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SAFE DRIVING STRATEGIES Traffic Calming

Description:

The current reality is that cars are still the primary mode of transportation, even though communities should create a variety of mobility options to meet the diverse needs of a typical community's resident population—particularly those with specific mobility limitations, such as frail older adults and individuals with temporary or permanent disabilities or mobility-limiting conditions. With this in mind, municipalities can take steps to create a safer driving environment for residents—steps that reinforce and complement a pedestrian-friendly neighborhood and street-design elements discussed in other sections of the Resource Manual.

Traffic Calming: Traffic calming creates a safe and comfortable travel environment for both automobile and non-automobile mobility (pedestrian, bicycle, wheel-chair, roller-blade, small-motor vehicle, public transit). One expert¹ defines traffic calming as “. . . changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes in the interest of street safety, livability, and other public purposes.”

Traffic calming is not traffic congestion; traffic continues to move, but more smoothly, steadily, and slowly. Under a traffic calming framework, it is more important that traffic move steadily—traffic characterized by areas of high speeds, interspersed with areas of slow congestion, is far less safe and less tolerable than traffic that moves at a steady, but manageable pace. Drivers are more tolerant of traffic if it is moving steadily through interesting, well-planned, well-landscaped, aesthetically pleasing areas with pedestrian and street activity.

Traffic calming strategies include:

- *Safe intersections:* Streetscape changes at intersections can create “safe zones” for pedestrians waiting to cross the street (particularly for frail older adults, children, and others with mobility issues), and can shorten the distance required to cross a street or intersection. Such changes include:
 - *Smaller Turning Radii:* The turning radius is the distance provided from the curb in which the driver can make a turn—the larger the radius, the more room to turn; the shorter the radius, the less room to turn. Distance of radii determines how fast and safely drivers make the turns—with a wide radius, the driver has more room to make the turn at a higher speed; a narrow radius forces the driver to slow down, or risk hitting the curb. Right-angled “T” intersection radii yield the slowest speed and the safest pedestrian environment—the driver must slow down enough to make a sharper turn. The speed of the cars making the turn has an impact on the safety and comfort of the pedestrians crossing and navigating the street.

- *Bulb-outs:* At an intersection, a bulb-out is an expansion of the curbed pedestrian area that extends out into the traditional street area. By extending this area, three things happen: pedestrians have a wider, safer area to congregate while waiting to cross the street; the walking distance to cross the street decreases; and cars have less room to turn and, thus, must take the turn at a slower, safer speed.
- *Traffic medians:* Medians are strips of raised pavement, usually landscaped, between the two directions of car traffic. This measure slows traffic and provides a “safe zone” in the middle of a pedestrian's trip across the street.
- *Roundabouts:* Roundabouts keep traffic flowing at a steady speed—they avoid the stops and starts associated with conventional intersections with traffic signals; they decrease traffic congestion and bottlenecks; and they minimize sudden stops, drivers running lights at high speeds, drivers “jumping” lights, and “speed-spiking” (quick acceleration to make up for lost time at stop signs or signals). The benefits are multiplied by the size of the intersection they replace because large intersections are more confusing, unpredictable, and dangerous. Unlike their early 20th-century cousin, the traffic circle, roundabouts eliminate the need for stop signals altogether.

Though confusing and seemingly less safe at first—largely because they are new to most Americans—roundabouts become easier to navigate and much safer than conventional-signalized intersections. In addition to decreasing driving speed and reducing frenetic driving, roundabouts have fewer points of contact that would lead to accidents, such as head-on left-turn accidents or angled crashes.² The added vigilance and attention required in a roundabout makes drivers pay more attention and, thus, drive safer.

The Indiana suburb of Carmel has built 50 roundabouts since 2001. Since that time, the rate of accidents involving injuries dropped 78 per cent.³ A Michigan study found that roundabouts produce a 40 per cent reduction in crashes, an 80 per cent reduction in injuries, and a 90 per cent reduction in accidents causing death or serious injury.⁴

Ancillary benefits accrue to many drivers, including older adults (who may be experiencing aging-related frailties); drivers of all ages with physical disabilities (including vision and hearing impairment); and others whose driving situations are fraught with distractions (cell-phone use, other people in the car, reading, etc.). Roundabouts generally reduce traffic delays and, thus, reduce stress, anxiety, and lost time. For example, roundabouts in Kansas produced a 62 per cent reduction in traffic delays.⁵

Benefits also accrue to the general community—air quality is improved (an idling car creates 30 per cent more air pollution than a car traveling at 30 mph), which is a direct benefit to seniors, children, and others with respiratory impairments or allergies; car emissions (hydrocarbon emissions,

in particular) are reduced because of reductions in both idling and quick accelerations; and gasoline consumption is reduced.

- *Mini-circles (often referred to as 'mini-roundabouts')*: Smaller than a roundabout (about 10-20 feet in diameter), mini-circles usually replace stop signs at less-travelled intersections.
- *Bump-outs*: Bump-outs are similar to bulb-outs, but are located along the street between intersections. Like bulb-outs, bump-outs are a raised extension of the curbed pedestrian area into the street area, usually replacing one parking space. Bump-outs provide greater safety and comfort for pedestrians and more area for street activity; they can also be used as the pedestrian waiting area for mid-block street cross-walks.
- *Cross-walks*: Raised cross-walks, and cross-walks constructed of different materials from the road, signal visually to the driver to slow down and be aware of pedestrians; drivers will also naturally slow down when they recognize that they will drive over a raised or different surface. Brightly-colored cross-walks serve the same purpose, though less effectively. These three measures are more effective than simple signs directing cars to yield to pedestrians; drivers should instinctively recognize a pedestrian area by its design, rather than having to read a sign.

The Psychology of Traffic Calming: Traffic calming is as much a study in behavioral psychology as it is in traffic engineering discipline. That is, traffic calming influences the intricate relationship between drivers and their physical surroundings, and between drivers and pedestrians. Many traffic calming measures, for example, create "boundaries" for cars and drivers—e.g., curbs, traffic medians, on-street parking, street trees and landscaping. These boundaries help drivers gauge, and be more aware of, their speed, which tends to lead them to slow down and pay closer attention to their surroundings.

Think about a wide country road with treeless farmland on either side. With no objects to drive by—against which to judge our speed—and no boundaries to navigate, a driver feels perfectly comfortable driving faster and less vigilantly; indeed, the driver will often not even notice the speed. But put that same driver on a narrow, curbed, tree-lined street with on-street parking and raised cross-walks—suddenly there are objects that must be navigated and that serve to gauge car speed, and most drivers will automatically slow down and pay more attention to their surroundings, for their own safety as well as the safety of others.

Traffic calming also creates a self-perpetuating and mutually reinforcing cycle of pedestrian and driver safety: simply the presence of more people on the street (a product of people-friendly streetscape reforms) signals to the driver to slow down and drive more carefully; slower traffic, in turn, invites more pedestrians to the street by creating a safer and more comfortable environment; more pedestrians generate slower traffic; and so on.

References:

^{1, 3, 4, 5} Reid Ewing (September, 1999), *Traffic Calming State of the Practice*. Washington, DC: Institute of Transportation Engineers. To view full text: <http://www.ite.org/traffic/tcstate.asp#tcsop>.

² Leslie Kettren (2006), *Talking the Walk: Building Walkable Communities*, p. 92. Chicago, IL: Congress for the New Urbanism. Full text: <http://www.cnu.org/sites/www.cnu.org/files/KettrenTalkingtheWalk.pdf>.

Benefits:

For residents:

- Pedestrians and bicyclists perceive the environment as safer and more comfortable, which increases the use of walking and bicycling as modes of mobility.
- Roadways and streets are more easily and comfortably navigated by drivers and transit riders.
- As traffic and driving conditions have become faster, more complex, and with greater numbers of drivers, traffic calming measures ameliorate the fear and stress older people with aging-related and other frailties, people with disabilities, and others with mobility restrictions feel when navigating the streets and sidewalks, resulting in greater numbers of community residents leaving the isolation of their homes and venturing out into downtowns and other areas of their communities.
- Traffic calming strategies help modify the general driving behavior of individuals, leading to safer streets overall and fewer accidents.

For the community:

- Structural aspects of traffic calming amenities contribute to overall neighborhood aesthetics, making communities more attractive to residents and visitors.
- Traffic calming elements are an important aspect of a livable community . . . contributing to the "sense of community" residents feel about their neighborhoods and encouraging them to remain living in their communities rather than relocating to other places. This is particularly important as the population ages and a significant proportion of older people are leaving New York for other states, taking their discretionary income and their skills and talents with them.
- The pollution-lowering aspects associated with traffic calming results in a cleaner, healthier living environment for residents to grow up, work, and grow old.
- When necessary, roundabouts are easily modified and do not rely upon electricity when there is a power outage.

Impediments or barriers to development or implementation:

- Often, residents and community leaders are unaware of the many implications of retaining conventional traffic and driving policies and procedures and do not understand the individual and community benefits of instituting traffic calming measures; thus, there is little resident-level pressure to incorporate such elements or to include them in planning discussions. Like alternative forms of development, traffic calming must be communicated to the public effectively, carefully and patiently.
- Many drivers view roads simply as a way to travel faster by car, and are often resistant to measures that appear to slow traffic and favor pedestrians and bicyclists.
- Most existing transportation codes do not include—and may even discourage—traffic calming measures.

Resource—examples and ordinances:

- Roundabouts: For a series of examples, including photographs, of where roundabouts have been successfully implemented, see: Leslie Kettren (2006), *Talking the Walk: Building Walkable Communities*. Chicago, IL: Congress for the New Urbanism. Full text: <http://www.cnu.org/sites/www.cnu.org/files/KettrenTalkingtheWalk.pdf>.
- Traffic calming: For a list of numerous cities in the United States and several foreign countries that have developed traffic calming manuals, policies, and programs, see: "Traffic calming Programs," *Traffic calming.org*: <http://trafficcalming.org/>.
- 146-slide power point presentation regarding complete streets and walkability, including photos of examples of good street design in a variety of cities:

Resource—written and web:

- Dan Burden (April, 2000), *Streets and Sidewalks, People and Cars: The Citizens' Guide to Traffic Calming*. Sacramento, CA: Local Government Commission, Center for Livable Communities.
- "Traffic calming," *Bike Plan Source*: www.bikeplan.com/calm.htm.
- National Center for Bicycling and Walking: www.bikewalk.org.
- Pedestrian and Bicycle Information Center: www.walkinginfo.org.
- Carmen Haas-Klau, et al (1992), *Civilized Streets—A Guide to Traffic Calming*. Brighton: Environmental and Transport Planning.
- *Traffic Calming, The Solution to Urban Traffic* (1993) and *New Vision for Neighborhood Livability*. Draper, Utah: Citizens Advocating Responsible

Transportation. Also, Walkable Communities:
<http://www.walkable.org/readinglist.html>.

- Pedestrian and Bicycle Safety Research Program, Federal Highway Administration:
www.fhwa.dot.gov/environment/bikeped/index.htmwww.trafficcalming.org.
- *Traffic calming, Auto-Restricted Zones, and Other Traffic Management Techniques: Their Effects on Bicycling and Pedestrians— National Bicycling and Walking Study* (1994). Washington, DC: U. S. Department of Transportation.
- Institute of Transportation Engineers, *Traffic Calming Library*:
<http://www.ite.org/traffic/>.
- Walkable Communities, Orlando, FL; founded by Dan Burden; promotes walkability as the cornerstone of a successful, vibrant community through education, resources, videos, and technical assistance to large and small cities, neighborhoods, school districts, parks, and roadway corridors to improve transportation efficiency and create whole, healthy communities:
<http://www.walkable.org/>.