

FOCUS

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National Center for Pavement Preservation Opens in Michigan



A new era for pavement preservation in the United States began on October 17, when the National Center for Pavement Preservation (NCPP) was dedicated at Michigan State University (MSU) in Okemos, Michigan. "The National Center for Pavement Preservation is a first and the only one in the world," said Bill Ballou, president of the Foundation for Pavement Preservation (FP²). "Over the coming years, this center will have the opportunity to reach each transportation owner agency with technical support for pavement preservation programs."

The center was founded by MSU, FP², and the Federal Highway Administration (FHWA) to lead and coordinate collaborative efforts among government, industry, and academia to advance pavement preservation. Pavement preservation is a planned strategy of treating pavements at the optimum time to maximize their useful life, enhancing pavement longevity while lowering lifetime costs. The key to successful pavement preservation efforts is applying the right treatment to the right pavement at the right time. Treatments must be carefully selected and must be applied when the pavement is still in good condition, i.e., with no structural damage.

"The Nation's highways are valued at more than \$1.75 trillion. As responsible stewards of the highway system, present and future generations cannot allow this investment to deteriorate," said King W. Gee, FHWA Associate Administrator for Infrastructure, at the dedication. "The FHWA has undertaken a greater

focus on preservation philosophy to address the significant deterioration that has been occurring to the Nation's infrastructure. Preservation extends highway service life and provides smoother, safer, and more reliable roads."

The center will coordinate and administer fundamental and applied research on pavement preservation. It will also provide hands-on technical assistance and work with highway agencies and others on meeting training and education needs. The center's resources include a technical library of national studies, specifications, and treatment procedures.

"The opening of the NCPP brings together the resources for national level research and development in the preservation area," said Jim

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Participating in the October 17 ribbon cutting for the National Center for Pavement Preservation are, from left, Center Advisory Board chair James S. Moulthrop, Fugro-BRE, Inc.; King W. Gee, Associate Administrator for Infrastructure, FHWA; Lou Anna K. Simon, Provost and Vice President of Academic Affairs, MSU; David Porteous, MSU Board of Trustees; Bill Ballou, President, FP²; Rep. Rick Johnson, Michigan Speaker of the House; Ronald Harichandran, Chair, Department of Civil and Environmental Engineering, MSU; and Janie Fouke, Dean, College of Engineering, MSU.



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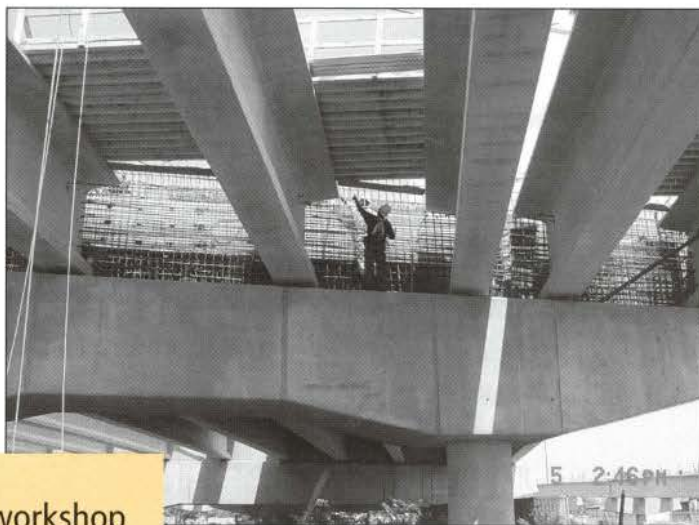
Moving Ahead with Context Sensitive Solutions in South Carolina

For the South Carolina Department of Transportation (SCDOT), the use of context sensitive solutions (CSS) is changing the way highway projects are developed and built. With CSS, the goals of ensuring safety and mobility when designing and constructing a road or bridge are enhanced by the aim to preserve environmental, community, scenic, and historic resources. Vital to the CSS approach is early and continuing stakeholder involvement and understanding of the existing landscape, neighboring communities, and the area's valued resources prior to designing the project.

A 3-day workshop held in October 2002 helped to advance the SCDOT's use of CSS. The hands-on workshop included representatives from SCDOT, the Federal Highway Administration (FHWA), South Carolina Department of Natural Resources (SCDNR), and the U.S. Fish and Wildlife Service. The South Carolina Department of Health and Environmental Control and the State's Department of Archives and History and Office of Coastal Resource Management also participated in the event. FHWA and SCDOT jointly developed and funded the workshop in a cooperative effort with the SCDNR. The SCDNR was fully involved in the development of the workshop and has become a big proponent of CSS.

Using existing and planned SCDOT projects as examples, workshop participants discussed how to apply CSS principles. The information gained from the workshop will be used as these projects

"The CSS workshop was a good venue to get feedback from everyone, including planners, resource and regulatory agency staff, and environmental staff."



SCDOT is using context sensitive solutions for its Cooper River bridge project in Charleston.

move forward in the development process.

"The CSS workshop was very helpful," says Wayne Hall, Assistant Environmental Manager for SCDOT. "With CSS, you're usually looking at multiple features of a project.

Instead of just having the vehicular perspective, the workshop opened it up to other agencies so that we had a more broad-based perspective. It was a good venue to get feedback from everyone, including planners, resource and regulatory agency staff, and environmental staff." It was also "a real eye opening experience to hear what the resource agencies had to contribute in terms of data and information about the affected environment," adds Patrick Tyndall of FHWA's South Carolina Division Office.

SCDOT is incorporating CSS elements into its Cooper River bridge project

in Charleston (see September 2003 *Focus*). For example, the agency has been working to reduce the potential effects of the bridge's lighting on loggerhead turtles. Nesting loggerheads lay their eggs on beaches and then find their way back to sea by following the moonlight or starlight, which until modern times were the brightest lights in the sky. Logger-

head hatchlings, meanwhile, instinctively head off toward the brightest light. SCDOT has implemented a variety of measures to reduce the potential effects of the bridge lighting on the turtles. These measures include the elimination of overhead sign lighting in favor of high-grade reflective sheeting, elimination of high mast lighting at two interchanges in favor of short mast directional lighting, reduction in lighting system wattage from 1000 watts to 250 watts per bulb, and the installation of a lighting control system that will allow aesthetic lighting on the bridge's towers and cable system to be turned off at strategic times. The reduced lighting will not only aid the turtles, but will help to alleviate concerns about interference with the paths of migratory birds.

Since the October 2002 CSS Workshop, the SCDOT has been busy integrating CSS principles into its project development process. Several new initiatives have resulted:

- SCDOT has established a CSS working group that has identified several pilot

FHWA has several new initiatives underway designed to advance the understanding and adoption of context sensitive solutions (CSS) concepts.

Working with the Institute of Transportation Engineers and the Congress for New Urbanism, FHWA is developing CSS design criteria for major urban streets. The guidance will focus on designing streets that are compatible with the surrounding landscape and activity and that provide safety and mobility for drivers, as well as those that live or work nearby.

Another resource now in development is a CSS Web site that will serve as a comprehensive source of information, including case studies, policies, and training opportunities. The Web site is being developed in cooperation with the American Association of State Highway and Transportation Officials, Federal Transit Administration, Project for Public Spaces, and the National Association of City Transportation Officials.

For more information, contact Seppo Sillan at FHWA, 202-366-1327 (email: seppo.sillan@fhwa.dot.gov).

projects where CSS can be implemented.

- The CSS working group is also developing an engineering directive for all SCDOT projects, which will require that CSS be considered during the planning process.
- SCDOT has revised its Highway Design Manual to include a section on Context Sensitive Design Principles.
- SCDOT has a new policy where accommodations for bicycles and pedestrians are included on all new projects and projects already designed are reexamined to see if bicycle/pedestrian accommodations can be added.
- The agency has also developed and implemented a new Public Involvement Process that requires a Public Involvement Plan for all significant projects.

For more information on the use of CSS in South Carolina, contact Wayne Hall at 803-737-1872 (email: halljw@scdot.org) or Patrick Tyndall at 803-765-5460 (email: patrick.tyndall@fhwa.dot.gov). For general information on CSS, contact Seppo Sillan at FHWA, 202-366-1327 (email: seppo.sillan@fhwa.dot.gov) or Harold Peaks at FHWA, 202-366-1598

(email: harold.peaks@fhwa.dot.gov). Information is also available online at www.fhwa.dot.gov/csd/index.htm. *

Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach to involve all stakeholders in the development of a transportation project. This involvement ensures that the project fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Often previously referred to as context sensitive design (CSD), the term "CSS" reflects the broad applications of the context sensitive approach. The CSS approach considers the total context within which a transportation improvement project will exist. It also focuses on providing an early and clear statement of purpose and need for a project and then addressing equally such considerations as safety, mobility, aesthetic characteristics, historical and cultural resources, and environmental and other community values.

National Center for Pavement Preservation,

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Sorenson, senior construction and system preservation engineer in FHWA's Office of Asset Management. The center has the long-term potential to help highway agencies at all levels support their pavement infrastructure investment, noted NCPP Director Larry Galehouse. "We will assist agencies in becoming more proactive and less reactive when addressing pavement needs, resulting in greater cost savings and satisfaction for the motorist," said Galehouse.

A Center Advisory Board will serve as a link between the NCPP and the pavement preservation community and will help determine priorities and direction for the center. For a list of board members, see sidebar.

For more information about the center and the assistance it can provide, contact Larry Galehouse at NCPP, 517-432-8220 (fax: 517-432-8223; email: ncpp@egr.msu.edu) or visit www.pavementpreservation.org. *

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Going Beyond Theory at the Fifth National Conferences on Asset Management

Moving from Theory to Practice" was the theme of the Fifth National Conferences on Asset Management, which were held in Atlanta, Georgia, from September 29–30, 2003, and in Seattle, Washington, from October 21–22, 2003. The conferences each drew more than 130 participants, with attendees representing a broad spectrum of Federal, State, and local governments; universities; industry; and other private organizations.

At both conferences, State and local government speakers discussed their agencies' implementation of transportation asset management (TAM) and described the challenges they faced, along with the solutions found and the prospects for further success. TAM is a strategic approach to maximizing the benefits from resources used to operate, expand, and preserve the transportation infrastructure. The Atlanta conference featured the experiences of the Georgia, Michigan, and Pennsylvania Departments of Transportation, along with such localities as Hillsborough County, Florida, and Alcona, Kent, and Oakland counties in Michigan. The Seattle conference, meanwhile, highlighted TAM implementation by the Arizona, Michigan, and Washington State Departments of Transportation, as well as local government experiences in such places as Multnomah County, Oregon; Cole County, Missouri; and the City of Redmond, Washington. Each agency described different elements of, and strategies for, asset management implementation, including the use of analytical tools and management

systems, the role of information technology, the establishment of procedures for data collection and integration, and the need for cooperation and collaboration to ensure success. "The presentations demonstrated the importance of using TAM to improve system performance and agency operations," noted David R. Geiger, Director of the Federal Highway Administration's (FHWA) Office of Asset Management.

A highlight of each conference was six interactive workshops that participants could choose from. The first workshop

TAM is a strategic approach to maximizing the benefits from resources used to operate, expand, and preserve the transportation infrastructure.

session focused on tools that can be used for TAM, such as life-cycle cost analysis (LCCA) and benefit-cost analysis. Panelists from FHWA described the economic concepts that underlie the trade-off analysis used in some of these tools, while representatives from Cambridge Systematics, Inc., gave an update on National Cooperative Highway Research Program (NCHRP) Project

20-57, "Analytical Tools for Asset Management," which is developing additional user-friendly TAM tools. Attendees then got to hear the real-life experiences of Oregon, Pennsylvania, and New York.

Oregon has been using its own version of FHWA's Highway Economic Requirements System (HERS) model since 1997 for Statewide transportation decision-making. It has proven to be a valuable transportation planning tool, such as when used to analyze different investment scenarios for an update of the State's Highway Plan. Across the country, the Pennsylvania Department of Transporta-

tion (PennDOT) has been conducting LCCA studies for all Interstate pavement projects with an estimated initial cost of more than \$1 million and for all other pavement projects with an estimated cost of more than \$10 million. Because of its LCCA policy, PennDOT has achieved, among other successes, improved overall performance of pavements and lower costs for new pavements and rehabilitation work. And in New York, the New York State Department of Transportation (NYSDOT) has developed a prototype TAM Tradeoff Model that uses economic tradeoff analysis to compare the dollar value of customer benefits to investment costs among competing transportation investment candidates. When the model is fully operational, NYSDOT will be able to target agency resources more productively among its pavement, bridge, safety, and mobility goal areas. More information on these State experiences can be found in a series of case studies available from FHWA's Office of Asset Management. To obtain a copy, contact FHWA at 202-366-0392.

The second workshop session looked at private sector applications of asset management, including use by General Motors and the railroad and energy industries. In workshop session three, meanwhile, FHWA provided a state-of-the-practice summary of asset management data integration among State and local agencies, and practitioners reported on their experiences in integrating different data systems to support the TAM process. For example, at the Atlanta conference, attendees heard how the South Carolina Department of Transportation evaluated a Web-based software for gathering, collating, segmenting, and distributing real-time information from multiple and disparate data sources. They also heard how the Georgia Department of Transporta-

tion developed data standards for geographic information system applications and how the Kansas Department of Transportation built an enterprise database architecture. In Seattle, presenters from the Montana, Oregon, and Washington State Departments of Transportation described their work in integrating bridge management data, developing a Web-based information portal, and establishing location referencing system and data standards, respectively.

TAM can also be used as a tool for communicating with decision makers, stakeholders, and employees, as highlighted in the fourth workshop session. For example,

the Colorado Department of Transportation has used performance measures and asset management practices to communicate both internally and externally, with performance measures playing a key role in clarifying mission and purpose, aligning resources, generating feedback, focusing on results, and recognizing improvements.

The fifth workshop session looked at local government experiences in implementing TAM. The Atlanta conference featured case studies on the implementation of a comprehensive benefit-cost based TAM system in Hillsborough County, Florida, and the integration of pavement management systems into the

decisionmaking processes of three counties of different sizes in Michigan (Alcona, Kent, and Oakland). The Seattle conference, meanwhile, covered lessons learned by the Association of Oregon Counties and Multnomah County regarding the use of TAM in Oregon. For example, the Oregon counties learned that for management systems and other TAM tools to be successful, balance must be maintained between the systems' desired features and ease of use. Another lesson learned is that users must control the data collection for the systems.

State and local governments looking for guidance on how to take the first steps in starting a TAM program found information on successful tools and techniques at the sixth workshop session. At the Atlanta conference, for example, the Florida Department of Transportation described its Turnpike Enterprise Asset Management System, which is a comprehensive Web-based system used to inventory and manage the maintenance and replacement of \$3.6 billion in capital assets.

A closing plenary session at each conference looked at what agencies have learned in implementing the Governmental Accounting Standards Board's Statement 34 (GASB 34), which calls for State and local transportation agencies to include the costs of infrastructure assets in their financial statements. An NCHRP study shows that the majority of States find using the modified approach to infrastructure reporting, which involves the cost to keep assets at desired condition levels, more helpful in making finance and management decisions than using an approach that merely depreciates the value of the assets.

Plans are already underway for the Sixth National Conference, to be held in 2005. This year's conference sponsors included the Transportation Research Board (TRB), American Association of

What can HERS-ST do for you? FHWA's HERS-ST (Highway Economic Requirements System—State Version) software is an analysis tool designed to aid transportation agencies in planning and scheduling highway work, as well as determining future highway system needs. The software simulates future highway condition and performance levels and identifies deficiencies using engineering principles. The program then applies economic criteria to select the most cost-effective mix of improvements for system-wide implementation. Fourteen States are now using HERS-ST. A new version of the software will be released by the end of 2003, along with a new User's Guide and Technical Report.

Over the past year, FHWA has provided free onsite briefings and workshops on HERS-ST for nine States. In 2004 that onsite assistance will be expanded to include implementation support for States seeking help in setting up and running HERS-ST. This support can include help in putting together the program input data, adjusting the software's various parameters and controls, understanding the output generated, and creating customized reports.

A HERS-ST User's Group Meeting will be held at the Transportation Research Board (TRB) Annual Meeting in January 2004 in Washington, DC. The new version of the software and the updated documentation will be available at the TRB Annual Meeting.

To learn more about HERS-ST, visit www.fhwa.dot.gov/infrastructure/asstmgmt/hersindex.htm. The Web site hosts a HERS-ST community of practice, where visitors can post questions and comments. The new software and User's Guide will also be posted on the Web site upon release. For additional information, contact David Winter, HERS-ST Program Manager at FHWA, 202-366-4631 (email: david.winter@fhwa.dot.gov).

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Fifth National Conferences on Asset Management,

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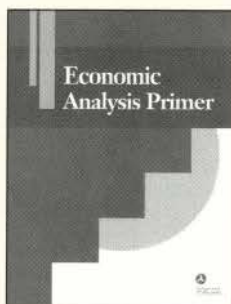
State Highway and Transportation Officials, American Public Works Association, Midwest Regional University Transportation Center (MRUTC), FHWA, Georgia Institute of Technology, Georgia Department of Transportation, University of Illinois-Chicago, Midwest Transportation Consortium, and the Georgia State Road and Tollway Authority.

The conference organizing committee

will be issuing a series of short papers summarizing the lessons learned from the conferences, which will be featured in a session at the TRB Annual Meeting in January 2004 in Washington, DC. For more information on the conferences, contact Ernie Wittwer at MRUTC, 608-263-3175 (email: wittwer@engr.wisc.edu) or Thomas Palmerlee at TRB, 202-334-2907 (email: tpalmerlee@nas.edu). *

Economic analysis is a critical component of a comprehensive project or program methodology that considers all quantitative and qualitative impacts of highway investments. Combined with planning, engineering, environmental review, and other disciplines, economic analysis can assist highway agencies in targeting limited transportation resources to their best uses. For example, it can help reveal if a planned highway project is worth undertaking, which design for the project will yield the best return, and when and how to implement the project.

A new *Economic Analysis Primer* (Publication No. FHWA-IF-03-032) available from the Federal Highway Administration (FHWA) provides an introduction to the role of economic analysis in highway decisionmaking. The primer covers a range of economic issues, including such fundamental concepts as inflation and discounting, and applications of economic analysis methodology, such as life-cycle cost analysis (LCCA) and benefit-cost analysis (BCA). LCCA enables an agency to make sure the selection of a particular project design alternative to accomplish a specified objective is not based solely on the lowest initial costs, but also considers all the future costs



over the project's usable life. BCA reveals whether the benefits resulting from a project justify the costs of the resources invested in it and, unlike LCCA, can be used to compare projects that differ in terms of benefits and level of service to the public.

The primer also discusses economic impact analysis, which complements BCA by identifying how the direct transportation benefits and costs of a project would affect such variables as regional accessibility, jobs, tourism, land values, and economic development. A separate section on risk analysis looks at how it greatly improves the usefulness of economic analysis to decisionmakers.

When used by highway agencies, all of these economic analysis tools make clearer the real-world effects of highway investments and allow agencies to target resources to their best uses.

To learn more about using economic analysis in transportation decisionmaking or to obtain a printed copy of the primer, contact Eric Gabler at FHWA, 202-366-4036 (fax: 202-366-9981; email: eric.gabler@fhwa.dot.gov). The primer is available online at www.fhwa.dot.gov/infrastructure/asstgmt/primer.htm.

LTPP Program Introduces New Distress Identification Manual

The fourth version of the *Distress Identification Manual for the Long-Term Pavement Performance Program* (Publication No. FHWA-RD-03-031) is now available, providing expert guidance on identifying and describing cracks, pot-holes, rutting, spalling, and other pavement distresses.

The manual is divided into three sections that focus on asphalt concrete (AC), jointed concrete pavements (JCP), and continuously reinforced concrete pavements (CRCP). These three sections contain photos of the various pavement distresses, ranging from fatigue cracking to joint seal damage to scaling, each clearly labeled and described. Ten years of practical experience gained using the previous version of the manual are reflected in the new edition, which incorporates many refinements and changes.

The Distress Identification Manual was originally issued in 1987 to provide a consistent, uniform basis for collecting distress data for the new Long-Term Pavement Performance (LTPP) program. Since 1987, the LTPP program has partnered with States and Provinces on a series of long-term field experiments monitoring more than 2,400 asphalt and portland cement concrete (PCC) pavement test sections across the United States and Canada. The information gathered will allow pavement engineers to design better, longer-lasting roads.

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Highway Technology Calendar

The following events provide opportunities to learn more about products and technologies for accelerating infrastructure innovations.

International Conference on Seismic Bridge Design and Retrofit for Earthquake Assistance

December 8–9, 2003, La Jolla, CA

The world's leading seismic bridge engineers and researchers will discuss recent advances in seismic bridge research and implementation. Session topics include bridge seismic design and analysis, seismic isolation of bridges, and important bridge projects in seismic zones.

Contact: Phyllis Erebor at the American Concrete Institute, 248-848-3784 (fax: 248-848-3768; email: phyllis.erebor@concrete.org; Web: www.concrete.org/EVENTS/conferences/conference.htm).

Third International Conference on Applied Geophysics

December 8–12, 2003, Orlando, FL

Hosted by the Federal Highway Administration (FHWA) and the Florida Department of Transportation, the conference will focus on achieving cost savings and safety improvements with applied geophysics.

Contact: Barry Berkovitz at FHWA, 404-562-3693 (fax: 404-562-3700; email: barry.berkovitz@fhwa.dot.gov) or visit www.fhwa.dot.gov/bridge/geophys.htm.

Transportation Research Board (TRB) 83rd Annual Meeting

January 11–15, 2004, Washington, DC

Transportation professionals from around the world will gather at the meeting to share their knowledge and perspectives on current developments in transportation research, policy, and practice.

Contact: For information, visit the TRB Annual Meeting Web site at www4.nationalacademies.org/trb/annual.nsf.

Fourth National Seismic Conference and Workshop on Bridges and Highways

February 9–11, 2004, Memphis, TN

The conference will provide a forum for exchanging information on current national and regional practices for designing seismic-resistant bridges and highway systems and retrofitting existing structures and highways. An International Forum will feature speakers from various countries that have implemented advanced earthquake design and mitigation technologies and approaches. A Technology Show and Information Display will also showcase innovative technologies for earthquake engineering.

Contact: Wendy Pickering at the University of Illinois, 217-333-2880 (fax: 217-333-9561; email: fourthphseismicconf@ad.uiuc.edu; Web: www.conferences.uiuc.edu/seismic).

Asphalt Pavement Conference 2004: 21st Century Construction

March 15–16, 2004, Nashville, TN

The conference will focus on construction practices that are necessary to building hot-mix asphalt pavements that will last. Session topics will include paving and compaction, contracting practices, and plant operations. The conference is being held in conjunction with the World of Asphalt 2004 Show & Conference. Sponsors include the Asphalt Institute, National Asphalt

Pavement Association, State Asphalt Pavement Associations, Tennessee Department of Transportation, American Association of State Highway and Transportation Officials, and FHWA.

Contact: For registration information, call 800-355-6635 (fax: 800-979-3365; email: info@worldofasphalt.com) or visit www.worldofasphalt.com.

2004 Concrete Bridge Conference

May 17–18, 2004, Charlotte, NC

The conference will focus on high-performance concrete bridges and rapid bridge construction. The event is sponsored by the National Concrete Bridge Council, Portland Cement Association, and FHWA.

Contact: Shri Bhide at the Portland Cement Association, 847-972-9100 (fax: 847-972-9101; email: sbhide@cement.org; Web: www.nationalconcretebridge.org/cbc/index.html).

First International Symposium on the Design and Construction of Long Lasting Asphalt Pavements

June 7–9, 2004, Auburn, AL

The symposium will facilitate the exchange of information on materials and mix design, construction issues, quality control/quality assurance, contracting methods, perpetual pavements, and other related topics. Sponsors include the International Society for Asphalt Pavements, the Asphalt Alliance, and FHWA.

Contact: National Center for Asphalt Technology, 334-844-6228 (fax: 334-844-6248; email: taplecp@eng.auburn.edu; Web: www.ncat.us (click on "Upcoming Events")). *

FOCUS

Focus (ISSN 1060-6637), which is published monthly by the U.S. Department of Transportation's Federal Highway Administration (FHWA), covers the implementation of innovative technologies in all areas of infrastructure.

Its primary mission is twofold: (1) to serve the providers of highway infrastructure with innovations and support to improve the quality, safety, and service of our roads and bridges; and (2) to help promote and market programs and projects of the various offices of FHWA's Office of Infrastructure.

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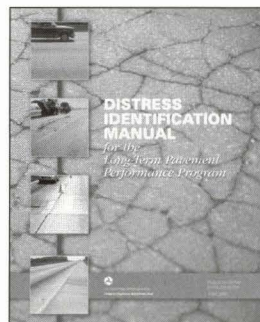
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Distress Manual, continued from page 6

"About half of all States use the Distress Identification Manual to some extent, with many of them getting the most use out of the distress definitions section," notes Bill Bellinger of FHWA. "It is an excellent reference."

The manual can also play an important role in a highway agency's pavement management program by helping to standardize the terminology used in pavement management reports. And colleges and universities can use it as a pavement distress dictionary for highway engineering courses.

The publication's appendixes include a "Manual for Distress Surveys," which contains guidelines on collecting LTPP data and sample data collection sheets. Also included is a "Manual for Faultmeter Measurements," which describes how to



use the Georgia Digital Faultmeter. The faultmeter is a hand-held device that measures faulting—the vertical displacement at joints—in PCC pavements and the drop-off between the pavement surface and the adjacent shoulder surface.

The new Distress Identification Manual can be downloaded from the LTPP Web site at www.tfhr.gov/pavement/ltppl/reports/03031/index.htm. Printed copies are available from the FHWA Research and Technology Report Center at 301-577-0818 (email: Report.Center@fhwa.dot.gov). Copies will also be distributed at the Transportation Research Board Annual Meeting in January 2004. For more information, contact Bill Bellinger at FHWA, 202-493-3156 (email: william.bellinger@fhwa.dot.gov). *

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