

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

List of Current and Recently Completed Projects Related to Maintenance (1997 - 2019)

Prepared for the AASHTO Highway Subcommittee on Maintenance Meeting,
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More information is available on the Cooperative Highway Research Programs' WWW Homepage
<http://www.trb.org>
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I. Pavements

1. Completed

- Project 1-48: Consideration of Preservation in Pavement Design and Analysis Procedures (published as NCHRP Report 810)
- Project 9-41: Construction and Maintenance Practices for Permeable Friction Courses (published as NCHRP Report 640)
- Project 9-50: Performance-Related Specifications for Emulsified Asphaltic Binders Used in Preservation Surface Treatments (published as NCHRP Report 837)
- Project 10-82: Performance Related Specifications for Pavement Preservation Treatments (Phase I)
- Project 10-82A: Performance Related Specifications for Pavement Preservation Treatments (published as NCHRP Report 857)
- Project 14-14: Optimal Timing of Pavement Preventive Maintenance Treatment Applications (published as NCHRP Report 523)
- Project 14-17: Manual for Emulsion-Based Chip Seals for Pavement Preservation (published as NCHRP Report 680 and AASHTO Code: MECB-1-UL)
- Project 14-31: Developing a Pavement-Maintenance Database System (published as NCHRP Report 820)
- Project 14-33: Quantifying the Effects of Preservation Treatments on Pavement Performance (will be published as NCHRP Research Report 858)
- Project 20-50(2): LTPP Data Analysis: Relative Performance of Jointed Plain Concrete Pavements with Sealed and Unsealed Joints (available as NCHRP Web Document 32)
- Project 20-50(03/04): LTPP Data Analysis: Effectiveness of Maintenance and Rehabilitation Options (available as NCHRP Web Document 47)
- Project 20-7(64): Maintenance Manual (published by AASHTO as "AASHTO Maintenance Manual: The Maintenance and Management of Roadways and Bridges," 1999)
- Project 20-7 (170): Review and Revision of the AASHTO Maintenance Manual (published by AASHTO as "AASHTO Maintenance Manual for Roadways and Bridges," 2007)
- Project 20-7(184): Pavement Preservation: Practices, Research Plans, and Initiatives (available on AASHTO Highway Subcommittee on Maintenance Website)
- Project 20-7 (203): Chapter on Systems Operations and Management (incorporated into the "AASHTO Maintenance Manual for Roadways and Bridges," 2007)
- Project 20-7(251): Consideration of Pavement Preservation in the AASHTO Mechanistic-Empirical Pavement Design Guide
- Project 20-07(380): Proposed AASHTO Manual for the Maintenance of Roadways and Bridges
- Project 20-7(339): Best Practices for Crack Treatments for Asphalt Pavements (published as NCHRP Report 784)

2. Pavements - In Progress

- Project 14-37: Guide Specifications for the Construction of Chip Seals, Microsurfacing, and Fog Seals
Project 14-38: Guide for Timing of Asphalt-Surfaced Pavements Preservation

II. Bridges and Structures

1. Completed

- Project 12-100: Guidelines for Maintaining Small Movement Bridge Expansion Joints (publication decision pending – agency research report is available on NCHRP Web site)
Project 14-15: Framework for a National Database System for Maintenance Actions on Highway Bridges (published as NCHRP Report 668)
Project 14-23: Practical Bridge Preservation Actions and Investment Strategies (un-reviewed reports on Phases I & II are available on project Website)
Project 14-27: Guide for the Preservation of Highway Tunnel Systems (published as NCHRP Report 816)
Project 14-28: Condition Assessment of Bridge Post-Tensioning and Stay Cable Systems Using NDE Methods (published as NCHRP Research Report 848)
Project 14-29: Assessing, Coding, and Marking of Highway Structures in Emergency Situations (published as NCHRP Report 833)
Project 14-30: Spot Painting to Extend Highway Bridge Coating Life (available as NCHRP Web-Only Document 251)
Project 14-32: Proposed Revisions to the AASHTO Movable Bridge Inspection, Evaluation, and Maintenance Manual (published by AASHTO as the Movable Bridge Inspection, Evaluation, and Maintenance Manual, Code MBI-2)
Project 14-36: Proposed AASHTO Guide for Bridge Preservation Actions (agency report available on project Website)
Project 18-06A: Service Life of Corrosion-Damaged Reinforced Concrete Bridge Superstructure Elements (published as NCHRP Report 558)
Project 20-7(234): Guidelines for Selection of Bridge Deck Overlays, Sealers, and Treatments (submitted to AASHTO)
Project 20-07(387): Maintenance Actions to Address Fatigue Cracking in Steel Bridge Structures (agency research report available on project Website)
Project 20-07(399): Identifying Bridge Maintenance and Preservation Activities which Minimize Environmental Impact (agency research report available on project Website)

2. In Progress

- Project 10-97: Detection and Remediation of Soluble Salt Contamination Prior to Coating Steel Highway Structures

3. Anticipated/Pending

- Project 12-115: Guidelines for Risk-Based Inspection and Strength Evaluation of Suspension Bridge Main Cable Systems
Project 12-117: Effective Use of Duplex Coating Systems to Improve Steel Bridge Structure Durability

III. Snow and Ice Control

I. Completed

- Project 6-12: Improved Visibility for Snow Plowing Operations (summarized in NCHRP Research Results Digest 250)
- Project 6-13: Snow and Ice Control: Guidelines for Materials and Methods (published as NCHRP Report 526)
- Project 6-14: Feasibility of Using Friction Indicators to Improve Winter Maintenance Operations and Mobility (available as NCHRP Web Document 53)
- Project 6-15: Testing and Calibration Methods for RWIS Sensors (available as NCHRP Web Document 87)
- Project 6-16: Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts (published as NCHRP Report 577)
- Project 6-17: Performance Measures for Snow and Ice Control Operations (summarized as a NCHRP Research Results Digest 335; the agency report is available as NCHRP Web-Only Document 136)
- Project 14-34: Guide for Performance Measures in Snow and Ice Control Operations (will be published as NCHRP Research Report 889)
- Project 20-36: Highway Research and Technology--International Information Sharing: Research Results Digest 204, Winter Maintenance Technology and Practices--Learning from Abroad, and Research Results Digest 238, Report on the 1998 Scanning Review of European Winter Service Technology
- Project 20-7(83): Guide for Snow and Ice Control (published by AASHTO as "Guide for Snow and Ice Control," 1999)
- Project 20-7(117): Benefit/Cost of RWIS and Anti-Icing Technologies (available as a SICOP web document)
- Project 20-7 (147): Update of the Design Guidelines for the Control of Blowing and Drifting Snow (available as a SICOP web document, "Controlling Blowing and Drifting Snow with Snow Fences and Road Design")
- Project 20-7(200): Synthesis of Vehicle Based Winter Maintenance Technologies (available as a SICOP web document)
- Project 20-7(250): Update the AASHTO Guide for Snow and Ice Control (submitted to AASHTO)
- Project 20-7(287): Grand Challenges: A Research Plan for Winter Maintenance (available on AASHTO Highway Subcommittee on Maintenance Website)
- Project 20-7(300): Methods for Estimating the Benefits of Winter Maintenance and Operations (available on AASHTO Highway Subcommittee on Maintenance Website)
- Project 20-7(318): Revised Chapter 8, Winter Operations and Salt, Sand and Chemical Management, of the Final Report on NCHRP 25-25(04) (available on AASHTO Highway Subcommittee on Maintenance Website)
- Project 20-7(329): Alternative Delivery Methods for Winter Maintenance Operations (available on AASHTO Highway Subcommittee on Maintenance Website; summarized in NCHRP Research Results Digest 387)

3. Anticipated/Pending

- Project 06-18: Update the AASHTO Guide for Snow and Ice Control

IV. Equipment Management

1. Completed

- Project 13-2: Guidelines for Warning Lights for Highway Maintenance and Operations Equipment (published as NCHRP Report 624, “Selection and Application of Warning Lights on Roadway Operations Equipment.” The guidelines portion of the report are published by AASHTO, Item Code: WL-1)
- Project 13-3: Decision Making for Outsourcing and Privatization of Vehicle and Equipment Fleet Maintenance – Phase I (Phase II of the research was conducted under NCHRP Project 13-3A)
- Project 13-3A: Decision Making for Outsourcing and Privatization of Vehicle and Equipment Fleet Maintenance (published as NCHRP Report 692 and also as AASHTO Publication Code EFM-1)
- Project 13-04: Guide for Optimal Replacement Cycles of Highway Operations Equipment (published as NCHRP Research Report 879)
- Project 20-7(309): Challenges and Opportunities: A Strategic Plan for Equipment Management Research (available on AASHTO Highway Subcommittee on Maintenance web site)

2. In Progress

- Project 05-24: Guidelines for Vehicle and Equipment Color, Marking, and Lighting
- Project 13-05: Guide for Utilization Measurement and Management of Fleet Equipment
- Project 13-07: Guide to Calculating Ownership and Operating Costs of Department of Transportation Vehicle and Equipment Fleet

3. Anticipated/Pending

- Project 13-06: Guide for the Formulation of Long-Range Plans for Replacement Needs and Budget of Highway Operations Equipment
- Project 13-08: Guideline for Decision Making for Repair vs. Replacement of Highway Maintenance Equipment
- Project 14-42: Determining State DOT Maintenance Program Implications of Connected and Automated Vehicles

V. Roadway/Roadside

1. Completed

- Project 14-16: Guidelines for Vegetation Management (published by AASHTO as “Guidelines for Vegetation Management,” 2011, Code: GVM-1-M-UL)
- Project 14-22: Effective Removal of Pavement Markings (published as NCHRP Report 759)
- Project 14-26: Culvert and Storm Drain Inspection Manual (submitted to the AASHTO Highway Subcommittee on Bridges and Structures)
- Project 14-40: Comparison of Cost, Safety, and Environmental Benefits of Routine Mowing and Managed Succession of Roadside Vegetation
- Project 20-7(177): Detectable Warning Products: Installation, Maintenance, and Durability Considerations (available on AASHTO Highway Subcommittee on Maintenance Website)
- Project 20-7(190): Strategy for Evaluating Durable Pavement Marking Materials for High Traffic Areas and Mountain Passes (available on AASHTO Highway Subcommittee on Maintenance Website)

2. In Progress

- Project 14-40: Transforming Roadside Management and Technology Practices for the Benefit of Safety, Ecology, and Economy
- Project 14-41: Permanent Vegetation Control Treatments for Roadsides

VI. Asset Management/General

I. Completed

- Project 08-71: Methodology for Estimating Life Expectancies of Highway Assets (published as NCHRP Report 713)
- Project 14-09(3): Maintenance Contracting (published as NCHRP Report 344)
- Project 14-09(4): Role of Highway Maintenance in Integrated Management Systems (published as NCHRP Report 363)
- Project 14-11(2): Enhancements to Program for Effective Motivation of Highway Maintenance Personnel (summarized in NCHRP Research Results Digest 257). The research presented a training course, “Effective Motivation of Highway Maintenance Personnel: Tools for Peak Performance,” on a CD-ROM.
- Project 14-12: Highway Maintenance Quality Assurance (published as NCHRP Report 422 “Maintenance QA Program Implementation Manual”)
- Project 14-13: Customer-Driven Benchmarking for Highway Maintenance Activities (Report is available as NCHRP Web Document 58; Guide published as NCHRP Report 511, “Guide for Customer-Driven Benchmarking of Maintenance Activities”)
- Project 14-18: Determining Highway Maintenance Costs (published as NCHRP Report 688)
- Project 14-20: Consequences of Delayed Maintenance (Phase I)
- Project 14-20A: Consequences of Delayed Maintenance of Highway Assets (published as NCHRP Report 859)
- Project 14-21: Resource Allocation Framework to Meet Highway Asset Preservation Needs (published as NCHRP Report 736)
- Project 14-24: Guidance for Communicating the Value of Highway System Maintenance and Preservation (published as NCHRP Report 742)
- Project 14-25: Guide for Selecting Level-of-Service Targets for Maintaining and Operating Highway Assets (summarized in NCHRP Research Results Digest 396)
- Project 14-33: Quantifying the effects of Preservation Treatments on Pavement Performance (will be published as NCHRP Report 858)
- Project 19-07: GASB 34 – Methods for Condition Assessment and Preservation (published as NCHRP Report 608)
- Project 20-24(11): Asset Management Guidance for Transportation Agencies (published by AASHTO and summarized as NCHRP Research Results Digest 266, and includes Project 20-07(134), Asset Management Education and Communication Materials)
- Project 20-57: Analytic Tools to Support Transportation Asset Management (published as NCHRP Report 545. The software tools, AssetManager NT and AssetManager PT, and other user guides are available on CD-Rom CRP-CD-57)
- Project 20-60: Performance Measures and Targets for Transportation Asset Management (published as NCHRP Report 551)
- Project 20-68A: US Domestic Scan Program (11-01, Leading Practices in Large-Scale Outsourcing and Privatization of Maintenance Functions; 14-01, Leading Management Practices in Determining Funding Levels for Maintenance and Preservation; and other topics). Scan reports available on project website.

VI. Asset Management/General (Continued)

Completed (continued)

- Project 20-74: Developing an Asset Management Framework for the Interstate Highway System (published as NCHRP Report 632)
- Project 20-74A: Development of Levels of Service for the Interstate Highway System (published as NCHRP Report 677)
- Project 20-7(206): A Model Guide for Condition Assessment Systems (submitted to AASHTO)
- Project 20-7(340): National Training: Challenges and Opportunities (available on AASHTO Highway Subcommittee on Maintenance web site)
- Project 20-7(357): Guidelines for Collecting, Processing, and Managing Roadway Asset Inventory Data (submitted to AASHTO)

VII. Synthesis of Information Related to Highway Problems

1. Completed

- Topic 28-01: Best Management Practices for Environmental Issues Related to Highway and Street Maintenance (NCHRP Synthesis 272)
- Topic 28-08: Historic Highway Bridge Preservation Practices (NCHRP Synthesis 275)
- Topic 29-03: Performance Survey on Open-Graded Friction Course Mixes (NCHRP Synthesis 284)
- Topic 29-07: Fleet Management and Selection Systems for Highway Maintenance Equipment (NCHRP Synthesis 283)
- Topic 30-10: Maintenance of Highway Edgedrains (NCHRP Synthesis 285)
- Topic 31-03: Assessment and Rehabilitation of Existing culverts (NCHRP Synthesis 303)
- Topic 32-06: Public Benefits of Highway System Maintenance and Operation (NCHRP Synthesis 330)
- Topic 33-04: Integrated Roadside Vegetation Management (NCHRP Synthesis 341)
- Topic 34-10: Winter Highway Operations (NCHRP Synthesis 344)
- Topic 35-02: Chip Seal Best Practices (NCHRP Synthesis 342)
- Topic 35-07: Inspection and Maintenance of Bridge Stay Cable Systems (NCHRP Synthesis 353)
- Topic 35-08: Investigation and Management of Bridges with Fracture-Critical Details (NCHRP Synthesis 354)
- Topic 36-05: Control of Invasive Species (NCHRP Synthesis 363)
- Topic 37-09: Performance-Based Contracting for Maintenance (NCHRP Synthesis 389)
- Topic 39-07: Reducing Litter on Roadsides (NCHRP Synthesis 394)
- Topic 41-04: Sustainable Pavement Maintenance Practices (summarized as NCHRP Research Results Digest 365)
- Topic 41-12: Microsurfacing (NCHRP Synthesis 411)
- Topic 42-06: Performance-Based Highway Maintenance and Operations Management (NCHRP Synthesis 426)
- Topic 42-07: Waterproofing Membranes for Concrete Bridge Decks (NCHRP Synthesis 425)
- Topic 43-12: Strategies to Mitigate the Impacts of Chloride Roadway Deicers on Natural Environment (NCHRP Synthesis 449)
- Topic 43-14: State Department of Transportation Fleet Replacement Management Practices (NCHRP Synthesis 452)
- Topic 44-04: Pavement Patching Practices (NCHRP Synthesis 463)
- Topic 44-07: Thin Asphalt Concrete Overlays (NCHRP synthesis 465)
- Topic 45-13: Maintenance Quality Assurance Field Inspection Practices (NCHRP synthesis 470)
- Topic 46-17: Training and Certification of Highway Maintenance Workers (NCHRP Synthesis 483)
- Topic 47-01: Control of Cracking in Bridge Decks (NCHRP Synthesis 500)