

TranScan

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NCHRP Project 20-36 • Highway Research and Technology—International Information Sharing

Your Link to Innovations Worldwide

Welcome to the first issue of *TranScan*, which reports news and information on highway research and technologies from outside the United States. The newsletter is published as part of NCHRP Project 20-36, Highway Research and Technology—International Information Sharing.

Project 20-36 was established by AASHTO in recognition of the benefits to be gained from sharing information on research and technology among transportation agencies worldwide. To make such exchanges possible, the project supports the participation of professionals from state departments of transportation in international scanning tours and conferences. NCHRP funding for the project is provided by the member departments of the American Association of State Highway and Transportation Officials. These tours and conferences yield a wealth of information that can be used to improve the safety, durability, reliability, and efficiency of the U.S. highway system.

The project also provides opportunities for state highway agency personnel to participate in World Road Association (PIARC) and International Road Federation committees, giving them a broader understanding of research and technologies that may have application in the United States. The project

has also provided funds for experts from other countries to present papers at U.S. conferences.

TranScan is thus designed to serve as a means of sharing this newly acquired knowledge and information with a larger audience of professionals involved in planning, designing, constructing, operating, maintaining, and managing highways in the United States.

An NCHRP panel determines the types of activities to be supported by Project 20-36 and establishes guidelines for their implementation. The panel is currently composed of the following individuals:

Byron Blaschke, Texas Transportation Institute
Carol Cutshall, Wisconsin Department of Transportation
Robert Ford, Federal Highway Administration
Francis B. Francois, American Association of State Highway and Transportation Officials
Merritt Linzie, Minnesota Department of Transportation
Martin Pietz, Washington State Department of Transportation
Richard Robertson, International Road Federation
Peter Ruane, American Road and Transportation Builders Association
Michael Walton, University of Texas at Austin
Tom Werner, New York State Department of Transportation
Robert White, Consultant
Ray Griffith, FHWA liaison
James Wentworth, FHWA liaison
Robert Spicher, Transportation Research Board liaison
Edward Harrigan, NCHRP staff

To be added to the mailing list for *TranScan*, please send your request to Ed Harrigan, NCHRP-TRB, 2101 Constitution Ave., N.W., Washington, DC 20418 (email: eharriga@nas.edu). The newsletter is also available through the Internet (www2.nas.edu/trbcprp).

— Byron Blaschke
Chairman
NCHRP Project Panel SP20-36

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Highlights of Recent Activities

Committee on Earthworks, Drainage, and Subgrade

In April 1997, the Technical Committee on Earthworks, Drainage, and Subgrade (C12) of the World Road Association (PIARC) met in Delft, the Netherlands. Edward Hoppe, research scientist at the Virginia Transportation Research Council, participated in the meeting with support from Project 20-36.

The committee had selected six study areas for 1996-1999. Here's a summary of progress to date, based on Hoppe's trip report.

1—Design and Construction of Embankments. The committee is surveying highway agencies on their requirements and methods for reducing the impact of road projects on the environment. The results will be available later this year, and a summary article will be prepared for PIARC's magazine, *Routes/Roads*. Responses to a survey on the pathologies of road embankments are being analyzed.



Sheetpiles being installed for canal wall maintenance in Delft, the Netherlands.

2—Techniques for Motorway Widening. The committee found that most countries do not have an established code for dealing with road-widening projects. The preliminary report, which is aimed at a general audience, describes various retaining systems, with an emphasis on reinforced earth and soil nailing techniques.

3—Ground Improvement. Case histories on soft soil improvement projects are being collected for inclusion in the report, which is expected to be completed this fall. The report will also include data from a lime treatment guide recently published in France.

4—Embankments with Waste Materials. A work proposal is being developed.



Ventura Escario, C12 chairman; Richard Cheney, C12 secretary; and A.C. Maagdenburg inspect Port of Rotterdam's storm surge barrier.

A literature review will be conducted to determine which recycled byproducts should be covered in the report.

5—Water Movements. A survey on inspection and maintenance procedures for subsurface drains was distributed in summer 1997. An International Symposium on Subdrainage in Roadway Pavements and Subgrades will be held November 11-13, 1998, in Grenada, Spain. The findings from the survey will be presented at the Symposium.

6—Risk Management of Slopes. A survey on risk management practices, monitoring techniques, and databases is being developed.

Two committee reports—*Lightweight Filling Materials and Landslides: Techniques for Evaluating Hazards*—were recently published and are available from PIARC.

For more information on Committee C12, contact the Committee Secretary: Richard Cheney, Hydraulics and Geotechnical Branch, FHWA, HNG-31, 400 Seventh St., SW, Washington DC 20590; telephone: 202-366-1568; fax: 202-366-9981; email: richard.cheney@fhwa.dot.gov.

For more information on PIARC, visit its Web site (www.piarc.inrets.fr).

Great Belt Project

The TRB 76th Annual Meeting included two sessions on the Great Belt Project in Denmark, which is one of this century's largest infrastructure projects. The 17.5-km (10.9-mi) project consists of a tunnel for railway traffic, a suspension bridge with a 1,624-m (5,328-ft) main span to carry vehicular traffic across the Eastern Channel to the is-

land of Sprogo, and parallel road and railway bridges from Sprogo across the Western Channel. The project is a key element in a project that will eventually connect Denmark with Germany and Sweden.

The presentations were made possible by Project 20-36, which provided travel funds for four experts from Denmark.

Tapes of the presentations (Sessions 142 and 172) are available from Caset Associates, 1-800-545-5583 (fax: 703-591-2804).

International Winter Maintenance Technology Scanning Tour

In March 1994, FHWA's International Outreach Program and Project 20-36 jointly sponsored a scanning tour to examine snow and ice control operations in Japan and Europe and to determine if the technology had potential application in the United States.

The participants found that the technologies and practices commonly used in Europe and Japan were superior to those commonly used in the United States, particularly with regard to equipment, anti-icing operations, road weather information systems, weather forecasting services, public information systems, and policy and environmental issues.

Many of the studied technologies could improve winter maintenance on U.S. roads and yield cost savings. But U.S. agencies will not adopt these technologies without the results from a program of rigorous testing and evaluation under environmental and operational settings that match local conditions. A major hurdle to such testing and evaluation, and ultimately implementation, is the lack of both a designated center to coordinate the evaluations and an established evaluation process.

The tour participants recommended that a winter maintenance program be developed to overcome that hurdle. Such a program would provide a means of identifying and evaluating promising foreign and domestic technologies and prac-

tices and would help speed the adoption of those technologies found to be cost-effective. Their recommendation ultimately led to the establishment of the AASHTO Snow and Ice Cooperative Pooled-Fund Program (SICOP) and NCHRP Project 20-7(83), which is aimed at developing a comprehensive guide for snow and ice control.

The tour participants proposed seven initial projects for evaluation:

- rear-delivery snow blowers
- innovative snowplows and accessories
- finer-graded sodium chloride and corresponding equipment for pretreated solutions
- road user information centers
- natural hazards mitigation project
- fixed snow and ice control liquid spray systems
- global technical information exchange

NCHRP Research Results Digest 204, *Winter Maintenance Technology and Practices—Learning from Abroad*, summarizes the findings and recommendations of the winter maintenance technology scanning review. The report is available from the TRB Business Office (telephone: 202-334-3214; fax: 202-334-2519).

Scanning Review of European Bridge Structures

To gain a broad overview of bridge technology and practices in Europe and to identify those that merit further consideration, a Scanning Review of European Bridge Structures Technology was conducted in 1995. Five European countries—Denmark, Germany, Switzerland, France, and the United Kingdom—were visited by representatives from state highway agencies and FHWA and by individuals in the private sector and academia. The review focused in the areas of policy, administration, and management; design philosophies and methods; materials; production and fabrication; bridge management systems; and maintenance.

Based on their observations, the panel members recommend:

- A study be conducted to evaluate U.S. and European project-delivery systems
- European practices designed to emphasize quality, durability, and aesthetics during all stages of bridge engineering and construction be investigated
- Practices to encourage the sharing of responsibility for “proof of concept” be adopted
- A study be conducted to evaluate U.S. and European deck waterproofing systems
- Bridge owners be encouraged to increase funding for routine maintenance
- The AASHTO Highway Subcommittee on Bridges develop rating specifications that reflect the latest design specifications
- A study be conducted to reevaluate European-style contractor warranties
- An informational package promoting public awareness of how bridge and highway investment benefits the United States be developed
- The AASHTO Highway Subcommittee on Bridges and Structures review, and participate in developing, the Eurocode for concrete structures

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Abbreviation Key:

AASHTO	American Association of State Highway and Transportation Officials
FHWA	Federal Highway Administration
NCHRP	National Cooperative Highway Research Program
PIARC	World Road Association (formerly Permanent International Association of Road Congresses)
TRB	Transportation Research Board

AASHTO Establishes Committee to Coordinate International Activities

Although membership in the American Association of State Highway and Transportation Officials is predominantly composed of transportation departments within the United States, the Association has long realized that innovations and good practices know no borders—that there is much to be gained from sharing information and experiences with other countries. In light of that, the AASHTO Board of Directors recently authorized establishment of a Special Committee on International Activity Coordination.

The Committee, which will report to the Standing Committee on Highways, is charged with several responsibilities:

- Maintaining an overview of ongoing and planned international activities involving AASHTO and its member departments
- Advising the panel for NCHRP Project 20-36, as well as other TRB panels and committees concerned with international matters, on the views of AASHTO and its committees
- Advising and, where appropriate, cooperating with the Federal Highway Administration and other agencies of the U.S. Department of Transportation on international program activities
- Encouraging and guiding the transfer of technology and information from other countries to the member departments and committees of AASHTO
- Facilitating the cooperation and involvement of other organizations in international activities

- Advising on the selection of AASHTO representatives on the committees of the World Road Association and other international organizations
- Advising the AASHTO Executive Director on the international activities of the organization.

The Special Committee will be headed by a chairperson, vice-chairperson, and secretary appointed by the AASHTO president. Committee members will be drawn from the Standing Committee on Highways and its subcommittees, as well as other standing committees of the association.

Over the past decade, AASHTO has increasingly strengthened its participation in international organizations and activities. The impetus for this came from an AASHTO Resolution passed in 1985 (AR-6-85, "Policy on the International Involvement of AASHTO"), which reads, in part:

There would be mutual benefit to both the Member Departments of AASHTO and their counterparts in other nations in a continuing effort to foster greater communication and exchange of technical and other information. Activity of the Association internationally would help AASHTO accomplish its stated purpose of fostering the development, operation, and maintenance of a nationwide integrated transportation system.

That resolution also led to the establishment of, and ongoing support for, NCHRP Project 20-36.

For more information, contact AASHTO (telephone: 202-624-5800; fax: 202-624-5806). ❀

In the Pipeline

Twelve AASHTO representatives participated in the **XIIIth World Meeting of the International Road Federation (IRF)** in Toronto, Ontario, in June 1997. The IRF is dedicated to encouraging the improvement of road and transportation systems worldwide and to giving nations the greatest possible economic and social returns on their roadway infrastructure investments.

Two scanning tours have been held this fall. **The Scanning Tour on Transportation Agency Organization and Management** (August 23-September 7, 1997) was sponsored by FHWA, AASHTO, and industry. The tour was led by Frank Francois, executive director of AASHTO, and Dave Gendell, administrator for FHWA Region 3. It included meetings with transport agencies in New Zealand, Australia, Sweden, and England.

The Scanning Tour on Bridges and Structures (September 12-28, 1997) was a follow-up to the bridges and structures scanning tour held in 1995. Participants examined bridge technologies and practices in Japan, Korea, and Taiwan. Tour leaders were Charles Chambers (FHWA) and James Siebels (Colorado DOT).

The **Winter Maintenance II** scanning tour will be jointly sponsored by FHWA and NCHRP. The tour will include the PIARC Winter Maintenance Congress to be held in Lulea, Sweden, in March 1998. ❀

FHWA's Technology Scanning Program Knows No Borders

In 1990, FHWA established a technology scanning program as a means of learning about innovative technical and management approaches to roadway design, construction, and maintenance throughout the world. The goal: to see if any of those approaches might have application in the United States. Since then, 24 teams of highway engineers and managers have visited highway agencies throughout the world in the quest for new knowledge.

"The scanning program has four key objectives," says Donald Symmes, who heads the scanning program for FHWA. "First, to allow the U.S. highway industry and agencies to learn from the successes, as well as the failures, of other countries. Second, to avoid reinventing the wheel. This allows us to make better use of our resources.

"Third, to gain inexpensive access to the results of the large-scale highway research and implementation programs conducted beyond our borders. And fourth, to create champions here in the states for key innovations from abroad; this will help shorten the learning curve."

FHWA's scanning program is closely coordinated with AASHTO and with NCHRP Project 20-36, which was established by AASHTO. Representatives from the private sector and TRB have also participated in the program's projects. Since its inception, FHWA's scanning program has sponsored the following scanning studies, some of which have been cosponsored by NCHRP Project 20-36 and private-sector entities:

- European Asphalt Study Tour (1990)
- Tour of European Concrete Highways (1992)
- Geotechnology—Soil Nailing (1992)
- Contract Administration Techniques for Quality Enhancement (1993)
- Intermodal Transportation Issues (1993)
- Pedestrian/Bicycle Safety (1993)
- National Personal Transportation Studies (1993)
- Advanced Technology Applications (1993)
- Winter Road Maintenance Practices (1994)
- Safety Management Scanning Team Review (1994)
- International Decision Making Criteria for Highway Investment (1994)
- Issues and Options in Highway/Commercial Vehicle Interaction—North America (1994)
- Speed Management/Enforcement, Equipment, and Practices (1995)
- Issues and Options in Highway/Commercial Vehicle Interaction—Europe (1995)
- Human Factors Technology for Highway Design (1995)
- Northumberland Bridge Review (Canada)—Structures Technology, Financing, and Environmental Considerations (1995)
- Bridge Structures Scanning Review—Europe (1995)
- Bridge Coatings Issues (1995)
- Traffic Management and Traveler Information Systems (1995)
- South Africa Technology (1996)
- Traffic Monitoring Scanning Review (1996)
- Repair/Rehabilitation of Bridges Using Fiber-Reinforced Composite Materials (1996)
- Safety Studies (1996)
- Transportation Agency Organization and Management (1997)
- Bridge Structure Scanning Review—Asia (1997)
- Highway-Rail Crossing Warnings/Barriers on High-Speed Lines (1997)

In addition to the study tours, FHWA's scanning program also supports U.S. participation in the two main international technical organizations—the Road Transport Research Program of the Organization for Economic Cooperation and Development (OECD) and the World Road Association (known as PIARC, which stands for its former name, the Permanent International Association of Road Congresses). The United States, represented by delegates from both FHWA and AASHTO, is active in all 15 PIARC technical committees plus about a half dozen OECD expert groups.

For more information about FHWA's scanning program, contact Donald Symmes at 202-366-9627 (fax: 202-366-9626; email: donald.symmes@fhwa.dot.gov). ☀

Highlights, continued from page 3

- FHWA sponsor projects demonstrating the use of under-deck superstructure enclosures to retard corrosion
- FHWA sponsor projects demonstrating the use of three-dimensional space-frame superstructures
- FHWA sponsor projects demonstrating the use of concrete form liners designed to enhance the near-surface durability
- FHWA evaluate procedures being developed in the United Kingdom for grouting longitudinally post-tensioned concrete bridges and, if warranted, prepare a technical advisory to disseminate information on the UK's experience
- Bridge owners consider peer review for the design of major or unusual bridges
- State departments of transportation and FHWA give increased consideration to aesthetics when evaluating bridge projects
- Curricula be developed to enhance the teaching of design for durability in U.S. universities
- Investigation of the use of corrugated steel webs in steel girders and as webs of prestressed concrete girders be continued
- FHWA prepare a technical advisory recommending field testing to destruction of decommissioned bridges

The tour was sponsored by FHWA's International Outreach Program and NCHRP Project 20-36, with the cooperation of the American Consulting Engineers Council, American Institute of Steel Construction, American Road and Transportation Builders Association, Associated General Contractors of America, and Portland Cement Association.

The panel's findings and recommendations are discussed in NCHRP Report 381, *Report on the 1995 Scanning Review of European Bridge Structures* (available from the TRB Business Office, telephone: 202-334-3214; fax: 202-334-2519). *

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Or visit the TRB website: www.nas.edu/trb/indexf2.html#Bookstore.

National Cooperative Highway Research Program

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