NDOT
STRUCTURES MANUAL

Published By:
Nevada Department of Transportation
Structures Division

Mark Elicegui, P.E., Chief Structures Engineer
Todd Stefonowicz, P.E., Assistant Chief Structures Engineer – Design
David Severns, P.E., Assistant Chief Structures Engineer – Inventory/Inspection

September 2008
FOREWORD

The *NDOT Structures Manual* has been developed to provide bridge designers with NDOT’s standard structural design policies and practices. Designers should attempt to meet all of the criteria presented in the *Manual*, while fulfilling NDOT’s mission of providing a safe and efficient transportation system for the State. Designers must consider economic impacts, aesthetics, and the social and cultural resources of the project area and request exceptions to the *Manual* criteria when conditions warrant. Because it is impossible to address every issue that bridge designers will encounter, sound engineering judgment must be exercised when conditions arise that are not specifically covered in the *Manual*.

The *NDOT Structures Manual* has been prepared based on the 4th Edition of the AASHTO *LRFD Bridge Design Specifications*.

ACKNOWLEDGEMENTS

The *NDOT Structures Manual* was developed by the NDOT Structures Division with assistance from the consulting firm of Roy Jorgensen Associates, Inc., Professor Dennis Mertz of the University of Delaware, and the consulting firm of CH2M Hill, Inc.

REVISION PROCESS

The *NDOT Structures Manual* is intended to provide current structural design policies and procedures for use in developing NDOT projects. To ensure that the *Manual* remains up-to-date and appropriately reflects changes in NDOT’s needs and requirements, its contents will be updated on an ongoing basis. It is the responsibility of the *Manual* holder to keep the *Manual* updated.

The NDOT Structures Division will be responsible for evaluating changes in the structural design literature (e.g., updates to the *LRFD Specifications*, the issuance of new research publications, revisions to Federal regulations) and will ensure that those changes are appropriately addressed through the issuance of revisions to the *Manual*. It is important that users of the *Manual* inform NDOT of any inconsistencies, errors, need for clarification, or new ideas to support the goal of providing the best and most up-to-date information practical. Comments and proposed revisions may be forwarded to the Chief Structures Engineer using the Revision Proposal Form.
NDOT Structures Manual

Revision Proposal Form

To propose a revision to the NDOT Structures Manual, complete and return this Revision Proposal Form to:

Chief Structures Engineer
Nevada Department of Transportation
1263 S. Stewart Street
Carson City, Nevada 89712
Fax: 775.888.7405
E-mail: info@dot.state.nv.us (include “Structures Manual” in subject line)

Identification

Date Submitted: ___________________________________________________________

Submitted By (name, agency/firm): __________________________________________

Contact Information (phone #, e-mail): _______________________________________

Description of Proposed Revision (attach additional sheets as necessary)

Applicable Manual Section Number(s): _______________________________________

________________________________________________________________________

Justification for Revision: _________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Proposed Revision: _________________________________________________________

________________________________________________________________________

________________________________________________________________________
# TABLE OF CONTENTS

## Part I — Administration and Procedures

Chapter 1 ................................................................. NDOT ORGANIZATION
Chapter 2 .............................................................. ADMINISTRATIVE POLICIES AND PROCEDURES
Chapter 3 .............................................................. BRIDGE PROJECT DEVELOPMENT PROCESS
Chapter 4 .............................................................. BRIDGE DESIGN COORDINATION
Chapter 5 .............................................................. PLAN PREPARATION
Chapter 6 .............................................................. QUANTITY AND COST ESTIMATES
Chapter 7 .............................................................. STRUCTURAL DESIGN NOTEBOOK
Chapter 8 .............................................................. COMPUTER SOFTWARE
Chapter 9 .............................................................. RESERVED

## Part II — Structural Design

Chapter 10 ............................................................ GENERAL
Chapter 11 ............................................................... PRELIMINARY DESIGN
Chapter 12 ............................................................... LOADS AND LOAD FACTORS
Chapter 13 ............................................................... STRUCTURAL ANALYSIS AND EVALUATION
Chapter 14 ............................................................... CONCRETE STRUCTURES
Chapter 15 ............................................................... STEEL STRUCTURES
Chapter 16 ............................................................... BRIDGE DECKS
Chapter 17 ............................................................... FOUNDATIONS
Chapter 18 ............................................................... SUBSTRUCTURES
Chapter 19 ............................................................... EXPANSION JOINTS
Chapter 20 ............................................................... BEARINGS
Chapter 21 ............................................................... RAILROADS
Chapter 22 ............................................................... BRIDGE REHABILITATION
Chapter 23 ............................................................... MISCELLANEOUS STRUCTURAL ELEMENTS
Chapter 24 .............................................................. RESERVED

## Part III — Construction

Chapter 25 .............................................................. CONSTRUCTION SUPPORT
Chapter 26 .............................................................. NON-DESTRUCTIVE TESTING
Chapter 27 .............................................................. RESERVED

## Part IV — Bridge Management

Chapter 28 .............................................................. NEVADA BRIDGE INSPECTION PROGRAM
Chapter 29 .............................................................. BRIDGE MANAGEMENT

# SUBJECT INDEX