

Streets For People

TRAFFIC CALMING IN YOUR NEIGHBORHOOD

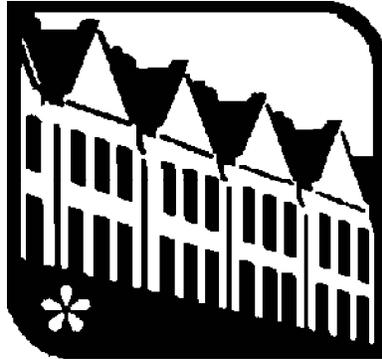
A PRIMER FOR PEOPLE WHO WANT QUIETER, SAFER, FRIENDLIER
NEIGHBORHOOD STREETS



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TRAFFIC CALMING IN YOUR NEIGHBORHOOD

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neighborhood streets network

1998

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West Village Houses Tenants Association

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People Are Talking

The Neighborhood Streets Network hears complaints from people concerned about the effects of traffic on safety and neighborhood quality of life all the time. Some may sound familiar:

- “When the highway gets backed up, cars get off and use our local streets—honking if they're stuck, speeding if they're not.”
—Carroll Gardens, Brooklyn
- “Drivers ignore the stop signs and speed. If we can't cross the street safely, how on earth will our children be able to?”
—West Village, Manhattan
- “When we moved to this neighborhood, it was nice and quiet. But every year, the traffic gets worse and worse. If it doesn't get better, we might have to move.”
—Flushing, Queens
- “I can't let my children play outside or walk to school by themselves. I'm afraid they'll get hit by a car.”
—Great Kills, Staten Island
- “We complained to the city, but they told us we couldn't have a traffic light or stop sign.”
—Richmond Hill, Queens
- “This intersection is too dangerous. Not only that, but the unpleasant conditions keep people from shopping here.”
—Morrisania, The Bronx



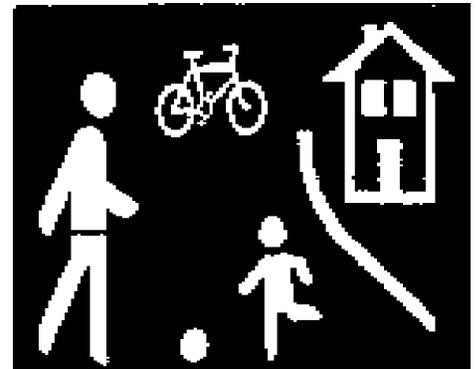
An increasingly common sight on our residential streets

Streets for People is like a tool kit—full of solutions for the kind of traffic problems that people all over the city are talking about. More importantly, it's a description of how people across the city, the country and the world are using these tools to beat back the threat that uncontrolled traffic poses to their safety and quality of life.

We can have livable communities along with motor vehicle access to homes and businesses. The following sections consist of an introduction to **traffic calming**. Traffic calming is a system that designs streets as shared space—shared between vehicles, residents, pedestrians, children and bicycles. It was developed by people just like you and me, people who wanted to reclaim their streets from growing traffic and protect the livability of their communities. Where used, traffic calming has helped to heal and support the fabric that makes urban life livable, even enjoyable.

As you read through *Streets For People*, always remember:

- **Your streets belong to you and your neighbors.**
- **Cars aren't kings of the road—they should be treated, and behave, as guests in a space that is shared by many other users.**
- **You have the right to a safer, quieter neighborhood.**



The international symbol designating traffic calmed areas shows that streets are public space appropriate for both motor vehicle and non-vehicular uses.

Reclaiming Our Streets is the Key to Reclaiming Our Neighborhoods

A group of streets and buildings is a neighborhood when there is a sense of community among the people who live there. New York is known for its neighborhoods, and the special quality of life that they provide. But that quality of life is threatened by too much traffic — too much speeding, too much noise and air pollution, too much danger. In New York especially, the street is where we meet and talk with our neighbors. A neighborhood can only maintain this quality of community if traffic is not the dominating feature. Cars can coexist with people, but when traffic overwhelms human interactions, the sense of community suffers most.

More Traffic Equals Less Community

As the amount of traffic and the speed at which it moves increase, community activities decline. A study of San Francisco neighborhoods showed that people who lived on streets with light traffic were friendly with neighbors on both sides of the street, but people who lived on streets with heavy traffic were almost completely estranged from their neighbors across the street. Increased traffic causes people to retreat into their homes, abandoning the public space. With no sense of the public space as a shared resource, the physical environment begins to deteriorate, vandalism and criminal activity may increase, and people who were neighbors now merely live in adjoining buildings.

Hope

Before too long, residents stop thinking about how to improve the neighborhood and start thinking about whether to move. But there is hope. People across the city are fighting this threat—read on to find out how and with what!

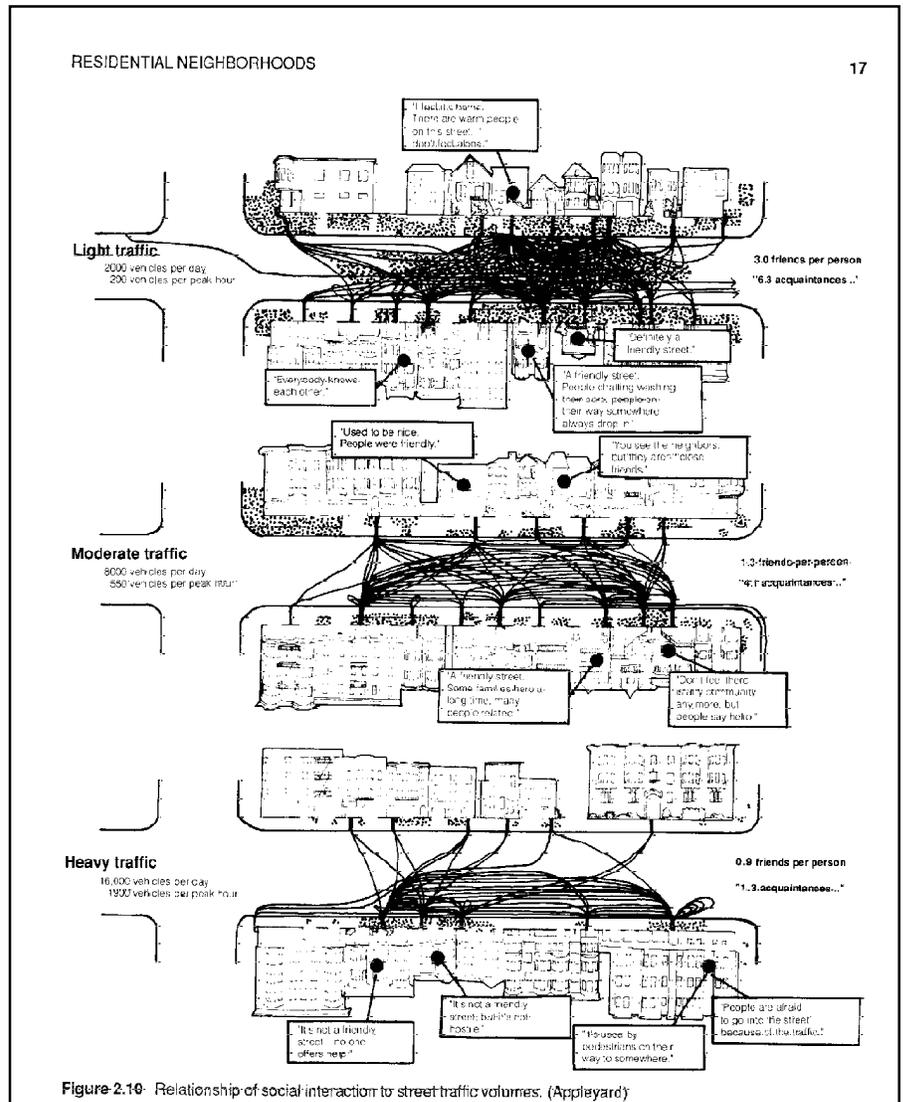


Figure 2.10: Relationship of social interaction to street traffic volumes. (Appleyard)
 Research confirms the obvious: heavier traffic means that people have fewer contacts with their neighbors and fewer friends on the block.



MetroTech Center - An urban oasis in downtown Brooklyn

Traffic Calming: The Street Tells You What To Do

To traffic calm a street, various physical and regulatory measures are used to change the psychological feel of the street. The way a street is designed tells drivers what to do. Wide, straight and flat expanses of asphalt say to drivers, “It’s okay to go fast”¹ By narrowing lanes or the street itself, making the street curvy, or using landscaping, streets are given a relaxed, pedestrian feel that says to the driver, “Slow down! This is a shared space.” Importantly, these measures are **self-enforcing**, reducing the need to call on an over-worked police force to ticket speeders and red-light runners.

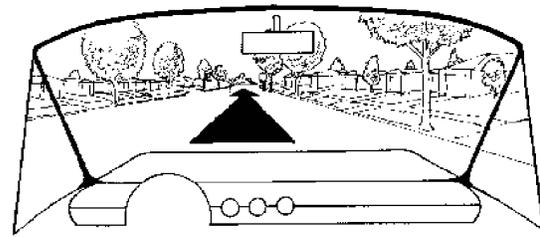
The primary objective of most traffic calming techniques is to **slow down traffic**, while still allowing vehicle access. Slower traffic is far less dangerous, less noisy and less polluting. Reducing speeds also discourages highway drivers from using neighborhood streets as short-cuts.

It Came From The People

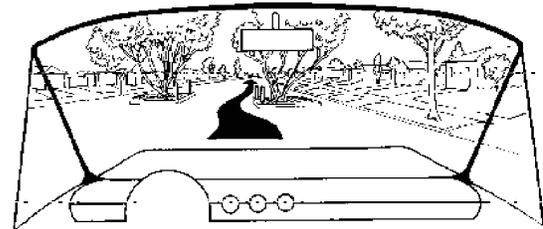
Traffic calming began in the Dutch city of Delft over 30 years ago. In Delft, residents grew tired of the danger and noise that traffic was bringing to their streets. The government wasn’t forthcoming with help, so residents took matters into their own hands. They pulled up cobblestones and arranged them to force drivers to slow down. As a result, they became pioneers in the movement to turn streets into community and pedestrian-friendly environments. Through grassroots action, Delft residents convinced their government that neighborhood quality of life and pedestrian safety were priorities. In response, the Dutch government embraced the innovative concept of traffic calming. In the decades since, traffic calming has been honed into a science.

Calm Streets Are Livable Streets

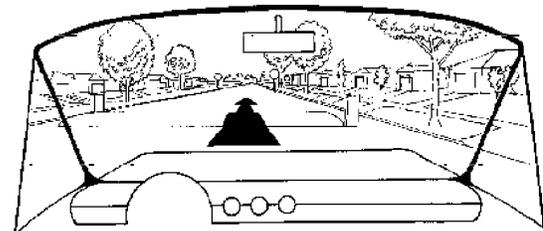
Used extensively in Europe, traffic calming is gaining popularity in the United States as a way to creatively and effectively solve the problems that traffic brings to our neighborhoods. Cities considered the most livable in the country, like Seattle, WA; Boulder, CO; and Portland, OR; have embraced traffic calming. Over the years, New York City has sporadically experimented with traffic calming. Only now, however, is the city beginning to use it on a widescale basis. Why the change of heart? As in Delft, much of the change is happening because groups like those involved in the Neighborhood Streets Network have begun increasing the pressure to do something to protect pedestrians and neighborhood quality of life.



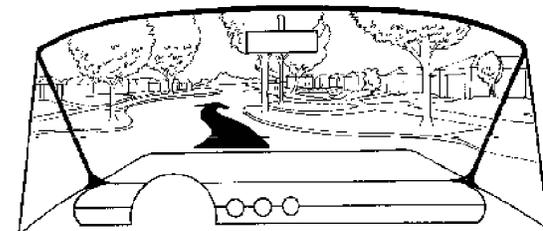
(a)
Fastest Condition
with Stop Sign



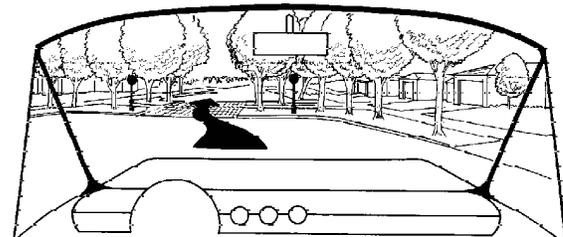
(b)
Deviation with Trees and Poles
Equipment with Reflections



(c)
Limiter



(d)



(e)
Deviation of Us Undulation with
Raised Crosswalk and Light Fixtures

Engineers Paying Attention

Traffic engineers and politicians are finally reacting to this pressure. At a recent conference, a Rochester, NY engineer said he used to "sleep well at night" knowing that he'd turned down residents' requests for stop signs, signals and "children at play" signs. He knew these measures have proven to be ineffective at reducing speeds. Yet, he did not try to come up with better solutions. At long last, increased pressure from communities and politicians is forcing traffic engineers like the one mentioned above to consider traffic calming techniques—options that even the prestigious Institute of Transportation Engineers endorse as very effective. Even the pro-automobile AAA's engineers are intrigued by traffic calming—the New York chapter offered it as a solution to neighborhood traffic problems in its December 1997 issue of *Car & Travel*.

Politicians Paying Attention

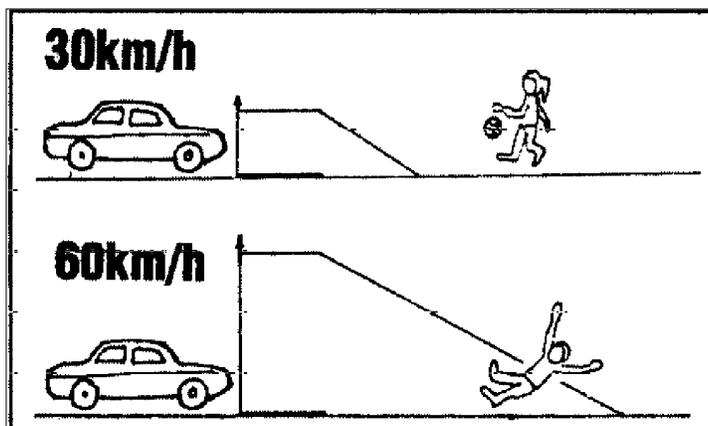
New York's politicians are paying attention as well. In January 1996, Mayor Giuliani signed a City Council bill that required the Department of Transportation to study traffic calming and report back within a year. And, it was discussed recently on the floor of the U.S. Congress when Brooklyn Congresswoman Nydia Velasquez proposed it as a way to protect communities along the Gowanus Expressway from traffic disaster as the decrepit highway is rebuilt.

More Needs To Be Done

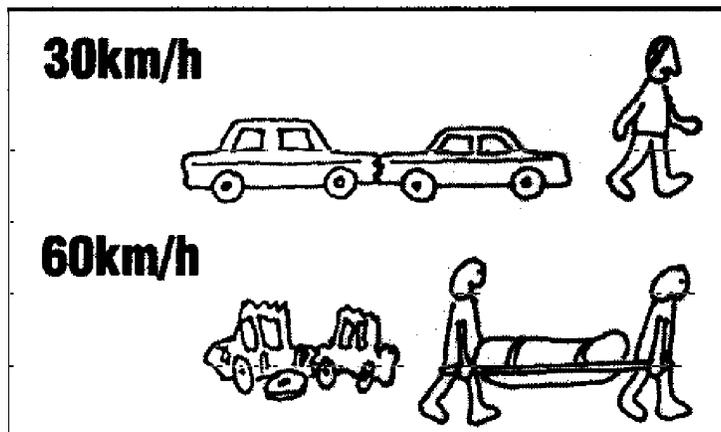
Despite the growing appreciation of traffic calming in New York and the rest of the United States, we must do more to convince people. Some opposition against traffic calming devices stems from the American Association of State Highway and Transportation Officials' (AASHTO) manual known informally as the "Green Book." The goal of the Green Book is to "provide operational efficiency, comfort, safety and convenience for the motorist." Such design standards are often contrary to the needs of pedestrians and cyclists. However, it is important to keep two things in mind:

- 1) AASHTO guidelines are not fixed regulations. The Department of Transportation often departs from them.
- 2) Many traffic calming devices do in fact abide by AASHTO standards.

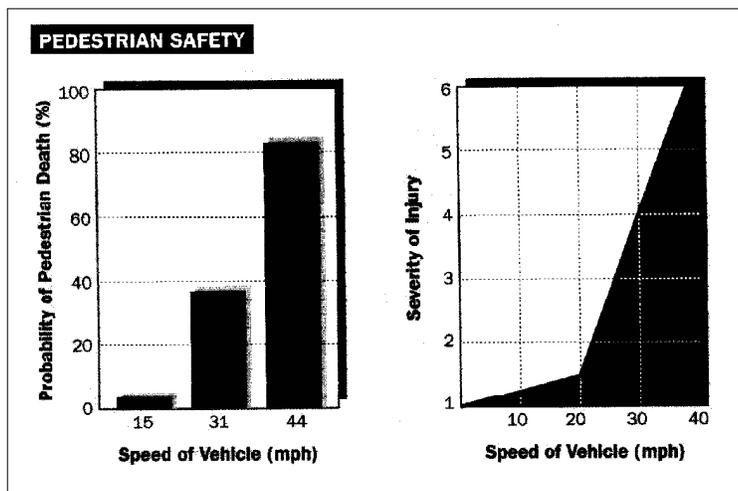
The next chapters explain traffic calming options and how to develop a plan for your neighborhood. They'll give you the facts you need to get traffic calming installed on your streets.



There are less crashes and pedestrian accidents because drivers have more time to respond as motor vehicle speeds are reduced.



At slower speeds, crashes that do happen are less severe.



And, the probability of pedestrian death is reduced dramatically.

Traffic Calming: Saves Lives And Neighborhoods

While traffic calming protects the lives of pedestrians, traffic calming increases safety for everyone who uses the city's road network. This group includes drivers, pedestrians, wheelchair-bound individuals, and cyclists—people on their way to work, school, the subway, or their cars.

New York City's traffic crash and fatality statistics are frightening. Our city averages 52.9% more fatalities per vehicle mile traveled than the rest of the nation.²

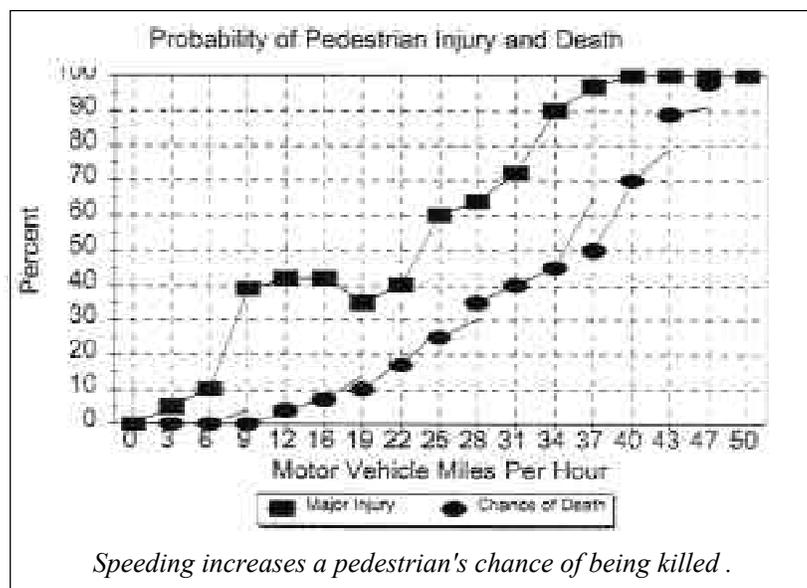
- **In New York City alone, 250 pedestrians were killed by motor vehicles in 1995.**
- **12,730 pedestrians were injured by motor vehicles.**
- **226 drivers, passengers and motorcyclists were killed.**³
- **Getting hit by a car is the number one cause of death and injury for New York children ages 5-14.**⁴

As the graph below shows, a pedestrian's chance of being killed by a car increases dramatically as the speed of the car increases. Slowing down cars is simply the best way to reduce the victim's chance of being killed or maimed in a crash. Lower speeds also help prevent crashes in the first place because drivers are more attentive on slow streets, and have more time to react to danger.

Traffic Calming Success Stories

Crash rates have been reduced significantly in traffic calmed communities all over the world:

- The western section of Berkeley, CA: Traffic calming led to decreased traffic volumes. Crash totals dropped from 142 to 116 a year, even though the rest of the city recorded a three percent rise in collisions.⁵
- Stockholm, Sweden: Crashes declined by 25% after the city was divided into nine sections designed to discourage traffic through residential neighborhoods.⁶
- Seattle, WA: Intersections where mini-traffic circles were installed have seen up to 90% fewer collisions.⁷
- Bologna, Italy: After traffic calming, traffic volumes were reduced 13% and the number of crashes dropped 22%.⁸
- Sittingbourne, England: One speed table and seven combined pinch points/speed tables reduced the road toll. Since implementation in 1989, the number of fatalities was zero and there was one injury, compared to two fatalities and ten injuries in the three years prior to installation.⁹
- Bridgeport, CT has made a low income neighborhood safe from drug dealing through the installation of traffic diverters. Now through traffic in search of drugs must drive into other neighborhoods.¹⁰



A combined pinch point/speed table, similar to the one used in Sittingbourne, England.

Traffic Calming: Reduces Traffic and Creates Livable, Walkable Communities

When traffic calming is implemented in neighborhoods, overall car and truck traffic decreases.

Until the advent of the automobile, streets were places where people gathered and socialized—places where community flourished. However, with cars overtaking urban roadways, many streets have become unwelcoming places. The street no longer provides people with a safe and pleasant public place. As a result, communities no longer have a sense of place. Neighborhood ties are less strong as residents are unable to socialize comfortably along the street. Noise levels and traffic danger keep residents inside. The diagram on page five illustrates the relationship between the level of traffic on the street and the amount of social interaction and pedestrian activity.

By recapturing street space for people, traffic calming helps create more pleasant and livable communities. It begins to shift the balance of power so that cars no longer dominate the street. Traffic calmed streets are pedestrian friendly streets. They create spaces where people feel safe from the dangers of traffic, and can socialize and interact with family, friends and other members of the community. Traffic calmed streets are also quieter and less polluted, providing a relaxed environment where people want to be. Following are some of the ways traffic calming makes life better for communities.

Reduced Noise Levels¹¹

When motor vehicle speeds and volumes are reduced, noise levels will decrease as well. Effective traffic calming means slower, more constant speeds. More constant speeds mean less stopping and starting. Less stopping and starting mean less noise from acceleration and braking.

Increased Retail Trade¹²

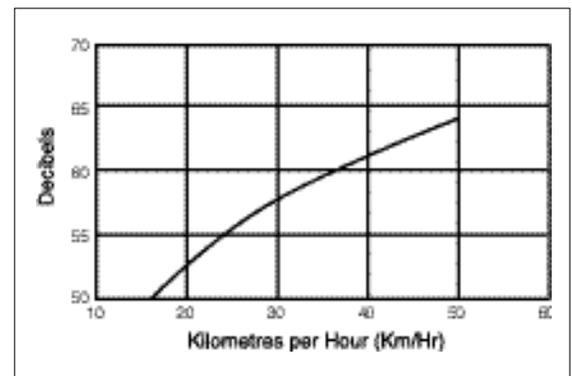
Studies have shown that traffic calming along commercial areas is good for business. People are more likely to shop and buy in a pedestrian friendly environment than on a congested, polluted, uncomfortable street. After all, you can't window shop at 40 mph!

Reduced Pollution Levels¹³

When cars travel at slower, more constant speeds, the amount of acceleration and deceleration is decreased. Less acceleration and deceleration means that emissions can be reduced by as much as 50%. Calmer traffic means cleaner air in your neighborhood. As it becomes safer and more pleasant to walk or cycle, people may even leave their cars at home more often.



Traffic calming creates spaces that are safer for everyone.



Slower traffic means less noise and quieter, more pleasant streets.

Common Problems And Their Traffic Calming

Solutions

Problem: Speeding Cars and Trucks

Streets that are wide and straight encourage cars and trucks to go faster. Children often dart out in front of cars because they haven't yet developed the skills to deal with fast traffic. It's a matter of physical development, not education. And, at higher speeds, drivers have less time to react to changing conditions and playing children¹⁴.



Solutions

Speed Humps

A modern version of the traditional speed bump, they are wider and more gradual.

Speed humps are more effective because they can be adjusted in size and shape in order to achieve a desired speed reduction.

They are inexpensive, yet their effects can be dramatic.



The speed hump is an inexpensive solution to speeding. This speed hump is in Northern California, but they can be seen all over the country, including New York.

Speed humps are now an integral part of NYC

Department of Transportation's traffic calming techniques. By the end of 1998, NYCDOT will have installed over 300 speed humps. Current sites include:

- Brooklyn - Grand Ave between Gates Ave and Putnam Ave
- Bronx - Morris Ave between Burnside Ave and E 182nd St
- Manhattan - W 28th St between 8th Ave and 9th Ave
- Queens - 102nd St between Park Lane South and Jamaica Ave
- Staten Island - Bookside Ave between Alpine Ct and Martling Ave

Design Considerations:

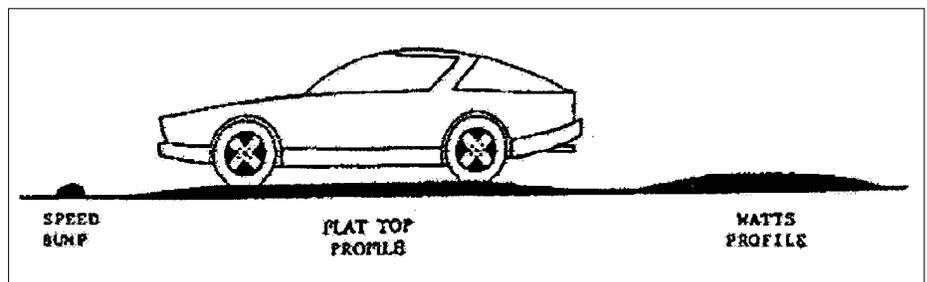
-Slope on the approach and exit should not exceed 8%. NYC DOT currently uses a standard of 5% or less.

-The Institute of Traffic Engineers (ITE) guidelines state speed humps should be considered on streets where the majority of vehicles travel at relatively fast speeds, 35 mph or greater.

-AASHTO standards state that street widths may vary from 18 to 50 feet.

-Speed humps are allowed on sanitation routes but not recommended for use on bus routes or emergency vehicle routes.

-Most American cities place them on streets with up to 12,000 average daily traffic (ADT).



This diagram from Maryland shows the difference between speed "humps" and "bumps"

Chicanes

- A form of curb extension that alternates from one side of the street to the other.
- Cars and trucks take a serpentine route along a street, slowing them down.
- Chicanes can be landscaped, painted, planted, fenced or provided with reflectors or street lights.

Chicanes are becoming an increasingly popular option in Seattle, and each year more and more are requested. In the Phinney Ridge area, residents on neighboring streets were concerned about possible spillover traffic. “However, post installation studies showed that the chicanes are effective in significantly reducing speeds and volumes without adversely affecting adjacent streets.”¹⁷

Pinch Points

- Narrow the road at points between intersections.
- Slow down traffic by reducing the road width at certain points.
- Provide an excellent opportunity to create more space for landscaping.



A pinch point narrows the road and slows traffic

Limited vision can lead to compromises like this pinch point on the Upper West Side's 94th Street. The idea is there, but NYC engineers years ago felt the need to maintain two lanes of traffic—eliminating the desired speed-reduction effect.



A chicane in a residential area slows traffic

Design Considerations:

- Signage and markings are needed to indicate directional priority.
- Poor design can make the road look cluttered and impacts adversely on traffic accidents.
- Dependence on parked cars for effect is discouraged.
- Chicanes must be visible in the dark.

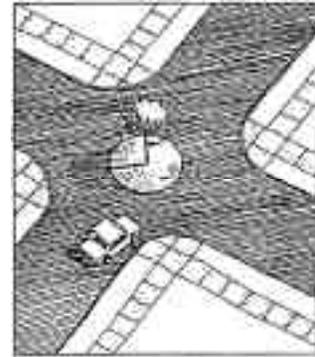
Design Considerations:

- To maximize on speed reduction, all moving lanes must be funneled into one.
- AASHTO recommends use on streets with ADT of 5000 or less.
- The use of textured surfaces such as blockwork will help impress upon the motorist that lower speeds are intended.



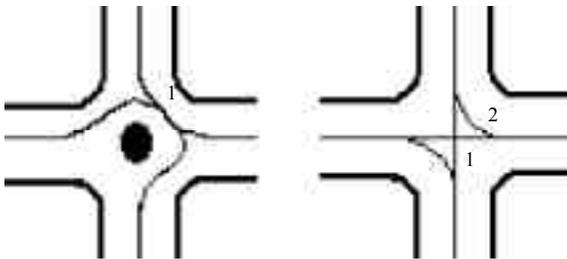
Mini Traffic Circles

- Small roundabouts, placed in the middle of an intersection.
- Can replace traffic lights and stop signs at low and medium volume intersections, improve intersection safety, and decrease speeds.
- Unlike signals, every vehicle that travels through an intersection with a mini-traffic circle has to slow down.
- Differ from traditional, larger circles because mini-circles are designed to slow traffic, not increase the number of cars that can drive through an intersection.



Design Considerations

- Highly visible or raised center will maximize reduction in speed.
- The circles should be large enough to impact speed, but AASHTO states they must permit emergency vehicles to make all necessary turning movements.
- A ramped area around the circle allows larger vehicles more turning space.



In Seattle, mini-traffic circles have resulted in as much as a 90% reduction in the number of crashes. Why are mini traffic circles so much safer? They cut the number of opportunities for conflict in half. Both diagrams at the right show the intersection of one-way streets. With a traffic circle, there is only one point where a car traveling north can conflict with a car coming from the west. In the regular intersection, that same driver has two points of conflict. Half as many points of conflict, combined with lower speeds, means far fewer crashes.



Channelization in Manhattan

Channels

- Painted lines or different color paving blocks indicate to drivers that a portion of the roadway is not to be driven on.
- Channels make the street appear narrower than it really is. Drivers react by slowing down.
- Bike lanes can be used to channel a street.

Channels are an excellent example of how easily and inexpensively traffic calming can be tested. On the Lower East Side's Montgomery Street, the residents wanted a stop light because speeds were too high. But when the engineers looked at the street, they realized that the problem was that the street was much too wide. A signal wouldn't solve this problem, but a median would. Because money wasn't immediately available to build a median, they painted the street to look like a median had been installed. As a result, speeds have been reduced and a pedestrian refuge area created. The DOT has plans to build a permanent median in the near future.

Speed Tables

- Are flat-topped speed humps.
- Vary in length along their flat area. As a result they can be used as regular speed humps, as crosswalks or to fill up an entire intersection.
- Crossing safety is increased if speed tables are used as a crosswalk. Drivers, and not the pedestrians have to change levels when they come to a crossing, not the usual other way around. As a result, drivers are more cautious.



Speed table



Design Considerations:

- Slope should not exceed 8%. NYC DOT currently uses a standard of 5% or less.
- The Institute of Traffic Engineers (ITE) guidelines state speed humps should be considered on streets where the majority of vehicles travel at relatively fast speeds, 35 mph or greater.
- AASHTO standards state that street widths may vary from 18 to 50 feet.
- Allowed on sanitation routes but not recommended for use on bus routes or emergency vehicle routes.
- Most American cities place them on streets with up to 12,000 average daily traffic (ADT).

Lower Speed Limits

- Elected officials and police are more likely to respond to complaints about speeding.
- Encourage drivers to travel at slower speeds. Work especially well if enforcement is available to back them up.
- Can be made self-enforcing through the use of the traffic calming techniques mentioned above.

New York State law currently prohibits speed limits below 25 mph on a specific street and 30 mph for an entire area. A new bill in the state legislature aims to change this restriction. It would allow speeds as low as 15 mph. 15 mph speed limits are currently allowed in school zones but NYC has yet to establish any.



Traffic Lights and Stop Signs Often Don't Solve the Problem, And They Can Make It Worse

Many communities turn to traffic lights or stop signs as the solution to dangerous intersections and speeding. Yet these conventional traffic control devices are not always reliable as pedestrian safety measures. A few inherent problems make them difficult to get and ineffective once installed. Traffic calming devices like speed humps, speed tables and traffic circles provide more effective solutions.

Traffic Light/Stop Sign Problem #1

The NYC Department of Transportation relies upon a U.S. Government publication called the Manual of Uniform Traffic Control Devices (MUTCD) to provide it with standards and criteria for installing traffic lights and stop signs. When a community asks for a traffic light or stop sign, a common response from the DOT will be: "Our analysis has shown that a traffic light is not *warranted* when measured against MUTCD criteria." This same bureaucratese is spoken when a community asks for a stop sign, though the conditions are somewhat less stringent.

The MUTCD provides a detailed list of conditions that must be met at an intersection before a traffic light or stop sign can be installed. For example, an intersection must have a minimum of 5 accidents per year, 15 percent of traffic on the larger street must exceed 40 mph; or the intersection must exceed minimum vehicular and pedestrian volumes as outlined in the manual in order for it to warrant a traffic signal or stop sign²⁰. These are some of the criteria an intersection must meet before the Department of Transportation will install a traffic light. There are more, eleven in all, that restrict a community's ability to obtain a traffic light.

Traffic circles, speed humps and speed tables do not have this problem. The MUTCD does not place restrictions on their installation. Speed tables, speed humps and other traffic calming devices do not have to meet the same set of conditions that restrict the installation of traffic lights and stop signs. The bureaucratic excuse of a device not being warranted cannot be used to deny a community a speed hump.

Traffic Light/Stop Sign Problem #2

Traffic lights and stop signs were not designed as speed control or pedestrian safety devices. They were designed to control the flow of traffic and mitigate motor vehicle conflicts at intersections. Therefore, in many cases, they do little to reduce speeds or increase pedestrian safety. Traffic lights and stop signs can exacerbate conflicts and they may make an intersection more dangerous. For example, if a driver approaches an intersection when the light is green, he/she will have no incentive to slow down. If the light is yellow, a driver may even speed up in order to catch the light.

Mini-traffic circles, speed humps and speed tables consistently slow motor vehicle traffic and enhance pedestrian safety. They are self-enforcing and can be designed to achieve a desired speed. Drivers are forced to slow down, since their trip would be uncomfortable at higher speeds.

Traffic Light/Stop Sign Problem #3

Traffic lights are expensive to install and need regular maintenance. Signals cost \$3,000 each and require regular maintenance as well as a continuous flow of electricity.

Speed humps cost about \$2000; circles, about \$4000²¹. With no mechanical parts, humps and circles require little maintenance.

Traffic Light/Stop Sign Problem #4

If stop signs or signals are installed at places where drivers perceive no need for them, drivers will start to ignore stop signs or signals unless police enforce the law.²² Since traffic calming devices are physically self-enforcing, drivers have little choice but to obey them.

Problems And Solutions

Problem: Inappropriate Through-traffic

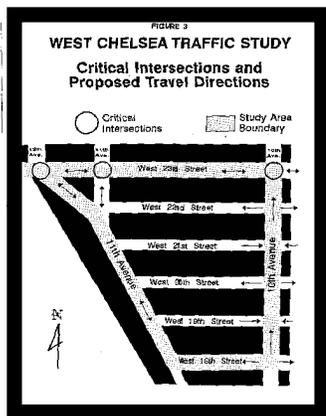
- Many neighborhood streets are being used as through streets by cars and trucks in a hurry.

Solutions

Any traffic calming technique used to reduce speeds on local streets will reduce inappropriate-through traffic, especially if an entire area is calmed. The solutions listed below belong to a more aggressive class of devices, called "diverters." By physically changing the street network, they make it more difficult to travel through a neighborhood. Diverters must only be used as part of a neighborhood-wide calming plan. If you change the layout of the street network, you must consider where diverted traffic might go (to a main street=good, to your neighbor's street=bad). You must also make sure that access to homes and busi-nesses is maintained.



A truck barrels down a residential street in Brooklyn



Street Reversals

- Can be implemented along a one way street by simply changing the directional "one way" signs.
- Are the least expensive and most effective means of reducing or eliminating inappropriate through traffic.



Diagonal diverters keep cars from going straight through a community

Diagonal Diverters

- Force motor vehicles to turn, but allow pedestrians and cyclists to go straight.
- Can be landscaped and turned into mini-parks.
- Allow police and other emergency vehicle access.

Design Considerations

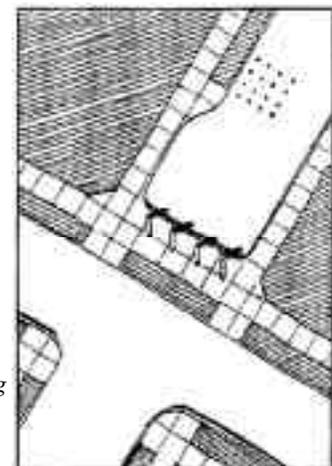
- A design that stops short of the curb will allow existing patterns to be maintained and reduce construction costs.
- Clearly visible signage should indicate "right (left) turn only."

Cul-de-Sacs

- Make the street end before it reaches an intersection, creating a turn around.
- Can be used either at the end of the street, or mid-block.
- Serve a similar purpose as diagonal diverters, but are a more extreme application.
- Preserve access to homes and businesses while eliminating through-traffic. Pedestrians and cyclists can travel through. Can be designed to allow emergency vehicle access.

Design Consideration

- When used on existing residential street only 36 to 40 feet wide, according to AASHTO, a turning radius of 18 to 20 feet is acceptable.



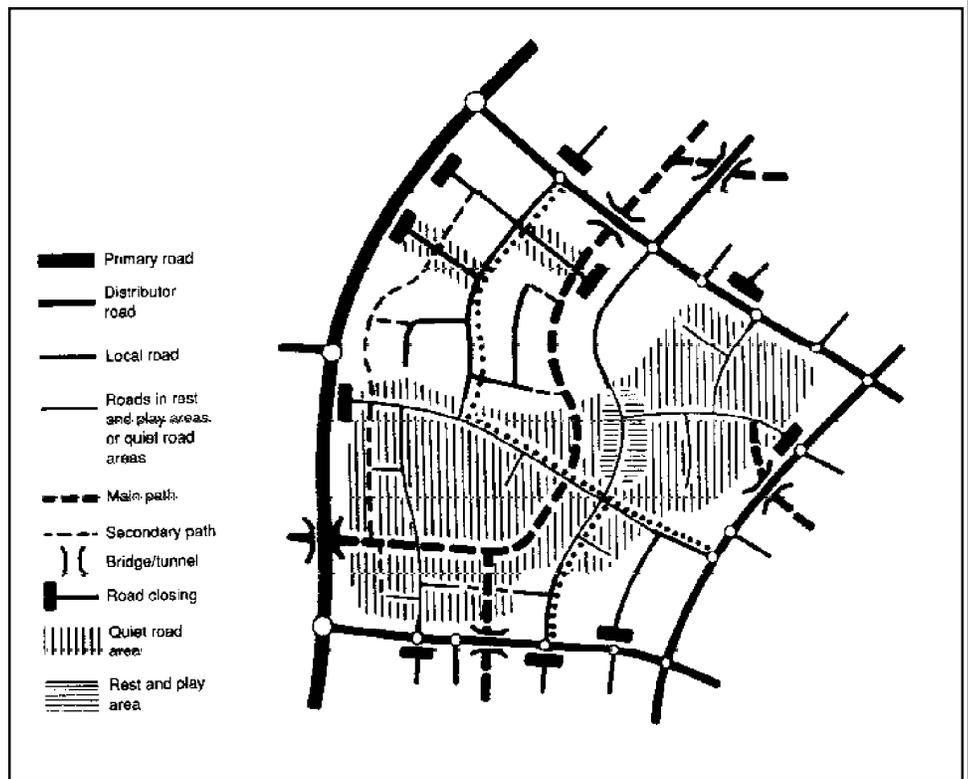
Cul-de-sacs prevent through traffic by turning cars around before an intersection

Neighborhood-wide Traffic Calming

Residents often worry that if one street in a neighborhood is traffic calmed, traffic will simply shift to the next street. This fear is why it is important to plan for a neighborhood.

Neighborhood-wide traffic calming includes:

- Application of traffic calming measures not just along one street, but along all potentially affected streets in the neighborhood.
- Changing the traffic pattern in the neighborhood, through the use of diverters and mid-block road closures, Allows vehicle access to homes and businesses while preventing cars from being able to speed straight through.
- Institution of parking regulations in order to control on street parking in the neighborhood. For example, some municipalities institute parking regulations that maintain on street parking for residents only. In New York State, a city or town has to have a special waiver written into law to do this—NYC is not currently allowed to have residential parking.²³
- Imposing speed limits on neighborhood streets. Creating a slow speed zone within a traffic calmed neighborhood.
- Providing facilities for transit and bicycles, thus making it easier for both residents and visitors to leave the car at home.



TRUCKS! TRUCKS! TRUCKS!

Does unwanted truck traffic barrel through your neighborhood? Neighborhood-wide traffic calming will keep unwanted through traffic especially trucks, out of a neighborhood. While traffic calming does not prevent trucks from entering a street, it does make streets undesirable as through routes. Therefore, trucks will be able to access your traffic calmed street to make a delivery or provide a service on that street. But your street won't be used as a shortcut.

- Are you on a truck route? If not, trucks shouldn't be there, unless they're making local deliveries. Write to the precinct or your Borough Commissioner and ask for enforcement.
- Are the trucks oversized? NYC law limits trucks to 55 feet. Any longer and they can suffer significant fines. If you see tractor trailers with big interstate sleeper cabs, that's too big. Another job for your precinct and borough commissioner!²⁴



Problems and Solutions: Dangerous Intersections

- Even with traffic signals, many intersections can be difficult, if not dangerous to cross. Turning cars, vehicles that fail to yield, and short crossing times make getting across the street safely a major challenge.
- Crosswalks are viewed as safety zones by pedestrians, but are actually the most dangerous place to cross the street. Twice as many NYC pedestrians are hit crossing with the WALK signal as are crossing against it.²⁵
- Intersections can be confusing and frightening, for children, the elderly, or the infirm .

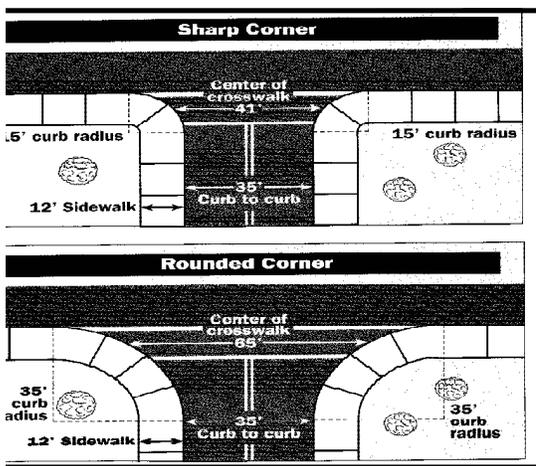


Pedestrians spill off crowded sidewalks into the street while waiting to cross, as cars speed through intersections.

Solutions to Dangerous Intersections

Corner Radii Treatment

Reduction in corner radii at intersections is an example of a simple, yet effective traffic calming device. Narrowing the roadway at specific locations acts as a reminder or encouragement to drive slowly and calmly. For many intersections, the radius of turn is designed for the occasional truck, not the typical automobile. As a result, smaller motor vehicles turn the corner at a faster speed and are less likely to check for pedestrians.



NATIONAL CENTER FOR SAFE COMMUNITIES

- Reduces the pedestrian crossing distance by 4 feet or more.
 - Adds much needed sidewalk space.
 - May diminish number and speed of cars.
- Design Considerations* -Placed on streets with high pedestrian volumes especially where young, disabled, and elderly are present.
 -Shrinking the corner radii should be taken into account in every street or arterial rebuild.

Tighter corners mean slower cars

Sidewalk Extensions (a.k.a. Neckdowns or Bulb-outs)

- Bring the curb out into the parking lane at the intersection, shortening the crossing distance for pedestrians.
- Drivers must turn more sharply, thus more slowly.
- Eliminate the use of the parking lane by aggressive drivers who want to pass other drivers waiting for a light.
- Can serve as a "gateway," informing motorists that they've gone from one kind of street to another.
- Sometimes used as bus stops, where they also decrease bus travel times because the bus doesn't have to pull in and out of traffic.



Sidewalk extensions create more pedestrian space at intersections

Design Consideration

- Locations with 24-hour curb parking are ideal since neckdowns have little impact on vehicular capacity.
- Well suited for compact commercial areas but not appropriate for high-speed arterial and collector streets .



Sidewalk extensions are an attractive addition to Manhattan's Restaurant Row

Raised Crosswalks

- Are speed humps at a crosswalk location and provide both speed control and greater pedestrian protection.
- Change in pavement height tells drivers that special care must be taken at intersections for pedestrian safety.
- Allow pedestrians to avoid puddles formed by clogged drains, poor drainage, poor street construction, disrepair, or melting snow at the crosswalk.

Design Considerations

- Similar to specifications for speed humps: slope should not exceed 8%. All materials used should be skid resistant and should extend from curb-to-curb.



Raised crosswalks mean that drivers have to exercise caution while crossing the pedestrian domain, not the other way around.



Raised intersections can slow cars at the cross-

Pedestrian Phase

- The traffic signal halts all motor vehicle traffic for a designated period of time, allowing pedestrians to a jump start crossing the street without having to worry about turning cars.
- New York City has a very successful Lead Pedestrian Interval (LPI) program, targeting high pedestrian intersections throughout the city.
- Every signalized intersection in downtown Denver, CO has a pedestrian phase.

People can walk safely during a pedestrian only cycle at the corner of 23rd St and 1st Av, 110th St and Broadway, as well as locations in the other boroughs.

Raised Intersections

- A raised intersection refers to a speed hump placed in the center of an intersection, or an intersection that is completely redesigned, raised and rebuilt.
- Recognized by the ITE as a valid traffic management technique.



Traffic Calming Major Streets

In many cities and towns, busy arterials pass directly through neighborhoods. Pedestrians, including small children and the elderly, must cross them to get to schools, shopping, public transportation, etc. But even the crosswalks at intersections along arterials can be frightening and dangerous.

With changes, arterials can become safer and less intimidating, and life along an arterial becomes more pleasant.

Medians (Pedestrian Refuge areas) can be placed in the center of an arterial to reduce the crossing distance, reduce speeds and give pedestrians a refuge area in the middle of a wide arterial. Arterials can even be turned into **Boulevards** by designing wider medians that include landscaping, and recreational (play area) and relaxation (park benches) opportunities.

Design Considerations

-Arterials of four or more lanes are ideal for medians with a preferred width of 6 feet. AASHTO states a minimum of 4 feet.

-To allow pedestrian to cross roads with a sense of safety, raised medians should be constructed to provide a refuge.



This median provides a safe place for pedestrians to wait.

Narrower travel lanes encourage slower speeds. Installing a **Bike Lane** and repainting lane markings along an arterial will effectively reduce the overall roadway width, as well as the width of individual travel lanes.

Design Considerations

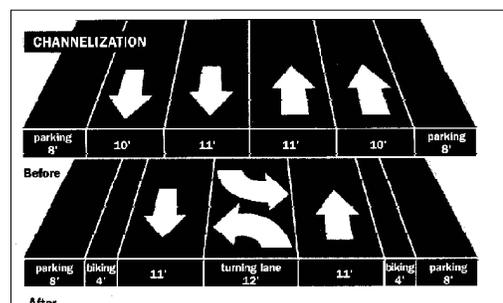
-The minimum bicycle lane width requirement is 4 feet but wider is preferred.

- It is advisable to add a buffer between the bicycle lane and the moving lane with a width of 6 feet. The buffer provides greater protection from motor vehicles and space for deliveries.



This bicycle lane on Lafayette Street in Manhattan reduces speeding by narrowing the road. Of course, it also improves conditions for cyclists and as more people bike, fewer drive.

Channeling an arterial can have an effect similar to that of a bike lane, by reducing the width of the road. Channeling is generally an



experimental measure to test the effectiveness of width reductions. They can later be made permanent through creation of medians or landscaping. There are also utilitarian uses for the channel, such as bike or bus lanes.



Channelization slows traffic along arterial streets

Seattle calms two-way streets using channels. Some neighborhoods ask for the turning lane to be made into a landscaped median.



Turning One-Way Arterials Into Two-Way Streets will create narrower lane widths in each direction. A driver seeing oncoming traffic will travel at slower speeds.²⁶

This two way arterial slows traffic and increases safety for everyone

Sidewalk Extensions, when placed at intersections along arterials, reduce the crossing distance for pedestrians, and force drivers to make turns more slowly and carefully.

Temporary neckdowns have been painted at Mulry Square on Seventh Avenue and 11th Street, in order to reduce crossing distances and increase safety. This experiment has been a success and will soon be made permanent through the installation of planters and bollards.



Is Traffic Calming an Oxymoron?

In most major cities, traffic engineers and planners focus solely on "congestion mitigation" i.e., moving the greatest number of vehicles in and out the central business district quickly during peak hours. It is easy to assume that traffic calming policies might conflict with this aim and lead to even more congestion. Fortunately this assumption is not the case.

In the book Struck in Traffic author Anthony Downs discusses the factors influencing traffic flow. The basis of the triple convergence theory is that drivers will nearly always take the shortest, most direct and least encumbered route available. Eventually the "best route" will become congested and drivers will modify their behavior by: taking an alternative route (spatial convergence); driving during off-peak hours (time convergence); or taking mass transit (modal convergence).

Events following the Los Angeles earthquake support this explanation. City officials feared that the economy would falter since few people could drive to work. This fear was unfounded. Instead, commuters took mass transit or worked at home. Amazingly, even LA survived without highways.

Areawide traffic calming initiatives operate the same way. Drivers will rethink "shortcuts" through residential areas if they believe there are better alternatives.

Children's Safety: Safe Routes To School

Do you feel safe crossing the street with your children? What about letting them cross the street by themselves? Children's lives are placed in danger every day, as they travel to school. At every intersection, they meet cars and trucks trying to get to their destinations as quickly as possible, sometimes sacrificing safety in the process. Statistics bear this view out. In New York State and New York City, **being hit by a car is the number one cause of death and injury to children between the ages of five and fourteen.**

In both the city and the suburbs, many children walk to school everyday. But very often parents are afraid to let their children walk to school alone—the risks are just too great.

In One Community, Traffic Calming Made a Difference

In the 1970's, Denmark had Western Europe's highest rate of child mortality due to traffic accidents. Parents, teachers and city officials decided to do something about it. They got together to plan and design safe routes to school for their children.



Here's how it was done:

1 The children filled out questionnaires about their routes to school and social activities, mapping these routes and pointing out the dangerous places along the routes.

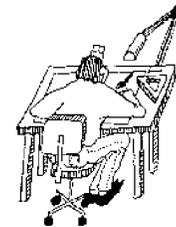
2 A report was sent to each school. It described the results, and proposals were made to improve children's safety.



3 Parents and teachers commented on the findings and proposals



4 A draft proposal for each project was made, using traffic calming and slow speed zones, and discussed with the school and the police.



5 The project was carried out.



6 Parents, teachers, and city officials together evaluated the project.



The Results: Traffic calming worked!

The number of crashes involving children declined dramatically from an average of 9.65 per year before implementation of the program, to 1.5 per year after implementation.

HOW DO I GET TRAFFIC CALMING IN MY NEIGHBORHOOD?

Before you do anything else, call the Neighborhood Streets Network. Not only can we help you get organized and develop a plan, but we also need your help to make the government more responsive. See page 24 and 25 for more about the Network.

To get safer, quieter, and friendlier streets, you'll have to identify the problems, develop a plan or wish list, and garner support from the community and elected officials. Follow the outline below and you'll find yourself well on the way to quieter, safer, and friendlier streets!

Plan For Action

1. Identify the problem. This first step is the most important. You must have a solid understanding of what the problems are in your area. Is there too much speeding? Too much traffic? Are you and your neighbors worried about the safety of your children?

Having a clear idea of the problems on your block allows you to focus on the entire problem, not on individual solutions. When requesting traffic calming, you may encounter excuses, not solutions, from the DOT or politicians. If you always frame your arguments in terms of solving the problems on your street, then a “no” to any of the elements listed in this book simply puts the responsibility on the naysayer to come up with an acceptable solution that still solves your problems.

2. Identify interested parties. Who do you want on your side, and who can you call on for assistance? You may want to include:
 - Local residents/tenant associations
 - Local business people
 - Chamber of Commerce
 - Transit Authority if bus lines are involved.
 - DOT Borough Commissioner
 - Community Board
 - Elected officials, including Councilperson, Borough President, Assemblyperson and State Senator
 - Other civic groups
3. Notify the interested parties, describe your problem to them and invite them to participate in creating a solution. You might even want to invite them to come and see the problems themselves. If the problems are sporadic, set up a “field visit” where people can come at a specific time and meet with you to see the problems.
4. Develop a solution. Work together with your neighbors and the interested parties to come up with a list of traffic calming solutions that you’d like to see installed. Explain why you want the different parts of the list, in terms of what problem you want each element to solve.
5. Develop support and apply it to the solution. This step is why you made a list of “interested parties” and invited them to participate in creating the solution: you’ll need them to help get something done. Ask elected officials and the community board to support your plan. Ask them to call on the city to implement your plan. Everyone you convince to write a letter or postcard of support will bring you one step closer to making your streets safer and calmer.

Important Hints

- Always write. Although it's good to talk to officials on the phone, follow up with a letter. Remember: if it's not written down, it didn't happen.
- Start a file. Keep copies of all your letters and notes, along with replies from officials. Getting your neighbors to write short letters of support can be a big help—keep copies of these letters as well.
- Send a copy of all correspondence to your city council member. After all, you can't expect them to stick up for you if they don't know what's going on. The same advice applies to your Assemblyperson and State Senator.
- Send a copy of all correspondence to your Community Board. Community Boards are supposed to be your liaison to the bureaucracy. Keep them informed so they can get involved if needed.
- Contact your Borough Commissioner. Each borough in NYC is represented by a DOT Borough Commissioner, whose job is to deal with community concerns. If your Borough Commissioner doesn't know about what's happening on your block, take a minute to write or call him or her. If he or she has already heard from you, get your friends and neighbors to take a minute to write or call.

Key Contacts

Neighborhood Streets Network—*Coalition of block associations, PTAs and civic groups working for traffic calming in New York City.*

c/o Transportation Alternatives, 115 W30th St NY NY 10001 Ph. 212-629-8080

Transportation Alternatives—*4,000 member citizens group whose advocacy and research introduced the term "traffic calming" to NYC transportation planners.*

115 W30th St NY NY 10001 Ph. 212-629-8080 Fax. 212-629-8334 email transalt@echonyc.com

Tri-State Transportation Campaign—*NY, CT, and NJ regional coalition of over 40 environmental, civic and other organizations working on all facets of transportation policy reform, including pedestrian advocacy and traffic reduction.*

281 Park Av South, NY NY 10011 Ph. 212-268-7474 Fax 212-268-7333 email tstc@igc.apc.org

NYC DOT Urban Mobility Unit—*Planning staff dedicated to coming up with solutions to pedestrian and neighborhood traffic control problems.*

Luiz Aragao Director Ph. 212-442-7658

Your Elected Officials

Call League of Women Voters for names and addresses
212-677-5050

NYC DOT Borough Commissioners—*A new position designed to make the DOT more responsive to local concerns. Borough Commissioners are in charge of almost everything that happens in their borough.*

William Baier, *Bronx*

1400 Williamsbridge Road, Bronx NY 10461 Ph. 718-931-5400 Fx. 718-597-8594

Michael Primerggia, *Brooklyn*

44 Court Street #1108, Brooklyn NY 11201 Ph. 718-643-3093 Fx. 718-643-7451

Leon Heyward, *Manhattan*

40 Worth Street #1105, NY NY 10013 Ph. 212-442-7340 Fx. 212-442-7338

Anthony Fasulo, *Queens*

28-11 Queens Plaza N., L.I.C. NY 11101 Ph. 718-830-7603 Fx. 718-361-9230

Jack Larson, *Staten Island*

10 Richmond Terrace #G19, S.I. NY 10301 Ph. 718-816-2373 Fx. 718-816-2368

What is the Neighborhood Streets Network?

The Neighborhood Streets Network is a city-wide coalition of block associations, civic groups, and business groups working for quieter, safer, friendlier neighborhood streets. The Network was created to unite local groups working to control traffic in their neighborhoods and have a say in how their streets were used. Groups join the Network because it provides resources and pushes for city-wide policy changes.

Unite Local Groups

All across New York City, neighborhoods are asking for relief from speeding and intrusive through-traffic. It has long been easy for the City to say “no” to block associations asking for stop signs or traffic lights. The City often turns a deaf ear to neighborhood groups demanding solutions, whether the problem is local streets being used as through-routes, or too many big trucks in their neighborhood. The Network is bringing them all together into a powerful coalition that can't be ignored.

Provide Resources

The Network provides technical and organizing advice to its members. Special skill-sharing workshops allow members to meet each other and discuss ways to get things done. And the Network sets up meetings with senior city officials so that Network members can come and discuss their concerns with them.

Push for City-Wide Change

The Network pushes for city-wide policy change that will make the City more responsive to community concerns about the effects of traffic on their streets. Our four city-wide goals are listed on the next page. Together, these changes will mean less through traffic in neighborhoods, safer routes to school for children and a new emphasis on neighborhood quality of life. The support of neighborhood groups allows the network to move city government towards these goals.

Join Today!

By joining, your block association or civic group endorses the four goals listed on the other side of this sheet. There's no charge to join, nor will you be expected to contribute time and energy unless you want to. We'll keep you up to date, through a regular newsletter, on what's happening in other neighborhoods and around the city.

Quieter, Safer, Friendlier— Neighborhood Streets

The Neighborhood Streets Network has four goals:

1. Lower the speed limit on non-arterial neighborhood streets from its current 30 mph to 15 mph. Arterials will remain at 30 mph, a speed much too fast for all but the largest of New York City's streets.



A "neckdown" slows traffic by widening the sidewalk at the corner

2. Get the City to use traffic calming tools to make streets more pedestrian and neighborhood-friendly. Traffic calming tools include neckdowns and speed humps, and are used across the country and the world to slow traffic.

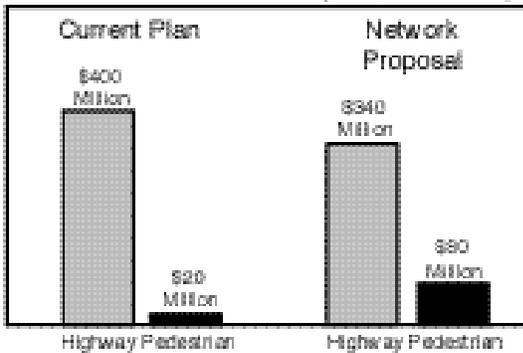
3. Create Safer Routes to School. Getting hit by a car is the number one cause of death and injury for children ages 5-14. We need a program like one in Denmark that resulted in a 90% decrease in pedestrian deaths to schoolchildren. Children

choose which routes they prefer to use to go to school and play. Traffic calming devices are then installed to make those routes safer.



4. Balance Federal transportation safety spending in NYC so that pedestrians and neighborhoods get their fair share. A recent study by the Network shows that current spending is

NYC Traffic Safety Spending



way out of line. Over the next five years, the city and state will spend 22 times more money on highway safety than pedestrian safety, even though more pedestrians are killed every year than motorists. Quadrupling the money spent on pedestrian safety would mean dramatically safer streets for pedestrians, yet keep the vast majority of spending focused on motorist safety.

To sign on your group as a Neighborhood Streets Network Member, or for more information call 212-629-8080

COMMONLY ASKED QUESTIONS

1. Are there legal constraints to installing traffic calming devices?

What are government's rights and responsibilities regarding traffic calming?

Very often, local Departments of Transportation cite legal obstacles, and the threat of lawsuits as excuses for not installing traffic calming devices. But these excuses have no basis in reality.

Local authorities are not prevented by law from implementing traffic calming techniques.

For example, in New York State, the Vehicle and Traffic Law gives local traffic agencies the freedom to use their discretion when implementing traffic control devices²⁸. Other state traffic laws contain similar provisions.

City officials often fear lawsuits if a car is damaged while driving over a speed hump, or if someone is injured after crashing into a chicane. Yet examples can be cited from the tri-state area, as well as from all over the country, of traffic calming techniques that have existed for years without a single lawsuit.

New York City can and has installed traffic calming devices. Speed humps exist on Prospect Street in Crown Heights, Brooklyn, sidewalk extensions have been installed along restaurant row in Midtown Manhattan, temporary sidewalk extensions and bollards have been installed on Mulry Square in the West Village, to name but a few. Traffic calming devices have existed for years in New York, all of them free of legal battles. Also, other cities throughout the country, such as Seattle, Portland, Arlington, Montgomery County, MD; and Bridgeport, CT, have installed more strident traffic calming devices without lawsuits.



Traffic calming is a political issue, not a legal one. Traffic engineers have the technical know-how and legal ability to install traffic calming devices. Cities around the country and around the world have done it successfully—so can your community.

2. If traffic is reduced on my block where will it go? Will it wind up on my neighbor's block?

Experience has shown that in many instances, when road capacity is permanently reduced, traffic dissipates and does not reappear elsewhere. Numerous examples exist in New York City of road construction projects or other capacity reducing measures that have not resulted in displaced traffic clogging adjacent streets. Examples of this include the permanent closing in the 1950's of 5th Avenue through Washington Square Park—"Traffic experts" prophesied gridlock, but a three-month test showed that the result was actually less traffic. The closing of NYC's elevated Miller Highway after its partial collapse in 1973 led to a similar effect. In both instances traffic did not reappear on adjacent



This street should be part of an areawide traffic calming project.

arterials. It simply disappeared.²⁹ (How does this happen? See discussion on page 20)

Though traffic dissipates in many cases, neighbors are rightfully concerned that if their neighborhood street is traffic calmed, traffic may wind up on their neighbor's block. If traffic calming is implemented on a residential street that is surrounded by other residential streets, there is a chance that traffic from the calmed street will be diverted to adjacent streets. This reason is why neighborhood-wide traffic calming, as discussed in the preceding section, is so important. Whole neighborhoods should be made safe, not just a few lucky blocks.

Each traffic calming solution must be analyzed within the context of the area's traffic flow. However, traffic engineers consistently underestimate the fluidity and flexibility of traffic. Remember that what traffic engineers say is not gospel. Always question, and always ask for their study in writing. Finally, communities must encourage transportation agencies to conduct experiments as the only real way to know if a traffic calming idea will work.

3. How much does traffic calming cost?

The cost of traffic calming applications varies from project to project. It is dependent upon the size of the project, materials used, varying regional labor costs, etc. Keep in mind, though, that what may seem like a lot of money often is not when compared to other roadway projects. For example, simply repaving a mile of street costs \$100,000 to \$400,000! Also, reducing the number of crashes can lead to big savings in legal and medical costs, especially when the town or city gets sued (a regular occurrence). Implementing a traffic calming plan on your street is a matter of politics. The money is there if your elected officials get behind you. However, answering the following questions can help bring down cost estimates:

1. Is the area or street due for reconstruction? Occasionally, streets have to be completely reconstructed. Utilities like sewer, phone, electric and gas lines are ripped up and replaced. Everything in the roadway, and sometimes the sidewalks, has to be replaced. Rebuilding the street with a traffic calming design under this situation can cost almost exactly the same amount as returning the street to its previous condition.

2. Can temporary measures be designed? Traffic engineers may come back with an inflated cost estimate that assumes ripping up drains or utilities to accommodate traffic calming. If this action happens, ask if temporary measures can be designed that get around the need for ripping things out. Temporary neckdowns, bollards, diverters, chicanes and other measures can be an inexpensive yet effective way to test the feasibility of a traffic calming plan. Mulry Square, at the intersection of 7th Avenue, 11th Street, and Greenwich Avenue in Manhattan, is an example of such an experiment. Lines were painted at the corners, imitating neckdowns. Temporary bollards were then installed at the outer edges of the neckdowns to discourage motorists from driving over the painted areas. The ability to conduct experiments like the one in Mulry Square is an important part of the effort to slow down traffic on city streets. Even if the DOT refuses to install permanent traffic calming measures, they may have the courage to set up temporary structures on a trial basis. If they prove successful, the DOT will be more likely to make them permanent. This tactic is especially useful if you have discovered that a reconstruction is scheduled, but not for a few years.

3. Can inexpensive regulatory measures like street reversals be used to lessen the need for capital construction?

Very often, regulatory measures like street reversals, parking regulations and speed limits involve little or no construction. They are inexpensive to implement, yet can have profound effects on traffic.

4. What about access for emergency vehicles? Won't traffic calming slow them down as well?

Traffic calming devices can be designed and built to accommodate emergency vehicles, while still controlling the behavior of most other traffic. For example, channels can be cut into a speed hump or table that will allow a fire truck with a wide wheel base to pass over it without slowing down. These channels would be too far apart, however, to accommodate an automobile. Emergency vehicles can also easily ignore regulatory traffic calming like street reversals and speed limits.



In order to insure that traffic calming is successfully implemented, traffic planners and emergency services officials must cooperate to find solutions to access problems. An example of one such cooperative effort can be found in the city of Seattle. In Seattle, the Fire Department and the Department of Transportation are in constant communication regarding the design and implementation of traffic calming devices. Seattle has installed many traffic circles throughout the city. Each time a traffic circle is proposed, representatives from both departments meet at the site and bring a fire truck and traffic cones with them. The cones are set up in the shape of the proposed traffic circle. The fire truck is then driven around the cones to see if it can negotiate them without an undue loss of time. Fire and Transportation Department officials discuss the design and agree upon appropriate dimensions. This cooperation is possible because the Seattle Department of Transportation has taken the time to make presentations to Fire Department officials, educating them about the safety benefits of traffic calming. As a result, the Fire Department is able to see the bigger picture, and realize that they and the Department of Transportation are striving toward the same goal: saving lives. Therefore, the Fire Department agrees to concede a few seconds of response time in the interest of overall public safety.

Notes

¹ On most streets in North American cities, car drivers do not have the experience of entering into a place for residential activities. The streets provide long views, allowing the driver to anticipate future events with reasonable certainty. The edges of the street space consist of uninterrupted horizontal lines converging on the axis of the road. Many cars face in the same direction and offer little threat of quickly moving across the driver's path. Frequently, there are few signs of residents or children, and often, few trees are tall enough to interrupt the view. In sum, the streets look like and are experienced as channels designed for the driver. (Homburger, Wolfgang S., Elizabeth A. Deakin, Peter C. Bosselmann, Daniel T. Smith, Jr., Bert Beukers, Residential Street Design and Traffic Control, Institute of Transportation Engineers, Prentice Hall, 1989, p.58.)

² Traffic Fatality Statistics from Traffic Fatalities in New York City, 1994, Rudolph W. Giuliani, Mayor, Elliot G. Sander, Commissioner, New York City Department of Transportation.

³ Ibid.

⁴ Injury Facts for New York State, Injury Control Program, New York State Department of Health, Albany, June, 1994.

⁵ Appleyard, Donald, Livable Urban Streets: Managing Auto Traffic in Neighborhoods, Federal Highway Administration, Washington D.C., January, 1976, p. 241.

⁶ Ibid.

⁷ Dare, James and Noel Schoneman, Seattle's Neighborhood Traffic Control Program, ITE Journal, Feb 1992.

⁸ Appleyard, p. 241.

⁹ Hass-Klau, Carmen, Civilized Streets: A Guide to Traffic Calming, Environmental Transport Planning, Brighton, England, 1992, p. 130.

¹⁰ Press Releases from Zane Yost, Urban Designer; developed a plan for Bridgeport.

¹¹ Komanoff, Charles, Win-Win Transportation, Komanoff Energy Associates, 1992, p. 19

¹² Hass Klau, Carmen, Impact of Pedestrianization and Traffic Calming in Retailing: A Review of the Evidence from Germany and the UK, (Transport Policy, Vol. 1, No. 1, pp. 21-31).

¹³ Komanoff, Charles, Win-Win Transportation, Komanoff Energy Associates, 1992, p. 24

¹⁴ Burden, Dan. Walkable Communities: A Search for Quality, 1997

¹⁵ City of Bellevue, WA. The Effectiveness of Speed Humps as Part of a Residential Speed Control Program, Public Works Dept, City of Bellevue, 1987

¹⁶ Zebaurers, Vladis. Speed Control Bumps in Jefferson County. Highways and Transportation Dept., Jefferson County, Colorado, 1987. ¹⁷ Gorman, Michael N., et al., Evaluation of Speed Hump Program in the City of Omaha, ITE Journal, June 1989, pp 28-32.

¹⁸ City of Pasadena, California, Evaluation of the City of Pasadena Speed Hump Program, Public Works and Transportation Department, Pasadena, California, April 1991.

¹⁹ Making Streets That Work, City of Seattle, p112.

²⁰ Manual on Uniform Traffic Control Devices, p 4C-2.

²¹ Making Streets that Work, City of Seattle, p 46.

²² Residential Street Design and Traffic Control, Institute Of Traffic Engineers, p 80.

²³ NYS Motor Vehicle Law

²⁴ Ibid.

²⁵ NYS DOT Pedestrian Death and Injury Database, 1989-1994

²⁶ Burrington, Stephen H & Veronika Thiebach Take Back Your Streets, Conservation Law Foundation, 1995.

²⁷ Neighborhood Traffic Control Program, Seattle Engineering Department, Transportation Division, August 1985.

For more information about how land use determines the use of the street, consult Portland, Oregon's Neighborhood Traffic Management Program (NTMP). They have developed an elaborate system of street hierarchies for the city. Additionally, they have set up a set of criteria for the implementation of traffic calming devices.

²⁸ A cost benefit analysis by the City of Seattle's Transportation Division, revealed that their Neighborhood Traffic Control Program (NTCP) is cost efficient and a wise investment. The study compared the cost of installation of a traffic circle with the cost of an crash. Results found an average annual crash cost savings of \$17,736 per traffic circle. Source: Neighborhood Traffic Control Program (NTCP) Cost-Benefit Analysis, City of Seattle, Engineering Department, Transportation Division, Prepared by: Fidel Alvarez, Civil Engineer Specialist, July, 1991.

²⁹ Descriptions of the Miller Highway and Washington Square Park closures can be found in the following articles: George Haikalis, draft memo on "Is the Westway the Best Way?" at pp. 8-9; the "Traffic Technical Report," West Side Highway Project, September, 1976; Boris Pushkarev and Jeffrey M. Zupan, Urban Space for Pedestrians, MIT Press, 1975, p. 139; The New York Times, October 31, 1958; The New York Times, November 25, 1958.

Further Reading

Following is a list of resources for those who want to read more about traffic calming and how to make it happen in neighborhoods:

- Appleyard, Donald, Livable Streets, University of California Press, 1981. *(An early seminal work for the American experience. Emphasis on traffic calming efforts in Berkeley, CA.)*
- Citizens Advocating Responsible Transportation, Traffic Calming, The Solution to Urban Traffic and a New Vision for Neighborhood Livability, CART, Ashgrove, Australia, 1989. *(Description of a Brisbane community's efforts to stop construction of an arterial street that would slice through the neighborhood. Also looks at traffic planning in general, facts and myths.)*
- Federal Highway Administration, Case Study #19, Traffic Calming, Auto-Restricted Zones and Other Traffic Management Techniques - Their Effects on Bicycling and Pedestrians, Federal Highway Administration, Washington D.C., October, 1994. *(Overview of traffic calming techniques and how they work.)*
- Hass-Klau, Carmen, Civilized Streets: A Guide to Traffic Calming, Environmental Transport Planning, Brighton, England, 1992. *(Examples of various traffic calming techniques as they have been applied in England, Netherlands, Germany and Sweden. Safety comparisons before and after installation, cost benefit.)*
- Homburger, Wolfgang S., Elizabeth Deakin, Peter C. Bosselmann, Daniel T. Smith, Jr., Bert Beukers, Residential Street Design and Traffic Control, Institute of Transportation Engineers, Prentice Hall, 1989. *(The Institute of Transportation Engineers is a well respected institution, even among traditional transportation planners. This book is full of information about why traffic calming works from an engineering perspective. Good overview of the subject.)*
- Newman, Peter and Jeff Kenworthy, Winning Back the Cities, Australian Consumers Association, Marrickville, Australia, 1992. *(A look at the negative impacts of the car and ways to mitigate them, traffic calming, light rail and urban villages.)*
- Safe Routes to School, Odense, Denmark, September, 1989. *(Step by step description of one community's efforts to make getting to and from school safer for their children.)*
- Take Back Your Streets, How to Protect Communities from Asphalt and Traffic, Conservation Law Foundation, Boston, May, 1995. *(Explains why traffic calming is a good idea, what, if any, legal constraints exist, and how communities can begin to get things done.)*
- Tolley, Rodney, Traffic Calming in Residential Areas, Brefi Press, Dyfed, Great Britain, 1990. *(Discussion of the history of traffic calming in Germany, Netherlands and Great Britain; discussion of green modes.)*
- Traffic Calming in Practice, An Authoritative Sourcebook with 85 Illustrated Case Studies, County Surveyors Society, Department of Transport, Association of Metropolitan District Engineers, Association of London Borough Engineers and Surveyors, Association of Chief Technical Officers, Landor Publishing Limited, London, November, 1994. *(Excellent illustrations and descriptions of specific examples of traffic calming applications in practice. Includes extensive photographs, descriptions of the traffic calming measures, materials, cost, etc.)*

Traffic Calming In Cities Around The U.S.

Many cities in the U.S. have implemented traffic calming techniques. Some city governments have even established projects and programs specifically designed to increase safety and livability on neighborhood streets through traffic calming. Following is a list of cities and how to contact them to find out more about their traffic calming efforts:

- Boulder, Colorado
Neighborhood Traffic Mitigation Program, City of Boulder, Charles Margolf, Process Manager.
- Bridgeport, Connecticut
Press releases and design plans available from Zane Yost, Urban Designer, who worked on the plan to make a low income neighborhood in Bridgeport safe from drug dealing through the implementation of traffic calming techniques.
- Howard County, Maryland
Baltimore Avenue Speed Hump Study, Howard County, Maryland, Department of Public Works, Bureau of Engineering, Traffic Engineering Division, August 21, 1990.
Walter, Charles, Successful Traffic Calming in Howard County, Md., Urban Transportation Monitor, March 17, 1995.
- Portland, Oregon
Evaluation of the Neighborhood Traffic Management Program (NTMP) for Local Service Streets, City of Portland, Bureau of Traffic Management, March, 1992.
Transportation Element, City of Portland Comprehensive Plan, City of Portland, Office of Transportation, October 23, 1992.
Traffic Calming Devices for Higher Volume Residential Streets as Part of the Arterial Traffic Calming Program, City of Portland, Oregon, Bureau of Traffic Management, April 13, 1993.
- Prince George's County, Maryland
Neighborhood Traffic Management Program, Prince George's County, Department of Public Works and Transportation, Wayne K. Curry, County Executive.
- Seattle, Washington
Chicane Evaluation, Seattle Engineering Department, Transportation Division, August, 1985.
Dare, James W., and Noel F. Schoneman, Seattle's Neighborhood Traffic Control Program, ITE Journal, February, 1982.
Neighborhood Traffic Control Program, Division Operating Instructions, City of Seattle, Engineering Department, Transportation Division, April 22, 1986.
von Borstel, Edwin W., Traffic Circles: Seattle's Experience

TRAFFIC CALMING GUIDELINES FROM AROUND THE WORLD

Devon County Council Engineering and Planning Department, Traffic Calming Guidelines, Devon County Council, Devon County, Great Britain, 1991.

Road Standards for the Traffic Areas of Danish Towns, Road Directorate, Denmark, Ministry of Transport, June, 1991.

Traffic Calming Policy, City of Toronto, Department of Public Works and the Environment, Interagency Memorandum to the City Services Committee, April 11, 1994.