Paul Beyer, Director of Smart Growth
Governor's Smart Growth Cabinet
Albany, NY

# COMPLETE STREETS
## Street and Streetscape Design Reforms

**Description:**
The "Complete Streets" movement, spearheaded by the National Complete Streets Coalition, most fully embodies the principles of safe and comfortable pedestrian, bicycle, and transit travel. Complete Streets takes a holistic approach to community mobility; that is, rather than addressing street and streetscape reform piecemeal, Complete Streets ordinances offer a comprehensive toolbox for street and streetscape design that is age-sensitive (older people and children), and that also responds to the great diversity that typifies a community's overall population—diversity of abilities, both temporary and permanent impairments, and health conditions. This movement is growing across the country, and several states and localities have passed Complete Streets ordinances (see Resources, below).

Complete Streets are designed to provide safe, comfortable streets for all users—pedestrians, bicyclists, motorists, transit riders, and users of other modes of mobility. Complete Streets combine elements of Smart Growth and walkable communities in a way that promotes safety, exercise, outdoor recreation, access to amenities, and social interaction for seniors, young and middle-aged adults, individuals with disabilities and mobility limitations, and children.

Complete Streets are characterized by a variety of elements; following are descriptions of seven specific tools in the Complete Streets toolbox:

**More sidewalks:** According to architect Mark Hinshaw,[1] sidewalks should be located on both sides of the street; if located on only one side, adequate street-crossing measures should be implemented. In a typical suburban residential neighborhood, sidewalks should be wide enough to accommodate two people walking side-by-side or passing each other—approximately five feet; in a more dense, mixed-use residential neighborhood, wider sidewalks are necessary to accommodate three people waking side-by-side, or two side-by-side and one passing—approximately seven feet; and in areas of heavy pedestrian circulation (downtowns, Main Streets, traditional business districts), sidewalks should be wide enough to accommodate two people passing each way—10 feet or more. To the greatest extent possible, sidewalks should be continuous and should inter-connect different neighborhoods, destinations, and land uses.

**Neighborhood trails:** Where sidewalks are not feasible, neighborhood connector trails serve as a worthwhile substitute—connecting homes, subdivisions, parks, open space, and other amenities. Connector trails can be used in low-density subdivisions (particularly ones with a predominance of cul-de-sacs and dead-ends) to connect areas that may be close "as the crow flies," but require long, circuitous and often dangerous routes to actually navigate by foot or bicycle.

**Street widths:** For decades, traffic engineers recommended wide streets to accommodate more cars and higher speeds. Even in traditional downtowns, which were originally designed primarily for pedestrians, streets were widened to accommodate automobile travel, rendering them unsafe to walk or bike—particularly for seniors, children, and others with mobility restrictions. Recently, however, traffic engineers have found that road widenings are little more than a temporary salve. In referring to Mark Hansen's 1995 study (*Do New Highways Generate Traffic?)*, Anthony Flint[2] reports that every one per cent increase in lane miles leads to a one per cent increase in congestion within five years. This phenomenon is called "induced demand"—the more roads you build, the more cars you will attract.

Counter-intuitively, narrower streets are actually safer—safer to cross on foot and bike, and safer to drive on. Citing a study in Longmont, Colorado, by Swift, Painter, and Goldstein[3] on the correlation between street design and traffic accidents, Girling and Kellett[4] report that a 36-foot-wide street had 1.2 collisions per year, while a 24-foot street had .32. The Longmont study found that 24-foot-wide streets are the safest; 36-40-foot-wide street are the most dangerous.

Typical post-war suburban streets are 34-36 feet wide, with total rights-of-way of 50-60 feet. This width invites unsafe speeds, which, in turn, discourages pedestrian and bicycle mobility. Some recent national standards (American Society of Civil Engineers: National Association of Home Builders; Urban Land Institute), however, are recommending streets as narrow as 22 feet for neighborhoods with low-traffic volumes.[5]

Several alternatives to road-widening are available to land use and transportation planning professionals; for example:

- Use extra road space (shoulder) for bike lanes—well-marked lanes actually make the road itself appear narrower and feel safer, while signaling to drivers that they should slow down and drive more cautiously;

- Create nearby alternative routes—parallel roads close by will disperse the traffic among several routes, while preserving pedestrian accessibility and safety on each of them; and

- Expand a pedestrian area into traditional street areas—providing a pedestrian "safety zone" promotes safety and comfort.

**Shorter blocks / more inter-connections:** Most traditional, walkable neighborhoods designed in the late 19th and early 20th centuries have 300-600-foot blocks; that is, cross routes/intersections exist at regular and frequent intervals. For example, the Portland, Oregon, Green Streets Ordinance[6] requires through-streets no more than 530 feet apart and pedestrian connections every 330 feet, where feasible. Such requirements offer advantages for all residents, but especially for older adults with frailties, small children, and other individuals with mobility impairments; for example:

- More linkages that access different land uses and amenities;
- More opportunities for walking and outdoor exercise;
- A more interesting pedestrian or bicycle trip;
- A greater feeling of safety;
- More direct and, thus, shorter routes to destinations; and
- A greater sense of place.

In addition, neighborhood connector trails can be located at areas where sidewalks are absent, in order to supplement a continuous and frequent system of inter-connections. Also, restrictions on the length and number of cul-de-sacs and dead-ends in a conventional suburban subdivision offer connectivity improvements. For example, the Metro Portland, Oregon, metropolitan region sets a maximum length of 200 feet for cul-de-sacs, which are only permitted where street and trail connections are not possible.[7]

**"Green streets":** Street landscaping and vegetation (street trees, planting beds, landscaped medians and sidewalks, pervious natural draining areas, etc.) provide human, as well as environmental, benefits: shade and cooling in the summer; aesthetic appeal; traffic-calming; and a sense of place. Researchers at the U. S. Federal Highway Administration and Canada's Victoria Transport Policy Institute even found that drivers drive slower on green streets, thus creating a safer and more enjoyable pedestrian experience.[8]

**Cross-walks:** Cross-walks provide clearly designated pedestrian areas for street-crossing—areas where people come first, and cars second. Cross-walks signal to drivers (more effectively than a sign) that they should slow down and be aware of pedestrian activity.

**Protective barriers:** Green areas between the street and sidewalk, on-street parking, and street trees provide a protective barrier between pedestrian areas and traffic, creating a greater sense of safety, security, and comfort for pedestrians.

**Benefits:**

*For all residents:*

- Complete Streets promote physical and mental health by:
  - Providing greater exercise and mobility options;
  - Improving pedestrian and driver safety; and
  - Creating opportunities for socializing and community activity.

*For older adults and individuals with disabilities:*

- Complete Streets allow frail older people and younger people with disabilities to continue to independently navigate their environment, thereby maintaining a sense of competency and reducing vulnerability to depression.

*For the community:*

- As a critical aspect of a livable community, Complete Streets :
  - Help create a healthier and more sustainable living environment;
  - Help generate a greater sense of place and community identity for residents and encouraging them to remain living in the community rather than relocating to other areas.
  - Make both commercial and residential areas more attractive, creating increased resident activity which, in turn, generates increased business activity by community establishments and stores.

**Impediments or barriers to development or implementation:**

- Existing zoning and development patterns have created an environment almost exclusively conducive to automobile travel, which makes mobility alternatives (walking, bicycling, alternative transit use) unsafe and uncomfortable, if not entirely impossible.

- Retro-fitting existing communities with green street amenities can be expensive.

- Planning for various community elements (housing, parkland, commercial, mobility and transportation, etc.) is often conducted independently of each other, thereby reducing the opportunity of coordinating the application of a Complete Streets approach to the overall community.

**References:**

[1] Mark Hinshaw (July 15, 2007), *True Urbanism: Living In and Near the Center*, pp. 61-62. Chicago, IL: American Planning Association.

[2] Anthony Flint (2006), *This Land: The Battle Over Sprawl and the Future of America*. Baltimore, MD: Johns Hopkins Press.

[3] Peter Swift, Dan Painter, and Matthew Goldstein (June, 1997; additional data added in 2002 and 2006), *Residential Street Typology and Injury Accident Frequency*, presentation at the Congress for New Urbanism, Denver, CO; study of 20,000 accidents over a 20-year period in Longmont, CO: http://massengale.typepad.com/venustas/files/SwiftSafetyStudy.pdf.

[4, 5] Cynthia Girling and Ronald Kellett (December 23, 2005), *Skinny Streets & Green Neighborhoods*, pp. 85-86; p. 85. Washington, DC: Island Press.
Local Government Commission, Sacramento, CA:
http://www.lgc.org/issues/communitydesign/street_design.html.

[6, 7] City Council, City of Portland, Oregon—
Resolution #36500, adopted April 18, 2007:
http://www.portlandonline.com/Auditor/Index.cfm?a=155819&c=28044.
Green Streets Policy:
http://www.portlandonline.com/shared/cfm/image.cfm?id=155901.
Green Streets Cross-Bureau Phase 2 Team Report:
http://www.portlandonline.com/shared/cfm/image.cfm?id=156831.

[8] Victoria Transport Policy Institute, Victoria, British Columbia: http://www.vtpi.org/.

**Resource—examples and ordinances:**

- Alan B. Cohen (1997), *Narrow Streets Data Base.* Chicago, IL: Congress for the New Urbanism, Transportation Task Force. Provides a list of communities that have adopted narrow street standards, with a brief description of the standard(s) and a contact person: http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool4_Site_Design/narrow_streets.htm.

- *Review of ITE Recommended Practices* (February 17, 2003), prepared for the Washington, DC, Institute of Traffic Engineers by the Texas A & M Research Foundation—a description and review of major publications that provide guidelines for numerous aspects of street design (publications include successful examples): http://www.ite.org/standards/ITE_RP_Review.pdf.

- Neighborhood Streets Project Stakeholders (November, 2000), *Neighborhood Street Design Guidelines: An Oregon Guide for Reducing Street Widths*. Salem, OR: Oregon State Department of Transportation and the Oregon State Department of Land Conservation and Development: http://www.cues.fau.edu/cnu/docs/Neighborhood_Street_Design_Guidelines-An_Oregon_Guide_for_Reducing_Street_Widths-State_of_Oregon.pdf.

- National Complete Streets Coalition—includes information, resources, model plans, and examples of best practices. The goal of the Coalition's steering committee of 19 national organizations and its numerous local, regional, and national member organizations is to help with the adoption and implementation of statewide, regional, and local complete streets policies.: http://www.completestreets.org/complete-streets-fundamentals/resources/.

- Bikes Belong—a 400-member organization, including suppliers, retailers, and individuals whose focus is bicycle-awareness and advocacy. Based in Boulder, CO, and sponsored by the U. S. Bicycle industry, the organization's goal is to put more people on bicycles more often: http://www.bikesbelong.org/.
  - Community grants: http://www.bikesbelong.org/grants/apply-for-a-grant/grant-seekers-guide/; http://www.bikesbelong.org/grants/apply-for-a-grant/schedules-deadlines/.
  - Resources: http://www.bikesbelong.org/resources/.

- Safe Routes to School National Partnership: http://www.saferoutespartnership.org/.
  - Safe Routes to School—New York: http://www.saferoutespartnership.org/state/srts-in-your-state/newyork.
  - Success Stories—New York: http://www.saferoutespartnership.org/state/srts-in-your-state/newyork#success.

**Resource—written and web:**

- American Association of State Highway and Transportation Officials (AASHTO) (December 31, 2004), *ASHTO Green Book: A Policy on Geometric Design of Highways and Streets*, 5th Edition. Washington, DC: AASHTO.
  ASHTO Book Store:
  https://bookstore.transportation.org/Item_details.aspx?id=110.
  Tech Street Subscriptions:
  http://www.techstreet.com/cgi-bin/detail?product_id=1183385.
  On Amazon:
  http://www.techstreet.com/standards/aashto/green_book_gdhs_5_?product_id=1183385.

- U. S. Department of Transportation, Federal Highway Administration, *Flexibility in Highway Design*; an extensive guide about designing highways that incorporate community values and are safe, efficient, effective mechanisms for the movement of people and goods:
  http://www.fhwa.dot.gov/environment/flex/foreword.htm.

- Victoria Transport Policy Institute, Victoria, British Columbia: independent research organization, which develops innovative and practical solutions to transportation problems and provides a variety of resources available free on their Web site to help improve transportation planning and policy analysis:
  http://www.vtpi.org/.

- James Daisa and John Peers (Fehn and Peers Associates) (1997), *Narrow Residential Streets: Do They Really Slow Down Speeds*, presentation at 67th meeting of the Institute of Transportation Engineers:
  www.ite.org/traffic/documents/AHA97F46.pdf.

- Reid Ewing (1996), *Pedestrian- and Transit-Friendly Design: A Primer for Smart Growth*, based upon a manual produced for the Florida Department of Transportation and the American Planning Association. Washington, DC: Smart Growth Network, U. S. Environmental Protection Agency and the International City/County Management Association:
  www.epa.gov/smartgrowth/pdf/ptfd_primer.pdf.

- Walkinginfo.org—a pedestrian and bicycle information center: a national clearinghouse for information about health and safety, engineering, advocacy, education, enforcement, access, and mobility for pedestrians (including transit users) and bicyclists: www.walkinginfo.org/library/details.cfm?id=4360.

- "The Relationship between Street Width and Safety Essay," *Community by Design*, Inc.:
  http://www.cbdinc.us/pages/horebscorners/hcsupportstreetsrelationship.html.

- Institute of Transportation Engineers (ITE) (2006), *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities: An ITE Proposed Recommended Practice*. Washington, DC: ITE: http://www.mwcog.org/uploads/committee-documents/v1hbX1o20061027161730.pdf.

- Livable Streets Initiative, an initiative of the Open Planning Project—an online resource for short educational/advocacy Streetfilms videos, streetsblog for information exchange, best practices, etc., focused on making communities and cities more livable: Livable Streets Initiative: http://www.livablestreets.com/about/.
  Open Planning Project: http://openplans.org/.