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: HMCRP-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

<table>
<thead>
<tr>
<th>Category</th>
<th>Submitted</th>
<th>Programmed</th>
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<tbody>
<tr>
<td>Continuations</td>
<td>18 ($11,980)</td>
<td>18 ($11,390)</td>
</tr>
<tr>
<td>New Projects</td>
<td>136 ($56,115)</td>
<td>44 ($19,880)</td>
</tr>
<tr>
<td>Syntheses</td>
<td>2 ($0.200)</td>
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<tr>
<td>Contingent</td>
<td></td>
<td>3 ($0.800)</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>154 ($68,095)</td>
<td>64 ($31,470)</td>
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<tr>
<td>FY 2011 (New)</td>
<td>114 ($49,941)</td>
<td>40 ($17,040)</td>
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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

<table>
<thead>
<tr>
<th></th>
<th>Submitted</th>
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<tr>
<td>Member Dept.</td>
<td>58</td>
<td>9</td>
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<tr>
<td>AASHTO Com.</td>
<td>72</td>
<td>35</td>
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<tr>
<td>FHWA</td>
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<td>2</td>
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<tr>
<td>TOTAL</td>
<td>136</td>
<td>46</td>
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<td>SOM</td>
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<td>3</td>
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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: 1\textsuperscript{st} and 2\textsuperscript{nd} 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
  ahanna@nas.edu
  202/334-1432