

Overview of NCHRP and Pooled Fund Research Programs AASHTO Subcommittee on Design

Background

The National Cooperative Highway Research Program (NCHRP) was created in 1962 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 of the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with the Federal Highway Administration (FHWA).

The State DOTs fund NCHRP on a voluntary basis through their Federal-Aid Highway apportionment of State Planning and Research (SP&R) funds. Each state's allocation amounts to 5½ percent of its SP&R apportionment.

AASHTO committees provide NCHRP project selection committees with critical advice in deciding the direction of the research program and determining which projects should be funded. As such, research proposals submitted by AASHTO committees carry more weight with the selection committees than those submitted by individuals or researchers. The members of the Subcommittee on Design can play a critical role in the development of a more effective transportation program by participating on research panels and representing the voice of the design program.

The Subcommittee's Role

The Subcommittee on Design and its technical committees are responsible for preparing research proposals and reviewing ongoing research in their area of expertise. The Chair of each AASHTO committee must ensure that their research proposals are submitted by the deadline of each specific research program. After the proposals have been submitted, NCHRP sends out requests to TRB, AASHTO, and FHWA for comments and rankings. Depending on the program, the group that decides which projects receive funding may be the AASHTO Standing Committee on Research, the Standing Committee on Highways, or an NCHRP panel that has been set up to review the proposals.

Panels of experts from public agencies, private industry, and academia direct the research projects that are funded, and panel members may be nominated from the AASHTO committees or from individual states. The goal of each panel is to have a diverse group of knowledgeable persons to guide the research and to ensure that usable products are developed as a result.

There are 6 research programs that are of interest to the AASHTO Subcommittee on Design:

- NCHRP Research Program
- NCHRP 20-5 Synthesis Program
- NCHRP 20-7 Program
- Transportation Pooled Fund Program
- International Scanning Program (NCHRP Project 20-36)
- AASHTO Domestic Scan Program (NCHRP Project 20-68)

These programs are discussed in more detail on the following pages.

NCHRP Research Program

The National Cooperative Highway Research Program (NCHRP) is an applied, contract-research program that develops near-term, practical solutions to problems facing transportation agencies.

The AASHTO Standing Committee on Research (SCOR) solicits research needs statements annually from three authorized sources:

1. CEOs of the AASHTO member highway and transportation departments
2. Chairs of AASHTO's committees and subcommittees
3. Federal Highway Administrator

On receipt, evaluations are performed by FHWA and NCHRP. These evaluations are sent to submitters in mid-November, and submitters have until early-December to comment on the evaluations or withdraw the proposed research needs statement. The NCHRP is also experimenting with evaluation panels for some of the more popular subject areas, such as bridges, materials, and traffic and safety. In these cases, the collective thoughts of the panel are conveyed back to the submitter instead of the FHWA and NCHRP evaluations.

Submitters are strongly encouraged to do a literature search before submitting new research proposals to make sure the problem hasn't already been solved or isn't being studied. TRB's Transportation Research Information Services (TRIS) system is now freely available as TRIS Online at <http://ntl.bts.gov/tris/> and Research in Progress can be found at <http://rip.trb.org/search/>.

SCOR meets annually in late March to determine which new problem submittals should be programmed and which completed or ongoing projects should receive additional funding for further work, based on the available funding for the given fiscal year. An Announcement of Research Projects is prepared each year in April, which details the preliminary scopes of work that will be considered in requests for proposals.

Research proposals are due to TRB, nchrp@nas.edu, by **September 15** each year.

The web site for this program is: <http://www.trb.org/crp/nchrp/nchrp.asp>. The full list of NCHRP projects may be found at: <http://www.trb.org/CRP/NCHRP/NCHRPProjects.asp>. Detailed information on preparing research proposals is at: <http://www.trb.org/NotesDocs/ProposalPrep.pdf>.

NCHRP Synthesis Program (NCHRP Project 20-5)

NCHRP Project 20-5, *Synthesis of Information Related to Highway Problems*, searches out and synthesizes useful knowledge from all available sources and prepares concise reports on specific topics. These reports provide current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures that have been found to be the most successful in resolving specific problems.

Projects are selected on the basis of:

- addressing problems that are widespread enough to generate broad interest
- timeliness and criticality with respect to safety, economic, or social impact
- appropriateness if current practice is non-uniform or inconsistent from agency to agency, or if the validity of some practices appears to be questionable
- quality and quantity of useful available information, indicative of the need to organize and compress that which has already been learned and written on the topic

- non-redundant to previous or ongoing research and work that might render the results to be obsolete

Synthesis proposals are due to TRB, JWilliams@nas.edu, by **January 31** each year. The web site for this program is located at: <http://www.trb.org/Studies/Synthesis/Syntheses.asp>

NCHRP Project 20-7

NCHRP Project 20-7, *Research for the AASHTO Standing Committee on Highways (SCOH)*, provides SCOH with a means to conduct research needed by the Committee and its subcommittees to fulfill their responsibilities. Research projects are conducted as “tasks” under the 20-7 project number as the Committee approves work. Research completed under Project 20-7 is conducted for the requesting subcommittee of SCOH.

Research results from this program are not published by NCHRP, but are instead furnished directly to the requesting subcommittee for its use in furthering committee business. The requesting subcommittee has the option to publish the research results, as-is or edited/reformatted, through AASHTO if they so choose.

The NCHRP 20-7 panel meets twice a year during the AASHTO Spring and Annual Meetings. Research proposals are due **two weeks prior to the AASHTO Spring and Annual Meetings**. Late submissions *may* be accepted by the selection panel if there is a compelling reason for the delay. Proposals should be submitted online at: <http://www.transportation1.org/nchrp/20-7/>.

More information on the NCHRP 20-7 program may be found at: <http://www.transportation1.org/nchrp/20-7/>. The TRB web site for this program is: <http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=509>.

Transportation Pooled Fund Program

The Federal Highway Administration (FHWA) sponsors the Transportation Pooled Fund Program (TPF) as a means for interested States, FHWA, and other organizations to partner when significant or widespread interest is shown in solving transportation-related problems. Partners may pool funds and other resources to solve these problems through research, planning, and technology transfer activities.

Federal and state transportation agencies may initiate pooled fund studies. Local and regional transportation agencies, private industry, foundations, and colleges/universities may partner with any or all of the sponsoring agencies to conduct pooled fund projects; however, TPF studies must be sponsored by either a State DOT or the FHWA. Within each State DOT and the FHWA, specified individuals (typically the AASHTO Research Advisory Committee member) are authorized to post solicitations on the TPF website, www.pooledfund.org.

Once established, State-led pooled fund studies are usually conducted under contracts awarded in accordance with State acquisition regulations and managed by the lead State. States also have the option of asking TRB to administer a study for them. With regard to FHWA-led studies, Federal acquisition regulations will apply, which include considering proposals through a competitive process before selecting a research contractor to conduct the pooled fund study.

Proposed pooled fund projects may be submitted at any time. AASHTO committees act as a resource to solicit support for pooled fund projects.

The web site for this program is: <http://www.pooledfund.org/>

International Technology Scanning Program (NCHRP Project 20-36)

The International Scan Program is undertaken jointly by AASHTO (through its Special Committee on International Activity Coordination), FHWA (through its Office of International Programs), and NCHRP (through the 20-36 project panel). This program sponsors scans of 8 to 12 representatives, selected from the states, FHWA, academia, and industry, to visit several countries over a two-week period to learn about the newest technologies and practices. The countries visited are those that have made significant advances or implemented innovations in a specific topic area, such as the various engineering disciplines, management practices, organizational structure, program delivery, and/or financing. Priority topic areas are jointly determined by FHWA, AASHTO, and their partners.

The scans help the U.S. transportation community learn from the successes and failures of other countries, avoid duplicative research and development, and accelerate improvements to our transportation facilities. Scans may be followed up with further research or pilot/demonstration projects to verify the adaptability of the findings to the United States. Information about the scan findings and results of pilot programs are then disseminated throughout the country to State and local highway transportation officials and the private sector for implementation.

Scan Proposal Submissions:

Scans may be proposed by FHWA, AASHTO, and indirectly by NCHRP Project Panel 20-36 "Highway Research and Technology - International Information Sharing," as detailed below:

FHWA - Scan proposals may be submitted by FHWA Program Offices and the FHWA Resource Center. Proposals originating from other offices (i.e. Division Offices) must be channeled through a Program Office or the Resource Center. FHWA offices that submit scan proposals should plan on funding 25% of the total cost of their scan, if it is selected. Proposals may be submitted jointly by two or more Program Offices or by the Resource Centers and a Program Office(s) – i.e. crosscutting scan topics.

AASHTO - Scan proposals may be submitted by any AASHTO Committee or Subcommittee dealing with road transportation. Proposals may be submitted jointly by two or more AASHTO committees or subcommittees - i.e. cross-cutting scan topics.

NCHRP Project Panel 20-36 - Other non-AASHTO or FHWA scan proposals (such as transportation industry associations or academia) may be submitted to NCHRP Project Panel 20-36 (please contact Nanda Srinivasan at: nsrinivasan@nas.edu). Project Panel 20-36 will evaluate such proposals and forward promising ones to the relevant AASHTO Committee for consideration in preparing scan proposals.

Scan proposals are due to FHWA by **September 30** each year. The web site for this program is: <http://international.fhwa.dot.gov/scan/>

Scan Selection Criteria:

Scan proposals will be reviewed, evaluated and selected by a joint panel of FHWA, AASHTO and NCHRP representatives. The following criteria will guide the selection process:

- Does the proposed scan address FHWA and AASHTO strategic goals?
- Is the proposed scan timely and of nation-wide importance?
- Does the proposed scan have the potential to produce technologies and/or practices that the U.S. highway community could adopt/adapt?
- Does the proposal identify the key countries, including specific projects or programs, which have

made the most significant advances and/or have had the most experience in the topic to be studied?

- Are similar efforts already underway or potentially duplicative?
- Has the proposed topic already been addressed on previous scans?

AASHTO Domestic Scan Program (NCHRP Project 20-68)

The Domestic Scan Program is similar to the International Scan Program except that the tour covers sites in the US. Topics are selected by the NCHRP 20-68 project panel based on the following criteria:

- interest to a broad national spectrum of people and agencies
- complexity and hands-on topics that lend themselves to exploration by on-site visits
- limit in focus to a few key items/issues due to the limited time available on the tour
- non-redundant to previous or ongoing research or work
- variety that will appeal to a broad constituency across functional areas

Scan proposals are due to AASHTO headquarters in the **fall** of each year. Further details of the program are located on TRB's web site: <http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1570>

Attachments

NCHRP Research Statement Form

NCHRP Project 20-5 Synthesis Statement Form

NCHRP Project 20-7 Guidelines for Allocating Research Funds

International Scan Proposal Form

AASHTO Domestic Scan Proposal Form

AASHTO Standing Committee on Research American Association of State Highway and Transportation Officials

NCHRP Problem Statement Outline

I. PROBLEM NUMBER

To be assigned by NCHRP staff.

II. PROBLEM TITLE

A suggested title, in as few words as possible.

III. RESEARCH PROBLEM STATEMENT

A description of the problem or need—one or more paragraphs explaining the reason for research. Be explicit about how the intended research product will be used and by whom.

IV. LITERATURE SEARCH SUMMARY

The problem submitter is strongly encouraged to conduct a literature search in order to avoid duplication with other current or past research. At a minimum, searches should be conducted on TRIS online (<http://ntl.bts.gov/tris>) and the Research In Progress database (<http://rip.trb.org/search>). If you are not comfortable conducting the search yourself, you can contact your local transportation library or the TRB Library (202/334-2990 or bpost@nas.edu) and ask them to conduct the search for you. If a search is performed, please describe how your proposal differs from the existing body of research found in the literature review. If no search is performed, please comment on why it was not needed.

V. RESEARCH OBJECTIVE

A statement of the specific research objective, defined in terms of the expected final product, that relates to the general problem statement in III above. Define specific tasks necessary to achieve the objective.

VI. ESTIMATE OF PROBLEM FUNDING AND RESEARCH PERIOD

Recommended Funding:

An estimate of the funds necessary to accomplish the objectives stated in V above. As a general guideline, the present cost for research usually averages about \$200,000 for 100 percent of a professional employee's time per year. This figure represents a fully loaded, professional rate that would include an individual's direct salary and benefits and an agency's overhead or indirect costs. Average rates for supporting staff might be approximately one-half those of professionals. Depending on the type of research, the estimate should be modified for any unique expenses such as the purchase of materials, extensive physical testing or computer time, and extraordinary travel.

(Note: This estimate may be changed by the AASHTO Standing Committee on Research.)

Research Period:

An estimate of the number of months of research effort, including three months for preparation of a draft final report, necessary to the accomplishment of the objectives in V above.

(Note: This estimate may be changed by the AASHTO Standing Committee on Research.)

VII. URGENCY, PAYOFF POTENTIAL, AND IMPLEMENTATION

Statements about the urgency of this research and the potential payoff (couched in benefit/cost terms if at all possible) from achievement of project objectives should be given.

A statement should be included that further describes the anticipated product(s) from the research (e.g., recommended specification language, new instrumentation, or recommended test methods). The anticipated steps necessary for implementation of the research product should also be delineated (e.g., Will recommended specification language be considered for adoption by a committee within AASHTO? Will an industry group have to adopt a new test method or revise their current practices or equipment?). This information should be as specific as possible, noting particular documents that may be affected, or techniques or equipment that may be made obsolete. Any institutional or political barriers to implementation of the anticipated research products should also be identified.

VIII. PERSON(S) DEVELOPING THE PROBLEM

A statement of the specifics (name, title, affiliation, address, telephone number, e-mail address) of the person(s) having developed the problem in all its detail.

IX. PROBLEM MONITOR

A statement of the specifics (name, title, affiliation, address, telephone number, e-mail address) of the person who will be assigned by the Administrator or Committee submitting this problem to monitor the research, if programmed, from inception to completion. The monitor's final responsibility will entail recommendations to the Standing Committee on Research as to how the research results could be implemented.

X. DATE AND SUBMITTED BY

Show date of submission and by whom problem is submitted.

Please submit completed problem statement to the following e-mail address:

nchrp@nas.edu

Questions on the process can be directed to the same address or cjencks@nas.edu

NCHRP 20-5 Synthesis Statement Form

Note: *Guidelines for Synthesis Statement Format in Italics*
Example of Proposed Synthesis Statement in Plain Font

Title:

Preferably ten words or less

Quality Assurance of Structural Materials

Submitted by:

Name and affiliation of submitter

John Doe, XDOT

Scope:

This statement should be brief (i.e., one or two paragraphs), but there is no limit on length. However, one-page write-ups for each recommended synthesis topic are preferred. The scope statement should describe the problem and identify the parts to be covered by the synthesis. The proposed research should be able to be accomplished in approximately 400 hours of professional time. In developing the scope of work, please note that the purpose of the synthesis series is to report on various practices in the highway or transit areas, making specific recommendations where appropriate but without the detailed directions usually found in handbooks or design manuals. For each topic, the project objectives are:

- (1) to locate and assemble documented information;*
- (2) to learn what practice has been used for solving or alleviating the problems;*
- (3) to identify all ongoing research;*
- (4) to learn what problems remain largely unsolved; and*
- (5) to organize, evaluate, and document the useful information that is acquired.*

The strategies employed by effective quality assurance (QA) programs include training and certification, statistical measures of conformance, pay adjustment factors, contractor quality control (QC) and performance-based specifications. While there is a growing body of experience showing that these strategies work well for highway construction materials, there is concern that some may be misapplied to critical components of structural work. For purposes of this proposal, structural materials are defined as any materials used in an engineered structure whose premature or unplanned failure may pose a threat to public safety. Examples include structural steel girders, structural concrete, and reinforcing bars. These materials merit the highest levels of quality assurance available. Deficiencies in their quality cannot be tolerated and are not easily corrected.

It is proposed that a synthesis be made covering the experiences of transportation agencies and other construction industries, both foreign and domestic, in the application of quality assurance strategies to structural materials. The synthesis will identify QA practices that have proven effective for structural materials, as well as those that have not. It will serve as a guide to states revising the QC/QA provisions of their structural materials specifications.

Information Sources (optional):

Organizations, individuals, or literature references

American Society of Civil Engineer's Manual on Quality in the Constructed Product, American Welding Society, American Society of Nondestructive Testing

NCHRP Project 20-7
Research for the AASHTO Standing Committee on Highways

GUIDELINES FOR ALLOCATING RESEARCH FUNDS

Tasks conducted under NCHRP Project 20-7 must be:

1. Requested by an AASHTO committee or task force
2. Directed at a research need
 - usually involving technical issues
 - not purely editorial
 - usually developing a new product or substantially upgrading an existing item;
 - not to support travel to attend conferences
 - to develop technical or other intellectual content - not to support publication, production, or distribution
3. Expected to produce results for use directly by an AASHTO committee or task force with widespread benefit throughout the highway community
4. Able to be supported using available Project 20-7 funds
5. Beyond the capabilities or resources of the AASHTO committee or task force
6. Small or moderate in scale
 - less than \$100,000
 - usually \$25,000 to \$50,000
7. Short in duration
 - usually able to be completed in less than 12 months
 - not a continuing operational activity
8. Urgent
 - ready to begin now
 - not able to wait for regular NCHRP research
9. Not inappropriate for the full NCHRP program (administered by the National Research Council's Transportation Research Board)
10. Approved by NCHRP Project Panel SP20-7
11. Approved by the AASHTO Standing Committee on Highways

To submit a proposal, send NCHRP a one-page project description (title, needs statement, project objective, funds needed) from the Subcommittee Chair. The deadline for the submission is usually two weeks prior to the AASHTO Spring and Annual Meetings. Proposals may be submitted online at: <http://www.transportation1.org/nchrp/20-7/> or sent to cjencks@nas.edu.

Note: Funds allocated for tasks under NCHRP Project 20-7 are used to support panel members' travel expenses to meetings of the panel responsible for each task and to support travel by selected individuals participating at working sessions that are convened by the task panel. Funds from Project 20-7 are not used to pay travel expenses for individuals attending meetings organized by AASHTO, TRB, or others.

FY 2010 International Scan Proposal Form

Date of Submission
Proposing FHWA Office(s) or AASHTO Committee(s)
Proposal Contact Information Name Title Address E-mail Telephone Number
Title of Proposed Scan
Scan Purpose (What topic is to be examined? What drives the need for the scan? Why now?)
Alignment with FHWA and AASHTO strategic goals (Please discuss how the proposed scan fits into FHWA and AASHTO strategic goals.)
Scan Objectives (What specific subject areas are to be examined? What key information is to be obtained? How will this information be shared after the scan? Who would the audience be for this information?)
Literature Survey (Please include literature/references identifying the countries, including specific international projects and/or programs, that offer the most experience and information on this topic.)
Expected Benefits from Scan (Please include potential impacts on current technology and/or practice.)

Online form available at:

<http://international.fhwa.dot.gov/scan/2010/proposal.cfm>

AASHTO Domestic Scan Proposal Form

AASHTO is soliciting topic proposals for a US Domestic Scan Program, loosely modeled after the existing FHWA/AASHTO/NCHRP International Technology Scanning Program. Each selected scan topic will be investigated through site visits to three to six locations over a one or two week period, conducted by a group of eight to 12 transportation professionals with expertise in the selected topic area. Proposed topics should meet the following criteria:

- Address an important and timely need for information by transportation agencies
- Are of interest to a broad national spectrum of people and agencies
- Are complex and also “hands-on,” meaning they lend themselves particularly well to exploration through on-site visits
- Are sufficiently focused that the tour participants are able to investigate and understand key issues in the limited time available on the tour

Proposals should be submitted online to AASHTO.

Proposal Contact Information Name: Title: Address: E-mail: Telephone number: Date of submission:
Title of Proposed Scan
Problem Statement (What topic is to be examined? What drives the need for the scan? Why now?)
Scan Scope (What specific subject areas are to be examined? Which cities and states might be visited? Which agencies/organizations (including specific departments or types of staff if applicable)?
Scan Objectives (What key information is to be gained? What information is to be shared after the scan? Who would the audience be for this information?)
Benefits Expected (Include potential impacts on current technology or procedures)