Accelerating Infrastructure Innovations

FOCUS

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INSIDE

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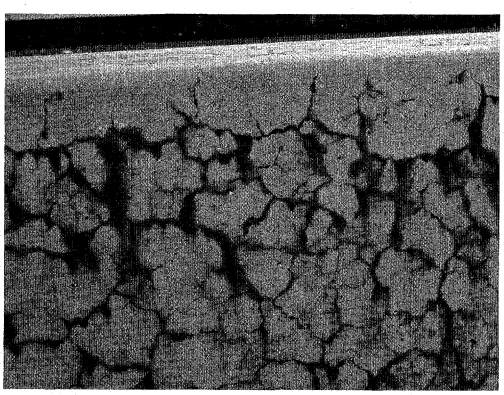
U.S. Department of Transportation
Federal Highway Administration

FHWA Develops Resources to Prevent and Mitigate ASR in Concrete

Opportunities to learn more about preventing and mitigating alkali-silica reactivity (ASR) in portland cement concrete pavements and structures are now available through the Federal Highway Administration's (FHWA) ASR Development and Deployment Program. Established and funded by the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the program is designed to increase the durability and performance of concrete pavements and structures and reduce life-cycle costs.

ASR occurs when silica in some aggregates and alkalis in concrete combine with water to form a gel-like substance. As the gel absorbs water and expands, it causes the concrete to crack. Over time, the cracks enable other forms of distress to occur, such as freeze thaw damage or corrosion, leading to premature deterioration and loss in serviceability.



ASR in pavements and structures can lead to premature deterioration.

A primary focus area of FHWA's ASR program is the implementation of field application and demonstration projects. "Deploying both new and currently underutilized technologies and methods for the prevention and mitigation of ASR will allow States to address their ASR issues in a more cost-effective manner and will allow the engineering community to gain valuable data on the long-term performance of these methods and techniques. These efforts will help to significantly advance the state of the practice," says Gina Ahlstrom of FHWA's Office of Pavement Technology. Demonstration projects for pavements and structures will begin in 2009. FHWA will provide technical assistance to States participating in the field demonstrations, including installing instrumentation for data collection and evaluating and analyzing data. FHWA will also develop individual project reports and a final program report based on the results and analysis of all of the field trials. ASR treatments to be used in the field trials will include lithium technologies, silanes, coatings, and fiber-reinforced wraps.

As part of the Development and Deployment Program, FHWA is conducting a parallel ASR research initiative. The research program will develop improved methods to predict and prevent ASR in new construction and mitigate ASR in existing pavements and structures, as well as improve fundamental understanding of the ASR process.

FHWA has launched a free quarterly newsletter, *Reactive Solutions*, to provide general information on ASR, as well as updates

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ASR in Concrete,
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on the ASR Development and Deployment Program. Features include an "Ask the Experts" column, which offers readers the opportunity to submit questions about ASR. The newsletter is available online at www.fhwa.dot.gov/pavement/concrete/asr.cfm. To be added to the mailing list, send an email to Gina Ahlstrom at FHWA, gina.ahlstrom@fhwa.dot.gov, or asrnewsletter@transtec.us.

Two new publications on ASR will be available from FHWA this winter: *Report on Determining the Reactivity of Concrete Aggregates and Selecting the Appropriate Measures for Preventing Deleterious Expansion in New Concrete Construction* and *Report on Diagnosis, Prognosis, and Mitigation of Alkali-Silica Reaction in Transportation Structures*. The reports will be available at www.fhwa.dot.gov/pavement/concrete/asr.cfm.

FHWA is also developing an online ASR Reference Center. "The goal of the reference center is to provide State engineers and other practitioners with resources and information on ASR that are readily accessible," says Ahlstrom. Resources will include ASR research reports and guidance documents; information on various State ASR specifications; and details on past, current, and planned field trials. FHWA expects to launch the reference center online by spring 2009.

For more information on the ASR Development and Deployment Program or hosting a field trial in your State, contact Gina Ahlstrom in FHWA's Office of Pavement Technology, 202-366-4612 (email: gina.ahlstrom@fhwa.dot.gov). To learn more about the research portion of the program, contact Paul Virmani at FHWA, 202-493-3052 (email: paul.virmani@fhwa.dot.gov). Information on the program is also available at www.fhwa.dot.gov/pavement/concrete/asr.cfm.

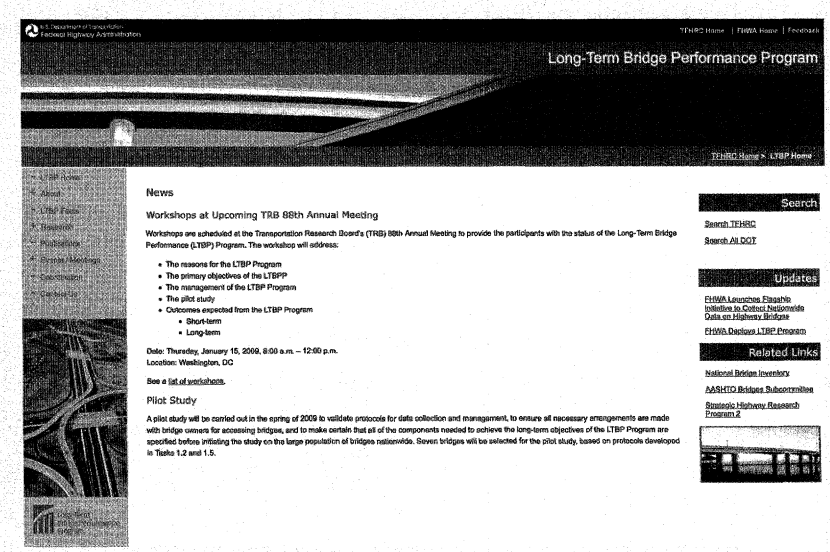
Learn More About Long-Term Bridge Performance at the TRB Annual Meeting

What is bridge performance? What do we need to do to ensure our Nation's bridges are safe, efficient, durable, and economical? And how can we manage our bridges better? These questions and more will be addressed at a session on the Long-Term Bridge Performance (LTBP) program at the Transportation Research Board (TRB) Annual Meeting in Washington, DC, on January 15, 2009. The session will run from 8 a.m. until noon. The event is sponsored by the TRB Committee on Structures Maintenance, Committee on Bridge Management, and Committee on Dynamics and Field Testing of Bridges.

"Come hear from the team engaged in the Long-Term Bridge Performance program, the Federal Highway Administration's flagship program to conduct a comprehensive examination of our Nation's workhorse highway bridges," says Hamid Ghasemi, LTBP program manager at the Federal Highway Administration (FHWA).

The 20-year LTBP research initiative will inspect, evaluate, and periodically monitor a representative sample of bridges nationwide. These bridges will represent many structural types and materials and a variety of conditions, exposures, and locations. The TRB session will provide more details on the plans for the program, including covering such topics as, "LTBP: Why a 20-Year Research Program and What Do We Expect to Achieve?," "Defining and Measuring Bridge Performance," "Critical Long-Term Bridge Performance Data Priorities and Bridge Selections," "Bridge Monitoring: Instrumentation," and "LTBP Database."

For more information on the LTBP program session or the LTBP program in general, contact Hamid Ghasemi at FHWA, 202-493-3024 (email: ltbp@dot.gov), or visit www.tfhrc.gov/ltbp.



Excellence in Highway Design 2008

The Federal Highway Administration (FHWA) honored the best in highway design in October 2008 with the announcement of its 2008 Excellence in Highway Design Awards. "From highways and bridges to roadside facilities, the award winners demonstrate how transportation infrastructure can creatively meet safety and mobility needs while also proving to be aesthetically pleasing and environmentally friendly," says Brooke Struve, Design Program Manager in FHWA's Office of Program Administration. The awards were announced at the American Association of State Highway and Transportation Officials' Annual Meeting in Hartford, Connecticut, on October 18, 2008. For more information on the awards program or to download a brochure with details on all of the award winners, including those receiving Honorable Mention, visit www.fhwa.dot.gov/eihd. Information is also available by contacting Brooke Struve at FHWA, 202-366-1317 (email: brooke.struve @fhwa.dot.gov).

Excellence Award Winners

Urban Highways: Freeway or Expressway

State Route 17, Horseheads, New York, New York State Department of Transportation

Carrying nearly 30,000 vehicles per day, with traffic speeds approaching 105 km/h (65 mi/h), the four-lane arterial Route 17 had become more like an Interstate expressway. Building a new elevated expressway on the existing alignment instead of a bypass resulted in fewer environmental impacts and was more cost effective. Project features include a remote weather information system, automatic anti-icing system, and mechanically stabilized earth walls. The project's design also reflects the local architecture, effectively blending the highway with its surroundings.

Urban Highways: Surface Streets

"New" Phalen Boulevard Corridor, St. Paul, Minnesota, City of St. Paul, Minnesota

The "New" Phalen Boulevard project enables multimodal access and mobility while also serving as an economic development tool, providing needed access and the impetus for clean up and redevelopment of an underused industrial site. The 4.2-km (2.6-mi) road accommodates bicycles and also connects to a regional trail system.

Rural Highways: Freeways

U.S. Routes 22/322, Lewistown Narrows Project, Derry Township and Fermanagh Township, Pennsylvania, Pennsylvania Department of Transportation

This 16.5-km long (10.3-mi) freeway was constructed in the 1930s and had narrow shoulder widths, steep cut and fill slopes, and a lack of drainage facilities, among other problems, resulting in a high crash rate. The two-lane, uncontrolled access roadway was transformed into a four-lane, limited access highway, greatly improving safety. A bifurcated alignment design incorporates nine river walls, reducing impacts to the historic Pennsylvania Canal.

Rural Highways: Highways

East Entrance Road, Sylvan Pass to East Entrance, Yellowstone National Park, Wyoming, National Park Service

The historic East Entrance Road to Yellowstone National Park was widened to accommodate visitors while protecting the park's natural resources, including wetlands, native vegetation, and bear trails. Special rails and rock sculpting were also used to maintain the area's rustic and natural aesthetics.

Structures Costing $10 Million or More

Lee Roy Selmon Crosstown Expressway Expansion, Tampa, Florida, Tampa Hillsborough Expressway Authority

Traditional expansion of this U.S. 60 expressway, which connects Tampa, Flori-

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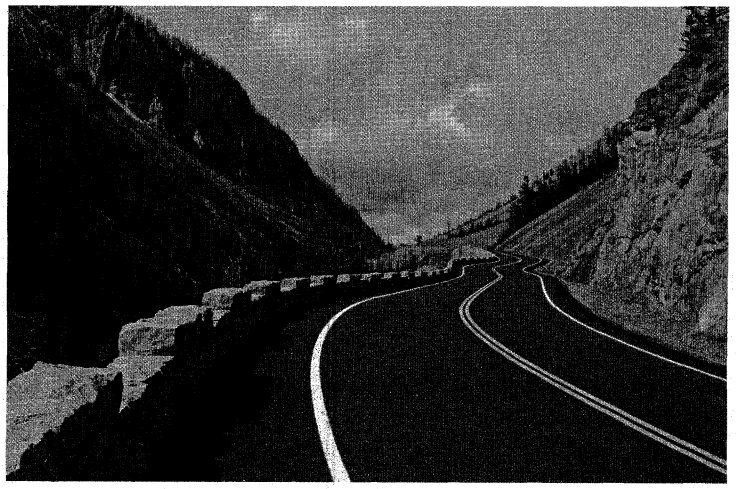

East Entrance Road, Yellowstone National Park, WY.

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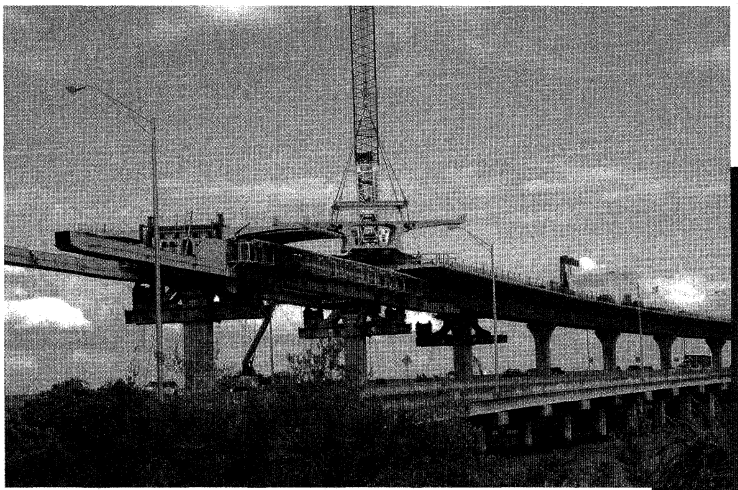
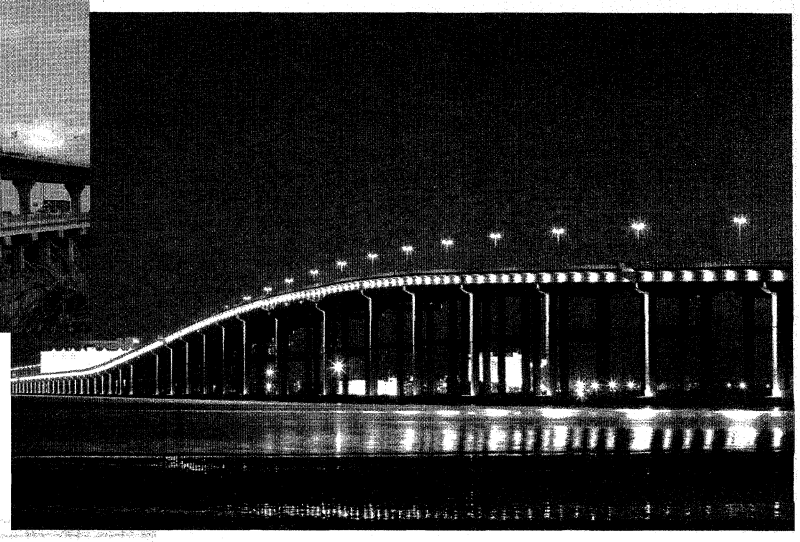




Above: Lee Roy Selmon Crosstown Expressway, Tampa, FL.
Right: Biloxi Bay Bridge, Biloxi, MS.

da, to its rapidly growing eastern suburbs, was not economically feasible. Instead, the designers built up rather than out, using the existing expressway median to house a three-lane elevated cantilever structure. The unique shape of the superstructure provides an attractive visual experience, while the expansion reduces average trip times 20 to 30 minutes during the morning commute.

Structures Costing Less Than $10 Million

Thurston Avenue Bridge Over Fall Creek, Ithaca, New York, City of Ithaca, New York

This bridge on the campus of Cornell University is listed in the New York State Department of Transportation's Inventory of Historic Bridges due to its rare type of existing arches, curved floorbeam ends, and vertical picket bridge railing. Using new induction bent tubular arches, the project successfully widened the bridge to include two sidewalks and two bicycle lanes, while preserving the historic arches. The curvature at the ends of the floorbeams and railing was also replicated.

Intermodal Transportation Facilities

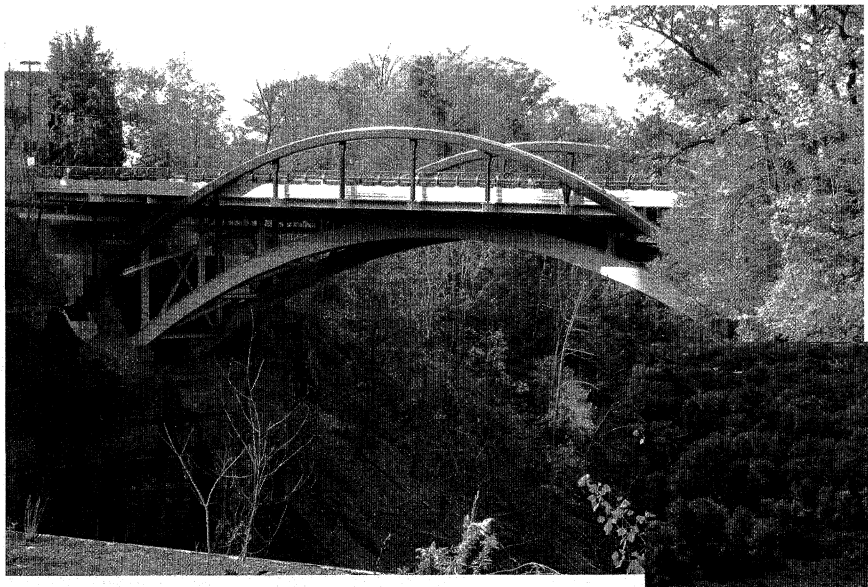
LYNX Blue Line Light Rail Station at I-485/South Boulevard, Charlotte, North Carolina, Charlotte Area Transit System (CATS), City of Charlotte, North Carolina

The LYNX Blue Line, North Carolina's first light rail line, opened on November 24, 2007. In a win-win situation for both the rail line and a local school, CATS built a parking deck for an end-of-the-line station on a remnant of land adjacent to Sterling Elementary School, complete with a playing field on the deck's rooftop for the school's students. The deck's design blends into the surrounding environment, while the available parking spaces help encourage rail ridership and ease traffic congestion.

Traveler Services

State Route 58, Lowell Covered Bridge, Lowell, Oregon, Lane County, Oregon

Constructed in 1945, the Lowell Covered Bridge is listed in the National Register of Historic Places. However, the bridge had fallen into disrepair and was closed to traffic in 1980. With increasing tourism in Lane County, Oregon, the site was reconstructed to serve as a gateway facility providing traveler services and information. The covered bridge was turned into a museum, with timbers salvaged from the structure milled on site and used again in the reconstruction.



Above: Thurston Avenue Bridge, Ithaca, NY.
Right: State Route 17, Horseheads, NY.

Congestion Mitigation: Bottleneck Reduction
State Route 61, Cameron Bridge Project, City of Shamokin, Coal Township, Pennsylvania, Pennsylvania Department of Transportation

Originally built in 1851, the Cameron Bridge had been replaced in 1933 with a more modern structure. By the end of the 20th century, however, the two-lane bridge could no longer adequately handle current traffic volumes. The new design provides a wider three-lane bridge with shoulders and sidewalks, removing a major traffic bottleneck and improving traffic flow and safety.

Project Management
U.S. Route 90, Biloxi Bay Bridge, Biloxi, Mississippi, Mississippi Department of Transportation (MDOT)

To rapidly rebuild the Biloxi Bay Bridge after it was destroyed by Hurricane Katrina in August 2005, MDOT used one of the first design-build contracts in the State. To accomplish the vital reconstruction, the project management depended on continuous communication, fast and effective decisionmaking, and a commitment to "doing it right" the first time.

Program or Project Development Process
Project Planning and Controls Program, FHWA Central Federal Lands Highway Division (CFLHD)

In 2006, CFLHD began implementing a comprehensive Project Planning and Project Controls Program to facilitate proactive project management and fiscal accountability. The new initiative has resulted in a more efficient and effective approach to managing the $750 million CFLHD program.

Minnesota Department of Transportation (Mn/DOT) Historic Roadside Developments Management Program, State of Minnesota

During the Great Depression, Mn/DOT's predecessor agency constructed roadside development facilities, including scenic overlooks, picnic areas, and waysides, to increase the recreational enjoyment of highway travel. However, modern highway projects had often adversely affected the historic integrity of these resources. Mn/DOT's Management Plans for the historic properties now guide project planners, managers, and designers early in the project development process, minimizing adverse impacts and maximizing preservation.

Highway Technology Calendar

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

2008 Highway Geophysics–Nondestructive Evaluation (NDE) Conference
December 1–4, 2008, Charlotte, NC

Sponsored by the North Carolina Department of Transportation and the Federal Highway Administration (FHWA), the conference will feature both the state-of-the-practice and the state-of-the-art use of geophysical and NDE technologies for the exploration and evaluation of geotechnical construction and underground or subsurface features. The conference is designed for engineers, geophysicists, geologists, program managers, and other decisionmakers.

Contact: For more information, visit the conference Web site at www.ncdot.org/doh/PRECONSTRUCT/highway/geotech/geophysicsconference, or contact Ben Rivers at the FHWA Resource Center, 404-562-3926 (email: benjamin.rivers@fhwa.dot.gov).

Product Demonstration Showcase on Roundabout Traffic Improvement Project
December 10, 2008, La Jolla, CA

This FHWA showcase will highlight a case study on how roundabouts were used to slow traffic on La Jolla Boulevard, while enhancing the walkability of the boulevard. The showcase will include information on how the local community and businesses provided input into the project. Additional topics will include funding, construction management, roundabout design improvements, and right-of-way issues.

Contact: Mark Sandifer at FHWA, 708-283-3528 (email: mark.sandifer@fhwa.dot.gov), or visit www.pdshowcase.org.

Transportation Research Board (TRB) 88th Annual Meeting
January 11–15, 2009, Washington, DC

More than 10,000 transportation professionals from around the world will gather at the meeting to share perspectives on current developments in transportation research, policy, and practice. The central theme for the 2009 meeting is "Transportation, Energy, and Climate Change."

Contact: For information, visit the TRB Annual Meeting Web site at www.trb.org/meeting. Questions about the meeting can be emailed to TRBMeetings@NAS.edu.

2009 Design-Build in Transportation Conference
April 1–3, 2009, Baltimore, MD

Join transportation leaders in discussing lessons learned in the use of the design-build project delivery method for transportation projects. The discussions will cover choosing the right delivery method, contracting approaches, risk allocation, and performance contracting. The conference is cosponsored by FHWA, the American Association of State Highway and Transportation Officials (AASHTO), and various industry groups.

Contact: Jerry Yakowenko at FHWA, 202-366-1562 (email: gerald.yakowenko@fhwa.dot.gov), or visit www.designbuildtransportation.com.

National Conference on Preservation, Repair, and Rehabilitation of Concrete Pavements
April 22–24, 2009, St. Louis, MO

The conference will provide a forum to address concrete pavement preservation, repair, and rehabilitation activities that result in safer, smoother, and longer lasting concrete pavements. Topics will include optimizing concrete pavement preservation strategies, alternate delivery methods for projects, traffic management considerations, repair material and equipment requirements, and forensic investigations. Conference sponsors include FHWA, AASHTO, American Concrete Pavement Association, Missouri Department of Transportation, and TRB.

Contact: Shiraz Tayabji at Fugro Consultants, Inc., 410-997-9020 (email: stayabji@aol.com), or Sam Tyson at FHWA, 202-366-1326 (email: sam.tyson@fhwa.dot.gov). Information is also available at www.fhwa.dot.gov/pavement/concrete/2009CPTPconf.cfm.

Fourth Rubber Modified Asphalt Conference
May 7–8, 2009, Akron, OH

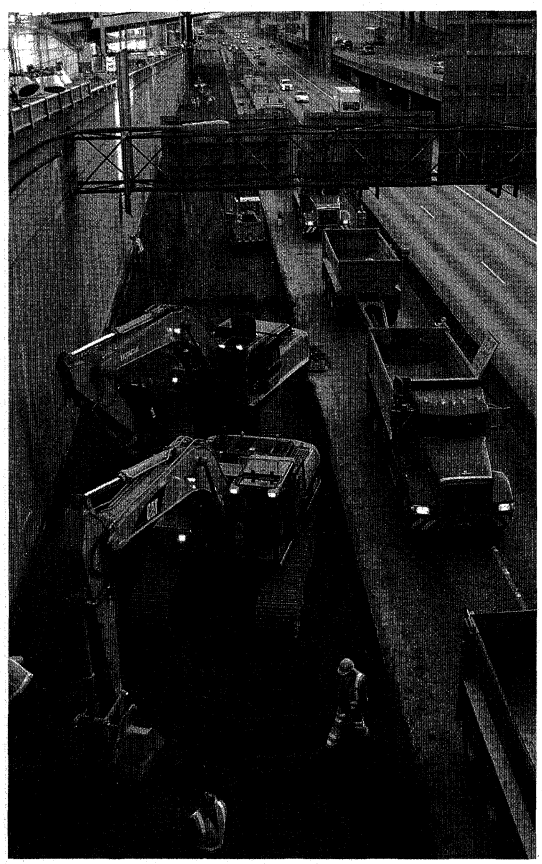
The conference will highlight the uses of rubber and polymer modified asphalt and discuss opportunities for expanding that use, as well as facilitate discussions among industry and State, Federal, and local government agency representatives. Sessions will focus on engineering, economics, and the environment, with topics such as engineering considerations and design, warm mix asphalt, life-cycle costs, State issues and solutions, materials supply, recycling, and quiet pavements. The conference is cohosted by the Rubber Division of the American Chemical Society (ACS), Rubber Pavements Association, and the Rubber Manufacturers Association, in conjunction with FHWA, the U.S. Environmental Protection Agency, National Asphalt Pavement Association, Asphalt Institute, National Center for Asphalt Technology, and Flexible Pavements of Ohio.

Contact: To learn more about the conference, visit www.rubberdivision.org/meetings/rmac.htm, or contact Ed Miller in the Rubber Division of ACS, 330-972-6527 (email: emiller@rubber.org).

A Core Curriculum for Construction Contract Administration

Learn the basics of contract administration with the Federal Highway Administration's (FHWA) new National Highway Institute (NHI) course, Contract Administration Core Curriculum (Course No. FHWA-NHI-134077). The 1.5-day course will cover such key areas as:

- Locating and interpreting policy, procedures, and directives that affect construction contract provisions and contracting procedures.
- Using the Web and other resources to research FHWA policy, including statutes, regulations, and directives.
- Understanding the five financial steps that follow the contract award.
- Interpreting the 13 provisions of FHWA's "Required Contract Provisions for Federal-aid Construction Projects."
- Understanding Federal-aid eligibility as it relates to State, Federal, and local procedures.
- Interpreting State oversight agreements.
- Using fraud indicators to detect the possibility of fraud.



FHWA's new course covers the basics of construction contract provisions and policies.

Geared to the beginner level, the course is designed for FHWA division office, State, and local government agency personnel who must interpret and apply Federal regulations affecting the administration of Federal-aid contracts. Attendees will discuss contract provisions, administrative procedures, and policies, with emphasis on the issues addressed in Code of Federal Regulations Title Number 23, Sections 230, 633, and 635.

The minimum class size is 20 participants, with a maximum of 40. Effective January 1, 2009, there is a $3,500 course fee for host agencies. To learn more about the course or how to schedule it in your State, visit www.nhi.fhwa.dot.gov. Information is also available from the NHI scheduler at 703-235-0534 (email: nhitraining@fhwa.dot.gov). For more information on the course content, contact Douglas Townes, Construction and Contract Administration Engineer at the FHWA Resource Center, 404-562-3914 (email: douglas.townes@fhwa.dot.gov).

Highways for LIFE Extends 2009 Project Application Deadline

The Federal Highway Administration's (FHWA) Highways for LIFE (HfL) program has extended the deadline for grant applications for its final round of demonstration projects to December 30, 2008. The HfL program is designed to encourage State transportation agencies to build projects using proven innovations that have been infrequently or never used by the agency. The proposed innovations must be available now and ready to use.

Depending on the availability of fiscal year 2009 funding for the HfL program, selected projects may receive either a program grant or a waiver to allow 100 percent Federal-aid funding for the project. States that have not been previously selected as a HfL recipient will receive first consideration for funding.

Applications must be submitted to FHWA's division offices. The application form is available on the HfL Web site at www.fhwa.dot.gov/hfl. For more information, contact your local FHWA division office or Mary Huie at FHWA, 202-366-3039 (email: mary.huie@fhwa.dot.gov).

To learn more about the Highways for LIFE program or projects, visit www.fhwa.dot.gov/hfl.

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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The Place to Go for LTPP Data and Information

The new Long-Term Pavement Performance (LTPP) Information Center at the Federal Highway Administration's (FHWA) Turner-Fairbank Highway Research Center in McLean, Virginia, is now your source for LTPP data, information, and assistance.

The LTPP program's Information Management System server was successfully transferred from Oak Ridge, Tennessee, to the LTPP Information Center in spring 2008, consolidating the LTPP Database Network. This network includes the Pavement Performance Database, Central Traffic Database, and the Ancillary Information Management System. The Information Center's components also include the LTPP Reference Library, which contains documentation on LTPP planning, data collection guidelines, testing procedures, and data processing and storage. The library also features research reports, test site construction and installation reports, and information on LTPP products and their supporting documentation. The LTPP Customer Support Service Center, meanwhile, provides a single point of contact and technical assistance for users of the world's largest pavement performance database.

To learn more about the LTPP program and products, visit www.fhwa.dot.gov/pavement/ltpp/index.cfm or contact the LTPP Customer Support Service Center at 202-493-3035 (email: ltppinfo@fhwa.dot.gov).

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