

To recipients of the *Construction Handbook for Bridge Temporary Works*, First Edition (1995):

## **Instructions**

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Interim revisions have been made to the *Construction Handbook for Bridge Temporary Works*, First Edition (1995). They have been designed to replace the corresponding pages in the book and are numbered accordingly.

Underlined copy indicates revisions that were approved in 2007 by the AASHTO Highways Subcommittee on Bridges and Structures. A listing of newly changed and deleted articles is included with these interim revisions as an addendum to the preface of the book.

All revised pages also display a box in the lower outside corner indicating the interim publication year. Any non-technical changes in page appearance will be indicated by this revision box alone to differentiate such changes from those which have been approved by the AASHTO Highways Subcommittee on Bridges and Structures.

To keep your Specifications correct and up-to-date, please replace the appropriate pages in the book with the pages in this packet.

**2008 Interim Revisions to**

**Construction  
Handbook  
for Bridge  
Temporary  
Works**

**First Edition/1995**



Published by the  
American Association of State Highway  
and Transportation Officials

# CHAPTER 1. INTRODUCTION

## SCOPE

This construction handbook has been developed for use by contractors and construction engineers involved in bridge construction on Federal-aid highway projects. This document may also be of interest to falsework design engineers, and supplements information found in the *Guide Design Specification for Bridge Temporary Works*.<sup>(1)</sup> The content is construction-oriented, focusing primarily on standards of material quality and means and methods. This handbook contains chapters on falsework, formwork, and temporary retaining structures. For more in-depth discussion on a particular topic, related literature and references are identified.

**Chapter Two. Falsework** identifies material standards, the assessment and protection of foundations, construction-related topics, loading considerations, and inspection guidelines. Methods for in situ testing of foundations are identified. General guidelines regarding timber construction, proprietary shoring systems, cable bracing, bridge deck falsework, and traffic openings are also discussed.

**Chapter Three. Formwork** identifies and describes the various components and formwork types commonly used in bridge construction. Information on load considerations and design nomographs are provided. General guidelines relating to formwork construction and form maintenance are also discussed.

**Chapter Four. Temporary Retaining Structures** focuses primarily on cofferdams and their application to bridge construction. As indicated by the chapter title, however, general topics relating to a wide range of temporary retaining structures are also addressed. Specific topics include classification of construction types, relative costs, sealing and buoyancy control, seepage control, and protection. The construction of timber sheet pile cofferdams, soldier pile and wood lagging cofferdams, and steel sheet pile cofferdams is reviewed. Methods of internal bracing and soil and rock anchorage are also discussed.

Section properties of standard dressed and rough lumber, bridge deck falsework design examples, recommended thicknesses for wood lagging, and steel sheet pile data are included as appendixes. Definitions and related publications are identified below.

## DEFINITIONS

For the purpose of this manual, the following definitions apply. These definitions are not intended to be exclusive, but are generally consistent with the common usage of these terms.

**Falsework** – Temporary construction work used to support the permanent structure until it becomes self-supporting. Falsework would include steel or timber beams, girders, columns piles and foundations, and any proprietary equipment, including modular shoring frames, post shores and adjustable horizontal shoring.

**Shoring** – A component of falsework such as horizontal, vertical, or inclined support members. For the purpose of this document, this term is used interchangeably with falsework.

**Formwork** – A temporary structure or mold used to retain the plastic or fluid concrete in its designated shape until it hardens. Formwork must have enough strength to resist the fluid pressure exerted by plastic concrete and any additional fluid pressure effects generated by vibration.

**Cofferdam** – A temporary watertight enclosure that allows construction of the permanent structure under dry conditions.

## **RELATED PUBLICATIONS**

*California Falsework Manual*, California Department of Transportation, Sacramento, CA.

*Certification Program for Bridge Temporary Works* (FHWA-RD-93-033), Federal Highway Administration, Washington, DC.

*Formwork for Concrete (SP-4)*, Seventh Edition, American Concrete Institute, Detroit, MI.

*Foundation Construction*, A. Brinton Carson, McGraw-Hill, New York, NY.

*Guide Design Specifications for Bridge Temporary Works* (FHWA-RD-93-032), Federal Highway Administration, Washington, DC. See also AASHTO GSBTW-1 (1995) and GSBTW-1-I1 (2008).

*Guide Standard Specification for Bridge Temporary Works* (FHWA-93-031), Federal Highway Administration, Washington, DC.

*Handbook of Temporary Structures in Construction*, R.T. Ratay, Ed., Second Edition, McGraw-Hill Book Company, New York.

*Lateral Support Systems and Underpinning, Vols. I, II, III* (FHWA-RD-75-128, 129, 130), Federal Highway Administration, Washington, DC.

*Soil Mechanics, Foundations, and Earth Structures* (NAVFAC DM-7), Department of the Navy, Alexandria, VA.

*Standard Specifications for Highway Bridges, 17th Edition (HB-17)*, American Association of State Highway and Transportation Officials, Washington, DC.

*Synthesis of Falsework, Formwork, and Scaffolding for Highway Bridge Structures* (FHWA-RD-91-062), Federal Highway Administration, Washington, DC.

*Temporary Works*, J.R. Illingworth, Thomas Telford, London, England.