



Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street.
 Completestreets.org

Complete Streets

INTRODUCTION

The desire for safe streets that function well for all users is a timeless idea. Since the early part of the last century, street design has been an interdisciplinary affair, often occurring in the context of a larger vision for the neighborhood, community, or city. Designs were guided by the uses planned along the street, the needs of pedestrians, horse drawn carriages, bicycles, and even streetcars. In urban environments, conflicts between these street users were commonplace and various design solutions were devised to address these challenges.

With the mid-20th century rise of the automobile, however, the focus on street design shifted; driven by new physical and safety considerations related to the size, weight, and speed of the automobile. Specialists in traffic engineering emerged. A new professional language was created. Roadway standards were developed, and attention was increasingly focused on moving vehicles quickly, minimizing delay for motorists, and increasing the personal freedom, access, and mobility afforded by the automobile.



Today, there is a growing public desire for a return to more walkable and bikable streets that support livable communities. Increasingly, local and regional agencies are working in support of street and transportation network design that encourages walking, bicycling, transit use by all users, including children, seniors, and disabled.

A complete street is safe, comfortable, and convenient for travel via automobile, foot, bicycle, and transit. This concept was initially championed by cycling advocacy groups seeking increased accommodation of cyclist needs in roadway design. Their initial research revealed a changing attitude among the majority of Americans. For the first time in decades, surveys are showing a preference for expanding existing public transportation and building new bikeways and sidewalks over expanding existing highways and building new highways.¹



¹ Federal Highway Administration Infrastructure Survey, 2000.



IMPLICATIONS OF NOT ADDRESSING THE ISSUE

The sustainability implications of a narrow focus on the automobile are widespread. At the community scale, land uses have become increasingly segregated and separated by larger distances, requiring more time and more energy to meet daily needs. At the neighborhood scale, higher traffic speeds and higher traffic volumes increasingly conflict with pedestrian and bicycle uses that once shared the same streets. At the roadway intersection level, improvements constructed to meet vehicular delay standards have the unintended consequence of also creating wide and unfriendly barriers to pedestrian crossing.

Incomplete street design may also result in continued safety problems. Streets designed exclusively for the automobile have been associated with disproportionately high crash rates and fatalities for pedestrians and bicyclists. While pedestrian and bicycle trips account for roughly 9% of all trips, 13% of all traffic related fatalities involve pedestrians and bicyclists.² Additionally, with the growing desire for walking and bicycling, the potential for more crashes and injury may increase if streets are not designed to serve all users.

GOALS

- Increased safety for the most vulnerable street users, especially bicyclists and pedestrians
- Increased choices for mobility
- Increased access for non-driving population
- Energy savings related to more fuel efficient modes of travel
- Reduced vehicle miles traveled (VMT) resulting in:
 - CO2 emission reduction
 - Improved traffic flow
 - Decreased maintenance and repair costs
- Increased physical activity levels resulting in improved public health
- Improved design standards and guidelines

POTENTIAL SUSTAINABILITY MEASURES

Potential sustainability measures for Complete Streets relate to the community design, the transportation network, and the choices available to the traveling public. The most sustainable

² 2005 NHTSA Traffic Safety Facts



Complete Streets communities will have a diverse mix of land uses that are accessible by many modes of travel on streets that serve all users safely and comfortably, and the resulting share of walking, bicycling, and transit trips are expected to be higher than comparable communities.

- Percent of streets with accommodation for all modes
- Quality or Level of Service for all modes
- Percent of population within walking distance of transit
- Percent of jobs within walking distance of transit
- Percent of population served by bicycle facilities
- Percent of jobs served by bicycle facilities
- Average vehicle trip length (shorter is better)
- Bicycling mode share

- Walking mode share
- Transit mode share
- Energy (fuel) savings related to mode share (relative to national or regional averages)
- Safer streets (reduction in bicycle & pedestrian crash severity and frequency)
- Emissions metrics related to vehicle use

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KEY STATISTICS AND FACTS:

- For the first time in decades, surveys are showing a preference for expanding existing public transportation and building new bikeways and sidewalks over expanding existing highways and building new highways.³
- There are an estimated 35.3 billion walking trips nationwide every year in the U.S.⁴
- Walking is not just for recreation. Over 50% of all walking trips serve a functional purpose other than exercise and recreation⁵
- Nearly a third of Americans do not drive, and the non-driving senior population will grow even larger in the near future with the aging Boomer generation
- 55% of Americans say they would rather drive less and walk more⁶
- The top pedestrian complaint is simply that there are too few sidewalks⁷
- The top bicyclist complaint is simply that there are too few bikeways⁸
- While pedestrian and bicycle trips account for roughly 9% of all trips, 13% of all traffic related fatalities involve pedestrians and bicyclists⁹



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		ACHIEVEMENT LEVELS (NOTE: HIGHER LEVELS GENERALLY INCORPORATE ACTIONS OF LOWER LEVELS)			References/Commentary	Code Examples/Citations
		Bronze (Good)	Silver (Better)	Gold (Best)		
	Remove Obstacles	<ul style="list-style-type: none"> ▪ Modal Accommodation - all modes of travel routinely accommodated on all local, collector, and arterial streets ▪ Vehicular Level of Service (LOS) – allow exceptions from jurisdiction standards on case by case basis ▪ Design Speed – allow design speed to match posted and planned operating speed on case by case basis ▪ Roadway Design – allow exception from 	<ul style="list-style-type: none"> ▪ Modal Accommodation - all modes of travel required to be accommodated on all local, collector, and arterial streets in specific districts or areas (CBD, urban centers, TODs) ▪ Vehicular Level of Service (LOS) – flexible level of service policy that allows for consideration of other transportation goals – applied in specific districts or areas (CBD, urban centers, TODs) ▪ Design Speed – design speed allowed to 	<ul style="list-style-type: none"> ▪ Modal Accommodation - all modes of travel required to be accommodated on all local, collector, and arterial streets throughout the jurisdiction ▪ Vehicular Level of Service (LOS) – flexible level of service policy that allows for consideration of other transportation goals – applied throughout the jurisdiction ▪ Design Speed – design speed allowed 	<ul style="list-style-type: none"> ▪ Completestreets.org is a comprehensive online resource. ▪ Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities, ITE Proposed Recommended Practice is a comprehensive guide to street design that reflects a 	<ul style="list-style-type: none"> ▪ City of Portland, OR, <i>Creating Livable Streets, Street Design Guidelines for 2040</i>, Available online. Retrieved November 2, 2010. ▪ City of Aurora, CO, Urban Street standards, Available online. Retrieved November 2,

³ Federal Highway Administration Infrastructure Survey, 2000.

⁴ National Household Travel Survey (NHTS), 2001

⁵ Natl. Survey of Pedestrian and Bicyclist Attitudes and Behaviors, 2002

⁶ Surface Transportation Policy Project Survey, 2002




⁷ National Transportation Availability & Use survey, 2002

⁸ National Transportation Availability & Use survey, 2002

⁹ 2005 NHTSA Traffic Safety Facts

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<p>Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities is a comprehensive guide to street design that reflects a joint effort between ITE and the Congress for New Urbanism</p> 		<p>standard cross sections based on context and consideration of other transportation goals on case by case basis</p> <ul style="list-style-type: none"> Travel Lane Widths – allow exception from standard vehicle lane width (typ. 12') on case by case basis Design Vehicle – allow exceptions to the standard design vehicle (e.g WB 50 truck) on a case by case basis 	<p>match posted and planned operating speed – applied in specific districts or areas (CBD, urban centers, TODs)</p> <ul style="list-style-type: none"> Roadway Design – multiple roadway design options or cross sections for various roadway types based on land use context and modal function (sometimes referred to as “Street Typologies”) Travel Lane Widths – allow exception from standard vehicle lane width (typ. 12') in specific districts or areas (CBD, urban centers, TODs) 	<p>to match posted and planned operating speed – applied throughout the jurisdiction</p> <ul style="list-style-type: none"> Roadway Design – flexible roadway design options for all roadways based on land use context and modal function Travel Lane Widths – flexible lane width options based on land use context and modal function (e.g. allowance of 10' vehicle travel lanes) throughout the jurisdiction 	<p>joint effort between ITE and the Congress for New Urbanism. Available online. Retrieved November 2, 2010.</p>	<p>2010.</p> <ul style="list-style-type: none"> City of Sacramento, CA, Pedestrian Friendly Street Design Guidelines, Available online. Retrieved November 2, 2010. MTC Routine Accommodation Checklist, Available online. Retrieved November 2, 2010.
<p>Complete street designs should accommodate all users, including emergency and life safety providers</p> 	<p>Remove Obstacles</p>	<p>Bronze (Good)</p>	<p>Silver (Better)</p> <ul style="list-style-type: none"> Design Vehicle – no “standard” design vehicle – rather it is established based on land use context and expected use of the roadway. Life safety agencies involved on case by case basis. 	<p>Gold (Best)</p> <ul style="list-style-type: none"> Design Vehicle – no “standard” design vehicle – rather it is established based on land use context and expected use of the roadway. Life safety agencies involved in setting policy, minimizing subsequent design review involvement. 	<p>References/Commentary</p>	<p>Code Examples/Citations</p>
<p>Complete streets policies can be structured to protect and prioritize the most vulnerable street users</p> 	<p>Create Incentives</p>	<ul style="list-style-type: none"> Offer a fast track or streamlined development approval for process Complete Streets projects Provide technical assistance for Complete Street design Facility Maintenance – street maintenance program includes routine clearing of vehicle, bicycle, and transit lanes and regular restriping of lane markings and crosswalks. 	<ul style="list-style-type: none"> Reduce transportation impact fees for projects that meet Complete Streets objectives Allow the pedestrian portion of a Complete Street to qualify for open space credits Provide grant writing assistance for applicants seeking Safe Routes to Schools and other transportation funding sources that support Complete Street implementation Policy and facility plans for all modes to guide Complete Street implementation Facility Maintenance – street maintenance program includes routine clearing of vehicle, bicycle, transit lanes, and access to transit stops and stations in the public right of way and regular restriping of lane markings and crosswalks. 	<ul style="list-style-type: none"> Offer matching funds to for Complete Streets projects Fund Complete Street retrofit projects independent of new development or redevelopment Facility Maintenance – street maintenance program includes routine clearing of vehicle, bicycle, transit lanes, access to transit stops and stations, and all sidewalks in the public right of way and regular restriping of lane markings and crosswalks. 	<ul style="list-style-type: none"> Partnerships with the public health and medical community can be a resource for incentivizing complete streets. Smart Growth BC provides a good overview. Available online. Retrieved November 2, 2010. 	<ul style="list-style-type: none"> City of Charlotte, NC, <i>Urban Street Design Guidelines</i>, Available online. Retrieved November 2, 2010. City of Sacramento, CA, <i>Sacramento Transportation & Air Quality Collaborative: Best Practices for Complete Streets</i>, Available online. Retrieved November 2, 2010.
	<p>Enact Standards</p>	<ul style="list-style-type: none"> Adopt a Complete Streets policy Establish an interdisciplinary project review process for street projects Require Complete Street design in all new construction Accessible Design Standards – require all new 	<ul style="list-style-type: none"> Establish Complete Street design standards that are land use and context sensitive Require Complete Street design in all new construction and reconstruction Require public and/or advisory committee involvement in the design process 	<ul style="list-style-type: none"> No exceptions to the Complete Streets policy Adopt standards for multimodal level of service Require level of service analysis for all modes 	<ul style="list-style-type: none"> The San Francisco County Transportation Authority recently released a report outlining how auto LOS standards impact the convenience and safety of pedestrians 	<ul style="list-style-type: none"> City of Fort Collins, CO, multimodal LOS and TIA requirements. Available online. Retrieved November 20, 2009.

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		construction and reconstruction to routinely accommodate Americans with Disabilities Act (ADA) and Universal Design requirements.	<ul style="list-style-type: none">▪ Require exceptions to Complete Street design to be approved by senior management or elected officials▪ Require Transportation Impact Studies to evaluate and address all modes of travel		<p>and bicyclists. Available online. Retrieved November 2, 2010.</p> <ul style="list-style-type: none">▪ Florida DOT, Quality/LOS defined for all modes, Available online. Retrieved November 20, 2009.	
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