



PAVING

Minnesota Asphalt
Pavement Association

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PROGRESS

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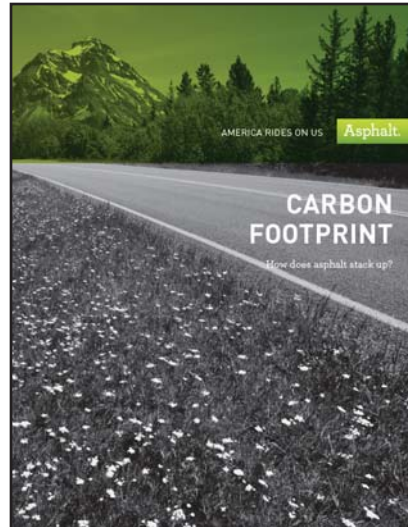
Carbon Footprint, How does asphalt stack up?

A new publication by the Asphalt Pavement Alliance sheds some light on carbon footprint calculations and asphalt pavements, see www.asphaltroads.org.

The document discusses how environmental consciousness is on the rise and many transportation officials are striving to make their practices and policies greener or more sustainable. But the question is how do you measure the greenness of a pavement? It's all about the carbon - how, when, and whether it is counted.

A useful guide is ISO 14040 - Environmental Management - Life Cycle Assessment - Principles and Framework [2006(E)], which outlines the basic definitions and procedures that should be used in looking at the environmental impact of a product throughout its life. It has two important principles: make sure you count everything and make sure you don't count anything twice.

To analyze the carbon footprint of a pavement, one must look at the greenhouse gas (GHG) emissions associated with the construction and maintenance of a



pavement. Greenhouse gas emissions are typically measured in terms of carbon dioxide equivalents (CO₂e).

The analysis for asphalt pavements is complicated by the fact that the cementing material, the asphalt cement, has high carbon content. Currently in North America, at least 95 percent of the asphalt pavement removed from the road is either reused

in new asphalt pavements or recycled as base or shoulder material. The material not reused or recycled is still not burned and thus the embodied carbon is never released into the atmosphere. In essence, when we pave with asphalt, we put the aggregate and the asphalt cement in the bank for future generations.

A paper presented at the 2009 International Conference on Perpetual Pavements, examined the carbon footprint of asphalt and concrete pavements for typical residential, collector, and freeway pavements constructed in Ontario, Canada. In every case, the analyses show clearly that asphalt has a far lower carbon footprint. This means that asphalt pavements are the more sustainable choice.

The NEW '10-'11 MAPA Directory is available on-line at www.asphaltisbest.com!

Meet & Greets With Industry & Legislators

Several MAPA Contractor Members have scheduled a “Meet & Greet” session with their local legislators, local City and County Engineers, and employees.

The first Meet & Greet (see photo to the right) was held on September 16 by Ulland Brothers, Inc. at their Albert Lea office. The second meeting was held on September 30 by Commercial Asphalt Co. in Maple Grove (see photo below). Those in attendance included industry, agency and local legislators.

The goal of these meetings is to get the message to legislators that investing in the infrastructure invests in jobs and the economy. The asphalt industry creates jobs and helps improve our economy.



Photo (l to r): Sue Miller, Freeborn County; Jeff Carlson, Ulland Brothers., Inc.; Rep. Jeanne Poppe; Sen. Daniel Sparks; Steve Jahnke, City of Albert Lea Public Works Director/Engineer



Photo: Bus tour during the Commercial Asphalt Co. Meet and Greet with legislators, agency, and industry.

It was discussed that highway funding is critical to Minnesota’s future and essentially the backbone of our economy rides on roads. Long-term, sustainable funding is needed to keep up with the growing transportation needs. The Engineers that were present agreed that local government funds cannot be trimmed back any further if we want to have safe and reliable roads.

Investing in the transportation system is fundamental to the physical world, our local and national economy. Everyone in the State of Minnesota relies on the transportation system.

Calendar of Events

- **MAAPT 57th Annual Asphalt Conference**
Wednesday, December 8, 2010 •
Northland Inn • Brooklyn Park, MN
- **Annual Asphalt Paving Awards Banquet**
Wednesday evening, December 8, 2010 •
Northland Inn • Brooklyn Park, MN
- **MAPA 57th Annual Membership Meeting**
Thursday-Friday, December 9-10, 2010 •
Northland Inn • Brooklyn Park, MN
- **North Central Asphalt User Producer Group
HMA Technical Conference**
February 2-3, 2011 • Meetings & Exhibits at
Fawcett Center, Ohio State University; Hotel
rooms available at University Plaza Hotel •
Columbus, OH
- **NAPA 56th Annual Membership Meeting**
Committee Meetings: February 5-6, 2011;
Program: February 6-9, 2011 • Waldorf Astoria
& the Hilton at Bonnet Creek • Orlando, FL
- **Mn/DOT Flagger Train the Trainer Course**
Friday, February 11, 2011 • Mn/DOT Arden
Hills Training Center • Shoreview, MN
- **55th Annual Asphalt Contractors’ Workshop/
Quality Initiative Workshop**
Wednesday, March 2, 2011 • Earle Brown
Heritage Center • Brooklyn Center, MN
- **ConExpo - Con/Agg 2011**
March 22-26, 2011 • Las Vegas Convention
Center • Las Vegas, NV
- **AAPT 86th Annual Meeting**
March 27-30, 2011 • Marriott Waterside •
Tampa, FL
- **Mn/DOT Flagger Train the Trainer Course**
Friday, April 8, 2011 • Mn/DOT District 3
Office • St. Cloud, MN

Expected Service Life & Performance Characteristics of HMA

The expected service life and performance characteristics of hot-mix asphalt (HMA) pavements are critical factors to use in a life-cycle cost analysis. Actual data should be used and can be found from the Strategic Highway Research Program (SHRP) that is now managed under the Federal Highway Administration (FHWA).

Under the SHRP program, the Long Term Pavement Performance (LTPP) program was developed as a 20-year study of in-service pavements across North America. Its goal is to extend the life of highway pavements through various designs of new and rehabilitated pavement structures, using different materials and under different loads, environments, subgrade soil, and maintenance practices.

Background

A primary objective of the LTPP program was to develop improved design methodologies and strategies for the new flexible pavements.

A report prepared by Applied Research Associates, ERES

Consultants Division for the Asphalt Pavement Alliance (APA) titled “Expected Service Life and Performance Characteristics of HMA Pavements in LTPP” and a Technical Brief are available at asphaltroads.org/Economics/AdditionalResources with more information.

The study documents the performance trends and characteristics of 500-foot test sections using distress data extracted from the LTPP database. A total of 372 test sections were included in this study. The age of the pavements ranged from 3 to 33 years, with an overall median age of 17 years. The test sections represent a diverse range of conditions and pavement structures.

Six distress types or performance indicators were used to evaluate the performance characteristics of the LTPP test sections. They include fatigue cracking, longitudinal cracking in the wheel paths, longitudinal cracking not in the wheel paths, transverse cracking, rutting, and roughness (as measured by the International Roughness Index [IRI]).

A global survivability or probability

of failure analysis was completed to determine the age of the flexible pavements to different surface conditions or magnitude of distress. A moderate level of distress was defined as the an unacceptable condition that generally results in some type of structural rehabilitation. *The expected service life for any of the distresses to reach a moderate level was 22 years or more.*

General Summary and Conclusion

The average service life of the LTPP flexible pavement sections was 22 years to a moderate level of distress. The majority of these flexible pavement sections have served for 20 plus years before the load and non-load-related distresses become sufficient to require some type of structural rehabilitation. More importantly, there are a number of test sections where the pavements have less than a low level of distress for more than 20 years of service.

In summary, this study confirms the hypothesis that flexible pavements can and do perform satisfactorily in excess of 20 years before the first overlay, if properly designed and constructed.

The Role of Asphalt in Livable Communities



The Asphalt Pavement Alliance (APA) has released a new publication titled *The Role of Asphalt in Livable Communities* on their web site at asphaltroads.org.

As stated by the American Association of State Highway and Transportation Officials, “Equating livability only to riding transit, walking and biking limits its relevance and excludes a wide range of

improvements and community needs.

This publication discusses how asphalt pavement is a good investment for America. Technological advances in asphalt provide cost-effective and green solutions and advance the goals of livability while protecting the investments that this country has made in our infrastructure.

Gubernatorial Candidates Debate How to Address Infrastructure Needs

MAPA, the Minnesota Transportation Alliance, the Associated General Contractors of Minnesota, and 24 other associations hosted a major gubernatorial debate on Wednesday, August 25, 2010 that focused on infrastructure needs in the state.

The three major party gubernatorial candidates: Mark Dayton (DFL), Tom Emmer (GOP) and Tom Horner (Ind) laid out their philosophies and visions in the area of infrastructure, jobs and economic development and answered a number of questions on a variety of topics.

Mark Dayton was the first candidate up and he stressed his background as former Commissioner of Economic Development and his ability to work with the private sector to create jobs immediately while building projects that are vital to the state. He mentioned the significant investments being made by other countries including China in their infrastructure. He said that he has seen the deterioration of our highway system driving around the state and would support a \$1 billion bonding bill next session with funding for roads and building retrofits given the low interest rates currently available.

Tom Emmer said that he brings a different perspective, disagreeing that the state needs additional revenue. He noted that the state will have 7 percent more revenue to spend, but current budgets call for an additional 17% in spending next biennium. He called for re-designing government. He noted that the state is responsible for maintaining a system of roads and bridges and that while transit is important and he is a bus rider, 95 percent of trips in the state are by roads and bridges.

Tom Horner noted that the public understands the need for additional investments, voting in favor of the 2006 MVST constitutional amendment and supporting the 2008 transportation funding bill as well as voting for the latest constitutional amendment to increase the sales tax for the arts and natural resources. Horner talked about Mn/DOT's estimate of \$65 billion in need on the trunk highway system with \$15 billion in expected revenue. He said that the state needs more 10-ton roads and rail investments to facilitate the shipment of products to market. He stressed his plan for balancing the general fund budget through tax reform and said he would support a \$400 million bonding bill next session that includes funding for roads and bridges and other infrastructure.

Minnesota Asphalt Pavement Association



Photo (l to r): Lori Sturdevant, Moderator/Star Tribune, Mark Dayton (DFL), Tom Emmer (GOP) and Tom Horner (Ind).

When asked about future funding for transportation given the uncertainty about future gas tax receipts, all three candidates mentioned bonding as an appropriate avenue for infrastructure investments. Unfortunately, no distinction was made between trunk highway bonding and general obligation bonds or the lack of ability for the trunk highway fund to handle much more bonding. There was some mention of user fees and toll roads.

In response to a question regarding their views on transit, all three candidates were very supportive of bus service and the need to move people more efficiently. Tom Horner does not think that extending North Star to St. Cloud is cost-effective. Tom Emmer said that each project has to be examined for the cost/benefit ratio. He noted the per ride cost to the state for Hiawatha LRT and Northstar Commuter Rail.

All three candidates expressed their support for working on a plan to keep the Vikings in the state with a new stadium.

On the issue of the regulatory climate in the state, all were concerned about the duplication and complexity of the permitting process in the state. Emmer noted that regulations not only govern total weight of trucks but the also the weight on each axle and said he would work to reduce government agency size and reach. Dayton suggested he would ask his running mate to work with the private sector on a set of proposals to bring to the legislature next session to reduce duplication and waste. Horner focused on the need for "one-stop shopping" to reduce the time and complexity of the permitting process.

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Porous Pavement Infiltration Evaluation

The U.S. Environmental Protection Agency published its findings on the infiltration rate of permeable surfaces at its Edison, NJ test site. They compared the infiltration rates for Porous Asphalt Pavement, pervious concrete, and interlocking pavers. To quote one of the conclusions of the report, “The infiltration capacity of all three surfaces is very large.



Parking lot in Pennsylvania with dense graded asphalt pavement in the driving lanes and porous asphalt pavement in the parking stalls (photo courtesy of Cahill and Associates).

Although the surface infiltration rates vary by more than an order of magnitude, each is much larger than the reasonably expected rain event. This translates into a difference in the amount of available excess capacity or the amount of impervious surface that can be serviced. The values are in reasonable agreement with values reported by others (e.g., Ferguson 2005; Bean 2007) in the literature.” The full report is available at <http://www.epa.gov/nrmrl/pubs/600r10083/600r10083.pdf>.

Asphalt Behavior is Negligible in Determining Fuel Consumption

A recently completed study by the French government research center LCPC found that the impact of asphalt’s viscoelastic nature on the rolling resistance of vehicles, and hence, fuel consumption, is negligible. Concrete industry funded studies have often raised this issue as being significant in comparing fuel consumption on asphalt and concrete surfaces.



The study concludes that “even at high temperatures (40°C) the structure-induced power dissipation of a 40 ton truck traveling on a thick asphalt pavement is no more than 1% of the engine power output.” This, along with a growing list of other references, points to the fact that it is not pavement type that determines a road’s impact on vehicle fuel consumption, but rather its roughness. For additional information on this subject, visit <http://asphaltroads.org/why-asphalt/smoothness-matters.html>.

Conference on Warm-Mix Asphalt - Call for Abstracts

The 2nd International Conference on Warm-Mix Asphalt will take place in St. Louis, MO, Oct. 11-13, 2011. Abstracts pertaining to aspects of warm mix are being solicited by the organizing committee. All those interested in submitting papers should submit an abstract of no more than 500 words on-line at

www.asphaltisbest.com

www.warmmixasphalt.com by December 17, 2010. Authors will be notified of acceptance by February 1, 2011. Please circulate this request to all interested parties.

Minnesota Asphalt Pavement Association

Spotlight on Laurie McGinnis, P.E., Director of the University of Minnesota Center for Transportation Studies

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

Laurie McGinnis has been a trail-blazer as a Civil Engineer throughout her career.

A native of Eau Claire, Wisconsin, Laurie had an affinity for math and science and was one of only two women in her high school's Advanced Math class. Her guidance counselor suggested engineering as a career and she decided to attend the University of Wisconsin, Madison for college. After taking a freshman orientation class on engineering, Civil Engineering became her passion, especially structures and bridges.

During college, Laurie was one of the first two women to be an Engineer in Training hired by the Wisconsin Department of Transportation. The first project she worked on was a grading job on State Highway 29 between River Falls and Prescott. The second project was construction of a bridge crossing a river near Elmwood, Wis.

Laurie finished college in four years due in part to receiving a full semester of credit for her Advanced Placement French class. In fact, she jokes that when she and her husband visited France, his ability to remember French and her ability to speak it helped them to navigate the country.

After college, Laurie went to work as a Project Engineer for a multi-disciplinary consultant firm in Wisconsin called Owen Ayres and Associates. She designed and

prepared plans for numerous civil engineering projects, however one particularly new skill she taught herself was designing FORTRAN computer programs to help design concrete slab bridges.

Eventually, her computer skills helped her to get a job in the Twin Cities as a Programmer/Analyst for Technalysis Corporation. While there, she provided technical and marketing support for specialty software packages. The office was on the same floor as HNTB Corporation and Laurie began networking with their employees. Shortly after, Laurie interviewed for a job and began working at HNTB.

Laurie remembers her seven years at HNTB with great fondness. She managed several engineering projects including the design, plan preparation, and construction administration of bridge activities. A few key projects included the Lake Street/Marshall Avenue bridge and the Hennepin Avenue suspension bridge. These projects used Context Sensitive Design before it had a formal name and procedure. The public input received had a significant influence on the design as the most suitable option was selected. It was also during this time that Laurie earned a Masters of Business Administration from the University of Minnesota.

In 1991, to get broader exposure to transportation, Laurie went to work for the University of Minnesota

Center for Transportation Studies (CTS) as a Research Coordinator. She was the fourth full-time person hired by CTS, which now employs 27 professional staff and more than 20 students. She managed the



transportation research program with University faculty and sponsoring organizations. As part of this effort, she developed and managed a request for proposals process for research that resulted in \$3 million of funded research annually.

From 1997 to 2001, Laurie was the Director of Research and Contract Management at CTS. In this position, she directed the Center's \$7 million annual transportation research program and managed the administrative functions. She also oversaw the development and monitoring of the Center's \$10 million annual budget.

Continued on Page 7

Spotlight on Laurie McGinnis

Continued from Page 6

In 2001, Laurie was promoted to the position of Associate Director at CTS. She identified program opportunities, secured funding, and directed programs in transportation research, education, and outreach. It was during this period that the Center doubled its annual budget. She provided leadership to several multi-disciplinary research projects to meet the sponsors' needs. As a self-professed "Professional Student," Laurie earned a Masters in Public Affairs with a concentration in Public Leadership in 2006.

The Transportation Engineering and Road Research Alliance (TERRA) was formed at this time, and CTS was a key facilitator of the collaboration. Laurie finds the time she spends working with the organization very energizing and looks forward to

seeing its successes grow in coming years. TERRA is a partnership of government, industry, and academia to advance innovation in road engineering and construction (see www.terreroadalliance.org for more information). This includes the study of warm mix asphalt, porous asphalt, asphalt cement studies, recycle asphalt pavement, use of taconite tailings, and other asphalt pavement innovative technologies.

Laurie has recently been selected as the Director of the University of Minnesota Center for Transportation. She directs the staff in carrying out the Center's research, education and outreach functions with an annual budget of \$20 million and involvement of over 150 faculty and research staff from 33 departments. She also leads funding efforts as well

as represents the Center in national, state and university activities.

As the Director of CTS, Laurie finds the most important assets to be the staff, connections to the University, and the solid relationships with internal and external stakeholders. She greatly values CTS staff and says that they are professional and highly productive people who continually strive for excellence.

Laurie and her husband, Howard Preston, have been married for 23 years. In her spare time she enjoys time with her family, which includes two grandchildren, golfing, hiking, and traveling.

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

Contact MAPA's Contractor Members For All Your Hot-Mix Asphalt Paving Needs!

All Members Are Listed at www.asphaltisbest.com

• Anderson Brothers Construction Co.	• Hardrives, Inc.	• Northland Paving, LLC
• Asphalt Surface Technologies Corp.	• Hawkinson Construction	• Northwest Asphalt, Inc
• Barton Enterprises, Inc.	• KGM Contractors, Inc.	• Pine Bend Paving, Inc.
• Bemidji Bituminous Inc.	• Knife River Corporation - North Central	• Plehal Blacktopping, Inc.
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• Bituminous Roadways	• Mark Sand & Gravel Co.	• T.A. Schifsky & Sons, Inc.
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Welcome to Our New Associate Member:

- Eide Bailly LLP



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