



MICHIGAN CONCRETE ASSOCIATION

2023 CONCRETE AWARDS

FEBRUARY 23, 2023

**DELTA HOTELS MARRIOTT KALAMAZOO
CONFERENCE CENTER - KALAMAZOO, MI**



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OSHKOSH

THE SAFETY SOURCE

VEGA AMERICAS

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Residential Streets

Heritage Hills - Phase 2

CITY OF FARMINGTON HILLS - HERITAGE HILLS SUBDIVISION

Concrete Contractor/Supplier: **Florence Cement Co.**
Design Engineer: **Hubbell Roth and Clark, Inc.**
Project Owner: **City of Farmington Hills**



What made this project special was the total size of the 28,000 square yards (SYD) of residential streets being reconstructed. The project worked on eight (8) separate residential streets (Hunter Whip, Glouster Circle, Glouster Court, Ravenscroft, Old Timer, Old Timber Court, Yorkridge, and Charleston Court).

The project was separated into six (6) phases. Each phase included the complete removal of existing pavement and aggregate base, placement of 1x3 crushed stone for stabilization, followed by MDOT 21AA aggregate base and topped with 7 inches of concrete pavement. The pavement was poured using the slipform machine with limited handwork pours to connect the intersections of the streets.

What made this project challenging was maintaining access for the residents. There was constant communication between the construction team, the City of Farmington Hills, and the residents to notify them of the upcoming work taking place on their street. This also required coordination with emergency services, garbage pick-up, and mail delivery services. The project was broken into 700-foot sections to minimize the number of residents affected by the construction. The old pavement and aggregate base had to be completely removed and the new aggregate base was replaced each day to maintain access for residents.



Gen Mar Drive

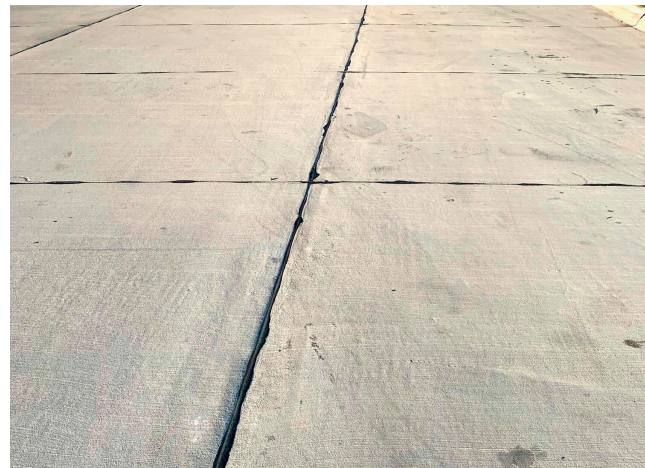
CITY OF NOVI - 2022 CONCRETE ROAD PROGRAM

Concrete Contractor: Mattioli Cement Company
Concrete Supplier: Milford Redi-Mix Company
Design Engineer: Spalding DeDecker
Project Owner: City of Novi

Gen Mar Drive is an industrial road that included a CVS Pharmacy warehouse and two other businesses, which required the contractor to maintain 24-hour access to truck and employee traffic each day.

Before construction started on Gen Mar Drive, representatives from Mattioli Cement Company and Spalding DeDecker met on site to determine the traffic patterns, met with delegates of each business to find out their specific needs and discussed phasing for the road reconstruction. CVS drivers and security also met with the team to discuss the turning capabilities of the trucks as well as where to queue the trucks while the drivers check in with security staff upon arrival without disrupting the construction activities.

Mattioli adjusted their phasing limits to accommodate the three (3) businesses. Mattioli and Spalding DeDecker came up with a solution to maintain two-way traffic throughout all phases of construction by breaking the road into 3 lanes instead of 2. This added a fifth phase of pouring and resulted in an increase to the total project duration but accommodated the needs of the businesses while not compromising quality. While waiting on cure time for each phase of construction on Gen Mar Drive, Mattioli was able to work on one of the residential streets to keep the overall project moving forward.



Concrete Pavement Restoration (CPR)

E. Huron Blvd. Repairs

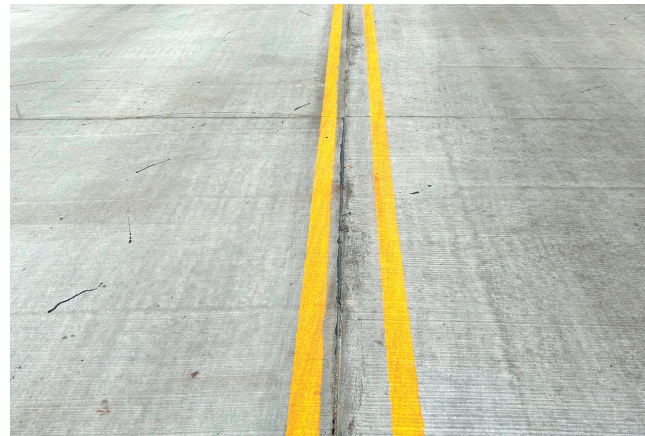
BUSHA HIGHWAY TO RIVER ROAD - MARYSVILLE, MI

Concrete Contractor: Florence Cement Company
Concrete Supplier: Protocon Ready Mix
Engineer: BMJ Engineers & Surveyors
Owner: City of Marysville

Although small in size and relatively simple in scope, what made the Huron Boulevard pavement repair project special was the coordination and timeliness to complete the project with minimal disruption. To achieve this, the Florence team worked very closely with the primary business, a large Chrysler facility located about mid-way through the roadway stretch being rehabilitated.

Florence chose to complete the project in two full-width closures, half of the job at a time, to allow incoming and outgoing truck traffic continued access to the Chrysler plant. Their crews saw cut and removed deteriorated areas of concrete over the 16-foot-wide lanes and placed over 500 cubic yards of concrete in the 10-inch-thick repair areas. Direct placement from Protocon's ready-mix trucks assisted the finishing crews, who used a roller screed to strike off the surface and achieve a smooth ride on the patches.

The full closure of the roadway also ensured that crews remained safe during construction, without live traffic having to pass through and near workers who were trying to accomplish their work. The result is a good-looking extension of life for this durable roadway that will continue to serve this busy area in Marysville.



Commercial Flatwork



Toledo Beach Marina

RACK-N-LAUNCH BUILDING - LA SALLE, MI

Concrete Contractor: Romanko Building Company

Concrete Supplier: Messina Concrete, Inc.

Design Engineer: Sidock Group

Architect: Travis Mayer Architect

Project Owner: Safe Harbor Toledo Beach Marina

QA/QC Consultant: Bowser Morner

Toledo Beach Marina is a large marine complex unique to the Lake Erie area with 250 acres of beautiful surrounding green space with over 550 deep-water boat slips. The marina also includes large-capacity equipment capable of lifting boats up to 70 feet in length.

This new 75,000-square-foot dry storage facility was constructed to replace the former 47,000-square-foot Rack-N-Launch Building destroyed in a fire in December 2020. The new facility enhancements included LED lighting, a second bay in the front instead of one, racks that are freestanding and adjustable, and the entire building is insulated and heated with an upgraded fire suppression system. Finally, the facility will also be supported by a new forklift capable of lifting 25,000 pounds.

The floor slab was placed in three (3) separate pours each achieving the required super floor flatness required for the modern high-low/lift equipment with a 25-foot high storage rack system.



Decorative - Commercial

Kirk in the Hills Presbyterian

1340 W. LONG LAKE RD - BLOOMFIELD HILLS

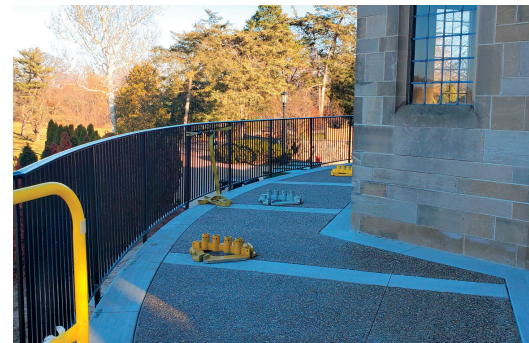
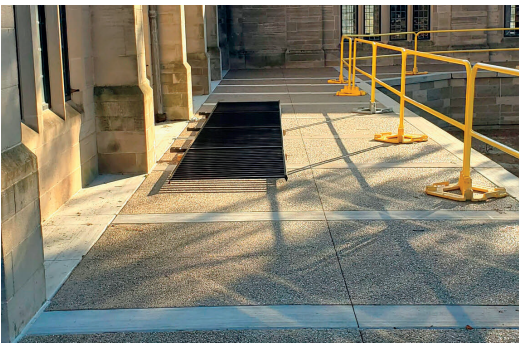


Concrete Contractor: Albanelli Cement Contractors, Inc.
Concrete Supplier: Superior Materials, LLC
Prime Contractor: Auch Construction
Design Engineer: Hobbs & Black Associates, Inc.
Owner: Kirk in the Hills Presbyterian Church

Patterned after Scotland's 13th-century Melrose Abbey, Kirk in the Hills is a majestic, gothic-style church, located on a 41-acre lakeside setting in Bloomfield Hills, Michigan. Set within beautifully landscaped gardens and grounds, the Kirk features a beautiful design set in a unique environment.

This project included the placement of an elevated exposed aggregate walkway, balcony, and stairwell. The concrete was placed an average of 5-inches thick and required two separate placements one for the exposed aggregate and then a second for the plain concrete perimeter band.

Both placements required near-flawless finishing on the part of the Albanelli crews and consistent batching from the supplier Superior Materials. Scheduling of work had to be closely coordinated with Church administrators so as not to interrupt various services. The sensitively placed flatwork complements the existing beauty of the surrounding stonework, sculptures, and gorgeous landscaping, thus further enhancing this stunning setting.



Decorative Residential - Mixed

The After Work Project

TAWAS, MI

Concrete Contractor: Captivating Concrete
Concrete Supplier: Team Elmers
Decorative Supplier: Decorative Concrete Resources

Creativity, imagination, artistry, and craftsmanship are a few words to describe the After Work Project that was undertaken by Captivating Concrete, which consists primarily of two beautiful and different decorative concrete surfaces, the basement floor and the pool surround.

The 1,000-square-foot basement floor was placed and finished like any typical basement floor. After the drywall was up, the floor was hand cut with a 4-inch hand grinder and dust vacuum in a design pattern that was inspired by The Grand Palace Peterhof floor in St Petersburg, Russia. It was then dyed, sealed, and waxed.

The design layout was difficult, with figuring out the overlapping of the circles and a three-dimensional layout. All of the cutting was done with a hand grinder which required a steady hand and a strong back.

The pool structure is actually built out of insulated concrete forms. But it's the pool surround that is the showpiece. Multiple placements, four different stamp patterns with four different colors, with a fiber-reinforced mix. The travertine patterned concrete required five coats of color hardener.

Stamping multiple textures and colors is a constant battle of lining things up and protecting previous pours. Site conditions were less than ideal, and rain events created poor soil conditions which would delay the next concrete placement.

This project takes stamped concrete to a different level. Normally, you have maybe one or two different patterns with a border but this pool surround has four different colors and four different patterns. This project pushes the limits of stamped concrete and is a great example of those efforts.



Decorative Residential - Driveway



Moores River Drive

3229 Moores River Drive - Lansing, Mi

Concrete Contractor: Hanneman & Fineis Concrete Construction
Concrete Supplier: Miller's Redi Mix
Decorative Supplier: ERSCO Construction Supply
Owner: The Jeffries Family

This new driveway at the Jeffries residence really stands out and adds character to the home as well as the entire neighborhood. The owner wanted to keep the red brick look for the driveway that was on the previous stamped asphalt, so Hanneman & Fineis opted to use a herringbone brick pattern to go with the curves of the driveway, along with a liquid release to better see the imprint and an antiquing agent for the secondary color to get the accent they were looking for.

First, crews removed the existing 3" to 4" stamped asphalt driveway and 4" to 6" of unsuitable subbase. Sand subbase was brought in and compacted with a mechanical plate compactor. The 5" thick fiber-reinforced concrete driveway was placed directly from the ready-mix trucks, hand screeded, and then bull floated. A liquid release agent was applied before stamping the herringbone pattern. The following day the surface was lightly acid washed and rinsed, and the secondary antiquing color agent was applied. The last step included two coats of cure and seal.

The Hanneman & Fineis crew paid close attention to ensure matching color between multiple pours. Between each pour, they installed a 12" light gray colored and stamped border for an added accent, which matched the house. The circle drive also had a unique centerpiece which aligns with the borders and joint pattern. Being in a unique historical neighborhood, the driveway is a dramatic enhancement to the architecture of the house.

Decorative Municipal



Avon Rd Roundabout & Bridge

Intersection of Avon & Dequindre Roads - Rochester Hills, MI

Prime Contractor:	Z Contractors, Inc.
Concrete Contractors:	Angelo Iafrate Construction Company GM & Sons, Inc.
Concrete Supplier:	Doan Companies, Inc.
Design Engineer:	OHM Advisors
Owner/Construction Engineer:	Road Commission for Oakland County

Several factors made this project a unique challenge.

- The first hurdle was that the project had to be constructed under very tight constraints. The bridge and roundabout had to avoid 30" and 66" diameter sanitary interceptors, a sanitary pump station, a 36" diameter water main, a large water main pressure-reducing vault, and numerous above-ground and below-ground private utilities. Besides utilities, the project had to avoid impacts on the public parkland and floodplain.
- The second challenge was the need for portions of the roundabout to be constructed on the bridge. Typically, roundabout splitter islands are constructed off the bridge deck. Due to the tight sight constraints, splitter islands were constructed on the bridge deck using specialized reinforcement and separate concrete pours.
- The third challenge was the schedule. The bridge was constructed over the winter such that the project was completed on time (8/15/22) prior to the peak business period for the adjacent Yates Cider Mill.
- Finally, aesthetics were very important. Formliners were used to depict natural features on the bridge. Decorative concrete using a dark grey coloring with a wood plank pattern was placed on the bridge deck.

This project was bid in September 2020, and the project team hit the ground running in the spring of 2021 and started placing concrete in April. A team effort was used to assist with the joint layout, ensuring a quality result and a great-looking intersection for motorists to navigate.

Decorative Interior



West Bloomfield Middle School

6000 ORCHARD LAKE RD - WEST BLOOMFIELD, MI

Prime Contractor: Auch Construction
Concrete Contractor: Albanelli Cement Contractors
Concrete Supplier: Superior Materials, LLC.
QA/QC Consultant: Testing Engineers & Consultants
Design Engineer: French Associates
Owner: West Bloomfield Schools



The two-story I-Center welcomes students and visitors with its stunning “wave” roof and high windows, which bring in plenty of natural light. The I-Center acts as a lobby, media center, and social or collaborative space. Rows of low bookshelves fill the center, framed by tables with soft seating and individual study carrels. The Learning Stairs—which act as both a traditional staircase and a casual seating area—create a focal point for the room that is sure to be a hit with students. Underneath the stairs, students will find a unique small stage for presentations.

Another highlight is the “Auditeria,” a combined auditorium and cafeteria space that creates new possibilities for community events. Tables and chairs used at lunch can be easily folded and stowed away to make room for more auditorium seating, depending on the needs of the event. Tiered levels ensure optimal viewing of the stage for everyone.

The building has a capacity of 1,200 students. Construction began in October 2019 and was completed for the 2022-23 school year.

The interior floor slabs were all polished. Superior Materials supplied the polished concrete mixes, for the 4-inch-thick floor areas and learning staircase. Albanelli crews placed the floors so that an even aggregate exposure of Class 2, 3 or 4 was achieved after their polishing crews came back in to grind and make them shine.

Decorative Innovative

General Motors Design Studio

12 MILE & MOUND RD - WARREN, MI

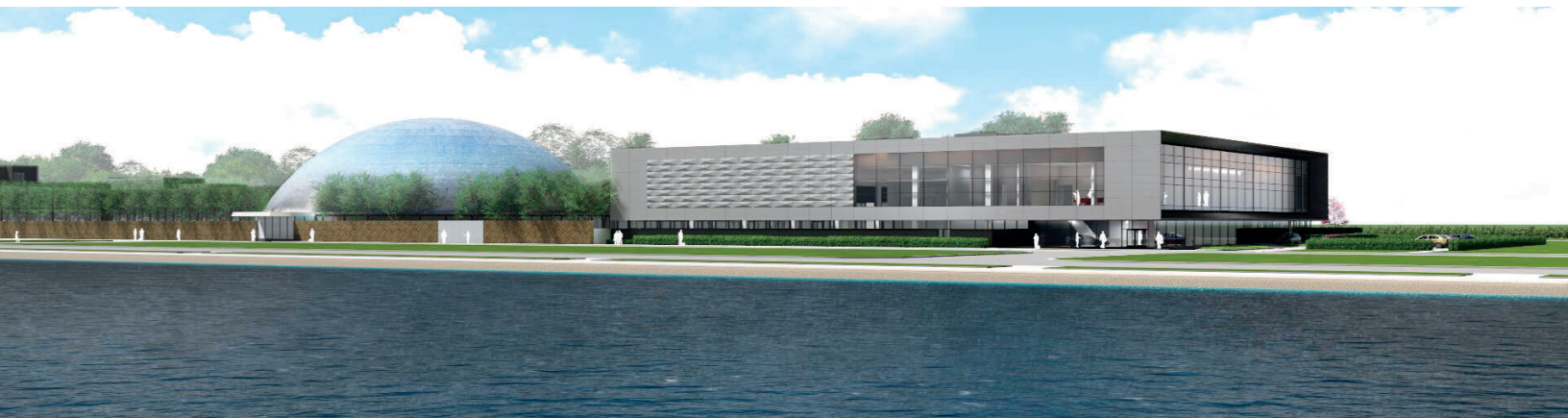
Owner:	General Motors
Prime Contractor:	Walbridge
Concrete Contractor:	Devon Industrial Group
Concrete Supplier:	Hercules Concrete, LLC
Design Engineer:	Smith Group, JR
Geotechnical Engineer:	Surveying Solutions, Inc.
QA/QC Consultant:	Soil and Materials Engineers, Inc.

GM's Global Technical Center campus opened in 1956 and was the pinnacle of engineering, design, and advanced technology at the time. It was designed by world-renowned architect Eero Saarinen and landscape architect Thomas Church. It was named a National Historic Landmark in 2014 by the Department of the Interior and the National Park Service. In 2000, the campus was listed on the National Register of Historic Places. In 1986, the American Institute of Architects honored the Tech Center as the most outstanding architectural project of its era.

GM broke ground on the new design center in mid-2018 but was stalled due to the COVID-19 pandemic. The Design Studio, dubbed GM Design West, features an open concept workspace with assigned desks and almost no walls, it will surround the iconic Design Dome Auditorium and viewing patio and connect to the existing Design Center. The advanced new design studio will help speed up the design and development of its battery-electric products, giving the automaker's design teams some much-needed additional workspace. GM Design West is expected to add roughly 360,000 square feet of additional office and workspace at the GM Warren Tech Center campus and is in the final stage of a multiyear \$1 billion investment.

In 2020 Hercules Materials Holdings LLC opened a new concrete batch plant named Titan Concrete LLC located in Centerline, Michigan just 5 miles from the GM Tech Center. This high-tech facility provided upwards of 300 cubic yards per hour utilizing a dual-lane central mix & dry mix batch plant. The plant features some of the newest Terex front discharge concrete mixers in the state to supply the GM Design Center with consistent concrete.

Nearly 15,000 cubic yards of polished 8-inch interior floor slab concrete was placed using a low shrinkage, blended aggregate mix. Some of the polished slabs poured also included a dark gray pigment. The concrete slabs/decks maintained a consistent color & finish throughout the entire structure. Careful attention to detail and strict quality control practices by the entire Team led to a very successful project.



Arterials



Farmington Road Streetscape

GRAND RIVER AVE TO ORCHARD ST - FARMINGTON, MI

Concrete Contractor/Supplier: **Florence Cement Company**

Owner: **City of Farmington**

Engineer: **OHM Advisors**

QA/AC Consultant: **G2 Consulting Group, LLC**

The road was reconfigured from two lanes in each direction to one and a left-turn lane. The streetscape project included rebuilding and widening the sidewalks along Farmington Road adding benches, bicycle racks, disability-friendly crosswalks, decorative light posts, and raised planters along its sidewalks.

The project was constructed by Florence Cement Company paving the roadway full length with the slip form machine. The northbound lane was poured first at 23-foot wide, waited for cure, then FCC paved the 12-foot-wide southbound lane with the slip form machine.

What made this project unique was during the first slip form pour at 23' wide, in the middle of the job there was a 175' section of the roadway with an island and the roadway tapered to 11 feet wide. The island was boxed out so FCC could use the slip form machine to pave from end to end even with the road going from 23-foot wide to 11-foot wide and then back to 23-foot.



Structural Innovative



New UV Disinfection Plant

CLEAN WATER PLANT - WYOMING, MI

Concrete Contractor: Davis Construction
Concrete Supplier: Consumers Concrete
Design Engineer: Black & Veatch
Testing Company: Materials Testing Consultants
Owner: City of Wyoming

The Wyoming Clean Water plant has the capacity to treat 42 million gallons of wastewater every day, with an average flow of around 14 million gallons on a typical day. Roughly 140,000 customers send their wastewater to this plant, mostly from properties and residents in the City of Wyoming and parts of four other surrounding communities.

The final step in the treatment process is disinfection, which in the past consisted of a dose of chlorine to ensure that the treated water can safely be returned to the Grand River. This \$6.5-million project utilized an existing portion of an old holding tank area within the plant to build a new disinfection facility that now incorporates ultraviolet (UV) lights and aeration to disinfect the water instead of chlorine.

Approximately 1,000 cubic yards of concrete were used in the project, requiring the contractor, engineer, and supplier to coordinate access, forming, delivery, and pumping of the mix. The team worked seamlessly together to ensure the success for this very demanding project. The forming requirements and sloped walls called for excellent technical knowledge of forming techniques and exacting tolerances. The low-shrink mixes required the concrete supplier to have strict control of aggregate batching and water additions during the mixing and delivery process to maintain the tight tolerances and consistency of the concrete throughout the project pours.

The complex nature of the design, the tight tolerances necessary in the formwork, the sloped walls and the need for them to be very accurate in their design and placement along with the technical nature of the low-shrink, low-water cement ratio concrete in this project define what a complex project typically is. Water treatment plants are not a new idea, but the technical demands of this project in the materials and skill needed to deliver this project qualify this project as award-worthy!

Structural Commercial

Padnos Shredder Plant

645 LUCY ROAD - HOWELL, MI

Concrete Contractor: Granger Construction
Concrete Supplier: High Grade Materials
Material Supplier: GMB A/E
Owner: Louis Padnos Iron & Metal Co.

Granger Construction has been working to build a brand-new \$12-million metal shredder and recycling center for Padnos, a West Michigan-based industrial recycling company. In addition to the 9,000-square-foot powerhouse building that supports a 5,000 hp shredder, the project also involves foundations for the downstream process equipment and sorting bins along with extensive site development on the 60-acre parcel.

This industrial project had numerous unique specifications to ensure superior quality within the concrete slabs and walls. Some unique elements of this project included:

- 48" thick elevated structural slab to support the heavy shredder equipment.
- Highly technical embed/anchor bolt placement to accept process equipment, which required close coordination with equipment suppliers to ensure alignment of support concrete.
- 90,000 square feet of 8" concrete site pavement.
- Use of custom prefabricated steel wall forms to provide added longevity to the concrete storage bins.



Structural Commercial

Padnos Shredder Plant



Early project planning required thoughtful coordination to develop the most efficient flow of work, and Granger's concrete expertise was evident during this process. The project team also displayed a high level of flexibility and ingenuity as it had to continually adapt to changes and re-sequence portions of the work due to permit issues, vendor equipment/system design delays as well as delays in receiving the owner-supplied prefabricated wall forms.

Granger utilized the owner's own custom-designed steel forms for placing the concrete walls for the bins that hold the final recycling material until it is transported offsite. Padnos fabricates these 20' long x 10' high x 1/4" thick forms in-house using recycled steel from a combination of sources, including its own recycling plants. Once delivered to the site, Granger installed the forms and Padnos crews welded the seams together prior to Granger filling them with concrete.

Once filled, the steel forms are left in place as part of the finished wall to provide added structural support for the bins, which undergo significant wear and tear from heavy equipment such as front-end loaders, crawler cranes, magnet cranes, and skid steers. Replacing concrete from this type of abuse is an ongoing battle within the recycling and other industrial industries, and this is just one innovative solution Padnos has adopted to help extend the life of these concrete walls.

This project involved the construction of two concrete radius walls, including one that is 51" thick to support the plant's radial stacker conveyor that sits on top of the wall and rolls side to side depositing a specific type of scrap metal into the nearby storage bins. The outside face of this wall is 130 LF and the inside face is 119 LF. This wall stands 6'-5" tall with a 3' curb on top, making the total height over 9', which required pans to be stacked and hand set.

The sorting bin walls were also difficult to pour due to the number of embeds used and their weight/size, with each being at least 1" thick. These metal embeds, strategically placed prior to the pour, help transmit the structural load of the concrete and also serve as connections to help anchor the prefabricated steel forms that were used. Placing the embeds was a key part of constructing these walls as they had to be placed within a 1/8" tolerance to ensure they met the owner's specifications.

The completion of this project will enable Padnos to shred/recycle 1,000 tons of steel per day which then gets re-melted down in various locations in the Midwest to be used for numerous products.

Structural Municipal

2 x 5-Million Gal Water Storage Tanks

GLWA SOUTHFIELD SERVICE CENTER - SOUTHFIELD, MI

Concrete Contractor: D. N. Tanks
Concrete Supplier: Superior Materials, LLC
Prime Contractor: Kokosing Construction
Design Engineer: Arcadis
Project Owner: Great Lakes Water Authority

The Great Lakes Water Authority (GLWA) draws water from Lake Huron and the Great Lakes tributary, the Detroit River to provide water to 112 communities in southeast Michigan. GLWA maintains and operates roughly \$4 billion of infrastructure assets. The major components of GLWA's water system include three intake facilities, 23 miles of raw water tunnels with sizes ranging from 120 to 186 inches in diameter, five treatment plants, 18 remote water booster stations, and a conveyance system of approximately 810 miles of water transmission main with an average age of 70 years. In addition, there are 30 water storage reservoirs, 14 of which are located at the water treatment plants (WTPs), and 16 located at booster stations. The maximum rated treatment capacity of the system is 1,720 million gallons per day (MGD) with a firm high service pumping capacity of 2,400 MGD. Water system flow and pressure are monitored and controlled remotely from the Systems Control Center located at the Central Services Facility.

Water storage tanks help GLWA's member partner communities better provide water in case of emergencies and allow them to better manage their potable water demands. The water stored in the tank is then used during peak hours instead of drawing from the GLWA system, keeping costs lower for everyone.

This project included the construction of new replacement storage and pumping facility for the GLWA Southfield Service Center, including two 5-million-gallon potable water concrete storage tanks. Each of the tank base slabs were placed in monolithic 1,500 cubic yard pours followed by two 400 cubic yard roof slab pours.

DN Tanks formed and built curved concrete tank wall sections on site, erected the wall panels and shotcrete coated each tank on the exterior surfaces of the walls. Concrete columns were built inside the tanks to support the roof structure prior to pouring the roof.



Ramps & Interchanges

Weigh Station Bypass Lane

FOWLerville W.B. I-96 - HANDY TOWNSHIP, MI

Concrete Contractor: Florence Cement Co.
Design Engineer: Comprehensive Engineering
Architect: Schley Nelson Architects
Owners: Michigan State Police
Michigan Department of Technology Management & Budget

The I-96 Michigan State Police Westbound Station Bypass Lane was bid through the Department of Technology, Management and Budget. The project consisted of removing and replacing the MSP weigh station ramp and adding a bypass lane along with a Weigh-in-Motion scale. Florence bid the project as a Lump-Sum all-inclusive project, with no itemized units.

Florence Cement Company produced over 4,000 cubic yards of concrete for the project using a portable batch plant located at the Fowlerville Fair Grounds. Florence used a 16 foot wide Gomaco slipform paver to lay down the 10.5-inch concrete on four different mainline pours and five days of miscellaneous concrete pours, which included curb and gutter, sidewalk, and specialized concrete divider.

Even with the cement and supply chain shortages, Florence still completed the concrete portion of work in only nine days. The project included a Weigh-in-Motion scale pit, which had to be poured in two phases, with special reinforcement. The concrete divider was poured in one pour with the raised "chevron" island. This new scale and bypass lane will stand up to the heavy truck loadings that utilize this nicely renovated facility.



Airports

Taxiway Y North Reconstruction

DETROIT METROPOLITAN AIRPORT - ROMULUS, MI

Concrete Contractor/Supplier: Toebe Construction LLC
Design Engineer: C & S Companies
Project Owner: Wayne County Airport Authority
QA/QC Consultants: TTL Associates, Inc.

Detroit Metropolitan Wayne County Airport (DTW) was dedicated on September 4, 1930. Operated by the Wayne County Airport Authority (WCAA) and is located on nearly 4,600 acres. DTW has six (6) runways, two terminals, and 129 in-service gates. DTW offers service from twelve (12) passenger airlines and offers approximately 800 flights per day to and from more than 125 nonstop destinations on three continents. DTW has maintenance facilities capable of servicing and repairing aircraft as large as the Boeing 747.

The Taxiway Y North Reconstruction from Taxiway V to Y9/K9 included the removal of approximately 52,000 square yards of Portland cement and asphalt airfield pavement, with associated electrical, drainage, signs, and utility work, and construction of approximately 70,000 square yards of new taxiway Portland cement pavement and 45,000 tons of asphalt pavement and base with associated electrical (80,000 linear foot of wire), drainage (25,000 linear foot of underdrain pipe), 100,000 cubic yards of earthwork, signs, and utility work.

This project was originally designed with seven phases including day and night shifts. The project had an elaborate haul route that required crossing a minimum of three (3) and sometimes four (4) active taxiways. During construction, Toebe Construction worked with the Design Engineer to change and streamline the phasing to increase efficiency and speed up the construction.

The concrete removed from the former taxiways was recycled and crushed and used as the P219 base course for the new taxiway.



Special Innovative

Bosch ABS-ESP Test Track Events

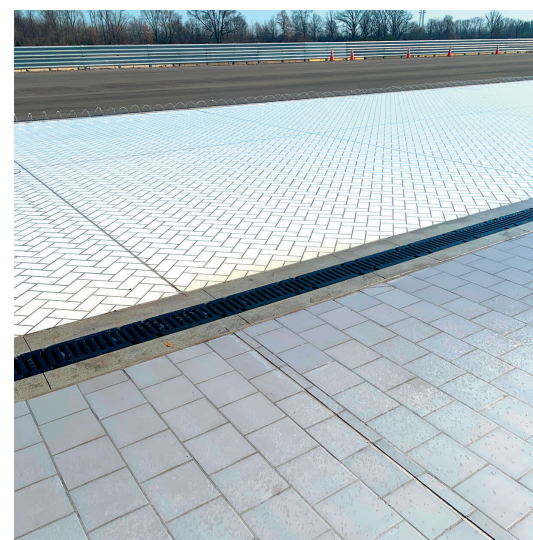
ROBERT BOSCH, LLC – AUTOMOTIVE PROVING GROUND ANTI-LOCK BRAKE SYSTEM (ABS)-ELECTRONIC STABILITY PROGRAM (ESP®) TEST TRACK - FLAT ROCK, MI

Paving Contractor: Angelo Iafate Construction Company
Concrete Supplier: Superior Materials
Design Engineer: Hubbell Roth & Clark, Inc.
Owner: Robert Bosch, LLC Proving Grounds

Consisting of 325 acres, the Bosch Flat Rock proving ground offers various test surfaces and tracks such as a vehicle-dynamics area that includes a 30-degree high bank curve, high and low-friction surfaces, special surfaces, and traction hills. Bosch has committed to making this facility their North American warm weather test facility by performing a series of multi-year upgrades.

This project consisted of constructing new test surfaces for the ABS Brake test feature for speeds up to 70 mph (112 kph) at the facility and accommodating vehicles ranging from motorcycles to semi-cabs. The new features included multiple road surfaces with varying friction coefficients including but not limited to the following: white tile Mu 0.15, gray tile Mu 0.7, cobblestone roadway, and tined concrete surfaces. Various concrete mixes were used throughout the project either as a base for the tile surfaces, or porous concrete under the cobblestone and drivable tined concrete surface.

All test surfaces have a state-of-the-art surface wetting system which will maintain the water sheen during testing operations. Water is reclaimed and reused until evaporated. This is accomplished by over 4,500 lineal feet of concrete encased trench drain. All test surfaces are level in the North-South direction of over 500 feet and have a cross slope of 0.50%.



Divided Highways

I-69 Reconstruction

FENTON RD TO DORT HWY - FLINT/GENESEE COUNTY, MI

Paving Contractor:	AJAX Paving Industries
Engineer:	ROWE Professional Services Co.
Consultant:	Hubbell Roth & Clark, Inc.
Testing Company:	Driesenga & Associates
Owner:	Michigan Department of Transportation



In February 2021, MDOT opened bids for the reconstruction of I-69 through Flint, which included the interchange with I-475, rehab of 9 bridge structures, preventive maintenance of 12 other bridge structures, three to four lanes of eastbound and westbound I-69, four high-speed ramp roadways between I-69 and I-475, and 15 entrance and exit ramps. The pavement type was chosen at the time of the bid, given that the project was an Alternate Pavement Bid, and the 10.5-inch-thick concrete pavement was the low bid. This \$100 million investment in the City of Flint was jointly funded by federal and state funds appropriated by Gov. Whitmer's Rebuilding Michigan Program, which provides for reconstructing state highways and bridges that are critical to the state's economy.

I-69 is a critical artery not only for the City of Flint but for the travel of goods between Canada and the Midwest. To maintain and mitigate the effect on the public and heavy commercial travel, MDOT considered this project expedited. Because time was of the essence, MDOT included steep lane rental costs, which are assessed for the amount of time for each lane closure on the mainline, ramps, service drives, or bridges. These assessments varied from \$67,000 per day for the closure of I-69 mainline lanes, up to \$20,000 for each ramp lane, and up to \$9500 for service drive lanes.



Divided Highways

I-69 Reconstruction

FENTON RD TO DORT HWY - FLINT/GENESEE COUNTY, MI

In the spring of 2021, the project began with preparations for maintaining traffic by shifting two westbound lanes to the eastbound roadway. This allowed the westbound I-69 and associated ramps to be closed and reconstructed. Ajax was able to locate a temporary concrete batch plant just north of the project to manufacture all the high-performance (HP) concrete placed. The concrete pavement was placed with stringless automatic grade control GOMACO pavers at 24', 16', and 12' wide. The use of maturity meters was established for each of the mainline concrete mixes so that the pavement strengths could be monitored and expedite the construction progress.

Westbound I-69 traffic was reestablished to the new westbound roadway at the end of October 2021 and no work was performed during the winter 2021 shut down period. In the spring of 2022, eastbound traffic was shifted to the westbound roadway for the reconstruction of the eastbound roadway. By the end of September, eastbound traffic was established on the newly placed concrete pavement.

Ajax paving crews focused their attention on paving very smooth, achieving an average IRI smoothness of only 61.5 inches per mile, while the four main ramps with I-475 achieved an average IRI of 72.3 inches per mile. Their hard work paid off, allowing very minimal lane rental charges while also giving motorists a smooth, long-lasting freeway through Flint.



Structural Transportation



I-94 Barrier Wall

US-31 to I-196 - BENTON HARBOR, MI

Concrete Contractor: Sanches Construction

Concrete Supplier: Consumers Concrete

Engineer: Wightman & Associates

Testing Company: Driesenga & Associates

Owner: Michigan Department of Transportation

In 2018, MDOT released a new concrete barrier design with a single straight slope on each side, instead of the typical “Jersey” barrier that had been used for over 50 years. The tall single-slope median barriers required the use of a new slipform mold on Sanches Construction’s Miller Formless 8800 barrier wall machine, and the upgraded 5,000 psi concrete mix was designed to be placed at a very low slump of one-half-inch, which also added to the complexity.

Highly technical mixtures such as this barrier wall mix require significant technical experience, strong aggregate control, and tight standards on the amount of water used in the batching process. The supplier must strike a balance between the need for low slump while maintaining concrete finishability. Consumers Concrete knew that they could help Sanches achieve these goals while supplying over 6,000 cubic yards for the median barrier on this multi-year project in the southwest corner of the state.

Placing the new barrier wall along an open I-94, the main artery between Detroit and Chicago as well as the interchange for I-196 a main highway for the Western Michigan Lakeshore added immense complexity to the project.

Because this was constructed on a key highway in Southern Michigan and a major connector for Chicago, cooperation and communication between the contractor, suppliers, engineers, and MDOT were critical to completing the sections safely and to the quality standards this project demanded.



Thank you to everyone who sponsored, exhibited, and/or attended this year's conference. We are incredibly grateful to our members and supporters.

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