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The Green Issue

Tales from the Road



# The Path to Renewable Asphalt Binders

By: Dennis S. Banasiak, Ph.D. – Avello Bioenergy, Inc. and R. Christopher Williams, Ph.D. – Iowa State University

While many companies are focusing on converting biomass into transportation fuels, a new member of the APAI is looking to supply the asphalt industry with a renewable, biobased asphalt binder.

Formed in 2009, as a spin-out of Iowa State University with seed capital from a local Iowa venture capital firm, Avello™ Bioenergy started down the path of commercialization to produce renewable feed stocks for asphalt, fuel, chemical and soil amendment products through low-cost, thermal conversion of biomass.

The Avello™ Bioenergy process converts biomass such as corn stover, wood chips, or other viable sources of biomass into several liquid pyrolysis oil fractions and biochar, using proprietary technology licensed from Iowa State University. Fast pyrolysis is a conversion process that quickly heats biomass in the absence of oxygen to produce liquid pyrolysis oil (also referred to as “bio-oil”), solid biochar and a mixture of combustible gases within seconds.

Avello™ licensed additional technology from Iowa State University for the use of

pyrolysis oil fractions as partial and full replacements of petroleum based binders in traditional asphalt applications. Selected liquid fractions are blended to form Bioasphalt™, the Company’s trade-name for a low cost, renewable replacement of petroleum based binders, which can be used in the manufacture of road pavement and roofing materials.

The use of pyrolysis oil fractions as a biobased asphalt material was invented by Dr. Chris Williams, Associate Professor in the Civil, Construction and Environmental Engineering Department at ISU. His pioneering research shows when selected pyrolysis oil fractions are mixed with conventional binders; they perform similar to bitumen binders.

High lignin and phenol content of Bioasphalt™ provide an antioxidant effect which may increase pavement lifetime, while reducing plant production temperatures and lowering fuel consumption by 15-20%. Greenhouse gas emissions may be reduced by up to 30%. Finally, since Bioasphalt™ is produced from biomass materials, the use of Bioasphalt™ may be a novel way to sequester carbon dioxide from the

**“Ingenuity and creative thinking is something that has long been a trademark of the asphalt industry. Bioasphalt™ is an outcome of this critical thinking and represents the pre eminent green technology that meets performance expectations, is economically viable, and allows us to build Iowa roads with Iowa products.”**  
– Dr. Chris Williams

My little boy Henry is three years old. He is going through the “Why?” stage in his development. A typical conversation might go something like this:

*Me:* Henry, eat your green beans.

*Henry:* Why?

*Me:* Because they are good for you and the will help you grow up big and strong.

*Henry:* Why?

*Me:* They have essential nutrients and vitamins. Don’t you want to grow up to be big and strong?

*Henry:* Why?

*Me:* So that you can become a professional athlete and take care of Mommy and me in our old age. Now eat your beans.

*Henry:* Why?

*Me:* Because I said so! (The classic response handed down from generation to generation.)

It was my experience that if you chose to ignore “Because I said so!” you did it at your own peril. It appears to me that many of our legislators on both the state and federal levels are at this same level of “why” development. A typical conversation might look something like this:

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### News from the Iowa DOT

#### New Director of Highway Division Announced

John Adam has accepted the position as Director of the Highway Division having filled this position as Interim Director upon the retirement of Kevin Mahoney. Please join us in congratulating John on this new opportunity. John may be reached at John.Adam@dot.iowa.gov, if you wish to send him a note of congratulations.

#### Local Systems Brings in New Secondary Roads Engineer

The Iowa Department of Transportation announced that Nicole Fox will be the new Secondary Roads Engineer in the Office of Local Systems. Nicole brings a great variety of county and DOT experience to this position. Beginning September 3, it is asked that you direct any questions or requests for assistance related to secondary roads or county transportation issues to her at 515-239-1506 or Nicole.Fox@dot.iowa.gov.

### Upcoming Events

#### 2010 QMA Field Trip

Date: September 14-15, 2010  
Location: Northwest Iowa with an overnight stop in Sioux City at the Clarion Hotel

#### QMA Steering Committee Meeting

Date: September 15, 2010  
Time: 7:00 a.m.  
Location: Sioux City – Clarion Hotel

#### Board of Director's Meeting

Date: September 30, 2010  
Time: 10:00 a.m.  
Location: APAI Tactical Operations Center (116 Clark Avenue, Suite C, Ames)

#### Board of Director's Meeting

Date: December 1, 2010  
Time: 10:00 a.m.  
Location: West Des Moines Marriott, West Des Moines, IA

#### 2010 APAI 55th Annual Convention

Dates: December 1 – 2, 2010  
Time: 12:00 Noon start  
Location: West Des Moines, Marriott West Des Moines, IA

#### 2010 County Engineer's Conference

Dates: December 7-10, 2010  
Location: Scheman Building, Iowa State University

(Tales from the Road – Cont. from Page 1)

#### Highway Construction Industry (HCI):

Legislators, we need a fully-funded, six-year Federal Highway Bill and we need to honor the obligation to the TIME-21 study here in Iowa.

#### Legislators: Why?

**HCI:** Better roads and bridges save motorists lives through improved safety. They save motorists money by decreasing congestion, and reducing wear and tear on their vehicles. It improves the transportation of freight across our state and nation. The transportation construction industry accounts for 3 million American jobs. Every \$1B invested in Federal Highway spending creates 30,000 jobs.

#### Legislators: How will we pay for it?

**HCI:** You have done studies both nationally and on a state level that all come back to the same conclusion, you need to raise user fees for motorists; there hasn't been an increase in fuel taxes federally for 17 years, and it's been over 21 years since the last increase in Iowa.

**Legislators:** Why would we support an increase in user fees? They are not popular with our constituents, they might vote for someone else in the next election. (*Much hand-wringing*)

**HCI:** The interstate system is what made America great. The ability to move goods and manpower across this great nation is the lifeblood of America. Better roads and bridges save lives, improve gas mileage, keep us competitive in a global economy, and decrease congestion, which is directly tied to reducing greenhouse gas emissions. You are short-changing the American public's intelligence regarding user fees; people are willing to pay more for better, safer, and less congested roads and bridges.

**Legislators:** We gave you \$800B in the American Recovery and Reinvestment Act (ARRA). Why should we give you more money?

**HCI:** Although you touted ARRA as an infrastructure bill, only 3% of the \$800B, or \$27.5B, went to roads and bridge construction. The one year "shot-in-the-arm" was very successful. The \$350M that was spent in Iowa was used to improve Iowa's aging roadways and bridges, thereby improving safety for Iowa's motorists and keeping people working in the highway construction industry. The American public saw real results from this investment; can the same be said for the other \$772.5B? Long-term growth in our industry and significant improvements in our nation's infrastructure require a new six-year reauthorization bill and fully funding TIME-21.

**Legislators:** Why don't we use some of our new catch-phrase programs like: Public-Private Partnerships (P3), an Infrastructure Bank, and greater tolling of existing roadways?

**HCI:** Those programs do not create new funding. They are only methods of finance. The American taxpayer understands and wants a "pay as you go" system. An increase in user fees is the only truly fair method (outside of a vehicle miles traveled (VMT) system) of paying for America's roads by the people who use them.

**Legislators:** Why would we vote for something that can be used against us in the next election?

**HCI:** You were elected to lead, we are asking you to lead.

**Legislators:** Why would we do that?

**HCI:** Because we said so.



**Smoother is Better.**

# Doing the Right Thing – A Non-Traditional Approach to Environmental Education

By: Joe McGuire, Ph.D., OMG Midwest Group

**E**nvironmental compliance in the construction industry is a study of extremes. On one end of the spectrum, we find companies working diligently to attain environmental compliance; on the other end are those who pay lip service. Companies in the first group might be characterized by the efforts in promoting environmental stewardship;

permits, provide information to increase employee environmental awareness and provide guidance to ensure compliance. OMG's future performance will reflect the amount and quality of training provided to employees.

This article describes what OMG Midwest has done to move to the next level environmentally. The goal was to

you will quickly see why. Listed there are EPA's 2007 to 2010 and 2011 to 2013 National Enforcement Initiatives (the name was changed from National Enforcement Priorities in February 2010).

Among the 2007 to 2010 initiatives is the Clean Water Act: Stormwater. It is EPA's position that "stormwater runoff from construction activities and sewers in large urban areas significantly impairs water quality in rivers, lakes, streams, reservoirs, estuaries, near-shore ocean and wetlands nationwide." Its strategy aims to achieve maximum compliance with environmental regulations in order to protect human health and the environment.

During 2008 to 2010, "EPA is focusing on homebuilding construction, big box store construction and ready mixed concrete with crushed stone and sand and gravel operations, and explore whether other sector, e.g., ports, road building operations, contribute to impairment of water bodies." Hot-mix asphalt plants were added to that list in 2010.

This trend is not expected to change after 2010. EPA's 2010 budget reflects a substantial increase and is the highest in the Agency's 39-year history. Included in that budget is approximately \$600 million for EPA's Enforcement and Compliance Assurance program – an increase of \$32 million. The EPA is focusing on five specific priorities: (1) reducing greenhouse gas emissions, (2) improving air quality, (3) managing chemical risks, (4) cleaning up hazardous-waste sites and (5) protecting America's waters.

One midwestern aggregates, ready mixed concrete and hot-mix asphalt producer was fined \$138,000 for violations of the Clean Water Act; a northeastern ready mixed concrete producer was assessed \$2.75 million for the same violations, and a western aggregates producer was fined \$37,000 for stormwater runoff at an inactive mine site. During 2008 to 2009, the EPA

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the time they spend understanding environmental trends, issues and regulations; and the commitment they make to attain compliance. Companies at the other end of the spectrum view compliance as an unnecessary cost, do the minimum to comply, spend little on environmental improvements and operate freely until regulatory agencies check.

Environmental training in the construction industry has often been superficial. It has been combined with safety training, benefits presentations or other company business discussions. Training needs to be comprehensive, meet outlined requirements in environmental

provide training to increase environmental awareness, identify problem areas, provide guidance for attaining compliance and explain the reasons behind requirements so employees do the "right thing" with regard to environmental matters, both at work and at home.

## INCREASING COMPLIANCE

Why has the area of environmental compliance become so important? Increased inspection activity on the part of environmental regulatory agencies is a nationwide trend and appears to be here to stay. Visit the U.S. Environmental Protection Agency (EPA) website and

*(Doing the Right Thing – Cont. from Page 3)*  
collected \$12.5 million in civil penalties as a result of its Stormwater Initiative, and the companies affected by it “invested” \$126 million in pollution control measures!

### NEEDS ASSESSMENT

Based on EPA’s initiatives, the OMG Midwest environmental staff conducted site inspections at the company’s aggregates, ready mixed concrete and hot-mix asphalt sites, and construction projects. These inspections focused on compliance levels with various permitting and general housekeeping issues.

Results of these inspections revealed



differing levels of compliance. While they found many excellent examples of environmental compliance and doing things the “right way,” there were areas of opportunity for improvement such as training and record-keeping requirements. These are assessed as civil penalties and critical as a plant’s operating condition of permits.

In general, employees did not understand the reasons behind environmental mandates. The environmental staff recommended that OMG Midwest management provide comprehensive environmental awareness education to all employees from top to bottom. It was evident that a non-traditional approach to environmental

education must occur if the company was to move to the next level.

### MANAGEMENT INVOLVEMENT

After formulating this recommendation and developing an implementation plan, the environmental staff scheduled a meeting with Billy Snead, safety, health and environmental manager. With his guidance, the team planned a course of action, consisting of data, recommendations and an environmental education program, and presented it to Jim Gauger, OMG Midwest president, in December 2009.

After the presentation, in which the inspection data, recommendations

and an environmental education plan were reviewed, Mr. Gauger authorized development of a comprehensive 3½-hour environmental education program to ensure compliance with all environmental rules and permits.

### EMPLOYEE ENVIRONMENTAL EDUCATION PROGRAM

A program was designed for each division; aggregates, ready mixed concrete, hot-mix asphalt, and construction and maintenance. Approximately 1,000 employees were expected to attend the training sessions, which would be presented by OMG Midwest staff.

These educational sessions were

scheduled in as many locations as were needed to minimize the costs and time involved in having employees travel to sites far from their homes or work sites. When the program concluded on May 11, 2010, 29 sessions had been conducted at 12 locations in five states. The total number of OMG Midwest employees who participated in the environmental education sessions was 1,064. Session attendance ranged from 10 to as many 125 participants. Throughout the sessions, the employees asked questions, made observations and shared experiences.

The class content consisted of the following:

- 1) **Why Environmental Training?** Pictures of problems or issues depicted the need.
- 2) **CRH / Oldcastle Environmental Philosophy.** Focused on corporate environmental philosophy and policy and OMG Midwest’s environmental mandate.
- 3) **Where Do We Begin?** A presentation of CRH / Oldcastle Materials’ Environmental Initiatives (operating more efficiently, reducing green house gas emissions, climate change, recycling, etc.). EPA and states’ positions on these issues, air pollution and regional haze.
- 4) **Air Quality Overview:** Tied OMG Environmental Initiatives to the work of our employees.
- 5) **Permit Overview:** A review of needed permits and best practices (e.g., hazardous waste, no open burning or burying anything on our properties, etc.)
- 6) **Stormwater Rules:** An explanation and discussion of the rules and the Stormwater Pollution Prevention Plan (SPPP).
- 7) **SPCC Rules / Plan:** A review of federal petroleum product storage rules and a Spill Pollution Control and Countermeasures (SPCC) plan.

### PRELIMINARY OUTCOMES

Comments received from senior and middle managers and many of the non-exempt employees indicated this educational experience was well received and beneficial. Some of the employees who commented said the program was “excellent,” and that “they learned a lot.”

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*(Doing the Right Thing - Cont. from Page 4)*

In addition, preliminary results from site inspections this year indicate improvements. General housekeeping appears to have improved; inspections required under stormwater permits or SPCC plan are being conducted and records kept, and



dust emissions at plants are within permit limits. Equally as important, managers and employees are asking questions before they take actions that may have an environmental impact.

### MEASURABLE OUTCOMES

Before and after each environmental education event, a brief survey or “Likert-like rating scale” was given. Managers/supervisors who attended were given a second rating scale (both pre and post) in an effort to assess issues related to their positions.

The 10-item rating scale asked employees to rate each item on a scale of 1 (disagree) to 7 (agree). At the completion of the session, they were asked to rate the same items again. The goal was to measure if learning took place or new information was received by those who had participated. When all 29 sessions were completed, the responses from the 1,064 employees were combined for evaluation and conclusions.

Even before analyzing the data, it was safe to say the employees of OMG Midwest learned a great deal more about environmental issues than they knew prior to participating in these educational sessions

and their level of environmental awareness had increased substantially.

A review of the data confirmed a statistically significant change in their level of knowledge and understanding of environmental matters. This means the results did not happen by chance, and if we held this educational even again, we would probably get the same results. There is no doubt, based on the data generated from the results of the rating scales, that this environmental education program could be deemed a success.

One of the more significant findings from this rating scale is in the area of air quality. Items that covered climate change, pollution and greenhouse gases were areas where there was more significant learning. Since these items deal with targets of CRH/OMG initiatives, having employees understand these issues and how they relate to their jobs is critical to achieve those goals or initiatives.

### SUSTAINABILITY

The cost of the program in terms of time and dollars was substantial, but worthwhile. In order to build on its success, it is imperative that managers at all levels work to sustain the momentum.

Recommendations:

- 1) Begin an ongoing program of internal inspections at plants, projects and construction sites. These audits will focus on deficiency identification and compliance assistance.

- 2) Develop a program of Environmental Tool Box Talks designed to provide plant managers with topics to discuss with their employees.
- 3) Provide managers with a series of posters highlighting relevant topics.
- 4) Continue to provide environmental education to employees in the field as needed or requested by the plant or project manager.
- 5) Long term: develop a booklet of Environmental Tool Box Talks and “story book” on the environment and our industries.

### CONCLUSIONS AND RECOMMENDATIONS

We have developed an environmental education and awareness program that has changed behaviors and increased knowledge. We are now more prepared to achieve the goal of 100 percent compliance with environmental permits and rules with everyone working toward it.

It is evident that taking environmental education to this level will have a major impact on achieving compliance and doing the “right thing.” Environmental training conducted in the past at the management level resulted in very little improvement, so we must take training like this beyond the manager level. It is the employees who are on the projects, drive the trucks, make the aggregates and perform all of the other activities at our plants that will have the most significant impact. To be successful, we need to involve all employees in what we do.



*Dr. McGuire teaching environmental class.*

## From Roof to Road – The Odyssey of Recycled Shingles

*Used with the permission of the Iowa Department of Transportation. Originally published in Inside, July 2010, a publication of the Iowa Department of Transportation.*

Whether driven by environmental concerns, monetary motivations or other reasons, people finding new ways to use old or unwanted items continues to provide innovative technologies in many different fields, including transportation. One product now being studied in Iowa as an additional source of road-building materials is recycled asphalt roofing shingles.

According to the Northeast Recycling Council, asphalt shingles make up roughly two-thirds of the U.S. residential roofing market. These products are made of the same four basic materials contained in the hot mix asphalt used to build roads: fiberglass or cellulose backing; asphalt cement; sand-sized, ceramic-coated aggregate; and a mineral fiber or stabilizer that includes limestone, dolomite and silica.

Scott Schram, Iowa DOT bituminous engineer, says the reusable shingles come from two different sources. “The market includes both post- and preconsumer shingles,” said Schram. “Postconsumer shingles are not yet widely accepted by states using recycled materials in road building mainly because the impact to performance is not known. Pre-consumer materials, which include shingles that have for one reason or another been rejected by the manufacturer and have never been used on a roof, are permitted in other states, including Texas, Georgia, Minnesota, Massachusetts, Indiana, New Jersey, North Carolina, South Carolina and Missouri. Still, the greatest potential for landfill diversion lies in post-consumer shingles, which has led to the DOT’s participation in a pooled-fund study along with neighboring states Missouri, Minnesota, Wisconsin and Illinois.”

Following the lead of our neighbor states

has provided information including the benefits and drawbacks of post-consumer shingles. Schram says research shows the main issue with post-consumer shingles is the effect the shingles have on the overall mixture performance behavior. “The asphalt binder grade used to manufacture roofing shingles is much stiffer than grades used in



paving. When exposed to the elements for a number of years, the material becomes highly oxidized and extremely stiff. With post-consumer product, you don’t know whether those shingles have been on a roof for five years or 20,” said Schram. “These stiffer materials may require blending with virgin binders that are softer than typical to ensure the pavement can perform well at low temperatures. The fibers in the shingles may also provide a benefit, but the possible presence of asbestos poses another issue. While shingles have not been manufactured with asbestos for more than 30 years and U.S. Environmental Protection Agency testing results have been negligible for the presence of asbestos, there is still a perception to be addressed. States’ experiences have shown proper precautions can be taken to use post-consumer roofing shingles safely and successfully.

With an estimated 11 million tons of asphalt shingles disposed of each year in the United States, the potential for recycling

this product is large.

Schram says, “Landfill diversion is the main environmental driver to using post-consumer recycled materials. Being able to reuse instead of dispose of something is a benefit to future generations. There is also a financial incentive to the asphalt paving contractors, especially here in Iowa where the Iowa DOT pays for liquid asphalt separately from the rest of the pavement mixture. Shingles contain 25 to 30 percent asphalt, where paving mixtures typically contain only 5 to 6 percent. Adding 5 percent recycled asphalt shingles to the paving mixture could reduce the purchase of liquid asphalt by nearly 20 percent. “The Iowa DOT recently approved a

developmental specification for use of recycled shingles. Two projects have already been constructed and five more are planned using the recycled material. “We are collecting a lot of data on the current projects over the summer. We’ll be looking very closely at pavement performance on these projects. If the performance is at the level we expect, using recycled shingles could become a fairly standard practice.

We anticipate the use of this material will be in the supplemental specifications in October 2011.”

### WARM MIX ASPHALT

In what would be a radical change to the way asphalt pavements are produced in Iowa, asphalt shingle materials may complement another emerging technology, warm mix asphalt, which will likely replace the current hot mix standard.

“Using warm mix instead of hot mix asphalt has many environmental benefits,” said Schram. “Asphalt plants can operate at lower temperatures and reduce greenhouse gases. Operating at lower temperatures also saves on fuel consumption, reduces emissions and odor associated with the petroleum-based product, and does not age the asphalt as much in the production process. Because of this reduction in aging, there is potential for use of more recycled materials, such as shingles without an effect on performance.”

## Partnerships Are Key in Asphalt Shingle Recycling

By: Debra Haugen, Debra S. Haugen, LLC

**A**sphalt Shingle Recycling has made headlines across the nation in the last few years bringing post-consumer asphalt shingles to the forefront. Many states DOT's are now looking at implementing specifications to allow post-consumer recycled asphalt shingles (RAS) in asphalt pavements and research is being conducted at a national level (TPF5-213) to learn more about the effects RAS has on pavement performance.

So why has it taken so long for RAS to find their way into the market? Using post-consumer RAS raises new challenges for shingle recycling partners in achieving a quality end product for use in asphalt pavements.

The first challenge is the potential of asbestos containing materials (ACM) being found in post-consumer shingles. Since the use of ACM by asphalt roofing manufacturers has not been practiced since the late 1970's the chances of finding ACM is negligible in the asphalt shingles themselves. However, there are still roofing products used in roofing applications that contain ACM (i.e. mastic, roof flashing and some roofing felts). Therefore it is beneficial for all partners involved in shingle recycling to understand local and federal Environmental Protection Agency (EPA) regulations and Occupational Safety & Health Administration (OSHA) standards.

A second challenge is the non-shingle material that may accompany a load of RAS. Removing a roof can generate more than just asphalt shingles! It is important for shingle recyclers to work closely with their suppliers to encourage on-site sorting so that wood, flashing, felt paper and other garbage is not included in the loads when they reach the recycling facility. There is also a need for additional sorting prior to the grinding operation as a contingency plan to ensure that no ACM or other non-shingle

material is processed. Understanding the protocols followed by the shingle recycling partners lowers the end-users risk in receiving a RAS product that does not meet agency specifications.

Next is the removal of the nails – ferrous and non-ferrous- found in RAS. Technology has improved over the last 10 years and industrial grinders now include magnets for the removal of nails. However, there is a need for multiple magnets to ensure the removal of all nails and recycling facilities have different methods of reaching the same goal – no nails! Taking time to review the process your recycling facility utilizes in removing metals can be helpful and save everyone money. Ideas and/or concerns can be shared and improvements

made when working together.

The last challenge to using post-consumer RAS is the hardness of the asphalt binder. Post-consumer asphalt shingles are stiffer than most virgin asphalts used in asphalt mixtures due to years of oxidation from the elements. The effect of the stiffer binder in RAS and its implications on the performance of asphalt pavements is being researched under TPF5-213 and by additional states.

These and many more challenges are important to understand by all partners involved in RAS recycling. It is good to know who you are working with and what quality control protocols they are following to support the development of a quality end product.  
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### Flexible Pavements of Ohio Team Places 4th

**O**n June 19, 2010, the Greater Columbus Soap Box Derby was held. First time driver Damaris Markley, aged 8, overcame the odds and placed a respectable 4th in a field of 28. Damaris was supported by her pit crew composed of her brothers and father. We all stand behind her as she pilots the ASPHALT RACER to future victories on the fastest pavement on Earth.....ASPHALT!



*Wearing their TEAM ASPHALT caps, Damaris, fans and friends celebrate a well-earned trophy.*

## Cedar Rapids Fishery Goes Green with Warm Mix Asphalt

By: Carrie Herrera, L.L. Pelling Co., Inc.

**T**alk to anyone in the asphalt industry and you're sure to hear something about warm-mix asphalt. The industry, which already boasts having a product that's 100 percent recyclable, now has something new to add, warm mix! Warm Mix Asphalt (WMA) is defined as traditional Hot Mix Asphalt (HMA) produced at 50-100 degrees Fahrenheit lower temperature using

of Cedar Rapids embraced the idea of new, even more environmentally friendly asphalt, but the City had a limited budget. In order to keep the job within the City's budget, L.L. Pelling teamed up with Flint Hill Resources and absorbed the additional costs incurred by the pricier warm mix. L.L. Pelling was then given the green light to use WMA on the



parking lot at Cedar Valley Urban Fishery. The job, which used over 4,000 tons of warm mix, took only four days to complete.

The Cedar Valley Fishery project, which started in August of this year, has been one of the more exciting projects for L.L. Pelling. Employees from payroll to estimating were at the Fishery to observe and take part in the excitement. Kelly White,

Foreman, was the first crew to test out the WMA.

Initially, White thought the warm mix would be an easier product to work with than hot mix but said that it ended up being more difficult to hand work. He said, "if it was just paving down the highway, it would have been easier. In a parking lot you have corners and turns...you have to use lutes and shovels so [warm mix] is a lot harder hand work."

The crew working under White agreed; hand working WMA is more difficult, but mentioned that it rolled out well and seemed

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a foaming process or chemical additive. The benefits from using warm mix asphalt are remarkable: lower fuel consumption, better work environment, increased hauling distances, and an extended paving season.

Although there have been several contractors in Iowa, alongside the IDOT, testing out the new mix on roadways, there hasn't been much done with it commercially. That is until the L.L. Pelling, Co. decided it was time to try something different. L.L. Pelling, aware that WMA was being used on highways, wanted to try WMA on a commercial application. The City



*(Cedar Rapids Fishery - Cont. from Page 8)*

to seal up better than hot mix. The crew also commented that they could really feel the difference in temperature. Though the crew enjoyed working around the cooler asphalt, Kelly White joked, "as a microwave it sucks. Normally it'd take five minutes to warm food, with the warm mix it now takes fifteen!"

Others observers, like DeWayne Heintz, an estimator at L.L. Pelling, said that while laying the base, "the crew handled the warm mix like it was hot mix, raking the larger aggregate off. By the time they got to the surface layer, they realized that

it wasn't necessary and they didn't need to man handle it so much." Chuck Finnegan, President at L.L. Pelling, added, "You have to let the compaction roller do the work."

As the popularity of WMA continues to grow in the asphalt industry more and more companies will begin to test it out on their own. As for L.L. Pelling, Chuck Finnegan sees the project as a successful first commercial application of WMA. Featured in the Cedar Rapids Gazette, the Fishery job was not only a learning experience for everyone involved, but it also helped bring awareness to the benefits of warm mix.

*(Asphalt Binders - Cont. from Page 1)*

atmosphere and store it in pavements and roofing materials.

Avello™ is currently leasing laboratory and office space for product development activities at Iowa State University's BioCentury Research Farm (BCRF) off of Highway 30 near Boone, Iowa. A grant from the Iowa Department of Economic Development Demonstration Fund, provided Avello™ with funding to complete two 5 day-24 hr/day pyrolysis oil fraction production campaigns utilizing ISU's fast pyrolysis pilot plant located at BCRF. A portion of the pyrolysis oil generated from these runs will be used to prepare Bioasphalt™ to conduct a bike path paving test in Polk County in the fall of 2010. The test will be a joint project with

Dr. Williams and Iowa State University, the Iowa Department of Transportation, the City of Des Moines, Prime Contractor – Elder Construction, Sub-contractor – Grimes Asphalt and Paving Corp, Asphalt Supplier – Bituminous Materials and Supply, L.P., and the Asphalt Paving Association of Iowa.

The next stage of development for Avello™ includes securing additional funding to build a demonstration plant at BCRF to produce semi-commercial quantities of Bioasphalt™ for larger scale paving tests. If testing is successful, the Company plans to build its first commercial Bioasphalt™ manufacturing plant during 2013.

*(Partnerships Are Key - Cont. from Page 7)*

product that meets agency specifications. Developing strong partnerships with suppliers, shingle recyclers, end users and environmental and agency officials is a first step to ensuring a quality end product.

RAS is comprised of valuable materials: asphalt, aggregate and fibers. These materials provide both economical and environmental benefits. The diversion of this valuable product from landfills is the most important environmental benefit. And we all know that the most economical benefit in utilizing RAS is the replacement of virgin asphalt in asphalt applications, but let's not forget that the replacement of the virgin asphalt also generates a savings in greenhouse gases! In addition, the angular aggregates and fibers found in RAS offer savings. RAS has presented significant savings in stone mastic asphalt, hot-mix asphalt and warm mix asphalt applications.

In June and July, three *Asphalt Shingle Recycling Workshops*, hosted by Debra S. Haugen, LLC in partnership with Iowa State University, were held across Iowa. The goal of the workshops was to bring local partners together to discuss the above challenges in developing a quality end product and its usage. The understanding developed from each sector of this movement, the roofing companies, shingle recyclers, DNR, IDOT, and asphalt contractors; will shape the future of this exciting environmental initiative. The Iowa DOT Developmental Specification for RAS was due to the partnering done with the Iowa Department of Natural Resources, OSHA, HMA producers and shingle recyclers to ensure quality control measures are implemented to produce a quality end RAS product that meets specifications and end user performance expectations.

Quality control is key for each partner involved in recycling asphalt shingles as they move from the roofs to the roads. Strong partnerships in the production and quality control of recycling asphalt shingles will insure a winning combination for the roofers, recyclers, governing agencies, asphalt contractors, and ultimately the traveling public.



AMERICA RIDES ON US

Asphalt.

## SOME THINGS ACTUALLY GET BETTER WITH AGE – INCLUDING ASPHALT PERPETUAL PAVEMENTS.

The pavement structure lasts indefinitely. Every 18 to 20 years, the surface is milled up and recycled; an overlay is placed during off-peak hours; and road users get a good-as-new highway. There's no need for the entire highway to be removed and replaced from the ground up. A pavement that remains a

permanent asset. A pavement that our grandchildren's grandchildren will be able to use. A pavement that's infinitely reclaimable, reusable, and renewable.

**Think smart. Decide diligently.  
Perpetual pavements make sense.**

# ASPHALT. AGE 59

The New Jersey Turnpike won the very first Perpetual Pavement Award back in 2001. Now, 59 years after the Turnpike opened, it's still going strong – with no structural failures ever. Congratulations to the New Jersey Turnpike Authority on a pavement that has stood the test of time.



[AsphaltRoads.org](http://AsphaltRoads.org)

## APAI Welcomes New Members

APAI has been fortunate to receive new members during the first half of this fiscal year. These Companies and their sponsors will be eligible to have their names drawn from the official hard hat during the 2011 Greater Iowa Asphalt Conference for the *Snow Goose Hunting Trip* that is being offered by Jim Hawk Truck Trailers. Join with us in welcoming our new members and please take advantage of the services that they offer.

### **TITAN** **MACHINERY**

Titan Machinery Inc. is the equipment solutions dealer for contractors in seven states in the upper Midwest. Titan provides the highest quality equipment from Case, Bomag, Leica, Stanley Hydraulic Tools, Kawasaki, Pettibone, Burchland, Atlas Copco, LaBounty and Big Tow to name a few. They provide attachments from various suppliers dedicated to design and manufacturing excellence.

Titan Machinery prides itself in providing world class products backed by the highest level of parts and service support. Their well stocked Parts Departments and trained Service Technicians are committed to the highest quality of "Uptime" support of their products giving their customers the confidence and performance required in today's construction operations.

### **Foth Infrastructure & Environment, LLC**

Foth Infrastructure & Environment, LLC offers a full range of strategic planning, consulting and engineering to governments and businesses. Offices in Des Moines and Cedar Rapids allow us to serve clients in Iowa in a timely and cost-effective manner. Our firm provides expertise in environmental, industrial and infrastructure consulting and engineering. Founded in 1938 in Green Bay, Wisconsin, Foth offers a tradition of personalized service and smart solutions to government, industrial and commercial clients.

Foth has nationally recognized expertise in the development of asphalt shingle recycling technologies and markets.

This new consulting service line allows Foth to provide strategic planning and technical assistance in the development and implementation of asphalt shingle collection, processing and finished product marketing. Foth has provided clients in Iowa with timely and customized consulting and engineering services to help grow their individual asphalt shingle recycling programs. Specific asphalt shingle recycling consulting services have included: feasibility analysis; project planning and coordination; asbestos awareness training for workers; asbestos material identification in the field; quality control and operations protocols; and end market development assistance.



Bolton & Menk, Inc., ranked in the Top 500 Engineering Firms by Engineering News Record (ENR), provides services in the areas of civil and municipal, water and wastewater, water resources, airport, traffic and transportation, cultural resource and energy sector engineering. The firm also provides environmental review, land surveying, GIS and mapping services.

The firm celebrated its 60th anniversary in 2009 and currently serves as city engineer to over 100 cities and is a consultant to another 100 communities.

Their staff of nearly 250 professionals and technicians is available to assist clients in meeting the ever-increasing demand for quality engineering and surveying services. With the corporate office in Mankato, Minnesota, the firm serves central Iowa from our Ames office. The firm also operates offices in Fairmont, Sleepy Eye, Burnsville, Willmar, Chaska, Ramsey, Maplewood and Brainerd, Minnesota.



Glendandy Marketing is a full-service promotional products company, specializing in finding you the right product to carry

your message. They provide products for marketing, introducing, acknowledging, commemorating, motivating, recognizing, and promoting. In addition, they also specialize in calendars, journals and planners, memo pads, magnets, banners and signs, point of purchase displays, apparel, screen-printing and embroidery, all right here in our own Iowa facilities. Glendandy Marketing, owned by Glenda Stormes-Bice, MAS, is a proud representative of Bankers Advertising Company. They can help provide creative results from creative products!



Debra Haugen of Debra S. Haugen, LLC, is a Geological Engineer based in Minneapolis, MN and is a nationally recognized consultant with over 20 years of experience in environmental engineering including experience in environmental regulation, site assessment and remediation. Debra has been actively involved for more than 10 years on the research and market development of asphalt shingle recycling with recycling entities and asphalt paving contractors. She has worked with multiple industry, government and non-profit partners and has provided technical expertise to recycling facilities nationwide including environmental permitting for recycling asphalt shingles and siting facilities.

### **Iowa Parts, Inc.**

Iowa Parts is a Cedar Rapids based company that specializes in service to their customers by providing full-service to their asphalt plants. By excelling in the sales and service of Cedar Rapids and Standard Havens parts and equipment, and control upgrades for Modicom units over the past 8 years, they have been able to continue their growth. In an effort to aid their clientele, Iowa Parts has expanded their fields of expertise by servicing and supplying replacement parts for Astec, Gencor, Dillman, and CMI products. Iowa Parts continues to help resolve the contractors' asphalt plant problems by being available day or night.

## APAI Members

### CONTRACTOR MEMBERS

Aspro, Inc., Waterloo  
Blacktop Service Company, Humboldt  
Determann Asphalt Paving, L.L.C., Camanche  
Duininck Inc., Prinsburg, MN  
Fort Dodge Asphalt Company, Fort Dodge  
Gee Asphalt Systems, Inc., Cedar Rapids  
General Asphalt Construction Company, Davenport  
Grimes Asphalt & Paving Corp., Grimes  
Heartland Asphalt, Inc., Mason City  
Henningsen Construction, Inc., Atlantic  
Illowa Investment, Inc., Blue Grass  
Kluesner Construction, Inc., Farley  
Knife River Midwest, L.L.C., Decorah  
Koss Construction Company, Topeka, KS  
Manatt's, Inc., Brooklyn  
Mathy Construction Company, Onalaska, WI  
River City Paving, Dubuque  
Norris Asphalt Paving Company, Ottumwa  
Oldcastle Materials Group  
Cessford Construction Company, LeGrand  
Des Moines Asphalt & Paving Company, Des Moines  
Tri-State Paving, Inc., Estherville  
Pate Asphalt Systems, Marion  
L. L. Pelling Company, Inc., North Liberty  
Shamrock Construction Company, L.L.C., Coralville  
Shipley Contracting Corp., Burlington  
Western Engineering Company, Inc., Harlan

### SUPPLIER MEMBERS

Bituminous Material & Supply Company, Inc., Des Moines  
Flint Hills Resources, Dubuque  
Jebro, Inc., Sioux City

### AGGREGATE SUPPLIER MEMBERS

BMC Aggregates, L.C., Elk Run Heights  
Concrete Materials Co., Sioux Falls, SD  
L. G. Everist, Inc., Sioux Falls, SD  
Hallett Materials, Des Moines  
Kuhlman Construction Company, Colesburg  
Martin Marietta Materials, Des Moines  
Schildberg Construction Company, Greenfield  
Wendling Quarries, DeWitt

### ASSOCIATE MEMBERS

Accurate Test Systems, Inc., Richfield, MN  
Ahrold-Fay-Rosenberg, Des Moines  
Altorfer, Inc., Cedar Rapids  
Antigo Construction, Inc., Antigo, WI  
Arr-Maz Products, L.P., Mulberry, FL  
Astec Industries, Chattanooga, TN  
Barnhill & Associates, West Des Moines  
James W. Bell Company, Inc., Cedar Rapids  
Bituminous Insurance Company, West Des Moines  
BOMAG Americas, Kewanee, IL  
Bonnie's Barricades, Inc., Des Moines  
Burroughs Consulting Group, Hiawatha

Central Service & Supply, Inc., Ankeny  
Coleman-Moore Company, Des Moines  
Construction & Aggregate Products, Des Moines  
Construction Materials Testing, Des Moines  
Cryogenic Engineering, Cedar Rapids  
Custom Welding & Metal Fabricating, Inc., Waite Park, MN  
Cylosoft, Inc., Ames  
Dahl Trucking, Inc., Elmore, MN  
J.D. Donovan, Inc., Rockville, MN  
DPLM, Inc., Des Moines  
Edwards Contracting Ltd., Hampton  
Elite Flagging, Inc., Cedar Rapids  
Glendandy Marketing & Advertising, Ames  
Highway Equipment Company, Cedar Rapids  
Holmes Murphy & Associates, West Des Moines  
Housby Mack, Inc. Des Moines  
Humboldt Manufacturing Company, Schiller Park, IL  
Iowa Parts, Inc., Cedar Rapids  
Iowa Plains Signing, Slater  
Jim Hawk Truck Trailers, Inc., Altoona  
JMT Trucking, Des Moines  
La Mair-Mullock-Condon Company, West Des Moines  
Manhole Adjustable Riser Company, Oskaloosa  
Meeker Equipment Company, Inc., Lansdale, PA  
Merchants Bonding Company, Des Moines  
Murphy Tractor & Equipment Company, Inc., Wichita, KS  
Quality Traffic Control, Inc., Des Moines  
Quick Supply Company, Des Moines  
Road Machinery & Supplies, Des Moines  
RoadSafe Traffic Safety, Inc., Des Moines  
Roadtec, Inc., Chattanooga, TN  
Sakai America, Inc., Adairsville, GA  
South West Inspection, Inc., Atlantic  
Star Equipment, Ltd., Des Moines  
Tarmac, Inc., Blue Springs, MO  
Tennis Services of Iowa, Marion  
Terex Roadbuilding, Cedar Rapids  
Thermo Scientific, Dubuque  
Titan Machinery, Des Moines  
Troxler Electronic Labs, Inc., Downers Grove, IL  
TrueNorth Companies, Cedar Rapids  
Unique Paving Materials, Cleveland, OH  
Walker Construction Company, Emporia, KS  
Weiler, Knoxville  
Wells Fargo Bank, Des Moines  
Whitfield & Eddy, P.L.C., West Des Moines  
Wynne Transport Service, Inc., Omaha, NE  
XL Specialized Trailers, Inc., Manchester  
Ziegler, Inc., Des Moines

### CONSULTING ENGINEERS

Anderson-Bogert Engineers & Surveyors, Inc., Cedar Rapids  
Bolton & Menk, Inc., Ames  
Foth Infrastructure & Environmental, LLC, Lake Elmo, MN  
Fox Engineering Associates, Ames  
Debra S. Haugen, LLC, Minneapolis, MN  
Terracon, Cedar Rapids