April 2012

PAVING PROGRESS

Minnesota Asphalt Pavement Association

900 Long Lake Road, Suite 100 • New Brighton, MN 55112 • (651) 636-4666 • www.AsphaltIsBest.com

In This Issue:

56th Annual Workshop

The 56th Annual Asphalt Contractors' Workshop/MN Quality Initiative Workshop was held March 6th at the Earle Brown Heritage Center in Brooklyn Center, MN. The theme for this year's event was "Perpetual Asphalt Pavements - Sustainable for Generations."

The workshop is an activity of the Minnesota Quality Initiative in cooperation with the Federal Highway Administration (FHWA), Minnesota Department of Transportation (Mn/DOT), MN Pollution Control Agency, Local Road Research Board, MN County Engineers Association, MN Public Works Association, City Engineers Association of MN, American Council of Engineering Companies-MN, MN Association of Asphalt Paving Technologists, University of MN Duluth, and MAPA. Thank you to the organizations and planning committee that helped develop the agenda.

Gerry Huber, Heritage Research Group

This year's event was co-chaired by Graig Gilbertson, Mn/DOT, and Derek Hawkinson, Hawkinson Construction.

The morning's presentations began with Mark Gieseke, Mn/DOT, giving an update on Mn/DOT's highway funding and program. Gerry Huber, Heritage Research Group, summarized the recent "RAP Low and High Temperature" study. Aaron Tast, Braun Intertec, and

Continued on Page 4.

Rubblized CR 88 Performing Very Well

In 2007, Ramsey County completed a rehabilitation project in Roseville that involved fractured slab technology to repair the dilapidated concrete on County Road 88 (CR 88). CR 88 serves as a minor 4-lane arterial with a projected ADT (2027) of 19,040.

Approximately one mile of CR 88 between the west county line

Continued on Page 3.

PDHs are Due!

Professional Engineers - remember to renew your license and update your personal development hours (PDHs) on-line at

www.aelslagid.state.mn.us

before the June 30, 2012 deadline!

Best Use of RAP & Cost Savings

Reclaimed-asphalt pavement (RAP) can be used to suppress dust on local roads, but even more cost-effective applications can be justified with a cost/benefit analysis of its use, say Burt Andreen and Harry Rocheville, University of Wyoming-Laramie; and Khaled Ksaibati, Ph.D., P.E., director, Wyoming T2 / LTAP, of the Department of Civil and Architectural Engineering, University of Wyoming, in their paper, "A Methodology for Cost/Benefit Analysis of Recycled Asphalt Pavement (RAP) in Various Highway Applications."

The Wyoming T2/LTAP (Local/Tribal Technology Assistance Program) recently completed a study on the use of RAP in gravel roads, which explored RAP as a means of dust suppression while considering road serviceability. The study found that RAP in gravel roads reduces dust without affecting the serviceability of roadways. This has become more important as expanded oil and gas exploration in the state has put new stresses on unpaved roads.

Now, Wyoming DOT and local agencies need to determine – out of the many possible uses – which use of RAP is the most cost-efficient. In this study, the T2/LTAP evaluated three possible RAP uses: RAP in hot plant mix, RAP in base and RAP on gravel roads. Using a method developed by the National Asphalt Pavement Association (NAPA) entitled "Calculating the Value of Using Reclaimed Asphalt Pavement," a system was devised to assess the costs and benefits of using RAP in hot plant mix, and a similar process was developed to evaluate the value of using RAP in gravel roads and bases.

"The system normalizes all of the costs and benefits into savings per ton of RAP as a means-equal comparison," the authors write. "The method includes factors such as savings from dust loss, layer coefficients, haul and decreased need of virgin aggregates. A case study was then conducted using the three different applications. ***It was determined that using RAP in hot plant mix was the most cost-effective in this case study.*** In addition, it was concluded that using RAP in gravel roads may be more cost-effective than using it in bases due to the additional benefit of dust loss reduction."

Following the economic analysis, the authors found:

- RAP can be a very effective material in highway construction applications. It is very economically feasible to use RAP because the recycled material greatly reduces the need for virgin aggregates, and does not decrease pavement performance.
- Added RAP significantly reduces the dust loss on gravel roads from traveling vehicles.
- For every ton of RAP included in hot plant mix, $40.87 was saved. Also there were savings of $17.07 for every ton of RAP used in gravel roads.
- The implementation of RAP in road base also saved money, but it was the least effective of the three applications. For every ton of RAP used in road base, $15.71 was saved.

"Clearly, the application of RAP in highway construction is cost-effective," the authors conclude. "The amount of savings can increase exponentially when large quantities are used and when a greater percentage of RAP is included," they say.

"The use of RAP in any situation has no shortfalls; RAP saves money, does not impact performance, and has the ability to help the environment due to dust loss in gravel roads."

Excerpted with Permission from Better Roads March 2012 Reaping Research Benefits. For the entire article, visit http://www.betterroads.com/road-science-10/?pg=4

Calendar of Events

- **Flagger Train the Trainer Course**
  April 23, 2012 • 8AM-Noon • Mn/DOT Arden Hills Training Center • Shoreview, MN
- **Best Practices for Constructing & Specifying Longitudinal Joints Workshop**
  April 24, 2012 • 8AM-Noon • Mn/DOT Arden Hills Training Center • Shoreview, MN
- **MAAPT 59th Annual Asphalt Conference**
  Dec. 5, '12 • DoubleTree by Hilton • St. Louis Park, MN
- **Annual Asphalt Paving Awards Banquet**
  Dec. 5, '12 • DoubleTree by Hilton • St. Louis Park, MN
- **MAPA 59th Annual Membership Meeting**
  Dec. 6-7, '12 • DoubleTree by Hilton • St. Louis Park, MN

Rubblized CR 88 Performing Very Well, continued from page 1

and County Road D was rubblized and overlaid with 6" of asphalt pavement and a short section was

cracked and seated and overlaid with 4" of asphalt pavement. Edge drains were installed to improve drainage.

The ability to recycle the existing highly deteriorated pcc pavement into a strong, flexible base layer to support the asphalt pavement resulted in reduced material and transportation costs as well as construction time.

The existing typical section was 8" of mesh reinforced doweled concrete pavement on 3" of class 5 aggregate base, on 3" of class 4 aggregate base. No new right-of-way (ROW) was needed as the construction limits were within the existing ROW.

Rehabilitation of existing pavements is one of the greatest pavement priorities facing local, state, and federal transportation agencies. The use of fractured pcc slab technology with an asphalt pavement overlay presents a long-term and economical solution to pavement rehabilitation challenges.

Using fractured slab technology prior to the asphalt overlay helped reduce reflective cracks from occurring, as seen in the recent photos. The technology is used to optimize the relationship between the fractured pcc slab modulus and the nominal fragment size. The proper overlay thickness can then be determined for the given soil conditions, drainage, and traffic.

Asphalt pavement overlays have several advantages including increasing the structural capacity of the existing pavement system and improving the ride for the traveling public. A short full-depth section has been used in areas with clearance requirements.

Numerous useful guidance documents are available for designing fractured slab pavements with an asphalt overlay including the National Asphalt Pavement Association's Information Series 117 and IS-132. Contact the Minnesota Asphalt Pavement Association for more information at www.AsphaltIsBest.com.

In the News

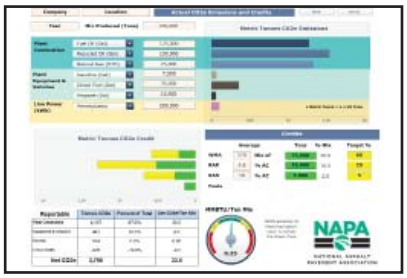
- **Fuel-resistant asphalt makes airport pavements more spill-resistant**

For years, domestic and international airport maintenance engineers used coal tar sealers for airport aprons and alleys because it effectively resisted jet fuel spills and oil-based spills. Now, there is fuel-resistant asphalt that is a viable alternative to coal tar sealers. Visit www.AsphaltInsititute.org for the full story.

- **FHWA and AI release longitudinal joints best practices**

Visit www.AsphaltInsititute.org for the full story.

- **NAPA Updates Greenhouse Gas Calculator**



NAPA has revised its online Greenhouse Gas (GHG) Calculator to help identify CO_2 credit for the use of RAP, RAS, and WMA. This version of the GHG Calculator, which is being released as an open beta version, also supports more data inputs, such as different fuels for various pieces of equipment. Another useful feature graphically illustrates changes in CO_2 credits by targeting different technologies or usage rates. For example, a user can see how much additional CO_2 credit is earned by increasing RAP usage from 10 percent to 20 percent. The new beta version is accessible at www.AsphaltPavement.org/ghgc.

56th Annual Workshop,

continued from page 1

Mark Gieseke, Mn/DOT

Andrew Valerius, Braun Intertec, presented on "Back to Basics" for sampling and testing asphalt pavement and aggregate samples. John Garrity, Mn/DOT, gave an update on the latest Mn/DOT Asphalt Pavement Specifications. The morning concluded with Mark Blow, Asphalt Institute, presenting on the recent Longitudinal Joint Study with FHWA and AI.

John Garrity, Mn/DOT

Andrew Valerius, Braun Intertec

The afternoon presentations began with Rob Hannan, Volvo Construction Equipment, describing how best to mill a pavement for a smooth overlay. Nick Thompson, Mn/DOT, presented on the alternate design bid projects in Minnesota. Prof. Eshan Dave presented on reflective crack mitigation. Gerry Huber, Heritage Research Group, gave his second presentation of the day, this time on perpetual pavements in China and how to handle 200,000 pound trucks. James Phillips, WEM Automation, Inc., presented on plant controls. Floyd Gast, Metso Minerals, gave the last presentation of the day regarding processing fines.

Graig Gilbertson, Mn/DOT

Aaron Tast, Braun Intertec

Thank you to all the speakers, moderators, trade booth exhibitors and attendees for making the Workshop a fun and successful learning event!

Derek Hawkinson, Hawkinson Construction

Continued on Page 5.

56th Annual Workshop,
continued from page 4

Mark Blow, Asphalt Institute

Prof. Eshan Dave, UMD

Rob Hannan, Volvo Construction Equipment and Rich Wolters, MAPA

James Phillips, WEM Automation, Inc

Nick Thompson, Mn/DOT

Floyd Gast, Metso Minerals

2012 Environmental Training

The Environmental & Safety Topics Training was held March 5th and was a joint effort between the MN Pollution Control Agency (MPCA), Mn/DOT, Wenck Associates, Mine Safety & Health Administration, Occupational Health & Safety Administration, and MAPA. Photos of some of the instructors are provided below.

Topics included air permits, storage tanks, spill prevention plans, storm-water permits, transportation and safety. Thank you to all who participated!

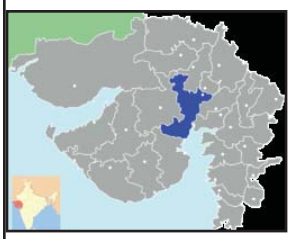
(l to r) John Potokar and Mark Panian with Wenck Associates, Elise Doucette and Theresa Haugen with MPCA.

(l to r) Sean O'Connor and Mike Nelson with MPCA and Amy Sandelin with MSHA

Spotlight on Eshan Dave, Assistant Professor, University of Minnesota Duluth

An interview by Jill Thomas, P.E., Associate Director, Minnesota Asphalt Pavement Association

Eshan is from the city of Ahmedabad (dark blue color on the larger map) in India, which is located in the state of Gujarat (grey color on the larger map, red color on the inset map).



Eshan's family worked in the Civil Engineering field and he chose a career in the same field as it seemed like a natural fit. His father was the Chief Planner for the state of Gujarat, and his uncles ran a construction company.

Eshan completed his Bachelor's Degree in Civil Engineering at the BVM Engineering College within Sardar Patel University in Vidhyanagar, India. He left India in 2001 to pursue his Master of Science Degree at the University of Illinois located in Urbana, IL. His Master's thesis was the "Determination of Presence and Amount of Recycled Asphalt Pavement in Asphalt Mixtures" and the project required a significant amount of lab work. Eshan enjoyed working on research (his advisor was William Buttlar) and he enjoyed teaching classes.

In 2003, Eshan began pursuing his doctoral degree at the same University. This time he wanted to work on a project that had more field and simulation work. His thesis was titled "Asphalt Pavement Aging and Temperature Dependent Property Gradients Using Functionally Graded Viscoelastic Model" and he developed a model to determine asphalt pavement and overlay responses as a function of time, temperature, and thickness. Eshan also worked on a large National Science Foundation (NSF) study on reflective cracking in pavements.

During his final year as a doctoral student, Eshan taught a full class on Highway Geometric Design, then another class on Systems Engineering and Economics. From that experience, Eshan knew that he wanted to take his career in the direction of being a Professor.

In August of 2010, Eshan became an Assistant Professor at the University of Minnesota Duluth (UMD). He is also the Director of Graduate Studies for the Civil Engineering Department at UMD. Eshan felt that UMD was the right place for him with the balance of teaching and research expectations on faculty.

The Civil Engineering program began at UMD in 2008 and this year will mark the first class to graduate consisting of 40 Bachelor of Science - Civil Engineering students and 6 Masters students. Currently there are 220 undergraduate students and 15 graduate students in the program.

A few of Eshan's current research projects are Laboratory Performance Test for Asphalt Concrete, Evaluation of Bridge Wearing Courses, and Increasing Sustainability and Renewability of Highway Infrastructure through Study of Moisture Damage in Asphalt Concrete Mixtures Containing Taconite Tailings. He is also working with the City of Duluth to develop a mix design for fine-graded mix with taconite tailings and recycled asphalt shingles.

Eshan has recently completed

Continued on Page 7.

Spotlight on Eshan Dave,

Continued from Page 6

research regarding Sustainable Pavement Rehabilitation using Thin Bonded Overlay Constructed with High Taconite Mix and a Synthesis of Asphalt Concrete Performance Tests.

Eshan has numerous publications, presentations, and accolades. Honors include "Teachers Ranked as Excellent by their Students" at the University of Illinois, Association of Asphalt Paving Technologists Scholarship Award, and Modern Construction Company Gold Medal Prize.

In his free time, Eshan enjoys outdoor activities, working on his car, and plane spotting. Plane spotting is a popular hobby where people can watch planes take-off and land at large airports. Also, Eshan will be running Grandma's half marathon in June.

Best of luck Eshan, and thanks for helping to build 'em black!

MAPA Updates

This section gives a brief update of MAPA activities.

- MAPA has been working with Mn/DOT on the 2012 Special Provisions for Bituminous Specification 2360 and related specifications as well as the pending proposed 2012 new spec book for construction.
- MAPA is working with Mn/DOT to help develop a procedure for Alternate Design Bid and update the Pavement Type Selection policy.
- The 56th Annual Asphalt Contractors' Workshop/MN Quality Initiative Workshop was held March 6th. Thank you to all the speakers, moderators, exhibitors and attendees for making it a fun and successful learning event.
- MAPA was a speaker at the World of Asphalt Conference, March 13-15, 2012 regarding storm water management with asphalt pavements.
- MAPA has met with key Minnesota Congressional Representatives and local legislators to discuss stable funding for transportation and how our transportation system contributes to the overall economic success of our nation and state.
- MAPA continues to meet and educate Legislators regarding the benefits of asphalt pavements and the industry to taxpayers and jobs.
- MAPA continues to provide Lunch & Learn seminars.
- MAPA is working with the MPCA's Minimal Impact Design Standards (MIDS) agency-industry group to help develop porous asphalt pavement specifications and update the Stormwater Management Manual.
- MAPA is working with Mn/DOT to provide Flagger-Train-The-Trainer classes for agency and industry.
- MAPA is providing training opportunities for its members and Construction Management students during the winter season, prior to construction.
- Mark your calendars for the next MAPA Annual Meeting to be held Dec. 5-7, 2012 at the DoubleTree, St. Louis Park, MN.

Don Andersen to Retire

Don Andersen will retire from the Civil Engineering Department at North Dakota State University on May 15, 2012, after 33 years of teaching.

Congratulations Don, and best of luck!

MAPA Contractor Members

- Aggregate Industries
- Anderson Brothers Construction Co.
- Asphalt Surface Technologies Corp.
- Barton Enterprises, Inc.
- Bemidji Bituminous Inc.
- Bituminous Paving, Inc.
- Bituminous Roadways, Inc.
- Commercial Asphalt Co.
- DMJ Asphalt Inc.
- Duininck Inc.
- FPI Paving Contractors, Inc.
- Hardrives, Inc.
- Hawkinson Construction
- KGM Contractors, Inc.
- Knife River Corporation - Central Minnesota
- Knife River Materials
- Mark Sand & Gravel Co.
- McNamara Contracting, Inc.
- Mesabi Bituminous, Inc.
- Midwest Asphalt Corporation
- Minn-Dak Asphalt, Inc.
- North Metro Asphalt
- North Valley, Inc.
- Northland Paving, LLC
- Northwest Asphalt, Inc
- Pine Bend Paving, Inc.
- Plehal Blacktopping, Inc.
- Rum River Contracting Company
- T.A. Schifsky & Sons, Inc.
- Tri-City Paving, Inc.
- Ulland Brothers, Inc.
- Valley Paving, Inc
- Wm. Mueller & Sons, Inc.
- W W Blacktopping, Inc.

MAPA Associate Members

Accurate Test Systems, Inc.
Advanced Drainage Systems, Inc.
American Agency, Inc.
American Engineering Testing, Inc.
Anderson Industrial Scales, Inc.
Antigo Construction, Inc.
Area Lakes Testing, LLC
Arr-Maz Custom Chemicals
Bearence Management Group
Bomag Americas
Boyer Trucks
Braun Intertec Corporation
Brock White Company LLC
Calumet Superior, LLC
Cat Auction Services
Caterpillar Paving Products Inc.
Cedarleaf, Cedarleaf & Cedarleaf, Inc.
Century Fence Co.
Certainteed Corporation
Clarence Richard Company
Cobb Strecker Dunphy & Zimmermann Inc.
Construction Bulletin
Crysteel Truck Equipment, Inc.
Custom Welding & Metal Fab, Inc.
Dahl Trucking Inc.
Dem-Con Companies
Dillman Equipment; a Div. of Astec Inc.
Dougherty, Molenda, Solfest, Hills & Bauer P.A.
Dresser Trap Rock Company
East Jordan Iron Works
Eide Bailly LLP
Erickson Engineering Co.
Esch Construction Supply, Inc.
Ess Brothers & Sons, Inc.
Fabyanske, Westra, Hart & Thomson, P.A.
Foth Infrastructure & Environment, LLC
Gencor Industries, Inc.
General Equipment & Supplies, Inc.
Grant Thornton LLP
Hayden-Murphy Equipment Co., Inc.
HHTC, Inc. DBA Pirtek Midway
Highway Technologies
Humboldt Manufacturing Co.
Independent Testing Technologies, Inc.
Inspec, Inc.
Interstate Engineering, Inc.
Intex Corporation
J.D. Donovan, Inc.
Johnson Crushing, Inc.
Kraemer Mining & Materials, Inc.
L.G. Everist, Inc.
Leonard, Street & Deinard, P.A.
Lubrication Technologies, Inc.
Martin Marietta Aggregates
Max Steininger, Inc.
Maxam Equipment, Inc.
Midstates Equipment & Supply
Minnesota Laborers - Employers Cooperation and Education Trust (MN LECET)
Minnesota Petroleum Marketers Association
Minnesota Trucking Association
MWV Asphalt Innovations
Northern Balance & Scale
Northwest Process Equipment, Inc.
Nuss Truck & Equipment
Olson and Welle, P.C.
PQ Corporation/Advera WMA
Prinsco, Inc.
R and G Construction Co.
RB Scott Company, Inc.
RDO Equipment Co.
Ritchie Bros. Auctioneers (America) Inc.
RJ Ahmann Company
Road Machinery & Supplies Co.
Roadtec, Inc.
Rock On Trucks Inc.
Rotochopper, Inc.
Ruffridge-Johnson Equipment Co., Inc.
Safety Signs
Scharber & Sons
SPC Engineering & Testing, Inc.
St. Paul Park Refining Company, LLC; a Div. of Northern Tier Energy
Stonebrooke Engineering, Inc.
Swanston Equipment Companies
TexPar Energy, LLC
Truck Utilities, Inc.
Twin City Wire, A Unified Screening & Crushing Company
Unique Paving Materials Corp.
Vance Brothers
Volvo Construction Equipment
Wenck Associates, Inc.
Wheeler Lumber LLC
Widseth Smith Nolting
Ziegler CAT