



PAVING PROGRESS

Minnesota Asphalt Pavement Association
www.asphaltisbest.com

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Did you know ...

The Minnesota Department of Transportation is one of the first state agencies to allow recycled asphalt pavement (RAP) back in new hot-mix asphalt pavement and has been doing this since successfully for over 32 years. RAP has the same quality criteria as virgin aggregate and it can actually improve the characteristics of HMA.

Asphalt Road Show Stops in Minnesota

The Asphalt Pavement Alliance “Asphalt Road Show” stopped in Minnesota on Wednesday, August 20, 2008. The theme of the event was “Asphalt - The Sustainable Pavement.”



The APA is a coalition between Asphalt Institute, National Asphalt Pavement Association, and State Asphalt Pavement Associations, visit www.asphaltalliance.com.

National speakers presented current information on new innovations across the nation. John D'Angelo from the Federal Highway Administration discussed the rap on RAP, more specifically new recycling methods and innovations of hot-mix asphalt (HMA), the most recycled product today. He also discussed life cycle cost analysis and impacts to pavement design and pavement type selection.

Mark Buncher from the Asphalt Institute presented information on in-



Asphalt Road Show - “The Sustainable Pavement”
Speakers (l to r): Mark Buncher, AI; David Newcomb, NAPA; John D'Angelo, FHWA; Andy Edlund, American Engineering Testing, Inc.; Bob Lisi, LHB; Chuck Lenthe, City of Blaine Engineer - retired.

place recycling and rubblization of pcc pavements. Rubblizing pcc pavements is a cost efficient way of recycling in-place a deteriorated pcc pavement, then overlaying with HMA.

David Newcomb from the National Asphalt Pavement Association presented how to keep your cool with warm-mix asphalt. Warm-mix asphalt is a tested and environmentally friendly technology that allows for HMA to be produced at lower temperatures, which among other benefits, saves on energy costs.

Bob Lisi from the consultant company of LHB presented on storm water management with



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The Asphalt Road Show, continued from page 1

HMA. Storm water management has been a national and local issue to ensure we have healthy water available. Using pavements with porous and/or dense graded HMA is a tool in the toolbox that can allow for infiltration of storm water, rather than piping water to another storm water system.

David Newcomb, NAPA, spoke in the afternoon regarding the mechanistic design for high and low traffic volumes using PerRoad, the software developed by Dr. David Timm, Auburn University, for the Asphalt Pavement Alliance.



The afternoon concluded with Charles Lenthe, P.E. the retired City of Blaine Engineer, speaking on Pavement Preservation with HMA. The city of Blaine has used thin HMA overlays to preserve their roadway network for many

years and Chuck shared their best management practices.

For more information about these topics, contact MAPA or go to www.asphaltisbest.com

Calendar of Events

- **Minnesota Surveyors and Engineers Society Fall Outing**

Wednesday-Friday, September 10-12, 2008 • Madden's Resort • Brainerd Lakes Area, MN •

Visit www.mses.org for more information

- **MAAPT 55th Annual Asphalt Conference**

Wednesday, December 3, 2008 • Northland Inn • Brooklyn Park, MN

- **Annual Asphalt Paving Awards Banquet**

Wednesday evening, December 3, 2008 • Northland Inn • Brooklyn Park, MN

- **MAPA 55th Annual Membership Meeting**

Thursday & Friday, December 4-5, 2008 • Northland Inn • Brooklyn Park, MN

Stone Matrix Asphalt in MN

The final segment of the new Highway 212 (TH 212) between TH 41 in Chaska and existing TH 212 in Carver has been completed.

Construction of the new TH 212 began in the fall of 2005 and included 11.8 miles of four-lane freeway, eight miles of bus shoulder lanes, two park and ride lots, 28 bridges, and seven interchanges.

The Minnesota Department of Transportation (Mn/DOT) estimates that the new TH 212 will shorten the average commute by as much as 15 minutes.

A segment of approximately 2 to 3 miles was let as an alternate design bid project between SMA and concrete - and it went SMA.

Commercial Asphalt produced the 9,000 tons of SMWEE640I mix for the 2.7 mile long project. Hardrives used two breakdown rollers and one finish roller to compact the material in two-2" lifts over 5-inches of dense-graded HMA. The pavement structure will be subjected to approximately 7.3 Million ESALs over the next 20 years.



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Also occurring in 2008 is a “-#4” (finer gradation) SMA pavement layer that will be paved at Mn/ROAD this season as a part of the Phase II research efforts.

In 2004, SMA was placed in Minnesota on two Mn/DOT projects. Approximately 6,000 tons of SMA was placed on 117th Street at TH 52 by Bituminous Roadways, Inc. in a 2-inch wear course. 117th Street and the connecting frontage roads support high truck traffic equating to an anticipated 13.5 million equivalent single axle loads (ESALs) over its 20 year design life.

Knife River Corporation-North Central placed approximately the same tonnage of SMA on TH 23 west of Cold Spring. They have also placed SMA on I-35 near Carlton.

SMA is a rut-resistant, gap-graded Hot Mix Asphalt (HMA) that relies on stone-on-stone contact to provide strength. The mix uses a

higher content of asphalt cement (AC) for film thickness. Mineral fillers and fibers of either mineral or cellulose are commonly added to form a stiff mortar and prevent draindown of the AC (binder). In-place air voids are kept low – to less than six percent – to make the mix impermeable to water.

Not only is SMA one of the most rut-resistant surface materials, it is also one of the quietest roadway surfaces, thus reducing noise issues for a given area. SMA is typically applied to Interstates and high-volume roadways, in both intermediate and surface courses, but a finer gradation can be utilized for thin overlay preventive maintenance.

Adjacent to Minnesota, South Dakota DOT placed 50,000 tons of SMA for their first SMA project located on Interstate 29 outside of Sioux Falls.

For more information on SMA, visit www.asphaltisbest.com.

Warm Mix Asphalt in Central MN

Crow Wing County, in conjunction with Anderson Brothers Construction Company (Brainerd), used warm-mix asphalt (WMA) technology on newly paved County Road 108.

One 2-inch lift over 7-inches of aggregate base was paved on a 2-mile section of CR108 located 15 miles southeast of Brainerd with approximately 3,250 tons of WMA.



WMA technology is new to Minnesota and can be highly beneficial in reducing the amount of energy needed to make asphalt roads

while still maintaining quality.

Asphalt Innovations, an Evotherm product, was added to the asphalt cement to produce the WMA and was delivered on-site. No modifications to the plant equipment were needed and conventional paving methods and equipment were used.

The additive allows for the mixing of water and asphalt cement to create microscopic bubbles that reduce the resistance to flow (viscosity) of the mixture so the pavement mixture can be produced and compacted at lower temperatures. For example, the aggregate temperature was reduced by 50 to 70 degrees with this process. An additional benefit was easier compaction and a greater time frame to achieve proper compaction.

MnROAD (the Mn/DOT pavement test track facility near Monticello,



MN) will be incorporating WMA for six mainline cells in September during Phase II of reconstruction.

For more information about WMA and other processes that can be used to make WMA, visit www.warmmixasphalt.com.



Porous Pavement Quantities & Guidance Specifications

When using porous HMA, keep in mind that the typical 110 to 113 pounds per square yard inch will overestimate tonnage. Try 95 to 100 pounds per square yard inch as a better estimate of the quantity of porous HMA. Contact MAPA for more information.

MAPA's guidance specifications for storm water management with either porous or dense-graded hot-mix asphalt (HMA) have been updated. Contact jthomas@mnapa.org for more information.



HMA Good Steward for Sustainability

Reprinted from *Centerline-Summer 2008* with permission from the Asphalt Pavement Association of Oregon.

Studies consistently show hot-mix asphalt (HMA) to be a leader in the race to shrink the “carbon footprint” of conventional paving materials. This bodes well for asphalt producers and contractors, not only because HMA ranks high on traditional cost/performance criteria, but HMA also ranks high on the sustainable development scale. And decision makers are considering sustainability more and more when it comes to selecting a paving material.

Brian Prowell, PhD., P.E., explains in an article that appeared in *Hot Mix Asphalt Technology* (“Carbon Footprint: How Does HMA Stack Up,” May/June 2008) that the term “carbon footprint” generally refers to total greenhouse gas emissions caused directly and indirectly by a given process, product or event.

It is common for researchers to use an environmental life-cycle approach to compare the carbon footprint of different paving materials. This method takes into consideration the impacts of raw materials acquisition, manufacturing and transportation of those materials, actual installation, and waste management.

A life-cycle approach is recommended by the Society for Environmental Toxicology and Chemistry and the U.S. Environmental Protection Agency.

to be between 21 and 92 percent less than that of CRCP, with the variation dependent on the estimate used for the energy required to produce the asphalt binder.



One of the reasons asphalt pavement performs so well on the sustainable development scale is that it is recyclable. When recycled asphalt pavement (RAP) is incorporated into new HMA, the demand for virgin asphalt is reduced, and the energy that would be required to produce the virgin

asphalt is cut in proportion.

Advancements in warm-mix asphalt technologies also provide opportunities for reduced energy requirements in the production process.

While a universal standard of comparison for different paving applications is not yet recognized, studies using different approaches repeatedly show HMA to outperform other pavement types when it comes to reducing carbon emissions. It’s just one more advantage of paving with asphalt.

This method tracks impacts “upstream.” For example, Prowell notes, HMA pavement would be tracked to aggregate quarrying and asphalt binder production, which in turn would be tracked to the recovery and transportation of crude oil, and so forth.

One study using this method found that it takes 36 percent more energy to produce Portland cement concrete (pcc) than a comparable HMA pavement.

The same method applied to a Horvath and Hendrickson HMA and continuously reinforced concrete pavement (CRCP) comparison showed the energy requirement of HMA pavements

Excerpted in part from “Carbon Footprint: How Does HMA Stack Up,” by Brian Prowell, PhD., P.E., Hot Mix Asphalt Technology, May/June 2008.

Spotlight on Gregory M. Coughlin, P.E. Mn/DOT Metro State Aid Engineer

An interview by Jill Thomas, P.E.

Greg was born in Minot, ND and grew up in various cities located in central and western North Dakota. He noted that his graduation class from Pettibone High School was the largest ever, totaling 18 people.

The construction business was prevalent in Greg's life at an early age as his father was involved in the construction of air bases in Minot and Grand Forks, ND. Then his father shifted careers to work as a school Superintendent during the school year while continuing to run his own construction company during the summer.

After high school, Greg attended North Dakota State University and received a Bachelor of Architecture degree. During the summer and after graduation, Greg worked at K&L Construction, Inc. in Moorhead, Minnesota. He primarily worked on commercial and residential projects and supervised a construction crew. Greg felt that the construction industry provided a better career than architecture and he returned to NDSU to receive his Bachelor of Civil Engineering degree.

Greg's first job as a Civil Engineer was for Houston Engineering, Inc. in Fargo, ND as an Engineering Inspector/Drafter. Over the next two years, his responsibility was primarily at the Fargo Hector Airport Terminal. In the late 1980's, Greg and his wife, Judy, moved to the Twin Cities for a new job opportunity, working as a Designer/Drafter for James R. Hill,

Inc. in Bloomington. For the past 20 years, Greg's career has been with the Minnesota Department of Transportation (Mn/DOT). Greg's considerable experience with Mn/DOT equipped him for project manager roles. He began as a Graduate Engineer I in the Bemidji District and rotated through the Traffic Engineering and Materials Offices. Next, he returned to the Metro Division as the Signal and Lighting Operations Engineer, then as the Signal and Lighting Design Engineer.

Greg's experience in State Aid began shortly thereafter as the Cooperative Agreement Engineer in the Metro, which was a new position at that time. He managed and administered the Metro Division's Municipal Agreement Program and assisted local public agencies in developing and processing cooperative construction projects. After three years, he was promoted to the Assistant State Aid Engineer position. He provided direction to clients and State Aid staff for the preparation of project documents and plans in order to meet State Aid, Federal Aid, and Trunk Highway standards.

Greg then shifted from State Aid to become one of Metro's Design Engineers. His projects included I35E/

Lexington Avenue river bridge, TH 61 portion of the Wakota Bridge, TH 169 Belle Plaine interchange, TH 169 Anderson Lakes and Pioneer Trail interchanges, and many others.



In early 2004, Greg took a mobility assignment as the Locally Administered Project Engineer, where he developed a master contract and work order process used by Mn/DOT districts when a local unit of

government has resources available to help Mn/DOT with projects.

In October 2004, Greg took a brief leave of absence to work at SEH, Inc. He provided project management for the design of trunk highway, county, and city transportation projects including County Road J at I-35 W, CSAH 23/Lake Drive at I-35W and TH 61 at CSAH 96.

Greg returned to Mn/DOT Metro Office in 2005 as the Area Engineer, where he helped to lead designers in the north metro area, on more than 40 active projects. Then, on a temporary assignment, he became the Cost Estimating Project Engineer tasked with assessing Mn/DOT's current cost estimating processes, compare to national best practices and recommend process and organizational

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Spotlight on Gregory M. Coughlin, P.E.

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changes. The project will prepare a cost estimating manual and provided training to staff.

Greg became the Mn/DOT Metro District State Aid Engineer in December 2007. He is responsible for Metro District leadership team participation (budgets, policy, etc.), local agency coordination, federal aid, state aid, and cooperative agreement programs, and jurisdictional transfers (turnbacks, frontage road releases, etc.). The Metro District alone has 81 State Aid cities and eight counties. This results in about 120 State Aid, 45 Local Federal Aid, and 25 Cooperative Agreement projects per year.

Internally, he supervises 17 people in

the Metro District State Aid Office. Greg credits his excellent staff that he feels has extreme dedication to teamwork, partnerships, relationships, and client service. "They understand that their role is to help local partners achieve program and project goals, and at the same time they understand the need to fulfill process and regulatory requirements."

Greg enjoys all outdoor activities including traveling, fishing, camping, and hiking. He recently caught a once in a lifetime walleye that was 30-inches in length and weighed 10.5 lbs. He also enjoys antique collecting – specifically Fitgers and Schells brewery items and ice cream scoops created as early as the 1880's.

Greg notes that from sports to engineering, he is an advocate for teamwork. "From planning and preparation, to design and execution, success in any profession takes each and every one of us. While we have slightly different needs and play different roles, the overall goals are generally very similar."

Greg also loves to roll down his window and enjoy the progress of summer as he drives through a construction zone, in particular the scent of fresh hot-mix asphalt in the air.

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

Do you have questions

about how to design hot-mix asphalt pavements, porous pavement, storm water management with HMA, stone matrix asphalt, warm-mix asphalt or other new technologies? Are you looking for information regarding how HMA can help you to meet environmental requirements or concerns?

Please visit our web site at www.asphaltisbest.com or e-mail info@mnapa.org to ***schedule a Lunch & Learn session!***

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|------------------------------------|---------------------------------------|
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