

National Cooperative Highway Research Program (NCHRP)

Research for Improved Highway Materials Tests and Specifications

**Report to the AASHTO Highway
Subcommittee on Materials**

Burlington, Vermont

July 31-August 5, 2011

NCHRP- National Cooperative Highway Research Program

One of Six Cooperative Research Programs:

- **Highways: NCHRP-1962-State DOTs-\$40 m.**
- **Transit: TCRP-1992-FTA-\$9 m.**
- **Airports: ACRP-2004-FAA-\$15 m.**
- **Freight: NCFRP-2006- RITA-\$3 m.**
- **HazMat: HMCGRP-2006-PHMSA-\$1 m.**
- **Railroad: NCRRP-2010-FRA-\$5m.**

NCHRP- As AASHTO Program

- **Sponsored by state DOTs and DC**
- **Started in 1962 Annual funding ~ \$40 million/year (voluntary contributions) – 50th Anniversary in 2012**
- **Largest and oldest of 6 research programs managed by TRB's Cooperative Research Programs Division**
- **Research areas include all topics covered by the Subcommittee's 21 Technical Sections**

NCHRP: Goal-Oriented Research

- **Responds to state DOT needs: DOTs and AASHTO committees propose research topics; SCOR selects projects.**
- **Ensures applicability of the results: state DOTs and other sectors of the highway industry participate in monitoring the research.**
- **Results are published by NCHRP (reports, digests, synthesis, CD-ROMs, and Web documents) or by AASHTO (guides/manuals, specifications, and test methods), and often adopted by state DOTs and other organizations.**

Examples of NCHRP Products

- ☺ **AASHTO LRFD Bridge Design specifications**
- ☺ **AASHTO Maintenance Manual for Roadways and Bridges**
- ☺ **AASHTO MEPDG: A Manual of Practice**
- ☺ **AASHTO Guide for Snow and Ice Control**
- ☺ **Highway Safety Manual**
- ☺ **AASHTO Guide for Pavement Friction**
- ☺ **AASHTO Standard Methods of Test**
- ☺ **Precision and Bias Statements**

Projects that Resulted in AASHTO Standard Methods of Test

- ☺ **Aggregate Tests Related to Asphalt Concrete Performance in Pavements (NCHRP Report 405)**
- ☺ **Transverse Cracking in Newly Constructed Bridge Decks (NCHRP Report 380)**
- ☺ **Superpave Support and Performance Model Management (NCHRP Report 547)**
- ☺ **Improved Specifications and Protocols for Acceptance Tests on Processing Additions in Cement Manufacturing (NCHRP Report 607)**
- ☺ **Self-Consolidating Concrete for Precast Prestressed Concrete Bridge Elements (NCHRP Report 628)**
- ☺ **Measuring Tire-Pavement Noise at the Source (NCHRP Report 630)**

Projects that Produced Potential AASHTO Standard Test Methods

- ☺ **Characterizing Aggregate Shape, Texture, and angularity (NCHRP Report 555)**
- ☺ **Air Void Requirements for Superpave Mix Design (NCHRP Report 567)**
- ☺ **Aging of Asphalt Binders in Pavements (Project 9-36)**
- ☺ **Air-Entraining Admixtures for Highway Concrete (NCHRP Report 578)**
- ☺ **Conditioning Procedure for Predicting Moisture Susceptibility (NCHRP Report 569)**
- ☺ **Detectable Warning Systems (NCHRP Report 670)**
- ☺ **Surface Applied Concrete Sealers (Project 20-07/Task 235)**

NCHRP FY 2012 - Summary

Programmed for FY 2012:

- **18 Continuation projects (\$11.390 million)**
- **44 New projects (\$19.880 million)**
- **2 Syntheses (\$0.200 million)**
- **Total 58 projects (\$31.470 million) in 18 problem areas (bridges, maintenance, materials, pavements, etc.)**
- **3 Contingent projects (\$0.800 million)**
- **4 New projects related to materials**

NCHRP FY 2012 Program

	<u>Submitted</u>	<u>Programmed</u>
• Continuations	18 (\$11,980)	18 (\$11,390)
• New Projects	136 (\$56.115)	44 (\$19.880)
• Syntheses		2 (\$0.200)
• Contingent		3 (\$0.800)
• TOTAL	154 (\$68.095)	64 (\$31.470)
• FY 2011 (New)	114 (\$49.941)	40 (\$17.040)

NCHRP Special Projects

- **20-5 Synthesis Program**
- **20-6 Legal Studies**
- **20-7 AASHTO Highways Committee**
- **8-36 AASHTO Planning Committee**
- **25-25 AASHTO Environmental Committee**
- **20-65 AASHTO Public Transportation Committee**
- **20-24 Adm. Of State DOTs (for CEOs)**
- **20-30 NCHRP-IDEA**
- **20-36 International Information Sharing (and Scans)**
- **20-68 US Domestic Scan Program**
- **20-83 Long-Range Strategic Issues**

NCHRP FY 2012 New Projects

Submitted Programmed

• Member Dept.	58	9
• AASHTO Com.	72	35
• FHWA	6	2
• TOTAL	136	46
• SOM	7	3

NCHRP FY 2012 Selected Projects

- ☺ **NCHRP Project 9-51: Characterization of Cold In-Place Recycled and Full Depth Reclamation Materials for Mix and Structural Pavement Design**
- ☺ **NCHRP Project 9-52: Short-Term Laboratory Conditioning of WMA Mixtures for Mix Design and Performance Testing**
- ☺ **NCHRP Project 9-53: Asphalt Foaming Characteristics for Warm Mix Asphalt Applications**
- ☺ **NCHRP Project 10-88: Determining the Influence of Road Surfaces on Vehicle Noise at Locations Adjacent to Roadway: Precision and Bias Statements**

Identification/Selection of Research Projects for NCHRP

- **Problem Statement Sources:**

- AASHTO member departments
- AASHTO Committees/Subcommittees, etc.
- FHWA

(120 to 180 are submitted)

- **Project Selection/Funding:**

- AASHTO Standing Committee on Research (SCOR)

(30 to 40 new projects plus 15-20 continuations are funded)

Review/Selection Process

- Preliminary review by NCHRP and FHWA
- Review/ranking by **Evaluation Panels (Materials, Bridges and Structures, and Traffic and Safety)**, AASHTO committees, industry (pavement projects only), etc.
- Review/rating by AASHTO Research Advisory Committee (RAC) and by AASHTO Standing Committee on Research (SCOR)
- Review/programming by SCOR
- Approval by AASHTO Board of Directors
- Acceptance by the National Academy of Sciences

Evaluation-Panel Process: Materials

- Problem statements related to materials are evaluated by an Evaluation Panel **on behalf the AASHTO Highway Subcommittee on Materials**
- The Evaluation Panel is composed of 10 members of the Subcommittee; includes the Subcommittee Secretary (serving also as FHWA representative)
- Evaluation Panel reviews and categorizes problem statements in terms of priority for research (low-medium-high).
- Evaluation Panel ranks high-priority problem statements.
- Staff provides Evaluation-Panel comments, categorization, and rankings to RAC and SCOR for consideration.

Three Types of NCHRP Projects

(of Interest to the AASHTO Highway Subcommittee on Materials)

- **Research Projects**

Selected by SCOR once/year (March)

- **Research for AASHTO Standing Committee on Highways (20-07 projects/tasks)**

Selected by NCHRP Project Panel SP20-07 twice/year (May and October)

- **Synthesis of Information Related to Highway Problems (20-05 synthesis topics)**

Selected by NCHRP Project Panel SP20-05 once/year (in May).

NCHRP FY 2012 Program

- **March 22-23, 2011: FY 2012 projects selected**
- **April 2011: Program announcement**
- **April 29, 2011: Solicit panel nominees**
- **National Academies acceptance**
- **Panel formation**
- **July-December 2011: 1st and 2nd panel meetings (develop RFPs and select agencies)**
- **February 1, 2012: FY 2012 authorization**
- **February-March 2012: Contracting**

NCHRP FY 2013 Program

- **July 1, 2011: Solicitation of FY 2013 problem statements**
- **Sept. 15, 2011: End date for problem statements**
- **Nov. 17, 2011: Respond to submitters**
- **December 1, 2011: End date for submitter comment**
- **January 3, 2012: Mail candidates to SCOR/RAC**
- **February 20, 2012: SCOR/RAC ballots due**
- **March 7, 2012: Ballot summary report to SCOR**
- **March 20-21, 2012: SCOR meeting/project selection**

More Information on NCHRP Projects Related to Materials

- **A handout (list of current and recently completed projects related to selected materials topics) is available:**
 - **It identifies status of projects (completed, in progress, or anticipated).**
 - **It identifies available publications (reports, digests, web documents, etc.)**
- **Specific information or questions, contact Amir N. Hanna (ahanna@nas.edu/202/334-1432).**

More Information

- **Cooperative Research Programs" (CRP) WWW Homepage**
 - **<http://www.trb.org> NCHRP**
- **Contact: Amir N. Hanna**
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