vehicle stacking at controlled intersections.</p> <p>Reduces crashes by 50-90% compared to signals, 2-way, and 4-way stop signs.</p> <p>Reduces vehicle speed.</p> <p>Provides space for landscaping.</p> <p>Cheaper to maintain than signals.</p> <p>Provides safe pedestrian crossings if well designed.</p>
<i>Disadvantages</i>	<p>May restrict larger vehicles if designed for too low a speed; this can be minimized with 3-4 inch mountable apron. (See photo page 11.)</p> <p>May require additional lighting.</p> <p>If left turns by large vehicles are to be accommodated then right of way may have to be purchased.</p> <p>Requires more right-of-way in many retrofit situations.</p> <p>Can endanger pedestrians if not properly designed.</p>
<i>Application</i>	Collector and arterial streets.
<i>Local Examples</i>	<p>49th & Adams Avenue, San Diego – No deflection (slowing) entering roundabout – confusing as to who yields. Entering lanes are too wide. Difficult for pedestrians and bicyclists. Unattractive, lacks landscaping. Some design corrections and landscaping could make this a nice community feature.</p>

Note: Sight impaired pedestrians trying to cross a street rely on the sound of approaching vehicles, which is made difficult by cars circulating in a roundabout. Until this issue is solved, most disabled advocates will oppose the use of roundabouts.



A well-designed roundabout operates at 15-20 mph. At this speed, vehicles stop readily for pedestrians.

Legoland Drive, Carlsbad –

Unusual, confusing design includes by-pass lanes for through-traffic, which cuts off safe crossing of pedestrians and bicycles. Separate, parallel bike path and walkway keep pedestrians and bikes away from the roadway.

Murray Drive at Murray Road and West Main Street, El Cajon –

Five-way roundabout, but one leg blocked. Larger diameter, deflection prior to entry, and narrower entry streets would slow cars to 20 mph or less. Its 16 approach signs seem excessive. More landscaping would help. Despite the flaws, overall performance is not too bad in a challenging location.

6. Traffic Circle



This traffic circle includes a 3-inch “truck apron” allowing encroachment by the rear wheels of large turning vehicles.



This North Park (San Diego) traffic circle works well but lacks landscaping. Traffic circles need not be expensive, but should always be attractive.



<i>Description</i>	Raised circle in low-volume intersection (no deflector islands on approach streets).
<i>Advantages</i>	Reduce crashes up to 90% compared to 2-way and 4-way stop controls. Physically slows all vehicles except bicycles. Attractive if landscaped.
<i>Disadvantages</i>	Wrong-way left turn could be problematic on busy residential or collector roads. Restricts larger vehicles.
<i>Application</i>	Residential and collector streets.
<i>Local Examples</i>	Louisiana Street, San Diego – Excellent traffic design, slows vehicles to 15-18 mph, but lacks landscaping. The array of A-frame warning signs is probably unnecessary. Loma Portal Neighborhood, Pt. Loma, San Diego – Traditional street lamps installed in the middle of low volume intersections act as traffic circles. In most cases, no other controls are present, inducing driver caution.

7. Chicane

<i>Description</i>	A series of curb extensions and islands creating an S-curve travel path.
<i>Advantages</i>	Provides greater visual obstruction, reducing speed. Provides a large area for landscaping. Length of the device is limited by cost. A very effective method of changing the initial impression of the street.
<i>Disadvantages</i>	Increases the area of landscaping to be maintained by residents. Cost is greater than some other devices. Reduces on-street parking.



This Oceanside example shows Chianes are safe and effective even on steep hills.

Application Residential and collector streets.

Local Examples Capistrano Drive, Oceanside –
Small, simple island and curb extensions work well.



This Oceanside mid-block chicane accommodates both large and small vehicles at a safe speed.

Foussat Road, Oceanside –

Circle and curb extensions on a collector road at a residential street intersection (Noreen Way) and on a speed-prone hill slow traffic at a key conflict point.

Sky Haven Lane, Oceanside –

Nicely-landscaped island and curb extension allows a straight path uphill but a serpentine path downhill. Very well engineered as both large and small vehicles pass by easily but slowly.

8. Oval Median

Description Oval-shaped mid-block island that shifts traffic to the right.

Advantages Landscaping provides a greater visual interruption, reducing speed.
Can improve the streetscape, if landscaped.
Can be designed to different speeds.

Disadvantages Requires careful design to achieve real speed reduction.

Application Residential and collector streets

Local Examples Stratford Court, Del Mar –
Good dimensions. Effectively slows traffic and is nicely landscaped with tall trees.

Auburndale Street, Linda Vista, San Diego –
Mid-block island moderately narrows the street and interrupts the view, slowing vehicles. Lacks landscaping.

Beryl Street, Pacific Beach, San Diego –
Four mid-block islands narrow the street of this high-volume collector street. The results are mixed. Planned landscaping was not implemented, but still could be. This would improve both aesthetics and effectiveness.



A well-designed oval forces vehicles to the right, inducing slowing.



Adding landscaping would greatly enhance this oval median on Auburndale Street.



Trees adorn this Del Mar median providing a visual interruption, thus reducing speeds.

Horizontal/Combined Devices

9. One-Way Slow Point

<i>Description</i>	Curb extensions that narrow the street to a single lane for a short distance.
<i>Advantages</i>	Reduces vehicle speed, especially if two vehicles approach from opposite directions. Imposes minimal inconvenience to local traffic. Pedestrians have a reduced crossing distance. Provides space for landscaping.
<i>Disadvantages</i>	Landscaping needs to be controlled to ensure visibility is not reduced. Reduces on-street parking.
<i>Application</i>	Residential streets.
<i>Local Examples</i>	None.



A one-way slow point creates an intentional bottleneck.

10. One-Way Slow Point with Speed Table

<i>Description</i>	Curb extensions with a raised area between them.
<i>Advantages</i>	Same as for One-Way Slow Point. Provides both horizontal and vertical deflection and hence has a greater calming effect.
<i>Disadvantages</i>	Landscaping needs to be controlled to ensure visibility is not reduced.
<i>Application</i>	Residential streets.
<i>Local Examples</i>	None.



This example combines a speed table with a crosswalk.

11. One-Way Angled Slow Point

<i>Description</i>	Triangular curb extensions creating a curbed path through which only one vehicle can pass.
<i>Advantages</i>	Reduces pedestrian crossing distance. Provides space for landscaping.
<i>Disadvantages</i>	Less effective in controlling speeds than Two-Way Slow Point with Median because drivers can create a straight path by driving over the centerline.
<i>Application</i>	Residential streets.
<i>Local Examples</i>	None.



Drivers must wait their turn to enter this angled slow point.

12. Two-Way Slow Point with Median

<i>Description</i>	Triangular curb extensions create a curved path through a two-way choke point.
<i>Advantages</i>	Same as for One-Way Slow Point, but advantages for a crossing pedestrian are not as great.
<i>Disadvantages</i>	Need to control landscaping to ensure visibility.
<i>Application</i>	Residential streets.
<i>Local Examples</i>	None.



A median and striping were added to this photo to illustrate how a median reinforces slowing.

Intersection Treatments

13. Street Closure

<i>Description</i>	Closure of one leg of an intersection to eliminate through traffic.
<i>Advantages</i>	Eliminates through traffic. Reduces the speed of remaining traffic. Improves safety for all other street users.
<i>Disadvantages</i>	Can severely restrict emergency vehicle access. Can create driver confusion. Severely restricts access to some residents' homes. Increases travel distance for residents and service vehicles.
<i>Application</i>	Residential streets. (Changes a collector street to residential street.)
<i>Local Examples</i>	Pershing Drive at Upas Street, North Park, San Diego –



Street closure on Pershing Drive eliminates severe cut-through problems.



Liberty Station's new residential district includes built-in road closures.

Transition from collector to local street, previously a notorious cut-through problem. Street closure inconveniences some residents. Accomplished with planters and posts. Permanent closure is under study.

Liberty Station, Rosecrans Street, Pt. Loma, San Diego –
Redevelopment of the former Naval Training Center includes road closures designed for fire, bicycle, and pedestrian access.

14. Diagonal Closure

Description Diagonal barrier across an intersection creates two unconnected, sharply turning streets.

Advantages Eliminates through traffic.
Provides area for landscaping.
Increases pedestrian safety.
Can include a bicycle pathway connection.

Disadvantages Restricts resident access to their properties.
Inhibits emergency access.
Moves through traffic to other streets if a whole system plan is not implemented.

Application Residential streets.

Local Examples None.



A diagonal closure turns an ordinary intersection into two sharply-turning streets.

15. Gateway Treatment

Description A (usually) decorative or ceremonial raised island at the entrance to a street or parking lot.

Advantages Signals a change from an arterial road to a residential street or pedestrian-oriented commercial district.
Reduces entry speed.
Reduces pedestrian crossing distance.
On very wide streets provides space for landscaping in the median.

Disadvantages Low speed of turning vehicles may restrict arterial road flow.
May slightly increase rear-end crashes depending on the speed on the arterial street.

Application Residential, collector, and arterial streets.

Local Examples 4th Avenue and Lewis Street, Hillcrest, San Diego –
A landscaped median marks a clear transition and slows traffic.



A neighborhood sign anchored in a median helps moderate traffic speeds.



Most San Diego gateway treatments are created and maintained by homeowners associations.

30th Street & University Avenue, San Diego –
The North Park Sign, and the median in which it sits, help moderate traffic at a primary commercial intersection.

Carmel Ridge Road & Tivoli Park Row, Carmel Mountain Ranch, San Diego – Treatment includes a landscaped island and textured pavement. Slows vehicles entering a condominium complex.

16. Modified Tee Intersection

<i>Description</i>	Islands, planters and /or striping to introduce curves at a Tee intersection.
<i>Advantages</i>	Reduces vehicle speeds. Reduces through traffic along the top of the Tee. Necessary to enforce changes in priority from one street to another.
<i>Disadvantages</i>	Makes driving more difficult and causes some confusion regarding priority.
<i>Application</i>	Residential streets.
<i>Local Examples</i>	None.



A simple planter island at the top of a Tee intersection enforces slowing from all three directions.

Intersection and Mid-Block Devices

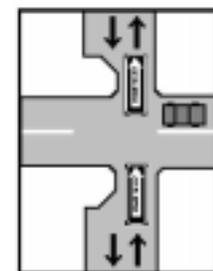


Shown above is a one-way entry and exit on a residential street and, at right, a temporary curb extension at Avocado Road and Calavo Drive on Mt. Helix reduces cut-through traffic.



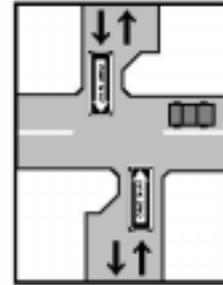
17. One-Way Entry & Exit (Continuous)

<i>Description</i>	Curb extensions limiting entry/exit to side streets to allow through traffic in one direction only.
<i>Advantages</i>	Reduces through traffic in one direction and partially in the other. Allows two-way traffic in the remainder of the street.
<i>Disadvantages</i>	Reduces access for residents. May affect emergency vehicles when they have to drive around partial closure.
<i>Application</i>	Residential streets, medium volume commercial street where cut-through traffic is severe in one direction.
<i>Local Examples</i>	Avocado Road & Calavo Drive, Mt. Helix – Temporary partial closure is low-cost but effective. If it becomes permanent, landscaping would improve aesthetics.



18. One-Way Entry or Exit (Opposing)

<i>Description</i>	Curb extensions limiting entry to side streets, prohibiting through traffic.
<i>Advantages</i>	Reduces through traffic in one direction and partially in the other. Allows two-way traffic in the remainder of the street.
<i>Disadvantages</i>	Reduces access for residents. Emergency vehicles partially affected as they have to drive around partial closure.
<i>Application</i>	Residential streets where cut-through traffic in both directions is severe.
<i>Local Examples</i>	None.



19. Pedestrian Refuge Island

<i>Description</i>	Raised island providing a refuge for crossing pedestrians.
<i>Advantages</i>	Can dramatically improve pedestrian safety. Cues drivers to expect crossing pedestrians.
<i>Disadvantages</i>	No horizontal or vertical deflection means that speed reduction is small and limited to only a few drivers.
<i>Application</i>	Residential, collector, and arterial streets.
<i>Local Examples</i>	Camino Del Mar, Del Mar – Generally effective, though traffic still moves quickly. With daily traffic around 20,000 vehicles, city should consider reducing roadway to two lanes between intersections. El Cajon Blvd., San Diego – Effective, especially where landscaped. Wide enough to protect pedestrians needing to stop halfway.



El Cajon Boulevard utilizes a number of pedestrian refuge islands.



Mid-block crossings with a pedestrian refuge island can be very attractive.



Del Mar's mid-block crossing on Camino Del Mar offers a safe refuge for pedestrians.

20. Two-Lane Slow Point

<i>Description</i>	Mid-block curb extensions which narrow the roadway for a short distance.
<i>Advantages</i>	Causes little inconvenience to drivers. Regulates parking and serves to protect parked vehicles as the bulbouts can be installed in no-parking areas to stop illegal parking. Reduces pedestrian crossing distance.
<i>Disadvantages</i>	Not very effective in slowing vehicles or diverting through traffic. Only partially effective as a visual obstruction. Eliminates parking spaces.
<i>Application</i>	Residential and collector streets.
<i>Local Examples</i>	None.



A mid-block slow point narrows a portion of the road but has limited traffic-calming effect.

21. Neck-Down Ends of Streets

<i>Description</i>	Curb extensions narrowing entryway to a street without reducing access.
<i>Advantages</i>	Reduces vehicle speeds without reducing access. Enhances the amenity of the street. Provides a large area for landscaping.
<i>Disadvantages</i>	High cost of retrofitting. More appropriate as part of a major street reconstruction or initial construction.
<i>Application</i>	Residential streets, neighborhood commercial streets.
<i>Local Examples</i>	Beech Street, South Park, San Diego – One of the earliest examples in San Diego, still holds up well.



This neckdown on Cortez Hill reduces crossing distance.

3rd & Cedar, Downtown San Diego – Excellent design. Slows traffic well in combination with judicious use of stop signs. Maintaining the expensive materials will be a challenge as street repairs occur.

Crest Road at Hoska Drive, San Diego – Corner realignment channelizes traffic, squares the intersection to 90 degrees, and creates space for landscape-buffered sidewalk.

Cortez Hill, Downtown San Diego – Curb extensions reduce crossing distance for people and pets.

Alternate Street Designs

22. Alternate Street Layouts: Woonerf

<i>Description</i>	Street environment favoring walking and bicycling over automobile use.
<i>Advantages</i>	Provides a low speed shared environment that is safe for all users. Enhances the street without restricting access. Provides flexibility for on-street parking.
<i>Disadvantages</i>	High cost as a retrofit of an existing street.
<i>Application</i>	Residential streets and low-volume commercial streets.
<i>Local Examples</i>	None.



The European ‘woonerf’ obliges all users (even trees!) to share the street equally.

23. Neighborhood Design: Mixed-Uses, Multiple Access Points

<i>Description</i>	Neighborhoods designed to make it possible to meet most needs by walking, biking, or short vehicle trips.
<i>Advantages</i>	Provides residents with maximum level of mobility. Many internal trips are walking or biking.
<i>Disadvantages</i>	Requires more thorough design and true mixed-use, people-friendly design, i.e., people live, work and recreate within the same neighborhood.
<i>Application</i>	Residential/collector/arterial streets working together.
<i>Local Examples</i>	Recent suburban developments integrating homes with shopping, schools, parks, and transit stops include Bressi Ranch (Carlsbad), Otay Ranch (Chula Vista), 4S Ranch (unincorporated area), Pacific Highlands Ranch (San Diego), Black Mountain Ranch (San Diego), and San Elijo Hills (San Marcos).



The Uptown District in Hillcrest provides homes within short walking distance of stores and services.

(See Section V. Avoiding the Need for Traffic Calming.)

24. Road Diet: Reducing Number and Width of Lanes

<i>Description</i>	Converting vehicle lanes to bike lanes, parking, wider sidewalks, or landscaping.
<i>Advantages</i>	Prudent drivers, rather than speeders, set the speed of traffic. If lanes are narrowed to 10' or 11', speed reductions and greater driver caution are usually observed. Provides new space for medians, bike lanes, sidewalks, and/or landscaping. Can reduce traffic congestion by reducing speeding and lane-weaving. Reduces crossing distance for pedestrians.
<i>Disadvantages</i>	Can be high cost for extensive retrofit. May reduce possibilities for future roadway expansion.
<i>Application</i>	Collector and arterial streets.
<i>Local Examples</i>	India Street Little Italy, San Diego – One-way street reduced from three lanes to two. Effectively creates reduced-speed environment for pedestrians. Extra width used for curb extensions and diagonal parking. Lacks good crosswalk markings. Jimmy Durante Blvd, Del Mar – Converted from four lanes to two with landscaped median. Lanes 11 feet wide, and bicycle lanes both sides. Attractive, but vehicles operate at high speed and there is no space for pedestrians. West Main Street, El Cajon – See Section VI. The Special Case of Main Streets.



Jimmy Durante Road, Del Mar, received a road diet treatment including new bike lanes. But where do pedestrians go?



Little Italy's road diet treatment on India Street draws pedestrians by taming traffic.

25. Diagonal Parking

<i>Description</i>	Converting parallel parking to diagonal parking.
<i>Advantages</i>	Drivers slow down, anticipating parked vehicles backing out. Increases on-street parking supply. Provides a greater buffer between traffic and sidewalks. Creates opportunity for zigzag curb with triangular planters. Reduction in travelway and vehicle speeds may increase roadway capacity. Speed moderation may create safer conditions for bicyclists.



Diagonal parking helps maintain low speeds in La Mesa's traditional "main street" area.

<i>Disadvantages</i>	Reduction in travelway and vehicle speeds may decrease roadway capacity. Requires 19 feet of pavement width, compared to 6-8 feet for parallel parking. Bicyclists may be forced to ride closer to parked cars, and are less visible to drivers of a backing vehicle.
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Application Residential, collector, and arterial streets.

Local Examples Most cities have examples.
Grand Ave., Pacific Beach, San Diego – Traffic moves much slower, but traffic capacity is also reduced, partly due to frequent signals. Through traffic moved to parallel roadway, Garnet Avenue.
Coast Highway 101, Encinitas – Coastal highway doubles as a local commercial street. Diagonal parking put excess pavement to good use and channelized traffic, creating safer pedestrian environment. Lanes reduced from 12 feet to 11 feet, improving driver safety.

26. Diagonal Parking – Reverse Angle

<i>Description</i>	Diagonal parking in which drivers back into stalls and parked vehicles face the street.
<i>Advantages</i>	Same advantages as conventional diagonal parking. Allows drivers of parked vehicles optimum view of the street when entering traffic. Elderly or disabled drivers avoid difficult "neck twist" to check for traffic when pulling out.
<i>Disadvantages</i>	Requires drivers to become comfortable backing into parking spaces. Backing into a parking space reduces visibility of sidewalk "obstacles" such as parking meters, signs, or landscaping.
<i>Application</i>	Residential, collector, and arterial streets.
<i>Local Examples</i>	None.

V Avoiding the Need for Traffic Calming

City staff designing new neighborhoods or streets should be asking themselves, “Will the new streets be safe for all users or will they spur next year’s angry calls about speeding?”

Dangerously wide streets with no pedestrian crossings have long been an urban planning standard, but the tide is changing.



Across the country, cities are revising street standards to tip the balance away from automobile dominance. To create hospitable streets and neighborhoods, five aspects need attention, the first of which is covered in more depth:

1. **Street Width** – Wider virtually always means faster.
2. **Intersection Design** – Crosswalk design, right-turn provisions, curb geometry, disabled access features, and signal timing all affect pedestrian safety.
3. **Designing-in Traffic Calming** – New neighborhoods can affordably include traffic circles, bulbouts, and other devices. Retrofitting later is costly.
4. **Tee-Intersections** – Incorporating tee-intersections in new neighborhoods reduces both cut-through traffic and speed, without resorting to winding cul-de-sac designs that cut off walking routes.
5. **Land Use Mix** – Providing schools, parks, and shopping within safe walking distance of homes.



Narrow Streets

The 50-year experiment with wide residential streets is slowly coming to an end. For decades, local cities have mandated residential street widths of 36 to 40 feet. We now understand that wide streets promote car use and speeding, increase air conditioning bills (heated pavement), maintenance costs, and stormwater runoff. They also waste valuable land.

Table 3 is a small sample of cities that have gone back to narrower street standards. (See www.sonic.net/abcaia/narrow for a more complete list.)

New Traffic-Calmed Neighborhoods

Two Local Examples

The City of San Diego has undertaken the region’s most comprehensive revision of street design standards. The City of Carlsbad has narrowed street standards less dramatically but requires traffic calming in all new developments. Encinitas is reviewing its standards as well. Both San Diego and Carlsbad have approved mixed-use (residential plus commercial) developments planned according to the new rules: Black Mountain Ranch in the City of San Diego and Bressi Ranch in Carlsbad.

Table 3
Jurisdictions Adopting Narrow Street Standards

Jurisdiction	Contact	Phone #	Residential Standard
Phoenix, AZ	Jim Slayer Transit Planner	602-262-6284	28’ – parking both sides
Santa Rosa, CA	Anthony Cabrera City Engineer	707-543-3209	30’ – parking both sides, <1000ADT 26-28’ parking one side 20’ – no parking 20’ neck downs at intersections
San Diego, CA	Samir Hajjiri, P.E. Planning Department	619-533-4546	30’ – parking both sides Traffic calming standard drawings, ped. lighting, planting buffer on all street classifications
Carlsbad, CA	Robert Johnson Deputy City Engineer	760-602-2752	34’ – parking both sides Traffic calming required for new developments (20’ neckdowns)
Howard Co., MD	Mike Mitchell	410-313-2420	24’ – parking unregulated, <1000 ADT
Birmingham, MI	Paul O’Meara	248-644-3869 x 241	26’ – parking both sides 20’ – parking one side
Missoula, MT	Steve King City Engineer	406-523-4623	26’ – parking both sides, 3-80 DU 32’ – parking both sides, 81-200 DU
Portland, OR	Terry Bray Transportation Planner	503-823-7058	26’ – parking both sides 20’ – parking one side
Kirkland, WA	Katy Coleman	425-828-1241	20’ – parking both side 24’ – parking both sides, low density 28’ – parking both sides
Vermont	State DOT		Rural – 22’ with 3’ shoulders

Bressi Ranch

Project Description: 523 single-family homes, 100 apartments, 200 assisted living units, and a neighborhood commercial center, all tied to a new employment area. The plan features corner bulbouts, four roundabouts, a modified grid street pattern, small parks dispersed throughout, and trail-oriented nature preserve. The orientation and design of homes creates “eyes on the street” giving pedestrians both the sense and reality of greater safety. Easy and pleasant to walk or bike to a park, shop, transit stop, or a neighbor’s house.



Black Mountain Ranch, North Village

Project Description: 2,783-homes around a mixed-use core of offices, retail, apartments, and a transit station. Features extensive open space, and a network of pedestrian walkways and bicycle paths. Alley access for most homes, which include row homes, garden apartments, and clustered homes. Project includes three schools – elementary, middle, and high school – designed and sited for walking or biking. Streets are narrower and include traffic calming features (bulbouts, traffic circles). Blocks are short, and arranged on a modified grid pattern.



VI The Special Case of ‘Main Streets’

A “Main Street” is a traditional pedestrian-oriented, mixed-use street serving as a town center. A well-functioning Main Street fosters the peaceful co-existence of vehicles (including transit), bicycles, and pedestrians. Visitors are encouraged through unobtrusive parking and the “street wall” of storefronts to park once and walk to a variety of uses. Parking is jointly owned and managed. (By contrast, exclusive-use parking lots force customers to depart early.) In keeping with this environment, traffic calming on Main Streets, and adjacent streets, serves three primary functions:

1. Reducing the dominant influence of through-traffic while favoring access to stores, etc.
2. Reducing speeds to better accommodate walking, bicycling, and parking maneuvers.
3. Providing more crossing opportunities for pedestrians.

Various techniques are frequently combined on Main Streets. (See table below.)

Main Street Traffic Calming Techniques

<u>Technique</u>	<u>Purpose</u>
Corner Bulbouts (curb extensions)	Reduce crossing distance, prevent speedy right turns.
Road Diet (reduce number of lanes)	Reduce speed and crossing distance, or create new space for bicycle lanes, a median, wider sidewalks, or diagonal parking.
Reduced Lane Widths	Calm traffic, induce driver caution, and provide additional pavement for a median, bulbouts, or bicycle lanes. Preferred width is 10-11 feet, rather than the standard 12 feet.
Diagonal Parking	Put wasted pavement to use, increase the parking supply, and increase the buffer between sidewalk and travel lane.
Raised Medians	Calm traffic and accommodate jaywalkers. Why accommodate jaywalkers? They are there anyway, and a median dramatically reduces pedestrian crashes.
Mid-Block Bulbouts with Crosswalk	Facilitate pedestrian access to both sides of the street. An underutilized treatment in Southern California.
Trees in Roadway	Calm traffic, reduce the dominance of cars.
Public Art	Cause motorists to slow to appreciate art. Includes sculpture, artful gateway treatments, and artistic flourishes on ordinary infrastructure and buildings.
Refuge Islands	Important part of a mid-block or intersection crosswalk in 4-lane applications. Assist slower pedestrians requiring more time to cross.
Widened Sidewalks	Invite pedestrian activity, which in turn slows vehicles.
Pedestrian-Oriented Signage and/or Lighting	Reinforce the message that pedestrians are welcome on the street; drivers respond accordingly.

Traffic Calmed Main Streets in the San Diego Region

This region boasts several examples of calmed Main Streets. Many of the above techniques are used, despite the fact that each street handles a unique volume and mix of traffic.

La Mesa Boulevard, La Mesa



At 5,000 vehicles/day, the traditional section of La Mesa Boulevard is a low-volume, 2-lane main street. Diagonal parking was added and street trees were planted in the roadway. Both treatments calm traffic and create a sense of protection for pedestrians. Sidewalks were widened and accented with brick, a nice design touch that communicates pedestrians are especially welcome. The store-front street wall creates a sense of enclosure. A nearby San Diego Trolley stop and high-density senior housing provide a steady stream of customers.



Third Street, Chula Vista

Third Avenue between E and H Streets is considered Chula Vista's "downtown". A two-lane section serves around 12,000 vehicles/day; a 4-lane section serves around 17,000. Special paving and landscaped curb extensions highlight several mid-block crosswalks, and the sidewalks are amply wide. Trees and diagonal parking are abundant. Vehicles operate at relatively low speed, particularly in the two-lane section.



Camino Del Mar, Del Mar

Planted medians up to nine feet in width give pedestrians a refuge when crossing, especially the many elderly pedestrians. Curb bulbouts, landscaping, and expanded sidewalks all give pedestrians a sense of belonging and communicate to motorists to expect pedestrians. Lanes are 10-11 feet wide instead of the conventional 12 feet. This causes more cautious, though evidently not slower driving. Stop signs were installed every other block, allowing pedestrians to cross. Unfortunately, motorists accelerate excessively between stops, a point made by all of the adjacent merchants we asked. This problem illustrates why *WalkSanDiego* rarely recommends stop signs as traffic calming devices.



Coast Highway 101, Encinitas



A \$5.7 million reconstruction includes widened sidewalks, landscaped medians, pedestrian lighting, diagonal parking, narrower lanes, colored crosswalks, and corner bulbouts. The pedestrian environment is enhanced with public art, landscaping, street furniture, trash receptacles, and period lighting.

Grand Avenue, Escondido

At up to 18,000 vehicles/day, a mid-volume, 4-lane main street. Small trees on the sidewalks and tall Eucalyptus trees in short grassy medians cast welcome shade. Terracotta pavers at crosswalks, corner bulbouts. Vehicles generally go at or below the posted 30 mph speed limit. Adjacent streets provide more through-movement.



University Avenue, North Park, San Diego

University Avenue handles both local and regional traffic with traffic counts up to 22,000 vehicles/day. At 30th and University, you can find sidewalk bulbouts, a mid-block island with a community sign, public art, a pedestrian plaza (southeast corner), and street trees. East of 30th Street, University has been reduced to three lanes (two eastbound, one westbound). Studies are underway to calm traffic west of 30th to Florida Street. In the three-lane section, there is considerable traffic, but short blocks, offsetting streets, and numerous (synchronized) traffic signals provide pedestrian crossing opportunities. However, west of 30th, there are few crossing opportunities and the street is very wide in some blocks. Still, the generous and attractive sidewalks and landscaping lend a very easy feel to strolling the avenue.





India Street, Little Italy, San Diego

India Street attracts tourists, local residents, and commuters, but at 5,000 vehicles/day, handles only light traffic. Two blocks have been rebuilt as a pedestrian-friendly restaurant and art studio destination. One lane of the three-lane, one-way street was converted to bulbouts, diagonal parking, and wider sidewalks. A gateway sign, period lighting, landscaping, and outdoor dining areas were added. Diagonal parking was added to additional blocks. Vehicles and pedestrians coexist well here.

Garnet Avenue, Pacific Beach, San Diego

In the intensive business section of Garnet Street, the number of lanes was reduced from three or four to two, and diagonal parking was installed in some blocks. Between Fanuel and Haynes



Streets, left turn pockets at intersections and diagonal parking force drivers to shift right, then left in the next block as the diagonal parking resumes. Following the changes, traffic dropped from 21,200 vehicles/day to around 15,500 vehicles/day. Residents report it is far safer to cross the street, and the pedestrian experience is enhanced by reduced traffic noise due to decreased speed. This street is frequently very congested, but drivers can elect to use the parallel arterial, Grand Avenue, as an alternate.

W. Main Street, El Cajon

The previous four-lane configuration was converted to two lanes. Large sidewalk bulbouts define diagonal parking bays, which provide an additional 84 spaces. A pedestrian-activated crossing signal was added mid-block. The regional bus route was moved one block south to reduce through-traffic and avoid back-ups at bus stops. Drainage was not disrupted or rebuilt (see photo). Traffic decreased from 20,000 to 17,000 vehicles/day. With the loss of a lane, traffic generally backs up more at peak commuting hours, as expected.



However, merchants report the addition of diagonal parking and the slower speed of traffic has increased business. The City should be commended for boldly and appropriately reducing the size of this overly wide street with the large bulbouts. These spaces can now be programmed for seating, restaurants, landscaping, or public art. Until this happens, the bulbouts will continue to lend a “blank canvas” feel to the street. The street’s transformation induced a \$6.4 million residential development in the next block.



VII The Right Process

Experience shows the process for choosing traffic calming devices is as important as the devices themselves. This is because traffic calming requires reaching consensus on the trade-offs between speed, access and safety. Since the immediate residents and businesses are most affected, they – not traffic engineers – should make these trade-offs. (See “How to Fail at Traffic Calming I”).

Instead, the most important participants are the residents. They know how the neighborhood works, what problems exist, and who the critical players are. And only residents can drum up the political support needed to fund and implement a Traffic Calming Plan.

Creating The Plan

Traffic Calming expert Michael Wallwork, P.E., has helped dozens of neighborhoods create Traffic Calming Plans. Here is his recipe:

To be successful, a traffic calming program requires a structured planning process, community participation, and consultation with all relevant authorities. The project should be designed in response to the needs of residents of a particular street, small area, or community. Traffic calming schemes work best when there is a consensus of residents. A consensus of 100% is difficult to achieve. However, a 65% to 75% approval rate is usually adequate to ensure acceptance. (Carlsbad requires 67% for installation and 80% for removal.)

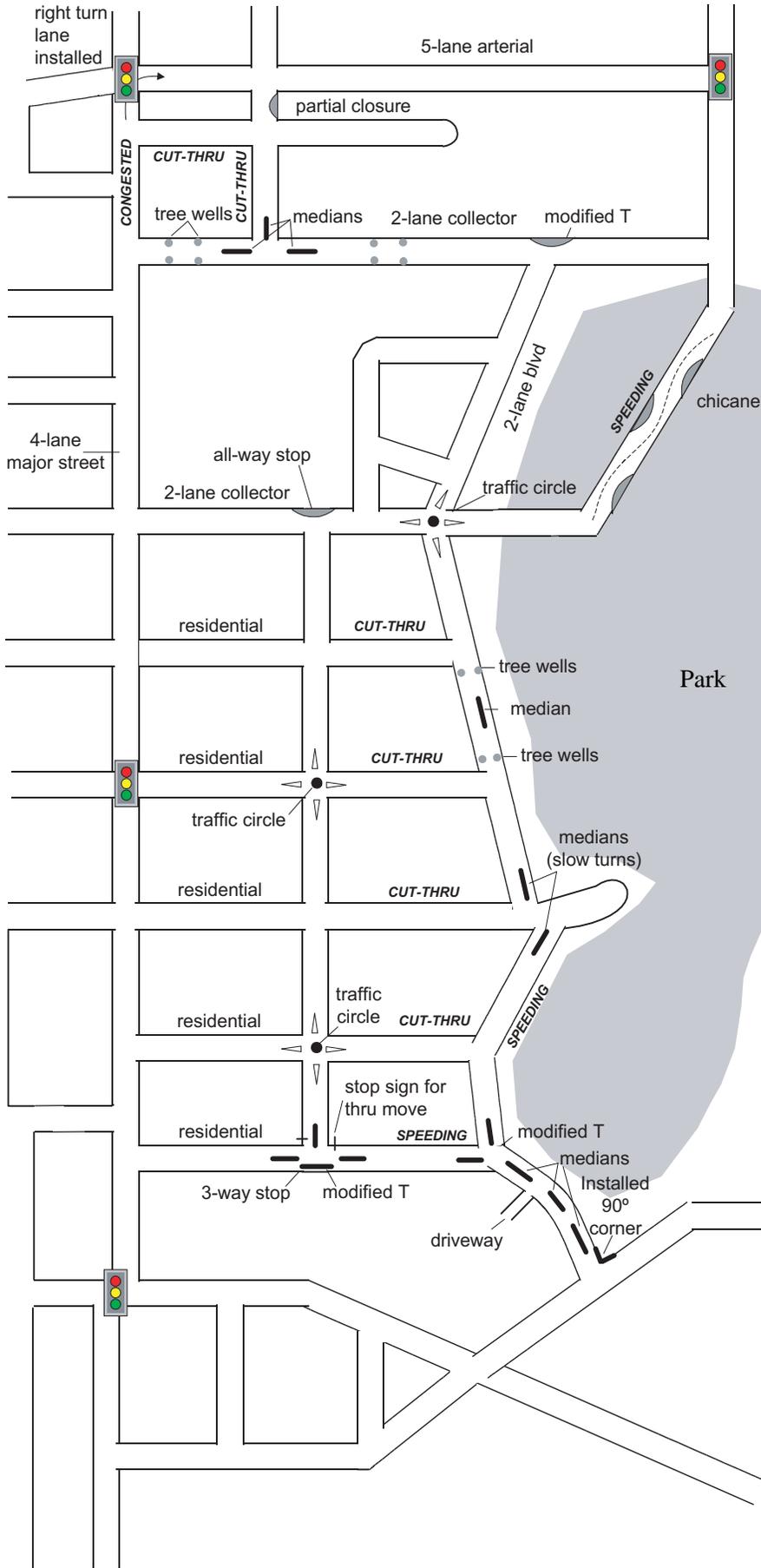
An effective approach is to educate residents about traffic calming by conducting a neighborhood workshop. At the workshop, residents (a) are asked to define the problem/s, (b) set the objectives, and (c) are educated on the process and the available techniques and devices. Then they break into teams of eight or fewer to prepare their own traffic calming schemes.

To avoid moving the problem from one street to another, an area-wide approach is necessary. Traffic calming is a community project where the residents and other affected people (such as local merchants) are active participants and hence become owners of the project, increasing its acceptance.



Residents and merchants know which streets most need attention, and how to prioritize competing goals. Workshops give them a forum to express their views.





Sample Neighborhood Traffic Calming Plan

This is an actual traffic calming plan created by a large group of residents of an Illinois community with the help of an expert facilitator.

The plan successfully eliminated traffic cutting through the neighborhood to avoid congested major streets and slowed vehicles on hills and long, straight roads.

Historically, skipping or skimming over parts of the planning process has caused traffic calming schemes to fail. The following steps of the planning process are crucial to its success:

Identify Problems and Issues —Collect and analyze crash data, traffic volumes, streetscape, residential, neighborhood, and community problems.

Establish Objectives —Specify and reach a consensus from the residents for the intended goal of the traffic calming plan. This step is essential in evaluating and comparing alternative schemes.

Develop Alternatives —Develop alternative schemes meeting the established goals.

Select a Plan —Evaluate the impact of each plan, including achievement of the goals, and undesirable or unavoidable impacts. After consultation with the residents, refine the final plan, design individual traffic control measures, and develop a phased construction plan. Neighborhood consensus of at least 65% will guard against uninformed neighbors sabotaging the plan in the final hour. (See How to Fail at Traffic Calming II.)

Implementation —Undertake any additional traffic studies to help determine if unforeseen traffic will transfer to other streets or areas. Communicate the work program and expected traffic detours to the community. Often residents cannot appreciate what a particular device will be like until it is installed. A useful technique is to install inexpensive temporary treatments so the residents can experience them before proceeding with the final construction. If a temporary scheme is implemented, it is important that the residents and City Council be advised that no comments will be received regarding the aesthetics of the devices – only their ability to meet the established goals.

Evaluation —Never assume the scheme achieves the desired effect. Motorists can find unexpected alternate routes. Conduct any additional after studies to measure the effectiveness, unexpected impacts, and resident/community reaction to the scheme. Change the scheme if necessary.

How to Fail at Traffic Calming I

Joe T. Engineer, a 30-year employee in the City of Carville, receives his third call that week from Mrs. Fedup, a resident of the Raceway neighborhood. As usual, she complains of speeding vehicles on her street and demands the city “do something about it.” An hour later, Joe receives a call from Councilman Grave, who Mrs. Fedup has also contacted. The Councilman makes clear Joe is to do everything he can for Mrs. Fedup.

Joe is only two years from retirement and would like this little problem to just go away so he can work in peace. He consults his boss, who has read about traffic calming, but never tried designing it himself. He tells Joe there’s no budget for anything “fancy” but to appease Mrs. Fedup.

After observing at the site, taking speed data, and consulting his fellow engineers, Joe informs Mrs. Fedup the city will install a series of speed bumps on her street and stop signs at both ends. Two weeks after the installation, Joe has received calls from 23 irate neighbors and 19 commuters deriding the project. One of the callers threatens to gather signatures for a ballot referendum prohibiting traffic calming of any kind. Councilman Grave calls and orders Joe to remove the speed bumps but to leave the stop signs in place.

Work crews remove the speed bumps, and the calls die down. Three months later, a driver runs one of the stop signs and severely injures an elderly pedestrian. Curious, Joe checks police records and finds there have been six collisions at the two stop signs. The stop signs are removed. Mrs. Fedup calls Joe to complain, and invites him to a meeting of 18 “like-minded” neighbors. Joe defers and begins avoiding her calls. He opts for early retirement.

VIII Funding Traffic Calming

A variety of sources have been used to fund traffic calming devices and their maintenance:

- ◆ **City Transportation Budget** – Contrary to appearances, traffic engineering is not just for cars. Pedestrian and bike safety is a legitimate transportation expenditure. For this reason, traffic calming funds should, and usually do, come from the yearly transportation budget. If your city doesn't have a traffic calming budget and assigned engineering staff, urge your City Council to establish them. Then find them problem spots to tackle.
- ◆ **Grants** – Various regional, state, and federal grants are available. Call the San Diego Association of Governments (619-595-5300) and ask for their pedestrian coordinator to learn more.
- ◆ **Parking Meters** – Commercial districts with parking meters have successfully lobbied their city council to dedicate all or some of the local meter revenue to street and sidewalk improvements, including traffic calming.
- ◆ **Community Development Block Grants** – Each city receives yearly federal outlays for community development needs. Contact your City Manager's office or planning department for more information.
- ◆ **Business Improvement District** – In commercial areas, merchants may elect to tax themselves to fund improvements.
- ◆ **Lighting and Landscape Maintenance District** – Similar to a Business Improvement District but includes residential neighborhoods. A small yearly tax on property owners can fund street lighting, landscaping, and other street improvements, including some traffic calming devices.
- ◆ **Private Donations** – Some neighborhoods have raised money for either the devices themselves, or to pay for ongoing maintenance of landscaping installed as part of the project.
- ◆ **Building Permit Conditions** – Building permits, especially for redevelopment projects, may include conditions requiring the developer to fund design and construction of traffic calming, sidewalk improvements, or other infrastructure improvements.
- ◆ **Sewer and Storm Drain Repair Projects** – As water infrastructure repairs are made, the opportunity exists to rebuild portions of the street.
- ◆ **Utility Undergrounding** – Similar to #9, programs to underground utility lines can provide opportunities to rebuild curbs and intersections.
- ◆ **Safe Roads to School Grants** – The California Department of Transportation (Caltrans) administers the multimillion dollar Safe Routes to School program, including installing pedestrian crossing and sidewalk facilities.
- ◆ **SANDAG-Administered Funds** – Various state and federal funds for pedestrian and bicycle facilities projects are administered by SANDAG. The 2030 Regional Transportation Plan envisions increasing these programs substantially.



Parking meter revenues can be dedicated in whole or part to traffic calming and other street improvements.

IX Secrets to Success

- ◆ **Don't Accept No** – Virtually every successful traffic calming program started with a concerned resident being told “We can't do that” by a city engineer, fire department, planner, elected official, or all four. Thousands of cities worldwide are already doing it. Sometimes it takes perseverance. Often, local officials aren't educated about the available solutions and flexibility in engineering standards. They may not realize there are no legal or technical obstacles, only the lack of will, or fear of new approaches.
- ◆ **Liability** – Sometimes cities fear lawsuits should a driver hit a traffic calming device. However, such suits are extremely rare. The most comprehensive study available of legal cases involving traffic calming (Ewing 1999) notes “a survey of 98 traffic agencies uncovered only six lawsuits related to traffic calming, this among agencies that collectively reported over 1,500 traffic related lawsuits each year. These same agencies reported paying only two damage claims.” These data suggest traffic calming may reduce government liability by making it harder to drive recklessly. However, when a city fails to properly light, mark, and sign a traffic calming device – and collisions result – lawsuits are a much greater risk.
- ◆ **Do Your Homework** – Learn more about traffic calming. Here's how: First, know this manual inside and out. If you have questions, contact *WalkSanDiego* or the Air Pollution Control District. Second, peruse the resources listed in the last section. Read about how well traffic calming devices worked or didn't work. Third, visit some working examples. To make it easier, divide these tasks among a group of energetic neighbors.
- ◆ **Form Partnerships** – Create alliances with your neighbors, local merchants, your local planning group and city council representative, local and regional advocacy groups, developers, police, schools, even your or your neighbor's children. If the problem concerns you, it undoubtedly concerns other people as well.

How to Fail at Traffic Calming II

A group of 30 residents living on Speed Street, a collector road receiving high speed commuter traffic, approached their city engineering department looking for solutions. The department was sympathetic, and worked with them to design a series of traffic circles. City policy required the neighborhood to fund the maintenance of any landscaping for three years, so the residents spent six months raising the necessary funds through bake sales and garage sales.

The city hired a contractor to build the traffic circles. Since there was no money in the budget for irrigation, the department asked adjacent residents to allow the city to tap into their lawn watering systems to irrigate the islands. None of the adjacent residents had heard about the project, and all of them refused. They were already angry at losing parking spaces near the circles. Lacking a water source, the department capped the circles with stamped concrete. Complaints poured in immediately from the residents group, who felt betrayed by the lack of landscaping.

Meanwhile, the contractor was experiencing staffing problems and failed to paint the curbs on the islands or install warning signs. Five months passed, during which four vehicles hit the islands at night, causing severe vehicle damage. Concerned about these accidents, the city fired the contractor and sent its own crews to install the signs and paint the curbs.

Meanwhile, residents who had not been consulted sent around a petition to have the circles removed. They were opposed at every step by the original residents, who felt the circles were effectively slowing traffic. Neighborhood tensions grew. Under pressure from the area's city council representative, the department adopted a new policy henceforth prohibiting the installation of traffic calming devices.

- ◆ **Involve Everyone Affected** – This is critical. Some traffic calming devices have been installed which merely pushed a speeding problem to another street, slowed the response time of emergency providers, or eliminated parking spaces without the user’s prior knowledge. Every party who stands to lose something must also understand what they will gain. Don’t make enemies of potential allies!
- ◆ **Emphasize the Public Safety Big Picture** – Some local transportation and fire departments object to the thought of slower streets. But house fires have been on a long slow decline, while the number of traffic crashes remains stubbornly high. It doesn’t make sense to plan streets for one fire every 30 years if 10 injury crashes are occurring annually in your neighborhood. Thus the next secret to success.
- ◆ **Get the Data** – The most important data you need to make your case, collected over the preceding five to ten years, are:
 - ▼ **Crashes** – Consult both the traffic and police departments. They keep different records. Since crashes often go unreported, ask around your neighborhood, too.
 - ▼ **Injuries from traffic collisions and fires** – Ask your local police department and San Diego County Emergency Medical Services at (619) 285-6429 for information.
 - ▼ **Fires** – Ask the fire department how many fires or other emergencies requiring a response vehicle have occurred in your neighborhood.
 - ▼ **Traffic volume** – Consult the traffic department on the number of vehicles per day using the affected streets.
 - ▼ **Vehicle speed** – Ask your traffic department to lay a speed/volume recorder on key streets. Request the resulting data.
 - ▼ **Temporary Devices** – One way to win over skeptics at the city, or within your neighborhood, is to install temporary devices made of rubber, temporary planters, painted lines, etc. However, since these installations aren’t usually attractive, they should not be allowed to stay in place more than 60 days. Otherwise, residents begin to associate traffic calming with blight. During the trial period, city staff and neighborhood leaders should state they will not accept comments regarding aesthetics. Permanent devices can beautify a street. Temporary devices do the opposite. That’s one reason they’re temporary.
- ◆ **Plan Ahead for Maintenance** – Effective traffic calming devices can still raise the ire of neighbors because of their unsightliness, or when taxes increase to pay for landscape maintenance. In the case of traffic islands installed in Pacific Beach, the city’s policy was to provide no money for maintenance, and not to accept informal maintenance commitments from neighbors. Once the islands were installed (without landscaping) and landowners learned they’d be required to tax themselves to pay for maintenance, a movement grew to remove the islands. This happened despite the relative success of the devices in slowing traffic. Plan ahead!



Traffic calming has transformed this residential collector into a safe, pleasant street for pedestrians, bicyclists, and motorists.

X

More Resources & Where to Find Them

Websites

www.walksandiego.org	Regional pedestrian advocacy organization
www.americawalks.org	National umbrella organization for pedestrian advocacy groups
www.trafficcalming.org	Provided by planning firm, Fehr & Peers
www.walkable.org	Walkable Communities, Inc., Principle Dan Burden is the “Johnny Appleseed” of pedestrian design and traffic calming. Author of several good reports (see below)
www.lgc.org/clc	Local Government Commission’s Center for Livable Communities
www.ite.org	Institute of Transportation Engineers
www.fhwa.dot.gov	Federal Highway Administration, U.S. Department of Transportation

Books and Manuals

Burden, Dan. 2000. *Streets and Sidewalks, People and Cars: The Citizen’s Guide to Traffic Calming*. Available for \$25 from the Local Government Commission, Center for Livable Communities, 1414 K Street, Suite 250, Sacramento, CA 95814-3966. (916)448-1198. www.lgc.org.

Burden, Dan with Paul Zykofsky. 2000. *Emergency Response: Traffic Calming and Traditional Neighborhood Streets*, Available for \$20 from the Local Government Commission (see above).

Burden, Dan. 1999. *Street Design Guidelines for Healthy Neighborhoods*. Available for \$25 from the Local Government Commission (see above).

City of Carlsbad, *Carlsbad Residential Traffic Management Program*, May 2001. Contact Engineering Department, Transportation Division, 1635 Faraday Avenue, Carlsbad, CA 92008, (760)602-2752.

City of San Diego, *Street Design Manual*, 2002. City of San Diego Planning Department, 202 ‘C’ Street, MS 5A, San Diego, CA 92101. (619)236-6479. Available free at www.sannet.gov/planning.

Ewing, Reid. 1998. *Traffic Calming: State of the Practice*. Institute of Transportation Engineers and Federal Highway Administration. Available free online at www.ite.org/traffic/tcstate.htm.

Hoyle, Cynthia L. 1995. *Traffic Calming*. American Planning Association, Planning Advisory Service Report Number 456.

Litman, Todd. 1999. *Traffic Calming Benefits, Costs and Equity Impacts*, Victoria Transport Policy Institute. Available at www.vtpi.org.

Rue, Harrison Bright. 2002. *Real Towns: Making Your Neighborhood Work*. Available for \$12 from the Local Government Commission (see above).

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What

Speed Control
Devices

Stopping
“Cut Through”
Traffic

Traffic Calming
Design Process

Traffic Calming

The Old Way

Stop signs, speed bumps,
“more enforcement.”
These don’t work or create
new problems.

Block the street or install
a series of stop signs.
Every driver is inconvenienced
and the problem moves to
another street. Stop signs
create new hazards.

Traffic engineer’s proposal is
picked apart by residents,
nothing satisfies everyone, all
go away angry. Traffic engineer
learns not to return calls.

Only cheap, unattractive
treatments are used. No specific
traffic calming budget exists.

What Really Works

Traffic circles, mid-block islands,
corner “bulbouts”, bike lanes,
chockers, etc.

Traffic Calming devices,
especially strategic bulbouts
at neighborhood entrances,
make cutting through less
advantageous.

A large cross-section of residents
are taught the available tools,
asked to make trade-offs
and create the design together,
which is fine tuned by engineers.

Residents who helped create
a traffic calming design rally
the neighborhood to convince
their elected officials to fund it.



SanDiego

*dedicated to enhancing the livability of communities through promotion, education
and advocacy, by making walking a safe and viable choice for all people*