High Performance Overlay for the South Suburbs

In the summer of 2014, Mannheim Chicago Auto Auctions had seen enough of their deteriorating asphalt pavement. Mannheim, based in south suburban Matteson, moves over 4,500 cars per week through their auction. The facility is constantly buzzing with dealers and car transports. Mannheim partnered with Ozinga Ready Mix and Ductilcrete to come up with a solution to their pavement needs. Due to the sheer size of the facility, a total lot replacement wasn’t reasonable in one year, so they came up with selected high traffic and drive thru areas to grind and overlay the asphalt with Ductilcrete.

Mike Cesta, GM of Mannheim Chicago, “I have a budget that is used towards yearly maintenance of the existing asphalt and I felt that we were constantly spending money on maintenance and not getting a sustainable product for the amount of money we were spending. “We were looking to maximize the amount of area that we could replace with concrete and Ductilcrete helped us achieve that.”
Over the course of the next several years, the Illinois Department of Transportation (IDOT) will be working toward specifications for cast-in-place concrete that are less prescriptive or “method” based and more “performance” based. The seeds of performance based specifications were planted by IDOT with the implementation of the Quality Control/Quality Assurance (QC/QA) Program a number of years ago. This program began to shift the balance of responsibility (and liability) for mix design and quality away from the Department and more towards Industry. Performance based specifications can be thought of as the next generation of QC/QA. For Industry, they will provide greater freedom than method type specifications have traditionally permitted.

What constitutes performance based specifications for cast-in-place concrete? This is a question that IDOT is only beginning to answer. It will take some time for the Department to achieve a level of clarity that can be clearly communicated to our IDOT Engineers in the field as well as Industry. However, several themes are starting to become apparent. One of these is the subject of this article. There are measures or requirements that can be instituted by IDOT which, in themselves, don’t necessarily guarantee long-term performance for cast-in-place concrete and are not acceptance criteria, but instead will help ensure performance.

One of these measures is the trial batch. It is uncommon for trial batches to be conducted on IDOT projects even if there are a number of occasions where the IDOT Resident Engineer has the authority to require one. This is true even though the efficacy of trial batches is not disputed by those in IDOT and Industry. Among other things, a trial batch provides an opportunity for troubleshooting, and optimizing admixture dosages or other aspects of a mix design such that fewer problems are likely to arise in the field on the day of the
actual pour. It is highly unlikely that any Broadway play does not have at least one dress rehearsal before opening night. Why should it be any different for a concrete pour?

Generally concrete mixtures that include “special ingredients” or require expertise beyond typical mix designs are the initial candidates on which the Department will be focusing. IDOT will be developing several special provisions in 2015 for which trial batches will be required to help ensure performance on the day of the pour and for the usable life of the concrete. These special provisions will be dealing with subjects such as bridge deck overlays with fibers, cellular concrete, and full depth bridge deck pours. The classes of overlays include those with latex, high-reactivity metakaolin (HRM), fly ash, and ground granulated blast furnace slag (GGBF). Cellular concrete special provisions include those involving filling annular spaces in culvert linings, select fill in mechanically stabilized earth (MSE) retaining walls, and geotechnical fill in roadway applications. Full depth bridge deck special provisions include mixes that employ lightweight aggregates (LWA) for internal curing, shrinkage reducing admixtures (SRA), and/or Type K cement.

The Department recognizes that trial batches will not prevent all potential problems. However, at the same time, it was well recognized by Benjamin Franklin that “an ounce of prevention is worth a pound of cure”. The pun, of course, was unintentional.
Keinstra-Illinois
Leading the Way in Fiber Technology
For years, the Poplar Street Bridge had been a point of frustration for both Illinois and Missouri motorists. The bridge carries an unusually large span without cable supports, allowing the deck to flex more than is typical. This movement creates an extraordinary amount of stress to the pavement, often causing it to fail. So when the west bound lanes of the bridge were, again, in need of repair, designers decided to look at new ways to extend the life of the bridge deck.

Through the teamwork of Dr. Gopal from the University of Missouri-Rolla and ready-mix producer Kienstra-Illinois, a 6000 psi mix design was developed using 196 lbs of steel fibers per cubic yard from Concrete Fiber Solutions. Initially there was some doubt. “When I first saw this mix design I was quite sure there was no way it would be a workable mix,” said Scott Maberry, Vice President of Kienstra Illinois. “But to my surprise, and I am happy to say, the mix was very workable and the steel fibers were evenly distributed throughout the entire pour.”

Phase 1 took place in September 2014. The pour took place at night to limit traffic issues. Phase 2 will begin in the spring of 2015. The total project of the 4” overlay features 1,600 cubic yards of concrete with 300,000 pounds of CFS type 5 steel fibers. The mix design provided additional temperature and shrinkage reinforcement. Initial inspection revealed no cracks or failures.

Restoration of the east bound lanes is slated for the near future.
Want to pay less for gas? Grocery stores throughout Illinois have a suggestion – buy your groceries from them and get a discount when you fill up at their new, affiliated gas pumps. The more “credit” you accrue from continued buying at the store, the greater your discount can be – in some cases up to 60¢ per gallon! Sounds great and customers are taking advantage, but what does it have to do with concrete?

Stores that are adding the new pump areas are, for the most part, relinquishing a significant segment of their parking areas; areas that are generally asphalt. The asphalt is removed, tanks are buried, piping is completed and then the surface must be replaced. NOW is the opportunity for concrete!

Within the last year, four groceries in Decatur added gas pump stations to their grocery stores. While the first replaced most of the area with asphalt, the next three did not! First the managers of these three significantly expanded the areas designated for the stations; they then made the decision to replace all pavement with concrete. All three cited the durability and maintenance-free attraction of concrete and two were impressed with the light reflection that has been afforded by the light colored concrete. Concrete for these stations in Decatur was provided by IRMCA members Grohne Concrete and Prairie Materials.

There’s a promotion opportunity here; the success of these new stations will certainly increase consideration from other stores. Indeed, Kroger is currently looking at all their operations. If you see or hear that stores in your area are adding gas pumping stations, make the call, extol the virtues of concrete pavement; it may be one of the easiest conversations you’ve ever made!
The nice folks from the Old Farmer’s Almanac recently called IRMCA, checking the dates for our 2016 Short Course. They are working on that year’s snow predictions and it seems our meeting has become a key indicator for their prognostications; IRMCA Short Course – Snow!! Despite this year’s storm (minor compared to last year’s), members made the trip to the Par*A*Dice Hotel in East Peoria January 5th & 6th and were rewarded with a meeting comprised of respected and informative speakers and with ample time for interaction.

The board met Monday afternoon and festivities started at 5:00pm with a “sponsored” reception and with member exhibits. Attendees of the reception received a special treat as one of the event’s entertainers, Brent Loewenstein, corporate magician, circulated through the crowd confounding attendees with his magical card tricks. Lots of laughs and a great opportunity to catch up with fellow members. Dinner speaker Matt Hart, Executive Director of the Illinois Trucking Association, explained new regulations and gave thoughts about the climate for business in Springfield under the new governorship. The evening “officially” ended with more entertainment from “the magician”.

Tuesday’s full-day agenda began with the IRMCA Annual General Membership Meeting. After Anti-trust papers were signed, the membership elected Chris Cooper, Red-E-Mix, to a 3 year term on the board and re-elected the current officers: Scott Maberry, Kienstra Illinois – President; Chad Groff, Prairie Material – Vice-President; and Carol Hustedde, Quad-County Ready Mix – Secretary/Treasurer.

Morning sessions began with a presentation “Bridging the Mighty Mississippi” by Randy Hitt, P.E., MoDot. His slides chronicled the 2 state bridge construction project and highlighted cooperation between IDOT and MoDot. Jason Weiss, Professor of Civil Engineering, Purdue University took the complex subject of Internal Curing and made it relatively easy to understand. Dan Tobias, Bureau of Materials and Physical Research, gave the annual IDOT update and the morning was rounded out with a short presentation on CDL Medical Certification by Debbie Anklam, Nurse Practitioner, Pana Community Clinic.

The afternoon session, shortened by the absence of snowbound Bob Garbini, President, NRMCA, began with a short synopsis of Mr. Garbini’s topic, RNC Check-Off Initiative, followed by an Environmental Update from Mitch Mariotti, Prairie Materials. Mitch also made a “pitch” for member involvement in the OES Committee of IRMCA. Brian Lutey, Ozinga Chicago, talked about Promoting Pervious Concrete, emphasizing the importance of qualified contractors, and the session ended with a Legislative Update from Jim Randolph, P.B.I. Trucking and IRMCA Government Activities Consultant. A drawing for door prizes was held for the remaining attendees, and most members cleared the snow off their vehicles and headed home.
“… We’ll help train them for you.” If you attended the IRMCA Short Course back in January, you heard those words, in the form of a promise, from IRMCA Operations, Environmental & Safety (OES) Committee Co-Chair Mitch Mariotti. That promise is intended to help make your folks just a bit better at their jobs, in the areas of Operations, Environmental, and Safety.

The IRMCA OES Committee is the centerpiece of IRMCA’s new committee structure, modeled after the NRMCA’s OES committee. It combines the regulatory disciplines of Operations, Environmental, and Safety into a single committee as a benefit to the IRMCA producer member, as quite often these separate regulatory areas are handled by the same employee. Now, instead of having to make the time commitment to multiple committees, members with regulatory responsibility for their respective companies need only participate in a single committee.

Curious to know how that “Fly Ash” thing worked out? Have any idea what an Environmental Product Declaration (EPD) is or what impact it is going to have on your business? Is your company ready to comply with the new OSHA “Global Harmonization System” (GHS) regulations that kick in this year? Did you hear the latest DOT regulations regarding Hours of Service? Send us your people … we’ll help train them for you. We’ll make them a bit more knowledgeable about the regulatory areas that affect your company.

However, as the saying goes, there is no thing as a free lunch … or in this case, free training. This training will definitely cost you something in addition to your annual dues. That “something” is time. The cost to you, which is ultimately an investment in your company, will be your employees’ time. We promise you an excellent rate of return on your investment. In fact, we already took the first step at the most recent OES Committee meeting. With a record turnout crowd, the OES Committee (in addition to the usual regulatory agenda) received a Storm Water Pollution Prevention Plan (SWPPP) presentation from Illinois EPA representative Holly Hirchert. The meeting was closed with an educational agenda including detailed training on U.S. EPA’s “Emergency Planning & Community Right to Know Act” (EPCRA) Tier 2 Hazardous Chemical Inventory Reporting system.

Curious to know what topics will be covered in the upcoming OES Committee meeting on April 9th? Send us your people … they’ll know a bit more about GHS, ROSS, HOS and TRI to name a few topics. Better yet, why don’t you come down to the next OES Committee meeting and find out for yourself? We’ll introduce you to the committee and give you a glimpse into what the committee has planned for 2015. Look for a reboot of the IRMCA safety program, and a new SWPPP template to update your permit compliance with the soon to be re-issued Illinois EPA’s general industrial storm water permit, just to name a few items. Can’t make the meeting on April 9th? Then please stay tuned to the IRMCA newsletter. In addition to regulatory and education agenda, we’ll fill you in on our plans for the committee in subsequent editions.

Respectfully,
OES Committee Co-Chairs

Mike Sorci
Wille Brothers Company
Operations Co-Chair

Mitch Mariotti
VCNA Prairie, Inc.
Environmental Co-Chair

Jeff Emrick
Ozinga Ready Mix Concrete, Inc
Safety Co-Chair
A question discussed by IRMCA staff since the beginning of time is “what can we do for our members?”

The answer to that question, for me as a producer was to be a resource if I had a problem. Whether it be environmental, technical, safety, operational, trucks, whatever, I could call IRMCA and find someone to answer my question or just help me. I hope you appreciate that as much as I did. In addition to just being there when you need help IRMCA tries to teach, disseminate new technologies and keep you aware of new regulations, specifications and laws and has committees that offer you the opportunity to be directly involved in issues that are of special interest to you.

From my own business experience, there were two very important objectives – make money and stay out of trouble. I’m quite sure they’re both high on your list as well. As far as staying out of trouble IRMCA can, and has advised you, but what you do is what will limit your exposure, your complaints and your problems. As far as being profitable goes, we tread carefully. Anti-trust laws are very clear. We obviously can’t talk about prices and have to be very careful when we talk about sales or even marketing practices of members. We can however, talk about how promotion, being more efficient and how taking advantage of new technologies can improve your bottom line. In the near future we intend to host a seminar intended to help you do exactly that.

As much as we try to help you, some things such as promotion need to be a joint effort in order to be successful. I know some of you think promotion is a big deal and you don’t have the time, people or even knowledge to “promote”. It need not be a big deal, and with our help, it need not take a lot of your time or money. I’m suggesting you think of promotion in a less grandiose manner. It need not be a formal seminar with speakers that takes a full day and includes a meal. I’m not saying we shouldn’t have formal promotional seminars, but there are always several issues for both of us to consider when we plan such an event such as: you don’t have the time; it’s too far to travel; you’re too busy; it costs too much; who should be invited; and most importantly how do we measure the success of our efforts. So what am I suggesting? Maybe we should think small!

Our customers are the contractors and some of them are knowledgeable and some are not. Some aggressively look to expand their markets and some don’t. The fact of the matter is it’s very difficult to “change a zebras stripes”. So maybe we should concentrate more of our efforts on those contractors who care, want to learn and be more profitable. You know who they are. Why not invite them to your office later in the afternoon when his work day is over or meet in his office, meet for breakfast or even dinner and just talk. Bill or I would be more than glad to come along. We can answer questions and introduce him to new technologies. You might want to include one of your material suppliers. That is promotion. A little time, maybe a little money and because you selectively chose the customer, you will see the success of your efforts and your customer will feel special.

So “what to do”. For us the answer is be there for you. For you the answer is make use of your membership.
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Initially, the scope was fairly small, but since the slab profiles are thinner with Ductilcrete overlays, Mannheim decided to add much more to the project. Upon completion, 250,000 sq ft of the lot went to Ductilcrete. Depths of concrete paving varied depending on the application, but over 3,300 yards were placed this past summer.

“So far, I’ve been very pleased with the product and look forward to a long lasting pavement. The areas we’ve done so far look great and our clients are pleased that they aren’t driving thru and around failing pavement.” We look forward to doing more overlays in the coming years as we transition our facility over to concrete.”

Spring and summer are typically the times of the year that exterior flatwork is most susceptible to plastic shrinkage. Here are some measures that will help reduce plastic shrinkage cracks:

- Moisten the subgrade and forms
- Moisten Coarse Aggregates
- Erect temporary windbreaks
- Erect temporary sunshades
- Cool the aggregates and mix water
- Reduce time between placing and start of curing by eliminating delays during construction.
- Protect the concrete immediately after final finishing to minimize evaporation (fog spray good for this).
- A fogger is required to be available for PCC projects ≥ 5,000 C.Y.
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Order Board
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Central Illinois Regional Office
100 West Cass Street
Peoria, IL 61602
309-676-0576
Central Illinois

Bankier Apartments

The F.A. Wilhelm project, Bankier Apartments, is located at 519 E. Green St., Champaign, directly in the middle of the University of Illinois Campus Village. The Prairie Material, Champaign yard began pouring concrete August 2013 and finished the roof deck on March 8, 2014. This is a 100% cast-in-place concrete structure with no structural steel or metal decking. This structure consists of 14 levels. The first (ground) level is designated for retail space, followed by 3 parking deck levels, and finally 10 levels of residential and ‘open’ space. The building opened up for occupancy in August 2014 in time for University of Illinois students to move in for Fall semester.

Numerous test batches were done prior to and during construction in order to establish maturity curves so that F.A. Wilhelm Q.A. personnel were aware of the in-situ strength for form stripping purposes. Maturity meters, or loggers, were placed in the formwork prior to concrete placement. Wilhelm personnel were then able to read the internal temperature (maturity) of the concrete from the loggers and then correlate that value to the compressive strength of the concrete. This was determined via the previous test batches which were performed at Yard 37 and tested at our Champaign Q.C. Lab. A total of 3,200 cubic yards were delivered to this project including a column mix exceeding the 8K P.S.I. specification as well as a 6K P.S.I. deck mix.

The site is curb to curb, and less than six inches from two adjacent buildings. There is one lane of road available for laydown. Wilhelm superintendents are very good at looking at the challenges associated with confined sites and coming up with ways to solving them.

Wilhelm used special equipment, including a self-climbing placing boom, which allows the team to use a much smaller concrete pump at ground level. They also erected a self-climbing forming system for the stair and elevator cores of the building. This system forms and wrecks at the point of placement, and it “jumps” itself to the next lift, which eliminates the need to remove forms and then stage for use.

Construction continued through the winter months, and because there was not a structure above the slabs, the floors below were tented and heated. MasterSet FP 20 was used as the accelerator for some of the final pours during the record cold in February.
Illinois Cement Company, a subsidiary of Eagle Materials Inc. and headquartered in LaSalle, Illinois, has been manufacturing, and distributing bulk Portland cement products primarily to Illinois and Wisconsin market consumers for over 40 years.

From distribution terminals located in LaSalle, Illinois and Hartland, Wisconsin we offer high quality Portland cement products, including Type I and Type III, for use in a variety of consumer and industrial applications.

At Illinois Cement Company, *Quality is our Strength.*
As you pass through Effingham on Interstate 57/70, it is hard to miss the City’s newest car dealership, Roy Schmidt Honda – especially at night. But the concrete showcase just east of the highway almost didn’t happen. The lot, like with the other Schmidt dealerships, was slated to be asphalt. Through the efforts of two local companies, the job was switched to a 5,310 cubic yard concrete parking area.

Pooling their resources, Mid-Illinois Concrete and Akra Builders put together a program to not only show Roy Schmidt the cost savings that concrete offered, but also illustrate how concrete would help highlight his inventory. After the presentation, Schmidt reached out to another local dealer, Bob Ridings Ford, to get their thoughts on using concrete. Following the discussion, and after reviewing the respective bids on concrete and asphalt, Schmidt decided to use concrete for the entire project – and he couldn’t be happier with the results.

If you have a job that you would like featured in IRMCA NEWS, please let us know at irmca@irmca.org.
IRMCA WELCOMES NEW MEMBERS

KIMBLE MIXER COMPANY
Derek Leggett, Sales Manager
1951 Reiser Ave. SE
New Philadelphia, OH 44663
Phone: 330.339.2357
Cell: 330.204.2838
Email: dleggett@kimblemixer.com
Products & Services: Concrete Mixers
Referred by: Scott Maberry, Kienstra Illinois

LINCOLNLAND CONCRETE, INC.
Matt Anderson, Plant Manager
6225 Industrial Drive, PO Box 110
New Berlin, IL 62670
Phone: 217.697.8566
Email: redimix910@aol.com
Website: lincolnlandconcrete.com
Products & Services: Ready-Mix Concrete
Referred by: Jim Amundsen, WR Grace