

Rolling into the Future: Emerging Resources and New Initiatives for Bicycle Transportation

RECENT YEARS HAVE BROUGHT A SIGNIFICANT EXPANSION OF AVAILABLE TECHNICAL RESOURCES FOR ENGINEERING AND PLANNING PROFESSIONALS IN ADDRESSING THE NEEDS OF BICYCLISTS. THREE SIGNIFICANT 2008 INITIATIVES ARE THE PROPOSED REVISION OF MUTCD, A NEW EDITION OF THE GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES AND A PROPOSED NEW SYSTEM OF U.S. BICYCLE ROUTES ADMINISTERED BY AASHTO.

BY RICHARD C. MOEUR, P.E.

RECENT YEARS HAVE BROUGHT a significant expansion of available technical resources for engineering and planning professionals in addressing the needs of bicyclists. Three significant 2008 initiatives are the proposed revision of the *Manual on Uniform Traffic Control Devices* (MUTCD), a new edition of the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities* and a proposed new system of U.S. bicycle routes administered by AASHTO.

Although all three of these references and programs have existed for several decades, all of them are in the process of being updated and improved to meet the needs of the 21st century.

NEW MUTCD

MUTCD is the document that defines standards and guidance for all signs, markings, signals and other traffic control devices on all highways, roads and bikeways open to public travel in the United States. Published by the Federal Highway Administration (FHWA), MUTCD contains sections devoted to signs, markings, signals and special areas such as low-volume roads, temporary traffic control zones, schools, railroad crossings and light rail facilities. Since 1978, MUTCD has contained a section (Part 9) in which standards and guidance pertaining to traffic control devices for bicycle facilities are collected.

A new edition of MUTCD has been in development for several years. A proposed draft of the next edition of MUTCD was released by FHWA on January 2, 2008 for public review and comment.¹ More than 500 significant changes are proposed in this new edition, covering the entire range of devices included in this national standard.

The National Committee on Uniform Traffic Control Devices (NCUTCD), a

volunteer organization comprising more than 300 experts in the field of traffic control, assisted FHWA in developing the content for this new edition of MUTCD. NCUTCD has several technical committees that focus on specific areas of MUTCD. The Bicycle Technical Committee of NCUTCD developed several proposals for new bicycle-focused traffic control devices included in the proposed content of the next manual.

Bicycle Guide Signing

The new MUTCD proposes an innovative system of bicycle guide signing that can provide considerably more comprehensive guidance beyond that of the simple "bike route." These signs (see Figure 1) use layouts and colors similar to other standard U.S. directional and guide signs, in keeping with the fundamental MUTCD design philosophy of uniformity. However, these signs adopt design details used on bicycle guide signs in Europe and elsewhere, such as a bicycle symbol and a size appropriate for bicycle travel.

These signs can be used on any category of transportation facility, from shared-use paths to highways, and can be used to display destination and wayfinding information of specific interest to bicycle commuters and travelers. The proportionally smaller size of these signs means they will be visible to bicyclists but will likely be less obtrusive to other traffic and, if used judiciously, should not contribute to sign clutter in urban environments.

Another signing improvement proposed in the next MUTCD is to add a set of mode-specific informational signs (see Figure 2) that can be installed on shared-use path corridors where separate travelways are provided for different user types. For example, a busy trail corridor might have one path for bicyclists and skaters and another path for pedestrian and equestrian traffic.

Although several local agencies in the United States already are using signs similar



Figure 1. The new MUTCD is proposing an innovative system of bicycle guide signing that can provide considerably more comprehensive guidance than the simple “bike route.”



Figure 2. Another proposed signing improvement is to add a set of mode-specific informational signs that can be installed on shared-use path corridors where separate travelways are provided for different user types.

to these, the standardization of these signs in MUTCD should result in more widespread use in a more uniform manner.

The existing M1-8 numbered bicycle route sign for local and regional routes has been used in locations across the United States for decades, but comments were received that the design of the M1-8 does not allow local agencies to place a unique identifier on the sign. To address this need, a new M1-8a sign has been proposed, which offers a space for agencies to place a name, pictograph, or other unique identifier at the top of the sign. This allows for agencies to provide a distinctive design while maintaining a uniform overall sign layout from one jurisdiction to another.

The new MUTCD also is proposing to extend the existing system of reference (milepost) markers to shared-use paths, where they can provide valuable distance and location information to path users for travel, maintenance and emergency services.



Figure 3. A “Bicycles May Use Full Lane” regulatory sign is for optional use where a travel lane is too narrow for bicycles and motor vehicles to operate side by side in the same lane.

Regulatory and Warning Signs for Bicyclists

The draft MUTCD proposes several new regulatory and warning signs for bicycle travel. A new combination bicycle and pedestrian warning sign has been proposed for locations where shared-use paths or trails intersect with roadways. Additionally, FHWA proposes that all warning signs for pedestrian, bicycle and school applications should use a fluorescent yellow-green background.

Also of interest is a “Bicycles May Use Full Lane” regulatory sign (see Figure 3) for optional use where a travel lane is too narrow for bicycles and motor vehicles to operate side by side in the same lane. Finally, two new prohibition signs for equestrians and skaters are proposed as complements to the travel mode signs added in the guide sign section of Part 9.

Bicycle-Specific Markings

The most significant addition to the chapter on bicycle markings is a new shared-lane marking (see Figure 4). This marking was developed through years of research and experimentation for roadways where it is useful to denote a recommended operating location for bicycle travel (e.g., to avoid the hazard of a driver-side door being opened where on-street parking is provided), but where it is infeasible or inappropriate to install a dedicated preferential bicycle lane.

At the time of this writing, almost 50 locations in North America are thought to be using some type of shared-lane marking, and the inclusion of design, layout



Figure 4. The most significant addition to the chapter on bicycle markings is a new shared-lane marking.

and placement standards should improve uniformity and guidance in the use of this marking.

More information on the proposed MUTCD, including the entire draft content, can be found at mutcd.fhwa.dot.gov/resources/proposed_amend/index.htm. The draft MUTCD content also is organized by device type at www.trafficssign.us/npa.htm.

Comments are being accepted by FHWA on the proposed content of MUTCD until Thursday, July 31, 2008. Comments can be submitted electronically at www.regulations.gov/fdmspublic/component/main?main=DocketDetail&d=FWHA-2007-28977. Based on prior rule-making cycles, it is anticipated that the publication of the next edition of MUTCD is likely to occur in 2009 or early 2010. More information on NCUTCD and its role in advising FHWA on MUTCD can be found at www.ncutcd.org.

NEW AASHTO BIKE GUIDE

Since 1981, AASHTO has published three editions of its *Guide for the Development of Bicycle Facilities*. The document has grown from a modest pamphlet into a substantial planning and design guidance reference consulted by U.S., state and local agencies in the adoption of their own

bicycle design policies or adopted outright as some agencies' bicycle facility design manual. Endeavoring to maintain a judiciously flexible but empirical approach and building on a rapidly growing body of research, the guide incorporates recognized best design practices for bicyclist accommodation at the time of publication, ensuring that engineers and planners can rely on its recommendations.

Since the publication of the current edition of the AASHTO guide in 1999, a significant amount of research and innovation has led to better technical guidance on several important topics. Also, the guide acts as a "how-to" manual for the application of traffic control treatments defined in MUTCD; as MUTCD evolves, the AASHTO guide also must evolve and improve to provide guidelines and examples for implementing new devices.

As a first step to capture current best practices for bicycle facilities and to define the scope of the next guide, in 2004 the National Cooperative Highway Research Program (NCHRP) Project 20-7 (187) was charged with developing an outline.² As part of an outreach program, more than 3,000 comments were received by the project contractor from the full range of guide users and practitioners in the field of bicycle transportation. These gave a clear consensus of practice, which could be used to define the range of guidance and treatments included in the next version of the guide.

Following this earlier work, NCHRP Project 15-37 was commissioned to develop the content of the next guide.³ This work is underway and is expected to conclude with a submission to AASHTO in 2009. Following final editing and balloting by the responsible AASHTO committees, the next edition of the guide (with any final revisions) should be published.

Specific improvements likely to be in the next edition of the AASHTO *Guide for the Development of Bicycle Facilities* include:

- updated section on bicycle planning;
- improved guidance on bicycle facility selection;
- guidance on retrofitting existing rights of way to accommodate bicycles;
- bike lane designs based on new research;



Figure 5. A map of state- and regional-level bicycle routes.

- additional guidance on bike lane design at intersections and freeway interchanges;
- information on use of new shared-lane markings;
- detailed guidance on path-roadway intersections;
- design of "rails-with-trails," e.g. pathways in the same corridors as active rail lines;
- revised signalization formulas based on new research;
- suitability and design issues with pathways adjacent to roadways ("sidepaths");
- design criteria that may be more appropriate for shared-use paths in urban conditions;
- design guidance for bike parking and storage facilities; and
- guidance on design of "bicycle boulevards," i.e., streets that facilitate through-bicyclist traffic while discouraging through-motorized travel.

NEW U.S. BICYCLE ROUTE SYSTEM

Long-distance bicycle travel has grown through the years across the United States. Hundreds of thousands of travelers have used their bicycles for inter-city and cross-country travel and, based on experience in some states, provinces and other nations, there seems to be a significant potential for increasing numbers of travelers to choose this unique and enjoyable form of transportation.

For more than three decades, private organizations such as the Adventure Cycling Association, Mississippi River Trail and East Coast Greenway have performed a tremendous service to long-distance bicycle travel by scouting, researching, cataloging and mapping routes that extend across the United States. These route organizations are playing a role analogous to that played by the auto trail associations of the early 20th century in providing the basis for the U.S. highway system.

In 2003, several of these organizations approached AASHTO to see if these routes and others could be considered for inclusion in a national network of U.S. bicycle routes, in much the same way that the early auto trails became the backbone of AASHTO's U.S. Numbered Highway System (and subsequent Interstate Highway System) that has been so vital to U.S. transportation development.

Although AASHTO created a policy and process for recognizing and designating multi-state U.S. bicycle routes as far back as the 1970s, during the first wave of popularity of cross-country bicycle touring, not much had been accomplished in implementing a national system other than the designation of one north-south and one east-west route in the east central part of the United States.⁴

In 2004, AASHTO's Standing Committee on Highways commissioned a task force to study the concept of a national



Figure 6. The draft corridor plan of candidate routes that could be considered for the first phase of a U.S. bicycle route system.

network of U.S. bicycle routes and to develop a national-level corridor plan for prioritizing and implementing routes. The members of this task force were drawn from AASHTO committees on traffic engineering, geometric design and nonmotorized transportation as well as representatives from major bicycle route organizations.⁵

The first step was to contact state and local transportation agencies and bicycling organizations and create a nationwide inventory of existing, planned and potential bicycle route networks. The resulting map of state- and regional-level routes can be seen in Figure 5.

The second phase in the process was to identify candidate corridors linking significant population centers, important scenic corridors and significant recreational destinations such as national parks. Many different routes were considered for this national system, and one of the challenges facing the task force was to narrow the candidate routes to a set of corridors for practical long-distance touring that could be considered for the first phase of a U.S. bicycle route system. The resulting draft corridor plan (see Figure 6) was reviewed by AASHTO committees in 2007.

Phase 3 of the task force plan is to create a logical and scalable system of designations for these route corridors. At this time, several proposed systems are under consideration by the task force, including

number, letter and combination number/letter designations.

The final product will be a corridor map with the recommended designation system applied to the corridors. This will be reviewed by appropriate AASHTO committees and then will become a blueprint for state departments of transportation to develop these corridors into a comprehensive network of bicycle routes spanning the United States.

More information on the AASHTO Task Force on U.S. Bicycle Routes can be found at www.adventurecycling.org/usbrs/. ■

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