

## 42nd Annual Concrete Design Award Case Studies



### Drumlin Dairy won in the Agricultural Category

Drumlin Dairy is the largest goat dairy in Wisconsin. The project in Chilton used a total of 4,777 cubic yards of concrete. The feed slab and manure pit used three variations of Natural Resources Conservation Service approved mixes.

The last four NRCS pours did not contain rebar, but instead contained Forta Fiber. Forta Fiber is a non-corrosive replacement for rebar that will help reduce and control shrinkage and temperature cracking.

Drumlin Dairy is the first project that the contractor has done without rebar. The contractor stated that it was cool to see the job unfold using fiber.

A lot of man hours were saved with the last four pours containing 7.5 pounds per yard of fiber for a total of 24,877.5 pounds. There were struggles during the project, from the poor weather to the massive supply and demand.

The project started on May 25<sup>th</sup>, ending on June 30<sup>th</sup>. We all worked together as a team to pull off this remarkable project.

#### **Project Team Members**

Owner: Drumlin Dairy

Concrete Supplier: Carew Concrete & Supply

Engineer: GHD Services

Contractor: JP TANK



## Food + Farm Exploration Center won in the Commercial Category

The Food + Farm Exploration Center is a multi-purpose building in the middle of a 24-acre working farm. Ready-mix concrete was used for outdoor walkways, a loading dock, and a patio. Polished concrete was used for the interior flooring.

Engineers specified concrete to provide safe walking paths, enhance curb appeal, and offer a long-lasting performance.

A ribbon of concrete with an exposed aggregate finish in warm, nature-inspired tones winds through the patios, walkways, and loading dock.

The warm tones of the decorative exposed aggregate ribbon visually connect the outdoor spaces to the surrounding landscape, which features natural areas accented by large boulders, gravel beds with perennial greenery, and colorful drainage gravel.

Polished concrete interior floors provide a durable, neutral canvas that contrasts with colorful murals.

During construction, the contractor successfully managed windy conditions while installing the concrete which accounted for 75% of the project. Installation began in October 2022, and the center opened in September 2023.

### Project Team Members

Owner/Developer: Farming for the Future Foundation

Concrete Supplier: County Ready Mix Corporation

Architect: Eppstein Uhen Architects

Engineer: Pierce Engineers

Contractor: J.H. Findorff & Son

Contractor: Barry Bohman



## Holy Family Catholic Church won in the Concrete Overlay Category

Holy Family Catholic Church in Brillion consisted of approximately 130,000 square feet of fiber reinforced concrete pavement for a total of over 2,000 cubic yards of concrete.

About 85% of the parking lot consisted of a concrete overlay of existing asphalt pavement.

The asphalt underneath the porte cochere and alongside the existing curb and gutter was removed in order to keep the current sidewalk elevations.

The church also added on to the building, requiring a need for approximately 7,000 square feet of added parking.

The project in total took approximately 3 weeks, all while church and school operations continued.

### **Project Team Members**

Owner: Holy Family Catholic Church

Concrete Supplier: MCC

Contractor/Engineer: Milis Flatwork



## The Trade Hotel won in the Decorative Commercial Category

Adjacent to the Fiserv Forum is Milwaukee's newest luxury nine-story hotel.

Construction began in 2021 on a parcel given to the Bucks as part of the Deer District redevelopment. The columns supporting the hotel are 8000-psi concrete with the decks consisting of a 6000-psi post tension mix.

To accelerate construction, the mix had to reach 3000-psi in 24 hours. This was difficult during winter months, so tarps were hung, creating a temporary enclosure to allow heat to be pumped into the building.

The first floor has an exposed concrete decorative floor. Summer Beige was selected as the base color and a deep polished finish was applied to expose the aggregate.

A double rebar mat was installed, and a specialty admixture was added to reduce shrinkage. Once the floors were poured, a protective mat was installed. Months later the mat was removed, and the floors were polished, giving them an incredible finish.

The drive entrance is stamped using a historic looking pattern called "Stones of Athens." The pattern, a throwback to Old Milwaukee, was colored with landmark gray and highlighted with a charcoal release agent.

Almost 18,000 cubic yards of concrete were poured, resulting in one of the most beautiful hotels in Milwaukee.

### **Project Team Members**

Owner: NCG Hospitality

Concrete Supplier: Riv/Crete Ready Mix

Architect/Design Firm: Jeff Brenkus of GBA Architecture | Design

Engineer: Pierce Engineers

Contractor/Construction Manager: J.H. Findorff & Son



## The Retreat won in the Decorative Residential Category

Ready-mixed concrete is used in motor court, walkway, front entry, side entry and rear patio, walls, planter walls, edger curbs, steps, and detached garage aprons.

Replacing and improving a 1980s landscape consisting of concrete pavers and wood-timber retaining walls into a more sustainable, maintainable, up-to-date space required re-engineering to accommodate new materials, particularly related to improving site grading, drainage, and pedestrian movement.

The framework for aesthetics revolved around creating a design that honors the 1980s aesthetic while transforming it into an elegant, warmer, robust, and more intimate visual context.

The fundamental challenges were:

- 1) staging and construction sequencing that required access to the home throughout a construction process that surrounded and isolated the house
- 2) site excavation, preparation, and construction access in a very tight wooded condition with large boulders that could only be reduced in size, not removed.

99% of the project consisted of ready-mix concrete and provided the variety, flexibility, beauty, and sustainability that physically and visually improved a vehicular and pedestrian residential environment.

### **Project Team Members**

Owners: Alex & Diane Swiderski

Concrete Supplier: County Ready Mix Corporation

Landscape Architect: Alchemy Concrete



## Chemistry Building won the in the Education & Healthcare Category

UW Milwaukee's new 163,000 square foot chemistry building is a key contributor to the university's R1 designation for research excellence. The building has lecture and study spaces; in the form of new laboratories that integrate teaching, with efficiencies in design that make collaborative research easier.

The project started in the spring of 2022. Since then, over 12,000 yards of concrete have been placed. The five 1,600-yard concrete decks utilize a 24-inch pan deck system with a 6-inch topping slab.

This unique building technique enhances the stability of the structure. The decks were broken into 2 placements, each requiring 25 finishers and 13 hours to complete. 8,000 psi concrete was used for the columns to support the massive decks.

Post tension technology was used in the construction of the beams, allowing for less columns and more open space. The second floor features a 96-foot mega beam with 20,000 pounds of rebar, 80 post tension cables, and 500,000 pounds of concrete. A self-consolidating concrete mix was used to ensure flow in the beam.

The research facility is used by over 5,000 students annually and will serve UWM for decades to come.

### **Project Team Members**

Owner: University of Wisconsin Milwaukee

Concrete Supplier: Riv/Crete Ready Mix

Architect: Kahler Slater

Engineer: Oneida ESC Group

Contractor: VJS Construction Services



## Excellerate Manufacturing won in the Industrial Category

With over 15,000 cubic yards of concrete to place, keeping Excellerate Manufacturing on schedule seemed like a daunting task.

The Milis Flatwork team placed 9,200 cubic yards of floor slab on a 400,000 square foot building in just three weeks' time.

The exterior pavement consisted of over 300,000 square feet of 7-inch concrete pavement. The exterior pavement was also completed in approximately 3 weeks' time.

With the 7-inch unreinforced concrete pavement option, concrete was able to be competitive with asphalt.

The result is a long-lasting truck court that will provide maintenance-free service for years to come.

### **Project Team Members**

Owner: FTI

Concrete Supplier: MCC

Architect/Engineer: McMahon Associates

Contractor: Milis Flatwork



## Holcim Green Bay Silo – Expansion Project won a special merit in the Industrial Category

Holcim is a French Industrial company specializing in cement, construction aggregates, and concrete.

The mix used for the silo base was a 4,000-psi full air with super. This was pumped into place because there were many pile ons due to the poor ground located near the Fox River. The base of the silo used over 500 yards of concrete.

The silo walls totaled over 800 yards of concrete, in 25-yard lifts. The wall mix was a 4,000-psi full air, full super. This was challenging because there were 25-yard pours in the morning and afternoon.

In order to set up the 25-yard pour in the afternoon, a cable system was used to pull the bucket up to the top of the silo and spun in a circle to fill the top of the wall.

The silo stands at over 130 feet and is located in Green Bay, where it can be seen from miles away.

### **Project Team Members**

Owner: Holcim

Concrete Supplier: Carew Concrete & Supply

Contractor: Borton Construction Company



## F-35 3-Bay Specialized Hangar won in the Municipal Category

The 115<sup>th</sup> Fighter Wing at Truax Field in Madison is one of only three locations in the US to house the new F35 fighter jets. This maintenance hangar is unique in that it offers climate-controlled maintenance bays, a FIRST for the Air National Guard.

The new hangars allow the Guard to work on fuel cell maintenance, corrosion control, and weapons loading on the F35 jets.

There was a lot of logistical coordination required. Getting ready-mix trucks in and out of the military base, especially for large pours was challenging.

The project was on a tight schedule with the delivery of new jets. Entering the base required a valid ID, vehicle search, and an escort to and from the jobsite.

The hangar floors consist of a 4000-psi mix with high range water reducers, needed to meet a flexural strength of 650 psi.

The floors needed to be poured at a very accurate slope for two reasons, the first being drainage for the fire suppression system, and the second being so it could support the jet on its 3 points when the engine is removed for maintenance.

### **Project Team Members**

Owner: 115<sup>th</sup> Fighter Wing

Concrete Supplier: Advanced Concrete

Architect/Engineer: FSB

Contractor: Findorff



## Paun Family Home won in the Other Category

The Paun family has been in the concrete and masonry business all their lives. They built a low maintenance house, using concrete throughout.

The producer met with the family about doing stained concrete floors in the basement, which is set up as a party and bar area.

The owners were not sure what colors they wanted to use in the lower level so the contractor sampled 7 different water-based color stains.

The applications to achieve this beautiful floor took a number of steps.

1. Clean the floor with Solomon Neutral clean.
2. Use a black pad buffer to open up the slabs.
3. Stain the floor with Artesian water-base walnut stain.
4. Seal the slab with a poly-Aztec sealer.
5. Put on two coats of floor polish.

The floor turned out beautiful with crazing in the concrete highlighted. The lower level provides a space for fun and relaxation with the added bonus of being low maintenance.

What a testament to the use of concrete!

### **Project Team Members**

Owners: Bob & Linda Paun

Concrete Supplier: Schmitz Ready Mix

Contractor: Paun Construction and Jerod Kasten



## The Pulaski Facility won in the Parking Lot Category

Milis Flatwork completed this 161,000 square foot concrete paving project at Cruisers Yachts.

This project was initially planned to be paved as an asphalt parking lot. After some consideration and comparing the cost of concrete, the ownership opted to go with the superior product.

This project was split into 3 phases, which all required intricate planning to keep the facility fully functional during the construction process.

The project consisted of 6-inch and mostly 8-inch concrete paving. A total of 3,538 cubic yards of concrete were poured.

### **Project Team Members**

Owner: Cruisers Yachts

Concrete Supplier: MCC

General Contractor: Alliance Construction & Design

Contractor: Milis Flatwork



## McFarland Skate and Bike Park won in the Public Category

The Village of McFarland takes pride in the diversity and depth of their recreational system. A new concrete skate and BMX park was designed to replace an outdated modular. A mixture of street/transition skate elements and a traditional bowl now provide a state-of-the-art facility for “all wheels” users.

The project was intended to provide an opportunity for skaters and riders to learn, grow, and showcase their abilities. Integral colored concrete was used to define sloped areas, skate features, and other areas of transition.

Heavy steel bar and mesh reinforcement was used throughout the new facility, and careful forming was needed to ensure smooth transitions between ramps, walls, and flat zones.

Narrow sawcut joints were carefully aligned, cut, and caulked to prevent wheel catches. Turn down walls, ramps, and other vertical surfaces were placed using shotcrete.

The design mix was 4,000 psi for Shotcrete, and 4500 psi concrete for flatwork. Colors included: Standard Grey, Solomon Onyx, and Solomon Bamboo. Approximately 481 cubic yards of concrete completed this project.

### **Project Team Members**

Owner: Village of McFarland

Concrete Supplier: Wingra Redi-Mix

Architect/Engineer: Parkitecture + Planning

Contractor: Parisi Construction



## Fed Ex Ground Manitowoc won in the Tilt Up Category

With pre-cast lead times too far out, tilt-up was an easy option and allowed for an earlier completion date.

Foundations, building slab on grade, and tilt-up panels were constructed simultaneously.

From the first foundation pour to the last panel erected was 120 days. The building exterior consisted of a 14-inch non composite sandwich panel. The face panel utilized fiber reinforcement to save on weight and construction costs.

The building slab on grade consisted of a 6-inch slab with 3-pound per cubic yard of fiber reinforcement. The mix used was a 4000 + MR straight cement. The performance R-value is 29, considerably better than precast. The building is a 100% thermo envelope which is very important for energy credits.

The contractor followed cold weather practices by using blankets when pouring the last panels in November and December. The last panels poured on site were high early concrete allowing the contractor to remove the crane from the site a week early.

Converting this 217,000 square foot building to tilt-up really increased the size of the concrete package.

### **Project Team Members**

Owner: Setzer Properties ZGBY

Concrete Supplier: Schmitz Ready Mix

Architect: Bill Thomas Architect

Engineer: Innovative Tilt-Up Design

General Contractor: Vardaman Construction

Contractor: Milis Flatwork



## North Crawford School District Parking Lot won in the Southwest Region

The North Crawford School District found themselves in need of a full reconstruction of their parking lots. Initially asphalt paving was the only option until a concrete alternate was presented to them that came in a mere 3 percent higher than asphalt paving.

The district's choice of concrete has the added benefits over asphalt paving with lower long-term maintenance costs, better durability for bus and car traffic, and lasting an average of 30 to 40 years.

A Wisconsin Department of Transportation 72A2 Grade A mix was used for this project with the majority of 2,120 cubic yards of concrete being placed in four pours. The parking lots total 111,526 square feet.

This project required effective communication and teamwork between the contractor and the ready-mix supplier to meet the concrete volume demand and the tight project schedule.

The team's hard work ensured the parking lots would be ready for use by the beginning of the school year.

### **Project Team Members**

Owner: North Crawford School District

Concrete Supplier: Croell

Contractor: Milis Flatwork



## Lake House Pool won in the Southeast Region

This house is set on a beautiful lake property in southeastern Wisconsin. The owners wanted their kids to be able to swim year around, so they built an indoor pool.

With the help of the pool installer, they came up with an idea of removing the back patio and installing the pool with sliding doors for year-round use.

The first step was to remove the concrete patio. The contractor vacuumed out the stone under the slabs. The builder wanted to leave the outer concrete wall in as part of the pool foundation. Concrete was pumped in for the pool floor. The contractor then installed rebar and pumped concrete for the interior pool walls.

110 cubic yards of concrete were poured. The mix was a 4500 psi + mid-range water reducer for the floors. The contractor used an 8.5 bag shotcrete mix plus 1 ½ lbs Micro- Fiber. The concrete was heated and had Non-Chloride Accelerator for early set. 5 lbs of structural fiber was used in the mix.

The pool highlights an efficient way of using concrete for a feature that will entertain for years to come.

### **Project Team Members**

Owners: Matt & Lindsey Schmitz

Concrete Supplier: Schmitz Ready Mix

Contractor: Neuman Pools Inc.



## **Boys & Girls Clubs of the Fox Valley won in the Northeast Region**

The Boys and Girls Clubs project consisted of replacing two broken up asphalt parking lots in downtown Appleton.

The concrete supplier was asked to participate in the project to complete concrete overlays to replace both parking lots in partnership with Mark Cardinal Concrete Construction in the summer of 2023.

The 4-inch overlays were completed over several days and completely changed the parking situation for the club.

The concrete overlay created a safe lot for parking and the light surface improved the nighttime visibility without changing the lighting placement. The Director of the facility was very pleased with the project and the improvement that the new lots added to their entire property.

The project was completed in June of 2023. It is an excellent example of concrete as a replacement for asphalt.

### **Project Team Members**

Owner: Boys & Girls Clubs of the Fox Valley

Concrete Supplier: Carew Concrete & Supply

Contractor: Mark Cardinal Concrete Construction



## The Courtyard at the Berard Center Boys & Girls Club won in the North Central Region

Ready-mixed concrete provides the color, texture, utility, and sustainability to create a space for kids that offers gardening, chess, checkers, hopscotch, four square, and gaga ball, as well as space for table games, small group gatherings, and the ability to sit and watch activities.

A space intended for active, and passive uses for multiple age groups and surrounded by structures on three sides, requires careful attention to engineering detail.

Lannon stone, broom-finish concrete creates the canvas to which additional colors and textures are applied to define the garden area, the corner niche space, chess, checkers, hopscotch, and four square.

Access to the site is from a major street on the open side of the courtyard. The site is located near a junior high school, parks department and police station. As a result, planning around morning and afternoon traffic volumes was a challenge.

Ready-mixed concrete was used for 99% of the project and provided the variety, flexibility, beauty, and sustainability needed to create a space for kids that accommodates a range of activities and age groups.

### **Project Team Members**

Owner: Boys & Girls Club of Portage County

Concrete Supplier: County Ready Mix Corporation

Landscape Architect: Alchemy Concrete