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Perpetual Renewal of PCC Streets

The perpetual Hot Mix Asphalt (HMA) pavement design concept for full-depth structures needs only periodic surface renewal for extended life. Although the full-depth perpetual pavement concept has been proven valid and effective, can the surface renewal only theory be utilized for rehabilitation overlays?

The conventional method for HMA rehabilitation overlay on Portland Cement Concrete (PCC) has been to mill off the existing HMA down to the PCC surface prior to laying the new HMA overlay. The problem with this method is that the uneven distressed PCC surface that required the original overlay is then exposed and in a short interval of time reflects those deficiencies through the new HMA surface. Also, when the new HMA surface is laid over the exposed concrete in one pass it is very difficult to obtain smoothness.

The City of Des Moines design team evaluated their concerns on these

conventional overlay problems and decided that if the existing HMA surface was at least 2 1/2 - 3" thick that a partial milling of that thickness would profile



Grimes Asphalt & Paving Corp. paving East 6th Street in Des Moines.

the roadway and allow for a one pass smooth top surface. In addition, it was anticipated that the new HMA would bond better to an asphalt surface than to the PCC surface. It was believed that the benefit of this thin bonded concept would be that a

portion of the existing HMA overlay would remain intact perpetually. Finally, it was determined that the new surface thickness



East 6th Street after paving completed.

to be added should be at least 3 times the maximum mix aggregate size. The desired benefits to this rehabilitation overlay would be a smooth top surface on the profiled HMA base, and a savings of tonnage that could be utilized for other projects.

The first thin bonded HMA overlay of this type was placed on Fleur Drive in 2005 with subsequent projects placed in 2005 and

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Tales from the Road



"The Team"

My son Henry had his first experience with a bully a couple of weeks ago at a 4-5 year old basketball camp. One of the kids on his team was pushing Henry and some of the other kids around and generally making life miserable for everyone on the team. It was infuriating to watch. Afterwards, and after much hand-wringing by my wife, I talked to Henry about standing up for himself against this bully and I gave him a few pointers if it happened again. Next practice I watched the bully picking on the smallest kid on the team. Henry went over and pushed the troublemaker to the ground. The bully ran crying to his mother in the stands. The effect on the team was instantaneous. They were all smiling, cooperating, and having fun.

I was very proud of Henry standing up for his teammate and surprised to see the mother of the bully tell her son that he deserved it.

These are lean times. Construction unemployment ranges around 20%. Projected work levels for FY 2012 IDOT work are one-half of average years. The need for greater funding of America's and Iowa's deteriorating roadways has never been greater. There is a need for all industries: PCC, Bridge, Aggregates, and HMA to come together and unify for the

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Upcoming Events

(Click event for more information)

Transportation 2020 Public Input Meetings

All meetings are being held from 6 pm – 8 pm)

Wednesday, August 31

Buena Vista University
Harold Walter Siebens Forum
Anderson Auditorium
610 W. Fourth St.
Storm Lake, IA

Wednesday, September 7

Mid-America Center, Room KL
One Arena Way
Council Bluffs, IA

Wednesday, September 14

Ramada Hotel Convention Center, Room 23
205 W. Fourth St.
Waterloo, IA

Wednesday, September 21

Iowa Wesleyan College
John Wesley Holland Student Union Social Hall
601 North Main
Mount Pleasant, IA

2nd 2011 Golf Outing

August 31, 2011

Carroll Country Club
20069 Olympic Avenue
Carroll, IA

QMA Field Trip

Northeast, Eastern, & North Central Iowa

September 14-15, 2011

Rainscaper Certification Workshop:

Permeable Pavement Systems Designer

September 19, 2011

Iowa Association of Municipal Utilities
Ankeny, IA

Iowa League of Cities Annual Conference

September 21, 23, 2011

Polk County Convention Center
Des Moines, IA

APAI 56th Annual Convention

November 30 – December 1, 2011

Tentative: West Des Moines Marriott
West Des Moines, IA

2011 County Engineers Conference

December 6-8, 2011

Scheman Building, Iowa State University
Ames, IA

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

greater good of all through an increase in highway funding. It is disappointing that the PCC industry has chosen this time to lobby for its own agenda both nationally and locally. Nationally they are lobbying for mandatory Life Cycle Cost Adjustment (LCCA) on all projects with over \$5M in federal money. The Portland Cement Association LCCA amendment has taken the debate away from fully funding a new robust Highway Bill and pitted industries against each other, thereby allowing the legislators off the hook. On the local level, the PCC industry has released a brochure claiming to use AASHTO 1993 to determine what are “equivalent” pavements. Unfortunately, the mistruths presented in this brochure are so outlandish that it tarnishes the

image of the industry as a whole, and the spirit of cooperation needed in these dire economic times.

We need to work together as a team to achieve our goals of increasing funding for construction both nationally and locally. It's time for those who support the PCC industry to get the message to their leadership that tearing each other down does not move us to our goal of restoring our crumbling infrastructure and getting our people back to work.

It's time to stand up together and fight for the team.

Bill

LEADCAP Debuts on Iowa City's Capital Street Project

A new Warm-mix asphalt additive was introduced to America on Capital St. in Iowa City on August 16. LEADCAP, a wax additive produced by Korean company Kumho Petrochemical, was used to place approximately 300 tons of Warm Mix Asphalt (WMA) by APAI member, L.L. Pelling Co., Inc. of North Liberty, IA.

Over 30 attendees watched the L.L. Pelling Company paving crew place the 1.5" surface course. The mix was plant produced at 260°F. “It looks like asphalt” said L.L. Pelling Co. Paving Foreman, Jim Ozello. “We appreciate the City of Iowa City giving us the opportunity to introduce warm-mix asphalt to this “green” city,” said L.L. Pelling Company, Inc. Vice President Brett Finnegan, “the use of WMA saves burner fuel, reduces CO₂ emissions, will lengthen the longevity of our pavements, and most importantly, will provide a better work environment for our employees.”

Following the site visit, Dr. David Lee, Professor – Civil and Environmental Engineering at the University of Iowa, presented his findings on LEADCAP and gave a tour of the University of Iowa Asphalt Lab. A special thank you to the city of Iowa City, the University of Iowa, and the crews of L.L. Pelling Company, for allowing the attendees to see this first of a kind project in Iowa City being constructed.



Avoiding Landmines In Construction Projects Using Arbitration

Kathryn Barnhill, Barnhill & Associates, West Des Moines, IA

Part 2 of a 3-Part Series

A disruptive event on a construction project can take many forms: disputes about workmanship, disputes about the plans and specifications, dispute over changes orders and work stoppage, strikes and owner caused delay to name a few. These disruptive events often result in a lawsuit. **Litigation can become an unintentional experiment that takes on a life of its own.** In litigation, the parties frequently became embroiled in a procedural morass that consumes years of motions and appeals. Litigation is a LANDMINE.

There is a different, cheaper, faster and more effective way to resolve disputes. This is called “Alternative Dispute Resolution” or ADR and includes, among other things,

arbitration. Many people are still unfamiliar with the arbitration process. Unless arbitration is included in the contract, the dispute will end up in court. Arbitration as the dispute resolution for the project MUST be included in the contract. Otherwise, all parties must agree to arbitrate and when they are at each others throats, this seldom happens. In short, litigation is the default position for dispute resolution on a construction project. Unfortunately, at the contract drafting stage, people usually are preoccupied with breathing life into their project and are not inclined to focus on how to resolve future disputes.

Arbitration is a time-tested, cost-effective alternative to litigation. Arbitration can be customized. Arbitration

is the submission of a dispute to one or more impartial persons for a final and binding decision, known as an “award.” Awards are made in writing and are generally final and binding on the parties in the case. The American Arbitration Association has a dedicated construction industry dispute resolution service. The website, www.adr.org, F:\contents\Guides\The Construction Industry’s Guide to Dispute Avoidance and Resolution.pdf explains the process and ways to streamline the process in more detail. In a comparison of the result of litigation and arbitration in similar types of disputes, arbitration led to resolution in much less time overall and allowed the parties to customize the process

(Cont. Page 7)

Research Report Points Out Road to Energy Savings; U.S. Could Save 3.3 Billion Gallons of Fuel per Year

Incline Village, NV – A new study shows that one road to energy savings could already be under the wheels of our cars: smoother pavements. Dr. Richard Willis, an assistant research professor at Auburn University, reported today that modest improvements in the smoothness of pavements could save up to 2.4 billion gallons of gasoline and over 900 million gallons of diesel for the U.S. every year – a total of more than 3.3 billion gallons of fuel for the vehicles being driven on our highways. In other terms, smoothing out America’s roads and

highways could save around \$12.5 billion for the U.S. economy every year.

Willis and Auburn’s Dr. Rob Jackson have just completed an analysis of more than 20 studies from throughout the world. At the Midyear Meeting of the National

Asphalt Pavement Association, Willis presented a preview of a study that will be published soon by Auburn. He reported that smoothness is a pavement characteristic that

has one of the greatest impacts on fuel economy. “We know that, of all the factors that influence fuel economy – vehicle aerodynamics, engine dynamics, ambient

air temperature, tire geometry, vehicle speed, tire pressure, and so forth – there is only one that pavements can affect, and that is rolling resistance,” said Willis.

Asked to define his terms, Willis said, “Rolling resistance can be thought of as the force required to keep tires rolling. It could also be thought of as the energy lost between the vehicle and the pavement. Of the two main influences on rolling resistance related to pavements – those due to the stiffness properties of the tire and those due to imperfections in the pavement surface – the pavement industry has the opportunity to influence only one, the pavement itself.”

Willis broke down his numbers. “A study published by Schmidt and Ullidtz in 2010 showed that slight improvements in

(Cont. Page 6)

“It is intuitive that smoother pavements are more fuel-efficient since less bouncing over rough pavements means less wasted energy.”

– Dr. Howard Marks



PROJECT SPOTLIGHT:

South Taft Avenue – Mason City, IA

(The Iowa Asphalt Report will feature an asphalt project each issue that highlights the advantages of choosing asphalt pavements.)

The South Taft Ave. paving project completed in Mason City, IA in 1998 by Heartland Asphalt, Inc. continues to defy the odds. First, the project was let with an alternate bid between seven inch PCC and nine inch HMA. Next, the low bid was HMA, and finally, the project is performing beyond all expectations. This is a city with two cement plants and a long history of PCC streets.

“We feel that we saved in excess of \$100,000 on our million dollar project, or about 10 percent of the cost. Heartland Asphalt has a vested interest in doing the best work possible since the company’s employees both work and live here. I’m sure some of Heartland’s employees drive this very road everyday,” added Tom Brunscheon, Associate City Engineer for Mason City.¹

“Quite frankly, their critics are going to be watching the results, too. This could be another 30 years, but if the road holds up as it should, it could open the door for more asphalt pavement here. All other things being equal, quality workmanship could spell the difference,” commented the Associate City Engineer.¹

The project required the milling of an old asphalt overlay and complete removal of the old PCC pavement, and widening the roadway, while keeping traffic flowing during the construction of the 10,000 ton paving project.

“We began this mile long project in May, 1998 and finished our final paving

by Labor Day. Because of being the first full depth asphalt road in a city known for its Portland cement roads and streets, I can tell that we had more than our share of visitors,” continued Wayne Auchstetter (former Heartland Asphalt Supervisor).¹

While not officially called a “perpetual pavement” at the time, the S. Taft Ave. project was constructed using the basic principals called for in today’s perpetual pavements: A thick, flexible five-inch base course with low voids to prevent ground-up cracking, a durable, 75% crushed 2-inch intermediate course, and a strong rut-resistant, 75% crushed, two-inch surface course.

The result is magic. Thirteen years in and the project is in excellent condition, very few cracks, and almost no rutting on a roadway that has become a major truck route to the city’s ethanol plants and industrial park.

The city has yet to perform any maintenance on the project.

“We couldn’t be prouder,” said Heartland Vice President, Dave Ricken. “The City of Mason City believed in Heartland Asphalt, the quality of the asphalt we placed on this project, and the advantages of using asphalt versus PC. They have been rewarded for that faith with a project that is performing beautifully and will continue to do so for another 20-30 years.”

¹A Mason City First, *Blaw-Knox™ Operating Strategy Report*, OSR185-10M-3-99, 1999 Ingersoll-Rand Company.

(HMA Overlays – Cont. from Page 1)

2006. Evaluation of those projects now after 5+ years of service life indicates that the original desired results were achieved.

The City of Des Moines has now established the thin bonded HMA overlay concept as a standard practice.

East 6th Street from Court Avenue to Walnut in the downtown loop has just been completed using the thin bonded HMA overlay concept. The design procedure included a core of the existing pavement to determine the depth of the existing HMA to be rehabilitated. It was determined that the existing HMA was 3” or greater in depth that the thin bonded HMA overlay concept could be used. Since the distresses on the HMA surface did not exceed over 1” in depth 1 ¼ of existing HMA was milled and profiled with the balance of the existing overlay remaining perpetually intact with the PCC surface. 1 ½” of new HMA was then applied as a finished surface over the profiled HMA base. The additional ¼” thickness allows for the passage of the paving machines easily over appurtenances. With this method it is estimated that over 30-50% of new HMA tonnage can be saved in lieu of milling down to and resurfacing PCC bases. The materials saved allow for the expansion of the number of program streets.

Grimes Asphalt & Paving Corp was the contractor for this project and the design engineer was Bruce Braun of the Des Moines Public Works Department. Other innovative methods that were used on this project included seamless joints with four pavers in tandem. This exemplified the major HMA advantage of speed of construction and eliminated future joint maintenance. The 1M ESAL 700 ton surface mix design included 25% certified RAP conserving valuable virgin asphalt and mineral aggregates.

The City of Des Moines deserves recognition for this type of innovative pavement maintenance thinking. One look at the finished project on E 6th Street in the City of Des Moines’ downtown loop is extremely convincing that this thin bond overlay concept has great potential.



Benefits of Asphalt Shine at Polk County Open House Demonstration

On a bright and shiny morning, forty city, county and consulting engineers gathered on SE 32nd Avenue in Polk County to see a Perpetual Pavement rehabilitation in action. The Open House Demonstration was sponsored by Polk County Engineering; Des Moines Asphalt, a division of Old Castle Materials; and the Asphalt Paving Association of Iowa. The project featured the use of a 40% RAP (recycled asphalt pavement) mix design, a two-inch profile milling of the existing pavement, and tandem (two pavers going side-by-side), fast-track paving of the 2" new surface wear course.

Perpetual paving is the use of thick, full-depth asphalt pavements that prevent bottom-up cracking and virtually never wear out. The pavements are milled approximately every twenty years (the 32nd Ave surface was 23 years old) to place a new wearing course, the milled material is recycled into new asphalt, and the extremely costly total rehabilitation needed for other

pavements, isn't needed for asphalt.

The road was closed to traffic during the five hours it took Des Moines Asphalt to place the approximately 1510 tons. "We give the local residents plenty of notice that we will be coming on a certain date, they get their cars out in the morning, and by five o'clock that night (or noon in this case) they can access their driveway. The people love it," said Jeff Chapman, General Manager of Des Moines Asphalt. "By using tandem or seamless paving, we eliminate the weakest spot in the

asphalt construction process at the centerline joint. It's a minor inconvenience during construction, but the benefits of longer-life pavements more than outweigh the trivial interruption to the traveling public."

The APAI plans several more demo projects this summer featuring the public, environmental, and social benefits of asphalt. A special thank you to Polk County, the crews of Des Moines Asphalt, Greg Kinser, Jeff Chapman, Ted Huisman and Col. John Bellizzi for allowing the attendees to see a top-notch project being constructed.



First APAI Golf Outing is a Hit

Playing in nearly perfect conditions, eighteen teams teed off at Saddleback Ridge Golf Course on June 30th for the first of two APAI golf outings this year. Consulting engineers, IDOT and county engineers, contractors, and associate members played for fun and took the opportunity to raise over \$1000 for the APAI Scholarship Fund.

Mark Johnson of the IDOT scored his third hole-in-one of his illustrious golf career, but unfortunately, it was not on the \$10,000 hole-in-one contest sponsored by Flint Hills Resources.

A special thank you to all the sponsors and volunteers for this great event, especially to RMS for their Gold Medal sponsorship and to Mr. Ben Hayes, of the UNI Construction Management

Club, for manning the long putt contest.

The next golf outing will be at the Carroll Country Club in Carroll, IA on Wednesday, August 31, 2011. If you have not

registered for this event, you may do so by clicking [here](#). To view more photos from the first golf outing click [here](#).



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“Pirates of Honey Creek” Storm Moravia

On July 21-22, 2011, over 75 members of the asphalt family came together for a day of fun on the water and a night of great food, revelry and camaraderie at the beautiful Honey Creek Resort on Lake Rathbun. The 3rd Annual APAI Beach Party featuring the “Pirates of Honey Creek” theme was another resounding success as the popularity of the family-friendly event continues to grow.

On Friday morning, the 3rd Annual Beach Party Golf Open was held under clear skies. The temperatures were exceptionally high, but the golf scores were exceptionally low. Congratulations to this year’s winning team, with an 11-under 61, Brad Henningsen, Kendra Hanson, Emily Bruner, and Kyle Bruner. Photos of the [2011 APAI Beach Party](#) and [Beach Party Open](#) can be viewed here.

APAI contractor and associate members have found this event is an opportunity to take a short break from the hard work and long hours, and celebrate both our fraternal and asphalt families. If you haven’t been able to make a Beach Party yet, make time in your schedule for fun, music and laughter on July 19th -20th, 2012 at the 4th Annual APAI Beach Party. A special thank you to Steve Rooney of Manatts and Tania Rosener for all your hard work in putting this event together and to all our sponsors for supporting this tremendous event.



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(Road to Energy Savings – cont. from page 3)

smoothness can reduce fuel consumption by 1.8 percent to 2.7 percent. Other studies suggest larger reductions of up to 4.5 percent. The Bureau of Transportation Statistics says that vehicles traveling on U.S. highways consumed 168 billion gallons of gas and diesel in 2009. AAA reported last week that the average prices were \$3.66 per gallon of regular gas and \$3.93 for diesel. Using a conservative figure of a 2.0 percent reduction in fuel consumption, we could thus save 3.3 billion gallons of fuel, or \$12.5 billion, every year,” he said.

Dr. Howard Marks, NAPA’s Director of Environmental and Regulatory Affairs, was unsurprised by Willis’s findings. “It

is intuitive that smoother pavements are more fuel-efficient since less bouncing over rough pavements means less wasted energy. While it is possible to build smooth pavements out of either concrete or asphalt, asphalt pavements are easier to build smoother and to keep smoother over their lifetimes,” he said.

NAPA President Mike Acott pointed out that rough roads also cost Americans billions for excess repairs. “The Road Information Program calculates that rough roads cost the average American motorist \$324 every year – a total of \$67 billion, just for extra wear and tear on vehicles. Adding this figure to the \$12.5 billion in potential fuel savings, we can

see that the U.S. could save nearly \$80 billion a year by building and maintaining smoother pavements.”

Acott added, “Congress and other policymakers are looking to incorporate green highway metrics in the pavement selection process. Legislation that has just been introduced in the House of Representatives – the Promoting Green Transportation Infrastructure through Research and Development Act – would identify the independent research studies and assessments in this field of research. This is a logical step in advancing the deployment of ultra-fuel-efficient pavements throughout the country and saving billions of gallons of fuel annually.”

(Avoiding Landmines in Construction – cont. from page 3)

– for example, 7 months for arbitration vs. 6 years for litigation.

One of the most successful ways to customize the arbitration process is to arbitrate before a non-attorney construction industry neutral. The contract can precisely specify and describe the arbitrator’s qualifications for a specific dispute. For example, if the claimant alleged a structural failure in the balconies, a precise request would be, “an architect, engineer or other design professional with hands-on experience in design and/or detail, or identifying structural failure.” This person will already know the relevant vocabulary and be familiar with the usual methods and course of dealing used in the construction industry in the site where the project is located. This leads to a smoother, more rational and more efficient resolution of a technical construction dispute than a jury of laypersons by eliminating much of the emotionality and confusion about terms and practices typical in court. No one gains an advantage from crying on the witness stand and swaying a jury who are totally unfamiliar with even the basic vocabulary terms of a construction project.

An example of a contract arbitration clause tailored specifically to the construction industry for a non-attorney neutral is:

“Any and all disputes, including but not limited to negligence and tort claims, involving the Contractor _____ and _____ and _____ (the “Parties”) shall be resolved by binding arbitration as follows:

- a. The Parties shall submit all disputes (including but not limited to those alleging negligence and tort claims) involving Contractor to mandatory and binding arbitration through the American Arbitration Association (AAA) following the AAA rules and procedures.
- b. The party demanding Arbitration shall be responsible for the cost of all filing fees required by AAA.
- c. The arbitration shall be held at a convenient business time and location in _____ County, Iowa.

- d. The demand for arbitration shall also be filed in writing with all other Parties.
- e. The Parties shall agree upon one (1) arbitrator. Should the party demanding arbitration fail to name an arbitrator within ten (10) days of their receipt of potential arbitrators from AAA, their right to name an arbitrator shall lapse. In that event, AAA shall choose the arbitrator based on the criteria herein listed. Should any Party refuse or neglect to supply the arbitrator(s) with any papers or information demanded in writing, the arbitrator(s) is empowered by the Parties to proceed ex parte.
- f. No one shall be nominated or act as an arbitrator who in any way has a financial interest in or is a family member by blood or by marriage with any party to the arbitration or is associated in the business affairs of the parties to the arbitration. **The arbitrator must have hands on experience in road construction, project management or construction contract administration.**
- g. The arbitrator’s decision shall be final and binding. Such decision shall be a condition precedent to any right of legal action, and wherever permitted by law it may be filed in court to carry it into effect.
- h. Arbitrator(s) is authorized to award to the Owner, if the Owner’s contention is sustained, the cost of reasonable repairs or replacement for the defect or damage only. No award for shall be allowed for any other incidental or consequential damages of any kind or nature including but not limited to inconvenience or discomfort arising from the making of repairs or improvements or from any action taken to comply with any law, ordinance or orders of a governmental authority or for loss of use, quiet enjoyment, emotional distress, diminution in value, pain

and suffering, loss of consortium any exemplary damages (punitive), consequential economic loss, spousal services or diminution in value etc.

- i. Should the Buyer fail to prevail, the arbitrator shall award the costs of arbitration including costs of the arbitrator’s compensation and reasonable attorney fees to defend the action against the Buyer.
- j. Award by the arbitrator(s) shall be in writing and it shall not be open to objection.

No amendment shall change or affect the provisions of this section “Dispute Resolution” without the express written consent of all Parties and this section shall survive for fifteen (15) years.

The Iowa Code has a chapter devoted to arbitration. In Iowa, at least, tort claims and negligence are not subject to arbitration unless the contract specifically includes negligence and tort claims. The 15 years survival clause is intended to see to it that undiscovered construction defects will still go to arbitration rather than court because Iowa has a 15 years statute of repose. As a practical matter, a construction defect that cannot be discovered can form the basis of a lawsuit for 15 years after it is finished.

Using arbitration in this way and customizing it to the project will go a long way towards avoiding the landmines in your next construction project.

NOTE: The Iowa Department of Transportation does not permit arbitration in their contracts. All disputes must go to court in the county where the project is located and decided by a jury of local taxpayers.

Kathryn Barnhill holds a law degree from Drake University, Des Moines, Iowa where she graduated with honors and was awarded Order of the Coif (top 10% of her class). She also has an M.B.A. degree, also from Drake University. Barnhill & Associates P.L.C. is a small highly specialized law firm concentrating almost exclusively in real estate, real estate development and construction law. Kathryn has served on numerous Boards of Directors and is a member of the Asphalt Paving Association of Iowa.

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Whitfield & Eddy, P.L.C., West Des Moines
Wirtgen America, Inc., Antioch, TN
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
Bishop Engineering, Urbandale
Foth Infrastructure & Environmental, LLC, Lake Elmo, MN
Fox Engineering Associates, Ames
Debra S. Haugen, LLC, Minneapolis, MN
Terracon, Cedar Rapids