Midwestern Pavement Preservation Partnership

Minneapolis Airport Hilton Hotel
Bloomington, Minnesota
9-11 September 2008

Meeting Minutes

Tuesday, 9 September 2008

1:00 p.m. – 1:30 p.m. "Setting the Stage", Jane Berger, Moderator

Ms. Berger, the MPPP's Vice-Chair welcomed the delegates and apologized for the absence of LaDonna Rowden, Chair of the MPPP. Ms. Rowden was unable to attend the meeting.

Ms. Berger highlighted the agenda items for the three days, described the breakout sessions, and thanked Mr. Roger Olson of the Minnesota Department of Transportation (MnDOT) for organizing the field trip planned for the next day. She also asked the delegates to review the By-Laws and the Minutes from the 2007 MPPP meeting.

Ms. Berger then introduced Mr. Bernie Arseneau of MnDOT who provided the State's Welcome.

Bernie Arseneau, MnDOT

Mr. Arseneau, formerly MnDOT's State Traffic Engineer told the delegates that there had been many recent changes at MnDOT, including the appointment of a new Commissioner. As an example, he highlighted his own newly created Office of Policy, Safety, and Strategic Initiatives, of which he was the Director. As an indicator of its public awareness, MnDOT uses performance measures on all of its roads.

Mr. Arseneau then talked about the I-35W Bridge collapse and reconstruction, citing the resulting loss of public trust. Although new revenues were raised as a result of the accident, their use is mostly restricted to bridges. Speaking as a former Area Maintenance Engineer, Mr. Arseneau said that the performance measures had resulted in better pavements. Many of the improvements have resulted from the application of a large number of chip seals, facilitated by a popular handbook developed by Tom Wood and others. Mr. Arseneau said the meeting represented a great opportunity for networking and sharing best practices. He believed it would be a great meeting.

1:30 p.m. – 2:00 p.m. "Membership Introductions"

After the State's welcome, the attendees introduced themselves, stating their names and organizations.

2:00 p.m. – 2:15 p.m. "Preservation Approaches for High Traffic Volume Roadways", SHRP2 - R26, David Peshkin, Applied Pavement Technology, Inc.

Mr. Peshkin gave a progress report for the 18-month study which began in March 2008. The study, to be done in two phases, has three major products:

- Guidelines on preservation strategies for high volume roadways,
- Methodology (and supporting data) for life cycle considerations, and
- Recommendations for further research.

Study tasks included:

1. Synthesis on current approaches.
2. Identification of preservation strategies / products usable for high volume roads.
3. Development of Documentation.
4. Identification of potential opportunities (Use / Performance).

To date, the study had completed a literature search and designed (and had approved) a national / international survey to be conducted via the Internet. Mr. Peshkin appealed to agencies for help in identifying the right person to receive the survey, provide supplemental data, and provide any available documentation for pavement preservation for high volume roads. He said that his default contact was the State Maintenance Engineer or the Pavement Engineer.

2:15 p.m. – 2:30 p.m. "Transportation System Preservation Technical Services Program (TSP2), Larry Galehouse, National Center for Pavement Preservation (NCPP)

Mr. Galehouse described the TSP2 concept. He said that although the audience clearly were strong supporters of pavement preservation, it was still necessary to struggle to obtain the necessary preservation resources. Today, roadway products are more expensive, but pavement preservation can help substantially and the sooner it is applied the better. He then went on to describe the acronym TSP2 which had its genesis at the Pavements Task Force meeting held in conjunction with the AASHTO Subcommittee on Maintenance in Duluth, MN on July 14, 2003. Due to the inflexible nature of traditional pooled funds, AASHTO chose to develop the TSP2 approach as a more flexible method of promoting and supporting the preservation concept. Its objective is to implement pavement preservation best practices.

TSP2 has three phases:

I Pavement Preservation Technical Services Program.

- Help Desk
- Website
- Speakers Bureau
- Technical Exchange

II Regional Pavement Preservation Partnerships, e.g., Northeast, Midwestern, Southeast, Rocky Mountains, and Western.
- Promotion of sound practices by sharing information.
- All members are invited to share information.

III Bridge Preservation Technical Services Program and Partnerships.

Mr. Galehouse explained that we were now at Phase III and that in October 2008, AASHTO would decide how bridges would be integrated into the program. He then displayed a map showing potential Bridge Preservation Partnerships and explained that it was essential to regard all of our infrastructure components as valuable assets. Mr. Galehouse also showed a listing of the members of the TSP2 Oversight Panel and the Mission and Vision Statements for TSP2. (The major elements of the TSP2 Strategic Plan are displayed on the TSP2's website at http://www.tsp2.org). In order to improve the practice of all preservation, Mr. Galehouse said that continual training would be needed.

Mr. Shields asked Mr. Galehouse about the fees for TSP2. Mr. Galehouse replied that starting in 2009, AASHTO would combine TSP2 for Pavements and Bridges and increase the annual voluntary contribution from $9,500 to $20,000. He strongly urged the audience to explain TSP2 to their agency administrators and solicit their contributions.

2:30 p.m. – 2:45 p.m. "Pavement Preservation - Current Federal Highway Administration (FHWA) Activities", Chris Newman, FHWA Office of Asset Management, Washington, DC

Mr. Newman started by saying that to date, 39 of 52 state appraisals had been completed. He described the program and said that it had been valuable for both the states and the FHWA which had developed:
- A Research "Roadmap",
- Policy Revisions and Guidance, and
- Training.

An important product being developed in-house by the FHWA was the "FHWA Maintenance Field Manual" which had the following features:
- Guidance for FHWA Division Offices,
- Clarification of FHWA Engineers' roles,
    - Pavement Preservation
    - Roadsides
    - Traffic Operations
- Online documentation.

A draft version of the document was expected by December, 2008.

Mr. Newman then went on to discuss Preservation Qualification and Training which was being developed as part of the Transportation Curriculum Coordination Council (TCCC).

Within the TCCC's framework, preservation qualifications were being developed with the following features:

- Qualifications are based on the TCCC's Maintenance Core Curriculum,
- Training needs are being identified,
    - Agencies
    - Contractors
- Existing materials are being evaluated,
- New training is being planned, and
- Materials are being developed in conjunction with a contractor qualification program.

Mr. Newman added that unfortunately, knowledge that is needed is not always taught in college engineering programs and that many engineering professors lack appropriate backgrounds in the preservation field. He listed the following pavement preservation courses offered by the National Highway Institute (NHI):

- NHI-131114 TCCC Pavement Preservation: Optimal Timing of Pavement Preservation Treatments.
- NHI-131115 TCCC Pavement Preservation: Preventive Maintenance Treatment, Timing, and Selection.
- NHI-131103 TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments.
- NHI-131104 TCCC Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management.
- NHI-131110 TCCC Pavement Preservation Treatment Construction (based on the California Department of Transportation (Caltrans Maintenance Technical Advisory Guide (MTAG)).

Mr. Newman then described the Maintenance Leadership Academy presently being developed. This course which is directed at Maintenance Supervisors, consists of 6 modules:

- Maintenance Management / Asset Management
- System Preservation
- Roadsides / Drainage
- Weather Services
- Safety / Work Zones
- Environmental.

The course would be given once or twice a year over a 4 week period to selected candidates. It also features an extensive resource library. Mr. Newman said the course development should be complete by January 2009, and he expected the first presentation would occur in spring 2009.

Ms. Zimmerman observed that there was resistance (in engineering schools) to providing new courses in pavement preservation. Instead, there appeared to be a preference to integrate pavement preservation principles into existing courses.

Mr. Galehouse asked what progress was being made with implementing contractor certification. Mr. Newman replied that there was a move to establish a framework for individual certification by the end of calendar 2008.

In response to a question about how the Research Roadmap was being used, Mr. Newman responded that the pieces were being arranged.

3:15 p.m. – 5:15 p.m. "Team Breakout Sessions" - Break-Out Room #2

"How Laboratories are Approved for Microsurfacing Mix Designs"
Roger Hayner, Terry Asphalt Materials, Inc.
Mr. Hayner stressed the growing importance of having approved laboratories as more states are using preservation treatments. He discussed standards and mentioned four in particular:

- Aggregates
- Mineral fillers, e.g., Portland cement or hydrated lime
- Water which determines the mixture consistency (must be potable)
- Emulsions which are usually cationic and may be quick or slow setting.

Mr. Hayner told the audience that testing laboratories, which usually cost $25K - $30K to set up for micro-surfacing design, need experience and the right equipment. In addition, there is no standard process for laboratory approval for mix designs - the system resembles a patchwork quilt. We need to standardize the laboratory requirements which now vary by state and agency. Higher demand and industry refocusing will lead to more contractors and existing contractors want the newcomers to be competent.

Mr. Hayner cited several FHWA and State research initiatives, e.g., FHWA's Pavement Preservation Expert Task Group (ETG) Emulsion Task Force. In conclusion, he stated:

- No standard process exists,
- Demand for pavement preservation treatments is increasing,
- Standard requirements are needed, and
- FHWA is active in the process.

Mr. Hayner then answered several questions.

Q. What should State DOTs do?
A. State DOTs need design equipment.

Q. Why do good mix designs sometimes fail on the road?
A. Failure can occur as a result of changes made outside the laboratory. It is possible to violate the additive guidelines. The inspector out on the roadway must be vigilant and should not stray too far from the work.

Q. Can the laboratory investigation be shortened or eliminated?
A. Yes, some contractors supply mixes based on proven performance.

Q. Are extractions done on micro-surfacing mixes?
A. Yes, there is a European standard.

Finally, Mr. Hayner made the following points:

- Be careful with sampling - samples from the chute may yield different results from samples taken from the pavement.
- ISSA does not "approve" laboratories.
- Emulsion suppliers use many additives which are proprietary and not subject to disclosure.
- Emulsions can be evaluated by performance rather than contents.

Mr. Woods commented that national standards were unlikely, although regional standards were possible.

"Thick Microsurfacing (3/4")"
Roger Hayner, Terry Asphalt Materials, Inc.
Mr. Hayner said that thick micro-surfacing was an economic alternative to thin HMA overlays. He mentioned three types of mixes, viz., 2FA (9mm), 3FA (12 mm), and 4FA (15 mm). (Typically, on micro-surfacing, water-based traffic markings would be used.)

Thick micro-surfacing had been applied successfully in Ohio (I-70) and Michigan (US-23, I-75). When asked to speculate beyond 2008, Mr. Hayner said that high asphalt prices were here to stay and he predicted prices ranging from $600 to $1,000 per ton.

"Fiber Mat"
Martin Thompson, COLAS-Midland Asphalt Materials
Mr. Thompson explained that he worked for Midland Asphalt, which is part of COLAS. He then went on to say that geotextiles could be quite effective in reducing reflective cracking and compared the traditional maintenance approach with the new techniques of preventive maintenance and asset management. Mr. Thompson's product, Fiber Mat, is also used as a Stress Absorbing Membrane Interlayer (SAMI) and wearing course.

Mr. Thompson then described the Fiber Mat process as a type of sandwich - glass fibers sandwiched between layers of emulsion. The process can only delay cracks, not prevent them.

Mr. Thompson discussed some Fiber Mat details, e.g., ¼" and ½" aggregates are most commonly used and the process is being tested in several locations, including a test track at State College, PA. Fiber Mat adds about 30% to the cost of conventional chip seals.

"SBR and Natural Rubber Latex-Modified Emulsions for Microsurfacing"
Chris Lubbers, BASF Corporation
Mr. Lubbers began his presentation by discussing asphalt emulsions - formulations, components, and other ingredients and talked about component distribution. He then described Polymers as being derived from "**Poly**" = many + Mono**mers** = small molecules and listed the major latex polymer types:

- SBR Latex
- Natural Rubber Latex
- Ground Tire Rubber - GTR (REAS[1]).

Mr. Lubbers then proceeded to discuss visco-elastic behavior and said that polymers help improve high temperature behavior and flexibility at low temperatures. In some respects, micro-surfacing (polymer + asphalt (hard)) behaves in a manner similar to latex foam (latex + air (soft)).

Finally, Mr. Lubbers described the benefits of using polymers in various treatments:

- Chip seals
    - Early and long term chip retention
    - High temperature strength
    - Low temperature flexibility
- Slurry seal and micro-surfacing
    - Improved mix cohesion
    - Reduction in abrasion loss of aggregate
    - Resistance to deformation.

"Microsurfacing in Minnesota"
Erland Lukanen, Minnesota Department of Transportation (MnDOT)

Mr. Lukanen described Minnesota's micro-surfacing experience from four perspectives:

- History
- Current practices
- Current application areas
- Performance.

Mr. Lukanen said that micro-surfacing adds about 5 years to a pavement's life. Minnesota had found from Life Cycle Cost Analysis (LCCA) that the cost of applying the micro-surfacing was approximately equal to the savings gained from deferring a more expensive mill and overlay treatment. (However, when other benefits such as better rideability and less motorist exposure to work zones are considered, micro-surfacing is clearly preferable.)

Mr. Lukanen told the audience that on Wednesday, they would be taken to see a SBR Latex-modified micro-surfacing demonstration on Trunk Highway 55 west of Minneapolis.

[1] REAS = **R**ubberized **E**mulsion **A**ggregate **S**lurry

Wednesday, 10 September 2008

8:00 a.m. – 10:00 a.m. "State and Provincial Presentations"

Dennis Watson, Moderator

Rick Barezinsky, Kansas DOT

Mr. Barezinsky told the audience that Kansas had started its pavement preservation program in 1983. Today, 98% of Kansas roadways are at Performance Level (PL) 1 (Good) with less than 1% at PL 3 (inadequate). Since the mid 1990s, the state has opened its preservation toolbox, adding treatments such as routed crack seal, use of polymers, slurry seals, rut filling, use of modified emulsions, ¾" to 4" HMA overlays, use of fly ash, and 1" Hot in-place recycling (HIR).

In 2002, Kansas began to use Nova Chip on higher traffic roads and now has 13 such projects, most of which are successful. The state has also gone from 1" to 2" surface recycling. Since 2001, Kansas has had success using "Strata" (Koch/SEM product). In 2007, KSDOT installed two 5/8" overlays and plans an additional such overlay in 2009, although their performance is still indeterminate. The state has also had good results with the use of up to 40% Recycled Asphalt Pavement (RAP).

Kansas is also trying new treatments such as Texas Seals (hard rock chip seal using hot asphalt binder modified with rubber instead of emulsion.)

KDOT spends $160M/year on pavement preservation for about 1,100 miles/year. This year, they expect to get considerably less (perhaps half as much) work accomplished due to higher materials costs.

Kevin Kennedy, Michigan DOT

Mr. Kennedy told the audience that Michigan spends about $89M/year on the Capital Preventive Maintenance (CPM) Program, including concrete patching. Of the $89M, $30M to $35M are spent for sealant treatments. Where cost effective, the state allows shifts from reconstruction and major rehabilitation. In 2009, Michigan plans to undertake 3 or 4 Fiber Mat projects. The state is also faced with the challenge of installing rumble strips along the center lines of 2-lane roadways, and ADA ramps are a challenge in the CPM Program

Michigan's funding forecast is gloomy - in 2010 and beyond, the state will be unable to match federal funding. Today, the program is $850M and this amount may need to fall by up to 50%. The state is exploring Construction Quality Partnerships and has engaged Red Vector (Florida) to present training.

Francis Todey, Iowa DOT

Mr. Todey told the audience that the paving industry was very strong in Iowa. In 2005, his agency appointed a new director who strongly supports the preservation concept and is establishing preservation programs despite increased costs. Anticipating increased revenues of about $100M over the next 5 years, the Iowa DOT is moving in the direction

of more surface treatments. In Iowa, an increase of 2 cents/gallon in the fuel tax costs the average motorist approximately $25/year.

One of the first maintenance programs to be instituted was for Interstate highways at $4M/year. This program features crack seals, shoulder fog seals, etc.

Mr. Todey mentioned several challenges being faced by Iowa:

- As the preventive maintenance programs are the responsibility of the districts, the Central Office must convince the districts to undertake the work.
- The Department is incurring higher costs, particularly for materials.
- Higher costs are making it difficult to do contract maintenance.

Tom Roberts, Montana DOT

Mr. Roberts mentioned that Montana, which has had an aggressive preservation program for 10 years, plans to join the Rocky Mountain Pavement Preservation Partnership. He also mentioned that one of Montana's preservation champions is retiring and the other champion may also retire.

Despite its high fuel tax, Montana has also felt the effects of high materials prices and is paying $750/ton to $850/ton for asphalt. In an effort to gain flexibility and speed the implementation of preservation projects, the agency has moved $10M from Construction to Maintenance, also giving contractors advance notice of impending work.

Mr. Roberts believes that lack of resources will eventually force Montana to do more preservation. His agency has also instituted a mentoring initiative for young maintenance engineers. Mr. Roberts also mentioned that college engineering courses needed to be revised.

Joanna Shewen, for Alberta Ministry of Transportation

Ms. Shewen said that Alberta, having done considerable outsourcing in the 1990s, was planning to bring back some functions, e.g., design. With about 17,000 centerline miles and a fairly healthy budget, Alberta spends $300M/year on capital works, e.g., ring roads, and $330M/year on rehabilitation. The agency also makes annual expenditures of $60M to $65M for chip seals (to be increased) and $6M for crack sealing. Alberta's chip seals are coordinated between construction and maintenance.

In 2008, the agency did a Fiber Mat project on a roadway carrying 10,000 ADT. Other treatments include restorative seals and graded aggregate seals for roadways carrying less than 1,000 ADT.

Ms. Shewen said that on thin (1½") overlays, they had experienced thermal cracking, prompting the agency to re-profile before such overlays are applied.

Alberta now has posted preservation treatment guidelines (with typical service lives) on the Internet at

http://www.transportation.alberta.ca/Content/docType233/Production/gappts.pdf . The guidelines also have logical treatment selection trees and must be continually updated.

Nathan Haaland, North Dakota DOT
Mr. Haaland told the audience that North Dakota used a "Mini Mac" machine to apply micro-surfacing to depressed cracks before installing chip seals, slurry seals, micro-surfacing, and thin lift overlay (TLO). North Dakota has found that this technique improves IRI by as much as 20 points in the driving lane.

The agency is updating its specifications and is considering applying more micro-surfacing and slurry seals, especially on higher volume roadways. Other treatments used include thin overlays for which the agency is updating the density specification.

North Dakota has now implemented its first white-topping (7") project and plans to do a cold in-place recycling (CIR) project later in 2008. The agency has also observed that the available range of emulsions is decreasing, and after a hiatus of 15 years, is planning to bring back recycled asphalt pavement (RAP).

Tom Anna, Missouri DOT
Mr. Anna recounted that in 2006, his director had challenged Maintenance to devise a performance program for personnel and projects. Missouri's primary treatment, chip seals, are installed in summer/fall and evaluated in the spring after undergoing a complete winter.

In an effort to boost performance, Missouri instituted incentive awards in various categories. There are three awards given to contractors/suppliers and three awards for agency employees.

Len Frass, Saskatchewan Highways
Mr. Frass said that Saskatchewan, which has good mineral resources, was challenged by four types of road:

- Gravel
- Thin Membrane Surface (TMS) (Unstructured roads meant to reduce dust in rural areas)
- Granular, and
- Paved.

The agency's treatment categories include:

- Routine maintenance – all done in house,
- Light treatments – full seal program (including fibers),
- Medium treatment – micro-surfacing, ultra-thin overlays (1" to 1½"), cold milling for granular pavements, hot in-place recycling (HIR), and
- Heavy treatments – rehabilitation.

In 2008, Saskatchewan's program was $157M, which is expected to increase to $200M in 2009. Current initiatives include:

- Twinning (converting 2-lane roads to 4-lane roads),
- Primary weight network expansion, and
- Hot in-place recycling.

Adam Au, Ohio DOT
Mr. Au told the audience that Ohio has had a preventive maintenance program since 2000 and distress criteria are developed for each preservation treatment. His agency encourages its districts to undertake preventive maintenance by requiring them to do 5% of the candidate lists each year.

Mr. Au said that Ohio continues to track performance for preventive maintenance and treatments that were installed before the inception of the PM program. The agency is data rich and is conducting several studies on performance and cost effectiveness, the results from which are expected to indicate the direction Ohio should go.

Blair Lunde, South Dakota DOT
Mr. Lunde explained that South Dakota was a centralized state and that pavement preservation was somewhat limited. Before 2007, his agency divided pavement preservation funding among four regions. Since 2007, they have moved preservation funds into their STIP to take advantage of Federal funding.

Mr. Lunde also said that micro-surfacing was one of the treatments included in South Dakota's pavement preservation program.

Dennis Watson, Manitoba Infrastructure and Transportation
Mr. Watson explained that while Manitoba's preservation program has been steady, it was still losing ground. His province has about 13,000 2-lane kilometers of surfaced roadways and, 6,000 kilometers of gravel roadways.

Manitoba applies asphalt surface treatments on one third of its surfaced network. In 2007, his agency had a record program exceeding $1B which included 250 km of contracted paving and 600 kilometers of seal coats using in-house crews. The province also completed 100 km of micro-surfacing and spent $17M for in-house maintenance repairs (crack repairs, etc.).

Mr. Watson also mentioned that after 3 or 4 years, Manitoba's pavements were losing considerable amounts of aggregate. Preservation seals are now being applied on a research basis to try and limit or prevent this aggregate loss.

Roger Olson, Minnesota DOT
Mr. Olson told the audience that MnDOT had collected large quantities of pavement management data and was compiling a best practices manual. They were also working on the timing of applications, establishing more test sections, and resurrecting SPS-3.

Mr. Olson said that in the past, MnDOT had a tendency to apply treatments too late to be effective. In addition, his agency was doing more pavement preservation in urban areas, more shoulder work, and more bicycle/recreation trails.

Mats Wendel, Swedish Road Administrator
Mr. Wendel was visiting Minnesota at the invitation of the Minnesota Department of Transportation.

Mr. Wendel explained some aspects of Swedish pavement preservation practice. In Sweden, it is customary to apply a 2" HMA overlay and follow it after about 2 years with a chip seal. Of the approximately 700M square meters of chip seal in Europe (mostly in France), Sweden has 80M square meters. Sweden's normal aggregate size is 11mm (max 16mm).

As Sweden still allows studded tires, it is necessary to use hard aggregates. Mr. Wendel described a common dilemma – it is hard to judge when to do a chip seal. Perhaps a roadway could withstand another winter, but if the winter is warmer than usual, the road would lose stone and a chip seal would no longer be appropriate.

Sweden does not undertake preservation treatments in early spring or late fall, preferring instead to do the work in the summer to allow the roads to heal.

Todd Shields, Indiana DOT
Mr. Shields referred to several studies being conducted by the Indiana DOT:

- Seal Coat Evaluation Study (with field and laboratory components)
- Pavement Preservation Best Practices
  - Distress Identification Manual
  - Treatment Selection Guidelines.

The agency had also provided several training sessions:

- NHI
  - Design and Construction of Quality PM Treatments - 6 sessions (each district)
  - PM Treatment, Timing, and Selection - 3 sessions (2 districts/class)
- Emulsion
  - Partnered with Industry (Asphalt Materials, Inc.)
  - 3 sessions (2 districts/class)

Mr. Shields said Indiana was interested in fog sealing and had experimented with fog seals on shoulders in the Fort Wayne District with good results.

Indiana had also revised its specifications for chip seals and micro-surfacing.

Finally, Mr. Shields mentioned a number of areas where Indiana would be grateful for input from other agencies:

1. How do other agencies work IRI (roughness) considerations into surface treatments? Typically, these treatments do not address IRI, and often make a road

rougher. Indiana is facing the institutional obstacle of having to "buy" something, i.e., IRI points, with construction funds.

2. How are agencies complying with the new MUTCD requirement that temporary CL markings are only allowed for 3 days, after which permanent markings are required? How is this done with chip seals where final sweeping may not be done within 3 days?
3. Do other agencies have clear, specific "trigger values" for pavement preservation treatments, e.g., micro-surfacing being appropriate for roads with IRI, rut, PCR, friction, etc in certain ranges?
4. Do other agencies have a method to track:
    a. Total mileage treated in a time period (resurfacing, reconstruction, PM)
    b. Actual breakdown of PP treatments (we can't easily differentiate a contract micro, un-bonded wearing course (UBWC), chip seal – all are coded "surface treatment").

Thursday, 11 September 2008

8:00 a.m. – 10:00 p.m. "Technical Presentations"

Todd Shields, Moderator

"Award Presentation", Jane Berger, North Dakota DOT, MPPP Vice-Chair

Ms. Berger first thanked Ms. Hahn and Mr. Galehouse for planning and arranging the logistics of the meeting. She then thanked the Host State Representative, Mr. Olson to whom she presented an inscribed plaque for his years of service to the Partnership.

"SBS Supply Outlook"

Henry Romagosa, ICL Performance Products

Mr. Romagosa began by saying that *"Good roads cost less"* would not be his message for the day. He then referred the audience to his White Paper, copies of which were included with the registration materials.

Unfortunately, raw materials needed to manufacture polymers were in short supply, and the production of Ethylene was a particular problem. Butadiene is one by-product of ethylene, but while oil prices remain high, producers find the production of other by-products to be more profitable.

Mr. Romagosa summarized the problem as follows:

> Ethylene is made by a steam cracking process which can accept as input, either gases such as ethane, butane, or propane, or liquid petroleum such as gas oil or naphtha. While ethylene, propylene, or benzene can be produced from either gas or liquid, other products such as butadiene can only be produced from liquid petroleum. As the relative prices of the inputs vary, producers move back and forward between gas and liquid inputs and the supply of butadiene becomes unstable.

Mr. Romagosa suggested the following list of modifiers as possible alternatives to SBS polymers during the supply shortage:

- Styrene Butadiene Latex,
- Reacted Ethylene Terpolymer (Elvaloy),
- Ethyl Vinyl Acetate (EVA),
- Ground Tire Rubber (GTR),
- Hybrid Binders, and
- Polyphosphoric Acid (PPA).

"Panel Discussion"
Henry Romagosa, ICL Performance Products
Chris Lubbers, BASF Corporation
James Moulthrop, Fugro LP
Mr. Moulthrop told the audience that he had previously worked with Exxon Chemical in 1985-1986.

Mr. Romagosa cautioned the audience about the use of GTR which, although it contains an elastomeric component, is a raw material and not consistent in quality.

Mr. Lubbers said that Texas is currently a big market for GTR. He noted that SBR takes longer to set, because the polymer film forms, water evaporation slows, which also delays the return to traffic. Formation of the polymer film indicates high early strength. A shortage of polymers affects hot mix suppliers more than emulsion suppliers.

Mr. Romagosa predicted that as refiners install cokers (costing approximately $1B), they will continue to use them - not good news. Cokers make light-end products, i.e.; fuels. Asphalt now costs approximately $700/ton and could substantially increase in the future.

Mr. Lubbers stated that the cost of asphalt two years ago was $350/ton.

Mr. Moulthrop remarked that when asphalt rises to a threshold price, sulphur technology becomes economically attractive. Some of the previous health/safety issues have been overcome.

Mr. Romagosa said sulphur was now in short supply and becoming more expensive, but we should expect to see more sulphur used in the future.

Mr. Moulthrop said that he had talked with the Texas DOT and Louisiana DOTD and that the Texas DOT had not done anything different except for low volume roads. Texas now had a specification for terminal blends which was applied at the option of the districts. On roads carrying less than 7,000 ADT, the Louisiana DOTD uses 64-22 instead of 70-22 Modified. However, performance over time is still largely uncertain.

Mr. Romagosa said some new specifications allow for a broader range of materials based on their performance.

Mr. Lubbers said that some crude sources do not make good polymers, and although it is possible to work around the problems to meet specifications, long-term performance is still uncertain.

"AASHTO National Transportation Product Evaluation Program (NTPEP)"
James McGraw, Minnesota DOT
Mr. McGraw told the audience that AASHTO's NTPEP had been a win-win for agencies and suppliers. (NTPEP's website is http://ntpep.org). He mentioned that the program had 4 current projects and that it was becoming somewhat of a data mine, allowing users to get away from hard copy reports.

Mr. McGraw mentioned a study of "Joint Sealers for PCC Pavements", currently under way in northern Minnesota. The study consisted of a 3-year field/laboratory evaluation of 18 products from 9 manufacturers. There appeared to be little performance difference between the inner and outer lanes. Also, the Sealant Condition Number (SCN) is not a good predictor of performance - instead, seal failure is a better predictor.

In the 2005 Crack Sealant Evaluation, several lessons were learned:

- Low modulus performance is better than Type II,
- Summer healing is desirable, and
- Evaluation should occur in winter.

"FP^2 Update and Sealer Binder Study"
James Moulthrop, Foundation for Pavement Preservation (FP^2)
Mr. Moulthrop began by describing the FP^2 and its emphasis areas. As the voice of industry, the FP^2 is an umbrella group representing various industries. The FP^2's emphasis areas are:

- Education - some college courses on pavement preservation are now available.
- Research - Pavement Preservation Roadmap, problem statements, funding.

Mr. Moulthrop then described the FP^2's organization and some recent accomplishments, including publication of the "Pavement Preservation Journal". He also mentioned TRB's establishment of a new standing committee, "Committee on Pavement Preservation (AHD18)".

The FP^2 is in a period of transition, having lost a major supporter, SEM Materials. Mr. Moulthrop also mentioned that the Foundation planned a strategic planning meeting to be held in Atlanta in mid-October, 2008. He also observed that while materials costs were rising, revenues were declining.

Finally, Mr. Moulthrop discussed the "Sealer Binder Study", summarizing its highlights, findings, and recommendations for further study.

10:00 a.m. – 12:00 p.m. "Business Meeting"
Jane Berger, Moderator
The meeting began at 10:20 a.m.

Secretary Treasurers Report
Todd Shields, Secretary/Treasurer of the Midwestern Pavement Preservation Partnership (MPPP) provided members with a financial report which showed a current amount (prior to this meeting) of $60,289.43 available for future initiatives.

Mr. Olson (MnDOT) moved to accept the report, Mr. Bill Tompkins (Indiana DOT) seconded, and the motion was approved.

Revised By-Laws
Copies of the revised by-laws were distributed with the meeting materials.

Ms. Zimmerman (APT, Inc.) moved to accept the revised by-laws, Mr. Frass (Saskatchewan Highways) seconded, and the motion was approved.

Next Meeting Location and Date
Ms. Berger inquired where and when members wished to have the next MPPP meeting. Mr. Haaland moved to have the meeting in Illinois and let Ms. Rowden select the location (possibly Chicago). Mr. Baker seconded the motion which passed.

Mr. Galehouse said that AASHTO wanted to see more contractor participation which would be more probable if the meeting were held in late fall or early spring. He recommended choosing fall and leaving it to the Steering Committee to select the date. The delegates then had a discussion of local participation and emphasized the need for county and municipal participation, noting that the Chicago area had about 1,400 members of local agencies. A proposal was made that the Steering Committee approve a date by 1 January 2009. Mr. Anna seconded the motion which was carried.

Election of Officers

Secretary/Treasurer
Kevin Kennedy (MIDOT) was nominated by the Steering Committee. There were no other nominees. Mr. Olson moved to accept the nomination. Mr. Scott Stone (MoDOT) seconded the motion which passed by voice vote.

Director - At Large
Mr. Watson nominated Nathan Haaland (NDDOT) to fill a vacant At-Large Directorship. Mr. Baker (McHenry County, Illinois) seconded the nomination and Mr. Haaland's election was approved.

Director – Industry Representative
Mr. Durante was nominated to fill a vacant Industry Representative Directorship. Mr. Olson moved for approval of the nomination and Mr. Roberts seconded the motion which was approved.

Directorships - Public Agency

Ms. Berger invited nominations to fill positions being vacated by Jon Watson (MTDOT) and Tom Roberts (MTDOT). Scott Stone (MoDOT) and Dennis Watson (MB Infrastructure and Transportation) volunteered and nominations were closed. Mr. Olson moved that both candidates be approved and Mr. Roberts seconded the motion which was carried.

Rotation of Officers

Normally, the Vice-Chair would rotate to the position of Chair. However, Ms. Berger cited LaDonna Rowden's medical condition and her agency's travel restrictions as reasons for her inability to act as Chair and proposed that Ms. Rowden be retained as the MPPP's Chair for the coming year and that she (Ms. Berger) should be designated as the Immediate Past Chair. The proposal was seconded by Mr. Haaland and passed by voice vote.

New Business

Academic Representation

Ms. Zimmerman observed that it had been very difficult to fill the position reserved for Academic Representative. She moved that the Academic position be made At-Large and that preference should be afforded academics when filling the position. She also noted that this change would require a change in the By-Laws. Mr. Kennedy seconded the motion which was approved.

Ms. Zimmerman then nominated Francis Todey of Iowa to fill the position. Mr. Brent Marjerison (Saskatchewan Highways) was also nominated, and by a show of hands, Mr. Todey was elected to fill the position.

Adjournment

Mr. Haaland moved for adjournment and was seconded by Mr. Baker. There was no discussion and the meeting was adjourned at 11:00 a.m.