


Research on Pavement Design

AASHTO Committee on Materials and Pavements Subcommittee 5d, Pavement Design

**August 6, 2019
Baltimore, Maryland
(NCHRP Liaison: Amir N. Hanna)**



NCHRP- National Cooperative Highway Research Program

- **A few words about NCHRP**
- **Examples of NCHRP projects on pavement design**
- **Committee dissemination of project findings**
- **Committee/member involvement in NCHRP**
- **NCHRP FY 2020 and 2021 Programs**



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NCHRP- National Cooperative Highway Research Program

- **Part of the Transportation Research Board (TRB)**
- **Part of The National Academies of Sciences, Engineering, and Medicine**
- **Private, non-profit institution**
- **Independent, non-partisan, objective**



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NCHRP- National Cooperative Highway Research Program

- **An AASHTO program sponsored by state DOTs**
- **Started in 1962**
- **Covers all aspects of highways.**
- **Considers problem statements ONLY from AASHTO member departments (individually or through AASHTO committees) and FHWA**
- **Annual funding ~ \$40 million/year**



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NCHRP: Goal-Oriented Research Program

- **Responds to state DOT needs:** Research topics are proposed by state DOTs and AASHTO committees; research projects are selected by the AASHTO R&I Committee.
- **Ensures applicability of the results:** Research is performed by experts in the field and monitored by panel of experts from State DOTs and other sectors of the highway industry.
- **Produces practical, ready-to-use results:** Research products are prepared as guides, manuals, specifications, test methods, tools, etc. for adoption by AASHTO and use by state DOTs and other organizations.



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Examples of Completed NCHRP Projects

Completed:

- **Project 1-52: A Mechanistic-Empirical Model for Top-Down Cracking of Asphalt Pavement Layers (available as NCHRP Web-Only Document 257)**
- **Project 1-53: Proposed Enhancements to Pavement ME Design: Improved Consideration of the Influence of Subgrade and Unbound Layers on Pavement Performance (will be available as NCHRP Web-Only Document 264)**



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Examples of Ongoing NCHRP Projects

In Progress:

- **Project 1-58: Quantifying the Effects of Implements of Husbandry on Pavements**
- **Project 1-59: Proposed Enhancements to Pavement ME Design: Improved Consideration of the Influence of Subgrade Soils Susceptible to Shrink/Swell and/or Frost Heave on Pavement Performance**
- **Project 1-61: Evaluation of Bonded Concrete Overlays on Asphalt Pavements**
- **Project 20-50(20): LTPP Data Analysis: Develop Practical Tools and Procedures to Improve WIM Data Quality**
- **Project 20-50(21): LTPP Data Analysis: Enhancements of Climatic Inputs and Related Models for Pavement ME Using LTPP Climate Tool (MERRA-2)**



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NCHRP Products – Examples

(Products Published by AASHTO)

- **Mechanistic-Empirical Pavement Design Guide - 2015**
- **Pavement Design, Construction, and Management – 2015**
- **Guide for the Local Calibration of the Mechanistic-Empirical Pavement Design Guide – 2010**
- **Guide for Pavement Friction – 2008**
- **Pavement Management Guide – 2012**



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NCHRP Products – Role of COMP

(Facilitating Dissemination/Implementation)

Help disseminate research findings/products:

- **Identify products useful to pavement engineers:**
 - **Recommend publication as AASHTO Guide, Manual, etc.**
 - **Encourage dissemination/use through workshops, webinars, etc.**

Resources Available for:

- **Assistance with the publication process**
- **Webinars, demos, workshops, etc.**
- **Training**
- **Briefing materials**



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Committee/Member Involvement

- **Suggest research topics:** Submit Problem Statements for research projects, synthesis reports, activities in Support for AASHTO Committees and Councils (20-123), U.S. Domestic Scan Program (20-68), etc.
- **Serve on panels** for research projects, synthesis, etc.
- **Assist with research activities:** Provide case studies and data, complete surveys, etc.
- **Implement Research Results:** Identify relevant projects, recommend for AASHTO publication, recommend/participate in webinars, consider implementation activities (20-44): webinars, workshops, training, etc.



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NCHRP FY 2020 - Summary

- **11 Continuation projects (\$7.740 million)**
 - 6 Special projects (\$5.120 million)
 - 5 Continuation projects (\$2.620 million)
- **58 New projects (\$25.590 million) – includes 2 syntheses**

Total 69 projects (\$33.330 million) in about 20 problem areas (bridges, maintenance, materials, pavements, traffic, security, safety, etc.)



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NCHRP Special Projects

- **20-05 Synthesis Program (\$765,000)**
- **20-06 Legal Studies (\$350,000)**
- **20-24 Administration of State DOTs (\$1,250,000)**
- **20-30 NCHRP-IDEA (\$950,000)**
- **20-68 US Domestic Scan Program (\$1,200,000)**
- **20-123 Support for AASHTO Committees and Councils (\$605,000)**



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NCHRP FY 2020 Program

	<u>Submitted</u>	<u>Programmed</u>
• Continuations	13 (\$10.060)	11 (\$7.740)
• New Projects	114 (\$46.130)	58 (\$25.590)
• TOTAL	127 (\$56,190)	69 (\$33.330)
• FY 2019	124 (\$54.709)	64 (\$34.429)



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NCHRP FY 2020 New Projects

	<u>Submitted</u>	<u>Programmed</u>
• Member Dept.	34 (\$14.025)	11 (\$5.045)
• AASHTO Com.	77 (\$31.105)	46 (\$20.195)
• FHWA	3 (\$1.000)	1 (0.350)
• TOTAL	114 (\$46.130)	58 (\$25.590)
• COMP	4	4



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NCHRP FY 2020 Program

- **April 9-10, 2019: FY 2020 projects selected**
- **May 9, 2019: Program announcement**
- **May 9, 2019: Solicit panel nominees (closed June 17, 2019)**
- **July-September 2019: Panel formation**
- **September-December 2019: 1st panel meetings (develop RFPs)**
- **December 2019-January 2020: 2nd panel meetings (select contractors)**
- **March-May 2020: Contracting**



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NCHRP FY 2021 Program

- **July 15, 2019: Solicitation of FY 2021 problem statements**
- **Nov. 1, 2019: End date for problem statements – New template**
 - **NCHRP & FHWA review**
 - **Review to submitter/submitter comment**
 - **Problem statements to R&I Committee and RAC for comment and ratings**
 - **Summary report with R&I/RAC comments and rating, and overall rankings to R&I.**
- **April 14-15, 2020: R&I Committee meeting/project selection**



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More Information

NCHRP: Advancing transportation and meeting states' needs for more than half a century

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