AASHTO-AGC-ARTBA Joint Committee

Subcommittee on
New Highway Materials

Task Force 13 Report

A Guide to
Small Sign Support Hardware

June 1998

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Joint Committee

Task Force No. 13

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Preface

This document is disseminated upon the sponsorship of the Joint Committee of the American Association of State Highway and Transportation Officials, the Associated General Contractors of America and the American Road and Transportation Builders Association (the Joint AASHTO-AGC-ARTBA Committee) in the interest of information exchange, based on the combined technical expertise of the authors. As such, the opinions and conclusions implied or expressed herein do not necessarily reflect the official views or policies of the Joint Committee or its member organizations.

This report was approved for publication by the three member organizations comprising the Joint Committee and was published on behalf of the Joint Committee by AASHTO.

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Standardization of Details for Bridge and Road Hardware

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These materials were developed by Dr. Malcolm H. Ray of Momentum Engineering as a part of National Cooperative Highway Research Program (NCHRP) Project 22-10. The NCHRP project panel provided considerable guidance, review, and direction during the project. The panel members included:

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Table of Contents

Introduction

Background

Most small highway signs are supported by rolled steel shapes, extruded aluminum shapes, woodposts, steel flange-channel shapes, round tubes, pipes, square steel tubes or fiber reinforced plastic shapes. These may be used in a variety of ways to meet the dual requirements of (1) providing support for signs under a broad range of environmental conditions and (2) releasing when struck by a vehicle to minimize the chance of injury to vehicle occupants.

This guide is a compilation of proprietary and non-proprietary small sign support hardware. Details have been provided and reviewed by members of the American Association of State Highway and Transportation Officials (AASHTO), the Associated General Contractors of America (AGC), and American Road and Transportation Builders' Association (ARTBA), Joint Cooperative Committee Task Force 13. Proprietary sign support hardware materials were provided by the manufacturers and non-proprietary sign support materials were developed by Momentum Engineering, Inc. as a part of National Cooperative Highway Research Program Project 22-10.

The Task Force believes that it would provide a valuable service to the highway community by publishing a comprehensive document containing the information detailed herein for widely used small sign support systems. This document presents a "state of the art" perspective that should be of benefit to engineers, designers, maintenance personnel, contractors, and administrators. This document only addresses the crashworthiness features of sign supports. Issues like typical design wind loadings, the sign to post attachment details and the maximum size sign permitted for each type of support, though important, are not discussed in this document.

To be acceptable for use on Federal Aid roadways all sign supports must be tested and evaluated as described in AASHTO's 1994 *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.(1)* The results of this testing must be submitted to the Federal Highway Administration (FHWA) whereupon FHWA will issue a letter indicating the acceptable uses of the sign support system.

While every effort has been made to make this document as complete as possible, some designs may have been omitted inadvertently. New systems and improvements to existing systems will also continue to be developed in the coming years. The information in this document, therefore, must be continually updated to remain of value to practicing engineers. This guide has been organized with special consideration to facilitating more frequent revisions. Task Force 13 will periodically update this document so that it will become an effective and timely means of transmitting sign support hardware information throughout the roadside safety community and hardware manufacturing industry. Information on any new small sign support designs should be forwarded to the AASHTO-AGC-ARTBA Joint Committee's Task Force 13, through AASHTO, AGC, or ARTBA, for evaluation and possible inclusion in future versions of this publication.

Many of the tested sign support systems in this document are representative of the largest crashworthy design. For example, a single 4.5 kg/m u-channel post driven directly into a strong soil is acceptable. By extension, single posts of lesser masses (kg/m) are also acceptable. Slip

bases and breakaway couplings theoretically will work over a wide range of post sizes. The upper limit is dependent upon the mass of the post that the impacting vehicle must accelerate (maximum 270 kg) and the lower limit is dependent upon the rigidity of the post to ensure that it does not bend.

Submitting New Small Sign Hardware Drawings

Anyone interested in having new systems or components included in future revisions of *A Guide to Small Sign Support Hardware* should send the following materials to the secretary of AASHTO-ARTBA-AGC Task Force 13:

1. An FHWA letter of approval that indicates the submitted small sign system has been successfully crash-tested according to the latest AASHTO Specifications.

2. A drawing (on a reproducible 216 x 280 mm sheet) along with design and material specifications conforming exactly to the standards and style used on the drawings currently in the guide.

The above materials should be forwarded to:

Secretary, AASHTO-ARTBA-AGC Task Force 13
Federal Highway Administration/HNG-14
400 Seventh Street, S.W.
Washington, D.C. 20590

Submissions that do not meet the above criteria will not be considered for inclusion in any revisions to this guide.

The drawings for the non-proprietary drawings in this guide were produced using INTERGRAPH MICROSTATION. The text specifications were produced using WordPerfect 5.1. Both the text and drawing files are available and may be obtained from several sources including:

PCTRANS
Transportation Center
University of Kansas
2011 Learned Hall
Lawrence, Kansas 66045
Phone (913) 864-5655
Fax (800) 245-8760

MACTRANS
University of Florida
Center for Microcomputers in Transportation
512 Weill Hall
P.O. Box 116585
Gainesville, Florida 32611-6585
Phone (800) 226-1013
Fax (904) 392-3224

Suggestions about revising drawings or specifications currently in the Guide should be forwarded to the appropriate manufacturer in the case of proprietary systems or to the Task Force secretary in the case of non-proprietary systems. Proposed revisions will be periodically evaluated by the Task Force.