

# THE CONCRETE conveyor



## David Rettner, Mn/DOT Earn National Recognition for 60-Year PCC Road

Mr. David Rettner and the Minnesota Department of Transportation were named recipients of the 2002 Marlin J. Knutson Award for Technical Achievement by the American Concrete Pavement Association. This award recognizes an individual or organization for an innovative technical achievement of major significance, as defined by its contribution to the advancement of concrete pavement design, construction and performance. Mr. Rettner and Mn/DOT are being honored for their contributions to the design and construction of the 60-year Concrete Pavement that was completed in 2001 on I-35W just south of Trunk Highway 62.



I-35W High-Performance "60-Year" PCC Pavement

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Mr. Rettner, Mn/DOT's current geotechnical engineering section manager and former concrete research unit engineer, spearheaded the conceptual development and engineering of this important project within Mn/DOT. It represents what is probably the closest thing to a truly permanent pavement ever constructed in this county, including: the use of large diameter stainless steel dowels that guarantee long-term joint performance without significant faulting; a thick slab that reduces load-induced stresses to levels that accumulate no significant damage; the use of premium aggregate, GGBFS and a low w/c (0.37) to produce some of the most durable concrete ever placed in Minnesota; concrete shoulders that can be converted to future traffic lanes, and silicone and neoprene joint seals for the longest possible sealant performance. All of these design improvements are expected to at least double the design life of the pavement (in terms of design traffic load applications) and were accomplished for an initial project cost increase of only about 3 percent (an 8 percent increase in initial paving costs over the typical Mn/DOT metro division PCC pavement design).

In this project, Mr. Rettner and Mn/DOT have set a new standard for PCC pavement design and construction in the U.S. and have raised awareness of the long-term performance potential of concrete pavements to a new level.

The Knutson Award for Technical Achievement will be presented to Mr. Rettner and Mn/DOT at a special ceremony during the ACPA Annual Convention Association Awards and Tournament Winners Luncheon on December 6 in Boca Raton, Florida. This project was also honored earlier this year with a Special Award for Technical Achievement by the Concrete Paving Association of Minnesota.

For additional information concerning the design and construction of this project, contact Mr. Rettner or Mr. Curt Turgeon (Mn/DOT's current concrete research unit engineer), or call the CPAM office.

## The True Cost of Unbonded PCC Overlays

About a month ago there was an e-mail circulating around with 'average' costs for constructing unbonded concrete overlays. The method used to determine the 'average' cost was to take the total project cost and divide it by the total project length. While this approach does give an average cost per mile of the project, it does not reflect the average cost of the unbonded concrete overlay itself. The total costs of the projects included bridges, culverts, frontage

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(The True Cost...continued from page 1)

roads, and shoulders -- items dictated by project needs and not necessarily associated with the placement of a concrete overlay. Depending on the extent of the "other work" being done in conjunction with the unbonded overlay, the average project costs varied from just over \$500,000 per mile to more than \$1,000,000 per mile. But these costs reflect the costs of work that would have been required regardless of pavement surface type and should not be included in the determination of the true cost of unbonded overlays.

CPAM has obtained copies of the bid abstracts for 16 unbonded concrete overlay projects constructed in Minnesota between 1998 and 2002 and has analyzed these costs to provide a more accurate estimate of unbonded concrete overlay construction costs. We tried to include every unbonded overlay let in Minnesota since 1998. Even if we missed a couple, the ones included provide a good picture of the true costs of constructing unbonded concrete overlays. The projects summarized came from all around the state, with the majority (9 of 16) coming from the Rochester District.

A spreadsheet was prepared to record and track the various bid items for each project. The costs of all items associated with constructing the unbonded overlay of the mainline pavement (e.g., concrete items, subgrade excavation, select granular material, concrete and bituminous milling, PASSRC, etc.) were broken out. Items were also broken out to show the costs of the concrete pavement items alone (e.g., square yard placement costs, cubic yard material costs, dowel bars, reinforcing steel, etc.). The cost of constructing the shoulders was also broken out to the extent possible, but was harder to track when asphalt shoulders were used and other minor asphalt pre-overlay repair work was done in association with the project.

Some items were included in the spreadsheet to help estimate overall project costs, but were not used in summarizing the cost of the pavement. Examples of such items include common excavation, common borrow, and granular borrow and other costs of ditch work.

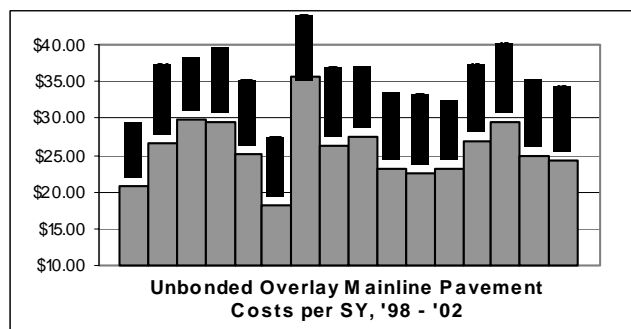
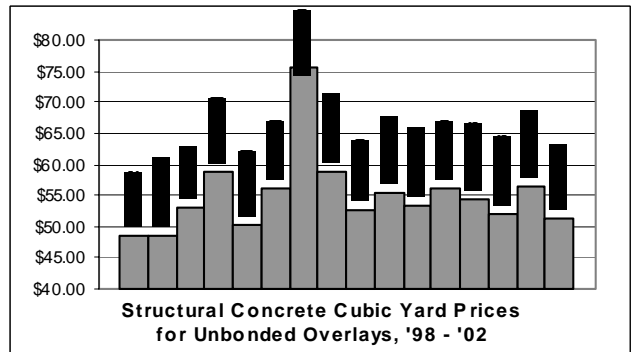
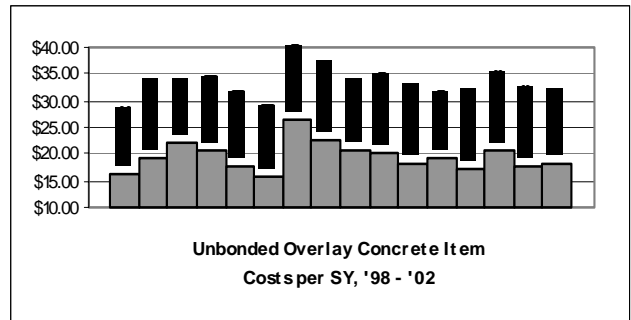
In analyzing the project cost data, many

items of interest came to light:

- The bid cost of "concrete only" items varied from \$16.08/SY (\$255K/2-lane mile) to \$26.38/SY (\$418K/2-lane mile)
- Throwing out the costs of the high- and low-priced projects (\$26.38/SY – high, \$16.04/SY – no dowels) the average bid cost of "concrete only" items was \$19.34/SY (\$306K/2-lane mile).
- The average cost for asphalt shoulders (used on 15 of 16 projects) was \$93K/mile. While we don't have actual dimensions for these shoulders, we might assume that outside shoulders were about 8 feet wide, inside shoulders were about 2 feet wide, and shoulder thicknesses averaged 4 inches.
- The cost of using 10-in thick, doweled, concrete shoulders (10 ft wide outside and 4 ft wide inside) was \$189K/mile on the one project where they were used.
- The bid cost per cubic yard of concrete, by far the single most expensive item in concrete paving, has remained approximately constant over the five-year period. Considering the effects of inflation, the actual cost of structural concrete has generally decreased over the last five years!

All told, it looks like a good estimate of the bid prices for unbonded concrete overlays is about \$510K/2-lane mile, including shoulders (but not including site-specific work like bridge construction, etc.). With any project there can be quite a variance in costs, depending on the quality and availability of local materials, but the cross-section of projects considered here shows fairly stable numbers. If an unbonded concrete overlay project is to include new culverts or bridges, those costs should not be included in estimates of the pavement costs unless they are only necessary for that pavement type.

Unbonded concrete overlays are generally considered the most economical (in the long run) alternative for resurfacing concrete pavements which are beyond concrete rehabilitation. For example, Mn/DOT considers an unbonded overlay to have an expected life of 30 years. There is not yet enough experience in Minnesota to verify this life expectancy, but it looks like 30 years may be a low estimate for many projects. With the current use of low water-cement ratio mixes and better methods of



staking dowel baskets, these pavements should be very long-lasting.

The selection of unbonded concrete overlays does not have to go through Mn/DOT's formal pavement selection process because it is considered a rehabilitation technique. If historical costs and expected performance (based on performances to date) are used for calculating life cycle costs of various overlay strategies, the unbonded concrete overlay option should almost always be a winner. In designing these projects, a closer look should also be given to the idea of using concrete shoulders to eliminate the use of what is often the largest maintenance headache out there – thin asphalt shoulders.

Now we need to apply this same thorough analysis of actual costs to the whitetopping of some high-volume full-depth or deep-strength (perpetual overlay) asphalt pavements. We'll bet that the results will be similar.

Contact the Concrete Paving Association of Minnesota for a complete copy of the analysis described above. The final version should be available in mid-October. In addition to showing the true costs of constructing unbonded concrete overlays, this study also highlights some "other" costs that tend to unduly increase overall project costs.

## Special Election Section

### Political Contributions 101 – How to Help Elect Highway-Friendly Candidates

by Matthew J. Zeller, P.E., Director of Engineering Services

Who remembers 1998? The Denver Broncos finally won a Super Bowl. The U.S. Men's Hockey team embarrassed themselves (and their country) by trashing their rooms after they failed to perform. The home run battle between Sammy Sosa and Mark McGwire. President Clinton's little problem with Paula and Monica. The attack on Iraq. And... oh yeah, Jesse 'the Body' Ventura was elected Governor of the State of Minnesota.

People were fed up with politics as usual and were looking for a change. The GOP candidate, Norm Coleman, and the DFL candidate, Hubert 'Skip' Humphrey, both ignored Jesse and, in a sense, ignored the people. They followed typical party politics and in the end...well, you know how it turned out.

It is now election time again. Governor Ventura has announced he is not going to seek re-election. But, this year there are even more choices. The GOP has backed Tim Pawlenty. The DFL is endorsing Roger Moe. Tim Penny has gotten the nod from the Independence Party and Ken Pentel is running on the Green Party ticket. I'm sure there are more, but those are the most prominent candidates. By my count, there were also 32 seats in the house and 14 seats in the senate vacated by retirements, and incumbents are running for re-election in many other districts. Our choices in filling these political offices will largely determine the transportation future of Minnesota.

Almost everyone in the state agrees we need to fix our transportation system. Some people want all highways. Some people want all mass transit. Some people want light rail. Some people want commuter rail. I think that most people agree it will have to be a mix of these items to make the system work most efficiently in the long run. But we already have a pretty extensive system of freeways and highways and not much in the other areas. It seems to me that the best thing to do is to upgrade the system we have now to accommodate current and expected future traffic while incorporating buses into the mix. Adding highway capacity and bus routes will relieve congestion the quickest. If a rail system makes sense, it needs to be thought of as above and beyond the current system because it will take decades and billions of dollars to finish a system that will carry only a fraction of the people carried on the highway system.

Back to 1998. Do you remember when Jesse promised not to take any political contributions over, I think it was, \$200? I also recall that he said the average person could contribute up to \$50, or \$100 per couple, and the government would reimburse them. At the time I had no idea what he was talking about. After a little research, I understood what was going on.

Minnesota State Statute section 290.06, subdivision 23 allows a person to claim a refund of up to \$50 (\$100 for a married couple) for a contribution to a political party or candidate. It is reasonable to assume that there are about 25,000 Minnesotans in road construction-related industries (e.g., contractors, suppliers, consultants, agencies). If they each contribute the allotted \$50 to candidates and parties that support additional funding for highway transportation, the total contribution would be \$1.25 million. If each of these Minnesotans have a spouse that contributes as well, the contribution total could be as high as \$2.5 million. That's a lot of cash for a highway-friendly candidate and/or party!

The form for obtaining a refund of these political contributions is called PCR 2002 and a link to the form and its instructions can be found at: <http://www.taxes.state.mn.us/misc/forms/pdf/02pcr.pdf>

It's time for everyone to get involved, politically. Get to know the candidates and what they stand for. Get to know the incumbent's records (or lack thereof). Let them know we are all watching and we are tired of the rhetoric and politics and want something done to correct the transportation funding issue. If they want transit, they should say so and act accordingly. But they should also stop tying up highway dollars with fighting over what should be an independent issue. Separate the transit and highway issues and settle them each as its own entity.

Support the candidates of your choice. If you don't get involved, you can't complain!



Matt Zeller, Director of  
Engineering Services



*Concrete is better!*

We're on the Web!  
[concreteisbetter.com](http://concreteisbetter.com)

## 2002 Membership Meeting Rescheduled

The CPAM Annual Membership Meeting and Luncheon will be held at the Four Points Sheraton St. Paul/Capitol (formerly Sheraton-Midway) located at 400 North Hamline Avenue in St. Paul, Minnesota on Wednesday, December 11, 2002. Please note that this is one week later than was originally planned.

The event will begin with a social hour and hors d'oeuvres at 11 a.m., followed by the luncheon at 1 p.m., guest speaker presentation at 1:45 p.m., annual meeting at 2:30 p.m. and adjournment by 3:00 p.m. The cost of this year's event is expected to be \$30 per person.

A formal agenda and registration form will be mailed to members and previous attendees in early November, but attendees can also preregister by phone with Lisa at the CPAM office.

## 2003 Seminar Date and Location Set

Mark your calendars -- CPAM's 42<sup>nd</sup> Annual Concrete Paving Seminar will be held on March 12-13, 2003 at Breezy Point Resort. Programs and registration materials will be mailed in January and February.

A seminar planning committee is now being formed to develop the seminar program. If you would like to serve on this committee (which is expected to meet only once, probably in November 2002), please contact Mark at the CPAM office.

Hope to see you at Breezy!

## Making Transportation An Election Issue

(condensed and adapted from a Minnesota Transportation Alliance article)

With fall right around the corner, the races for Governor and other legislative races are heating up. For those of us who are concerned about transportation funding in Minnesota, this is a critical time.

We have the opportunity to make a difference in deciding who becomes the next Governor. We all know what a critical role the Governor can play in getting a transportation funding package passed and signed into law. The last two Governors had other priorities and let transportation funding languish. Not coincidentally, the last time the state's gas tax was increased was fourteen years ago and, as a result, our transportation system has failed to keep pace with the demands placed on it. We need a Governor who will take a leadership role in pushing a strong transportation agenda, someone who will remain committed to the issue throughout his term.

We also have the opportunity to influence the makeup of the legislature. With newly drawn legislative district boundaries and a record number of retirements, there will be an unprecedented number of new faces at the legislature. We need to do our best to make sure that a majority of those new faces support increased transportation funding. We need legislators who will get funding bills passed rather than legislators who merely come up with excuses for why it can't be done.

*This is our opportunity to lay the groundwork for a significant increase in transportation funding.*

To that end, the Minnesota Transportation Alliance, in conjunction with the Minnesota Transportation Coalition, sent a questionnaire to all the major party candidates asking for their views on transportation issues. More than 150 responses were received from state legislative candidates.

Approximately 75% of the respondents supported an increase in the state's motor fuel tax while approximately 86% indicated support for a transfer of revenue from the motor vehicle sales tax to increase funding for roads, bridges and transit. Another 61% of respondents support placing a referendum on the ballot in the metro area to increase the sales tax with the additional revenue dedicated to roads and transit, while 65.5% support a stand-alone funding source for transit. An increase in the amount of Trunk Highway bonds the state issues was supported by 73% of the candidates who responded.

To see who has responded to the transportation questionnaire and view the responses provided by candidates in your area, visit the Coalition website at [www.mobilizemnfor2002.org](http://www.mobilizemnfor2002.org)

This year, it does seem that more candidates recognize the need to address transportation issues. However, we're also hearing from candidates, notably the gubernatorial candidates, that they are hearing more about education and other issues than they are about transportation when they are out visiting with people.

**We need to change that perception and make transportation an election issue.**

Here's what you can do:

- ❖ Make sure you know which legislative district you reside in.
- ❖ Find out who the candidates are in your area.
- ❖ Check out their responses (if any) to the Coalition questionnaire on transportation.
- ❖ Contact the candidates and let them know how important transportation funding is to the state and how it will influence your decision on Nov. 5<sup>th</sup>.
- ❖ Contribute financially to the political parties and candidates of your choice (and get reimbursed by the State for doing so, as described elsewhere in this newsletter).

## CPAM Welcomes New Members

The Concrete Paving Association of Minnesota welcomes new members Short Elliott Hendrickson, Inc.® (SEH) and Interstate Detroit Diesel and invites you to "get to know 'em"!



Short Elliott Hendrickson, Inc.® (SEH) is a multidisciplinary firm of engineers, architects, planners, and scientists providing a full range of quality services. An abbreviated overview of the firm's expertise includes architecture, general engineering, environmental, transportation, and specialty services.

Founded in 1927, SEH has grown in size, the variety of clients served, and in capabilities—by anticipating and meeting client expectations.

Among the values SEH founders instilled in the firm are the prerequisites of listening, understanding, and communicating with clients for complete satisfaction. Today, SEH continues to hold those values in the highest regard.

SEH's broad-based capabilities are built on a solid foundation of client service. This high level of personal, professional service is the thread of continuity that enables all work to flow more smoothly, more efficiently, and with greater client satisfaction.

Currently, SEH has a full-time staff of more than 650 qualified professionals. The firm has offices throughout Minnesota and Wisconsin, and also in Illinois, Indiana, South Dakota, Colorado and Montana. SEH provides a dynamic team environment designed to foster continuous individual skill and personal development.

### Interstate Detroit Diesel Company, Inc.

Interstate Companies, Inc. began as Interstate-GM Diesel, Inc. in June 1957. Headquartered in Minneapolis, it has been at its present location, 2501 East 80<sup>th</sup> Street, since 1966.

Until 1986, Interstate was basically a two-product line company whose primary business was the distribution of Detroit Diesel engines and Allison transmissions. Since 1986, the company has grown and expanded, through a series of mergers and acquisitions, to consist of more than 650 employees at 19 locations in the Midwest. Interstate's five major operating divisions are:

- *Interstate Detroit Diesel*, a wholesale and retail distribution company, which serves the Detroit Diesel engine and Allison Transmission industries in the Midwest, with 15 full-service branch locations in Minnesota, North Dakota, South Dakota, Montana, Wyoming, Nebraska and Iowa.
- *Interstate Power Systems*, which is responsible for marketing and sales for Kohler Power Systems and Waukesha gas products and is supported by 12 locations that provide sales, service and parts.
- *Interstate Transport Refrigeration*, a parts, service and sales organization dedicated to the distribution and product support of the Carrier Transicold product line of truck and trailer equipment.
- *Interstate Bearing Technologies*, a wholesale distributor of bearings and power transmission components. Originally founded as Barco Bearing, IBT now has 10 locations serving Wisconsin, Minnesota, North Dakota, Montana and Wyoming.
- *Interstate Power Products and Services*, an assembly division that is headquartered in Fargo, ND. It was originally founded in 1995 to provide subassembly for OEMs and focused initially on the bus coach industry.

## National ACPA Convention Details Announced

The 39<sup>th</sup> Annual National ACPA Convention will be held at the Boca Raton Resort and Club in Boca Raton, Florida from Wednesday, December 4 through Saturday evening, December 7, 2002. This year's program has been modified to concentrate most meetings and committee work in the mornings, leaving some afternoons free to enjoy the resort. As usual, technical sessions will be held all day Friday and the Gala Awards Dinner and Program will be held Saturday evening. *For more information on the convention program, check the convention section of the ACPA website online at [www.pavement.com](http://www.pavement.com), or call Robb Jolly or Maryann Beckman at (847) 966-2272.*

For hotel reservations, please contact Boca's Reservations Department at 1-800-327-0101 and mention that you are with the American Concrete Pavement Association to receive discounted room rates. These special rates are guaranteed until October 30, 2002 and are available on a first-come, first-served basis. *Visit the Boca Raton Resort and Club's website at [www.bocaresort.com](http://www.bocaresort.com) for additional hotel information.*

## Regional Concrete Airport Pavement Technical Conference Planned

The 2<sup>nd</sup> Annual Tri-State Regional Concrete Airport Pavement Technical Conference is being planned for February 12-13, 2002 at the Ramada Plaza Suites in Fargo, ND. This conference is being organized and sponsored jointly by CPAM, the North and South Dakota Chapters of the ACPA, the Minnesota, North Dakota and South Dakota DOT Divisions of Aeronautics, Lafarge North America, SEH Inc., and other CPAM/ACPA members.

The tentative program includes many interesting topics, including:

- Why Use Portland Cement Concrete for Airport Pavements
- Mix Design and Admixture Compatibility for Dummies
- Obtaining Funding for GA Airport Improvements
- Regional Issues in Airport Management
- Whitetopping and Ultrathin Whitetopping Design Fundamentals
- Case Studies:
  - PCC Pavement Maintenance Programs
  - GA Airport Pavement Reconstruction
  - GA Airport Whitetopping
  - Reconstruction and Expansion of the St. Cloud Airport

The registration fee for this conference is expected to be \$75 or less, so mark your calendars and watch for official program announcements and registration materials in the mail!



From Mark, Matt & Lisa at CPAM





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Mark your calendars for these up  
and coming events!

## Calendar of Events

### Local Events:

Oct 15	CPAM Board of Directors Meeting	CPAM Office
Oct 17-18	Midwest Concrete Consortium Meeting	Mpls, MN
Oct 17 & Nov 21	MN Concrete Council Breakfast Mtg. & Seminar	Midland Hills CC, St. Paul
Dec 11	CPAM Annual Membership Meeting	Sheraton Four Points, St. Paul
Feb 12-13	Tri-State Concrete Airport Pavement Technical Conf.	Fargo, ND
Mar 12-13	42nd Annual CPAM Seminar	Breezy Point, MN

### National Events:

Nov 12-13	NRMCA Promotion Plus Meeting	Omaha, NE
Dec 3-7	ACPA National Convention	Boca Raton, FL
Jan 12-16	Transportation Research Board Annual Meeting	Washington, DC
Feb 25-27	ACPA Airfield Pavement Design Seminar	Skokie, IL

If you have items you'd like to add to the calendar for future issues of the Concrete Conveyor, please contact the CPAM office!

*In an effort to deliver this newsletter and future mailings to you promptly, please notify us of any mailing or addressing problems you may have noticed on your mailing label. We have been attempting to update our databases and hope that we have the most current information on file for you or your organization. For any changes please notify Lisa at the CPAM office (763)561-0402.*