

## Abridgment

# Community Cycling Manual—Planning and Design Guide

DAPHNE A. HOPE

In recognition of the importance of cycling and the needs of cyclists, Fitness Canada, a directorate within the federal Ministry of Fitness and Amateur Sport, established the Canadian Task Force on Cycling. Led by the Canadian Cycling Association, the task force has prepared the *Community Cycling Manual*, a guide for planning, design, and construction of bicycle facilities. The objectives of the project were to establish the concept of the bicycle as a valid means of transportation, undertake activities to increase participation in cycling, enhance public awareness of cycling as both a recreational and utilitarian activity, and provide a safe environment for cyclists across Canada.

Cycling is a physical activity pursued by millions of Canadians. This level of participation not only increases the fitness of many Canadians but also increases their concerns for safety, education, and the provision of bicycle facilities.

Recognizing the needs of cyclists, Fitness Canada, a directorate within the federal Ministry of Fitness and Amateur Sport, established the Canadian Task Force on Cycling under the leadership of the Canadian Cycling Association. One of the projects of this task force was the preparation of the *Community Cycling Manual*. The project was funded by Fitness Canada and managed by the Canadian Institute of Planners.

The objectives of the task force with respect to the *Community Cycling Manual* were to

- Establish the concept of the bicycle as a valid means of transportation,
- Undertake activities to increase participation in cycling,
- Enhance public awareness of cycling as both a recreational and utilitarian activity, and
- Provide a safe environment for cyclists across Canada.

This manual is a guide for planning, design, and construction of bicycle facilities. It also addresses education and enforcement. These are key to the creation of a safe cycling environment for all types of users.

The *Community Cycling Manual* provides sufficient technical information for the expert. At the same time, it provides the basic groundwork for those less familiar with cycling. It also serves as an introduction to the process of translating the needs of the community into actions. The manual provides the basis for reassessing the facilities, both physical (roads, parking, signals) and nonphysical (safety and enforcement programs), in the community. Used along with local expertise,

it can provide the framework for developing a more user-friendly environment for cyclists.

The *Community Cycling Manual* is designed primarily for the planners, designers, engineers, and landscape architects who will be involved with bicycle facilities. It provides planning process outlines and design standards. An emphasis is placed on the importance of integrating planning, engineering, education, and enforcement.

Many government organizations, from federal to local levels, are in the process of reassessing their transportation priorities for the 1990s. The environment is a major focus of government, industry, and the public. Planning for bicycles in urban centers and planning for linear corridors in rural areas should be part of any transportation review for the following reasons:

- Bicycles are a practical and economic means of local transportation,
- Bicycle use can make existing transportation systems more efficient as intermodal linkages complement existing public transit systems,
- Capital and maintenance costs for bicycle facilities are reduced when they are designed as part of the overall system,
- Pollution is reduced and energy conservation is increased, and
- Bicycles are already an existing and widely used means of transportation, making it easier to adapt present systems to accommodate them.

Planners and engineers should work to fully integrate the bicycle into the existing transportation system and to encourage the use of the bicycle as a safe and convenient mode of transport by applying the following basic principles:

- Every street is a potential bicycle route,
- Bicycle facilities are part of the whole picture and should be considered as an integral component of any planning decision,
- Existing barriers to bicycles should be overcome,
- Bicycle facilities should be incorporated into long-range capital works planning by adopting design standards, and
- Links between routes should be encouraged to make use of the routes more effective, efficient, and attractive to the cyclist.

Most of these principles can be summarized by the four Es of bicycle planning—engineering, education, enforcement, and encouragement. One important aspect to consider is user preference. The best bicycle route by planning and design

standards may not be the one that will be used by cyclists. Thus, it is essential to consult with the user group and identify their needs and preferences early in any planning or design process. Cyclists may not necessarily prefer the most direct route if that route follows heavily used motor vehicle roads, has many controlled intersections or frequent stops, or runs through an area considered undesirable from the point of view of personal safety. Many planning jurisdictions are recognizing the issue of women and urban safety. Identifying areas that are considered unsafe for women should be part of the initial planning process. Bicycle facilities that incorporate trails through remote areas or away from lighted areas may pose a threat to such individuals.

The basic planning process may follow an outline similar to Schedule A of the *Community Cycling Manual*. This can be used as a generic model that can be modified to suit individual situations or projects.

The use of bicycles in North America in past decades has had an interesting association with the use of automobiles. During the 1930s and 1940s, the bicycle was viewed as a useful mode of transportation. Automobiles were costly and gasoline rationing during World War II discouraged extensive use of them. In the 1950s, a different trend emerged. Cities expanded, becoming less compact and therefore less attractive for short-trip commuting by bicycle. The general populace was more affluent, the price of automobiles decreased, and the attraction of the bicycle as an economic means of transportation waned. It was not until the 1970s that there was a general revival in cycling. This revival was in part born of the energy crisis of the mid-1970s. Most of the existing bicycle facilities today were built during this period. Design tended to focus on separate pathways that quickly took on a recreational nature.

The current approach to bicycle facility design is based on the premise that bicycles are recognized as vehicles and that every road is a potential bicycle route. This concept endorses cyclists as legitimate road users. With this concept in mind, the idea of integrating existing transportation system and bicycle facility planning and design makes eminent sense.

The term "bicycle facility" is understood to mean any facility designed to accommodate bicycles or bicycle travel. Thus, bicycle facilities include roads, paths, bridges, tunnels, parking racks, garages, and signage. In order to design facilities that accommodate the many types of bicycles and cyclists, it is necessary to be familiar with the characteristics of both vehicle and user. Physical parameters as well as user parameters must be taken into consideration.

The typical multispeed bicycle is 0.6 m wide, 1.75 m long, and stands up to 1.25 m high. It can weigh between 10 and 20 kg. Mountain or city bicycle handlebars can be up to 0.8 m wide, 0.2 m greater than the drop handlebar style of bicycle. Adult tricycles and trailers used to tow children are both 0.8

m wide. If mirrors or a side mount safety flag is added, the vehicle can be 1.0 m wide. In addition to these specifications when not in motion, the bicycle requires approximately 0.3 m of clearance at each side to allow for the side-to-side motion when ridden. Overall, this gives a design width of 1.6 m.

Although the bicycle itself may be up to 1.25 m high, the total height of a bicycle and cyclist can exceed 2.0 m. An additional 0.5 m is needed for clearance. This gives a design height of 2.5 m.

If a bicycle is towing a trailer or baby buggy, the total length can be 2.5 m. A tandem can be more than 2.0 m long. The turning radius and parking requirements of these vehicles are different from those of a standard bicycle. These exceptions should be noted. As more new designs appear on the market, these design parameters must be reviewed and adjusted accordingly.

If the bicycle is to be successfully integrated into the transportation system, both its similarities to and its differences from other road users must be understood and considered. Specific situations require appropriate solutions. Whether a bicycle route, designated lane, or path is considered, the generic models must sometimes be modified to meet the needs of the users.

For the purpose of establishing consistency of design and terminology, the *Community Cycling Manual* recognizes three categories of bikeways:

- Bicycle route—any road so designated by signs or road markings, usually providing continuity with other cycling facilities or being a preferred route;
- Bicycle lane—a separate lane designated for bicycles; and
- Bicycle path—a separate facility for nonmotorized vehicles only, a single-use (bicycles only) or multiuse recreational pathway.

The following factors must be considered in the design of bicycle routes, lanes, or paths: access; attractiveness; continuity; delays; destinations; directness; surface quality; topography; traffic type, volume, and speed; and user conflict. In addition to these general criteria, specific considerations apply to each of the three categories of bikeways. These are identified and addressed in the *Community Cycling Manual*.

Cycling is not a passing fad. For many, it is part of their way of life—a vital transportation link or an enjoyable recreational activity. With this in mind, communities, agencies, and organizations must recognize and work toward the goal of providing a safe environment for all cyclists. Whether bicycles are ridden on the road or on separate pathways, provision must be made for the safety of the cyclist, which would also ensure the safety of other road or pathways users. The *Community Cycling Manual* can provide the framework and design standards to assist in achieving this goal.