



TRANSPORTATION RESEARCH BOARD

Bridges & Other Structures Overview

TRB at a Glance

The mission of the Transportation Research Board (TRB) is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal.

A resource to the nation and to the transportation community worldwide, TRB provides an extensive portfolio of services:

- Opportunities for information exchange on current transportation research and practice,
- Management of cooperative research and other research programs,
- Analyses of national transportation policy issues and guidance on federal and other research programs
- Publications and access to research information from around the world.

More info at www.trb.org

TRB's Transportation Research Information Services (TRIS)

TRIS includes the TRB Library and the TRIS Databases (listed below) which are available for free on TRB's website.

The TRB Library provides information services to TRB staff, sponsors, TRB Committee members and panels and researchers. Access to the TRB Library is a benefit to TRB sponsors and TRB committee members.

In cooperation with your State DOT Library or Information Service, the TRB Library provides:

- Reference and research assistance
- Literature searches
- Articles for TRB Committee work

The TRB Library provides training on effective and efficient use of the following TRIS resources:

TRID – The world's largest and most comprehensive bibliographic source on all modes and disciplines of transportation
trid.trb.org

Practice Ready Papers (PRP) Database - Papers with information that is ready for immediate implementation or requires minimal additional research or implementation effort.
prp.trb.org

Publications Index (PubsIndex) Database – The papers, articles and reports published by the Transportation Research Board, Highway Research Board, Strategic Highway Research Programs or the Marine Board
pubsindex.trb.org

Research in Progress (RiP) Database – Current or recently completed transportation research projects
rip.trb.org

Research Needs Statements (RNS) – Research needs as identified by TRB Technical Activities standing committees
rns.trb.org

More information about TRIS is available online at: <http://www.trb.org/InformationServices/InformationServices.aspx>
Contact the Library at TRBLibrary@nas.edu or 1 (202) 334-2989



Recent and Upcoming Events

- Conferences (co-sponsored by TRB):
 - April 13, 2016 Orlando, Florida **2016 World Steel Bridge Symposium**
 - April 22, 2016 San Francisco, California **2016 World Tunnel Congress**
 - June 26, 2016 Foz do Iguacu, Brazil **8th International Conference on Bridge Maintenance, Safety and Management (IABMAS2016)**
 - July 16, 2016 Xi'an, China **International Conference on Transportation Infrastructure and Materials**
 - August 8, 2016 Istanbul, Turkey **Istanbul Bridge Conference**
 - September 25, 2016 Atlanta, Georgia **8th World Congress on Joints, Bearings and Seismic Systems for Concrete Structures**
 - June 28, 2017 Athens, Greece **Tenth International Conference on the Bearing Capacity of Roads, Railways, and Airfields (BCRRA 2017)**
 - September 26, 2017 Washington, D.C. **11th University Transportation Center (UTC) Spotlight Conference: Rebuilding and Retrofitting the Transportation Infrastructure**

- Webinars:
 - October 24, 2016 Performance of Geosynthetic Reinforced Soil Integrated Bridge Systems

View TRB webinars here: <http://www.trb.org/ElectronicSessions/ConferenceRecordings.aspx>

Technical Committees

- Standing Committees:
 - Design and Construction Group (AF000)
 - Section - Structures (AFF00)
 - General Structures (AFF10)
 - Steel Bridges (AFF20)
 - Concrete Bridges (AFF30)
 - Field Testing and Nondestructive Evaluation (NDE) of Transportation Structures (AFF40)
 - Seismic Design and Performance of Bridges (AFF50)
 - Tunnels and Underground Structures (AFF60)
 - Culverts and Hydraulic Structures (AFF70)
 - Structural Fiber Reinforced Polymers (AFF80)
 - Construction of Bridges and Structures (AFH40)
 - Fabrication and Inspection of Metal Structures (AFH70)
 - Section - Concrete Materials (AFN00)
 - Basic Research and Emerging Technologies Related to Concrete (AFN10)
 - Properties of Concrete (AFN20)
 - Durability of Concrete (AFN30)
 - Concrete Materials and Placement Techniques (AFN40)
 - Foundations of Bridges and Other Structures (AFS30)
 - Subsurface Soil-Structure Interaction (AFS40)
 - Structures Maintenance (AHD30)
 - Bridge Management (AHD35)
 - Bridge Preservation (AHD37)
 - Corrosion (AHD45)
 - Railroad Track Structure System Design (AR050)

- Task Force:
 - Task Force on Value of Transportation Infrastructure (AB020T)



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- Policy Study Committees:
 - Research and Technology Coordinating Committee (FHWA) (B0024)
 - Long-Term Bridge Performance (LTBP) Committee (B0122)
 - Long-Term Bridge Performance (LTBP) Committee: Expert Task Group for Bridge Durability and Preservation (B0122A)
 - Long-Term Bridge Performance (LTBP) Committee: Expert Task Group for Bridge Evaluation and Monitoring (B0122B)
 - Long-Term Bridge Performance (LTBP) Committee: Expert Task Group for Bridge Traffic and Truck Weight (B0122C)
 - Committee for Intelligent Construction Systems and Technologies: Program Review (B0133)
 - TRB Long-Term Pavement Performance (LTPP) Committee (B0135)

To become Friend of any committee visit MyTRB.org

Cooperative Research Program (CRP)

- NCHRP Reports
 - NCHRP Report, Issue 816 - Guide for the Preservation of Highway Tunnel Systems.
 - NCHRP Report, Issue 796 - Development and Calibration of AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.
 - NCHRP Report, Issue 778 - Bridge Stormwater Runoff Analysis and Treatment Options.
 - NCHRP Report, Issue 782 - Proposed Guideline for Reliability-Based Bridge Inspection Practices.
 - NCHRP Report, Issue 776 - Bridge System Safety and Redundancy.
 - NCHRP Report, Issue 761 - Reference Guide for Applying Risk and Reliability-Based Approaches for Bridge Scour Prediction.
 - NCHRP Report, Issue 757 - Long-Term Performance of Epoxy Adhesive Anchor Systems.
 - NCHRP Report, Issue 744 - Fuel Usage Factors in Highway and Bridge Construction.
 - NCHRP Report, Issue 734 - Hydraulic Loss Coefficients for Culverts.
 - NCHRP Report, Issue 733 - High-Performance/High-Strength Lightweight Concrete for Bridge Girders and Decks.
 - NCHRP Report, Issue 725 - Guidelines for Analysis Methods and Construction Engineering of Curved and Skewed Steel Girder Bridges.
 - NCHRP Report, Issue 721 - Fatigue Evaluation of Steel Bridges.
 - NCHRP Report, Issue 718 - Fatigue Loading and Design Methodology for High-Mast Lighting Towers.
 - NCHRP Report, Issue 717 - Scour at Bridge Foundations on Rock.
- NCHRP Web Documents
 - NCHRP Web Document, Issue 201 - Calibration of AASHTO LRFD Concrete Bridge Design Specifications for Serviceability.
 - NCHRP Web Document, Issue 197 - Guidelines for the Load and Resistance Factor Design and Rating of Riveted and Bolted Gusset-Plate Connections for Steel Bridges.
 - NCHRP Web Document, Issue 190 - Structural Design of Culvert Joints.
 - NCHRP Web Document, Issue 187 - Seismic Design of Geosynthetic-Reinforced Soil Bridge Abutments with Modular Block Facing.
 - NCHRP Web Document, Issue 181 - Evaluation of Bridge-Scour Research: Abutment and Contraction Scour Processes and Prediction.
 - NCHRP Web Document, Issue 177 - Evaluation of Bridge Scour Research: Geomorphic Processes and Predictions.
 - NCHRP Web Document, Issue 176 - Cost-Effective Connection Details for Highway Sign, Luminaire, and Traffic Signal Structures.
 - NCHRP Web Document, Issue 175 - Evaluation of Bridge Scour Research: Pier Scour Processes and Predictions.
 - NCHRP Web Document, Issue 173 - Cast-in-Place Concrete Connections for Precast Deck Systems.



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- NCHRP Synthesis of Highway Practice
 - NCHRP Synthesis of Highway Practice, Issue 494 (2016) Life-Cycle Cost Analysis for Management of Highway Assets.
 - NCHRP Synthesis of Highway Practice, Issue 489 (2016) Extending Bridge Service Life Through Field Welded Repairs and Retrofits.
 - NCHRP Synthesis of Highway Practice, Issue 484 (2016) Influence of Geotechnical Investigation and Subsurface Conditions on Claims, Change Orders, and Overruns.
 - NCHRP Synthesis of Highway Practice, Issue 478 - Design and Load Testing of Large Diameter Open-Ended Driven Piles.
 - NCHRP Synthesis of Highway Practice, Issue 474 - Service Life of Culverts.
 - NCHRP Synthesis of Highway Practice, Issue 441 - High Performance Concrete Specifications and Practices for Bridges.
 - NCHRP Synthesis of Highway Practice, Issue 440 - Performance-Based Seismic Bridge Design.
 - NCHRP Synthesis of Highway Practice, Issue 437 - Assessing the Long-Term Performance of Mechanically Stabilized Earth Walls.
 - NCHRP Synthesis of Highway Practice, Issue 425 - Waterproofing Membranes for Concrete Bridge Decks.
- NCHRP Research Results Digest
 - NCHRP Research Results Digest, Issue 378 - Evaluation of Bridge Scour Research.
 - NCHRP Research Results Digest, Issue 364 - Validation of LRFD Metal Loss and Service-Life Strength Reduction Factors for Metal-Reinforced Systems.
 - NCHRP Research Results Digest, Issue 363 - Hydroacoustic Impacts on Fish from Pile Installation.
 - NCHRP Research Results Digest, Issue 355 - Summary of Cast-in-Place Concrete Connections for Precast Deck Systems.
- NCHRP-IDEA Program Reports
 - NCHRP IDEA Program: Products with an Impact or Potential Impact on Current Highway Practice: Notable Examples. Transportation Research Board
 - NCHRP-IDEA Program Project Final Report - Bridge Retrofit Laser System.
 - NCHRP-IDEA Program Project Final Report - Tools for Determining Yield Stress of In-Service Gusset Plates.
 - NCHRP-IDEA Program Project Final Report - Bridge Cable Inspection with Long Range Ultrasound.
 - NCHRP-IDEA Program Project Final Report - Corrosion Resistant, Structurally Reinforced, Thermal Spray Coatings for In Situ Repair of Load Bearing Structures.
 - NCHRP-IDEA Program Project Final Report - A Shape Memory Polymer Based Self-Healing Sealant for Expansion Joint.
 - NCHRP-IDEA Program Project Final Report, Issue 149 - Use of Energy Absorbing Breakaway Posts for W-Beam Guardrail in Frozen Soil Conditions.
 - NCHRP-IDEA Program Project Final Report - Full-Scale Prototype Testing and Manufacturing and Installation Plans for New Scour- Vortex-Prevention sCAUR and VorGAUR Products for a Representative Scour-Critical Bridge.
 - NCHRP-IDEA Program Project Final Report - Shape Memory Alloy Enhanced SMART Expansion Joints.
- Other Reports
 - Long-Term Bridge Performance Committee Letter Report: February 23, 2016. Transportation Research Board (2016)
 - Long-Term Bridge Performance Committee Letter Report: August 3, 2012. Transportation Research Board
 - Long-Term Bridge Performance Committee Letter Report: March 16, 2012. Transportation Research Board
 - Long-Term Bridge Performance Committee Letter Report: February 20, 2015. Transportation Research Board
 - Long-Term Bridge Performance Committee Letter Report: February 19, 2013. Transportation Research Board
 - Long-Term Bridge Performance Committee Letter Report: January 27, 2014. Transportation Research Board



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- Safety IDEA Program Project Final Report, Issue 24 - Railroad Bridge Dynamics and Ratings.
- Transportation Research E-Circular, Issue E-C171 - Durability of Concrete. Second Edition.
- Transportation Research E-Circular, Issue E-C163 - Maintenance Management 2012: Presentations from the 2012 AASHTO-TRB Maintenance Management Conference, July 15-19, 2012, Seattle, Washington.
- NCHRP Legal Research Digest, Issue 58 - Legal Issues Surrounding the Use of Digital Intellectual Property on Design and Construction Projects.
- Current research
 - NCHRP 12-87A - Fracture-Critical System Analysis for Steel Bridges
 - NCHRP 12-89 - Recommended AASHTO LRFD Tunnel Design and Construction Specifications
 - NCHRP 12-90 - Guidelines for Shielding Bridge Piers
 - NCHRP 12-91 - Strand Debonding for Pretensioned Girders
 - NCHRP 12-92 - Proposed LRFD Bridge Design Specifications for Light Rail Transit Loads
 - NCHRP 12-93 - Contribution of Steel Casing to Single Shaft Foundation Structural Resistance
 - NCHRP 12-94 - LRFD Minimum Flexural Reinforcement Requirements
 - NCHRP 12-95 - Connection Details of Adjacent Precast Concrete Box Beam Bridges
 - NCHRP 12-96 - Simplified Full-Depth Precast Concrete Deck Panel Systems
 - NCHRP 12-97 - Guide Specification for the Design of Concrete Bridge Beams Prestressed with CFRP Systems
 - NCHRP 12-98 - Recommended Guidelines for Prefabricated Bridge Elements and Systems Tolerances and Dynamic Effects of Bridge Moves
 - NCHRP 12-100 - Guidelines for Maintaining Small Movement Bridge Expansion Joints
 - NCHRP 12-101 - Seismic Design of Bridge Columns with Improved Energy Dissipating Mechanisms
 - NCHRP 12-102 - Recommended AASHTO Guide Specification for ABC Design and Construction
 - NCHRP 12-103 - Bridge Superstructure Tolerance to Total and Differential Foundation Movements
 - NCHRP 12-104 - Guidelines to Improve the Quality of Element-Level Bridge Inspection Data
 - NCHRP 12-105 - Proposed AASHTO Seismic Specifications for ABC Column Connections
 - NCHRP 12-107 - Proposed AASHTO Guidelines for Use of Stainless Steel in Bridge Girders
- Upcoming projects
 - NCHRP 12-106 - Proposed Guidelines for Performance-Based Seismic Bridge Design
 - NCHRP 12-108 - Guide Specification for Service Life Design of Highway Bridges
 - NCHRP 12-109 - Use of 0.7-in. Diameter Strands in Precast Pretensioned Girders
 - NCHRP 12-110 - Proposed New AASHTO Load Rating Provisions for Implements of Husbandry
 - NCHRP 12-111 - Evaluating the Effectiveness of Vibration-Mitigation Devices for Structural Supports of Signs, Luminaires, and Traffic Signals

Panel Member nominations accepted (<http://www.trb.org/TCRP/CRPInfoPanelMembers.aspx>)

Second Strategic Highway Research Program (SHRP 2)

- SHRP 2 Report, Issue S2-R19B-RW-1 - Bridges for Service Life Beyond 100 Years: Service Limit State Design.
- SHRP 2 Report, Issue S2-R02-RW-2 - Development of the Geoconstruction Information and Technology Selection Guidance System.
- SHRP 2 Report, Issue S2-R02-RW-1 - Geotechnical Solutions for Soil Improvement, Rapid Embankment Construction, and Stabilization of the Pavement Working Platform.
- SHRP 2 Report, Issue S2-R19A-RW-1 - Bridges for Service Life Beyond 100 Years: Innovative Systems, Subsystems, and Components.
- SHRP 2 Report, Issue S2-R07-RR-1 - Performance Specifications for Rapid Highway Renewal.
- SHRP 2 Report, Issue S2-R07-RR-3 - Framework for Performance Specifications: Guide for Specification



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Writers.

- SHRP 2 Report, Issue S2-R06G-RR-1 - Mapping Voids, Debonding, Delaminations, Moisture, and Other Defects Behind or Within Tunnel Linings.
- SHRP 2 Project Brief - Designing Bridges for Service Life.
- SHRP 2 Report, Issue S2-R04-RR-1 - Innovative Bridge Designs for Rapid Renewal.
- SHRP 2 Project Brief - A Toolkit for Accelerated Bridge Construction.
- SHRP 2 Report - Design Guide for Bridges for Service Life.
- SHRP 2 Report, HNTB Corporation, Issue S2-R04-RR-2 - Innovative Bridge Designs for Rapid Renewal: ABC Toolkit.
- SHRP 2 Project Brief - Nondestructive Testing Technologies for Rapid Renewal: Reduce Traffic Disruptions, Improve Efficiency.
- SHRP 2 Report, Issue S2-R06A-RR-1 - Nondestructive Testing to Identify Concrete Bridge Deck Deterioration.
- SHRP 2 Project Brief - Tomorrow's Bridges: A Renewal Project Brief Summarizing Bridge Research in SHRP2.

Other Relevant Reports

- 2013: Planning, Design, Operations, and Infrastructure (*Journal of the Transportation Research Board, No. 2387*)
- Livable Cities of the Future: Proceedings of a Symposium Honoring the Legacy of George Bugliarello (2014, *National Academy of Engineering*)