Southeast Pavement Preservation Partnership

Meeting Minutes
Hotel Monteleone
New Orleans, Louisiana
May 12 through May 14, 2009

Setting the Stage

Mark Chenevert, LADOTD, the Southeast Pavement Preservation Partnership (SEPPP) Chair, called the meeting to order and welcomed the attendees. Mark thanked the agencies in attendance particularly during these difficult financial times facing the nation. Each agency is confronted with not having enough funds to address their current needs, and pavement preservation is the only opportunity for highway agencies to cost-effectively improve our current condition. It will ultimately create their better pavements and to delay costly reconstruction and rehabilitation well into the future. Pavement preservation is truly applied asset management.

Dr. William Ankner, Secretary of LADOTD, was unable to attend the meeting because of an unforeseen legislative commitment. He sent his regards and wishes for a successful meeting.

Wes Bohlinger, Administrator, Louisiana Division, FHWA, welcomed the attendees to New Orleans on behalf of the FHWA Louisiana Division. He understood that travel restrictions impacted all the states, yet the attendance reflected a commitment to improving the state of practice through pavement preservation.

Katie Zimmerman, AP Tech, presented the integration of pavement management and preservation and explained how a robust PMS can support pavement preservation. Many areas within a DOT such as maintenance, construction, materials, etc. are resistive to a pavement management system, unless brought into the initial process development. The PMS should be able to provide a better way to analyze the pavement and help determine the right treatment to apply.

Pavement preservation treatments primarily address functional deterioration, but in some cases there is a need to collect additional distresses. There are surrogate methods to obtain some additional information without changing the way information is currently collected. Macro-texture can be obtained from automated data collection vehicles used to estimate Mean Profile Depth. This information could be used in combination with crash data to set investigatory levels for when a treatment might be appropriate to restore surface characteristics, reduce hydroplaning, or to reduce road noise.

The important first step of any successful project is treatment selection. There are several approaches to using a pavement management system in treatment selection, but perhaps the simplest method is to combine all the pavement preservation treatments into one or two group. The agency will need to develop rules for the appropriate time when preservation treatments should be considered. There is also a need to think about the impact models that represent the

changes in condition after the treatments are applied, and have to good handle of the cost of the treatments. Once rules have been established, the agency can then have the pavement management system identify candidate sections for pavement preservation, and the have the field staff make the final selection.

Although there are many challenges, such as what is the effectiveness of crack seals, the pavement management system should be able to help demonstrate cost-effectiveness and help justify the need for the current funding. A big issue these days, in light of the current recovery act and with the pending authorization legislation, is accountability and transparency in the way decisions are being made. Pavement management should be able to serve a significant role in providing the needed information.

At the most basic level, pavement condition information in the pavement management system should be able to provide information needed to analyze the performance of a pavement in terms of the type and extent of distress present. The pavement management system should be able to identify the types of treatments that are feasible. However, often times the different factors that lead to the selection of preventive maintenance treatments haven't been incorporated into a pavement management system. The challenge for pavement management engineers is to figure out what factors influence the selection of preventive maintenance treatments and to figure out which of those can be incorporated into a pavement management system.

Consider four recommendations for project and treatment selection:

1. Start integrating preventive maintenance treatments into the analysis process using the condition information already available. Begin with a simplistic approach by creating a single preventive maintenance treatment and set up decision trees that flag sections with minimal distress.
2. Next step is to work with the maintenance and operations staff to identify other factors that trigger the use of preventive maintenance treatments. Examples may include sealed and unsealed cracks, surface rutting, surface texture characteristics, oxidation, and even factors that aren't condition related like traffic volumes, etc.
3. Determine how many trigger factors that be incorporated into the pavement management system…through data integration, modified condition survey techniques, etc.
4. Establish processes so the preventive maintenance treatments make their way back into the pavement management system, such as tracking performance over time and reporting better network conditions.

It is difficult not to recognize that changes are going to be necessary in the way pavement management works in the future. Now is the time to embrace the opportunity to make the changes and enhance the role that pavement management will be expected to accomplish.

Judith Corley-Lay, NCDOT, discussed the Asset Management and Data Collection Workshop, held September 24 – 26, 2008, in Durham, North Carolina. Judith had the dubious honor of being responsible for coordinating the data collection. Her involvement was a result of a late night discussion over a cold beverage between Jim Sorenson, FHWA, and Steve Varnedoe, NCDOT.

The workshop had four separate tracks, including pavements, bridges, roadside elements and geotechnical. Judith concentrated her presentation on pavements. The overall goal of the workshop is to take the individual subjectivity and variability out of data collection process, while collecting data quickly and at a reasonable cost. In essence the data collection process should have accurate measures, consistent repeatability, and establish ground truth. Ground truth refers to information that is collected "on location." More specifically, ground truth may refer to a process in which digital data are compared to what is there in reality.

Judith established a test loop for data collection that included a variety of pavement sections, with different traffic volumes, physical features, and geometrics. The loop was located near Raleigh, NC, and was 93 miles in length. It included I-40, I-440, I-540, US-1, US-64, US-70, NC-39, NC-98, and a service road. The pavement was mixture of concrete and asphalt surfaced sections, both urban and rural. The number of lanes varied from 2 to 10 lanes.

Pavement data collection vendors throughout the country were invited to run the loop. Only three vendors displayed interest in the project: Pathways Services, Fugro Roadware, and Precision Scan. Pathways and Roadware submitted complete pavement data, and Precision Scan submitted partial data which included only one element – Ground Penetrating Radar (GPR). Judith personally performed a 20% review of the data and distresses for both Pathways and Roadware and concluded that the data clearly demonstrated that no single measure exhibited good truth. What was considered accurate measures often had high variability.

Judith expects a report on the data collection results to be released very shortly.

Mark Washko, BASF, reported on future transportation congressional legislation. Mark works with the BASF Government Affairs Office in Washington, D.C. He reported that the Obama Administration is on record as supporting an 18-month extension for SAFETEA-LU. With the Senate Committee on Environment and Public Works (EPW) supporting the Administration's position, the likelihood of Congress passing and the President signing into law a comprehensive surface transportation bill this year is about zero. Even so, House Committee on Transportation and Infrastructure (T&I) leaders are pressing ahead with their legislation to reauthorize the highway program, which expires on September 30. A T&I committee is planning to vote on the bill in the summer. The biggest sticking point in getting legislation passed is funding. With a projected price tag of approximately $500 billion over six years, members of Congress are not very inclined to add such a costly program into the mix of other high-cost legislative priorities (e.g., healthcare overhaul, climate change, stimulus spending) this year.

What this means for Pavement Preservation. The easiest path forward for Congress and the Administration is to pass a "clean" extension (i.e., one that does not change existing policies, but merely extends funding the existing program), effectively postponing the day of reckoning. If Congress approves an 18 month extension, it is possible that a six-year highway bill could be passed next year, but equally likely is that Congress would not pass such legislation until 2011. The bottom line is that, if Congress opts for a clean 18-month extension, there is not much likelihood of getting language supporting pavement preservation into an extension bill. On the

positive side, this means that there will be more time to work with Congress (especially the Senate) to get language supporting pavement preservation into the comprehensive reauthorization bill next year.

Tom Harman, FHWA Resource Center – Baltimore, provided insight into the American Recovery & Reinvestment Act of 2009. Tom brought levity to the serious nature of the requirements and provisions of the Act through his version of "Deal or No Deal."

The Act, commonly referred to The Recovery Act (of 2009), has authorized $27.5 B in highway projects, which accounts for 3.5% of the total $787 B investment. Funds allocated to states are eligible for most activities within the Surface Transportation Program, including reconstruction, restoration, repair, etc. The federal government will fund up to 100% of most projects. Priority will be given projects that are completed within 3 years, and projects that are located in economically distressed areas.

The Recovery Act has use it or lose it provisions. A minimum of 50% of the apportioned funding to each state must be obligated within 120 days of the funds will be redistributed. Furthermore, within 30 days of the enactment, the Governor must certify to the USDOT Secretary that their State will maintain the state funding level for transportation projects. The Governor must also identify the amount of state funds that their State planned to expend from the date of enactment through September 30, 2010.

Larry Galehouse, NCPP, presented some preliminary results of the FHWA Pavement Preservation Technical Appraisals. The NCPP has performed 40 state on-site reviews beginning in 2005 to the present. The appraisals covered 13 topic areas that impact pavement preservation. The topic areas include: general information, program assistance, program implementation, public relations, pavement management, project selection, preservation treatment, business process, quality control, materials, training, performance monitoring, and research and development.

A goal of the technical appraisals is developing a national pavement preservation database, accessible to state DOTs that have participated in the process. The database will allow each state to compare their results with other states within the same geographic region or compare their results with the nation. The database is web accessible and will have user name and password protection.

Perhaps the most encouraging output of the appraisals is that State DOTs are becoming increasingly receptive to Pavement Preservation.

Jim Sorenson, FHWA Office of Asset Management, discussed the importance of each state having a strong pavement preservation program. A strong program most exhibit support from all areas of the DOT. Yet, within many DOTs organization chimneys and other factors exist that hamper the program advancement. Maintenance cannot carry a pavement preservation program alone. The pavement management systems have not included the treatments or preservation

strategies – but it's not their fault. Supporting research data, such as timing, treatment life extensions, cost effectiveness, etc., to populate the PMS is simply not in place.

Times have changed. Today's high prices have forced the HMA industry to drop their Perpetual Pavements. Now is the right time for pavement preservation and the opportunities have never been better. Highway agencies need to insure preservation strategies are incorporated into PMS.

It is common knowledge by pavement practitioners that one project doesn't age the same as another project. However, the layman has a difficult time understanding how pavement age. A good method for the laymen to understand the needs of the network is by introducing Remaining Service Life (RSL). We need to make pavement information more transparent to the layman, whom is often the holder of our pocket book or influences public opinion. The booklet entitled, "A Quick Check of Your Highway Network Health" or known as the little red book, shows that you can't continue to balance network needs with rehabilitation and reconstruction alone. A pavement preservation program is needed to level out the pipe-stems.

Asset Management is not a program, it's a decision process. Asset Management gives the decision maker the ability to make informed policy. We need to move from the past to address today's need. Consider renaming the DOT maintenance unit to the preservation unit.

Today, our Congress is struggling to develop a new authorization bill. Congressman James Oberstar has proposed an additional $75 B funding to improve the highway infrastructure. Although the additional funds are important, the future is about solutions and new preservation strategies have to be put on the roads. Agencies need to address preserving the pavements earlier than before.

In the future, partnerships are going to be the key for success. The 5 regional pavement preservation partnerships; Southeast, Northeast, Midwestern, Rocky Mountain and Western, will drive the program in the coming years. The AASHTO TSP·2 Panel is represented by subcommittees under the auspices of the Standing Committee on Highways (SCOH). The TSP·2 Panel is charged with insuring the AASHTO preservation policy is successfully implemented. The Southeast PPP has two members on the TSP·2 Panel: Judith Corley-Lay and John Vance. Therefore, the SEPPP has excellent opportunity to shape the future direction of preservation.

Jim introduced his new mantra, "if they don't build it right, we can't buy it." This highlights the need to maintain high standards and accountability in pavement preservation.

Gayle King, GHK Inc, spoke on innovative research and development that is currently taking place to find alternatives to traditional petroleum based binders which are becoming less abundant. This new binder technology is based on finding a sustainable material source with an environmental benefit such as removing CO_2 from the atmosphere. Through the application of nanotechnology, a new group known as "The Algaeal Biomass Organization" is developing bio-jet fuel from algae at a University of Iowa-Ames facility through a project with Boeing and the Department of Defense. Potentially, "Algae-phalt" could be manufactured from algae oil grown in salt water in a desert environment, producing 100 times more oil per acre than vegetable based

products such as soybeans. Currently, recovering the oil is an expensive process, but new "sponge-like" substances are under development that can extract the oil without damaging the algae. Over time this technology appears very promising and will not have a negative impact on food production like corn and soybean oil production currently do.

Agency and Industry Presentations

Rhonda Taylor, PBS&J, representing Florida DOT, stated that their pavement network currently does not have many structural needs, thereby allowing them to focus on preserving more lane miles. Approximately 50% of the projects in the queue do not require an increase in the structural number. Most of their preservation work is accomplished through state funded resurfacing. The Department is currently using only thin HMA overlays in their preservation treatment tool box, but they are considering the use of micro-surfacing. The interstate system is managed by the Pavement Management group while arterials are managed by the districts. The pavement management system was developed in-house and has structural data based on as-built cores.

Eric Pitts, Georgia DOT, asserted the Department started pavement maintenance about 30 years ago. Georgia's Pavement Management System known as GPAMS and pavement condition data is collected on the entire network annually and analyzed through their COPACES program. Recently, recommendations were made to the 13 member Georgia Transportation Board for the 2010 program. The Department initiated an effort to educate their board members on their historical approach to preserving and managing their pavements and the negative effects that recent budget cuts are having on their network. Board members were given a technical tour of pavements within their districts to demonstrate good, fair and poor condition levels. A 10-year pavement condition model was presented which demonstrates how the network will continue to deteriorate due to inadequate levels of funding for pavements. The poor pavements will increase from the current level of 15% to 80% by 2019, without additional funds.

David Cook, South Carolina DOT, indicated that the SCDOT Pavement Improvement Program on the Federal Aid system had a current funding level of $82M. The program is broken into three components: reconstruction-20%; rehabilitation-63%; and, preservation-17%. He reported that all of the 2009 ARRA funds had been allocated to reconstruction and rehabilitation and nothing was directed to preservation. On the State System (non Federal Aid), the Department has a budget of $75M for pavements to be distributed with 66% for rehabilitation and resurfacing and 34% for preservation. A significant part of the preservation work is dedicated to chip sealing. Chip seals are limited to pavements with less than 1500 ADT, but with the addition of polymers the thresholds are increasing.

Mr. Cook encouraged the SEPPP to focus efforts on public education and outreach as well as the development of training tools for pavement preservation project selection. The number of preservation projects is increasing, particularly with local engineers. He encouraged the audience to read the publication entitled "Rough Roads Ahead" on the TSP·2 website.

Richard Chisolm, Mississippi DOT, declared that MDOT is using a large mix of fixes for pavement preservation. The Department is beginning to use warm mix asphalt with the Evotherm process. They have completed projects using a 9.5mm mix placed at 1.5" which did not require any major modifications to the asphalt plant. The heating temperature was reduced to 265º F at the plant with temperatures behind the paver screed recorded at 230º F, achieving 94.5% density. Mississippi is also planning an ultrathin HMA pilot project which will use 25% RAP and 30% sand. This 4.75mm mix will have 4-6% voids.

Mark Chenevert, Louisiana DOTD, reported that they had been developing a pavement preservation manual and were interested in comparing manuals from other states. He noted that rehabilitation had been removed from their definition of preservation.
The Department also changed its definition of pavement preservation to treatments less than 2" of additional surface thickness, and as a result a programmatic agreement with FHWA has been established that does not require extensive safety upgrades or improvements. The safety upgrades may include limited, low cost improvements such as rumble strips. Mark suggested that available state preservation manuals be included on the TSP·2 website.

The Department has been conducting pilot projects using the "Safety Edge" which is a shoe added to an asphalt paver to form a 30-45º sloped edge. This edge helps reduce pavement drop-offs and helps to re-direct errant vehicles. They found the plate must be removed when paving by driveways to achieve a proper tie-in.

Mr. Chenevert indicated that Department is interested in pursuing pilot projects using Tire Grip® in horizontal curves to improve skid resistance; Joint Bond® to improve HMA longitudinal joint performance, and shot abrasion combined with a fog seal. Fog seals have been applied to rumble strips during construction, but the Department does not have a history of performance. By improving the macro-texture, a fog seal or rejuvenator could be applied without the expected loss of friction.

Tammy Simms, Texas DOT reported that their agency is implementing a web-based pavement performance maintenance management system with the purpose of assisting the districts with the allocation of funds. They have established a performance goal for their pavement network of having 90% of their pavements in "good" or better condition. The functionality of the system provides prediction models for:

Light Rehab	<1½" Overlay
Medium Rehab	HMA Mill & Fill
Heavy Rehab	Down to Base

Ms. Simms explained that the Pavement Preservation comprised about 35 - 40% of their total pavement program, or about $250M, while light rehabilitation totaled $1.2B. Their Department spends about $900M on routine maintenance. The Department has experienced specification variations in the past and is now working to obtain more uniformity in their specifications.

Texas DOT is using the sand patch test to evaluate pavement macro-texture and determine appropriate application rates for its chip seals. Additionally, they are beginning to utilize strip seals as a preventive maintenance treatment.

Troy Travis, Oklahoma DOT, stated that preservation was supported by their top management. The Secretary came up through the agency ranks and has a maintenance background as does their Chief Engineer who was formerly State Maintenance Engineer.
The Department has a State Surface Rehabilitation (SSR) program mostly oriented to rehabilitation, a $30M annual pavement preservation program (3P), and a Special Maintenance Program which covers treatments such as chip seals. The 3P is not used on roads with known safety problems, which is approximately 25% of the system. Current consideration is given to adding three options for federal funding: Chip Seal/Armor Coat, Hot In-place Recycling (HIR), and Ultrathin Bonded Wearing Course. The Special Maintenance Program is a band-aid program to hold the roads together and at least 50% of the state funded program must be contracted out. Mr. Travis reported that the Oklahoma pavement network is currently in poor condition and the state has lost its sovereign immunity which is creating a difficult balancing act for maintenance engineers.

The Department is now using the Micro-Deval test for its aggregates instead of the L.A. Abrasion test. The wet performance test for aggregates is gaining popularity for assessing aggregate quality for HMA, PCC, aggregate bases and surface treatments. The Department is sponsoring a large pavement preservation research project with 23 test sites near Norman, OK which will be covered in more detail during the FHWA Pavement Preservation ETG later on in the week by the researcher.

Pavement decisions are primarily made in the field. The Central Office is supporting the field and has implemented an Agile Assets Pavement Management System.

Jay Norris, Tennessee DOT, indicated that he saw significant benefit in the individual state presentations during the SEPPP meeting. He offered that his Department desired to promote a "perpetual pavement" concept whereby they only had to address the pavement surface only through preservation. A slide showing how the number of lane miles resurfaced annually was trending sharply downward and the Chief Engineer has committed to reserving 10% of available funding for non-HMA preservation treatments. Mr. Norris stated although 90% of funding had addressed 800 lane-miles of HMA treatments the remaining 10% non-HMA preservation funding had treated 600 lane-miles of work.

The Department has started constructing chip seals for the first time in 28 years. They had received some complaints and emails from the public about flying stone, and made design improvements with #8 stone at 23 lbs/yd^2 and CRS-2P emulsion placed at 0.25 gal/yd^2 followed by a diluted emulsion fog seal applied at 0.12 gal/yd^2.

New HMA applications have seen noted improvement in ride quality, smoothness, density, and end of load segregation since requiring the use of material transfer devices (MTD) in their specifications. The Department is now requiring the use of Joint Bond® at the expense of the

contractor if centerline joint densities are not met. The Tennessee ARRA 2009 program is around $469 M of which $100 M will be used for resurfacing.
Mr. Norris mentioned that their normal pavement program was around $200 M/year with about $15 M dedicated for non-HMA preservation treatments. They did allow alternative bids this year for thin-lift (45 lbs/yd^2) HMA vs. Micro-Surfacing and the HMA alternative won out. The Department is currently working on 'road parity" issues or prioritization by system.

Jon Wilcoxson, Kentucky Transportation Cabinet (TC), discussed the Cabinet has encountered a major push-back against pavement preservation from the HMA industry. A project selection manual was developed but industry forced senior management to reject it until micro-surfacing was removed. However, the situation has begun to improve with the new administration and recently the new Cabinet Secretary backed a staff recommendation to use micro-surfacing in a meeting with a contractor. The project will involve constructing a 1-mile project which will compare the performance of ultrathin HMA to micro-surfacing. Input received from SEPPP members was vital and helped sell the preservation message in Kentucky.

Chip seals have not been used by the Cabinet in over 20 years and state pavement engineers would like to visit successful chip seal projects in other states before undertaking a project in Kentucky. Local contractors are not likely to bid on chip seal work as they do not support the use of non-HMA treatments. Although industry support is non-existent, senior management now provides good support for pavement preservation.

Dennis Wofford, North Carolina DOT, gave an update on preservation efforts in North Carolina. He stated that last year about 4000 centerline miles were covered by various pavement preservation treatments. The Department holds Maintenance Engineer Conferences every two years and includes sessions on pavement preservation as part of this training effort. The research program with North Carolina State University has a project that is focusing on chip seals to develop optimal designs for low, medium and high traffic volume roads. Most of the chip seal work is in-house (with 14 Division Road Oil Units) and a few years ago the General Assembly authorized the Department to implement an "Incentive Pay Program" for employees on the chip seal crews, with a goal of boosting productivity and efficiency. Each year improvements in productivity are measured by increases in yd^2/manhour. Productivity has increased by 50% since the program's inception and up to 0.25% of the funds budgeted for the chip seal program can be used for incentive payments.

The Department is also working jointly with FHWA on enhancing the pavement and bridge preservation programs in North Carolina. A working group has been established to accomplish this. After a review of 10% of the roads by field audits, the pavement condition rating increased from 64.4 to 70.5 statewide.

Raja Schekkaran and **Tom Tate,** Virginia DOT**,** presented the pavement preservation efforts and provided an overview of the decision tree methodology being utilized in the Department's new Agile Assets Pavement Management System. Mr. Schekkaran explained the framework developed for treatment selection which considers traffic, structural integrity, and construction history. The Department has developed a Four-Distress Matrix that addresses fatigue cracking,

transverse cracking, rutting, and potholes. Only pavements with non-load associated distresses are considered for pavement preservation treatments. The resulting treatment selection is categorized as preventive maintenance, corrective maintenance, restorative maintenance, reconstruction, and "do nothing".

Mr. Tate discussed two recently constructed pavement preservation projects on I-95 in the Hampton Roads District. The existing pavement was an HMA Overlay that had been constructed over a PCC pavement. The composite pavement was just starting to show signs of deterioration, though it was structurally sound. The roadway was patched, cracks sealed and one section was overlaid with a thin lift asphalt surface (Novachip®) and another section with micro-surfacing. The Department uses a ride specification and a slight decrease in ride quality was noted on the micro-surfacing project. Both sections will be monitored to determine the long term performance and document the resulting pavement life extensions.

Colin Durante, Pavement Technology Inc, discussed preservation treatments and materials offered by his company which are aimed at addressing pavements at the "Top of the (deterioration) Curve". Pavement Technology's Reclamite®, used for nearly 45 years, addresses early pavement deterioration by restoring the plasticity and durability of the binder that are lost due to oxidation and the loss of volatile fractions.

Another product offered by Pavement Technology is JointBond® which is a polymerized maltene emulsion that is spray applied to longitudinal HMA joints immediately after construction to stabilize the area on each side of the joint and improve long term performance. The longitudinal joint is an area that is often difficult to achieve target density. The product can also be applied to rumble strips and does not adversely affect pavement markings.

SurfCrete® is a thin concrete resurfacing material which can be used on variety of pavement maintenance and repair projects. It is a 2-coat application that is approximately 18 mils thick and will feather to a "zero edge" without losing strength, flexibility or adhesion. It is a polymer material mixed with water, cement, and sand.

Chad Gemberling, Road Science Inc, announced that SEM Materials had been dissolved and Road Science Inc had been formed to support many products developed or owned by the former company. Although the new company has few assets, it has exceptional people and a state of the art laboratory in Tulsa, Oklahoma. The focus will be on product development and engineering services.

Technical Presentations

Louay Mohammed, Louisiana Transportation Resource Center (LTRC)/L.S.U., discussed his work on "Laboratory Performance of HMA Mixtures Congaing High RAP Content with Crumb Rubber Additives". The recent spikes in crude oil prices created a research opportunity to incorporate waste and recycled materials in HMA. An important factor in the research was to promote sustainability in the HMA industry. Other key objectives of this effort were to:

- React to the volatility in the availability and price of asphalt cement;

- React to the recent shortage of polymers;
- Explore the benefits of crumb rubber (engineered); and,
- Address traditional aging/oxidation issues associated with RAP "Green" approach.

The project evaluated four different 19mm level 2 HMA mixtures commonly used in Louisiana. The projects used different binders PG 76-22M and PG 64-22 crumb rubber additives and different percentages 0, 15 and 40 RAP. Each mixture was subjected to a standard testing regiment. The research is showing that crumb rubber is a promising technology and has significant potential to enhance pavement performance.

Matt Ross, Penhall Company, gave an overview presentation on Concrete Pavement Preservation Techniques. Mr. Ross discussed some of the long term performance benefits associated with maintaining smooth concrete pavements, including improved pavement condition, safer roads, lower life cycle costs, and improved customer satisfaction. He explained that smooth pavements can significantly reduce damage resulting in a rougher ride typically caused by dynamic loadings. Existing pavements can be improved through diamond grinding with 60-70% improvement in ride quality routinely achieved. Diamond grinding removes only a thin surface layer which is the weakest part of a concrete pavement.

Diamond grinding also can provide improvements in noise. Mr. Ross mentioned that Kansas and Missouri routinely use diamond grinding for this purpose. He noted examples where noise readings have dropped from 104.9 dB to 95.5 dB as a result of diamond grinding. Furthermore, California has estimated that diamond grinding extends pavement life approximately 17 years on their network.

Mr. Ross briefly discussed other treatments/repairs used in the concrete pavement preservation toolbox. These include dowel bar retrofits (DBR), under-sealing, full depth & partial depth repairs, joint resealing, crack sealing, and cross-stitching longitudinal joints. Used in combinations on the right pavement, these treatments/repairs can substantially increase concrete pavement life.

Task Force Team Groups

Steve Varnedoe, NCPP, stated that all agencies are currently facing challenging times with budgets, and voluntary contributions through the AASHTO TSP·2 are continually being evaluated. A logical question that could be asked by the Standing Committee on Highways (SCOH) is, what are the states getting for the contribution? This partnership meeting provides an excellent opportunity to identify common issues and work together to find solutions. The SCOH will be looking for a tangible work product from each of the regional partnerships.

Judith Corley-Lay, NCDOT, facilitated the discussion to redefine the task groups for the coming year and develop action item(s) for each task group. It is critical to keep the groups moving through the year for the success of the partnership. Each task force team needs to develop one or two action items for the following groups:

1. Performance, Monitoring, Standards, Specifications, Warranties
2. Public Relations
3. Workforce Development – Training, Education, and Certification
4. Integrating Pavement Preservation into Pavement Management Systems

Judith promised that next year's meeting will have longer working sessions to further drive action items. Open discussion followed, and the following action items were agreed to by the Partnership members.

1. Specifications – there is a need to obtain pavement preservation specifications from all states in the Southeast.
    a. A few agencies have not supplied specifications
    b. A volunteer is required to contact the missing state agencies
    c. A conference call will be held to assign work tasks to create a generic specification for each treatment type.

    John Calvert, Pavement Technology Inc, volunteered to contact the missing state agencies.

2. Public Relations – ongoing activities have included sending a copy of At the Crossroads to contractors in the Southeast. Chad Gemberling, Road Science LLC, reported that 500 letters have been mailed to all the contractors and other contacts about the SEPPP. Future initiatives should include:
    a. Cultivate contacts with metropolitan areas about the benefits of pavement preservation.
    b. Develop articles for magazines such as Better Roads, Roads & Bridges, Pavement Preservation Journal, etc.
    c. Create a chip seal pamphlet explaining the reasons for the surface treatment and distribute the information at specific locations such as rest areas, project offices, etc.

    As chair of the task force, Chad Gemberling will continue to lead the public relations effort.

3. Training and Certification – should include placement operations, testing, and inspection. The Virginia DOT has an aggressive inspection program that can be used as a model. Various questions must be addressed to initiate a certification program, such as:
    a. Who should administer certification/
    b. Who should be certified?
        i. What is the status of the FHWA certification activity? Chris Newman, FHWA, is the lead contact.
        ii. What states have inspection certification? Simone Ardoin, LaDOTD, is the lead contact.
        iii. What state training is currently available to assist in certification? Jim Feda, SCDOT, can provide information about the Volpe database.
        iv. What are the state definitions for pavement preservation? Judith Corley-Lay will lead this initiative.

4. Integrating Pavement Preservation into PMS – the Southeast state DOT pavement preservation technical appraisal database can be used to establish a regional baseline. The database should be available for participating states after the AASHTO Subcommittee on Maintenance meeting in late July. Luis Rodriguez - FHWA, is the task force chair, with Chad Gemberling, Judith Corley-Lay, Raja Shekharan - VaDOT, and Eric Pitts - GaDOT providing assistance. The following query will be made for the baseline:
    a. How are pavement candidates selected, and what is the selection process?
    b. What are the key performance factors; i.e., ride, rutting, etc?
    c. What are the key distresses that trigger the need for a preservation treatment?
    d. What treatments are included into the PMS?
    e. How are the pavement preservation treatments performing?

5. Research – needs are identified in the "Transportation System Preservation Research, Development, and Implementation Roadmap." The research roadmap can be further refined and prioritized as necessary by each state or region. (The document is available for download at: www.tsp2.org) Judith Corley-Lay encouraged the partnership members to use the roadmap to shape a future research program. The task force will be lead by Judith Corley-Lay, with assistance from Tammy Sims - TxDOT, Jay Norris - TnDOT, and Caleb Riemer - OkDOT.

Technical Presentations

Helen King, GHK Inc, provided an update on the Polymer Modified Asphalt Emulsions Study being conducted for FHWA. The study is looking at the emulsion composition, uses and specifications for surface treatments. The Central Federal Lands Highway (FLH) Division of the Federal Highway Administration (FHWA) initiated this study to provide a guide for the use of polymer modified asphalt emulsions in surface treatment applications, specifically chip seals, slurry/micro-surfacing and cape seals. Currently there is no guidance document available giving direction on where to use polymers, determining the loading of polymer, and the performance of different types of polymer in emulsions.

Polymer modification of asphalt emulsions offers improvements in performance and durability, mitigation of pavement distress, and reduced life cycle costs when compared to unmodified asphalt emulsions or hot mix asphalt surface dressings. Based upon their strain performance characteristics at low temperatures, polymer modifiers are generally separated into two broad categories: elastomers and plastomers. Elastomeric polymers
can be stretched up to ten times without breaking, but quickly return to original shape once the load has been removed. Typical elastomeric polymers used to modify asphalt include natural and synthetic rubbers, styrene-butadiene-styrene (SBS) and crumb rubber modifiers (CRM) reclaimed from scrap tires. Worldwide, elastomeric polymers comprise approximately 75 percent of all the asphalt polymer modifiers used (not including recycled crumb rubbers). Plastomeric polymers attain very high strength at a rapid rate, but are brittle and resistant to deformation once set.

Findings that have emerged from the study are:

- Polymers must be pre-blended prior to emulsifying;
- The advantage of using polymers significantly outweighs not using them; and,
- The cost differential of using polymers is approximately 7% more than not using them, which is lost with increased performance gained with polymer.

There is considerable more testing that is required to establish a baseline for polymers. New testing protocols are being investigated to detect polymers in emulsions, including the residue recovery, dynamic shear rheometer (DSR), and multiple stress creep recovery (MSCR). The project completion is expected by the end of 2009.

Fred Mello, BASF Asphalt Polymers, discussed the environmental benefits of pavement preservation and outlined the eco-efficiency life-cycle approach. There are three pillars of sustainable development: economy, ecology, and social responsibility. Mr. Mello demonstrated that an eco-efficiency analysis is an assessment of equally weighted economic and ecological aspects of products and processes. Being able to measure sustainability is critical to its successful integration into business strategy. These measurements include:

- Labor costs
- Raw material costs
- Energy (process and transportation)
- Capital & non-capital investment costs
- Environmental Health & Safety programs and regulatory costs
- Illness & injury costs (medical, legal, lost time)
- Waste costs (hazardous, non-hazardous)
- Recycling costs
- Other as applicable

The environmental impacts considers six parameters used in the ecological footprint. These parameters include raw materials, energy consumption, land use, emissions, toxicity, and risk potential. BASF and Colas recently completed comparative studies on several pavement preservation systems comparing chip seals and micro-surfacing to thin HMA overlays. Early indications appear to illustrate that micro-surfacing alternatives have lower overall environmental impact in all categories because:

- Reduced thickness of the road surface leads to advantages in material consumption, emissions and energy consumption.
- Handling less material and the avoidance of workplace aerosols during application in street construction leads to a lower overall toxicity (human health) potential.
- Micro-surfacing has a lower risk potential because no hot asphalt is used during application on the street surface.

As expected, work is ongoing in this area.

Jim Moulthrop & Gayle King, representing Fugro and GHK Inc, discussed the outlook for asphalt and polymer supplies for 2009 and beyond. In 2008, a number of projects couldn't be completed because market supplies of asphalt and SBS polymers had severely dwindled. What's even worse, this problem could happen again.

The last refinery constructed in this country was in the 1960s. In recent years, crude prices have spiked because of speculators and unscrupulous business practices. In the United States, Europe, and Japan, polymer production is dependent on butadiene. Butadiene is produced as a byproduct of the steam cracking process used to produce ethylene and other olefins. The quantity of butadiene produced depends on the hydrocarbons used as feed. Liquefied Natural Gas (LNG) is usually the principle feed source and typically contains more than 90% methane and small amounts of ethane, propane, butane and some heavier alkanes. The ethane, gives primarily ethylene when cracked, but butadiene is also a derivative.

It appears that polymer production will not be a problem in the near term, but asphalt supplies will continue to diminish. This is because refiners have greater economical incentives to coke petroleum residues, such as asphalt, into fuels; the asphalt value increases approximately $50 /Ton after a coking process is installed. Furthermore, six new cokers will go into production this year and with more expected in the future. Expect asphalt binders to be in short supply in the future unless a premium price is paid.

Business Meeting

Mark Chenevert, Louisiana DOTD and SEPPP Chair presided over the business meeting. The minutes from the 2008 meeting held in Atlanta was reviewed and approved.

Tammy Simms, Texas DOT and SEPPP Treasurer reported that the partnership had a balance of $2,628.00.

Nominations for officers and directors were opened by Chairman Chenevert:

Next year Judith Corley-Lay, North Carolina DOT will rotate into the chair position. Raja Schekkaran, Virginia DOT was nominated and approved as the vice-chair and Tammy Simms will remain as the treasurer.

The open Academic Director will be filled by Caleb Reemer, University of Oklahoma.

Future meeting locations were approved by the members. The 2010 meeting will be held in Nashville, Tennessee and the 2011 will be held in Oklahoma.

A sheet was passed around during the business meeting and members were encouraged to sign up for one of the task force teams.

The group discussed having a joint meeting in the future with the Southeast Pavement Association. After considerable discussion, the group agreed that concurrent meetings would

detract from the SEPPP. However, there was interest in scheduling the SPA meeting after the SEPPP meeting concludes so interested persons could attend both events.

Jim Sorenson, FHWA Office of Asset Management, recommended that the SEPPP must be inclusive of maintenance. If more than 2 people want to participate in the meetings, the state should contact there local FHWA Division Office to request financial assistance. Further, the SEPPP should consider sending a representative to the ICPP scheduled in Newport Beach, California in April 2010.

Mark Chenevert asked the group if the meeting was worthwhile. A resounding "yes" was the members' response.

Judith Corley-Lay thanked Mark Chenevert for his service as chair.

The meeting was then adjourned.