

37th Annual WRMCA Concrete Design Awards

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AGRICULTURAL – SPRING BREEZE DAIRY

The dairy farm required extreme engineering design skill and coordination on the part of many companies. The farming complex is the latest addition to a partnership of five families who own and operate several farms throughout Wisconsin.

More than 11,000 cubic yards of ready-mix concrete was used to construct new facilities that allowed the farm to grow from 1,800 to 3,500 cows. In all, ready-mix was used to construct a manure pit, several barns, a storage shed, a milking parlor and pathways connecting buildings.

This immense job required three different contractors to operate onsite. All three contractors relied on the same supplier for the ready-mixed concrete. This system required a great deal of coordination to make sure the right trucks were getting to the right contractor. In addition, there were more than 20 different design mixes used throughout this job.

Project Team Members

Concrete Supplier: County Materials Corporation

Contractor: Milis Flatwork

Contractor: Spiegelberg Implement

Contractor: Everlasting Concrete

Engineer: Keller, Inc.

Engineer: Roach & Associates, LLC



COMMERCIAL – ABBEY MARINA HARBOR RENOVATION

This project consisted of a complete renovation of the Abbey Marina Harbor in Fontana, WI. The Abbey Marina is a 407-slip full-service boating facility.

The entire perimeter of the harbor was redone with a new seawall and sidewalks along with a boat ramp, patios, and curb and gutter. Over 1,100 cubic yards went into the renovation. Most of the concrete was an air-entrained straight six bag mix and some sections required a higher early strength seven bag mix.

The project started in late 2017 after the boating season and was completed almost a year later. The majority of the concrete was placed in late 2017 and early 2018 with scattered pours throughout 2018.

Some challenges faced were fighting through the bitter cold weather and wind on the lake and dealing with the water. Since almost all the work was on the water, it required the use of barges for the finishers and equipment. Besides the material for the seawall renovation, ready-mixed concrete was the primary material for the job.

Project Team Members

Owner: Abbey Marina

Concrete Supplier: Otto Jacobs Company, LLC

Contractor: LPS Utilities, Inc.

Engineer: WBK Engineering LLC



CONCRETE OVERLAY – PEACE UNITED METHODIST CHURCH

The Peace United Methodist Church parking lot was originally spec'd in asphalt. The concrete contractor discussed the benefits of a concrete parking lot over an asphalt parking lot, including low cost maintenance, sustainability, cost effectiveness, and longevity. Based on these factors, the church decided on a concrete parking lot.

The concrete contractor used a binary 4500 psi concrete mix placed at a 4-inch slump to complete the project. The total amount of concrete placed was 297 yards. The concrete was placed using a Somero 3D laser screed making operations run smoothly and timely. The project was completed in one day, including prep and set up.

Efficiency of the contractor was most important as there was a specific time frame for completion of the project. Once completed, the church was another satisfied customer using concrete as the preferred pavement. This project is just another example of more and more businesses realizing the benefits of concrete over asphalt in our area.

Project Team Members

Owner: Peace United Methodist Church

Concrete Supplier: MCC, Inc.

Contractor/Engineer: Milis Flatwork



DECORATIVE COMMERCIAL – MILWAUKEE COUNTY ZOO: OTTER EXHIBIT

On May 20, 2018, Governor Walker welcomed The Milwaukee County Zoo's newest members with the opening of the Otter Passage Exhibit. This incredible exhibit showcases 1,700 feet of dry land and two pools containing a total of 10,000 gallons of water connected by a stream to accommodate the strong swimming otters.

To create this life-like environment, several different concrete mixes, integral colors, release agents, and stamping patterns were used. The most challenging aspect was the "cracked" mud area surrounding the exhibit. Sun Buff liquid color was chosen with a combination of a Summer Beige and Walnut release to replicate natural mud.

The area was created with a specially designed stamping pattern. Once the concrete was poured and stamped, a handcrafted tool was gently pressed into the wet concrete to create the otter tracks. A traditional 6 bag mix with mid-range water reducer achieved the desired strength and workability. To compliment the stamped areas, the surrounding sections were poured with a medium gray integral smoke color. The concrete mix was the State A2 D.O.T mix. The smoke color was so impressive, that the design team kept expanding the area it was used.

The extra work challenged the project schedule, requiring a unique curing and penetrating sealer so that the concrete could be used immediately. In total, over 450 cubic yards of concrete was poured using the smoke color. The new otter exhibit is a first of its kind in the nation and will be enjoyed for generations to come.

Project Team Members

Owner: Milwaukee County Zoo

Concrete Supplier: Riv/Crete Ready Mix

Contractor: CG Schmidt

Construction Manager: Gilbane Building Company

Architect: PGAV Destinations

Engineer: K. Singh & Associates, Inc.



MERIT – WAUSAU WHITEWATER PARK

This beautiful third-mile long whitewater course in Wausau is used for regional and international competitions. The course first opened in 1974 and has since seen many changes. Last year, the non-profit board announced plans for upgrades to meet its reputation as the longest running and widely used natural world class course in the world. The project consisted of 99 yards of concrete to create pathways and viewing areas, the first part of a ten-year master plan.

The decision to make major upgrades was first addressed because of the park's limited handicap and emergency accessibility. The park regularly hosts major competitions, so it is important that people can access the different viewing areas. One of the biggest changes was the use of integral color for the pathways instead of stained concrete, which was previously used. Integral colored concrete was chosen as it requires less maintenance and is better suited to withstand the elements.

Nature proved the biggest challenge for this installation. The new path runs along the edge of the Wisconsin River bank where there are many natural rock outcroppings that either needed to be removed or worked around.

Another challenge was the river bank's aggressive slope down to the water. After the excavation process, the contractor laid a fabric liner to hold the base layer and help prevent washouts. Several pump trucks were deployed to the project because the ready-mix trucks couldn't reach the site. This phase of the project was completed within one month.

Project Team Members

Owner/Architect: Wausau Kayak/Canoe Corporation

Concrete Supplier: County Materials Corporation

Contractor: Precision Grading & Utilities

Engineer: Becher Hoppe



DECORATIVE RESIDENTIAL – HAAG-HANSON RESIDENTIAL DRIVEWAY

This project submission is in honor and memory of our late ready-mix rep and friend Andy Balch. The 5,590 sqft custom driveway consisted of a 4,000 PSI AE - 6 bag mix with a 0.5% non-chloride accelerator. The design goal was to create a decorative appeal that complimented the home while adding unique beauty.

The project included complete removal of an existing failed asphalt driveway. Prior to on-site construction, the crew prefabricated the framing with custom materials for the decorative inlay. Pouring and finishing multiple stages on separate days with different colors and textures presented unique challenges. Meeting up with fixed walls, elevations of the home and a detached garage, while maintaining proper drainage and structural integrity was a necessity.

The 18" wide, 1,108 sqft stamped and "Bark" colored border was installed 8" thick. The 4,000 sqft lava colored body was poured at a 5.5" depth and had a medium texture broomed finish. The 482 sqft decorative inlays used a leather integral color with an orchard stone stamp. The border and inlays were released with a 'Walnut' antiquing agent. #4 rebar tied on chairs and #10 wire mesh were installed to integrate the multiple pours and provide durability. Upon completion, two coats of an acrylic sealer were applied. The edges were finish graded, seeded and landscaped to meet existing features. All in all, our team is proud to have been chosen to meet the clients' high expectations and install their new custom driveway. We feel it is truly a work of art!

Project Team Members

Concrete Supplier: Wingra Redi-Mix

Architect/Contractor: Moyer's Inc. DBA D.W. Nelson



MERIT – ROHLOFF RESIDENCE

The Rohloff family was looking for a modern and industrial look for their concrete project. Starting with the footings and walls which varied in height from the elevation to the land. They were 4 to 6 feet tall and 12 inches thick. The back patio area took the longest to set up and pour due to the random squares with 6-inch gaps between them and were hand trowled.

There were two tiers of concrete steps added as well. The job was finished by doing the massive driveway and sidewalks. These were all 5 inches thick with grids of #4 rebar throughout. The concrete was sawcut and broomed. The project included about 312 yards of 4500 psi, low chert with fiber concrete.

The 4-week project was fun and challenging with just a crew of five guys. Some of the challenges were due to the layout of the property and trying to get the proper pitch so everything pitches away from the house. Another major challenge was the weather as it was done during a hot stretch of the summer, thus, resulting in minimal margin for error.

Project Team Members

Owners: Adam & Ashley Rohloff

Concrete Supplier: Ozinga Ready Mix

Contractor: Next Level Concrete



EDUCATION, HEALTHCARE & PUBLIC – CARTHAGE COLLEGE RESIDENTIAL TOWER

The Carthage College Residential Tower Project is a 9 story, 50,000 sqft residence hall, housing 126 students, located on the shore of Lake Michigan in Kenosha. 3,523 cubic yards was used to complete the project in July of 2018. The Tower connects two existing residence halls, providing beautifully designed suite-style rooms, while tripling the amount of common space on campus.

The project utilized an 8" two-way flat plate floor design to maximize the available floor to deck height. Available vertical space was highly constrained to allow the tower to connect with the adjacent residence halls. Both existing halls were constructed in the 1970s and have a very low floor to floor height by modern standards.

The tower project utilized several mix designs, including 4000 psi footings and slabs on grade, 5000 psi columns, shear walls, beams, foundation walls, and floor slabs. Mix designs were adjusted throughout the year as the structure was completed through the harsh winter, with sitework completed in late spring. Site concrete included a terraced seat step retaining wall and fire access drive around the property, with pigments being used in decorative bands.

Part of the unique project aesthetics include residence rooms featuring exposed concrete ceilings and columns, while lounge spaces also include exposed walls and beams. Unique care was taken through the forming systems, mix design, and pre-coordination of mechanical sleeves and embedded conduits to produce a strikingly clean final surface, left exposed with only a simple acid wash.

Project Team Members

Owner: Carthage College

Concrete Supplier: Point Ready Mix

Contractor: The Boldt Company

Architect: Workshop Architects

Engineer: GRAEF



ICF – WALKERS LANDING

Sitting along the Milwaukee River in downtown Milwaukee is one of the most unique apartment structures in the city. What makes this building so special is the construction method used to build it. The Walkers Landing project took an unconventional approach using Insulating Concrete Forms. Benefits of using an ICF wall system is the unmatched comfort, energy efficiency, strength and noise reduction.

“As the owner and developer of our own buildings, we know using an ICF system is a far superior construction method. It might surprise people but the upfront cost between wood and ICF is virtually zero. After factoring in the cost savings it’s an easy decision,” stated owner Ryan Bedford. On average, an ICF structure will have a 50% savings in energy efficiency over a wood-built structure which is significant when you factor in hundreds of apartments throughout a building.

The concrete mix used for the ICF system was a 4000-psi air entrained mix. Due to the height and size of the walls, much of the 2,000 cubic yards of concrete was pumped into the wall forms. To achieve the higher slump and workability of the concrete, a combination of mid-range and high range water reducers were also used. On October 18, 2018, the National Ready Mixed Concrete Association showcased Walkers Landing to owners, engineers, and developers from all over the country. This nationally recognized building proves that ICF systems are not only environmentally friendly, they are also financially smart.

Project Team Members

Owner/Developer: Bedford Development
Concrete Supplier: Riv/Crete Ready Mix
Contractor/Construction Manager: Bedford Builders
Architect: Engberg Anderson
Engineer: TDI Associates, Inc.



INDUSTRIAL – DIDION MILLING FACILITY REBUILD

The first phase of rebuilding at Didion Milling began with the replacement of the Milling Building. The construction was done by slip form placed in 7 days on a continuous pour in December 2017. The pour started on Sunday morning and was completed on the following Friday night a few days before Christmas.

At the start, it took 110 workers which split the day into two 12 hour shifts to complete the pour. Four ready mix trucks fed the concrete pump continuously for the seven-day pour. Concrete was pumped into a surge bin and distributed into the forms with 35 workers on concrete buggies. A total of 4,050 cubic yards was used for this building.

The winter weather presented challenges to get the concrete to set properly so that the form could be moved to keep the pour on schedule. The rate of placement averaged 20 yards per hour. The concrete mix for the slip form was a 6 ½ bag air entrained mix with super plasticizer. The concrete floor slabs were poured after the walls cured. An 8-bag mix with super plasticizer was used for that part of the building. The building was completed on August 31, 2018. Other work on the project continues. Didion plans to have the "State of the Art" plant fully operational by early 2019.

Project Team Members

Owner: Didion Milling
Concrete Supplier: Carew Concrete & Supply Co., Inc.
Contractor: Hogenson Construction
Engineer: VAA, LLC



MUNICIPAL FACILITY – OSHKOSH SNELL ROAD WEST LIFT STATION

The Snell Road West lift station pumps incoming waste to the wastewater treatment plant miles away. Approximately 1,100 cubic yards of concrete was used in this project. About 900 yards of the concrete is below grade that needed a waterproofing admixture added to the concrete at the batch plant to produce water tight concrete. That included the footings, walls and floors. The base floor is 7 ½ feet thick.

The first floor is a cast-in place suspended deck pour that was shored up from 35 feet below grade. The walls are 30” thick and 35 feet tall to the top of the grade. There are water channels 5 feet thick that divert wastewater into various wet well bays to the big pumps that pump the material clear across town.

There are also four flights of suspended concrete stairs that were poured in place. Various design mixes were used for the project from 3000 to 4500 psi. The project took 73 tons of ¾ inch rebar.

Project Team Members

Concrete Supplier: MCC, Inc.

Contractor: Cardinal Construction

Engineer: AECOM Technical Services



MUNICIPAL INFRASTRUCTURE – I-41 and WIS 441 INTERCHANGE BRIDGES

This multi-year project in the Fox Valley was very complex; including concrete structures over roadways, waterways, and railroads. The highly visible project has needed an upgrade for many years. With its completion, it has made a positive impact on residents and has added new business to the area.

The existing bridge was re-decked along with new piers on the ends to accommodate the fly overs, ramps and grade changes to work in conjunction with the 41 interchange. Scheduling was a big concern as the contractor wanted to complete as many decks as possible in the fall of 2017; as they could only pour the parapets if the decks had been poured and cured out. By pouring the parapets in the winter, the contractor had enough time to pour the final placements in the spring of 2018 allowing for the project to be completed on time.

The 17 deck pours averaged 1,000+ yards per pour, with the largest being 1,600 yards place in 12 hours. For the bridge parapet portion, the contractor designed a conveyor device that allowed trucks to continually discharge concrete at an increased rate improving efficiency. A variety of concrete mixes were used from a standard DOT binary mix with 1 ½” aggregate, to mixes using superplasticizer, mid-range water reducer, and ice as needed. Overall, the 56-million-dollar project used 32,794 cubic yards, once again proving that concrete is the preferred building product for bridges in Wisconsin that will be in use for generations to come.

Project Team Members

Owner/Architect: WisDOT

Concrete Supplier: MCC, Inc.

Contractor: Lunda Construction

Engineer: DAAR Engineering



PARKING LOT – FED EX DISTRIBUTION CENTER

The FedEx 156 door distribution facility in Oak Creek is a spectacular example of why ready mixed concrete is essential to the success of the transportation giant's future. The project was originally designed with over 70% of the 1.2 million square feet in asphalt. However, aggressive marketing of concrete benefits, converted the site to 100% concrete pavement. The site consists of various concrete pavement thickness - 6inches in the employee parking lots, 7inches in the truck and trailer parking areas, 9inches in the drive lanes & traffic areas, and 12inches in the site entrance lanes.

Many challenges were overcome to place the concrete in a timely matter. Originally tabbed to start in April, heavy continuous rain throughout the spring and early summer delayed the project until early July. As a result, the contractor needed to ramp up paving efforts, expanding planned 1200 cy daily pours to 2,000 cy, with the largest being 86,000sqft in one day. A total of 31,000 cubic yards of un-reinforced concrete pavement was placed.

To keep up this massive production, many state of the art technologies were used, from computerized control joint planning, 3D total station guided fine-grading, laser screed mounted final texturing and curing application, to ride-on laser-guided early entry sawing of 38 miles of control joints. A 4000 psi AFA mix was used, with opening strength typically achieved in 3-4 days.

Project Team Members

Owner: Setzer Properties LLC

Concrete Supplier: Ozinga Ready Mix

General Contractor: Bunnell Hill Construction

Contractor: Swederski Concrete Construction

Architect: Bill Thomas

Engineer: JSD Professional Services



MERIT –PARK CITY CREDIT UNION

In July 2018, the new credit union and headquarters building opened its doors for the first time. Although the new 26,000 sq. ft. building itself is a marvel of design and craftsmanship, the parking lot also provides many practical and aesthetic benefits. The grand opening of this new facility coincided with the credit union's 80th anniversary celebration. With the company's long history in mind and with their sight set on the future, longevity was a key goal for this new site.

Ready-mix was selected on this project for its ease of maintenance, strength, low lifecycle costs, and light reflectivity. In all, 1,541 cubic yards of concrete was used to create this new parking lot. Ready-mix provided a high-quality building material and safety considerations for credit union employees and guests. In addition to the parking lot surface, ready-mix was used for sidewalks, curbs, islands, planting beds and a common area near the main entrance. The planting beds help break up the parking lot to organize parking and traffic to the bank's amenities, while also providing a space for lighting. Near the bank's entrance, a tall planting bed provides additional aesthetic appeal and acts as a safety barrier in front of the credit union. The raised planting bed required careful framework to create a combination of rounded edge sand 90-degree corners.

Project Team Members

Owner: Park City Credit Union

Concrete Supplier: County Materials Corporation

Contractor: Lewis Construction

Architect/General Contractor: LaMacchia Group



TILT UP – DIDION MILLING

A brand-new warehouse was part of the plant rebuilding at Didion Milling. The warehouse is used for bulk storage and processing of corn. Tilt up concrete panels were constructed on the building floor by Didion crews.

A 6-bag air entrained mix using pea gravel and water reducer was poured for the face of the panel. Then 3 inches of styro-foam was sandwiched in between another 6 inches of concrete. A 4000 PSI mix with $\frac{3}{4}$ inch stone and super plasticizer was used for this part.

The tilt up panels used almost 3000 cubic yards of concrete. The foundation and floor poured used another 850 cubic yards of ready-mix concrete. CD Smith Construction did the construction for both the foundation and floor. They also set the tilt up panels and were the General Contractor on the project.

Project Team Members

Owner: Didion Milling

Concrete Supplier: Carew Concrete & Supply Co., Inc.

Contractor: C.D. Smith Construction

Architect: GRAEF

Engineer: Siebers Inc



SOUTHWEST REGION – FARWELL DRIVE – MAPLE BLUFF

The homeowners decided to install a colored stamped concrete driveway to increase the value and curb appeal of their beautiful Madison home. The contractor laid out 2 ½ ton of #4 rebar for this project before concrete was poured to ensure a strong and lasting product. The pour was then broken into 3 separate areas; 1,000 sqft of border, 3,800 sqft of main driveway, and 700 sqft of sidewalks. The main driveway and walkway were poured with Porcelain Gray color while the borders are a much deeper color, Smokestack.

To enhance the look and functionality of the driveway, low-voltage lights were imbedded along the border within the concrete. As the homeowners drive onto their driveway, sensors turn on the lights which remain on until turned off by a timer. The lights provide an economical and eco-friendly lighting solution for the property.

The main challenge of this project was handling the water onsite. Due to the pitch of the properties in the area and the proximity to Lake Mendota, neighbors were concerned with water getting on their properties or draining past their yards into the lake. As a result, the contractor set up a catch basin in the back of the house. To maximize the homeowners' investment, a penetrating sealer and two coats of an acrylic sealer with grip were applied to the finish product resulting in a beautiful, protected surface.

Project Team Members

Concrete Supplier: LYCON INC.

Contractor/Engineer: Chris Foss Contractor, Inc.



SOUTHEAST REGION – VALLEY ROAD CONDOMINIUM SPACE

The goal of the Valley Road Condominium Common Space Project was to develop a gathering area for the patrons and employees of the surrounding businesses where they can enjoy a break from shopping or working while using the area that also acts as the storm water retention for this part of the development.

The project includes a metal structured pergola supported by board formed columns, multiple benches and seating areas, accent lighting all atop and around a multi patterned and stained concrete walk and patio. Several concrete patterns and colors were integrated to highlight the area to make it warm and inviting.

The concrete was poured over the clear stone retention area. There was a rebar grid throughout the entire project that helps support the slab over the massive clear stone. Integral color was used in the stamped concrete cobblestone circles. A polymeric grout was used to define the grout lines to create an authentic look.

The decorative stone along the edges of the walk allows for storm water infiltration to a larger clear stone mass below the walk and patios where storm water is controlled and allowed to return into the earth at a controlled pace. The Valley Road Condominium Common Space Project turned out to be a beautiful and useful alternative to a retention pond.

Project Team Members

Owner: Ixonia Bank

Concrete Supplier: Riv/Crete Ready Mix

Contractor: Ganos Decorative Concrete Inc.

Architect: Oliver Construction Co.

Engineer: Lake Country Engineering, Inc.



NORTHEAST REGION – THE LEHRER HOUSE

The Lehrer family bought 17 acres in the Town of Winchester 3 years ago. They wanted a very private wooded setting with the house set into the side of a hill. This allowed them to have walk outs on two sides as well as a two-level garage. The home is a great example of how to use concrete not only for the basement, but throughout the whole house. The second main level of the house is Spancrete with a 3-inch concrete topping.

The house started in February of 2017 and was poured throughout the winter. It was very easy pouring in cold temperatures because of the insulated forms. Ceiling heights varied with the basement height at 10 feet, great room ceiling height at 19 feet and the overall ICF walls at 29 feet. The contractor chose ICF for a couple of reasons. He wanted an energy efficient, quiet and safe home. Building with ICFs made it a smooth process.

The Lehrer family wanted an easy to maintain house, so they used concrete in all the interior floors with in-floor heat. In the lower level, they used 4 different colors in the stamped concrete. The second floor has an acid stained floor in the workshop and garage area. The living room concrete floor was dyed. The volume of concrete placed in this house showcases the many diverse uses of concrete.

Project Team Members

Owner: Travis Lehrer

Concrete Supplier: Carew Concrete & Supply Co., Inc.

Contractor: Delrar Inc.

Architect: Eric Peters



NORTH CENTRAL REGION – UWSP CHEMISTRY BIOLOGY BUILDING

Building a fully operational science facility on the University of Wisconsin-Stevens Point campus required several unique design demands. The biggest challenge was building a concrete superstructure in conjunction with a post-tension system and connections with both masonry and structural steel throughout the building.

The science facility required a strong concrete super structure and post tension system to minimize equipment noise and vibration, maintaining a quiet learning environment. Ready-mix was the most utilized building material for the science facility and makes up approximately 75% of the structure. A majority of the pumping for the elevated decks took place during cold weather, requiring the implementation of several cold weather techniques to maintain proper curing.

During the construction process there were many environmental obstacles. First, much of the construction, including ready-mix pours took place early in the morning to avoid vehicle and pedestrian traffic the campus sees throughout the day.

In addition, a major storm damaged the site as well as a long and cold winter that included a late winter snow storm. The time constraints and weather required several schedule changes and varying delivery times. The contractor said that coordination between their crews and the ready-mix supplier resulted in no issues in timing, placement, or quality of the job.

Project Team Members

Owner: State of Wisconsin

Concrete Supplier: County Materials Corporation

Contractor: Miron Construction

Architect/Engineer: Potter Lawson in association with HOK