R&T UPDATE
Concrete Pavement Research & Technology

CURRENT AND RECENTLY COMPLETED NCHRP PROJECTS RELATED TO CONCRETE PAVEMENTS

The National Cooperative Highway Research Program (NCHRP) was created in 1962 as a means to conduct research in acute problem areas that affect highway planning, design, construction, operation, and maintenance nationwide. NCHRP is administered by the Transportation Research Board (TRB) and sponsored by the member departments (i.e., individual state departments of transportation – DOT's) of the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with the Federal Highway Administration (FHWA).

There are currently over *200 research projects on concrete pavement* that have recently been completed, are currently underway, or are anticipated to begin soon. Most of them are sponsored by NCHRP, individual state DOT's, industry trade associations and individual companies, and/or the federal government, including the Federal Highway Administration and the Federal Aviation Administration.

Out of the 200 total research projects on concrete pavements, over 50 of them have been, currently are, or will be administered by NCHRP. These are separate from and in addition to those research projects conducted under the auspices of the Innovative Pavement Research Foundation (IPRF), as well as research carried out by individual state departments of transportation.

Summaries of all the current concrete pavement research projects can be found on ACPA's website, where an online guide of concrete pavement related research projects can be searched for summaries and contact persons: http://www.pavement.com/PavTech/Research/resdigest/default.asp. IPRF, NCHRP, and other sponsored projects are described in the guide, which also includes most of the projects listed here in this R&T Update.

More detailed information on IPRF research projects is available at http://www.iprf.org. Information about NCHRP and the projects listed here is available on the Cooperative Highway Research Program's website: http://www.nationalacademies.org/trb/crp.nsf. NCHRP Contact: Amir N. Hanna, 202-334-1892, ahanna@nas.edu

American Concrete Pavement Association
5420 Old Orchard Rd.
Suite A100
Skokie, IL 60077
Phone: 847-966-2272
Fax: 847-966-9970
www.pavement.com

Current and Recently Completed NCHRP Research Projects Related to Concrete Pavements

I. Pavement Materials

1. Completed

Project 4-20:	Aggregate Tests Related to Performance of Portland Cement Concrete (Phase I)
Project 4-20A:	Aggregate Tests Related to Performance of Portland Cement Concrete Pavements: State of the Art Report and Plan for Research
Project 4-20B:	Aggregate Tests Related to Performance of Portland Cement Concrete Pavements (Phase I)
Project 4-21:	Appropriate Use of Waste and Recycled Materials in the Transportation Industry (an informational database is available on CRP-CD-5)
Project 4-23:	Aggregate Tests Related to Performance of Unbound Pavement Layers (published as NCHRP Report 453)
Project 18-4A:	Durability of "Early-Opening-To-Traffic" Portland Cement Concrete for Pavement Rehabilitation (Phase I)
Project 18-5:	Relationship of Portland Cement Characteristics to Concrete Durability (will be summarized in NCHRP Research Results Digest 262)
Project 18-9A:	Guidelines for Reducing Premature Deterioration in Hydraulic Cement Concrete Pavements; Background and Research Plan

2. In Progress

Project 4-20C:	Aggregate Tests Related to Performance of Portland Cement Concrete Pavements
Project 18-4B:	Durability of "Early-Opening-To-Traffic" Portland Cement Concrete for Pavement Rehabilitation

3. Anticipated

Project 4-30:	Improved Test Methods for Characterizing Aggregate Shape, Texture, and Angularity
Project 18-10:	Procedures for Evaluating Air-Entraining Admixtures for Highway Concrete.
Project 18-11:	Improved Specifications and Test Protocols for Processing Additions in Cement Manufacturing

II. Pavement Design, Construction, and Rehabilitation

1. Completed

Project 1-29:	Improved Surface Drainage of Pavements (published as NCHRP Web Document 16)
Project 1-31:	Smoothness Specifications for Pavements (published as NCHRP Web Document 1)
Project 1-32:	Systems for Design of Highway Pavements (summarized in NCHRP Research Results Digest 227 and CD-ROM)
Project 1-34:	Performance of Subsurface Pavement Drainage
Project 1-34B:	Effectiveness of Subsurface Drainage for HMA and PCC Pavements
Project 1-36:	Determination of Pavement Damage from Super-Single and Singled-Out Dual Tires: Phase I, completed
Project 1-37:	Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures: (Phase I)
Project 1-38:	Guide on Pavement Rehabilitation strategies (published as NCHRP web Document 35)

Project 10-41: Evaluation of Unbonded Portland Cement Concrete Overlays (Published as NCHRP Report 415)
Project 10-47: Standards for Longitudinal Pavement Profile Measurement (published as NCHRP Report 434 and summarized in NCHRP Research Results Digest 244)
Project 10-50: Strategies for Rehabilitating Rigid Pavements Subjected to High Traffic Volumes: Phase I

2. In Progress

Project 1-34C: Effects of Subsurface Drainage on Performance of Asphalt and Concrete Pavements
Project 1-37A: Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures: Phase II
Project 1-39: Traffic Data Collection, Analysis, and Forecasting for Mechanistic Pavement Design
Project 10-50A: Guidelines for Selecting Strategies for Rehabilitating Rigid Pavements Subjected to High Traffic Volumes
Project 10-56: Accelerated Pavement Testing: Data Guidelines
Project 14-14: Guide for Optimal Timing of Pavement Preventive Maintenance Treatment Applications

III. Pavement Management and Evaluation

Completed

Project 1-33: Methodology to Improve Pavement-Investment Decisions (summarized in NCHRP Research Results Digest 246)
Project 1-35A: Guide for Pavement Management (will be published by AASHTO)
Project 10-44: Nondestructive Testing to Determine In-situ Material Properties of Pavement Layers (Phase I)
Project 10-44A: Determination of In-situ Material Properties of Asphalt Concrete Pavement Layers (will be summarized in an NCHRP Research Results Digest)
Project 10-48: Assessing Pavement Damage Using Deflection Data (summarized in NCHRP Research Results Digest 254)

IV. LTPP Data Analysis

1. Completed

Project 20-50(02): LTPP Data Analysis: Relative Performance of Jointed Plain Concrete Pavements with Sealed and Unsealed Joints (published as NCHRP Web Document 32)
Project 20-50(08/13): LTPP Data Analysis: Factors Affecting Pavement Smoothness (published as NCHRP Web Document 40 and summarized in NCHRP Research Results Digest 264)

2. In Progress

Project 20-50(1): LTPP Data Analysis: Data Availability and Facilitation
Project 20-50(03/04): LTPP Data Analysis: Effectiveness of Maintenance and Rehabilitation Options
Project 20-50(05): LTPP Data Analysis: Variations in Pavement Design Inputs
Project 20-50(07/12): LTPP Data Analysis: Daily and Seasonal Variations in In-situ Material Properties

Project 20-50(09): LTPP Data Analysis: Feasibility of Using FWD Deflection Data to Characterize Pavement Construction Quality

3. Anticipated

Project 20-50(10/16): LTPP Data Analysis: Influence of Design and Construction Features on the Response and Performance of New Flexible and Rigid Pavements

Project 20-50(15): LTPP Data Analysis: Confidence of WIM Axle Load Data

V. LTPP Product Development

1. Completed

Project 20-51(01): LTPP Product Development: Workshop on Pavement Smoothness (will be published as NCHRP Web Document 42)

Project 20-51(02): LTPP Product Development: PCC Pavement Practice Manual and Workshop (published by the FHWA)

2. Anticipated

Project 20-51(03): LTPP Product Development: Pavement Smoothness Specification for Approaches to WIM Equipment Sites

VI. Research for AASHTO Standing Committee on Highways

Completed

Project 20-7, Task 87: Investigate the Need for Research on the Performance of Portland Cement Concrete

Project 20-7, Task 127: Strategic Plan for Pavement Research

VII. Synthesis of Information Related to Highway Problems

Topic 22-12: Truck Operating Characteristics (NCHRP Synthesis 241)
Topic 25-07: Pavement Subsurface Drainage Systems (NCHRP Synthesis 239)
Topic 26-02: Variability in Highway Pavement Construction (NCHRP Synthesis 232)
Topic 26-05: Relationship Between Pavement Surface Texture and Highway Traffic Noise (NCHRP Synthesis 268)
Topic 26-07: Application of Full-Scale Accelerated Pavement Testing (NCHRP Synthesis 235)
Topic 29-08: Measuring In-Situ Mechanical Properties of Pavement Subgrade Soils (NCHRP Synthesis 278)
Topic 30-11: Evaluation of Pavement Friction Characteristics (NCHRP Synthesis 291)
Topic 32-04: Significant Findings from Full-Scale/Accelerated Pavement Testing

More information about NCHRP and the projects listed here is available on the Cooperative Highway Research Program's website: http://www.nationalacademies.org/trb/crp.nsf.

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