



# Pavement Preservation

# Today

FALL 2002

## Asset Management Tops List Of Senate Reauthorization Priorities

If the U.S. Senate has its way, proactive asset management of highways, roads and streets — which can result in lower life cycle costs and higher quality pavements for road owners — may get a big boost in next year's federal surface transportation program reauthorization.

Asset management is at the top of a list of reauthorization priorities of Sen. Jim Jeffords (I-Vt.), chairman of the powerful Senate Committee on Environment and Public Works, which will craft the Senate reauthorization bill.

In late June, at a conference on transportation sponsored by the American Road & Transportation Builders Association (ARTBA) and the American Association of State Highway & Transportation Builders Association (AASHTO), Sen. Jeffords listed asset management the first of six items he wants reauthorization to cover.

Jeffords acknowledged the immense capital investment of the Interstate highway system, and said next year's program reauthorization needs to preserve that investment.

"In recent years," Sen. Jeffords said, "state DOTs have spent over 75 percent of their Interstate program funds on system preservation. We should continue this trend of Interstate maintenance ... we should focus on the system's performance and insist that it is well operated, so that we realize the full return on our investment."

### Dovetails With FP<sup>2</sup> Position

Sen. Jeffords' position dovetails with the mission of the Foundation for Pavement Preservation (FP<sup>2</sup>), which has launched a

new *National Initiative for Pavement Preservation* in advance of program reauthorization next year. FP<sup>2</sup> wants to bring the preservation concept to state DOTs and other road agencies via a national platform.

Last summer, FP<sup>2</sup> began high-level talks with the Federal Highway Administration (FHWA) and AASHTO to readdress pavement preservation research and policy needs, and to establish a focus for a national program.

And early in 2002, FP<sup>2</sup> developed a "white paper" which called for a new National Initiative for Pavement Preservation, and continued top-level meetings with national entities like FHWA and AASHTO.

### Leading Proponent Of Preservation

FP<sup>2</sup> is the nation's leading proponent of pavement preservation. FP<sup>2</sup> maintains that proper pavement preservation means application of the right treatment, to the right road, at the right time, and communicates this principle to the top management levels of government agencies, as well as to field personnel.

Pavement preventive maintenance is the application of various surface treatments early in the life of a pavement to reduce the rate of wear and tear and extend the pavement's overall service life. It is akin to the preventive maintenance we perform on our cars, such as changing the oil at regular intervals to prevent serious engine wear.

Research shows that for every \$1 spent on pavement preservation, state departments of transportation save at least \$6 in



Sen. Jim Jeffords (I-Vt.)

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## Asset Management

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future road rehabilitation and reconstruction costs. And this year's white paper observes that "Rhode Island calculates that if the state had spent \$6 [million] to \$7 million for preventive maintenance, it would not now be faced with a \$30 million rehabilitation need for I-295" in that state.

Also, sound pavement preservation programs can decrease traffic congestion, increase mobility, and improve work zone safety, because preventive maintenance treatments are quick and cost-effective.

### National Focus Needed

FP<sup>2</sup> observes that the national Strategic Highway Research Program (SHRP) of the 1980s led to world-class improvements in asphalt pavement specifications such as Superpave.

"Nationwide AASHTO standards recommended by the work done by SHRP are now in place," FP<sup>2</sup> said. "The AASHTO standards, guidelines and mix design methods generally have a proven record of performance and are

readily available to all agencies."

The same is not true, however, for pavement preservation techniques such as joint and crack sealing, chip seals, slurry seals, microsurfacing and overlays. "Here the research and experience on materials, performance and equipment seriously lags behind the demand for such knowledge."

Where national standards are lacking, the individual states have stepped in, at the risk of duplicating each others' work. "Montana, Minnesota, California and other transportation departments have detailed design and testing procedures for chip seals, and New Mexico has detailed information on cold in-place recycling," FP<sup>2</sup>'s white paper states.

"However," FP<sup>2</sup> said, "there are no nationally recognized protocols for design, materials, selection, specifications and quality assurance or performance criteria for most preservation techniques ... [d]eveloping national protocols and publishing them as AASHTO standards would improve overall quality and long-term performance."

### Meeting In March

In pursuit of this goal, in March, FP<sup>2</sup> again met with executives of FHWA and AASHTO. "The discussion revolved around ideas of the white paper, our new, needed Research Statements developed last year, and that dollars will be needed to move the research forward," said FP<sup>2</sup> president Bill Ballou, Koch Materials Inc.

"Along those lines we discussed what funding mechanisms were available, and how we could develop momentum and enthusiasm for pavement preservation research among the existing research forums," Ballou said. "We want to make sure everyone understands the importance of the Research Statements and encourage stakeholders to get behind them."

One way enhanced funding could be achieved is through specific inclusion in the national surface transportation legislation now being debated in the nation's capital. The existing legislation – the Transportation Equity Act for the 21st Century (TEA-21) — expires Sept. 30, 2003 and new

authorizing legislation must be enacted by then to ensure a continuing flow of U.S. highway user fees back to the highway and bridge construction and maintenance sector.

"We are keeping the issue on the radar screen in Washington," Ballou said. "They are working on reauthorization every day and FP<sup>2</sup> needs keep its needs up front so they don't forget about us."

### Moving To Next Level

The National Initiative hopefully will result in a harmonized set of guidelines or specifications that can be consistent from coast to coast in the United States.

For years the primary road construction paving media — hot mix asphalt (HMA) and portland cement concrete (PCC) — have enjoyed such consistent specifications.

"We never have had pavement preventive maintenance and preservation treatments such as those supported by our charter members — the Asphalt Recycling & Reclaiming Association, Asphalt Emulsion Manufacturers Association, and International Slurry Surfacing Association — show up in AASHTO manuals," Ballou said. "Nor have we trained our young engineers how to use the treatments when they get in the field. That's why we want this know-how in a consistent, national, written package that engineers can use as a guideline."

Across the country, not everyone has the same pavement preservation knowledge base as there may be in the state right across the border. "We've got to make this knowledge as widespread as we do with HMA and PCC know-how," Ballou said. The National Initiative for Pavement Preservation will help make that dream a reality.

A list of the Research Statements developed by FP<sup>2</sup> and mentioned above appears on page 10 of *Pavement Preservation Today*, Winter 2002 issue, available from FP<sup>2</sup>'s office or off its web site at <http://fp2.org/pdf/winter%202001.pdf>.

For more information, contact Bill Ballou at FP<sup>2</sup>. ■

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# Michigan Governor Recognized

## For Pavement Preservation

Michigan Governor John Engler's reputation as the taxpayer's watchdog got some much-deserved national recognition, thanks to an award in February from the Foundation for Pavement Preservation (FP<sup>2</sup>). The national group honored Engler at American Association for State Highway Transportation Officials' (AASHTO) Washington Briefing Wednesday, Feb. 27.

FP<sup>2</sup> voted unanimously to honor Gov. Engler with its first *President's Award for Pavement Preservation Excellence*. The award recognizes the governor for "his steadfast commitment to improved asset management practices through pavement preservation."

"Gov. Engler has provided leadership and commitment to Michigan's Capital Preventive Maintenance Program," said foundation president Bill Ballou. "He has provided dedicated support for staff, resources to carry out the program and has promoted this philosophy to other states."

"Under Gov. Engler's leadership," Ballou said, "the Michigan Department

of Transportation created its Capital Preventive Maintenance Program, instituting a broad array of preventive maintenance measures. The state estimates \$700 million less was required to achieve the same or better pavement conditions, making Michigan a leader in the management of transportation assets through preservation concepts. These savings have occurred exclusively because of the leadership of Gov. John Engler."

"We have made considerable progress in recent years in focusing attention on pavement preservation as part of asset management strategy," said Federal Highway Administrator Mary Peters.

"As the former director of a state transportation department, I recognize the need for preventive maintenance to preserve our investment in the existing infrastructure," FHWA's Peters said. "This award recognizes the out-

standing efforts by Gov. Engler and Michigan in doing that. The FHWA is pleased to join the foundation in saluting his dedication to improving transportation systems in Michigan and across the nation."

Ballou noted that Engler's willingness to support outreach to other states has led to at least 10 state DOTs to adopt pavement preventive maintenance programs modeled after Michigan's.

"Motorists in states with preservation programs face fewer construction-related delays and less vehicle damage due to deteriorating roads,"

Ballou said. "We have Gov. John Engler's commitment

to preventive maintenance to thank for that."

The President's Award for Pavement Preservation Excellence was presented at noon on Wednesday, Feb. 27, 2002 at the AASHTO Washington Briefing. ■



Michigan Gov. John Engler

## Introducing FP<sup>2</sup>'s New Executive Director

Steve Hersey, program manager for FP<sup>2</sup>, left the Association Management Group (FP<sup>2</sup>'s management company) at the end of August to pursue opportunities in his hometown of Boston. We wish Steve well and thank him for his time with the Foundation!

Melinda Bridges, executive director of the American Council of Engineering Companies of Metropolitan Washington, will be taking the reins as FP<sup>2</sup>'s new Executive Director effective September 1. Steve and Melinda have worked together for several weeks to ensure a seamless transition for the Foundation. Melinda will be joining us at the ETG/Strategic Planning session in Whitefish, MT, and has assisted in planning the logistics for that meeting.

Please join us in welcoming Melinda! She can be reached through FP<sup>2</sup>'s main contact telephone number: 703.610.9036 and email: info@fp2.org. ■



**It's hard to believe that the Foundation has been advocating pavement preservation for 10 years! A celebratory cake was enjoyed at the spring 2002 FP<sup>2</sup> Board meeting.**

# New GASB 34 Requirements

## To Drive Pavement Preservation

The advent of the asset management-based accounting guidelines under the GASB 34 requirements now being applied to local governments will drive both pavement management and pavement preservation in coming years.

Across America, armed with pavement condition inventories, pavement management systems or geographic information systems, local governments are making informed decisions as to how their limited funds will go the farthest in preserving their pavements.

“Pavement management systems and data collection technologies are so widely accepted today that they are no longer being challenged,” said David G. Peshkin, P.E., Applied Pavement Technology.

“Those systems are essential to maintaining your pavements,” Peshkin said, who specializes in educating agencies in pavement maintenance practice. “The agencies which use them can better control what treatments and pavements are selected, when they are applied, and how their performance is evaluated.”

And an important adjunct is that today’s pavement management systems (PMS) will give street departments the data they need to justify additional maintenance spending, and to support the requirements of the new GASB 34 guidelines.

GASB (pronounced GAZ-BEE), the Governmental Accounting Standards Board, is a nonprofit organization whose standards provide accepted accounting procedures for all state and local governments in the United States.

In June 1999, *GASB Statement No. 34: Basic Financial Statements and Management’s Discussion and*

*Analysis for State and Local Governments* was approved. GASB 34 requires that state and local governments include long-lived infrastructure assets, including roads and bridges, in their annual financial statements beginning as early as fiscal year 2002.



### GASB 34 And Local Agencies

GASB 34’s impending changes in financial reporting requirements for America’s cities and counties already are impacting local government agencies. These changes are affecting how agencies report major infrastructure assets, including highways, roads and

bridges. And PMS/GIS programs — with their inventory of capital assets — will make this easier.

“GASB 34 is going to be an indirect force that will affect every public agency,” Peshkin said. “We see specific implications for agencies with pavement infrastructure. As stewards of those infrastructure investments a PMS will enable agencies to track asset value. And if they’re intent on not losing their bond rating, the PMS will help them maintain that infrastructure value at its current or higher level.”

There is “a critical role for asset management to play in demonstrating prudent stewardship of highway infrastructure and facilitating private sector confidence in highway investments,” said Daniel L. Dornan, Vice President, Infrastructure Management Group, Inc., in his paper, *Asset Management: Management Fad or Prerequisite for Solving the Fiscal Challenges Facing Highway Infrastructure?*

“The infrastructure reporting requirements of GASB’s Statement No. 34 are intended to increase accountability for publicly owned infrastructure and promote improved management of

longlasting capital assets,” Dornan said. “GASB 34 also provides a basis for enabling public agencies to finance implementation of asset management techniques and renewal of infrastructure assets through securitization.”

### Conventional Cash Accounting

Conventionally, local governments have used cash accounting methods to report infrastructure capital assets such as transportation structures and water and sewer treatment facilities, said Tom Maze, P.E., Ph.D., vice president, Transportation Sector, Howard R. Green Co., Cedar Rapids, Iowa.

Under cash accounting, Maze said, the capital cost of an infrastructure investment appears in an agency’s annual financial report during the year in which the cost of construction is incurred; the value of existing physical assets does not appear on financial reports.

Under this cash accounting system, the value of a jurisdiction’s physical assets is not carried on the books, so to speak. But in reality, infrastructure such as bridges and roadways continues to have value, or usefulness, long after cities and counties have incurred the cost of construction, Maze said. Just as other physical assets such as trucks depreciate in value, the value or fitness of roads, bridges, and other physical assets declines over the decades, typically 20 to 50 years.

The new accrual accounting recommended by GASB 34 guidelines offer a more realistic report of an agency’s financial status. These new guidelines — being phased in for cities of different sizes through 2003 — show the existing value of an agency’s capital assets, with the value of an asset spread across the asset’s useful lifetime, rather than accounted in its first year.

GASB says that this new method of accounting meshes with asset management or pavement management systems. “Because historic costs and

depreciation [are] not an effective management tool, and because effective tools are available,” the board said, “the ‘modified approach’ allowed under GASB 34 — utilizing asset-management systems to monitor infrastructure performance and estimate actual maintenance expenditures required to maintain adequate performance — represents a better course for local and state governments to adopt in conforming to the new requirements.”

GASB 34 is bringing government agencies more in line with accounting standards of the business world, and dovetails with the growing philosophy of asset management being promoted by FHWA’s Office of Asset Management (OAM). And to the FHWA, asset management at the local government level is based on pavement management.

GASB 34 guidelines say it will be implemented in three phases, based on a government’s total annual revenues in the first fiscal year ending after June 15, 1999.

- Phase 1. Governments with total annual revenues (excluding extraordinary items) of \$100 million or more should apply GASB 34 for periods beginning after June 15, 2001.
- Phase 2. Governments with at least \$10 million but less than \$100 million in revenues should apply GASB 34 for periods beginning after June 15, 2002.
- Phase 3. Governments with less than \$10 million in revenues should apply this Statement for periods beginning after June 15, 2003. Earlier application is encouraged.

More information on GASB 34 is available at GASB’s web site at <http://accounting.rutgers.edu/raw/gasb/st/summary/gstsm34.html>.

Also, the FHWA’s Office of Asset Management is distributing a definitive brochure titled *Primer: GASB 34*. It’s available online in pdf format at <http://isddc.dot.gov/OLPFiles/FHWA/010019.pdf>. This brochure better explains the relationship between asset management and GASB, and will help the reader understand its impact on pavement preservation. ■

## FHWA Asset Management Articulated In Germany

The theme of asset management as it supports pavement preservation — a guiding principle of the Foundation of Pavement Preservation (FP<sup>2</sup>) — got a resounding reinforcement during the annual meeting of the International Slurry Surfacing Association (ISSA) in Germany in March.

There, Federal Highway Administration (FHWA) Office of Asset Management’s Jim Sorenson addressed the international delegates on asset management of transportation systems and its growing importance in the United States.

“Pavement preservation is more than just a collective set of specific pavement maintenance techniques,” Sorenson told the international assembly. “It is a way of thinking and the guiding force behind an agency’s financial planning and proper asset management.”

Its transportation system always has been the backbone of the United States’ economy, Sorenson said. “The safe, efficient mobility of goods and services, unimpeded, across the country and into every city and neighborhood make our nation’s business world and our lifestyle strong,” he said.

But the attacks of Sept. 11 brought the needs of the transportation system into focus, Sorenson said. “When the U.S. Department of Transportation grounded all U.S. airlines, for a moment, transportation halted,” he said. “Commerce, industry and business all turned to the nation’s highway network. The roads and highways were there and were ready to meet the public’s needs.”

All the more reason, then, to preserve the system that exists,



Sorenson said. But this is requiring a change in mindset among U.S. transportation agencies.

“Highway agencies are redefining their objectives, requiring them to focus on preserving and maintaining, rather than only expanding our existing highway system,” he said. “A change in philosophy must be made.”

And FP<sup>2</sup> is one way that change may come about, FHWA’s Sorenson said. “The Foundation for Pavement Preservation, established in 1992, provides resources to advance knowledge for improved asset management for maintaining and preserving highway pavements.”

He said FP<sup>2</sup> has grown “into a fully integrated organization with a vision to provide resources to advance knowledge for managing and preserving pavements through effective public-private partnering. Their vision is to provide funding, research and skills to see that pavement preservation is done correctly.” ■

# BULLETIN: Sealer/Rejuvenator/Binder

## Workshop Draws Experts To Minnesota

At press time in late August, nearly 50 pavement preservation practitioners got an inside look at the use of sealers, rejuvenators and binders both in the lecture hall, and in the field.

A practical Foundation for Pavement Preservation (FP<sup>2</sup>)-sponsored workshop on sealers, rejuvenators and binders was held Aug. 21-22, in Bloomington, Minn., in conjunction with the second meeting of the Midwest Pavement Preservation Partnership.

### Scoop On Sealers, Rejuvenators

The *Ensuring Pavement Preservation through the Use of Emulsified Sealers and Rejuvenators* workshop agenda included a host of blue-ribbon speakers and panelists, all strongly associated with the Foundation for Pavement Preservation.

A goal of the FP<sup>2</sup> Sealer/Binder/Rejuvenator effort is to conduct five local workshops, a national workshop, and then one "lessons learned" workshop. FP<sup>2</sup>'s first national workshop was held in Myrtle Beach, S.C. in March. A local workshop also has been held in Sacramento.

The event kicked off at 1 p.m. Wednesday, Aug. 21, with FP<sup>2</sup>'s per-

spective on sealers, rejuvenators and binders, by FP<sup>2</sup> President Bill Ballou, Koch Materials Inc., Wichita, Kan. Then, Glynn Holleran, of Law Companies Group, Inc. discussed the *Purpose and Use of Emulsified Sealers/Rejuvenators*.

That was followed by the presentation of a brand new survey, conducted earlier this year, *Results of National Survey on State Practices on Sealers and Rejuvenators*, by Larry Scofield, Arizona DOT. It was followed by a presentation on *Providing Early Protection of paved surfaces*, by Gayle King, of Koch Pavement Solutions.

Arizona's Scofield then presented an update on the ongoing Federal Highway Administration/FP<sup>2</sup>-sponsored field study on sealer/binder/rejuvenator research.

This was followed by technical presentations on *Chemical Characterization and Performance Prediction* by Michael Hansberger, Western Research Institute, and how *Pavement Performance Assessment* is conducted in the field, by Dr. Soheil Nazarin, University of Texas-El Paso. Lastly, Koichi Takamura, BASF Corp., discussed how poly-



Jerry Geib, P.E., Minn/DOT Research Project Engineer, is interviewed on location at sealer/binder field test by Minnesota broadcast media on significance of pavement preservation testing

mer networks form in modified emulsion residue and how they enhance performance.

The next day, Thursday Aug. 22, the entire workshop traveled via bus to a low-volume road in southern Minnesota, where a variety of surface treatments were placed as part of FP<sup>2</sup>'s five-year sealer/rejuvenator/binder study. A more detailed report on the workshop and field application will appear in the Winter 2003 issue of *Pavement Preservation Today*.

### Workshop Part Of Larger Effort

The Sealer/Rejuvenator Workshop is only part of a larger effort by FP<sup>2</sup> to study the role and applicability of emulsified sealers, binders and rejuvenators in pavement preservation.

Traditionally, highway agencies allow the ride quality and structural condition of pavements to deteriorate substantially before taking steps to preserve their investment. This is costly. An effective pavement preservation program can provide an agency with considerable monetary savings.

The use of emulsified sealers, binders and rejuvenators is of great interest to the pavement preservation community due to their ability to pro-



FP<sup>2</sup> President Bill Ballou opens Minnesota Sealer/Binder Workshop Aug. 21

tect oxidized asphalt surfaces, or actually penetrate and rejuvenate them.

The oxidative aging of pavements begins at the time of construction and continues throughout a pavement's life. However, most oxidative aging occurs within the first two to four years of service life.

This results in the top 0.5-inch or so of the pavement surface becoming more brittle than the underlying material due to the oxidative actions of water, ultraviolet, and environmental actions. This can result in raveling and or premature cracking, which often will begin at the pavement surface.

Maintenance personnel in many agencies have combated this aging process by applying spray-applied treatments using distributor trucks. Two major types of spray applied treatments are commonly used:

- Products that seal the surface, and
- Products that rejuvenate the surface.

Sealers consist of products that are applied to seal pavement surfaces against intrusion of air and water, and to eliminate or minimize raveling of the fine aggregate due to aging of the asphalt binder. These treatments can begin immediately after construction but more typically occur many years later when some form of distress is observed. Sealers have been used in approximately two thirds of the states.

Rejuvenators are formulated to penetrate into the pavement and then enhance the properties of the asphalt binder of the existing the pavement. These treatments are most commonly used in the western states where ultraviolet exposure appears to promote

greater oxidation.

Little quantitative data exists to develop design procedures for application or to determine the cost effectiveness of specific applications. So in February 2001, the FHWA contracted with FP<sup>2</sup> to evaluate the effectiveness of spray applied emulsified sealer/binders.

This was a unique approach as it brought together a partnership between industry and the FHWA. Although the FHWA provides the significant share of research funding, the pavement preservation industry also contributes to this effort through the foundation. FP<sup>2</sup> conducts the research through its partners and contractors.

For more information about FP<sup>2</sup>'s study, contact Larry Scofield, Arizona Department of Transportation, e-mail [lscofield@dot.state.az.us](mailto:lscofield@dot.state.az.us). ■

## Midwestern Pavement Preservation Partnership Formalizing Union

The Midwestern Pavement Preservation Partnership (MPPP) is growing in stature and outreach as a medium to enhance pavement preservation in the nation's heartland, and it held its second major meeting in the Twin Cities in mid-August.

Over 70 attendees from Midwestern and Western states came to the Ramada Inn/Minneapolis-St. Paul International Airport Aug. 19-21 for the second meeting. There, MPPP leaders began to draw up bylaws and a formal charter.

Review and finalization of these materials would take place through fall 2002, said Jerry Geib, P.E., MPPP member, and Research Project Engineer, Office of Materials and Road Research, Minnesota Department of Transportation, Maplewood, Minn.

In April 2001, the MPPP was formed by the states of Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio,

South Dakota and Wisconsin, to perform work tasks related to pavement preservation in their climatic area. In addition to most of the founding states, representatives from Iowa also attended, as did registrants to the following FP<sup>2</sup>-sponsored Sealer/Binder Workshop.

At the August meeting, MPPP considered what's been accomplished since the previous year, focusing on pavement preservation activities both locally and nationally.

On Monday, Aug. 19, Doug Weiszhaar, Deputy Commissioner/Chief Engineer, Minnesota Department of Transportation (Mn/DOT) welcomed the group. He was followed by an update on Foundation for Pavement Preservation (FP<sup>2</sup>) president Bill Ballou.

MPPP team updates commenced, on Training by Jerry Geib (Minnesota) Materials by Lee Gallivan, Research by Aric Morse (Ohio), Specifications by Kirk Fredrichs (Kansas) and Policy by

Larry Galehouse (Michigan). A discussion of team dynamics followed.

On Tuesday, Aug. 20, the program continued with discussions of seal coating, including emulsions, materials, equipment, ADT, QC/QA; crack sealing, microsurfacing, partial depth repairs, and warranty and policy issues.

The program concluded Wednesday morning, Aug. 22, with a discussion on pavement management systems and their interaction with pavement preventive maintenance; optimal timing issues; National Highway Research Program and National Highway Institute activities; pavement preservation and the City of Egan, Minn.; and future steps.

MPPP plans to meet again in St. Louis in early spring 2003.

For more information about the MPPP, contact Larry Galehouse, Michigan DOT, P.O. Box 30049, Lansing, Mich., 48909, e-mail [galehouse@mdot.state.mi.us](mailto:galehouse@mdot.state.mi.us). ■

# New Funding Stream

## Boosts North Carolina Roads, Pavement Preservation

A new funding stream for pavement maintenance is boosting North Carolina pavement condition, while laying the foundation for pavement preservation as articulated by the Foundation for Pavement Preservation (FP<sup>2</sup>).

In doing so the state has gained notoriety for its efforts in both the 42,000-circulation *Better Roads Magazine*, and in *Focus Newsletter* of the Federal Highway Administration (FHWA).

FP<sup>2</sup> defines pavement preservation as the application of the “right” treatment to the “right” road surface at the “right” time.

Through FHWA, the American Association of State Highway & Transportation Officials, and FP<sup>2</sup>, North Carolina learned of success stories of other states in prolonging pavement life through judicious pavement maintenance practice, said FP<sup>2</sup> participant Steve Varnedoe, P.E., State Maintenance & Equipment Engineer, and George C. Gibson, P.E., State Pavement Management Engineer, North Carolina Department of Transportation.

“North Carolina began to look for ways to implement these strategies to protect the investment in its pavement assets,” they said. Theirs was a big task. North Carolina maintains the second largest highway network in the nation, with more than 78,000 center-line miles of which over 71,000 are paved.

### Unused Trust Fund Utilized

The key to this enhanced road work and preservation is the utilization of unspent cash balances in the state’s Highway Trust Fund, without jeopardizing their use for promised future capital improvements.

North Carolina’s Highway Trust Fund is a funding vehicle established in 1989 to widen and improve specific corridors, construct outer loops in sev-

eral metro areas and pave more than 10,000 miles of unpaved roads across the state.

“North Carolina Transportation Secretary Lyndo Tippett made funding for maintenance a high priority in his administration,” Varnedoe and Gibson said. As a result, the department lobbied for legislation during the 2001 session of the General Assembly that increased funding in the budget for maintenance line items, and also provided a special provision allowing the use of cash balances which have accumulated in the Highway Trust Fund for pavement preservation on the primary highway system.

This legislative support now permits the DOT to use cash accrued in this fund through 2005 to improve the condition of primary route pavements, without jeopardizing the schedule of any programmed projects for which this fund was established.

The \$470 million infusion of funds will allow the department to “jump start” a pavement preservation program by addressing the backlog of

“worst first” needs, and leveraging recurring contract resurfacing funds for thin overlays to preserve pavements still in good condition. Such funds were increased from \$135 million to \$154 million in FY 2001-2002.

Also, the department has earmarked \$28 million (\$2 million per division) from the legislative increase in routine maintenance funds for pavement preservation activities such as crack sealing, chip seals and slurry seals, bringing the total for these treatments to around \$40 million per year.

“A significant improvement in system wide pavement condition ratings should be evidenced by time the 2004 pavement condition survey is completed,” Varnedoe and Gibson said. “The long-term goal is to sustain 75-80 percent of the system rated at the good or above level (PCR>80).”

### Narrowing Window Of Opportunity

North Carolina conducts a visual, 100 percent pavement condition survey every two years on its non-interstate highway system, Varnedoe and



Sealing prolongs life of secondary road in North Carolina. Photo courtesy State Road Maintenance Unit.

Gibson said, adding Interstate routes are evaluated annually.

Key distresses evaluated include alligator and block cracking, rutting, bleeding, raveling, and ride quality. Based on a network level analysis of year 2000 data, approximately 41 percent of the primary system was rated as fair to poor, while the secondary system was slightly less at 35 percent.

“Looking at the data in a more positive view found that for all systems,” they said, “an average of more than 60 percent had pavement condition ratings of 80 or higher, making them potential candidates for preventive maintenance techniques.”

Given that most of North Carolina’s pavements are still in relatively good condition, despite inadequate funding for maintenance and the rapid rate of growth in traffic volumes, the state has a narrowing window of opportunity to develop and implement a preservation program, they said.

To implement this strategy, the state relied on materials developed in cooperation with FP<sup>2</sup>. In spring 2001, all field engineers at the county, district and division levels involved with pavement maintenance attended National Highway Institute Course No. 131054, *Pavement Preservation: The Preventive Maintenance Concept*.

“These six classes held across the state laid the groundwork for a cultural change in the organization,” Varnedoe and Gibson said. “Getting buy-in” to the concept of pavement preservation from the engineers who make decisions on a daily basis on project selection was a critical element,” they said.

This same group of engineers attended a second course, NHI No. 131058 in spring 2002, *Pavement Preservation: Selecting Pavements for Preventive Maintenance*. Also, the theme of a joint NC DOT/Hot Mix Asphalt industry conference held in January 2002 centered on pavement preservation and protecting the investment in pavement assets.

### Preservation Vs. Worst First

With the movement toward implementation of a “preservation philosophy” vs. “worst first”, the DOT revised the pavement condition survey deci-



**Crack sealing part of North Carolina DOT pavement preservation program. Photo courtesy State Road Maintenance Unit.**

sion tree to indicate more preventive treatments where none had been, they said. This would identify those fair to good pavement sections whose pavement life would benefit by applying “the right treatment, to the right road, at the right time.”

With the ability to utilize the Highway Trust Fund cash balances for primary system pavement preservation, North Carolina made a conscious decision not to just to apply “band aids” but to take an engineered approach to this preservation effort.

A fleet of nondestructive pavement testing equipment has been mobilized to determine pavement needs. “As a result, very detailed information is being assimilated and used to make recommendations that will serve well to leverage other pavement preservation funds in the future,” Varnedoe and Gibson said.

In past years North Carolina relied heavily on hot mix asphalt thin lift (HMA) overlays as its primary means of maintaining and preserving its pavements. “Emphasis is now being placed on a wide range of pavement preservation treatments through the inclusion of these activities in the pavement management system decision tree,” they said.

Now the focus is on treating pavements in fair to good condition by such techniques as crack filling and sealing; conventional and modified chip seals; slurry seals and microsurfacing, as well as a variety of thin lift HMA surfaces.

The use of Cape Seals (chip seal on bottom and slurry seal on top) have increased in the past couple of years and are proving to be an effective preservation tool that is well received by the public, they said.

Hot-in-Place Recycling (HIR) is another technique that has also been used effectively on several projects. An alternate bid specification has been developed for HIR or mill-and-fill with HMA for projects that are identified as recycling candidates.

“All of these techniques can effectively be used to extend pavement life and prevent deterioration if properly timed and used appropriately,” they said. “Pavement preservation makes good cents and sense. [It] not only conserves precious maintenance dollars, but portrays a good public image. Our goal is to live up to the reputation that was established many years ago when North Carolina became known as The Good Roads State.” ■

# Driver Mobility

## Included In New Work Zone Rules

This spring the Federal Highway Administration (FHWA) was seeking comments on how both worker and driver safety — but also enhanced driver mobility — can be improved in highway construction work zones.

On Jan. 31 Federal Highway Administrator Mary Peters issued an “advance notice of proposed rulemaking” (ANPRM) which solicits potential improvements to federal regs on traffic safety in roadway work zones, with an eye to making zones safer and transit times faster. Suggestions and comments were accepted through June 6.

The solicitation dates to early 2001, when FHWA director of traffic operations Shelley Row asked Associated General Contractors (AGC) members assembled in Nashville to help establish a new push to make work zones safer, beginning at the very conception of a road project.

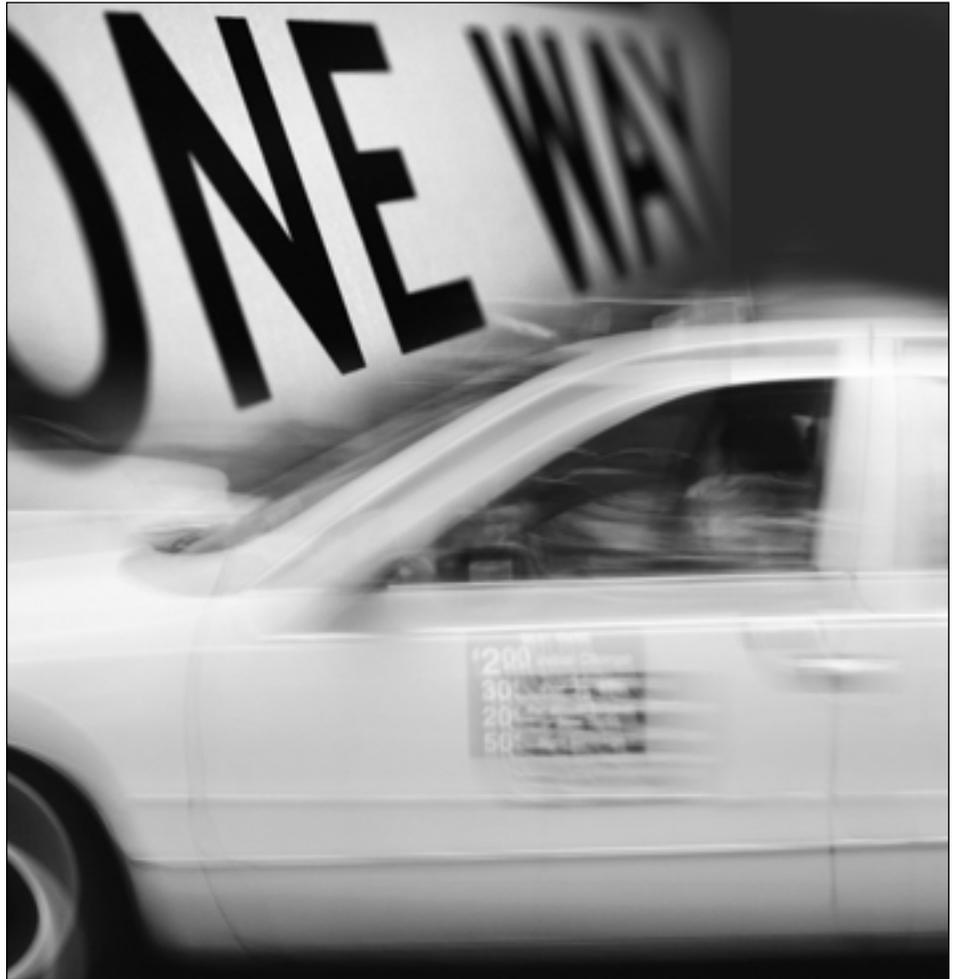
Later, in July 2001, AGC held a *Work Zone Safety Summit* that developed potential solutions to work zone problems. AGC said the summit produced over 50 concepts for safer work zones, and developed an action plan to identify the recommendations, impediments, implementation strategy, and what additional information is needed to give life to the recommendations in the field.

AGC endorsed FHWA's initiative and said a joint public/private strategy for reducing fatalities and injuries might include:

- Increased enforcement of speed limits
- A public relations campaign to educate motorists, and
- Training programs aimed at contractors and workers.

To that end, in May 2002 in St. Louis, AGC's new Highway Work Zone Safety Committee held its first meeting and prepared its response to FHWA's request for comments for its proposed rulemaking.

Similarly, American Traffic Safety



Services Association executive director Roger Wentz presented ATSSA's plan for enhanced work zone safety and traffic safety in next year's federal surface transportation program (TEA-21) reauthorization at a meeting of transportation insiders in Washington in May.

### Setting The Stage For Feds

There is a precedent for federal involvement with work zone safety. TEA-21's predecessor legislation, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) ordered the U.S. secretary of transportation to improve work zone safety by enhancing the quality and effectiveness of traffic control devices, safety appurtenances, traffic control plans,

and bidding practices. This was rolled out as a non-regulatory action in October 1995, which established a *National Highway Work Zone Safety Program*. One of the fruits of this effort was creation of the *National Work Zone Safety Information Clearinghouse* (<http://wzsafety.tamu.edu>) by FHWA and the American Road & Transportation Builders Association (ARTBA).

The clearinghouse is a gold mine of information for government agencies, public and private organizations, and the general public about safe and effective traffic work zones. The clearinghouse began operations in February 1998 under FHWA funding, and now is a cooperative partnership between

ARTBA and the Texas Transportation Institute, supported by private and public organizations.

In support of heightened federal involvement with work zones, FHWA states that much of TEA-21's enhanced funding is being spent on maintaining and operating existing roads, as comparatively few new roads are being built. At the same time, traffic volumes continue to grow and create more congestion.

"From 1980 to 1999, the U.S. experienced a 76 percent increase in total vehicle-miles traveled, while total lane miles of public roads increased only by 1 percent," FHWA observes. "Congestion is frustrating and costly to businesses and individuals."

Over the years, improvements in work zones have taken place, FHWA says. "However, more effort is required to meet the needs and expectations of the American public," FHWA says. "FHWA is seeking to identify and foster ways to make work zones function

better. This requires looking at the full life of our transportation infrastructure and may require changing the way construction and maintenance projects are conceived, planned, designed and executed."

FHWA believes that the trends of increasing road construction, growing traffic and public frustration with work zones call for a more broad-based examination of the current regulations. Regulations may be updated to reduce the need for recurrent road work, the duration of work zones, and the disruption caused by work zones.

### Driver Delays Vs. Road Workers?

Given the difficulty and vulnerability of the road worker in construction done under traffic, some may question why driver delays should be included in as part of a new federal work zone safety regulation. But FHWA is right to include user delays and motorist attitudes in the work zone safety equation, along with worker and motorist

safety.

That's because as road work volume ramps up to the levels required by condition — and permitted by enhanced funding — the entire industry risks a backlash from motorists who see work zones blocking prime, and often, alternate routes.

This backlash already is being cultivated by people who outright oppose road work such as the environmental movement and local NIMBYs ("not in my backyard") opponents of projects. Moreover, frustrated motorists are a source of impulsive driving that endangers road workers. It's enough that workers have to dodge beer bottles and soda cans; they shouldn't have to dodge vehicles as well.

A fresh, new, national perspective on work zones — constituted by industry stakeholders, bolstered by the FHWA and including motorist needs — can help all the industry in the long term and is something to watch for in coming months. ■

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## Scanning Tour Team To Return To Australia

As it refines its implementation plan for best-practice pavement preservation techniques from overseas, select members of a U.S.-based team will return to Australia to follow up on promising technologies.

Overseas pavement preservation practices have application here in the United States, a fact-finding task force co-sponsored by the Federal Highway Administration (FHWA) and American Association of State Highway & Transportation Officials (AASHTO) reported last year.

This overseas scanning task force — including members of the Foundation for Pavement Preservation (FP<sup>2</sup>) — traveled to France, South Africa and Australia July 6-22, 2001 as part of FHWA's *International Scanning Program for Pavement Preservation*.

The objective of this scanning tour was to review and document innova-

tive pavement preservation techniques, materials, procedures and equipment utilized in host countries, and to evaluate these elements for potential application in the United States.

The FHWA/AASHTO International Scanning Tour proved that the United States is on target with pavement preservation, and moving in the right direction similar to other countries, reported FHWA's Luis Rodriguez earlier this year.

Now, a scout team composed of Rodriguez, with John Andrews, Maryland DOT, Zane Web, Texas DOT, and Steve Varnedoe, North Carolina DOT — with Larry Galehouse, Michigan DOT, and Larry Scofield, Arizona DOT as alternates — will return to Australia this fall to further investigate technologies. Many of these individuals are active in FP<sup>2</sup>. This may

include:

- **Chip seals**, including geotextile use, quality materials, and pre-coated aggregate). A Research Problem Statement may result as key to obtaining future study.
- **Pavement Management in Australia**. This material may be used in the National Highway Institute course No. 4 now in planning stages, in cooperation with FP<sup>2</sup>).
- **Condition Survey Vehicles in Australia**. The team will investigate what is available domestically before its visit.

A early version of the Overseas Scanning Tour's technology implementation plan has been written and is being reviewed. For more information, call FHWA's Luis Rodriguez at (404) 562-3681, or Julie Trunk at (202) 366-1557. ■

# Coming Events

**Sept. 7-10. Pavement Preservation Expert Task Group and Strategic Planning Meeting**, Kalispell, Mont. Contact: Melinda Bridges, FP2, **voice 703.222.5986**, fax 703.610.9005, [info@fp2.org](mailto:info@fp2.org), <http://fp2.org>.

**Sept. 24-27. Third World Congress on Emulsions**, Lyon, France. Sponsored by COLAS, S.A. Contact: Web site, <http://www.cme-emulsion.com>.

**Oct. 7-8. Pavement Preservation Seminar**, Austin, Tex. Contact: Tanya Clarkson, AGC of Texas, **512.478.4691**, e-mail [telarkson1@agctx.org](mailto:telarkson1@agctx.org), web site <http://www.agctx.org>.

**Oct. 11-15. American Association of State Highway & Transportation Officials (AASHTO) Annual Meeting**, Anchorage, Alaska. Host State Contact: Ginger Johnson, e-mail [ginger\\_johnson@dot.state.ak.ua](mailto:ginger_johnson@dot.state.ak.ua); association contact Hannah Whitney **202.624.8489**, e-mail [hwhitney@aaashto.org](mailto:hwhitney@aaashto.org), web site <http://www.transportation.org/calendar/2002AnnualMeeting/>.

**Oct. 28-29. Asphalt Recycling & Reclaiming Association Semi-Annual Meeting**, Palace Station Hotel & Casino, Las Vegas. Contact ARRA, **voice 410.267.0023** or write to ARRA Headquarters, No. 3 Church Circle - PMB 250, Annapolis, Md., 21401, or download registration brochure from <http://www.ara.org>.

**Jan. 12-16, 2003. Transportation Research Board**, Washington, D.C. Contact: TRB, National Research Council, **202.334.2934**, fax 202.334.2030, web site <http://trb.org/trb/meeting>.

**Feb. 4-7, 2003. Slurry Systems Workshop**, Las Vegas. Contact International Slurry Surfacing Association, 410.267.0023, fax 410.267.7546, <http://www.slurry.org>.

**Feb. 19-22, 2003. 27th Annual Meeting, Asphalt Recycling & Reclaiming Association**, Fort Lauderdale, Fla. Contact ARRA at **voice 410.267.0023**, fax 410.267.7546, <http://www.ara.org>.

**March 18-20, 2003. World of Asphalt 2003 Show and Conference**, Nashville Convention Center. Contact World of Asphalt, **800.355.6635**, <http://www.worldofasphalt.com>.

**March 19-22, 2003. 30th Annual Meeting, Asphalt Emulsion Manufacturers Association**, Nashville. Contact AEMA at **voice 410.267.0023**, fax 410.267.7546, <http://www.aema.org>.



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