

Traffic Calming Basics

by Richard Untermann

For decades transportation engineers have labored to increase road capacity and reduce traffic congestion. They widened intersections, added turn lanes, enlarged travel lanes, eliminated parking — anything to move more cars faster. Yet we now understand that road widening seldom lessens traffic congestion. Instead, it encourages more cars to use the roadway, and at faster speeds. Correspondingly, road widening has vastly diminished the pedestrian's world.

In the 1960s many citizens in Europe started to see that catering to more and faster cars was ruining their small villages. Local groups began reversing the process by narrowing traffic lanes, adding stop signs and barricades, and reducing intersection size. Called "traffic calming," this new approach focused on physical modifications to the street aimed at reducing vehicle speed and traffic volumes, and changing circulation patterns, in order to create a more pedestrian-oriented environment.

Many North American cities in the following decade began to use traffic calming techniques in older neighborhoods, often to reduce short-cutting traffic that made residential streets unsafe,

noisy, and unpleasant. A number of constraints — circles, stop signs, speed humps, neck downs, one-way streets, and diverters — were devised to slow traffic and make short-cutting trips take longer. Drivers soon learned they were better off staying on designated arterials, and neighborhood streets became safer and quieter.

With 25 years experience, residential street calming is well accepted. Now many cities are tackling spot locations — for example, the roads around parks, schools, or along shopping streets. Others, such as Seattle, Washington, are experimenting with calming not just residential streets, but arterial roads.

Traffic calming represents a decision to improve the pedestrian environment by reducing traffic speed and volume, without eliminating access for those living or doing business on the street and without preventing emergency vehicle access. Traffic calming can also help strengthen the fabric of neighborhoods by making streets less of a barrier.


How can we calm traffic? Let me first discuss some basic traffic calming approaches that do not involve modifying the street, and then turn to strategies that do entail street modifications.

TRAFFIC SIGNS & PEDESTRIAN SIGNALS

Signs are relatively quick, easy, and cheap to install. *Traffic calmed* areas can be identified with signs such as "Pedestrian District" or "Local Traffic Only". More frequent placement of "Speed Limit" and "Stop" signs can help significantly slow speeds, while "One Way" and "Do Not Enter" signs can thwart through traffic. Some engineers (and motorists) don't like frequent stop signs or reduced speed solutions. However, most residents view speeding traffic as a major safety concern, especially for children and older pedestrians. Faster



Photo 2. Center islands can be used occasionally to narrow the street and reduce traffic speed.

speeds also mean increased traffic noise.  *Street Noise*. Placing signs is a good first step, but may not be enough. In that case, increased enforcement or physical solutions (as described later in the article) may be necessary.

Setting traffic lights for easier pedestrian movement helps. Pedestrian-activated signals at intersections are part of a traffic calming strategy. But be sure that the signals don't require pedestrians to wait more than 20 seconds for the lights to change. Otherwise, many pedestrians won't bother to wait but will take their chances trying to cross when they can — canceling out the safety benefits, while leaving drivers angry when the pedestrian signal finally does come on and there's no one waiting to cross.

PARKING & TRAFFIC SPEED

Many communities still prohibit on-street parking. Unfortunately, wider roads encourage speeding. On-street parking, in effect, reduces the width of the street, leading to slower driving. Parking also separates traveling cars from the sidewalk, helping to improve pedestrian safety. Creating on-street parking is inexpensive — as simple as painting in the spaces.

Angle parking is even better than parallel, as it consumes more space, and motorists must slow to watch for cars pulling out of their space. During the 1930s and '40s most Main Streets across



Photo 1. Safe-crosses extend into the street at the intersection so pedestrians are more visible and have a shorter distance to cross. The work with parallel, perpendicular, or angle parking. Note also the bold "Zebra" crossing marks to alert drivers to the crosswalk.

the country had angle parking; many still do.

Another way of slowing traffic — and also increasing the parking supply — is to allow parking closer to the intersection. This will work best for pedestrian safety when combined with a “safe-cross” (described in the next section of the article). See *Photo # 1*.

One of the most widely used street modifications designed to reduce traffic speed is the *speed hump*. Speed humps are often 10 feet or so wide, with gently sloping edges — a far cry from the narrow, jutting, old-style *speed bumps* which could cause vehicle damage, as well as problems for snow plows and emergency vehicles. With proper signs to warn motorists, a well-planned series of speed humps can be quite effective in slowing traffic. Speed humps can also be designed with a “flat top” and striped for use as pedestrian crosswalks. Along similar lines, a number of communities have been experimenting with changes in pavement texture and appearance as a way of helping alert drivers to slow down when, for example, they are at a cross-walk or intersection.

ALTERING THE STREET

Physically altering the street has become an increasingly popular approach to reducing vehicle speeds. One way to do this is by narrowing short sections of streets from two to one lane. Called chicanes, the one lane portion requires one driver to wait while the other passes. Seattle has converted portions (up to 150 feet long) of two way streets to one way, using extended curbs to block wrong way access, and to shorten pedestrian street crossings.

Along similar lines, some communities have made use of *traffic diverters* — curbs connecting diagonally across the middle of two intersecting streets.

Diverters block the roadway, forcing drivers to turn left or right.

Islands and *medians* placed in the roadway can also help slow traffic down, visually reinforcing the message that the road is not designed for high speeds. In addition, through landscaping and tree plantings, islands can create a more attractive street environment. See *Photo #2*.

Traffic circles (also referred to as *roundabouts*) can also be effective in calming traffic. Located in the center of an intersection, with a diameter between 12 and 25 feet, these small circles usually include concrete curbing and tree or shrub plantings, often personalized by nearby residents. The trick is to make the circles large enough to slow traffic, while keeping them small enough so emergency and service vehicles can get through. To remind drivers not to speed between traffic circles, some communities have installed warning signs or modest speed humps between nearby circles. [Editor's Note: For a more in-depth look at the modern “roundabout” see Michael Wallwork's article on page 15 of this issue].

My favorite street narrowing technique is widened sidewalks at intersections. Various called *bulb-outs*, *neck-downs*, or *safe-crosses*, they include an enlarged sidewalk “bulb” that projects out into the street — reducing the street width and, as a result, the pedestrian crossing distance. The bulb usually goes about 6 feet into the street, and is 20 to 30 feet long. Safe-crosses often include trees or landscaping, and benches; and also frequently serve as bus stop locations. They can be either single or double (i.e., with a bulb on each side of the street).

Mid-block crossings — expanded sidewalks combined with a crosswalk —

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Street Noise

“Whether it is the rumbling, roaring, whishing, creeching, ticking-over, or echoing, the noise of traffic is pervasive. It often drowns out all other sounds in the city ... In our sample, 60 percent were aware of noise on their street, ‘very or quite often.’ In fact, only 17 percent were ‘hardly or never’ aware of it.” From Donald Appleyard's *Livable Streets* (Univ. of Calif. Press 1981). See also James Cowan's “Community Noise: Dealing With a Growing Problem,” in PCJ #14 (Spring '94).

Editor's Note:

Traffic Calming and the Planning Process

Traffic calming, as Richard Untermaier notes, can involve a variety of techniques aimed at reducing traffic speeds and creating a safer environment for pedestrians. Traffic calming proposals can also raise a firestorm of protest — and not just from traffic engineers. Some people simply don't want their commute home slowed down in any way. Others (with some justification) may be concerned that slowing traffic in another neighborhood may lead to more cars coming into their neighborhood.

The point to remember is that — as with any significant changes to our physical surroundings — the best approach is to involve the whole community in the planning process early on, well before any changes are made. As planning commissioners, find out where traffic speeds need to be reduced (and make sure neighborhood residents concur) and learn more about different ways of accomplishing this. Then help educate the public on what their options are and listen to what they have to say.



Photos 3 and 4. Arterial expansion has left us with many super-wide streets. Dividing the street into a “thru lane” and a “service lane” slows traffic and increases the functionality and the aesthetics of the street.

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allow pedestrians to cross between intersections. Mid-block crossings have been constructed on streets ranging from modest main streets to state highways. Safety concerns can be addressed by placing the crossings in clear view of oncoming drivers, boldly striping the crosswalk, installing warning signs and adequate lighting, and using the crossings sequentially, so drivers become used to them.

Other ways of narrowing the street to reduce vehicle speeds include:

- *Striping bicycle or walking lanes.* Not only does this make the road seem narrower to drivers, but it also provides a safer environment for bicyclists and walkers.
- *Eliminating free right turn lanes.* Separate right turn lanes allow traffic to move faster. Unfortunately, pedestrians don't benefit from this, or from having to cross a much wider intersection.
- *Converting angle intersections to 90*

degree “T” intersections. Cars move much faster — and often don't fully stop — when entering another street at, say, a 45 degree angle instead of having to make a 90 degree turn. Angle intersections can frequently be converted to 90 degree intersections by adding a curb and sidewalk extension at the intersection (like the previously described “bulb-outs”). The extension also helps pedestrians by providing a shorter and safer crossing distance.

SUMMING UP:

Traffic calming can make streets safer and better environments for pedestrians and bicyclists. Striping and sign programs are typically the simplest and least costly approach to traffic calming. But, because they are “self-enforcing,” striping and signs are often not as effective as physical traffic calming techniques such as narrowing the roadway. Sound planning is essential to ensure that the most appropriate traffic calming methods are selected, emergency access is maintained, and traffic problems are not simply shifted from one neighborhood to another. ♦

Richard Untermann is Professor Emeritus of Urban Planning at the University of Washington. He is the author of Accommodating the Pedestrian: Adapting Towns and Neighborhoods for Walking and Bicycling, published by Van Nostrand Reinhold Co. of New York. Untermann now resides in Santa Barbara, California, where he works as a consultant on planning and design issues. This is the second in a series of columns on streets, cars, and pedestrians.



On-Line Comments

“The biggest challenge faced by planners with respect to traffic calming may be in achieving a public consensus as to their usefulness. The reality is often that traffic calming is quite controversial, and overcoming public opposition and educating may be the planner's best role ... Members of the public often have conflicting perceptions of traffic calming techniques. For example, some people believe that multiple stop signs cause motorists to speed excessively in order to compensate for perceived lost time. Any planner who is a proponent of traffic calming should be well informed about the need to prove by example the effectiveness of the design measures.

— Robin Bennett, Ottawa, Ontario

“It's important to include key players in design. The highway crew needs to know what's coming down the pike, and will likely have important suggestions for design elements that will ease the additional difficulties

we're making for snowplowing, street cleaning, etc. Fire crews will often balk, but they can be won over. One of the most creative ideas I heard of was where the highway and fire crews were invited to a trial, with cones laid out to simulate a new intersection or traffic pattern ... it turned into an informal competition to see who could drive the biggest rig through the cones. All made it, and everyone suddenly realized that the new design standard would work! What a great idea, which turned the initial resistance into support.

It's also important to communicate that no single 'improvement' will solve problems, whether perceived or real. Most improvements work in tandem with others ... Just putting in better crosswalks won't, by itself, make safer pedestrian crossings. We still need to educate drivers and pedestrians about how to do it right. ... I do believe that physical form does influence behavior, and we should always do what we can to help design influence positive behaviors. It just doesn't do it by itself...”

— Lee A. Krohn, AICP, Manchester, Vermont