

Alternative Traffic Calming Methods

In-street Pedestrian Crossing Sign

Cost: approximately \$300 per sign not including the installation cost

Advantages of in-street pedestrian crossing signs

1. Typically will increase the number of opportunities for pedestrians to cross streets by creating gaps in traffic flow.
2. Typically will encourage people to walk.
3. Serve to inform motorists and pedestrians as to who has the right of way.
4. Study data suggests that such signs can improve safety conditions for pedestrians.

Disadvantages of in-street pedestrian crossing signs

1. The lifespan of in-street pedestrian crossing signs that are not protected by a raised median may be a year or less if they are regularly struck by vehicles. (The average lifespan of conventional off-street signs is 10-15 years.)
2. May foster a belief in some pedestrians that all motorists will yield and allow them to cross. (This is also true for conventional roadside pedestrian crossing signs.)
3. If in-street signs are installed only at selected locations, the unintentional message to drivers may be that the particular "rule of the road" applies only to those locations so signed.
4. In-street signs require regular inspection and maintenance to ensure that they are in place and undamaged.



Countdown Signals

Objective

To provide information to pedestrians about how much time is left to cross the street at signalized intersections.

Applications

This treatment is useful under the following conditions:

- Pedestrian clearance interval greater than 15 seconds
- High pedestrian volumes
- High levels of vehicular traffic conflicting with pedestrians
- Presence of mobility-impaired pedestrians
- School zones

Advantages

- Easily understood by all age groups
- Increases the feeling of safety
- Reduces the number of pedestrians stranded in the crosswalk when the light changes
- Appropriately suited for wide crossing and areas where there are many senior citizens and people with walking disabilities
- The great majority of installations are simple drop-in replacement

Disadvantages

- Not accessible to pedestrians with impaired vision
- Some suppliers start the countdown at the beginning of the pedestrian phase and others at the beginning of the pedestrian clearance interval; this may confuse some pedestrians
- Drivers may use the countdown to get a head start before they have a green light
- May create a possible legal conflict if a pedestrian starts during the pedestrian clearance interval but cannot finish crossing before the countdown timer reaches zero
- May encourage pedestrians to begin crossing during the Flashing Don't Walk phase

Cost

Low, average purchase price for the countdown timers ranges from \$300 to \$800.

Examples

City of San Francisco, Department of Parking and Traffic;
City of San Jose, Department of Transportation;
City of Walnut Creek, Community Development Department;
City of Berkeley, Transportation Division;
City of Oakland, Transportation Services Division;
Salt Lake City, UT, Transportation Division;
Canada, Dessau-Soprin Inc.;
City of Farmington, NM, Traffic Engineering Administrator;
City of Boston, MA, Boston Transportation Department



Bicycle Boulevard

A bicycle boulevard is a roadway that motorists may use, but that prioritizes bicycle traffic through the use of various treatments. Through motor vehicle traffic is discouraged by periodically diverting it off the street.

Remaining traffic is slowed to approximately the same speed as bicyclists. Stop signs and signals on the bicycle boulevard are limited to the greatest extent possible, except where they aid bicyclists in crossing busy streets. The bicycle level of service may be further enhanced through the use of directional signage and other amenities. The development of a bicycle boulevard may include the alteration of intersection controls, the installation of signage, stencils, or other treatments that facilitate bicycling. Bicycle boulevards are most effective when several treatments are used in combination.



Objective

To provide an alternative to bicycling on arterial roads. To improve the safety and convenience of bicycling on local streets.

Applications

For use on residential streets parallel to a nearby arterial, on a route with high or potentially high bicycle traffic. Bicycle boulevards are generally too narrow to install a bicycle lane or have such low vehicle volumes that a bike lane is unnecessary. Direct, cross-town routes are preferable.

Advantages

- Increases efficiency and safety for bicyclists
- Potentially improves safety for pedestrians
- Reduces and slows through vehicle traffic

Disadvantages

- Neighborhood residents may object to the alteration of their street, especially intersection controls (stop sign rotation, traffic circles) and vehicle access limitations
- Depending on the location of the installation, it may divert vehicle traffic to
- If bicycle boulevard design includes closures, partial-closures or forced right-turn treatments for vehicles, it may result in more circuitous vehicle circulation routes, possibly affecting emergency vehicle response.

cost

Varies

Reduced curb radii



Corner curbs have shorter radii to narrow the distance of the road that a pedestrian has to cross.

Objective

To reduce pedestrian exposure to vehicular traffic and the potential of being struck.

Applications

This treatment is used in high pedestrian activity areas such as downtowns where there is a need to create a more pedestrian-friendly atmosphere. Tighter turning radii are particularly important where streets intersect at a skew.



Advantages

- Reduces the distance that pedestrians travel in the street and the potential for being struck by a vehicle
- Vehicle turn speeds are reduced and pedestrian visibility is improved
- Improves signal timing because the time for the pedestrian crossing phase can be reduced

Disadvantages

- Makes it harder for trucks and other larger vehicles to turn without the rear wheels mounting the corner curb, which can lead to damage of the sidewalk area. To avoid this problem, some drivers swing into opposing lanes of traffic, which can cause traffic delays.
- Decreases vehicular capacity at intersection

Cost

Medium to High, approximately \$2,000-\$20,000 for reconstructing a tighter turning radii per corner, depending on site conditions (e.g., drainage and utilities may need to be relocated).

Orange flags



Two orange flag holders are provided, each with an instruction sign and flags in it. A pedestrian takes a flag, holding it aloft while crossing the street, and places it in the flag holder on the other side of the street. Under the "Adopt-A-Crosswalk" program, individuals living or having businesses within a block of a marked crosswalk may "adopt" the crosswalk by agreeing to monitor the flag containers to insure flags are available as well as purchase replacement flags as needed.



Objective

Make pedestrians more visible at the crosswalks.

Applications

At crosswalks where there is a need to make drivers more aware of pedestrians using the crosswalk. May be used at controlled or uncontrolled intersections and mid-block crossing locations.

Advantages

- Low-cost
- Drivers may be reminded of the presence of the crosswalk simply from seeing the orange flags in the holders on the sides of the street

Disadvantages

- Some pedestrians felt they looked silly carrying the flags.
- The problem of flag theft is significant.
- Not useful to visually impaired pedestrians.

In-roadway warning lights at crosswalks



Also known as in-pavement flashers, crosswalk warning systems, illuminated crosswalks, flashing crosswalks, or Santa Rosa lights. The devices are mounted in the street pavement adjacent to the outside of the crosswalk markings, with the flashers positioned so as to be seen by oncoming traffic. They are normally dark, but they are actuated to provide a flashing yellow light while the pedestrian crossing is in use. Pedestrians are detected either through pedestrian push buttons or automatically, through microwave, motion sensors, video detection, or light trip beam.

Objective To warn motorists of the presence of pedestrians in marked crosswalks at unsignalized locations through the use of flashers embedded in the pavement.

Applications The devices appear to be most effective for use on multi-lane roadways or uncontrolled crossing locations where pedestrian usage is moderate and reasonably expected. The Manual on Uniform Traffic Control Devices contains specific guidelines on installation of these devices.

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Advantages Provides a dynamic visual cue to drivers of the presence of pedestrians, especially during adverse weather conditions such as darkness, fog, and rain.

Disadvantages Significant costs for installation and maintenance

- The presence of a lighting device at the outer edge of the travel lane may be a hazard to some bicyclists
- Passive detection can be difficult to operate properly and may produce false calls. Frequent false calls may encourage motorist non-compliance

Cost High, \$20,000-50,000 per location, depending on the width of the road and whether the treatment includes automated detection devices.

Bicycle box

Objective

To improve the visibility of cyclists at intersections. To enable bicyclists to correctly position themselves for turning movements during the red signal phase by allowing them to proceed to the front of the queue. To provide a transition from a left-side or median bike lane to a right-side lane.

Applications

For use at intersections with high motor vehicle and bicycle volume, frequent turning conflicts, and/or intersections with a high percentage of turning movements by both cyclists and motorists.



Advantages

- Increases cyclist visibility, allowing them to move to the front of the line where they are in full view of motorists on all sides of the intersection. Allows cyclist to maneuver to the correct position for turning movements during the red signal phase.
- Does not significantly delay motorists since cyclists are usually able to accelerate quickly through intersections.
- Reduces conflicts between turning bicycles and vehicles by clearly delineating location for movements to occur.
- Provides buffer between vehicles and pedestrians/bicycles crossing the street

Disadvantages

- Effectiveness of the bicycle box may be decreased by motorists encroaching into the bike box area.
- Allowing motorists to turn right on red may be hazardous to bicyclists since the approach bike lane leads right up to the intersection (left-turning vehicles in Britain and other countries where motorists drive on the left)
- If the signal turns green as a cyclist is approaching the intersection, they may not have enough time to position themselves properly to effectively and safely use the box.
- Unfamiliar drivers may be confused or uncertain about intended purpose of markings.
- Local traffic laws may not permit the use of this treatment.
- Cost of on-going maintenance to maintain color may be a concern.
- Pavement markings obscured by snow may lead to driver uncertainty in winter conditions

Cost

Varies, dependent on the materials and whether signage and new signal heads are needed.

Mini Traffic Circles



A temporary traffic circle is used to discourage speeding along Key Blvd. This will be reconstructed next spring as a permanent landscaped circle.



A temporary traffic circle is used to discourage speeding along Key Blvd. The landscaping is done by neighbors. This will be reconstructed next spring as a permanent circle with landscaping.



A permanent traffic circle is used to discourage speeding along Key Blvd.

COMMUNITY INITIATIVES

Community publications. Community newsletters, web sites, billboards, bulletins and the similar publications and information materials can be used to highlight traffic concerns and encourage more appropriate behavior among motorists.

Community events. Public meetings and community open houses involving residents and stakeholders can be an effective means of identifying traffic issues and options available to deal with problems. It is recommended that Transportation

Community Speeding Awareness Program. Through this City program, community groups can borrow a portable speed display board connected to a radar unit, which is used to advise motorists of their speeds. The board displays the speed motorists are driving, and is intended to be a passive educational tool to encourage motorists to drive at or below the posted speed on neighborhood streets. The speed display board is typically loaned to community groups for a one-week period.

Portable speed advisory signs.
speed limit signs that can be posted temporarily as a passive educational tool.

LIAISON WITH SCHOOLS

Community groups can work with school board authorities and parent-teacher groups to discuss and highlight traffic issues that are of concern in the community, notably in and around schools. Concerns can be discussed and communicated to parents at community events and through newsletters. School-related safety issues typically include parking and congestion at schools, traffic generated by parents picking up and dropping off their children, improper traffic maneuvers and similar concerns.

LIAISON WITH BUSINESSES AND INSTITUTIONS

Many neighborhoods include not only residential dwellings but also commercial business and institutions. Sometimes, commercial and institutional traffic can be a problem on streets in the residential portion of a neighborhood. In neighborhoods in other communities where this has been the case, individuals and community groups have worked with business and institutions to develop workable solutions to traffic problems. In many cases, businesses and institutions did not realize that traffic which they generated was causing a problem in the neighborhood. Even though residents may have complained among themselves and to City staff, residents had not directly contacted the businesses or institutions generating the traffic. Direct communication between residents, businesses and institutions is often the best way to draw attention to the traffic issues and subsequently identify and implement solutions agreeable to all parties. It may be advisable to include City staff in discussions and initial contacts to provide additional information and assist in considering solutions to traffic problems.

LANE STRIPING

Lane striping can be used to create formal bicycle lanes, parking lanes, or simple edge lines. As a traffic calming measure, they are used to narrow the travel lanes for vehicles, to encourage drivers to lower their speeds. The past evidence on speed reductions is, however, inconclusive.



Approximate Cost:
\$2 per lineal foot

Advantages

- Inexpensive;
- Can be used to create bicycle lanes or delineate on-street parking;
- Does not require time for design; and
- Does not slow emergency vehicles.

Disadvantages

- Has not been shown to significantly reduce travel speeds; and
- Increases regular maintenance.

SPEED LEGENDS



Speed legends are numerals painted on the roadway indicating the current speed limit in miles per hour. They are usually placed near speed limit signposts. Speed legends can be useful in reinforcing a reduction in speed limit between one segment of a roadway and another segment. They may also be placed at major entry points into a residential area.

Approximate Cost: \$75

Advantages

- Inexpensive;
- Helps reinforce a change in speed limit;
- Does not require time for design; and
- Does not slow emergency vehicles.

Disadvantages

- Has not been shown to significantly reduce travel speeds.

BOTTS DOTS AND RAISED REFLECTORS



Botts dots and raised reflectors, or “raised pavement markers,” are small bumps lining the centerline or edgeline of a roadway. They are often used on curves where vehicles have a tendency to deviate outside of the proper lane, risking collision. Raised reflectors improve the

nighttime visibility of the roadway edges.

Botts dots can be arranged into a rectangular array across the roadway, creating a *rumble strip*, which causes a rumbling sensation to drivers as they cross. These can reduce travel speeds but also increase roadway noise considerably. Consequently, rumble strips are only placed in very low density areas because of the noise factor.

Approximate Cost: \$4.50 per marker

Advantages

- Inexpensive;
- Does not slow trucks, buses, and emergency vehicles; and
- Can help keep drivers in the appropriate travel lane on curves and under low-visibility conditions.

Disadvantages

- Noise caused by rumble strips.

