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SAFE ACCOMMODATION OF BICYCLISTS ON HIGH-SPEED ROADWAYS IN MARYLAND

Problem

Bicycling as an alternative mode of transportation can bring significant individual and societal benefits. However, the potential risks of riding on high-speed roads alongside fast travelling vehicles cannot be ignored. This study investigated bicycle infrastructure design options and related treatments to facilitate safe accommodation of bicyclists on high-speed roadways in Maryland.

Objective

The objectives of this study were to: 1) investigate safety concerns associated with the provision of bicycle accommodations on high-speed roadways; 2) evaluate existing designs and treatments; and (3) develop new designs if necessary.

The expected outcomes and deliverables of this study were: 1) a review of the best practices both in and outside the United States for accommodating bicyclists on high-speed roadways; 2) a synthesis of opinions and suggestions from the bicycle groups on the safe accommodation of bicyclists on high-speed roadways; and 3) bicycle infrastructure design options with renderings for high-speed roads.

Description

High-speed roadways are defined here as having speed limits above 45 miles per hour. The state-of-the-practice in the U.S. and best practices in designs and related treatments worldwide were explored. Both at-grade intersections and grade-separated interchanges, along with designs of dedicated and shared-use bike lanes adjacent to roadways and roadway shoulders, were studied. Inputs from government agencies, bicycle advocacy groups, researchers, and practitioners were reflected in the proposed design alternatives, developed with the aim of enhancing safe and efficient human interaction with the built environment.

Bicycle advocacy groups contacted in 16 states as part of this study were unanimous in their concerns about bicycling along high-speed roadways. They agreed that the method used for separating bicyclists from motor-vehicle traffic, whether a buffer, physical barrier or separated path, is very important. These groups made several suggestions such as (1) actual speeds are as important as posted speed limits; (2) colored pavements in conflict areas can be helpful; and (3) designs should account for the way bicyclists use the facilities. For example, an experienced bicyclist will merge into the inside lane and turn left under low traffic volumes, but will make a two-stage left turn under high traffic volumes.

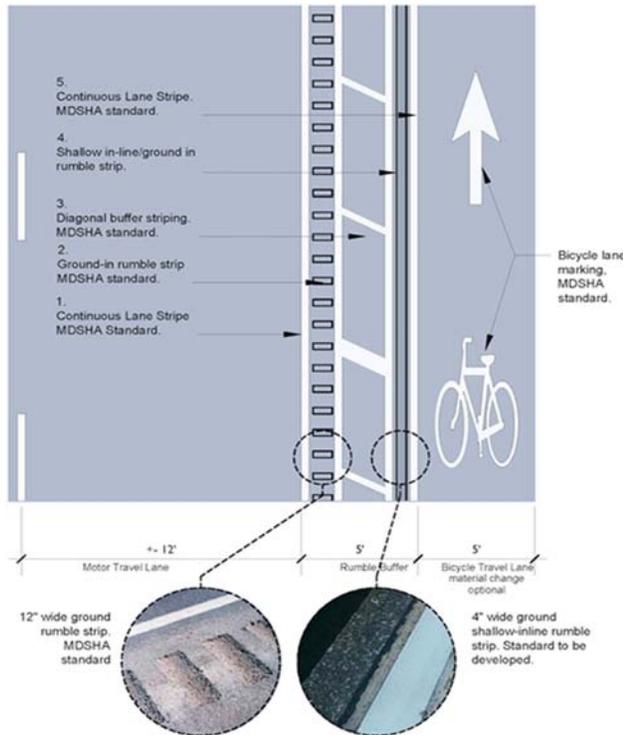
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Results

The main conclusion of this study is that bicyclists on high-speed roadways face serious risks unless sufficiently separated from the motor-vehicle traffic. The treatments presented in the project report, if prudently implemented, can help mitigate such risks where separated facilities are not an option. The study also found that available data on accidents involving bicyclists are inadequate for quantitatively comparing the merits of design alternatives and treatments.

A treatment, referred to as a “rumble-buffered” bike lane was proposed. The suggested minimum rumble-buffer width is 5 feet, the desirable bike travel lane width 5 feet, and the minimum total width for the rumble-buffered bike lane 10 feet. The research team suggested to use the available paved shoulder (widening the paved shoulder may be needed) to construct the rumble-buffered bike lane.



Report Information

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Link to Final Report: http://www.roads.maryland.gov/OPR_Research/MD-16-SHA-UM-4-06_Bicycles-on-High-Speed-Roadways_report.pdf