RESEARCH & TECHNOLOGY
TRANSPORTER

JULY 2000

U. S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

INFRASTRUCTURE

Transportation Agencies Strive To Develop Course of Action Concerning Use of SRW

Specialists in materials, geotechnical, and structural engineering from State highway departments in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Wisconsin, and Wyoming met with FHWA to discuss issues related to the durability of segmental retaining wall (SRW) blocks in reinforced soil systems.

Much of the meeting pertained to developing performance specifications for SRW block for highway applications. The performance of the block depends on the production process and environmental exposure. In northern climates, some SRW blocks exposed to moisture and repeated freeze-thaw cycles are susceptible to deterioration. Cap units on the top of the wall and blocks exposed to salt spray and moisture are particularly susceptible to deterioration. It is difficult to develop a performance specification into a 75-year service life because of the lack of long-term block performance data.

At the meeting, representatives of the SRW industry defended the durability of SRW during freeze-

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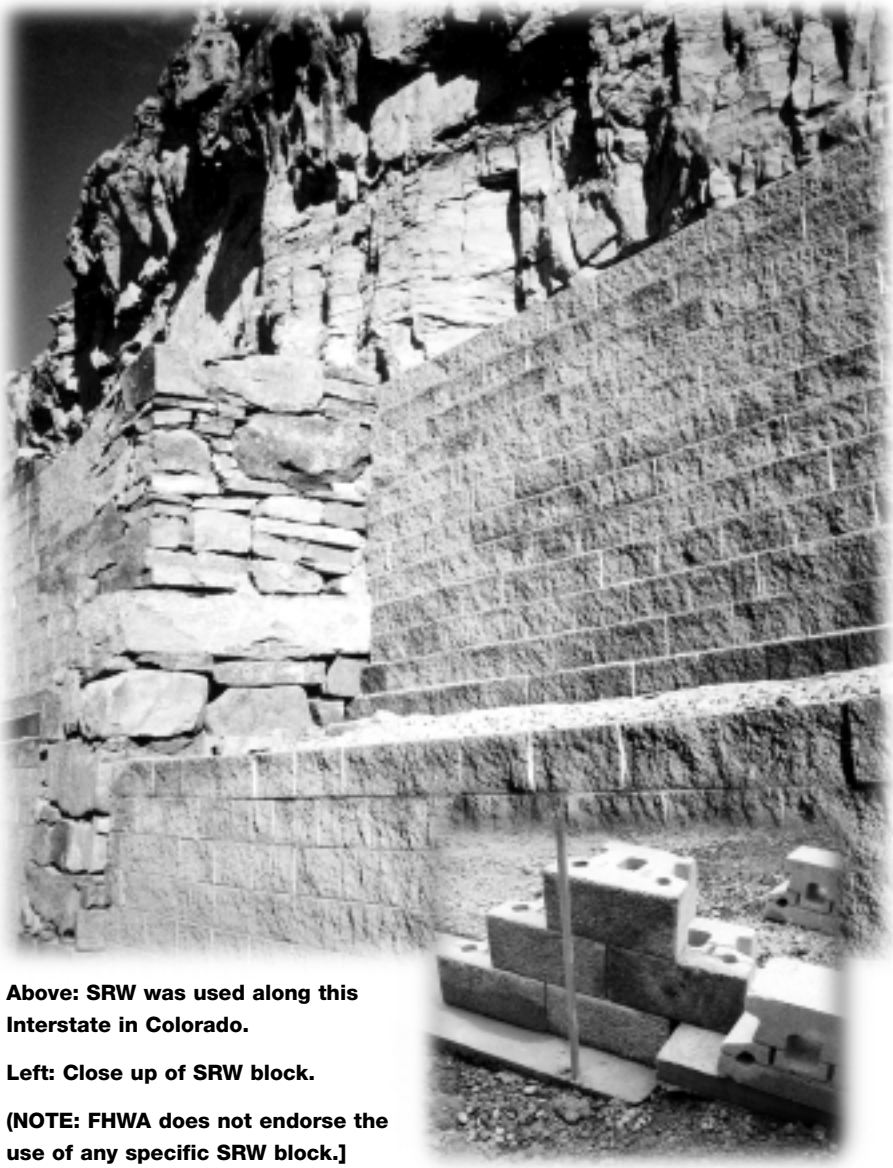

Above: SRW was used along this Interstate in Colorado.

Left: Close up of SRW block.

(NOTE: FHWA does not endorse the use of any specific SRW block.]

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The *Research and Technology Transporter* communicates FHWA research, development, and technology accomplishments, findings, information, and technology transfer opportunities. Its audience is transportation engineers and professionals in State and local highway agencies, State DOTs, Local Technical Assistance Programs, Divisions, Resource Centers, Core Business Units, academia, and the research community. The eight-page newsletter is published monthly by FHWA's RD&T service business unit. Editorial offices are housed at the Turner-Fairbank Highway Research Center. Comments should be sent to the editor at the address below. Field offices are encouraged to submit articles for publication via the appropriate agency technology leader from the editorial board listed below. The newsletter can be viewed online at www.tfhrc.gov. Subscriptions to the *Transporter* are free. Send your request to Judy Dakin at the address below, or send email to judy.dakin@fhwa.dot.gov.

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Researchers Use NDE Method on George Washington Bridge

Researchers successfully demonstrated a nondestructive evaluation method for evaluating steel structural members of suspension bridges on the George Washington Bridge in early May. This nondestructive evaluation (NDE) technology was developed by Southwest Research Institute through a contract with FHWA.

The George Washington Bridge is a two-level suspension toll bridge used for vehicular traffic and spans the Hudson River between New York City and Fort Lee, NJ.

While removing and replacing a suspender cable, the vertical cable that connects the bridge deck to the main bridge cable, researchers conducted the NDE tests. The testing took place with the cooperation of the Port Authority of New York and New Jersey and Parsons Engineering. By using this method, which combines magnetic and stress wave techniques, researchers were able to inspect the entire 40-m-long cable for defects. It was also used to measure tension in the cable as the load was adjusted.

Researchers also demonstrated the feasibility of measuring the main cable strands in the anchorage area.

Having the capability to evaluate the condition of suspension-bridge members without having to damage the structure significantly reduces the cost and lessens traffic congestion involved with periodic inspection of these structures.

The bridge is operated by the Port Authority of New York and New Jersey. Richard Livingston of FHWA's Office of Infrastructure R&D was the project manager.
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(Continued from front page)
thaw cycles, presented test methods to evaluate freeze-thaw durability, and explained advancements in preventing damage.

Meeting participants debated what level of participation the government should have in trying to limit the occurrence of SRW deterioration. Some advocated that the government should assist by refining the technology involved in creating SRW blocks. Other participants asserted that it was only necessary to develop SRW block performance-based specifications for industry to use in manufacturing block for highway applications and that the SRW block industry should develop the specified product without assistance from government agencies.

The states plan to prepare a problem statement to solicit additional contributions towards a pooled-fund study to further examine the use of SRW.
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TRB Committee Discusses Improved Concrete Pavements at TFHRC

The Transportation Research Board's (TRB) committee for the Research on Improved Concrete Pavements held a meeting at FHWA's Turner-Fairbank Highway Research Center (TFHRC), on May 22–23. The committee meeting was held to generate recommendations for the structure and conduct of the Concrete Pavement Technology Program (CPTP). Representatives from the States, industry, academia, the National Institute of Standards and Technology, the U.S. Army Corps of Engineers, and FHWA attended the meeting.

The committee was briefed on the status of FHWA's current technology activities in the CPTP, on proposed activities for FY 2001, and on the long-range plan for the program. CPTP is a cooperative effort of participating State highway agencies, American Association of State Highway and Transportation Officials, TRB, FHWA, and the Innovative Pavement Research Foundation (an organization supported by the concrete-industry).

In addition, the committee members visited TFHRC's concrete research laboratories, the accelerated loading facility (where an ultra-thin whitetopping study was conducted), and mobile concrete trailer.

The committee was established by TRB at the request of FHWA. Joseph T. Deneault, State Highway Engineer, West Virginia Department of Transportation, chairs the committee.

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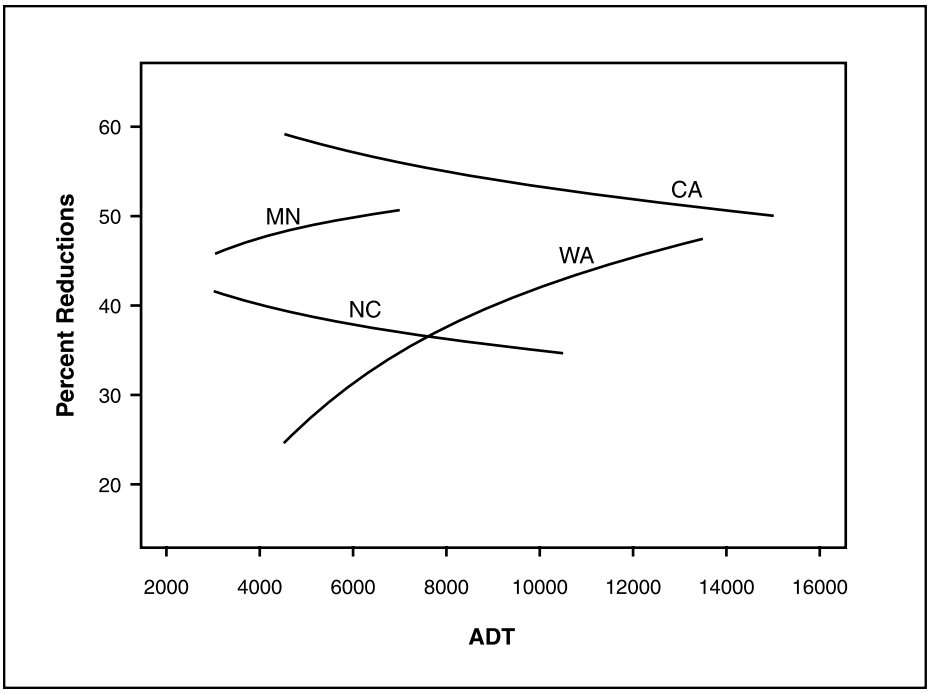
TRB's Committee for the Research on Improved Concrete Pavements held a meeting at FHWA's Turner-Fairbank Highway Research Center. Researcher engineer Leif Wathne gives a tour of the Mobile Concrete Laboratory (top). Research engineer Jim Sherwood and committee members inspect ultra-thin whitetopping cores at the Accelerated Load Facility (bottom).

Converting Two-Lane Highways to Four-Lane Can Reduce Crashes

FHWA used models based on data collected from California, Minnesota, North Carolina, and Washington and showed that converting "most typical" two-lane sections of highway to "most typical" four-lane divided sections would reduce crashes.

The data was taken from the Highway Safety Information System (HSIS), a multi-State safety database that contains crash, roadway inventory, and traffic volume data.

Ideally, researchers would conduct a study like this using a large sample of "before/after" sites. However, because no such sample was available, cross-sectional models were developed using data collected on two- and four-lane roads in four HSIS States: California, Michigan, North Carolina, and Washington.



Predicted two-lane to four-lane divided crash reductions for "most typical sections."

The models estimated differences in crash rates for typical two- and four- lane divided roadways. The results of the analyses indicated that conversion from "most typical" two-lane sections to "most typical" four-lane divided sections would reduce crashes per kilometer between 40 percent and 60 percent. The percentage reduction varies with the "before" and "after" roadways. (The results concerning the conversion of two-lane to four-lane undivided roadways were inconclusive because data were available from only one State.)

State and local agencies, FHWA, and the public have a vested interest in converting highways from two-lanes to four-lanes because of budgetary constraints for constructing new highways. People also want to know what impact this conversion would have on public safety.

The full study is published as "Safety Effects of the Conversion of Rural Two-Lane to Four-Lane Roadways Based on Cross-Sectional Models" in *Transportation Research Record 1665.*

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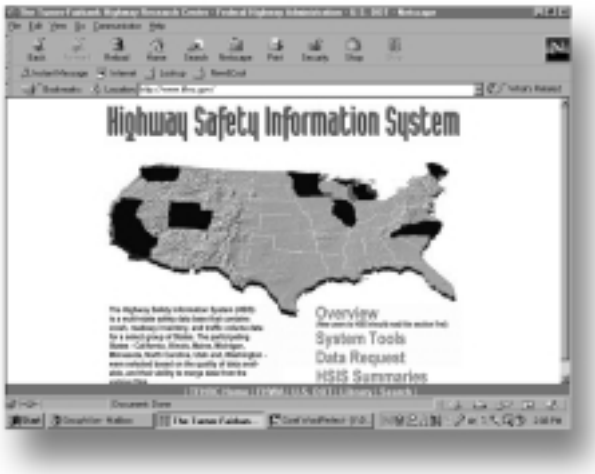
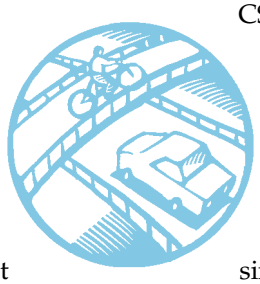


For more information on HSIS, visit *www.tfhrc.gov* and click on "Safety," then on "Highway Safety Information System (HSIS)."

Rolled-In Continuous Shoulder Rumble Strips Reduce Run-Off-The- Road Crashes

FHWA evaluated before/after projects on rural and urban freeways in Illinois and California that used rolled-in Continuous Shoulder Rumble Strips (CSRS). The data was taken from the Highway Safety Information System. Earlier studies of CSRS had resulted in effectiveness estimates of 15-70 percent. This study attempted to refine this estimate for rolled-in CSRS through the use of newer evaluation methods.

Two types of before/after study designs were used (i.e., "yoked" comparison sites and simple comparison sites). The combined rural/urban data from California showed a reduction of single-vehicle run-off-the-road crashes of 7.3 percent (a statistically non-significant result). The Illinois data for rural freeways showed a reduction of single-vehicle run-off-the-road accidents of 21.1 percent (a statistically significant result).



Basic cost-benefit analyses indicated that approximately one single-vehicle run-off-road accident (at an average cost of $62,200) could be prevented every 3 years based on a investment of $217 to install rolled-in CSRS for 1 km.

The 1997 statistics from the Fatal Analysis Reporting System showed that approximately 30 percent of fatal crashes involve single-vehicle run-off-road crashes. CSRS are installed as one of the measures to address this safety problem since most of these crashes are caused due to driver inattention/fatigue.

The full study is published as "Safety Evaluation of Rolled-In Continuous Shoulder Rumble Strips Installed on Freeways" in *Transportation Research Record 1665.* More detailed information on the general topic of rumble strips can be found on FWHA's Safety Core Business Unit web page, *http://safety.fhwa.dot.gov/rumble-strips.*

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Papers for TRB's Annual Meeting 2001 Due August 1

The 80th Annual Meeting of the Transportation Research Board will be held in Washington, DC from January 7–11, 2001. TRB is accepting solicited and unsolicited papers until August 1, 2000. Submission of papers does not ensure selection for presentation at the annual meeting or publication by TRB. Papers submitted for the 2001 Annual Meeting must be prepared in accordance with the publication specifications listed in the Information for Authors brochure, which can be downloaded from TRB's website at *http://www4.nationalacademies.org/trb/annual.nsf*. While authors may select the method that best suits their needs, TRB encourages authors to submit papers electronically via the web. That can also be done at the web address listed above.

For more information, contact Rosa Allen at (202) 334-2935.

FHWA Assembles Workforce Planning and Professional Development Task Force

FHWA has recently assembled the Workforce Planning and Professional Development Task Force. The objective of the task force is to assure that the agency has trained, dedicated, and motivated employees to deliver the agency's vision, mission, and goals into the future.

Administrator Wykle said, "As we move into the new millennium, the FHWA must be prepared for the challenges and opportunities which will define our future. Our first priority must be to make what's good, even better." FHWA Workforce Planning and Professional Development Task Force was formed to meet this challenge. The objective will be accomplished by addressing three main questions: Where are we today? Where will we need to be in the future? How can we close the gap?

This year-long project is scheduled to be completed by December 2000, when the task force will offer specific recommendations for closing the gap among the agency's recruiting, retention, and professional development. The task force is chaired by Vince Schimmoller, Program Manager for Infrastructure Core Business Unit; and Joe Toole, Director of the Professional Development Service Business Unit.

By studying FHWA's core assets—its people and skills—the task force will concentrate on how FHWA can build upon where it is today to reach the desired vision of the future workforce.

The task force is committed to getting input from everyone in FHWA and keeping them informed throughout the process. Members of the task force will be going around the country doing outreach and gathering input from FHWA staff members. Information, including minutes of previous meetings, is available on StaffNet under Committees/Task Forces. If you would like to offer your thoughts on workforce topics, send email to *WorkForcePlan@fhwa.dot.gov.*

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Research, Development, and Technology (RD&T) Unveils Unit Plan

FHWA's Office of RD&T strives to conduct research that is essential, indispensable, and connected to our customers.

The Unit Plan outlines major products and services the office of RD&T offers FHWA employees, Federal officials, and the public during fiscal year 2000–2001. This document is an outgrowth of FHWA's strategic planning process. The Unit Plan includes an RD&T planning performance alignment framework; the vision, mission, and goals for RD&T, FHWA, and DOT; RD&T's Corporate Management Strategies (based on the President's Quality Award); the Action Agenda (to produce results); the Products resulting from the Action Agenda; and most importantly, the Organizational Structure in place to get it done.

RD&T provides leadership in the development and coordination of a national highway research and technology program; support for innovative knowledge dissemination; and service through innovative knowledge development.

To learn more about RD&T and the Unit Plan, visit the website at *www.tfhrc.gov.*

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FHWA Uses Madden and Petty to Hit Their Target

A new FHWA videotape now under production is generating quite a buzz. The video, which promotes smoother concrete pavements, features well-known pro football commentator John Madden. Several months ago, FHWA produced another videotape about asphalt pavement featuring auto racing legend Richard Petty. It, too, got a lot of attention.

Why did these videos get noticed? The audience listened to their message because they recognized that these people represent excellence in their chosen fields. The video's purpose was to market a new technology to a specific audience, get construction contractors and state transportation agencies to give attention to the video's message, and then respond positively to it. It worked.

Marketers studied the audience that needed to be reached, and aimed specifically at that particular group. It's a rifle—not a shotgun—approach. It's called "target marketing." And you've got to do your homework to make target marketing truly effective.

Here's an example of the type of research that FHWA used to determine who the spokesmen would be.

Gary Hamby, Operations Manager for the Western Resoiurce Center, presents Emmy Award-winning football announcer John Madden with a certificate of appreciation for his work on FHWA's concrete pavement smoothness video.

A major construction equipment magazine allowed us to see the results of a survey they sent to their readers. More than 95 percent of their readers are male. Seventy percent of them are between the ages of 37 and 60. Most are Caucasian (89.5 percent), and 65.5 percent consider themselves to be "competitive." More than half say they are politically conservative. While "dining out" and "travel" were the top two recreational pursuits, "television" was third, and "spectator sports" was eighth. Under the heading of "recreational pursuits," "driving" and "NASCAR racing" were third and fourth, respectively. These results were typical of the results we saw in other surveys. So FHWA strived to get John Madden and Richard Petty, individuals who would appeal to the target group, to address the agency's concerns.

Marketers, to effectively target their audience, must recognize that it's more effective to give the customers what they want, and to talk in their language. You must not only aim, but you must hit the target—ensuring that message is sent and understood by the intended audience.

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MOTOR CARRIERS

FMCSA Revises Requirements for Marking Commercial Motor Vehicles

The Federal Motor Carrier Safety Administration (FMCSA) now requires motor carriers that operate in interstate commerce to display their name and USDOT number on both sides of the power unit. FMCSA revised requirements for marking commercial motor vehicles so that there is a more consistent method for identifying vehicles.

This rule is effective July 3 and all new interstate motor carriers must submit a Form MCS-150 to FMCSA before beginning operations. They also must mark the power units of their commercial motor vehicles before putting them into service. Requirements prior to this new rule called for motor carriers to submit the form within 90 days after starting operations.

FMCSA has required the use of USDOT numbers since 1988. Prior to that Interstate Commerce Commission (ICC) numbers were required on vehicles operated by for-hire carriers. FMSCA used to allow motor carriers authorized by the former ICC to continue to mark their trucks and buses with the ICC number. If a carrier displayed the ICC number as of July 3, 2000, the motor carrier will have until July 3, 2002 to display its USDOT number. All commercial motor vehicles added to a motor carrier's fleet on or after July 3, 2000 must meet the new marking requirements before being placed in service.

Information and the form used to apply for USDOT numbers can be obtained by calling (800) 832-5660. The MDC-150 form also can be downloaded from the Internet at *www.mcs.dot.gov/factfigs/forms-pubs.htm*. The new regulation was in the June 2, 2000 *Federal Register.*

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