National Cooperative Highway Research Program (NCHRP)

Research for Improved Highway Materials Tests and Specifications

August 2007
NCHRP- National Cooperative Highway Research Program

• An AASHTO program sponsored by state DOTs
• Started in 1962
• Annual funding ~ $35 million/year
• Contributes to advancements in all aspects of highways
• 8 fields of research (Administration, Planning, Design, Materials and Construction, Soils and Geology, Maintenance, Traffic, and Special Projects
• 25 Subject areas (includes concrete materials; bituminous materials; general materials; specifications, procedures, and practices)
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.
NCHRP Research Subject Areas

- Research areas include all topics covered by the Subcommittee’s 21 Technical Sections:
  - Soil & Unbound Recycled Materials; Aggregate Materials
  - Asphalts; Asphalt-Aggregate Mixtures
  - Hydraulic Cement and Lime
  - Concrete Materials & Fresh Concrete; Hardened Concrete
  - Rigid Pipe; Flexible and Metallic Pipe
  - Safety Devices
  - Concrete Reinforcement
  - Pavement Measurement Technologies
  - Etc.
Examples of NCHRP Projects (1)

- Completed, Resulted in AASHTO Standards:

  😊 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)
Examples of NCHRP Projects (2)

- Recently Completed NCHRP Projects (Potential for AASHTO Standards)
  - Test Methods for Characterizing Aggregate Shape, Texture, and angularity (NCHRP Report 555)
  - Air Void Requirements for Superpave Mix Design (NCHRP Report 567)
  - Improved Procedure for Laboratory Aging of Asphalt Binders in Pavements (Project 9-34)
  - Procedures for Evaluating Air-Entraining Admixtures for Highway Concrete (NCHRP Report 578)
Examples of NCHRP Projects (3)

• In Progress - Nearing Completion (Potential for AASHTO Standards):

- ☑ Improved Specifications and Protocols for Acceptance Tests on Processing Additions in Cement Manufacturing (Project 18-11)
- ☑ Improved Conditioning Procedure for Predicting Moisture Susceptibility (Project 9-33)
- ☑ Self-Consolidating Concrete for Precast Prestressed Concrete Bridge Elements (NCHRP 18-12)
- ☑ Measuring Tire-Pavement Noise at the Source (Project 1-44)
- ☑ Procedures for Testing and Evaluating Detectable Warning Systems (Project 4-33)
Examples of NCHRP Projects (4)

• In progress:
  ☺ Procedures for Determining the Mixing and Compaction Temperatures of Asphalt Binders in Hot Mix Asphalt (Project 9-39)
  ☺ Mix Design Practices for Warm Asphalt Mix Technologies (Project 9-43)
  ☺ Specifications and Protocols for Acceptance Tests of Fly Ash Used on Highway Concrete (Project 18-13)
  ☺ Testing Protocols for Surface Applied Concrete Sealers (Project 20-07/Task 235)
Examples of NCHRP Projects (5)

• Planned/Anticipated (Selected as Part of the NCHRP FY 2008 Program):

  ☺ NCHRP Project 4-35: Enhanced Test Method for Specific Gravity and Absorption of Coarse and Fine Aggregate
  ☺ NCHRP Project 9-46: Mix Design and Evaluation Procedure for High Reclaimed Asphalt Pavement Content in Hot Mix Asphalt
  ☺ NCHRP Project 9-47: Engineering Properties/Field Performance of Warm Mix Asphalt Technologies
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 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.
## NCHRP FY 2008 Program

<table>
<thead>
<tr>
<th>Category</th>
<th>Submitted</th>
<th>Programmed</th>
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</thead>
<tbody>
<tr>
<td>Continuations</td>
<td>24 ($9.995)</td>
<td>23 ($9.600)</td>
</tr>
<tr>
<td>New Projects</td>
<td>122 ($45.605)</td>
<td>36 ($16.450)</td>
</tr>
<tr>
<td>Other New</td>
<td>5 ($0.830)</td>
<td>5 ($0.830)</td>
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<tr>
<td>TOTAL</td>
<td>146 ($55.555)</td>
<td>64 ($26.880)</td>
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<tr>
<td>Contingent</td>
<td>8 ($2.225)</td>
<td>8 ($2.225)</td>
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<tr>
<td>FY 2007 (New)</td>
<td>188 ($74.772)</td>
<td>54 ($21.050)</td>
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## NCHRP FY 2008 New Projects

<table>
<thead>
<tr>
<th></th>
<th>Submitted</th>
<th>Programmed</th>
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<tbody>
<tr>
<td>Member Dept.</td>
<td>59</td>
<td>16 (27%)</td>
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<tr>
<td>AASHTO Com.</td>
<td>59</td>
<td>24 (41%)</td>
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<tr>
<td>FHWA</td>
<td>4</td>
<td>1 (25%)</td>
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<tr>
<td>TOTAL</td>
<td>122</td>
<td>41 (34%)</td>
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NCHRP FY 2008 Program

- March 25-27, 2008: FY 2008 projects selected
- April 2007: Program announcement
- April 13, 2007: Solicit panel nominees
- National Academies acceptance
- June-July 2007: Panel formation
- July 2007-January 2008: 1st and 2nd panel meetings (develop RFPs and select agencies)
- February 1, 2008: FY 2008 authorization
- February-April 2008: Contracting
NCHRP FY 2009 Program

- July 2, 2007: Solicitation of FY 2009 problem statements
- Sept. 14, 2007: End date for problem statements
- Oct. 31, 2007: Completion of review
- Nov. 16, 2007: Respond to submitters
- December 3, 2007: End date for submitter comment
- January 3, 2008: Mail candidates to SCOR/RAC
- February 19, 2008: SCOR/RAC ballots due
- March 6, 2008: Ballot summary report to SCOR
- March 25-27, 2008: SCOR meeting/project selection
Some NCHRP Continuing Programs

- **Project 20-07**: Research for AASHTO Standing Committee on Highways
- **Project 20-05**: Synthesis of Information Related to Highway Problems
- **Project 20-06**: Legal Problems Arising Out of Highway Programs
More Information on NCHRP Projects related to Maintenance

• 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/202/334-1892).
More Information

• Cooperative Research Programs" (CRP) WWW Homepage

  • http://www.trb.org ........ NCHRP

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