1 Introduction

Bicycling is a popular means of travel and recreation for a variety of people.

History

The bicycle has been around in some form since the early 1800s, when Baron von Drais of Germany developed his "Draisienne," a two-wheeled device with a saddle and a steering handlebar, but no pedals. During the 19th century, such features as pneumatic tires, gearing, pedals, and brakes were added to the point where the bicycle of the late 1800s looked much like the bicycle of today.

As breakthroughs in mass production techniques drove bicycle prices down and the bicycle became more popular, a major problem arose. The roads of the day were, for the most part, dirt trails. In foul weather, these became quagmires and bicyclists found riding difficult, if not impossible.

This problem led bicyclists to create and lead the "Good Roads Movement." One major thrust of this campaign was to build short stretches of all-weather paved roads around the country, demonstrating how such roads would improve transportation in America.

As the automobile's popularity grew during the first part of this century, the bicycle' s popularity declined, eventually becoming little more than a child's toy. However, since the late 1960s, adult bicycle use has grown dramatically. Today, millions of Americans use the bicycle to fulfill their transportation, recreational, fitness and utilitarian needs.

Planning for bicycle transportation

Since the early 1970s, agencies have worked to accommodate the growing number of bicyclists in their roadway planning and engineering. While early attempts were experimental in nature, over the years, designers have begun assembling an accepted body of field experience and theoretical knowledge. Although many questions remain to be answered, much has been learned.

Some examples of changes seen in the bicycle planning and engineering field in recent years are as follows:

- Early designers believed a 1.5 m (5 ft) wide two-way path was sufficient; today's two-way paths are at least 3.0 m (10 ft) wide.
- Early designers tried to separate bicycle and motor vehicle traffic; today, designers know that separation can increase crash rates when bicyclists and motorists surprise each other at intersections.
- Early curve design formulas gave a radius of less than 15 m (50 ft) for a 48 km/h (30 mph) curve; today's formula gives a radius of 75 m (250 ft).

Each year, cities throughout North Carolina request more and improved bicycle facilities. Many are actively developing networks of bicycle improvements and producing bicycle route maps.

The state has shown its support for bicycling through the Bicycle and Bikeway Act of 1974, which states that it is "in the public interest, health, safety and welfare for the state to encourage and provide for the efficient and safe use of the bicycle" and that "bikeways are a bona fide highway purpose, subject to the same rights and responsibilities, and eligible for the same considerations as other highway purposes and functions" [GS §136-71-8]. The state also sponsors one of the most active bicycle programs in the nation.

At the national level, the U.S. Department of Transportation under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), is more involved in bicycle planning and engineering projects than ever before. Among other provisions, ISTEA requires states and local agencies to include bicycle considerations in their overall transportation planning processes.

Definitions

The following terms are used throughout this manual. References from North Carolina General Statutes are included where applicable.

BICYCLE: A non-motorized vehicle with two or three wheels tandem, a steering handle, one or two saddle seats and pedals by which the vehicle is propelled [GS §20-171.1].

BICYCLE FACILITIES: A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking facilities, maps, all bikeways and shared roadways.

BICYCLE LANE (BIKE LANE): A portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.

BICYCLE PATH (BIKE PATH): A bikeway physically separated from motorized vehicular traffic and either within the highway right-of-way or within an independent right-of-way.

BICYCLE ROUTE (BIKE ROUTE): A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number.

BIKEWAY: A thoroughfare suitable for bicycles – may either exist within the right-of-way of other modes of transportation, such as highways, or along a separate and independent corridor [GS 136-71.7].

HIGHWAY: The entire width between property or right-of-way lines of every way or place of whatever nature, when any part thereof is open to the use of the public as a matter of right for the purposes of vehicular traffic. The terms "highway" and "street" and their cognates are synonymous [GS §20-4.01 (13)].

RIGHT-OF-WAY: A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

RIGHT OF WAY: The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.

ROADWAY: That portion of a highway improved, designed or ordinarily used for vehicular travel, exclusive of the shoulder. In the event a highway includes two or more separate roadways the term "roadway" as used herein shall refer to any such roadway separately but not to all such roadways collectively [GS §20-4.01 (38)].

SHARED ROADWAY: Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designated as a bikeway.

SHOULDER: That part of a highway which is contiguous to the regularly traveled portion of the highway and is on the same level as the highway; the shoulder may be pavement, gravel or earth.

SIDEWALK: The portion of a highway designed for preferential or exclusive use by pedestrians.

STREET: A highway as defined in subdivision (13) [see above]. The terms "highway" and "street" and their cognates are synonymous [GS §20-4.01 (46)].

Purpose and scope

The purpose of this set of planning and design guidelines is to inform engineers, planners and other transportation officials of the planning and design considerations which are recommended for good bicycle facility design.

The information contained in this manual is a distillation of much of what has been learned in the past 20 years. The intention is to help designers avoid repeating mistakes made in the past.

These guidelines provide a uniform set of the most current planning and design considerations available for safe and effective bicycle facilities development, construction and maintenance.