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Manual of

STEEL  
CONSTRUCTION

Allowable Stress Design

Ninth Edition



MANUAL FOR CONDITION  
EVALUATION OF BRIDGES  
1994



PDF

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## Load Rating of Wood Bridges Using LRFD and ASD

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### ABSTRACT

Most timber bridges are currently designed in accordance with the American Association of State Highway and Transportation Officials (AASHTO) *Standard Specifications for Highway Bridges, 17th Edition* (SSHB), which follows an allowable stress design (ASD) approach. However, the Federal Highway Administration (FHWA) will be requiring all highway bridges designed after October 1, 2007, to follow the *AASHTO LRFD (Load & Resistance Factor Design) Bridge Design Specifications, 3rd Edition*. As the transition from ASD to LRFD nears, engineers need to be aware of the differences. Information will be presented about more recent changes to the design codes and differences between AASHTO's *Manual for Condition Evaluation and Load Resistance Factor Rating (LRFR) of Highway Bridges*, which uses the LRFD method, and AASHTO's *Manual for Condition Evaluation of Bridges, 2nd Edition* (MCEB), which uses the ASD method. This paper will provide an overview of the pertinent issues related to wood bridge load ratings. Examples are included that illustrate the dramatic reduction in rated load capacity when sawn wood and glued-laminated timber stringers are load rated by the LRFD method compared to the ASD method.

### INTRODUCTION

This paper discusses differences between AASHTO's *Standard Specifications for Highway Bridges, 17th Edition*, and *AASHTO LRFD (Load & Resistance Factor Design) Bridge Design Specifications, 3rd Edition*. The Federal Highway Administration will require all new highway bridges to be designed using the LRFD method after October 1, 2007 (FHWA memo, June 28, 2006). This paper illustrates the effects on design and legal load vehicles for existing sawn wood and glued-laminated beam structures load rated using AASHTO's new *Manual for Condition Evaluation and Load Resistance Factor Rating (LRFR) of Highway Bridges*. There are many differences in load rating between the ASD and LRFD methods. The significant changes are: design vehicles, wheel load distribution, stability factor, condition factor, dynamic load allowance, and design load ratings.

### BACKGROUND

This is a companion paper to a previously published paper (Groenier 2005) presented at the 2005 Structural Congress. The paper gave an overview of significant changes in LRFD and ASD for design and load rating of a timber bridge. It also showed a load

## Division Section 900

### WHAT DO YOU SUBMIT TO ODOT?

- ❖ 2 - Printed copies of load rating report  
(signed and sealed by an Ohio PE)
- ❖ 1 - Electronic copy of load rating report
- ❖ 1 - Electronic copy of input data files
  - BARS -  
LISTA.LIS, RATE2.LIS, SUMMARY.LIS,  
and FLEX.LIS files
  - BRASS -  
Files with the following extensions:  
DAT, CUS, and XML



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Table 1. AASHTOWare Datasets collected for this research.

State/Agency	Number of AASHTOWare Data Sets
Alabama	4,128
Illinois	3,200
Michigan	378
Missouri	4,844
New York	5,412
Ohio	41
South Dakota	1,135
Tennessee	53
Total	18,087

Aashto manual for condition evaluation of bridges 1994. Aashto list of standards. Aashto requirements. Aashto test procedures. Aashto guidelines. Aashto manual for condition evaluation of bridges.

It serves as a unique standard for the evaluation of road bridges of all kinds. Stand reading a free preview of 7 to 16 is not displayed in this preview. Stand reading a free preview of the pages 20 to 38 is not displayed in this preview. Stand reading a free preview of 119 to 120 is not displayed in this preview. This AASHTO manual for the assessment of the bridge replaces both the AASHTO manual of 1998 for the evaluation of the bridge conditions and the 2003 AASHTO guide manual for the assessment of the condition and the rating of the load and resistance factor (LRF) of road bridges. You are reading a free preview of 105 to 112 are not displayed in this preview. He also replaces the manual for the assessment of the bridge, the 1st edition with the interim. This manual replaces both the 1998 AASHTO manual for the evaluation of bridge conditions and the 2003 AASHTO guide manual for the assessment of the condition and qualification of the load and resistance factor (LRF) of bridges highway. AASHTO MANUAL FOR THE EVALUATION OF BRIDGE ASHTO MANUAL FOR THE EVALUATION OF THE BRIDGE 2nd EDICION This manual has been developed to help the owners of the bridge when establishing inspection and practical evaluation procedures that comply with the national inspection standards of the Bridge (NBIS). You are reading a free preview of 129 to 136 are not displayed in this preview. ASOHTO CONTENT TABLE MANUAL FOR THE EVALUATION OF THE BRIDGE SECTION 1: INTRODUCTION SECTION 2: Bridge Files (Records) Section 3: Bridge Management Systems Section 4: Inspection 5: Test of Inspection Material Section 6: Loading Classification Section 7: Fatigue Evaluation of Steel Bridge Section 8: Application A: Illustrative Examples Much of the Guide Manual Aashto 2003 for the assessment of the condition and rating of load factor and resistance (LRF) of road bridges have been incorporated and updated in this manual. Section 6 of this manual includes the load rating provisions of both the 2003 GuAa Aashto Manual for the assessment of the condition and the load and rating of the resistance factor of Highway Bridges and the 1994 AASHTO Manual for the Assessment of the Status of Bridges SECCIA N 5: ASHTO MATERIAL TEST Manual for the evaluation of bridges 5.1 GENERAL 5.2 FIELD TESTS 5.2.1 concrete field tests 5.2.1.1 Resistance methods 5.2.1.2 radiografAa 5.2.1.8 Ae Wooden field tests 5.2.3.1Ae manual laboratory material test pdf download free, PDF FREE - MecAónico-empArico GuAa de dise de pavements: A Manual of Practice EdiciA Interim, Download the Manual AASHTO for the Evaluation of the Construction of the Bridge, CBT E-EXAM PRACTICE, manual of evaluation of the bridge, procedures of loading of ceiling of weapon, instructions of installation of shingles of weapon, manual of tests of material AASHTO PDF, AASHTO MATERIAL TESTIN MANUAL PDF, report on the test of road material Number ISBN : 1-56051-496-1 Articles pages : 548 Pages Download type: PDF File, AASHTO Manual for the evaluation of bridges Download AASHTO Manual for the evaluation of bridges Ranking Pdf: 5 You are reading a free preview Pages 61 to 99 are not shown in this preview. You are reading a free preview Pages 47 to 55 are not shown in this preview. The manual has been divided into eight sections, each of which represents a different phase of a general inspection and evaluation program of bridges. REFERENCES ASHTO (1994). Standard For Structural Supports for Luminaire Highway and Traffic Signal Aashto - (Manual for the Assessment of the Condition of Bridges). pdf Aashto 2002. Specifications Standard for Highway Bridges 17A Guide Aashto Specifications for pedestrian bridges 1997 Aashto 2002. Specifications Standard for Highway Bridges 17A AASHTO Specifications Standard for Highway Bridges 17A.TOC AASHTO 2002. Specifications Standard for Highway Bridges 17th Design Manual of Suspension Bridges Boundary Condition for Dielectric Aashto Lrfd Guidespecfordesignof Pedestrian Bridges December2009 Orn 09 - A Design Manual for Small Bridges MSE WALLS FOR SUPPORT OF HIGHWAY BRIDGES Bridge Construction Methodology Bridges For Young Students PDF Aashto For Design of Pavement Structures Guide AASHTO for design structures Standard procedure for bidding assessment for hiring .pdf conceptual designer of bridges Size 11.1 4 MB AUTHORS AASHTO PAGE NUMBER 615 PUBLISHER AASHTO ISBN 9781560514961 Samples This manual has been developed to help the owners of bridges by establishing inspection procedures and evaluation practices that meet with national bridge inspection standards (NBIS). It also replaces the AASHTO manual for the assessment of bridges 1A edition with Interims. Interims

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