American Association of State Highway and Transportation Officials

AASHTO

The Voice of Transportation







Standard Specifications for

Structural Supports for Highway Signs, Luminaires, and Traffic Signals



Sixth Edition 2013

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Foreword

The sixth edition of *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* supersedes the fifth edition and its 2010 and 2011 interims. It includes changes approved by the Highways Subcommittee on Bridges and Structures in 2012.

Design guidelines for fatigue-critical multisided tubular sections are included in Section 5, "Steel Design." Additional guidance is provided on longitudinal seam welds, tube-to-transverse plate connection welds, anchor bolt installation, and stiffened connections. New figures for fillet-welded gusseted box connections and ring-stiffened box connections are provided as commentary. Section 5 also includes updates to hand-hole welds, weld inspection, and provides new figures for holes and cutouts.

The scope of Section 11, "Fatigue Design," is expanded to allow design of support structures using nominal stress-based classifications of typical connection details, or using the alternate local stress-based and/or experiment-based methodologies presented in Appendix D. New tables are provided for determining the fatigue resistance of typical connection details in support structures for finite and infinite life designs. The scope of Section 11 is expanded to include separate provisions for high-mast lighting towers, including a combined wind load for a simplified approach to derive fatigue damage from all the load effects due to natural wind.

The Specifications are based on the allowable stress design methodology and are intended to address the usual structural supports. Requirements more stringent than those in the Specifications may be appropriate for atypical structural supports. The commentary is intended to provide background on some of the considerations contained in the Specifications; however it does not provide a complete historical background, nor detailed discussions of the associated research studies. The Specifications and accompanying commentary do not replace sound engineering knowledge and judgment.

AASHTO Highways Subcommittee on Bridges and Structures

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Preface

The sixth edition of *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* supersedes the fifth edition and its 2010 and 2011 interims. It includes changes approved by the Highways Subcommittee on Bridges and Structures in 2012.

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SECTION 1
INTRODUCTION

1.1—SCOPE

The provisions of these *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, hereinafter referred to as the Specifications, are applicable to the structural design of supports for highway signs, luminaires, and traffic signals. The types of supports covered in these Specifications are discussed in Article 1.4. The Specifications are intended to serve as a standard and guide for the design, fabrication, and erection of these types of supports.

These Specifications are not intended to supplant proper training or the exercise of judgment by the designer, and they include only the minimum requirements necessary to provide for public safety. The Owner or the designer may require the design and quality of materials and construction to be higher than the minimum requirements.

The commentary directs attention to other documents that provide suggestions for carrying out the requirements and intent of these Specifications. However, those documents and the commentary are not intended to be a part of the Specifications.

C1.1

These Specifications are the result of National Cooperative Highway Research Program (NCHRP) Project 17-10 and the corresponding NCHRP Report 411. At the discretion of the Owner, proprietary solutions may be considered. These solutions may address both new structures and the repair or rehabilitation of existing structures. Testing of proprietary solutions shall model actual conditions as closely as possible, and the test methods and results shall be published. These Specifications are intended to replace the previous edition, *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (2009).

The commentary discusses some provisions of the Specifications with emphasis given to the explanation of new or revised provisions that may be unfamiliar to users of the Specifications. The commentary is not intended to provide a complete historical background concerning the development of this and previous Specifications, nor is it intended to provide a detailed summary of the studies and research data reviewed in formulating the provisions of the Specifications. However, references to some of the research data are provided for those who wish to study the background material in depth.

1.2—DEFINITIONS

Arm—A cantilevered support, either horizontal or sloped.

Bridge Support—Also known as span-type support; a horizontal or sloped member or truss supported by at least two vertical supports.

Cantilever—A support, either horizontal or vertical, supported at one end only.

Designer—The person responsible for design of the structural support.

High-Level Luminaire Support—Truss-type or pole-type tower that provides lighting at heights greater than about 17 m (55 ft), typically using 4 to 12 luminaires.

High-Mast Lighting Tower (HMLT)—Another description for a pole-type high-level luminaire support.

Luminaire—A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps to the electric power supply.

Mast Arm—A supporting arm designed to hold a sign, signal head, or luminaire in an approximately horizontal position.

Monotube—A support that is composed of a single tube.

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