



Complete Streets Design Guidelines

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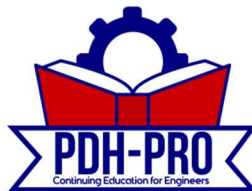
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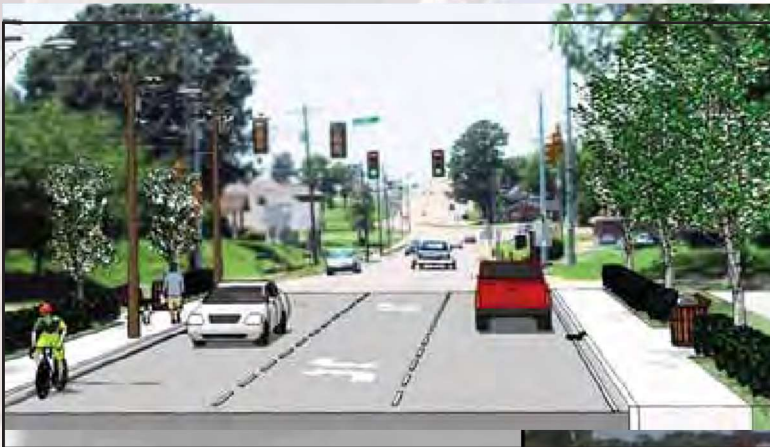


1. INTRODUCTION

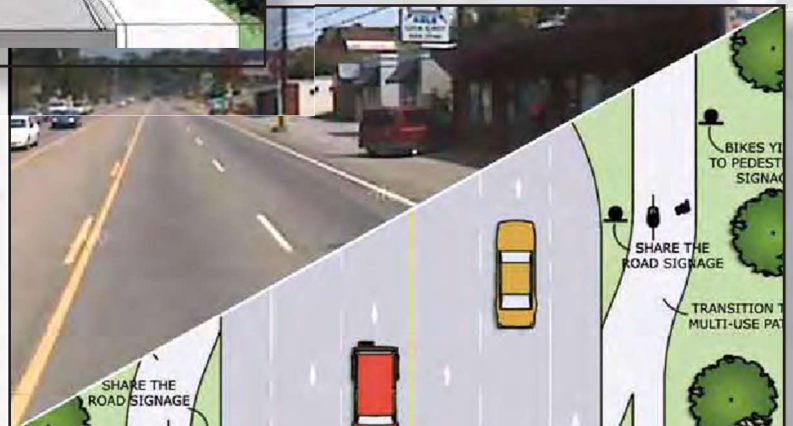
During the latter half of 2008, the Knoxville Regional Transportation Planning Organization (TPO) embarked on a mission to make streets in the region more complete. The complete streets effort began with two separate studies that made recommendations on how to transform two suburban corridors into complete streets.

The guidelines presented in this course represent the next step in that effort. The guidelines build on the findings from the individual corridor studies, providing guidance and recommendations on how to transform other streets in regional areas into complete streets.

This course is intended for use by the design professional and the layperson alike. In many cases, additional reference information is provided; the user is encouraged to seek out that reference material to get a better understanding of the concepts and guidance presented here. The designer should also be familiar with local ordinances and state laws that govern street design in their jurisdiction.



In urban planning and highway engineering, 'complete streets' are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users.



2. WHAT ARE COMPLETE STREETS?

The National Complete Streets Coalition states that “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.”

Close to 5,000 pedestrians and bicyclists die each year on U.S. roads. Unfortunately, these roads have characteristics with which we are all too familiar — a lack of sidewalks or crosswalks, vehicle lanes too narrow to share with bicyclists, little or no room for waiting transit riders, and poor accommodation for people with disabilities — essentially creating *incomplete* streets. Complete streets represents a *paradigm shift* in traditional road design philosophy.

Simply stated, a complete street reflects a new way of thinking about how streets are designed. A complete street may be put together a number of different ways, so long as it is intentionally designed to serve all potential users. Complete streets are streets that work for all existing and future users, not just those using a motor vehicle. Street designers and transportation agencies have a responsibility to the public health, safety and welfare to design, operate, and maintain the entire right of way to enable safe access for drivers, transit users and vehicles, pedestrians, and bicyclists, as well as for older people, children, and people with disabilities.

“Complete Streets” is a national movement that includes the Federal Highway Administration (FHWA), state departments of transportation (DOTs), metropolitan planning organizations (MPOs), cities, counties, nonprofits and others. The movement is gathering momentum as more communities see complete streets as a valuable approach to providing alternatives to traffic congestion, making



Many streets are incomplete: they lack sidewalks and/or crosswalks, bicycle facilities and places to wait for transit.



Complete streets are intentionally designed around all potential users.

places safer and more livable, reducing environmental impacts, and a host of other benefits. Complete streets also complement the design process known as Context Sensitive Solutions by ensuring that streets are sensitive to the needs of all users in the context of the facility that is being designed.

3. FLEXIBILITY IN DESIGN

There is no *one size fits all* design for complete streets. While the ultimate goal is to design a street that is convenient and safe for all users, every complete street design evolves from a process of evaluating a number of factors (some possibly competing) that influence the ultimate design of the street. These factors include, but are not limited to:

- Number and types of users;
- Available and planned right-of-way;
- Existing improvements;
- Existing and planned land use context;
- Community desires;
- Available budget;
- Parking needs;
- Utilities.

Applying flexibility in street design requires an understanding of the street's functional basis. It also requires an understanding of how altering, adding or eliminating any design element will affect different users of the street. Dimensions, whether for elements in the roadside, traveled way, or intersection, should not be applied arbitrarily. The complete street designer should understand the relationship between a recommended criterion and its impacts on safety and mobility for all user classes. The American Association of State Highway and Transportation Officials (AASHTO) recognizes the above requirement in the following quote from *A Guide for Achieving Flexibility in Highway Design*:

Only by understanding the actual functional basis of the criteria and design values can designers and transportation agencies recognize where, to what extent and under what conditions a design value outside the typical range can be accepted as reasonably safe and appropriate for the site-specific context.

Designing complete streets often requires balancing user needs and prioritizing the design elements and emphasizing the higher-priority elements. Higher-priority design elements are those that help the street meet the vision and context-sensitive objectives of the community.

Often the available width of the public right-of-way is less than desirable and may vary along a street, making the job of the designer



Varying cross-sections are sometimes necessary to help prioritize design elements when right-of-way is limited.

even more challenging. When the width of the right-of-way is insufficient to meet all needs, it is useful to prioritize design elements and develop a series of varying cross sections and design features for consideration.

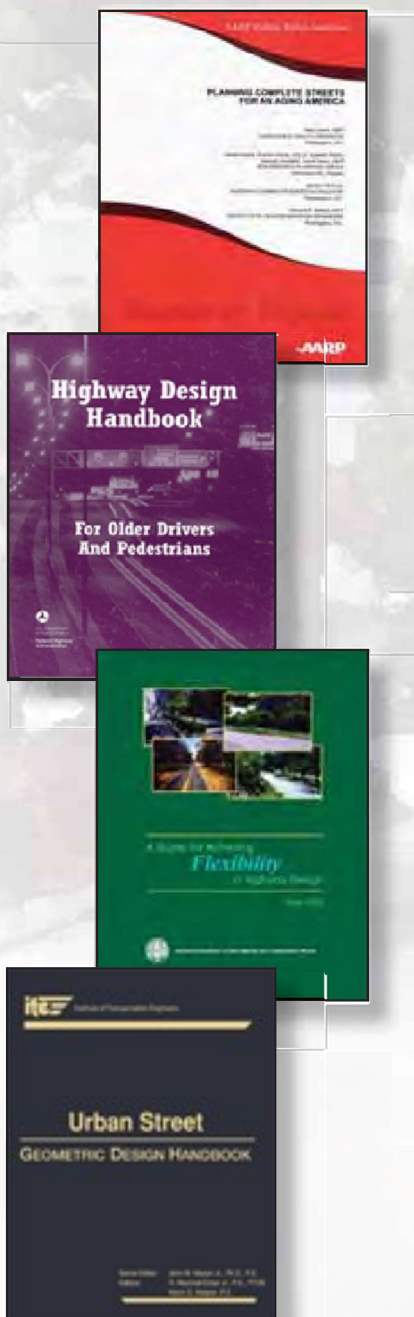
For instance, along a high-traffic-volume street in constrained conditions it might be tempting to maximize vehicle travel lanes and minimize the roadside width to provide only a minimum pedestrian throughway. In urban areas, however, it is often important to maintain at least a minimum roadside width that accommodates not only pedestrian travel but also furnishings such as trees and landscaping, street furniture, utilities and other amenities. Without this “furnishings” zone, trees, utilities, benches and shelters and other street paraphernalia might encroach into the throughway for pedestrians and also encroach into the minimum lateral offset area for the travel lanes.

In consideration of the above, the street designer is strongly encouraged to become familiar with the criteria, principles, design controls and functional basis for the guidance presented in this document and other design guidance, including the most current editions of these documents:

- *A Guide for Achieving Flexibility in Highway Design*, AASHTO,
- *Flexibility in Highway Design*, FHWA,
- *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, ITE/CNU,
- *Urban Street Geometric Design Handbook*, ITE,
- *Planning Complete Streets for an Aging America*, AARP,
- *Highway Design Handbook for Older Drivers and Pedestrians*, FHWA,
- *A Policy on Geometric Design of Highways and Streets*, AASHTO (often referred to as the Green Book),
- *Guide for the Planning, Design and Operation of Pedestrian Facilities*, AASHTO,
- *Guide for the Development of Bicycle Facilities*, AASHTO, and
- *Roadside Design Guide*, AASHTO.

Design Process in Constrained Right-of-Way

The nature of street design is balancing the desired design elements of the ideal street with right-of-way constraints. Designing streets in constrained rights-of-way requires prioritizing the design elements





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