



# Introduction

## 1.1 DESIGN IMPERATIVE

Bicycle travel has played a historic role in transportation. Even before the invention of the automobile, the League of American Wheelmen promoted improved traveled ways.

Bicycling is recognized by transportation officials throughout the United States as an important transportation mode. A policy statement, released in early 2010 by the U.S. Department of Transportation, emphasizes the needs and requirements to integrate bicycling (and walking) into transportation systems (4). Over a quarter of the population in the United States, over the age of 16 rides bicycles (3). Nationwide, people are recognizing the convenience, energy efficiency, cost effectiveness, health benefits, economic development, and environmental advantages of bicycling.

Local, state, and federal agencies are responding to the increased use of bicycles by implementing a wide variety of bicycle-related projects and programs. This interest in bicycle transportation calls for an understanding of bicycles, bicyclists, and bicycle facilities. This guide addresses these issues and clarifies the elements needed to make bicycling a more safe, comfortable, and convenient mode of transportation.

All roads, streets, and highways, except those where bicyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists. Therefore, bicyclists' needs should be addressed in all phases of transportation planning, design, construction, maintenance, and operations (1). All modes of transportation, including bicycles, should be jointly integrated into plans and projects at an early stage so that they function together effectively.

## 1.2 PURPOSE

Bicyclists should be expected on roadways, except where prohibited, and on shared use paths. Safe, convenient, well-designed, well-maintained facilities, with low-crash frequencies and severities, are important to accommodate and encourage bicycling.

This guide provides information on how to accommodate bicycle travel and operations in most riding environments. It is intended to present sound guidelines that result in facilities that meet the needs of bicyclists and other highway users. Sufficient flexibility is permitted to encourage designs that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists. However, in some sections of this guide, suggested minimum dimensions are provided. These are recommended only where further deviation from desirable values could increase crash frequency or severity.

This guide has been updated from the previous guide published in 1999. The fact that new guidance is presented herein does not imply that existing bicycle facilities are inadequate or unsafe, nor does it mandate the initiation of improvement projects. The intent of this document is to provide guidance to designers and planners by referencing a recommended range of design values and describing alternative design approaches. Good design practice involves engineering cost-effective solutions that balance safety and mobility for all transportation modes, along with preservation of scenic, aesthetic, historic, cultural, and environmental resources. This guide is therefore not intended to be a detailed design or traffic engineering manual that could supersede the need for application of sound principles by the knowledgeable design or traffic engineering professional.

### 1.3 SCOPE

This guide provides information on the physical infrastructure needed to support bicycling. Facilities are only one of several elements essential to a community's overall bicycle program. Bicycle safety education and training, encouraging bicycle use, and enforcing the rules of the road as they pertain to bicyclists and motorists should be combined with engineering measures to form a comprehensive approach to bicycle use. Information on other elements of an overall bicycle program can be obtained from state or local bicycle coordinators and other publications.

The provisions for bicycle travel are consistent with, and similar to, normal highway engineering practices. Signs, signals, and pavement markings for bicycle facilities are presented in the *Manual on Uniform Traffic Control Devices* (MUTCD) (2), which should be used in conjunction with this guide. If there is a discrepancy between the content of this guide and the current edition of the MUTCD, then the MUTCD supersedes this guide for that case. For construction of bicycle facilities, applicable state and local construction specifications should be used.

### 1.4 DEFINITIONS

**Bicycle**—A pedal-powered vehicle upon which the human operator sits. The term "bicycle" for this publication includes three- and four-wheeled human-powered vehicles, but not tricycles for children. In some states, a bicycle is considered a vehicle, while in other states it is not.

**Bicycle Boulevard**—A street segment, or series of contiguous street segments, that has been modified to accommodate through bicycle traffic and minimize through motor traffic.

**Bicycles Facilities**—A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically defined for bicycle use.

**Bicycle Lane or Bike Lane**—A portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane, unless designed as a contra-flow lane.