35th Annual WRMCA Concrete Design Awards

Sponsored by Acuity, Euclid Chemical, FiveCubits, GCP Applied Technologies, Ozinga Ready Mix, Sika and the Wisconsin Chapter of the American Concrete Institute
The Awards presentation can be viewed at https://youtu.be/K-FhpwEC_TE.

Agricultural – Matsche Farms Inc.

The Matsche family had a massive project when adding 5,000 cows to their farm. Additions included a 27-million-gallon manure pit, two free stall barns, a feed slab and a state of the art milking parlor. One of the largest challenges was ensuring each project complied with government regulations designed to protect the environment. The integrity of concrete helped ensure that waste would be contained with no leakage.

The concrete shell for the manure pit needed to be strong enough to withhold the extreme weight. Concrete met Wisconsin NRCS Specs at 4,000psi. The size of the pit was four football fields so careful coordination with the concrete supplier was vital. The two free stall barns are each a quarter-mile long. Grooves were put into the floor along the barn's entire length to add traction. The outside of the milking parlor shows the aesthetic appeal concrete can offer. To match the parlor's decorative veneer outer walls, the parlor's patio and entrance area were stamped to look like natural wood.

A crew of 20 built all four structures, which proved a challenge with the project's tight deadline. The small crew planned ahead and worked diligently while concrete was on sight. With the help of concrete's strength and versatility, the Matsche Farm was able to transform into one of Wisconsin's largest dairy operations.

Project Team Members
Owner: Matsche Farms Inc.
Concrete Supplier: County Materials Corporation
Architect/Engineer/Contractor: Thiex Construction LLC

Commercial – Acuity Insurance

Acuity Insurance expanded their headquarters by 1 million square feet. The 570,000 square feet of building expansion included a 2,000 seat auditorium as well as an expanded training complex, improved collaboration spaces and an additional workout area.

The north and south parking structures are multi-story car ramps, designed to enable employees to escape natures elements through an enclosed arcade connecting the structure to the headquarters. The south structure was constructed with 3,000 psi footings, 4,000 psi walls and slab on grade, and 5,000 psi columns, requiring 16 pours averaging 400 cubic yards. The north parking structure contained a 5,000 psi elevated deck pour mix. The north and south structures each used 12,500 cubic yards and 7,600 cubic yards for their post tensioned decks and roof.

The East Galleria, a lecture hall and the Southeast Addition, a two-story open office required 5,581 cubic yards. A special pump mix with ½-inch aggregate was requested so the contractor could use a smaller 3-inch rubber hose to ease placement of the stadium seating in the lecture hall. The Northwest 2-story shelled space addition used 5,400 cubic yards of concrete. In all, nearly 37,000 cubic yards of concrete was used to complete this project.

Project Team Members
Owner: Acuity Insurance
Concrete Supplier: Carew Concrete & Supply Co., Inc.
Contractor: M.A. Mortenson
Architect: Eppstein Uhen Architects
Engineer: Pierce Engineers, Inc.

Merit Commercial – The Corners of Brookfield

The Corners of Brookfield is a 750,000 square foot multi-use development in the Town of Brookfield. The project consists of a cast-in-place parking structure, 244 luxury apartment houses, and a mix of retail and restaurants.

A total of 51,000 cubic yards of concrete was used on the project. The parking structure was comprised of 30,000 cubic yards of an 8000 PSI post-tension mix. An 8000 PSI mix was also used for the 500 plus interior columns. Poor soils forced the contractor to use 5,600 cubic yards of a 1500 PSI lean mix. A 3000 PSI mix was used for the footings and a 4000 PSI mix was used for foundation walls and slab on grade.

The cast-in-place parking structure posed the biggest challenge on the project. The post-tension decks were 22 to 24 inches thick with an 80-degree maximum concrete specification. The above-average temperatures all summer, coupled with the heavy amount of Portland cement in the post-tension mix, meant cooling the concrete was imperative. To accomplish this, an average of 75 pounds of ice per cubic yard was loaded into each yard of concrete to keep it under 80 degrees. The ability to overcome the challenges in the concrete specifications enabled The Corners of Brookfield to be completed ahead of schedule.

Project Team Members
Owner: Bradford Real Estate
Concrete Supplier: Ozinga Ready Mix Concrete Inc.
Contractor: Tri-North Builders
Architect: Eppstein Uhen Architects
Engineer: Pierce Engineers, Inc

Decorative Commercial – Heartland Farms

The owners of the state-of-the-art, award-winning Heartland Farms wanted the ultimate patio and gathering space showcasing their company logo. A family member designed the project, totaling 12,000 square feet of concrete. The patio and trail come together to form the Heartland Farms logo from an aerial view.

The project's incorporation of the company logo's intricate design and use of multiple colors made this pour challenging. Each color required its own inlay carefully placed using GPS coordinates. The curved pattern of the design was accomplished using flexible plastic forms. The logo's leaves were poured first using integral green and dye, then a juniper color hardener. The red heart inlays were poured tightly against the green leaves on the bottom portion, with the shadow slate grey poured above covering the rest of the patio. Three concrete pads on the western and southern edge are aligned with the rounded heart. The pads were designed to display historic tractors and machinery.

The concrete was poured into 5-inch slabs with a fiber mesh for reinforcement. The project was finished with two acrylic solvent-based sealants, which played a role in creating the correct color, and enhanced surface protection.

Project Team Members
Owner: Heartland Farms
Concrete Supplier: County Materials Corporation
Contractor: Alchemy Concrete, Inc.
Architect: Ellis Stone Construction Company
Engineer: JPF Engineering

Decorative Residential – Ian & Holli Martin Residence

The Ian & Holli Martin residence is a beautiful example of using concrete to create an outstanding hardscape. 100% of this project was ready mixed concrete using a straight 6 bag mix design that includes a mid-range water reducer with low chert stone and macro fibers. The time frame of this project was from March thru October. Non-corrosive accelerators were used in the winter and spring months and hydration stabilizer was used in the summer months to ensure uniform impression of all stamps in the difference of the elements of nature. The macro fibers made it possible to make larger pours with less control joints necessary on such a large project using stamped concrete to obtain a natural appearance.

All of the steps, pool coping and curbs used form liners to create the natural stone look. Color hardener was necessary to obtain the light golden color of sandstone to match so a hopper gun was used to spray color in the faces of all the form liners right before pouring the ready mix. The running bond brick border in a radius was achieved without any seams. Grout between the bricks makes the running bond appear as natural brick. The colors chosen in the entire project are congruent with the color scheme of the natural stone on the house.

Project Team Members
Owners: Ian & Holli Martin
Concrete Supplier: Schmitz Ready Mix
Contractor: Ganos Decorative Concrete, Inc.
Architect: Judith Stark & Associates

Education, Healthcare & Public – ThedaCare Physicians Clinic – Neenah

The new Theda Care facility is a 72,000 square foot three story building. The project started on February 17, 2016 and was fast tracked to be open in one year. One of the project's challenges was dealing with the sub grade. The contractor ended up digging out a lot of bad soil and filling back in with a lean mix before constructing the building. After getting a good base, footing and walls were created.

Specifications were strict when it came to the floors, making sure concrete was placed precisely. The only way to increase the slump was by the use of super plasticizer. Water vapor admission needed to be under a certain reading to put down the finished flooring. The mix design was a 4000 psi plus super plasticizer and structural fibers.

The structural fibers were used in the floor mix and were a great option as they increased production and helped reduce labor costs. The fibers also reduced the cost of reinforcement in the floors. The floor pours were around 110 to 250 yards at a time. The contractor typically poured the floor twice a week to keep on schedule. The project is a great example of supplier and contractor working together to come up with mixes to keep the project on track.

Project Team Members
Owner: ThedaCare
Concrete Supplier: Carew Concrete & Supply Co., Inc.
Contractor: The Boldt Company

ICF – The Century House

This ICF project was co-designed by Andrew and Jennifer Bielanski in cooperation with D.F. Maher Architects-Builders. The entire project (exterior walls and floors) is approximately 65 percent ready mixed concrete. The exterior ICF walls arc thirteen inches thick utilizing five inches of Styrofoam Blocks with 8 inches of reinforced concrete. These walls are on average 23 feet tall. The footings are 32 inches wide by 12 inches thick with 3 number 4 rebar running continuously. The walls were poured in 3 foot lifts. Vertical rebar was placed 36 inches on center and horizontal rebar were 24 inches on center continuously.

The first floor was a 4 inch poured concrete-fiber-mesh slab sand grade on two inches of poly insulation. Rebar was placed 24 inches on center in 2 directions within the garage slab. Also inlaid in the first floor slab was pex tubing, 10 inches on center for in-floor radiant heating using a gas-fired boiler.

The project took 8 months to build and was finished in September of 2016. The challenge of this project was to incorporate the design specifications, as submitted by the owners, in a stunning and utilitarian whole that invokes an 1890's historical archatype. Great clients and great Sub Contractors made for a great project.

Project Team Members
Owner: Andrew & Jennifer Bielanski
Concrete Supplier: Point Ready Mix
Architect/Contractor: D.F. Maher Architects-Builders
Subcontractor: T.C. Concrete
Subcontractor: Julian's ICF Installation, LLC

Industrial – Mullins Cheese

The Mullins Cheese project involved four distinct uses of concrete in the storage tanks, caissons, floor, and walls. Coordinating the pours of each mix proved a challenge with multiple pours happening on site simultaneously. Due to the large amount of rebar required, self-consolidating concrete with a low water to cement ratio was used to flow around the steel without honeycombing. The 5,500-psi mix also contained approximately 2.5 pounds per yard of macro fiber to reduce shrinkage cracks. A crystalline integral waterproofing agent was also added to the mix to help prevent liquid from penetrating the walls.

Because of the extreme weight of the tanks, equipment, and traffic in the multi-story facility, caissons were necessary for added support. Designing the proper mix for the caysons proved a challenge. The concrete had to be poured into deep holes and fill the entire space.

Flatwork in the facility was poured by a separate contractor. The floors had to handle extreme weight and traffic and were constructed with 3-4 pounds of macro fiber per yard. On any given day, caysons, walls, and flatwork were being poured at the same time, all using different mixes. The project was a success because of the coordination between the contractors, concrete supplier, and drivers on site.

Project Team Members
Owner: Mullins Cheese
Concrete Supplier: County Materials Corporation
Contractor: S.D. Ellenbecker
Architect: Nikolai Construction
Structural Engineer: Ionic Structures & Design
Project Manager: The Probst Group

Merit Industrial – Uline I6 Branch Warehouse and Office

The 850,000 square foot warehouse located in central Kenosha County, broke ground in July of 2016. A 3000 PSI mix was used for trench footings. The interior slab on grade was a 5.5 bag #1 & #2 stone with a water reducer. A 5.85 bag air mix was used for the 11,000 cubic yards of exterior paving.

One of the construction challenges included maintaining access to the interior and exterior concrete placements, while all other trades completed their work. The concrete contractor performed interior and exterior pours simultaneously to meet, and exceed, the project schedule. Some pour days exceeded a total of 1,500 cubic yards. A grand total of 38,000 cubic yards was placed within a 6-month period. The project was completed by the end of 2016.

Project Team Members
Owner: Uline Shipping Supply Specialists
Concrete Supplier: Ozinga Ready Mix Concrete Inc.
Contractor: Hunzinger Construction
Sub-Contractor: Middleton Construction
Architect/Engineer: HGA

Municipal Facility – The Milwaukee Intermodal Train Station

A 200-ton locomotive rolling through your jobsite is a daily hazard when you are renovating a live train station. The 1964 passenger loading facility at the Milwaukee Intermodal train station was recently rebuilt. The project manager ran a meeting every morning with representatives from Canadian Pacific, Amtrak, the DOT, and subcontractors to ensure the project would be completed safely and on time.

The original passenger loading facility was built prior to modern safety and ADA requirements. To update the facility over a mile of platforms had to be demolished and rebuilt. Piles were driven to support a mezzanine that would allow passengers to reach platforms that were previously inaccessible to wheel chairs. 4,000 yards of concrete was poured to build the piles, grade beams, and platforms.

The delivery window for concrete on this project was unusually tight because trains were constantly moving through the work area. Concrete trucks had to be staged and ready to pour as soon as the tracks were clear. This project required a high level of coordination between the contractor and the concrete supplier. The project was completed in the fall of 2015.

Project Team Members
Owner: WisDOT
Concrete Supplier: Sonag Ready Mix
Contractor: JP Cullen
Architect: Hanno Weber
Engineer: GRAEF

Municipal Infrastructure – Bearskin Trail Bridge

The Bearskin Trail Bridge originally was a steel railroad bridge built in 1938. It hasn't been used for several years and is now part of a pedestrian, bike, and snowmobile trail system. The iconic "T·Bird Country" bridge no longer met horizontal or vertical clearance safety standards. Many oversize trucks could not haul through this section of US Hwy 51 causing costly detours. The memorable steel bridge was salvaged and remains in the community as an attraction for residents and tourists.

The new $1.2 million is 6 feet higher and used 80% ready mix concrete. The other 20% is comprised of pre-stressed concrete girders and an asphalt overlay. One mix design was used throughout the entire construction process. The 4000 PSI WisDOT mix contained cement, fly ash, water reducer and air entrainment. The project followed WisDOT QMP specifications and requirements.

Rock form liners were used and the concrete was stained to provide the bridge with a decorative element. A crane and bucket system was used to place every yard of ready mix concrete. There were two overnight lane closures during the 3-month construction process. The new bridge is 16 feet wide and spans 250 feet. A total of 520 cubic yards of concrete was used and the project was completed in July 2016.

Project Team Members
Owner/Engineer: WisDOT
Concrete Supplier: Northern Lakes Concrete
Contractor: Pheifer Brothers Construction

Parking Lot – Kwik Trip

Kwik Trip built a new store off of Golf Road in Pewaukee. They opted to pave the majority of their parking lot with ready mix concrete rather than asphalt because of the heavy truck traffic expected. The lot was a total of 1,800 cubic yards of concrete.

The mix was a 4,500 PSI mix with 3 pounds per cubic yard of macro fibers to replace welded wire fabric. All the stone used was limestone to avoid chert pops and provide a higher strength. The use of fibers allowed for faster placement and guaranteed a thorough reinforcement throughout the whole slab rather than trying to fight proper placement of Welded Wire Fabric.

The concrete was struck off by using a laser screed equipped with 3D technology to allow for faster placement, which allowed the job to be completed earlier. The whole project was completed by August 1, 2016.

Project Team Members
Owner: Kwik Trip
Concrete Supplier: Zignego Ready Mix
Contractor: Whitetail Concrete LLC

Merit Parking Lot – BioLife Plasma Services

BioLife Plasma Services has chosen concrete as the standard for all of its parking lots due to its durability, ease of maintenance, lifecycle cost, and light reflectivity. When the company expanded to a new facility in Wausau, they continued their tradition of using concrete for the 75,000 square foot parking lot.

More than 1,384 yards of 4,500 psi air entrained with 1.5-pound fiber per yard concrete was poured to complete the parking lot, sidewalks, and curbs. The owner knew a light grey concrete would brighten up the area and require less lighting at night. The aesthetic features of the building were chosen to match the concrete, giving the entire site a uniform, professional appearance.

Planter squares provide a place for lighting and also soften the clinical appearance of the building's exterior to create a more welcoming space. A light gray concrete block was chosen for the retaining wall, complementing the color of the concrete. The client's tight time frame proved the biggest challenge. The parking lot needed to be complete by the scheduled grand opening. The project was completed in an impressive two days with a 3D laser screed and a crew of 15. From the beginning the company knew the advantages concrete offers, and chose building features that matched the parking lot.

Project Team Members
Concrete Supplier: County Materials Corporation
Contractor: Advance Concrete
Architect/Engineer: WDS Construction

Tilt-Up – Dennis & Becky Doyle Residence

The tilt-up residence is a 3,600 square feet residential home with an exposed basement. It took approximately 8 hours to set 22 panels with a 120-ton crane. It took 4 weeks to construct the panels. Each corner was tied together with weld plates. The biggest panels were 51 feet long by 10 feet high and 10 inches thick, weighing in at 14.1 ton each.

The smallest panels were 8 feet long by 10 feet high and 10 inches thick, weighing in at 9.11 ton. The panels have 3.5 inches of reinforced concrete topped with 3 inches of insulation topped again with 3.5 inches of reinforced concrete. Insulation values are R25-R30. The exterior is finished with a sand based paint that gives it somewhat of a stucco type finish. No need to side concrete!

Dennis along with his brothers and their company designed, engineered and built the house.

Project Team Members
Owner: Dennis & Becky Doyle
Concrete Supplier: MCC, Inc.
Contractor/Architect/Engineer: Doyle Contractors

Southeast Region – Northwestern Mutual Life Tower: Mat Slab

Planning the largest mass concrete pour in the state's history requires detailed coordination and teamwork for a successful outcome, demonstrated by Sonag Ready Mix on March 28, 2015 with the construction of Northwestern Mutual Life Insurance Company's 32-story building in downtown Milwaukee. A massive mat slab was designed with a foundation of 175 by 250 feet wide and ranging in depth from 3 to 10 feet. Delivering 400 cubic yards of concrete per hour for 30 straight hours is a unique challenge. To manage this massive effort, a 14-hour 2 shift system was created.

To help staff this massive pour, Sonag turned to members of the Wisconsin Ready Mixed Concrete Association. Trucks and drivers were provided by Okauchee Redi-Mix. Drivers were supplied by Otto Jacobs, Jackson Concrete and VanDerVart. Zignego Ready Mix operated its West Allis plant as a third batch plant to meet production demands. To ensure a consistent concrete mix, all plants used the same cement, aggregates, and admixtures.

A high strength 6000 psi mix with small stone was specified. To avoid the core temperature from reaching 150 degrees, 18,000 feet of cooling cables were installed to pump cold water for 10 days straight. Almost 9,500 cubic yards of concrete was successfully poured in under 30 hours - a testament to the concrete industry for accomplishing this incredible feat.

Project Team Members
Concrete Supplier: Sonag Ready Mix
Contractor: Gilbane
Contractor: C.G. Schmidt
Owner: Northwestern Mutual Life Insurance Company
Architect: Kendall-Heaton Associates
Engineer: Magnusson Klemencic Associates
Construction Manager: Hines

Northeast Region – Lambeau Field Water Retention Pond

This project is unique as you cannot see a visible structure, it is just one big parking lot. On this project, the owner needed a way to retain water runoff onsite, without having to use up all the valuable land. The owner looked at how they could solve this problem. One was to dig a big pond and give up the parking lot, which was not an option. Another thought was to go under the parking lot so they chose to build a concrete structure 12 feet underground that holds 3 million gallons of water run-off.

They started pouring a base slab and then built a concrete structure on top of that. The concrete pours averaged about 500 yards or more. Three different mixes were used on the project. One was a 4000 psi concrete for the base. The other was a 4500 plus mid-range for easy placement and a 4000 super-p mix for pumping the concrete. The reservoir was back filled and covered after completion. On site, one would never know you are walking on an underground concrete structure in the parking area.

Project Team Members
Owner: Lambeau Field Redevelopment LLC
Developer: Hammes Company Sports Development
Concrete Supplier: Carew Concrete & Supply Co., Inc.
Engineer: Oneida Total Integrated Enterprises
Contractor: Miron Construction Co., Inc.

North Central Region – Skyward, Inc. Corporate Headquarters

Skyward's new 4-story world headquarters located in Stevens Point, opened in early 2016. The building allows for 350 employees previously housed in 2 separate locations to consolidate into one building while providing space for an additional 500 employees Skyward is expecting to hire through 2021. Ready-mixed concrete was used in five unique applications – a partial basement and parking garage; floor and columns; a custom designed retaining wall leading to the parking garage; an employee patio; and an entryway with a heated slab.

The project began with pouring the underground parking area just as cold weather was setting in making it necessary to maintain an adequate temperature for the massive amount of concrete. The building's parking garage includes an access ramp with precast retaining walls on either side. The retaining walls feature a fieldstone decorative surface created by using a form liner system. The mix used a defoaming agent was used to eliminate air pockets, and a plasticizer was added for superior flow.

Heating tubes run under the entryway and patio to aid in snow removal. The ready-mix was integral colored at the facility and stamped for added aesthetics. The owner is proud of the new space, and excited for the opportunity of continued growth that it represents.

Project Team Members
Owner: Skyward
Concrete Supplier: County Materials Corporation
Contractor: Lewis Construction
Contractor: Miron Construction Co., Inc.
Architect/Engineer: Performa