November/December 2021
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CRB

CONCRETE REPAIR BULLETIN

2021 ICRI PROJECT AWARDS

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ON THE COVER: 2021 Project of the Year—The Assembly: Jumpstarting the Historic Ford Assembly Building, pg. 10.

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DEPARTMENTS

NOTE FROM THE EDITOR

The temperatures are getting colder and winter is almost here in the northern hemisphere. The year is almost over and the construction industry is looking forward to a new start in 2022. ICRI has completed a successful in-person conference in Minneapolis in October and is moving ahead with the planning of the Spring Conference in April 2022. Plans are being made for more in-person certification programs in 2022.

The Fall Convention means it's time for the ICRI Project Awards, and this issue's theme for the *Concrete Repair Bulletin* is "2021 ICRI Project Awards." Articles include rundowns of the 2021 Project of the Year Finalists (Terminal Tower and SMUD Museum of Science and Curiosity) and the Project of the Year Award Winner (The Ford Assembly Building). Articles also detail the Award of Merit winners from the different project categories.

ICRI is continuing to hold certification classes for Concrete Surface Repair Technicians and for Concrete Slab Moisture Testing. Check the ICRI website for dates and locations. Please continue to send in your ICRI Chapter events and updates to Dale Regnier.

I hope you have all had a great 2021 and look forward to seeing you in 2022!

Jerry Phenney
RAM Construction Services
Editor, Concrete Repair Bulletin

PRESIDENT'S MESSAGE


ELENA KESSI

We did it!

After two long years of virtual meetings, ICRI held its live Fall Convention in Minneapolis! Over 200 colleagues came together to rekindle friendships, celebrate our project award winners, learn from experts in the field, and tackle critical technical challenges.

And we just plain celebrated the opportunity to be together again!

COVID has not completely receded into the past, but ICRI made the decision to give its members the choice to join a live convention. With due precautions and guidance in place, the experience in Minneapolis showed that it was the right decision.

The convention included two outstanding networking events hosted by the Minnesota Chapter: Axe throwing (yes, you read that right!) and a fun riverboat cruise on the Mississippi River. We owe a huge debt of gratitude to the Minnesota Chapter for its hard work to make the convention in Minneapolis a welcoming and successful event.

Attendees also took advantage of 18 exceptional technical presentations that addressed the convention theme *Evaluation and Forensics—Despair to Repair*. In addition, every technical committee came together with a more streamlined format that eliminated meeting overlap—greatly increasing the ability of attendees to attend any technical committee. Also, while we are all used to Zoom by now, we added a new technology called the "Meeting Owl"—an in-meeting camera and microphone setup that provided remote meeting attendees with a clear visual of the entire meeting room and attendees.

Across the board, it was incredibly gratifying to see both our administrative and technical committees well attended by both in-person and remote participants. The Women in ICRI Committee, for example, had its largest attendance ever! Other committees reported large attendance both virtually and in-person.

We also welcomed one of our largest contingents of first-time convention attendees. Over 70 attendees indicated on their registration form that this was their first ICRI convention—nearly one-third of total attendance! That level of interest by new attendees is a great sign that ICRI appeals to the next generation of concrete repair professionals. We intend to build on that energy in the months and years to come.

Last but definitely not least, we honored this year's impressive ICRI project award winners at the 2021 Project Awards Luncheon, including the 2021 Project of the Year winner Wiss, Janney, Elstner Associates, Inc. for *The Assembly: Jumpstarting the Historic Ford Assembly Building* (Historic Category). We also honored the first winners of ICRI's Safety Awards program, including the President's Award for Safety, which was given to PULLMAN, of Monroeville, New Jersey.

Please take some time to read about all the project award winners in this issue of the *Concrete Repair Bulletin*.

2021 redefined our lifestyle, our purpose, and our industry. Fall convention restarted the fire of in person events and sparked new forward motion for all the ICRI greatness to come. As president, I want to thank every member of the association for your continued trust and contributions to ICRI. We couldn't do it without all of you and I can't wait to see what happens in 2022 and beyond. My final words of wisdom are words that were passed along to me - volunteer for topics you are passionate about, don't be afraid to speak up and if you seek a leadership role, the sky is the limit at ICRI..

As always, thank you for your continued commitment to ICRI. I wish you continued safety and health!

Elena Kessi
2021 ICRI President

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TACTALK


MARK NELSON

TAC GOALS FOR 2021

Thank you to the TAC members, the Technical Committee Chairs and Vice Chairs, Ken Lozen and Dale Regnier for all of your help this year. Because of your hard work, we were able to achieve our four goals we set one year ago. First, with help from Dale, we established the initial version of a Technical Committee calendar. While this calendar will need to be updated and improved, the current version is a great start in that process. Second, with help from Ashish Dubey and Fred Goodwin, we were able to create an initial PowerPoint tool for training new Technical Committee Chairs. We look forward to refining and implementing the training program in 2022. Our third goal was to do a better job of recognizing and rewarding our technical committee members who create our technical offerings. With the help of ICRI staff as well as the members from the Education Committee, ICRI now has a formal product launch procedure for new technical guidelines and other technical offerings. The process does a great job recognizing those members who put so many hours behind the scenes creating these technical offerings. Finally, we also asked our Technical Committee Chairs to increase their committees by five new active members. With their leadership, we added over 50 new committee members to the ICRI Technical Committee rosters. Thank you again to all who participated in the Technical Committees this past year.

Contractors Needed for Technical Committees

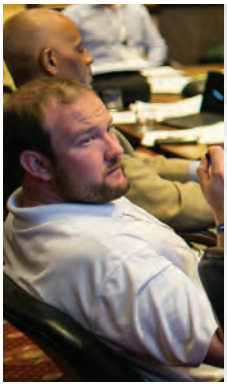
Thanks to the ICRI members who attended the Minneapolis Convention Technical Committee meetings in person or via Zoom. The hybrid meetings were a great success, and we look forward to continuing this format for our upcoming conventions. The option to attend virtually provides an opportunity for more ICRI members to get involved in our committees as well as the creation of new technical offerings. We are especially interested in attracting our local chapter ICRI contractor members. You are the members who best understand the issues related to application issues. You are also part of the membership class that is least likely (and able) to attend our national conventions. If you are a contractor and would like to be a part of one of our Technical Committees, please contact me or contact the Technical Committee Chair directly. With your practical experience, you will be a valuable addition to any Technical Committee roster.

ICRI Technical Committee Chairs

Following is a list of the ICRI Technical Committee Chairs. If you want to become more active in ICRI and the repair industry, please feel free to contact them directly to learn more about their committees.

- **Liying Jiang**, *Jensen Hughes*
  Committee 110—Guide Specifications
- **Paul Farrell**, *Carolina Restoration & Waterproofing*
  Committee 120—Environmental Health and Safety
- **Marthe Brock**, *BASF Master Builders Solutions USA*
  Committee 130—Contracts, Warranties, and Agreements
- **Vincent LaPointe**, *SIMCO Technologies*
  Committee 160—Life Cycle and Sustainability
- **Charles Mitchell and David Rodler**, *SK&A*
  Committee 210—Evaluation
- **Peter Haveron**, *Texas Concrete Restoration*
  Committee 310—Surface Preparation
- **Mark Kennedy**, *Construction Sales Group, Inc.*
  Committee 320—Concrete Repair Materials and Methods
- **Tarek Alkhrdaji**, *Structural Technologies*
  Committee 330—Strengthening and Stabilization
- **Jason Coleman**, *Wiss, Janney, Elstner Associates, Inc.*
  Committee 410—Masonry
- **Jorge Costa**, *Durability, Inc.*
  Committee 510—Corrosion
- **Eric Muench**, *Sika Corporation*
  Committee 710—Coatings and Waterproofing

Mark Nelson *is chair of the ICRI Technical Activities Committee (TAC).*



Volunteer

The success of the International Concrete Repair Institute and its work in the industry depends on a strong, active volunteer force. As a member of ICRI, you are invited to participate in the meetings and projects of any ICRI administrative or technical committee. All are volunteer-led and depend on your expert contributions.

ICRI's volunteer program strives to create an environment that is friendly and welcoming. As an ICRI volunteer, you work closely with volunteer leaders and ICRI staff—active parts of each committee, who are available to assist you to answer questions about how ICRI operates, and to help you be the most effective volunteer possible.

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2021 PROJECT OF THE YEAR

HISTORIC CATEGORY

The Assembly: Jumpstarting the Historic Ford Assembly Building

INDIANAPOLIS, INDIANA

SUBMITTED BY WISS, JANNEY, ELSTNER ASSOCIATES, INC.

Ford Motor Company assembly building

In the early twentieth century, recognizing an increased demand for the Model T, the Ford Motor Company embarked on a plan to build a network of assembly plants throughout the nation. The plan included construction of more than two dozen Model T assembly plants throughout the nation designed by John Graham of Seattle and including multi-story assembly areas with a showroom and service station.

The four-story Indianapolis assembly building was opened in 1915 and operated as an assembly building for the Model T for nearly two decades (Fig. 1).

The building structure consisted of reinforced concrete columns and slabs with exposed concrete façades on the east and west exterior walls. A centrally located atrium extending the full length of the building in the north-south direction provided a craneway to transport parts and materials to the assembly floors. Parts and materials were transported into the building via train cars which were backed into the centrally located atrium via a rail spur. In all, the building housed approximately 150,000 sf (13,900 sm) of floor space, including subsequent additions onto the building in the 1920s.

The north and south façades comprised red brick masonry with terra cotta accents on the decorative north façade. The decorative north façade was designed and constructed in an Art Deco style with a decorative terra cotta cornice.

The terra cotta cornice was removed at some point in the building's history.

John Graham designed the assembly buildings to include steel-framed windows and skylights throughout the building to provide natural light and reduce electrical costs. Nearly 60 percent of the exterior enclosure of the building included glass.

For nearly two decades after original construction in 1915, the Indianapolis Ford Assembly building produced Model Ts. At peak production in 1923, the Indianapolis Ford Assembly Building built nearly 300 vehicles a day with its 300 employees. Unfortunately, due to the Great Depression and a shift in manufacturing strategy by Ford, the Ford Assembly line closed down in the 1930s. In subsequent years, the building was occupied by various manufacturers, including P.R. Mallory and Company (now Duracell) and Western Electric Company. In 1986, the building was listed on the National Register of Historic Places as part of the Indianapolis Automobile Industry Thematic District.


Fig. 1: Ford Motor Company assembly building circa 1915

In the two decades preceding the 2018 redevelopment by the owner, the building served as a storage facility and fell into severe disrepair (Fig. 2). In 2016, the building was listed on Indiana Landmark's 10 most endangered list.


Fig. 2: Condition of building prior to 2018 redevelopment

EXISTING CONDITIONS

By the time the owner purchased the building in 2017, there was severe and extensive deterioration of the concrete façades on the east and west walls. All the original skylights on the building were previously covered with metal panels or removed, and most of the windows were replaced with infill concrete masonry. The gables on the north and south façades were severely displaced and unstable, brick parapets on the south façade had partially collapsed, and remaining decorative terra cotta units on the north façade were significantly distressed. Furthermore, the large centrally located atrium in the building was enclosed with various floor systems by previous owners.

The owner's vision for redevelopment of the property included a multi-use building with 132 apartment units and commercial space on the first floor. The owner's vision emphasized restoring the historic character of the building by re-opening portions of the centrally located atrium, replicating the original window openings and some of the skylights, and restoring the façades. Restoring the façades included concrete, brick, and terra cotta restoration, as well as the replication of the original cornice on the north façade.


Fig. 3: Extensive concrete facade deterioration

CONDITION EVALUATION

In 2017 and 2018, the evaluation of the exterior façades included a visual evaluation of the conditions, up-close assessment of select portions of each façade, inspection openings, and material sampling and testing. Based on the visual evaluation and close-up assessment of the façades, extensive deterioration was observed at the east and west

Fig. 4: Unstable and distressed areas on south facade

Fig. 5: Displacement of brick cladding on the north façade

Fig. 6: Inspection opening at terra cotta water table

concrete façades, including spalled concrete and incipient spalls where the original reinforcing steel was corroding (Fig. 3). Visual evaluation of the south façade revealed the original brick parapets and gable were unstable and significantly distressed. The original steel girders supporting the gable above the original window openings were significantly corroded and the concrete corbels supporting the fourth-floor steel girders were compromised (Fig. 4). The brick parapets on the south gable had partially collapsed, revealing reinforced multi-wythe brick masonry parapet walls anchored to the roof slab, which was a novel idea at the time of the original construction.

Ultimately, the conditions on the south façade necessitated rebuilding the parapets and south gable. The north façade exhibited terra cotta and brick masonry distress, largely related to corrosion of embedded mild steel anchors and steel lintels. The north façade gable was also significantly displaced and unstable due to corrosion of the supporting steel lintels and the absence of lateral ties of the masonry to the concrete gable backup structure on the north façade (Fig. 5).

DETAILED INVESTIGATION

Inspection openings at various details and distressed conditions on the north and south façades confirmed that the causes of visual distress in the masonry and concrete façades were largely related to corrosion of embedded mild steel elements (i.e., steel window lintels, anchors, and concrete reinforcing). The inspection openings also aided in developing repair drawings for the existing configurations (Fig. 6). No original drawings for the building were available, thus inspection openings were critical for developing a clear scope of repair for contractor pricing and execution.

Material samples of the original concrete were collected and petrographically examined in the laboratory of the façade restoration consultant. The petrographic studies of the concrete confirmed that the concrete distress was predominantly related to the scale accumulation on the original reinforcing steel due to corrosion. The laboratory examination of the original concrete also revealed the concrete material was paste-deficient and aggregate particles were not completely encased in paste (Fig. 7). These findings indicated that the original concrete had a higher relative porosity which could contribute to the rate of corrosion of unprotected mild steel embedment. However, despite air-entrained concrete not existing at the time, the paste-deficient original concrete created distinct voids in the concrete matrix, which afforded resistance to freeze-thaw related deterioration and could have also relieved some stresses in the concrete resulting from corrosion scale accumulation. Thus, while the deterioration of the concrete façades on the building were severe and extensive, it very well could have been worse if not for the characteristics of the original concrete material.

DESIGN AND REPAIR

Repair design for the various materials, systems, and conditions on the exterior façades of the building required a multi-disciplinary team of engineers and architects with expertise in concrete, terra cotta, glass fiber reinforced concrete (GFRC), and brick repair. Repairs to the concrete façades on the east and west sides of the building were designed with conventional vertical surface concrete repair details commonly found in the concrete repair industry. The concrete repair design generally included removal of deteriorated concrete, preparation and coating of exposed existing reinforcing steel, supplemental reinforcing steel where necessary, and replacement of concrete repair materials. On this project, form and pour, as well as shotcrete repair methods, were utilized to complete the nearly 13,000 sf (1200 sm) of vertical surface concrete repairs on the east and west façades (Fig. 8). The shotcrete repairs implemented for the vertical surfaces of the building were uniquely considered on this project as a means to reduce the construction schedule. A few factors specific to this project, including the vacancy of the building, proved the shotcrete repair method to be a viable option on the vertical surfaces of the building.

The design and repair to the south gable and parapets included complete disassembly and rebuilding. Parapet designs were upgraded with concrete masonry backup walls and brick masonry cladding with a liquid applied waterproofing system installed on the backup walls (Fig. 9). The south gable was rebuilt with two precast concrete girders spanning approximately 30 ft (9.144 m) to replicate original window openings on the south façade (Fig. 10). Preparation for the setting of the precast concrete girders required repair of the severely compromised original concrete corbels integral with the original concrete structure.

On the north wall, the entire façade was re-pointed and more than 200 terra cotta units were replaced with GFRC units to replicate the original profile, color, and sheen of the terra cotta (Fig. 11). A new GFRC cornice was designed to replicate the proportions, color, and detailing of the original façade, and was designed as a modular system where each GFRC cornice unit replaced seven of the original terra cotta cornice units utilizing false joints (Fig. 12). The GFRC cornice units were anchored to a reinforced concrete masonry backup wall with stainless steel anchors and hooks (Fig. 13). Replicated windows and skylights were designed and incorporated into the redevelopment to restore the original exterior appearance of the building and to increase the natural lighting within the building.

CONCLUSION

The restoration and redevelopment of the building was completed in the summer of 2020 at a total cost of approximately US $38 million. The vision of the owner for the Indianapolis Ford Assembly building saved this historically significant building from the scrap yard and

Fig. 7: Microscopic view of original concrete material


Fig. 8: Concrete repairs on west façade


Fig. 9: South parapet reconstruction

restored the luster of the building and neighborhood that surrounds it. The success of this project has spurred interest and active projects to redevelop the surrounding corridor of downtown Indianapolis, Indiana.

Fig. 10: Precast concrete girder set over window opening at south gable

Fig. 11: Glass fiber reinforced concrete (GFRC) units

Fig. 12: Glass fiber reinforced concrete (GFRC) cornice replicating original terra cotta cornice units

Fig. 13: Stainless steel anchors and hooks used to anchor the cornice to the reinforced concrete masonry backup wall

The Assembly: Jumpstarting the Historic Ford Assembly Building

SUBMITTED BY
Wiss, Janney, Elstner Associates, Inc.
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Indianapolis, IN

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FINALIST—2021 PROJECT OF THE YEAR

HISTORIC CATEGORY

Restoration of the SMUD Museum of Science and Curiosity

SACRAMENTO, CALIFORNIA

SUBMITTED BY SIKA CORPORATION USA

SMUD Museum of Science and Curiosity

The newly repurposed SMUD Museum of Science and Curiosity (MOSAC) is located in Sacramento, CA, and sits along the banks of the Sacramento River at 400 Jibboom Street. Originally built in 1912, the Pacific Gas and Electric Company's (PG&E) Power Station B was designed in the Beaux-Arts style by San Francisco architect Willis Polk. The building's Beaux-Arts-style architecture was typical of the era and became part of the City Beautiful movement, of which Polk was a devotee and Sacramento was moving toward (Fig. 1).

Power Station B produced electricity as an auxiliary power plant with a 500kW output. In 1924, PG&E upgraded the facility, making it the largest steam turbine power plant in the area. Although it had been up and running as an auxiliary power source for twelve years, interruptions in service led PG&E to add a fourth turbine generator in 1924, and another 1,200kW in 1925, making River Station B the largest electrical steam station in Northern California. Times changed and in the 1940s, PG&E was only using the facility for test purposes; it became an unofficial tent city during The Great Depression (Fig. 2).

For the next 50 years, the building went through numerous changes in ownership and uses. Efforts were made to revive the building, but in the end, nothing was accomplished.

In 2000, after 50 years of ownership and nothing to show for it, the State finally completed the hazardous materials mitigation, deeded the site to the City of Sacramento, and the plan of putting something inside the crumbling power station was initiated for repurposing the building.

Fig. 1: The SMUD building is on the National Register of Historic Places, California Register of Historic Places, and the Sacramento Register of Historic & Cultural Resources

REPURPOSING THE BUILDING

In 2002, determined to repurpose the building for the public, the City solicited proposals from developers to suggest uses for the property. At the same time, the Discovery Museum was shopping for more space and newer facilities. Already familiar with the River Station B site, they teamed up with a developer to develop the Discovery Museum Project (the precursor name to Powerhouse Science Center and eventually SMUD MOSAC), and their proposal was selected.

In 2007, an architect created the first conceptual design for the center. Not technically a museum, the historic building and new addition with planetarium would be a premier center for science education. Over the next few years, several different surveys on the property commenced but funding was still lacking to ultimately move forward with construction. In 2011, the Powerhouse Science Center project won a large grant and were asked to redesign the building again – this time with a green roof, parking structure and conference center. However, time continued to pass, and the grant wasn't solely enough to move the project forward, so they were asked to redesign it again. In 2014, after multiple tax credits, grants and donations supporting the project, the Sacramento City Council voted to approve the extra funds for the project. The third iteration for the Powerhouse Science Center was the happy medium needed for moving River Station B ahead again.

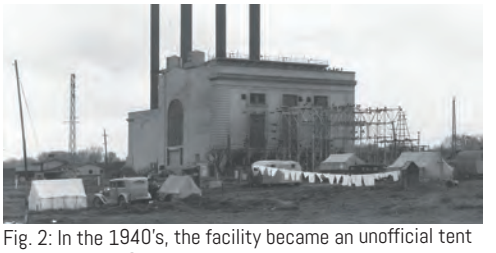

Fig. 2: In the 1940's, the facility became an unofficial tent city during The Great Depression

The project included stabilizing and renovating the stately power plant structure, adding a new two-story, 22,000 sf (2,045 sm) addition containing a lobby, classrooms, offices, a café and a 110-seat planetarium with a zinc-clad hemispheric dome rising above the building's mass.

REPAIR STRATEGY AND DEMOLITION TECHNOLOGY

A thorough structural assessment of the building was completed by the project team. The plan was to use and retain as much of the old Power Station B's structure as possible (Fig. 3). The north, west, and south walls would be kept and half of the east wall was carefully dismantled. Before demolition could begin, a steel exostructure had to be placed around the building to support the 100-year-old walls. The building would require a complete structural retrofit and a second floor for flexible exhibit space.

Fig. 3: Building during demolition (photo courtesy of Geocon, Inc.)

Removal of the roof and part of the building's structure required state-of-the-art robotics technology (Fig. 4). The contractor used a remotely controlled robot that was lifted onto the roof and carefully demolished it in pieces. Cameras monitored the progress from inside the building, a delicate job for a state-of-the-art machine working on a century-old building. Here, technology and history met in the name of science. With the age of the building, care had to be taken to understand the condition of the concrete walls to ensure structural integrity. Once the building was retrofitted, construction of the new buildings commenced and were then tied to the old building.

Fig. 4: Remote controlled robot used for roof demolition (photo courtesy of KCRA 3 News)

RESTORATION PROGRAM

Concrete Repair

The century-old walls were heavily spalled and cracked both inside and out. Great care was taken to preserve the original architectural elements

Fig. 5: Crack injection at exterior walls

of the building. In many areas, the horizontal grooves, arches, and cornices had to be rebuilt due to spalling and cracking. Over 5,000 sf (465 sm) of spall repair was done using a fast-setting, one component, cementitious vertical and overhead repair mortar with high build properties. The repair areas were saw cut and mechanically prepared with chipping hammers to achieve a concrete surface profile CSP 5-6 and ensure good bond to the concrete substrate. Approximately 3000 lf (915 m) of crack repair was completed. Larger cracks (>1/16 in [1.6 mm]) were routed and sealed with urethane sealant. Smaller cracks were injected with a 2-component, 100 percent solids, moisture-tolerant, low-viscosity, high-strength, epoxy resin adhesive (Fig. 5). Once the spalls and cracks were repaired, the entire exterior received a corrosion inhibiting impregnation coating to penetrate and protect the reinforcing steel.

Fig. 6: Application of corrosion inhibiting coating, a) Application 1 and b) Application 2

Concrete Protection

After the concrete repairs were complete, a corrosion inhibiting impregnation coating was applied to the concrete walls, forming a protective layer on the steel reinforcement surface which inhibits corrosion caused by the presence of chlorides as well as by carbonation of the concrete (Fig. 6).

Finally, the building was coated with a one component, penetrating, adhesion-promoting primer and then two coats of an elastomeric, crack-bridging, anti-carbonation, acrylic protective coating (Fig. 7).

Cartouche Retrofit

The cartouche was originally created in 1911 and appears on the west elevation, mounted in a tall arched opening. The cartouche incorporates an elaborate circular medallion mounted on a solid structural base, held up by two male figures. The base of the cartouche features a detailed decorative motif of fruit, vegetables, and leaves.

A digital scan of the cartouche was created, which would serve as the foundation for replicating this artistic piece. Unfortunately, the scan did not capture all the intricate artistry of the piece, prompting craftsmen to create the missing elements. Using the scan to create a glass fiber reinforced concrete (GFRC) base to work from, the detail was then added using historic photos and hand carving the detail into the piece with a high-performance repair mortar, utilizing old-school craftsmanship. The end result was a replication of the original cartouche that had the same level of detail and artistry as the original (Fig. 8).

Quality Assurance

Quality assurance measures were taken throughout the project. Site visits between manufacturers, consultants, and engineers ensured that every step of the repair process was performed to the highest levels. Wall-coating adhesion tests were conducted to confirm adequate adhesion between the coatings and substrate.

CONCLUSION

By restoring this iconic structure, our history has been preserved for many more years to come. The renovation and repurposing of the SMUD building, a US $38-million-dollar investment project, has many reasons for distinction. The century-old structure has now been successfully repurposed and modernized for the next hundred years. This building restoration project

Fig. 7: Elastomeric protective coating: a) Before and b) After

Fig. 8: Cartouche retrofit: a) Before and b) After

was only possible because of a significant contribution by the advances made in the concrete repair industry. Whereas other industries continue to make a name for themselves in the world of sustainability, there can be no other testimonials as strong as projects like this, where the concrete repair industry is the pinnacle of sustainability. The continuing evolution of the repair industry continues to make an impact on preserving our history and continues to be the beacon of light on sustainability.

This project is an example of contractors, design teams, and owners successfully and consistently working together to improve on designs of the past without changing the fundamental aspects of the project that make it unique and historic. The project incorporated modernized and improved products and techniques to give new life to the structure to be enjoyed for centuries to come. This unique and complex project used innovative and collaborative efforts to ensure a safe workplace and a happy customer.

Restoration of the SMUD Museum of Science and Curiosity

SUBMITTED BY
Sika Corporation USA
Lyndhurst, NJ

OWNER
SMUD Museum of Science and Curiosity
Sacramento, CA

PROJECT ENGINEER/DESIGNER
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San Francisco, CA

REPAIR CONTRACTOR
Western Specialty
San Leandro, CA

MATERIALS SUPPLIER/MANUFACTURER
Sika Corporation
Lyndhurst, NJ

FINALIST—2021 PROJECT OF THE YEAR

LONGEVITY CATEGORY

Terminal Tower: Cleveland Skyline Landmark

CLEVELAND, OHIO

SUBMITTED BY SIKA CORPORATION USA

Terminal Tower

Located at the southwest corner of Public Square, Terminal Tower is the signature building of the Cleveland skyline. This landmark building is the Public Square's focal point with a unique architectural design much like a castle turret topped with a detailed dome. Designed by the firm Graham, Anderson, Probst & White, the tower was modeled after the Beaux-Arts New York Municipal Building and was built for US $179 million (US $2.7 billion in 2021 dollars) by the Van Sweringen brothers.

The tower was to serve as an office building atop the city's new rail station, Union Terminal. Originally planned to be 14 stories, the structure was expanded to 52 floors resting on 280 ft (85 m) caissons. Groundbreaking began in 1926 and was completed in 1928, two years before the entire Union Terminal complex opening. At 708 ft (215 m), it was the tallest building in North America outside of New York City until the Prudential Center in Boston was completed in 1964. In 1976 the tower was added to the National Register of Historic Places as the Union Terminal Group. Today, it serves as the centerpiece of mixed-use Tower City Center development, with the entire Terminal Tower complex comprising 557,000 sf (51,750 sm) on 34 acres.

The 52-story building consists of a concrete-encased steel frame and is clad with decorative limestone and glazed terra cotta. At the 37th floor the tower begins its transition from square to octagonal to round with multiple setbacks.

Terra cotta clads the exterior walls along with an ornamental window system behind the colonnade. The tower culminates with a monumental flagpole atop an ornamental iron spire. The building is a local landmark designated by the Cleveland Landmarks Commission.

TOLL OF 75 YEARS

As the building approached its 75th anniversary, several repairs were completed, including selective terra cotta replacement and patching, sealant removal and replacement, and installation of protective netting at the 44th and 46th floors. In addition, the terra cotta of the west portico and supporting columns at the 44th floor had been entirely removed.

However, decades of exposure to the harsh Midwest coastal environment had taken its toll. Continued water infiltration resulted in interior water damage and accelerated deterioration. Active paths for water infiltration included failed mortar joints, flashing, and terra cotta units. Steel flanges had rusted and expanded, causing pieces of terra cotta to loosen and fall, resulting in cornices that needed to be strapped into place (Fig. 1).

The owners were faced with having to spend several years investigating conditions, developing drawings, and placing work out to bid—an extraordinarily long and expensive proposition. Instead, the decision was made to follow a design-build model. Examinations and bidding for repairs were developed concurrently as the project moved from floor to floor, which had the advantage of avoiding delays and separating the work into more than 40 manageable bid packages.

INNOVATIVE REPAIR SOLUTIONS

Essential for funding this US $20 million-plus project were historic preservation tax credits. The owners needed an innovative solution to present to state officials based on the condition of the building's steel framing. Replacing terra cotta with terra cotta was not an option. The alternative was to replace the terra cotta with fiberglass cornices and other shapes manufactured with embedded aluminum extensions that could be bolted to new steel. In addition to being lighter and easier to manufacture and install, and a fraction of the cost of their terra cotta counterparts with less lead time, fiberglass pieces would remain watertight. For salvageable terra cotta, an elastomeric coating employing a fiberglass mesh would provide waterproofing protection.

Fig. 1: Loose terra cotta secured with straps

Fig. 2: Scaffolding around the entire 37th to 52nd floors allowed engineers to inspect every square foot of the façade

With tax credits granted, the first bid package was issued to erect scaffolding around the entire building between the 37th to 52nd floors (Fig. 2). Begun in October 2005 and completed in January 2006, it became a familiar Cleveland skyline sight and allowed engineers to inspect every square foot of the façade. The engineers' approach to the project involved selective demolition to expose and determine the cause of deterioration at specific sites, design repairs to those areas using innovative engineering and construction techniques, and competitively bid out that section. The process was then repeated for each section as the project moved from floor to floor.

The biggest problem encountered was water infiltration into the building. To eliminate the water infiltration, every mortar joint from the 44th floor to the top of the building was removed and repointed (approximately 13 miles [21 km]).

Fig. 3: a) Cracked and rusted cast iron cornices replaced with new steel duplicating shape of original, and b) Fiberglass reinforced polyurethane liquid applied membrane in custom gold to match original

Where the terra cotta was determined to be beyond repair, all material was removed to the underlying substrate. Steel was exposed, cleaned, and coated, concrete was replaced, and new material was installed. Based on the extent of deterioration, it was decided to either use original material, such as limestone or terra cotta, or replace with fiberglass replicas duplicated from salvaged material.


Fig. 4: Total of 32 fiberglass columns replaced in 2009 (photo in 2021)


Fig. 5: Fiberglass-reinforced coating conformable and color-matched to salvageable terra cotta

One of the first renovation tasks involved repairs on the cast iron cupola at the base of the flagpole. As originally constructed, the cast iron served as a form for poured concrete. Over the years, the cast iron had cracked and rebar in the concrete had rusted. Workers removed all loose and split cast iron cornices and replaced them with new steel duplicating the shape of the original (Fig. 3a). Handrails and windows were replaced, and the entire area including the existing metal deck was cleaned and coated with a fiberglass-reinforced polyurethane liquid-applied membrane system manufactured in a custom gold color to match the original (Fig. 3b).

As the project moved to the 51st floor and below, a method of repair for unsalvageable terra cotta was developed. All loose and broken cornices were removed as well as rusting and expanding steel lintels that were splitting apart the façade. The framework was replaced with stainless steel and aluminum, and the terra cotta was replaced with fiberglass molded from original pieces. Fiberglass units replaced hundreds of lineal feet of specialized cornice as well as thousands of square feet of terra cotta, including 32 columns, each 40 in (1 m) in diameter and 30 ft (9 m) tall (Fig. 4).

The repair for salvageable terra cotta entailed grinding out mortar joints and replacing with new mortar as well as repairing all cracks and broken pieces with polymer-modified repair materials. Over 10,000 sf (930 sm) of surface was then coated with a UV-cured, elastomeric, fiberglass-reinforced coating system with unique ability to conform to intricate detailing and color matched to the existing terra cotta (Fig. 5).

As the project moved to the 44th floor, the walkthroughs and terra cotta balconies were found to be failing structurally. For the walkthroughs, the repair required demolition of the roof slab and removal of all masonry parapet walls. The roof slab and single-ply roof, as well as copper flashings, were replaced. New concrete beams above the doorways and parapet stones were cast and coated with the fiberglass-reinforced coating. The balconies required demolition of top

and bottom slabs and removal of all masonry (Fig. 6). Steel framing was cleaned and reinforced, and the new top slab was roofed with copper and new bottom slabs were formed to replicate the original terra cotta. The walls were framed with stainless steel and aluminum and rebuilt with fiberglass pieces.

At the 37th floor, the rusting lintel had expanded so much that it was lifting the balcony. This required demolition of one course of masonry to expose and remove the entire lintel. The lintel was replaced with stainless steel fastened back to the building framing, along with new stone and weep tubes.

Repair of the 34th floor cornice required demolition of the entire bottom half and removal of masonry and rusted lintels. Stainless steel framing was installed to support the top half of the cornice, which was then repaired and coated with the fiberglass-reinforced coating. Fiberglass pieces were installed to replace the bottom half.

Below the 34th floor, the main shaft of the building required replacement of mortar joints, caulking of all relief angle joints, and installation of weep tubes. The 30th floor columns were repaired, and deteriorated stone pieces were replaced. Repair of the 10 ft (3 m) 15th floor cornice required removal of masonry and rusted steel angles. Steel beams were cleaned and coated. New steel framing and fiberglass units were installed (Fig. 7). Finally, the entire building surface was cleaned.

In addition to renovation work at the exterior, more than 3 years were spent modernizing 21 elevators. Restoration of the observation deck to its original grandeur has since been completed with plans to restore the Van Sweringens' living space. The massive project was completed 6 months ahead of schedule and US $8 million under budget.

SUSTAINABILITY ADVANTAGES OF FIBERGLASS

Fiberglass products are becoming a viable alternative for both new construction and restoration projects and are providing new cost-saving options for owners, builders, architects, and engineers. Their use is gaining substantial recognition with preservation and landmark agencies as a viable alternative to traditional materials.

The ability of fiberglass to reproduce complex shapes and configurations allows designers to retain historic designs and finishes without sacrificing the authentic look. Material cost and production lead times are a fraction of those for traditional materials.

The energy consumed to produce and install fiberglass is far less than with traditional products like concrete and terra cotta. Fiberglass requires less maintenance, resists rot and corrosion, and reduces the need for replacement, repair, and repainting. Fiberglass is also a low conductor of heat which lowers insulation requirements.

Fig. 6: Renovation of structurally failing balconies: a) Before renovation and b) After renovation


Fig. 7: Fiberglass units installed to new steel framing

Terminal Tower: Cleveland Skyline Landmark

SUBMITTED BY
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Lyndhurst, NJ

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PROJECT ENGINEER/DESIGNER
Barber & Hoffman
Cleveland, OH

REPAIR CONTRACTOR
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MATERIALS SUPPLIERS/MANUFACTURERS
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Lyndhurst, NJ

Architectural Fiberglass
Cleveland, OH

AWARD OF EXCELLENCE

HIGH-RISE CATEGORY

The Leamington Building

OAKLAND, CALIFORNIA

SUBMITTED BY SIKA CORPORATION

The Leamington Building

Located on 1814 Franklin Street in downtown Oakland, CA, the Leamington is a Spanish-style high-rise building that was built to showcase modern design ideas in hotel construction. The 12-story high-rise featured a street-level commercial space accompanied by 150,000 sf (13,935 sm) of hotel rooms. The original architectural design of the building was a concrete-encased steel frame and featured cast stone ornamentation decorating the elevations of the building. The interior featured large skylight windows that provided the entrance atrium with plenty of natural sunlight. Designed by architect W.H. Weeks, the total budget was over US $2 million when originally built and opened in 1926.

This historic building was utilized as a large event gathering space for wealthy Oakland residents. It also featured a staffed children's playroom, a service kiosk for guests and a US $30,000 pipe organ which was uncommon for hotels during this period. The hotel was marketed as a luxury landmark for the City of Oakland.

HOTEL TO OFFICE: CHANGES OVER THE YEARS

Since the opening of this iconic building, it has had its fair share of changes and uses over the years:

- 1926—Groundbreaking to the public
- 1930—Owner J.K. Leaming sold the property and it was rebranded as the Ambassador Hotel (Fig. 1)
- 1933—The Ambassador Hotel reverted to the original "Leamington" name
- 1981—Bankruptcy closed the operations of the Leamington Hotel
- 1983—The City of Oakland partnered with an investment firm to purchase and convert the building into an office and retail space after a complete renovation

- 1987—The Leamington Hotel Building and Annex was designated as an Oakland Landmark

CONDITION SURVEY

In 2017, a visual condition survey of the Leamington Building's façade and windows was performed and identified spalling and deterioration of the decorative building elements and spalling of the building façade due to wall coating failures and aging that allowed water ingress into the wall assembly. In 2019, the building's ownership hired a consultant to prepare repair documents for the façade's restoration on the north and west elevations, the elevations with the most exposure and in need of restoration and waterproofing. The other elevations were not part of the scope of work.

A façade inspection was performed during the restoration process that included sounding all wall elevations to identify the extent of distress. As part of this inspection, portions of the façade were removed. Coating adhesion testing was also performed during this investigation to determine if the walls and ornamentation needed complete removal of the existing coatings.

RESTORATION

Following the façade inspection, repair documents were prepared for the observed conditions (Fig. 2 and 3). Repairs included spall repairs of the cast-in-place concrete and decorative carvings and finials, coating and putty repairs of the building's original steel windows, sealant replacement, installation of a new elastomeric coating to waterproof the building's concrete walls and decorative building elements, and repairs at the "widow's walk" cast steel balconies at the top floor of the building.

CHOOSING THE RIGHT MATERIALS

Mock-ups included the evaluation of substrate preparation for repairs and coating installation, adhesion testing, and sounding of the detail work at the building's decorative elements to maintain the unique historical character. These mock-ups ultimately evaluated the potential products to be used in the repairs.

The level of detail needed for the ornamental elements required a mixed palette of repair solutions that would ultimately extend the service life of the building. A low shrinkage concrete repair mortar was utilized for most of the wall and windowsill repairs and cast stone ornamental element restoration (Fig. 4). The repair mortar contained a corrosion inhibitor, which is crucial in a repair that had issues with water leakage causing corroding steel reinforcement.

In addition to the repair material, a cementitious bonding primer and corrosion inhibitor was utilized to protect the steel reinforcement. The original reinforcement in the structure was not sufficient to complete long-lasting repairs and required additional steel to be implemented in the repairs.

Fig. 1: Rebranded as the Ambassador Hotel

Fig. 2: Work area including roof tower walls

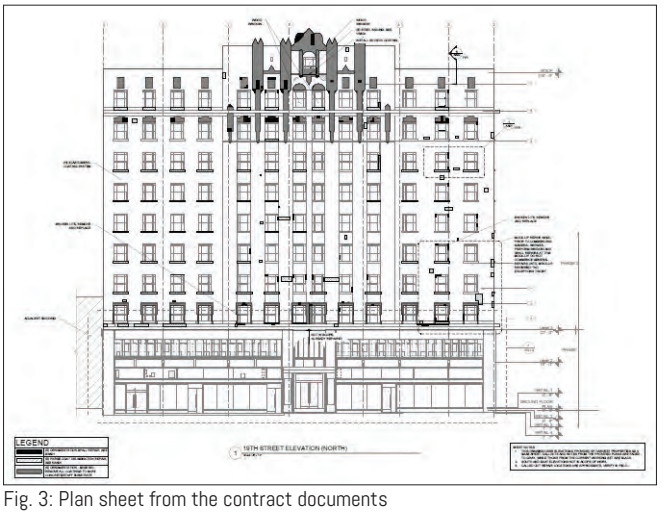

Fig. 3: Plan sheet from the contract documents

Fig. 4: Ornamental element restoration

Fig. 5: Securing reinforcing bars

Fig. 6: Elastomeric coating provides waterproofing and protection

In some instances, reinforcing bars were secured using an ultra-high-strength two-component epoxy adhesive anchor (Fig. 5).

FINISHING THE JOB: PROTECTING OAKLAND'S LANDMARK

With all the repairs implemented to the structure, the cosmetic appeal of the exterior and façade was addressed by utilizing a high-grade acrylic elastomeric coating, providing waterproofing and protection from the ingress of carbon dioxide and other aggressive gasses. After applying two coats of an anti-carbonation elastomeric coating, the façade has a high resistance to chlorides and water borne salts and has excellent UV light resistance (Fig. 6). In addition to the acrylic elastomeric coating, a low modulus hybrid sealant was used to seal multiple window fixtures and various details on the façade.

COVID-19 IMPACT: WORKING THROUGH THE PANDEMIC

In March 2020, the COVID-19 pandemic created a new reality for the global economy and across all industries. The Leamington project started in January 2020 and throughout the course of the pandemic, many guidelines and work restrictions were enacted to protect the general health of the population. This posed a problem in project planning efforts as work crews were essentially reduced to a fraction of what was normal to typical repair schedules due to social distancing guidelines.

The overall challenge of adhering to the new precautions did not stop the contractor from planning a workable schedule that allowed completion only a few months after its slated October completion date.

The Leamington Building

SUBMITTED BY
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Oakland, CA

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Lyndhurst, NJ

Tnemec Company, Inc.
Kansas City, MO

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AWARD OF EXCELLENCE

PARKING STRUCTURES CATEGORY

National Capital Bank

WASHINGTON, DC

SUBMITTED BY CONCRETE PROTECTION & RESTORATION, INC.

National Capital Bank

National Capital Bank is a full-service community bank headquartered on Capitol Hill in Washington, DC. Founded and built in 1889, it is Washington, DC's oldest bank, offering walk in and drive through service.

The project addressed various structural and waterproofing repairs across the property. Exterior brick and lintels showed wear from exposure to the elements. The existing surface lot—consisting of a post tension slab with asphalt overlay—showed visual signs of deterioration from years of heavy traffic. As a result, active leaking was experienced inside the bank's operating office space. Inside, the subgrade garage exhibited extensive spalling of the concrete deck, columns, and beams.

Work at the National Capital Bank occurred in two locations: the surface lot and garage. Repairs were scheduled to begin at both locations simultaneously. During the surface lot repairs, customers had to walk up to the two service windows that were previously drive-through operated. A full garage shutdown was needed for the wall-to-wall slab repairs inside the garage.

SURFACE LOT

Asphalt Removal

To expose the structural slab on the surface lot, 8,000 sf (740 sm) of asphalt was removed using loaders equipped with milling heads, taking care that the post tension deck below was not disturbed during demolition (Fig. 1).

Expectations were that a hot applied membrane would be found under the slab upon asphalt removal and the original design called for replacement of the hot applied membrane along with the asphalt topping. With only a thin asphalt topping found, there was concern that enough room existed to put back a hot applied membrane and a sufficiently thick layer of asphalt while still matching the existing elevations of various slabs on all elevations on all sides of the surface lot, as well as uncertainty about loading the deck with more weight.

The solution was to perform all structural repairs and install a urethane traffic coating in lieu of the hot applied membrane and asphalt. The coating system included an epoxy primer applied on the deck to level and smooth any divots on the structural slab as a result from the

asphalt removal, and a charcoal topcoat gave it a similar appearance to the removed asphalt.

Post Tension Repairs

With the asphalt removed, the condition of the structural slab on the surface lot was examined and about 600 sf (55 sm) of full depth concrete repairs were identified on the post tension deck. While the concrete was in slightly worse shape than expected, the condition of the exposed post tension tendons and end anchors were found to be in good shape with only 10 cables in need of repair. Once repairs were made to the tendons, they were poured back with the remainder of the full depth repairs and stressed (Fig. 2).

Loading Dock Repairs

Adjacent to the surface lot sits NCB's loading dock. Acting as a catch-all for deliveries, roll-off dumpsters, and various building maintenance equipment, the 1,000 sf (90 sm) slab experienced significant traffic over the years. Here, topping slab removal revealed an existing hot applied membrane. Following asphalt topping removal, focus shifted to various perimeter waterproofing/flashing details (Fig. 3). Against the building, courses of brick were removed to accommodate through-wall flashing. The opposite side was hand dug 3 ft (0.9 m) to expose the foundation wall and waterproofing applied 2 ft (0.6 m) down the foundation wall. The other two sides terminated at an expansion joint and at a curb at the loading dock door, respectively.

Perimeter Waterproofings and Flashings

150 ft (45 m) of perimeter foundation walls were waterproofed in a similar fashion as the loading dock foundation wall. While hot applied was used at the loading dock, the surface lot utilized a urethane traffic membrane. A urethane system was also applied on the foundation walls.

Several hundred feet of brick wall was waterproofed. Although the original detail called for through-wall flashing, an alternate design incorporated the urethane coating. A new curb was formed and poured along the bottom of the braced brick wall (Fig. 4) and waterproofing installed up the curb and onto the backing wall. This allowed water to shed off the wall while keeping the brick off the slab where standing water could degrade it over time.

PARKING GARAGE

Hydrodemolition/Partial and Full Depth Repairs

At the subgrade parking structure, wall-to-wall hydrodemolition was performed on the two elevated levels where severe delamination was visible on the top and bottom sides of the 10 in (250 mm) cast-in-place slabs. Hydrodemolition provided 4 in (100 mm) partial depth removal and exposed the upper mat of reinforcement (Fig. 5) and complete 26,000 sf (2415 sm) of repair. Extensive full

Fig. 1: Asphalt topping removal at surface lot

Fig. 2: Stressing repaired post tension tendon during structural slab repairs at surface lot

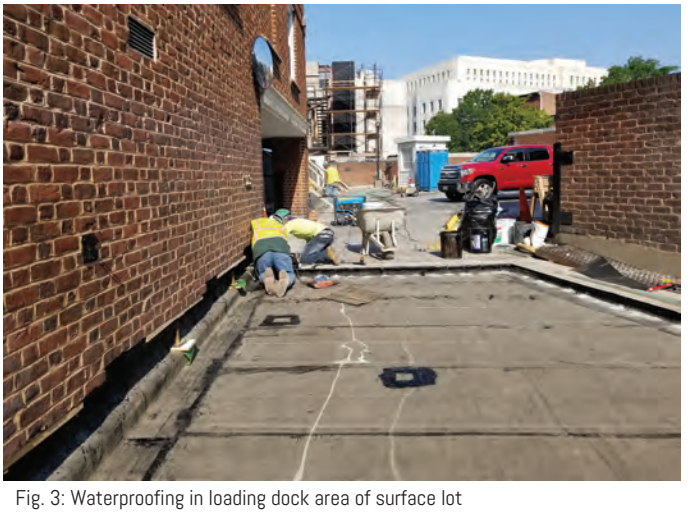

Fig. 3: Waterproofing in loading dock area of surface lot

Fig. 4: Formwork for new curb to aid perimeter waterproofing at the surface lot

Fig. 5: Garage slab surface after hydrodemolition

Fig. 6: Full depth slab repair areas in the garage

Fig. 7: Installation of topcoat for urethane traffic coating system in the garage

depth areas resulted (Fig. 6) and numerous diagonal braces were anchored into walls and columns where needed to provide support. Water from the hydrodemolition process was collected on the ground and pumped to a treatment center consisting of two dumpsters, caulked, and outfitted with baffles to allow particulates to settle out as water passed through each chamber, and CO2 was injected into the hydro water in the early stages of treatment to combat high pH levels.

Coating Installation/Waterproofing

Once sufficient cure time was reached with the repaired slabs, 25,000 sf (2320 sm) of urethane coating was applied to the slabs in the garage (Fig. 7). In addition, new light fixtures were installed and fresh paint applied.

National Capital Bank

SUBMITTED BY
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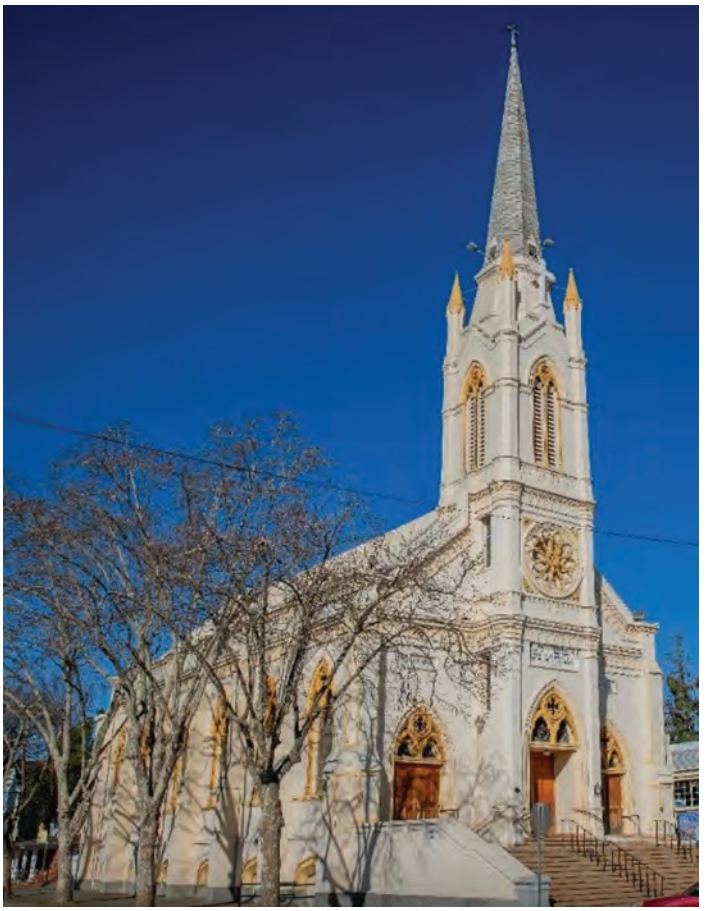
AWARD OF EXCELLENCE

SPECIAL PROJECTS CATEGORY

St. Joseph Catholic Church

MARYSVILLE, CA

SUBMITTED BY SIKA CORPORATION USA



St. Joseph Catholic Church

St. Joseph Catholic Church is located at 702 C Street in Marysville, CA, 40 miles north of Sacramento. With a 320-person seating capacity, St. Joseph's has remained a stable figure in the life of Marysville residents and is one of the oldest institutions in the Diocese of Sacramento. The parish of more than 1,700 families celebrated the Church's 165th anniversary this year.

When Marysville was a bustling Gold Rush hub, the city and its church were key players in the development to the Sacramento diocese. In 1852, the archbishop of San Francisco sent Father Peter Magagnotto to Marysville to set up a parish. That year, he built a small temporary church where St. Joseph's priest now lives. On September 16, 1855, the cornerstone of the current St. Joseph's church was laid, and by the next year, the parish opened.

Physically, the Marysville cathedral has changed little over the past century and a half, at least on the outside. Behind the large wooden doors, the sanctuary that exists is nearly unrecognizable when compared to its past incarnations (Fig. 1). Many features remain, such as the church's bell, cast in 1851 and the stained-glass windows imported from Germany in 1899. In 2000, the exterior of the building was painted using acrylic paint but after 20 years was in need of extensive repair (Fig. 2).

Over the years, the elements had taken a toll on the building. Some existing conditions identified

were a leaking roof, extensive cracking of the exterior façade, spalling of the concrete and plaster walls, the exterior paint contained lead and needed to be remediated, and the stained-glass windows had lead which needed to be removed and the windows repaired.

PROJECT FINANCING

Finances and support for religious institutions are arranged differently than other typical construction projects. The church has about 1,700 parishioners that regularly attend services. Church members collected $1 million over the years to help with the project. Earlier this year, parish leaders set out on a plan to raise the remaining $800,000 needed for the project.

Once the scaffolding went up, it was found that much of the exterior façade plaster had delaminated from the original brick walls, creating a huge surprise to the project team. Like any other project, this project had its share of surprises resulting in scope creep.

THE CONCRETE REPAIR STRATEGY

The repair strategy included a site survey to identify the deficiencies and understand the scope of work. Façade walls were sounded to locate delaminations. Failing paint would be removed by mechanical means and the façade would be adhered to the brick below. Cracks would need to be epoxy injected and spalls would require repair with a mortar. Once the repair work was done, the building would be protected with a surface applied corrosion inhibitor and a crack-bridging, waterproofing, elastomeric wall coating.

LEAD PAINT ABATEMENT AND PLASTER REPAIRS

Options for dealing with the lead-based paint and the delaminated plaster façade were discussed by the project team. To neutralize the lead-based paint, it was agreed to remove only the loose and flaking material and use a lead-blocking primer to encapsulate the lead paint. The delamination of the plaster façade was a bigger problem. The cost to remove the delaminated plaster and replace it would be cost-prohibitive. Instead, a two-component, 100 percent solids, structural epoxy was injected to spot-glue the veneer masonry back to the brick. The epoxy injection was done at very low pressure as not to blow out the plaster walls. Some test areas were performed and passed the adhesion tests, providing a durable solution within the budget.

GLASS REPAIRS

The stained glass had extensive cracking and had to be carefully removed and sent back to a glass repair studio in Ohio where it was repaired and reinstalled with safety glass in front to increase its protection. This tedious process required extreme care for the removal, repair, shipping, and re-installation of the glass panes.

SPIRE & STEEPLE REPAIRS

Replacing the steeple and spire which towered 100 ft (30 m) high presented another challenge. It was starting to lean

Fig. 1: 12 large stained-glass windows depict Saints and add beauty to the Sanctuary

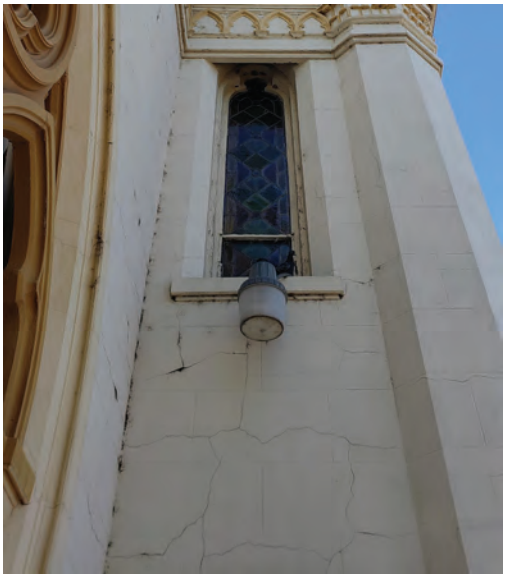


Fig. 2: Extensive cracking in the exterior plaster

Fig. 3: New cross being installed to the steeple

and was showing wear, so it had to be carefully removed with a tower crane. Once it was safely on the ground, it was deconstructed, and the new steeple trucked in and reinstalled (Fig. 3).

BUILDING FAÇADE WEATHERPROOFING

The building was washed to get rid of all dirt and mildew. To fill surface cracks, an elastomeric material was applied and smoothed with a putty knife. Spall repairs were completed using a fast-setting, one-component, cementitious vertical and overhead repair mortar. Once the repair work was completed, a one-component penetrating primer was applied to seal the surface and promote adhesion and two coats of elastomeric, crack-bridging, anti-carbonation, high performance wall coating installed (Fig. 4 through 7). The owner took this opportunity to update the color palette to match traditional church colors of the 1800s.

COVID-19 PRECAUTIONS

The COVID-19 pandemic made for its own set of challenges. Extra precautions had to be taken to keep the workers and community safe and avoid costly shutdowns. One benefit of the pandemic was that the Governor had suspended all in-church gatherings which meant that the contractors did not have to work around the normal daily church activities. The owners are looking forward to COVID-19 restrictions being lifted and allowing its parishioners to return to inside worship where everyone can enjoy the beautiful new Sanctuary.

Fig. 4: Scaffolding erected with tarps to prevent overspray and direct sunlight

Fig. 5: Finished facade exterior

Fig. 6: Side view of the newly restored and painted church

Fig. 7: Completed exterior at church entrance

St. Joseph Catholic Church

SUBMITTED BY
Sika Corporation USA
Lyndhurst, NJ

OWNER
Roman Catholic Diocese of Sacramento
Marysville, CA

PROJECT ENGINEER/DESIGNER
Wood Rodgers, Inc.
Sacramento, CA

REPAIR CONTRACTOR
Capital Industrial Restoration
Rancho Cordova, CA

MATERIALS SUPPLIER/MANUFACTURER
Sika Corporation USA
Lyndhurst, NJ

AWARD OF EXCELLENCE

TRANSPORTATION CATEGORY

The Don Cesar Entrance Bridge and Ramp Repairs

TAMPA BAY, FL

SUBMITTED BY TADJER-COHEN-EDELSON ASSOCIATES, INC.

The Don Cesar Resort

The Don Cesar is a historic beachfront resort located along the gulf coast of Florida near Tampa Bay. The iconic resort opened in 1928. The building design features elements of Moorish and Mediterranean style architecture with terraces, arched openings, ornamental balustrades, and rooftop copulas. The reinforced concrete and masonry structure was constructed on a foundation system consisting of a large floating concrete pad over upside-down pyramid footings.

Often referred as the "Pink Palace," the resort was a playground for the elite and celebrities such as F. Scott Fitzgerald, Al Capone, and Lou Gehrig during the Gatsby Era. In 1942, the United States Army purchased the property to serve as a World War II hospital for wounded veterans returning from battle. The building was abandoned and fell into a state of disrepair following the war.

The Don Cesar was saved from demolition, reopened as a full-service resort and added to the National Register of Historic in 1973. The hotel is still in service today providing a popular vacation destination in a landmark property.

RAMP AND BRIDGE STRUCTURE

A large bridge and ramp structure was built in the early 1970s to provide vehicular and pedestrian access over Gulf Boulevard, the main artery for St. Pete Beach, to the main hotel entrance lobby situated at the second floor of the building (Fig. 1).

The 72 ft (22 m) wide bridge is accessed from a sloped ramp located within the surface parking area on the opposite side of the roadway and consists of large precast prestressed concrete girders supported by reinforced concrete piers. The main bridge span is 86 ft (26 m) over Gulf Boulevard with two shorter 15 ft (4.5 m) spans on each side.

The bridge deck is corrugated metal decking with poured concrete slab and precast pavers on a

sand setting bed. The elevated segment of the ramp structure incorporates rectangular solid precast concrete planks with unbonded prestressed tendons spanning over conventionally reinforced concrete beams and columns.

STRUCTURAL DETERIORATION

The bridge and ramp structure experienced deterioration of structural and ornamental components after nearly 50 years in service. Prolonged exposure to the marine environment coupled with numerous hurricanes and floods caused extensive corrosion and delamination of the main precast prestressed concrete planks and supporting bridge piers and columns. Emergency shoring was installed in the rooms below the elevated ramp and was left in place until repairs could be performed (Fig. 2). The original waterproofing system failed, allowing water migration through the deck to areas below and precast pavers were settled and cracked from vehicular use. The concrete balustrades along the edges were cracking, delaminating, and posed a fall safety hazard to the roadway and sidewalks below.

FORENSIC INVESTIGATION AND REPAIR

In the absence of original drawings, the forensic investigation involved a detailed field survey to measure and document the exposed structural members and other bridge components for overall layout. A preliminary set of drawings was generated as a basic working set to be revised after the investigation phase.

Several exploratory openings were made through the ramp and brick decks to expose the various topping materials, check the presence of membranes, and expose underlying structural members. Ground penetrating radar (GPR) scanning was used to help determine the type of precast elements and concealed reinforcing. Dust samples were extracted from concrete members to determine the chloride content and methods to mitigate future corrosion.

Based on the conditions, some of the severely deteriorated precast planks needed to be replaced and the remaining planks would be repaired in place. New precast planks required load analysis and design for emergency vehicles to access the hotel. The repair program for the remaining planks involved shoring, concrete removals to expose damaged tendons, repairing tendons and adding mild reinforcing, applying overhead repair mortar, and strengthening using a carbon fiber reinforced polymer (CFRP) system from below (Fig. 3). Adhesion testing was performed to ensure bonding of the CFRP system.

CONSTRUCTION AND PROJECT CHALLENGES

The repair program was scheduled for a six-month period in Summer/Fall 2020 with the hotel being operational throughout construction. Because the main entryway and lobby access was closed, a temporary hotel entrance and guest drop-off area was required at another part of the property. Furthermore, the repairs needed to coincide with a guestrooms renovation—with all work completed by Thanksgiving holiday for a grand reopening event.

Fig. 1: Original construction of bridge and ramp in 1972

Fig. 2: Deteriorated precast prestressed ramp planks and spandrel beams at the elevated ramp structure with shoring

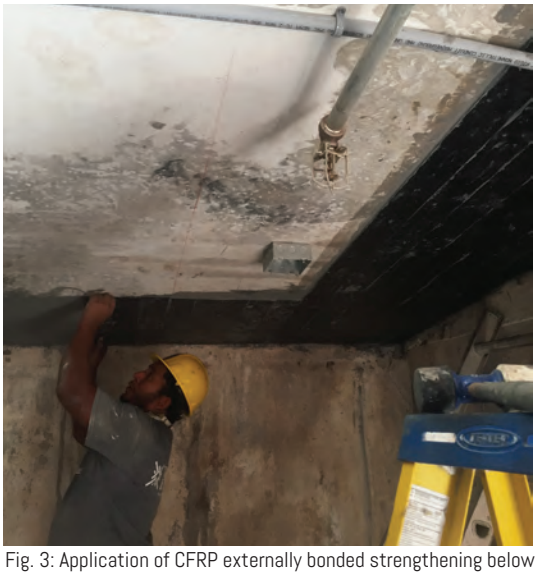


Fig. 3: Application of CFRP externally bonded strengthening below the existing repaired precast planks

Because all traffic lanes had to remain open during construction, a large scaffolding system was needed to serve as a working platform and to catch debris (Fig. 4). For historic approval due to the registered landmark, new balustrades and handrails had to be designed and engineered to closely match the original while meeting current Florida Building Code.

The work required 100 percent removal of all topping elements to expose the structural members for repairs and waterproofing application (Fig. 5). This included all planters, sidewalks, light fixtures, curbs, water feature, balustrades, and pavers. The water runoff from elevated surfaces had to be captured, ph-neutralized and sediment removed before returning to storm drainage. Extensive concrete repairs were required on the deck and supporting concrete members. A portion of the lower ramp slab was removed and the soil below excavated for concrete repairs and waterproofing (Fig. 6). Exterior walls and exposed concrete members were painted with protective vertical coating system with custom color to match the main hotel. The completed repair project at the bridge and ramp is shown in Figure 7.

Fig. 4: Wide scaffolding installed over the road to serve as a working platform and debris control

Fig. 5: Ariel view of completed structural repairs and waterproofing application on the bridge and ramp

Fig. 6: Excavated area and waterproofing application on the rear foundation wall near the middle of the ramp

Fig. 7: Completed bridge and ramp repair project

The Don Cesar Entrance Ramp and Bridge Repair

SUBMITTED BY
Tadjer-Cohen-Edelson Associates, Inc.
McLean, VA

OWNER
Host Hotels & Resorts, Inc.
Bethesda, MD

PROJECT ENGINEER/DESIGNER
Tadjer-Cohen-Edelson Associates, Inc.
McLean, VA

REPAIR CONTRACTOR
Complete Property Services, LLC
Tampa, FL

MATERIALS SUPPLIER/MANUFACTURER
Sika Corporation USA
Lyndhurst, NJ

AWARD OF EXCELLENCE

WATER STRUCTURES CATEGORY

Repair and Protection of a 1950s-era Wastewater Digester Tank Structure: Gold Bar Digester No. 3

EDMONTON, ALBERTA, CANADA

SUBMITTED BY RJC ENGINEERS

Wastewater Treatment Plant: Gold Bar Digester No. 3

Wastewater Treatment Plant (WWTP) repair and restoration projects can present uniquely challenging environments and the Gold Bar Digester No. 3 was no exception. At the Gold Bar WWTP, the plant completed process improvements to Digester No. 3 during one of the maintenance and facility upgrade programs, which required the digester to be taken out of service for an extended time. Although no sewage leakage had been previously observed, after the process upgrades were completed, the digester had to pass a hydrostatic tightness test using treated water before it could be returned to active service with sewage.

Unexpectedly, the digester did not meet this water tightness criteria (Fig. 1). To ensure that the digester met all regulatory and American Concrete Institute (ACI) requirements, the WWTP management immediately implemented a plan to investigate, design, and undertake a suitable concrete and leakage repair program that would serve the facility into the future.

One of the original structures at the Gold Bar WWTP, Digester No. 3 (circa 1955) is constructed of reinforced concrete and is approximately 100 ft (30 m) in diameter. It has a sloped conical-shaped floor, a circular perimeter wall approximately 31 ft (9.3 m) high and is enclosed with a roof slab. The bottom two-thirds of the digester are buried below-grade, while the remaining wall portions are either exposed to the exterior or shared with other buildings or interior access tunnels serving the plant. Along with the perimeter wall, twelve concrete columns support the roof structure from inside the digester's interior.

DIAGNOSIS PHASE

As part of recent upgrades, a High-Density Polyethylene (HDPE) liner assembly had been installed on the upper portions of the interior wall surfaces and the underside of the roof structure. The HDPE liner was thoroughly tested during installation; therefore, it was generally assumed that the leakage was not occurring through this new liner, and the investigation and leakage repair

program targeted solely the 1950s-era concrete wall and floor surfaces below.

To establish the potential sources of water leakage and the extent of any associated concrete repair required prior to waterproofing, an inspection of the digester's interior surfaces uncovered numerous concrete issues including cracking, cold joints, loose form-tie hole plugs, large areas of poorly consolidated and non-encapsulated aggregate (honeycombing), and void-ridden pour joints with debris embedded at the interface (Fig. 2). None of these conditions were determined to be the sole source of leakage, but all were considered during the design of the new coating.

Prior to specifying and developing details for the coating, structural analysis determined that the as-constructed reinforcing steel in the digester wall was close to "on-par" with current concrete reinforcement provisions. However, thermal and structural modelling determined that the digester wall was prone to significant temperature-related stresses and cyclical/seasonal movements, due to both the internal process and exterior environment.

Additionally, based upon the interior inspection and assessment, it was considered that the pre-existing coal tar coating (Fig. 3) was likely providing some level of waterproofing and concrete protection; however, the hydrostatic water tightness testing demonstrated that the coal tar assembly was no longer providing full waterproofing or containment, which was likely the consequence of its extended service life. The observed conditions substantiated the baseline water tightness testing results and aided in defining the potential sources of leakage and repair objectives.

REPAIR EXECUTION

The structural repair and protection program was implemented in two phases. During the first phase, scaffolding was constructed inside the digester for the cleaning, concrete repair, substrate preparation, and coating application on the lower 21 ft (6.3 m) of interior vertical wall surfaces, up to the underside of the recently installed HDPE liner (Fig. 4).

Once the wall coating application was completed, reviewed, and tested for conformance with project specifications, the scaffolding was deconstructed and floor surface cleaning, repair, preparation, and coating application proceeded into the second phase.

Surface preparation was performed by heavy abrasive blasting to fully remove the existing coal tar coating. This surface preparation method resulted in a rough substrate with a Concrete Surface Profile (CSP) greater than 5 for the 23,600 sf (2,200 sm) of coating application area. Concrete surface pH testing was performed to confirm that the concrete substrates had been adequately cleaned of bond-inhibiting contaminants before proceeding with concrete repair and resurfacing (Fig. 5).

A pre-packaged mortar mix was applied to resurface and reprofile the substrate, effectively filling all the "peaks and valleys" of the abrasively blasted concrete and provided a uniformly textured substrate similar to CSP 3, which was the required surface profile for the coating application.

After priming the resurfaced substrate, a flexible polyurethane coating was applied using a heated, plural component

Fig. 1: Original construction of bridge and ramp in 1972

Fig. 2: Wood debris embedded at pour joint interface

Fig. 3: Partially removed pre-existing coal tar coating

sprayer to the specified dry film thickness, 100 mils (2.5 mm). As a safety consideration for future maintenance and cleaning work, granular quartz was seeded into the wet floor coating for slip-resistance on the sloped surface, with a subsequent tie-coat application to encapsulate the quartz.

Fig. 4: Access scaffolding set up inside the digester

Fig. 5: Determining substrate concrete surface profile (CSP) and pH testing

Fig. 6: Failure in original substrate during adhesion strength pull-off testing

In addition to the contractor's Quality Control and the on-site technical review and support from the material suppliers, Quality Assurance (QA) testing included thickness, adhesion strength pull-off testing, and holiday/spark testing (Fig. 6 and 7).

Upon completion of the interior coating program, hydrostatic testing was again performed using treated water, and the digester passed with no measurable water loss.

CONCLUSION

The Gold Bar Digester No. 3 repair solution prevented leakage, protected, and extended the life of the existing concrete structure, and provided the facility management and operations team with confidence that their asset's operational performance will meet all regulatory and plant requirements.

Fig. 7: Holiday/spark testing

Repair and Protection of a 1950s-era Wastewater Digester Tank Structure: Gold Bar Digester No. 3

SUBMITTED BY
RJC Engineers
Edmonton, Alberta, Canada

OWNER
EPCOR Water Services, Inc.—Gold Bar WWTP
Edmonton, Alberta, Canada

PROJECT ENGINEER/DESIGNER
RJC Engineers
Edmonton, Alberta, Canada

REPAIR CONTRACTOR
Sure-Form Contracting Ltd.
Edmonton, Alberta, Canada

MATERIALS SUPPLIERS/MANUFACTURERS
The Sherwin-Williams Company, Inc.
Cleveland, OH

Sika Canada, Inc.
Quebec, Canada

AWARD OF EXCELLENCE

WATER STRUCTURES CATEGORY

Extending the Service Life of Oil Docks at Port of Corpus Christi

CORPUS CHRISTI, TEXAS

SUBMITTED BY VCS, INC.

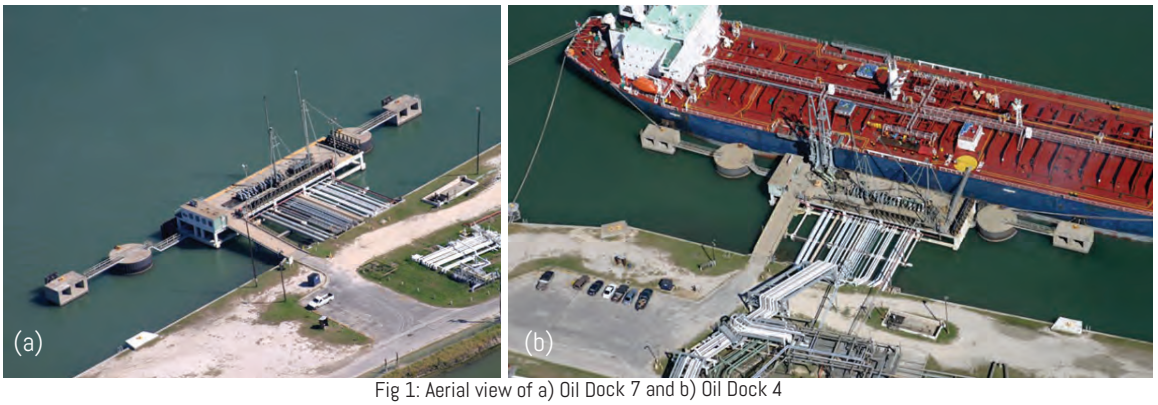


Fig 1: Aerial view of a) Oil Dock 7 and b) Oil Dock 4

In 1920, the United States Congress authorized the Army Corps of Engineers to conduct a feasibility study to recommend a location for a new deep-water port. In 1926, the Port of Corpus Christi located in Corpus Christi, Texas, was conceived. Fast forward almost 100 years and the port once used for the exportation of cotton is now the nation's second largest port based on exportation of crude oil. Today, the Port of Corpus Christi has become a multifaceted port with cargo docks, liquid docks, bulk terminals, and storage and warehouses. The Port is also equipped with 15 docks developed for its various capabilities including the loading and unloading of liquid natural gas (LNG) and crude oil.

Two reinforced concrete structures at the Port, Oil Docks 4 and 7 (Fig. 1), are the focus of this project. Each dock is supported by reinforced concrete columns and beams comprised of two levels. The upper level serves as the primary loading/unloading area for inbound and outbound oil tankers and the lower level provides a walkway and framing for the dock and access to the many incoming oil pipelines (Fig. 2).

In 1993, the Port's asset management division installed an arc spray zinc (ASZ) galvanic cathodic protection (GCP) system to mitigate corrosion activity and protect the two docks' reinforced concrete elements from further deterioration. In 2019, 26 years after the installation of the original GCP system, Oil Docks 4 and 7 again began to show signs of concrete deterioration (Fig. 3) due to the original ASZ system no longer providing protection to the oil docks. An ASZ system typically has a service life between 10–20 years depending on the exposure environment, with a coastal environment being the most aggressive on the CP service life.

REHABILITATION STRATEGY

The Port originally decided to extend the service life of the docks by installing a new ASZ cathodic protection system along with other dock upgrades such as a new pipe lift. Due to limited work windows and the installation nature of ASZ, most bids came in much higher than anticipated and ASZ was not a feasible option for the Port to pursue.

A value-engineered alternative was then proposed utilizing drilled-in two-stage anodes that provide both impressed current cathodic protection (ICCP) and GCP. The anode is comprised of an internal power supply which is utilized in the first stage to polarize the structure using ICCP. The initial charge output is designed to passivate the active corrosion and build up a protective alkaline environment around the

reinforcement. The anodes then autonomously switch to a second stage which utilizes an alkali-activated zinc component to provide protective current and maintain the steel passivation for the remainder of the anode service life. The existing ASZ CP system could also be left in place, which added to the cost-saving benefits on this CP system.

The value-engineered services and newly proposed CP system saved the Port approximately US $1.6 million in overall project cost, maintained the proposed completion schedule, and further extended the service life of the oil docks that would have been achieved with ASZ.

PROJECT SCOPE

The work began by redesigning the cathodic protection system to last 25 years using two-stage anodes along each beam and column supporting the oil dock structure. Due to the structural design of the docks, each group of beams and columns had varying rebar quantities at various spacing, hence each group of beams and columns had to be thoroughly analyzed using the original as-built drawings so that an appropriate anode spacing for each element could be calculated to provide adequate protection against corrosion. Anodes were designed to be installed in the vertical faces of each element and based on the original ASZ CP design criteria. Several beams/columns on each oil dock were selected for monitoring the performance of the CP system.

The installation of the two-stage CP systems consisted of the following:

1. Drilling 2 in (50 mm) diameter by 5 in (125 mm) deep holes at specified locations (Fig. 4).
2. Identifying reinforcing steel in the anode zone and removing 3 in (75 mm) by 3 in (75 mm) areas of concrete to expose rebar and creating a rivet connection to the reinforcing bar to establish structure connection (Fig. 5).
3. Connecting each anode to the common header wire via a sealed button connection with each end of the common header redirected to the test station via the common chase.
4. Grouting in two-stage anodes (Fig. 6).
5. Installing a silver-silver chloride reference anode in the monitored beam/columns and redirecting wire to the test station via the common chase (Fig. 7).
6. Grouting all wires inside the common chase.

Each dock was equipped with 14 test stations to monitor the performance of the CP system after completion of installation. Using the 14 test stations, a total of 36 zones (consisting of beams and columns) were monitored on each dock.

Fig. 2: Incoming oil pipelines into lower level of oil dock


Fig. 3: Visible concrete deterioration


Fig. 4: Drilling anode holes

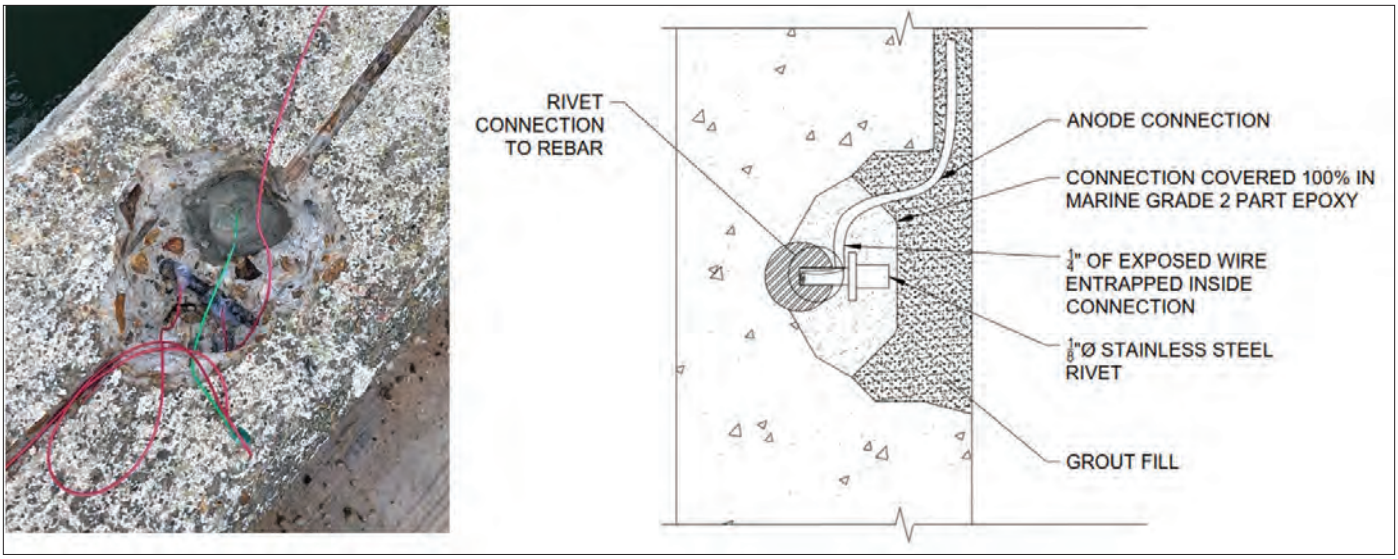


Fig. 5: Establishing structure connections

Fig. 6: Grouting in two-stage anodes

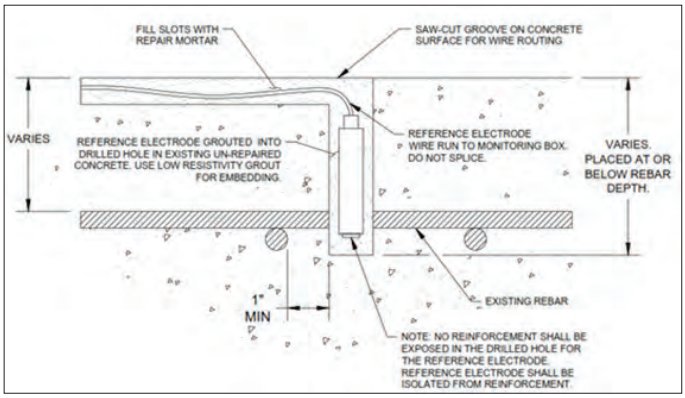


Fig. 7: Installation of reference anode

SUMMARY

Over a period of 6 months, over 3,000 two-stage anodes were installed into the beams and columns to extend the service life of Oil Docks 4 and 7. Both oil docks are currently active and fully operational without any signs of active corrosion, and anode monitoring shows the system is functioning as designed. There were many challenges to the project; however, the construction activities did not affect the berthing and loading/unloading of the inbound or outbound oil tankers and the Port was ultimately able to keep the oil docks operational throughout the construction phase and continue to be one of the nation's most important ports.

Extending the Service Life of Oil Docks at Port of Corpus Christi

SUBMITTED BY
VCS, Inc.
Tampa, FL

OWNER
Port of Corpus Christi
Corpus Christi, TX

PROJECT ENGINEER/DESIGNER
VCS, Inc.
Tampa, FL

REPAIR CONTRACTOR
Vector Construction, Inc.
Cedar Rapids, IA

MATERIALS SUPPLIER/MANUFACTURER
Vector Corrosion Technologies, Inc.
Frankfort, KY

AWARD OF MERIT

HISTORIC CATEGORY

Historical Restoration of Newtown Turnpike Bridge

NEWINGTON, CONNECTICUT

SUBMITTED BY THE EUCLID CHEMICAL COMPANY

Merritt Parkway is the first divided limited access highway in Connecticut, and one of the most unique and historically significant highways in the United States. The roadway was designed to combine the beauty of a parkway with the function of a limited access highway. This design aesthetic is evidenced by the architecturally diverse bridges of the Merritt Parkway, which were inspired by the Art Deco and Art Moderne architectural styles of the 1930s. Their elaborate and unique design makes Merritt Parkway bridges distinctive, and poses unique challenges when restoration is required. The Newtown Turnpike Bridge is one of the rare arch bridges on the parkway. It carries an old route dating back to 1829, built to connect farms in the north to southern ports in Norwalk, CT. The Newtown Turnpike Bridge suffered severe deterioration over the years, necessitating the encasement of the bridge with wood planks in 2015. In August 2018, rehabilitation work on the bridge began and included upgrades to pavement, guiderail, drainage, and historic concrete.

This ICRI Project Award Submittal focuses on the historic restoration of the Newtown Bridge's cast stone walls, arches, abutments, and decorative corbels. Because the project specification required that the repairs replicate the original cast stone, 3D imaging equipment was employed to scan and digitize the architectural surface of the bridge structure.

Gang forms for the bulk of the work were used. The contractor's carpenter crews often reviewed the bridge's 1939 engineering drawings and carefully followed the original layout to place block liners accordingly. Every new cast stone unit was placed exactly where its 1939 equivalent had been. To replicate the color, the restoration team spent months developing and testing various shades of a transparent stain that satisfied the Connecticut Department of Transportation as well as the Merritt Parkway Conservancy. Because no lane closures or other disruption to traffic were allowed during the day, most concrete pours took place at night.

Historical Restoration of Newtown Turnpike Bridge

SUBMITTED BY
The Euclid Chemical Company
Cleveland, OH

OWNER
Connecticut Department of Transportation
Newington, CT

PROJECT ENGINEER/DESIGNER
Connecticut Department of Transportation
Newington, CT

REPAIR CONTRACTOR
Manafort Brothers
Plainville, CT

MATERIALS SUPPLIER/MANUFACTURER
The Euclid Chemical Company
Cleveland, OH

AWARD OF MERIT

INDUSTRIAL CATEGORY

Prill Tower Repair Extends Service Life

LIMA, OHIO

SUBMITTED BY PULLMAN

An Agricultural/Pharmaceutical client with a concrete prill tower that was more than 50 years old needed repairs to extend the service life of the asset by 20 years and address critical safety concerns. A comprehensive condition assessment showed thermal freeze/thaw exposed aggregates and reduced coverage of reinforcing steel. Components of the exterior pond deck system were found in need of demolition and replacement. The contractor was awarded this project due to the firm's expertise in concrete repair, in-house engineering capabilities and over a century of innovation working at heights on industrial chimneys. Using a custom-designed suspended work deck, as well as other custom elevated access systems, the crew meticulously removed sections of the spray head floor system.

This project was challenging due to the pace of the work schedule, and the quick responses required to address changed conditions. Working around the clock, there was little "down time" to review issues. The team had to execute the base scope as they developed the additional repair scope, while maintaining the project and QAQC controls and progressive Engineering of the project. The client stayed well informed during the whole process and worked with the onsite Project Manager and Construction Management team to make decisions in a timely manner to reduce impact of the schedule and costs.

The team's construction expertise ensured concrete repairs met a high standard of quality. The execution of the field work was a collaborative effort, which involved system-wide support from the contractor's entire organization. During repairs, additional deterioration of the structure was discovered. After defining, planning, and sourcing the necessary materials, the team executed the additional strengthening required to return the structure to surface. These repairs have provided a long-lasting solution that will benefit the client for many years.

Prill Tower Repair Extends Service Life

SUBMITTED BY
PULLMAN
Kansas City, MO

OWNER
Nutrien
Lima, OH

PROJECT ENGINEER/DESIGNER
PULLMAN w/ STRUCTURAL TECHNOLOGIES
Kansas City, MO

REPAIR CONTRACTOR
PULLMAN
Kansas City, MO

MATERIALS SUPPLIER/MANUFACTURER
Sika Group
Leawood, KS

AWARD OF MERIT

LONGEVITY CATEGORY

Arizona Dam Spillway Repair Project

PHOENIX, ARIZONA

SUBMITTED BY GERVASIO & ASSOC. INC.

This is a concrete repair project of two spillway structures on a hydroelectric dam site in Arizona. Repairs were performed in 2002-2003 and received the ICRI Award of Excellence in 2003. The project is significant due to the remote location, extremely difficult access, and the multitude of materials and processes specified and used. The dam site is in a remote area, a 1-1/2-hour drive from civilization. The spillways are situated on sheer rocky 200 ft. high cliffs with the only access from the top of the dam. Significant Alkali Silica Reactivity (ASR) was occurring, causing excessive cracking, leading to corrosion and spalling.

The investigation accessed all parts of the structure using a specialty rope access contractor to determine the extent of deterioration. Specifications were written to allow the contractor the option of many different repair materials and processes for the concrete patching. Lithium was used to treat existing ASR as well as prevent new ASR from occurring at the repair areas. Construction began in summer with temperatures on the spillway slab over 130° F, continuing through freezing winter temperatures.

Arizona Dam Spillway Repair Project

SUBMITTED BY
Gervasio & Assoc. Inc.
Phoenix, AZ

OWNER
Salt River Project
Phoenix, AZ

PROJECT ENGINEER/DESIGNER
Gervasio & Assoc. Inc.
Phoenix, AZ

REPAIR CONTRACTORS
Truesdell Corp
Tempe, AZ

MATERIALS SUPPLIER/MANUFACTURER
Sika
Lyndhurst, NJ

Euclid Chemical Company
Cleveland, OH

With a rope access contractor, scaffolding was constructed off of the rocky cliffs accessing all parts of the structure. Chipped-off concrete material had to be collected and dumped off-site. Dry process shotcrete was used for the patching repairs, as well as epoxy crack injection, polyurethane foam injection, lithium treatments for the ASR, and epoxy flood coats. Truly an unusual project. Water continues to “seep” through the spillway gates due to thermal expansion and contraction of the structures today. This caused the original deterioration. Despite this ongoing water seepage, the repairs show no signs of corrosion cracking and spalling 18 years after the repairs were complete. These repairs demonstrate that even extremely difficult repairs can achieve longevity.

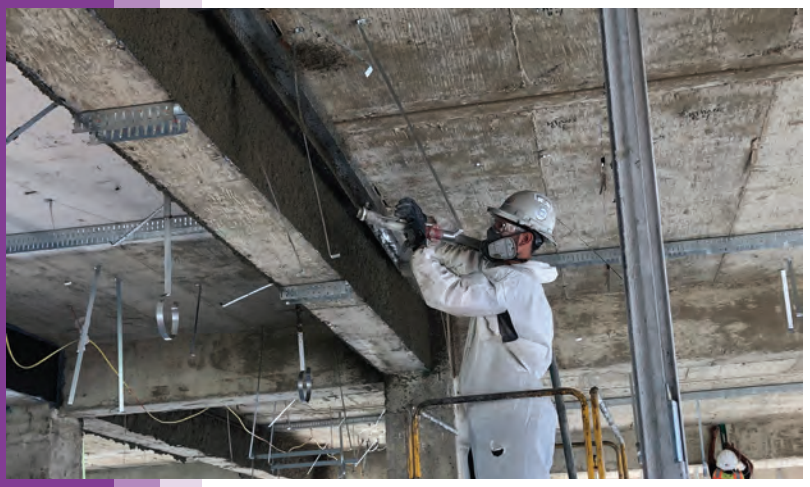
AWARD OF MERIT

LOW-RISE CATEGORY

SSA Arthur J. Altmeyer Building

BALTIMORE, MARYLAND

SUBMITTED BY SIKA CORPORATION USA



The Social Security Administration (SSA) is an independent agency of the U.S. federal government and the largest social welfare program in the United States. Headquartered in Woodlawn, Maryland, the SSA complex sprawls across 34 acres and includes multiple buildings. One of those buildings is the 10-story, 181,662 sf Arthur J. Altmeyer building which serves as SSA's main facility and houses the SSA Commissioner, SSA executives, and support staff. Located at the edge of the campus on Security Boulevard, the Altmeyer building is the face of the Woodlawn Campus. Built in 1959, the building had not been upgraded in decades and as such, it was becoming costly to maintain. To improve the appearance of the campus, optimize its use, and improve its energy efficiency, the SSA began a full building modernization in 2018. The project scope included stripping the building down to the existing reinforced concrete frame, strengthening it, and replacing the exterior cladding, interior finishes, and MEP systems. Various building systems such as stairways and elevators were also re-configured to suit building code requirements and the desired revised layout. The total cost of the project was $150 million.

The structural strengthening of the building did not go without a hitch. The timeline of the project was very tight with very little room for any delays. As such the building upgrades were occurring simultaneously with the strengthening work. In addition, the strengthening work had to be done before the glass façade was installed to prevent any damage to the glass. The FRP specialty contractor had to constantly manage the pressure to stay ahead of all trades and successfully did so with proper communication with all teams involved.

The adaptive reuse of the building saved taxpayers nearly $13 million and was feasible because of technologies such as CFRP, which allowed the successful structural strengthening of the building. The strengthening process included preparing the surface of the concrete, priming it with epoxy, and installing the carbon fiber fabric. The final step in the installation was fireproofing the strengthened members or coating them to match the surrounding substrates.

SSA Arthur J. Altmeyer Building

SUBMITTED BY
Sika Corporation USA
Lyndhurst, NJ

OWNER
Social Security Administration
Baltimore, MD

PROJECT ENGINEER/DESIGNER
B Squared Engineering
Ventnor, NJ

REPAIR CONTRACTORS
SGS, Inc.
Riverdale, MD

MATERIALS SUPPLIER/MANUFACTURER
Sika Corporation USA
Lyndhurst, NJ

AWARD OF MERIT

PARKING STRUCTURES CATEGORY

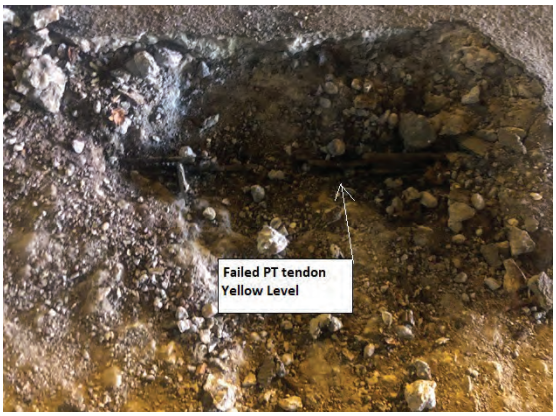
6th Street Parkade Post-Tensioning Retrofit

BISMARCK, NORTH DAKOTA

SUBMITTED BY VECTOR CONSTRUCTION, INC.

The 6th Street Parkade, built in the late 1960s, is located in downtown Bismarck, North Dakota, on Sixth Street and Broadway. The structure contains 432 parking spaces spread over six covered levels and the rooftop level. During the winters, vehicles track de-icing salts, picked up from the roadways, up the entrance ramp and into all levels of the parking structure and deposit them on the reinforced concrete slab. Over time and despite periodic maintenance, the original traffic coating had deteriorated—allowing chloride ions from the de-icing salts to migrate down to the reinforcing steel and paper-wrapped post-tensioning initiating active corrosion resulting in concrete deterioration in the ramp and more concerning section loss of the post-tensioning strands in the slab. In 2014, a corrosion assessment was done on the entrance ramp, it revealed significant areas of active corrosion. Based on the assessment, the structural engineer developed plans and the work went to tender and this scope was completed in 2015.

During the repairs on the entrance ramp, there were observed protruding PT tendons from the ceiling of the Yellow Level. After an evaluation in the spring of 2016, the damaged button-head tendons that were found were spliced into a monostrand system to restore capacity and strength in the slab. In 2019, another robust investigation was conducted on all levels of the parkade. Corrosion testing showed high levels in the drive lane extending from the entrance ramp and a number of tendons were damaged beyond repair. In 2020, the work began to retrofit the slab on the yellow level with new monostrand PT tendons and finish with a traffic deck coating to prevent further moisture. The parkade project was a challenging and unique project as this parkade is one of three main parking structures in downtown Bismarck.



6th Street Parkade Post-Tensioning Retrofit

SUBMITTED BY
Vector Construction, Inc.
West Fargo, ND

OWNER
Rocky Gordon and Company
Bismarck, ND

PROJECT ENGINEER/DESIGNER
Walker Consultants
Hoffman Estates, IL

REPAIR CONTRACTOR
Vector Construction, Inc.
West Fargo, ND

MATERIALS SUPPLIERS/MANUFACTURERS
Dywidag Systems, Inc.
Bolingbrook, IL

Prairie Supply
Bismarck, ND

AWARD OF MERIT

PARKING STRUCTURES CATEGORY

Dallas City Hall Plaza Parking Garage Repairs

DALLAS, TEXAS

SUBMITTED BY JQ ENGINEERING, LLP

The Dallas City Hall Parking Garage sits under a large, landscaped plaza in front of an iconic I. M. Pei-designed building. The garage structure consists of bonded post-tensioned flat slabs with unreinforced drop panels supported by conventionally reinforced circular columns with conically flared capitals. The upper slab of the garage is sloped and stepped to promote drainage and address changes in surface amenities. This also results in significant variations in soil fill depths as the upper topography also varies greatly. The parking structure is overlain by two city streets and various site amenities including multiple mature trees, emergency access fire lanes, assembly areas, sculptures, and a pool with fountains. The varying depths of soil and diverse site features create large variations in the loading imposed on the garage. Based on the failure of a large section of a drop panel which became detached unexpectedly, a structural assessment was ordered for the two-level, 600,000 sf below-grade parking structure serving Dallas City Hall.

Repairs were developed to strengthen the existing slab and supporting columns and to repair cracking and delaminations in the slab and columns caused by the significantly overloaded conditions. Sequencing of the repair work was also incorporated into the design to allow for the continued operation of the parking structure as it is the sole available space for City Hall staff parking. This project and the techniques used for evaluation have provided the basis for several continuing educational courses presented to engineers across the nation.

The finished, repaired, and improved Dallas City Hall Plaza Parking Garage serves a vital role. Providing ample parking for employees of City Hall, the underground garage keeps the beautiful plaza available for pedestrian, event, and citizen use. Through thoughtful and cost-effective design and thorough testing before and throughout construction, the city can rest assured that the garage is secure for use for decades to come.

Dallas City Hall Plaza Parking Garage Repairs

SUBMITTED BY
JQ Engineering, LLP
Dallas, TX

OWNER
City of Dallas
Dallas, TX

PROJECT ENGINEER/DESIGNER
JQ Engineering, LLP
Dallas, TX

REPAIR CONTRACTOR
Structural Technologies
Fort Worth, TX

MATERIALS SUPPLIERS/MANUFACTURERS
BASF/Master Builders
Coppell, TX

Lattimore Materials Company
McKinney, TX

AWARD OF MERIT

SPECIAL PROJECTS CATEGORY

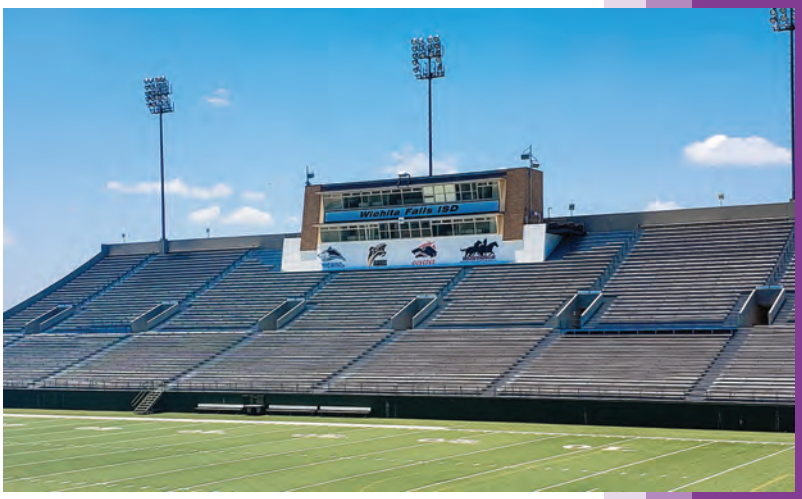
Wichita Falls ISD Memorial Stadium Assessment and Repairs

WICHITA FALLS, TEXAS

SUBMITTED BY JQ ENGINEERING, LLP

After 50 years of exposure to Texas weather, the Wichita Falls Independent School District's Memorial Stadium needed major repair. The 14,500-seat stadium was constructed in the early 1970s with monolithic cast-in-place concrete treads, risers, and raker beams on concrete columns and shallow foundations. The original construction drawings provided by the District showed concrete sections and reinforcing in the structure. Over the years, water had penetrated the exposed concrete surfaces, rusted the reinforcing steel, and delaminated or spalled concrete cover in numerous locations in the elevated seating structure. Additionally, volume changes due to a wide range of Texas temperatures and expected movement of the shallow foundation system contributed to failures of spandrel beams. The District was concerned that the delaminated and spalling concrete would become a potential hazard to occupants of the stadium. As a result, the District ordered an assessment, which generated a report detailing recommended repairs.

Once the structure of the treads and risers had been repaired, cracks in the top surface of the treads and vertical faces of the risers were routed and sealed with a single-component urethane-based traffic use joint sealant. All cracks with widths greater than .0625 in (1.5875 mm) were addressed to be compatible with the traffic coating. In addition to addressing cracking in the structure, all expansion joint materials were removed and replaced with new expansion joint seals in properly refinished and prepared joints. Spandrel beams on the ends of the seating structures had failed where the beams connected to concrete walls on the lower end of the slope. The repair required establishing a new expansion joint at the lower end of the spandrel beams to relieve thermal stresses and stresses caused by potential future foundation movements. The spandrel beams were shored, all cracked concrete was removed, reinforcing in the beams was reestablished, a new expansion joint was established between the beam and supporting wall, and the concrete was replaced. A new wall coating was applied over existing wall surfaces.



After completion of the structural repairs and application of new joint sealants and deck coating, the aging 50-year-old stadium has new life and can continue for many years to host sporting events for Wichita Falls Independent School District.

Wichita Falls ISD Memorial Stadium Assessment and Repairs

SUBMITTED BY
JQ Engineering, LLP
Dallas, TX

OWNER
Wichita Falls Independent School District
Wichita Falls, TX

PROJECT ENGINEER/DESIGNER
JQ Engineering, LLP
Dallas, TX

REPAIR CONTRACTOR
Trinity Hughes Construction
Wichita Falls, TX

MATERIALS SUPPLIER/MANUFACTURER
Neogard, A Division of Hempel USA, Inc.
Dallas, TX

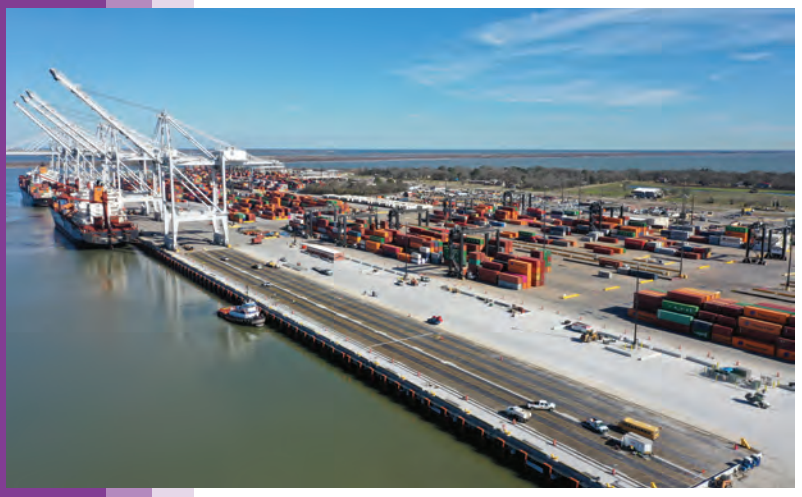
AWARD OF MERIT

WATER STRUCTURES CATEGORY

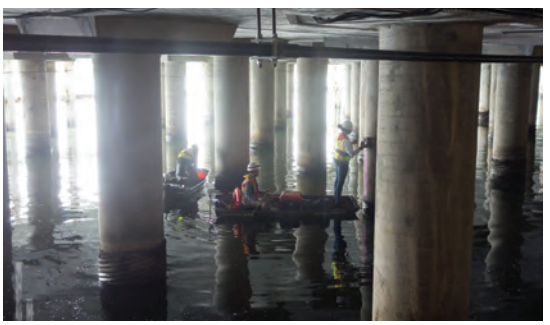
Barbours Cut Terminal—Container Wharf Expansion Design

HOUSTON, TEXAS

SUBMITTED BY WISS, JANNEY, ELSTNER ASSOCIATES, INC.



In June 2016, after 9 years of construction, the expansion of the Panama Canal was completed. With the capacity to accommodate larger ships carrying more cargo, the new locks are redrawing world trade routes and prompting ports and shipping infrastructure upgrades in U.S. cities from New York to New Orleans. To date, the largest project investments are along the Gulf Coast. These changes in shipping commerce have necessitated larger gantry cranes on wharves to unload and load container cargo with increased efficiency. Currently, Port Houston is expanding their container ports to accommodate larger gantry cranes, which in turn service the increased vessel size. This project highlights work performed at one of the reinforced concrete wharves at Barbours Cut Container Terminal, including assessment of the existing structure, rehabilitation design, service life modeling, and the design approach employed to increase the capacity of the wharf to support new 100-foot-gage gantry cranes (previously 50 ft). The project involved the use of service life estimations to aid in the repair design, as well as the design approach and methodology to integrate the new rail beams and structural elements into the existing wharf structure.



It is important to note that the applied forces and wharf geometry resulted in high torsional forces in the various connecting elements, such as the deck beams and frontal beams. The new, conventionally-reinforced drilled shafts, with lengths varying up to 180 ft (54.9 m) along the waterside and 130 ft (39.6 m) along the landside, were constructed using both permanent and temporary steel casing. To place concrete into the reinforced shafts during construction, deep tremie and pump truck hosing were employed. Where applicable, temporary casing was extracted using large 100-ton track cranes after concrete filled the lower portion of the shafts.

Drilling the depth shafts required 2 days to complete. During this operation the bentonite slurry obstacles impeded the initial schedule, as filter cake became apparent on the side walls of the shafts from residual slurry. The design and construction team successfully overcame this issue and several more to complete the project on time and within budget.

Barbours Cut Terminal—Container Wharf Expansion Design

SUBMITTED BY
Wiss, Janney, Elstner Associates, Inc.
Austin, TX

OWNER
Port of Houston Authority
Houston, TX

PROJECT ENGINEER/DESIGNER
Wiss, Janney, Elstner Associates, Inc.
Austin, TX

REPAIR CONTRACTOR
McCarthy Building Companies, Inc.
Houston, TX

MATERIALS SUPPLIER/MANUFACTURER
BGE, Inc. (Prime Firm, not MSM)
Houston, TX

CONCRETE REPAIR CALENDAR

DECEMBER 8, 2021
ICRI CSRT Live Performance Exam
Dallas, TX Area
Website: www.icri.org

JANUARY 17-20, 2022
World of Concrete
Las Vegas, NV
Website: www.worldofconcrete.com

JANUARY 19-20, 2022
ICRI CSMT Program
World of Concrete, Las Vegas, NV
Website: www.worldofconcrete.com

FEBRUARY 1-3, 2022
The International Surface Event (TISE)
Las Vegas, NV
Website: www.intlsurfaceevent.com

FEBRUARY 1-2, 2022
ICRI CSMT Program
The International Surface Event (TISE)
Las Vegas, NV
Website: www.intlsurfaceevent.com

FEBRUARY 17-18, 2022
Canadian Concrete Expo
Toronto, Canada
Website: www.canadianconcreteexpo.com

APRIL 12-14, 2022
National Wood Flooring Association Expo
Tampa, FL
Website: www.nwfaexpo.org

INTERESTED IN SEEING YOUR CONCRETE INDUSTRY EVENT LISTED HERE?

Events can be emailed to editor@icri.org. Content for the January/February 2022 issue is due by December 1, 2021 and content for the March/April 2022 issue is due by February 1, 2021.

The International Concrete Repair Institute is the leading resource for education and information to improve the quality of repair, restoration, and protection of concrete.
Visit www.icri.org.

INDUSTRY NEWS

BIGGEST ACQUISITION IN THE COMPANY'S HISTORY: ARDEX TAKES UP MAJORITY STAKE IN WEDI

Ardex continues to grow: the German-based construction chemicals specialist is taking up a majority shareholding in wedi GmbH, a leading manufacturer of system solutions for high-quality wet room solutions based in Emsdetten, Germany. It is the largest acquisition in the company's history. The employees of both family-run companies have already been informed of the development. In this respect, the management made it clear that wedi will continue to operate independently. In addition, Stephan Wedi and Fabian Rechlin will remain in place as the Managing Directors of wedi. Stephan Wedi will also continue in his shareholder role.

For more information visit www.ardexamericas.com.

GARVIN CONSTRUCTION APPOINTS TWO INDUSTRY VETERANS AS VICE PRESIDENTS OF SALES AND OPERATIONS

Garvin Construction Products, a leading distributor of sealant and waterproofing products to the construction industry in the Northeast, has named two respected industry veterans to leadership posts.

Tony Roselli, the Company's new Vice President of Sales, and Rich Romano, its new Vice President of Operations, are well known and respected in the sealant and waterproofing industry.

Both Roselli and Romano joined the Company in 1999 and were soon charged with the task of opening the Company's first branch in the New York metro area.

Roselli and Romano will contribute materially to the Company's plans to structure the Company for significant future growth.

INTERESTED IN SEEING YOUR NEWS IN THIS COLUMN?

Email your 150-200 word industry news to editor@icri.org. Content for the January/February 2022 issue is due by December 1, 2021 and content for the March/April 2022 issue is due by February 1, 2021. ICRI reserves the right to edit all submissions.

TACA MEMBERS LEARN HOW CONSERVATION EFFORTS CAN INCREASE BUSINESS PROFITABILITY

The Texas Aggregates & Concrete Association (TACA)–the leading state trade association for the aggregate, concrete, cement and associated industries–welcomed more than 50 attendees to its Environmental & Sustainability Seminar on Sept. 23-24 at the Marriott Riverwalk in San Antonio, Texas.

Industry professionals delivered topical presentations on the environmental and sustainable regulations and issues facing TACA members today, including the Biden Administration's environmental policies; how to be audit-ready in a post-COVID world; the business of conservation; the federal government's Environmental Justice initiatives; noise-related issues in the aggregates industry; using pro-active community relations to limit potential liability; and how natural gas and hydrogen can support "Energy Transition."

One conference session, "The Business of Conservation" led by Joni Carswell, CEO and President of Texan by Nature, explored how Texas businesses can create opportunity to increase profitability, while advancing sustainable usage of the state's natural resources. Carswell works with industry partners across the state, including those in the construction and aggregates industry, to create a "return on conservation.

ECLCC is a partnership between CEMEX USA and Josiah Austin and has a mission to restore the lower desert landscape and protect ecological corridors in a transboundary area located as the connecting link between Texas and Mexico. ECLCC works with numerous conservation partners, including Texan by Nature and Texas Parks and Wildlife, to restore native wildlife and birds through land restoration, water developments and habitat enhancement.

She also lauded Vulcan Materials Company's extensive waste diversion, recycling and material use programs, which have seen the recycling of more than 1.85 million gallons of oil, 42 tons of batteries, 85,000 light bulbs, and 830 tons of oil filters since 2016. "Its commitment to quality control of waste disposal through carefully selected partners is really making a difference to the environment, and saving them time and money. It is a win/win situation," said Carswell.

For more information on how TACA member companies enhance our daily lives, please visit www.tx-taca.org.

NEX LAUNCHES SMARTBRIEF ON NONMETALLIC BUILDING MATERIALS

NEx: An ACI Center of Excellence for Nonmetallic Building Materials announces the launch of a new weekly e-mail news digest for nonmetallic and composites industry professionals around the world. The NEx SmartBrief on Nonmetallic Building Materials features nonmetallic building and construction news, innovation, and major new projects incorporating these breakthrough materials, in an easy-to-consume format with links to detailed articles.

The free weekly digital news digest is available to anyone with an interest in the use of nonmetallic building and construction materials, and will also include articles on improved sustainability, durability, and resilience of structures. The NEx SmartBrief on Nonmetallic Building Materials is the first global digital weekly news digest specifically targeted to the nonmetallic building materials industry.

Learn more about NEx at nonmetallic.org. Sign up for the NEx SmartBrief on Nonmetallic Building Materials newsletter at smartbrief.com/nex.

ACI TO DEVELOP CONCRETE POOL AND WATERSHAPE CODE

The American Concrete Institute (ACI) announces the formation of a new committee whose mission is to develop and maintain code requirements for concrete pools, spas, and other recreational watershapes. ACI Committee 322, Concrete Pool and Watershape Code, will host its inaugural meeting Monday, October 18, 2021, from 11:30 am–3:00 pm EDT at the ACI Virtual Concrete Convention.

Under the leadership of chair Charles Hanskat, Executive Director of the American Shotcrete Association, the committee will work in direct response to an expressed industry need for code requirements that specifically address crack control, watertightness, and continuous exposure to water with wetting and drying that are essential to long term durability and serviceability of pools. Although there is an established code for concrete liquid-containing structures (ACI CODE -- 350), there has been much discussion that it is not geared towards pools and has too high a requirement for the pool industry.

Those with design or construction expertise in pools or other watershapes and are interested in contributing as an active voting member of ACI Committee 322, Concrete Pool and Watershape Code, please visit the ACI Join a Committee webpage and fill out the member application.

Additional information is available at concrete.org.

CONCRETE INDUSTRY MANAGEMENT PROGRAM SEEKS DONATIONS FOR 2022 AUCTION AT WORLD OF CONCRETE

The Concrete Industry Management (CIM) program – a business intensive program that awards students with a four-year Bachelor of Science degree in Concrete Industry Management – is seeking donations for their 2022 CIM Auction to be held at World of Concrete. The auction is scheduled for Wednesday, Jan. 19, 2022 at the Las Vegas Convention Center. The silent auction will be held from 11 a.m. to 1 p.m. and the live auction begins at 1 p.m.

Once again, the CIM Auction organizers are hoping for another record event in 2022. According to CIM Marketing Committee Chairman Brian Gallagher, the 2021 auction, while not a record-breaker, raised an impressive $1.150 million in gross revenue.

World of Concrete exhibits are open from Jan. 18-20 and seminars run Jan. 17-20.

Previous auction items have included concrete mixer trucks, cement, skid steers, concrete saws, drills, mixers, vibrators, scaffolding, safety equipment, screeds, fiber transport systems, dust collectors, NDT equipment, decorative concrete tools, water meters, pumps, generators, training sessions, reference books, advertisements, laptop computers, mobile com-

puters, sports memorabilia, sports travel packages, golf packages and vacation travel packages.

Those interested in making a donation should contact CIM Auction Committee Chairman Ben Robuck at ben.robuck@cemex.com or (404) 456-6867.

AMERICAN CONCRETE INSTITUTE HONORS OUTSTANDING CONTRIBUTIONS TO THE INDUSTRY

The American Concrete Institute (ACI) is pleased to recognize several individuals for their outstanding contributions and dedication to ACI and the concrete industry. The Fall 2021 awardees consist of personal and paper award winners who were recognized at the ACI Virtual Concrete Convention, October 17-21, 2021.

The following medals and awards recognize exemplary achievement, groundbreaking research, and service to ACI and the concrete industry:

- Arthur R. Anderson Medal – Ron Klemencic
- Roger H. Corbetta Concrete Constructor Award – Chris A. Forster
- Joe W. Kelly Award – Mary Beth Deisz Hueste
- Alfred E. Lindau Award – Werner Fuchs
- Henry C. Turner Medal – Arturo Gaytan Covarrubias
- Charles S. Whitney Medal – Michael M. Sprinkel
- Concrete Sustainability Award – Kimberly Waggle Kramer
- Aci Education Award – Cecil Jones
- Wason Medal For Most Meritorious Paper – Emmanuel K. Attiogbe
- Aci Symposium Volumes Award – Kjell Tore Fosså, Anton Gjørven, Kåre O. Hæreid, Jameel Khalifa, Widianto
- Wason Medal For Materials Research – Deborah Glosser, O. Burkan Isgor, W. Jason Weiss
- Mete A. Sozen Award For Excellence In Structural Research – Shih-Ho Chao, Youngjae Choi
- Aci Concrete International Award – Scott Tarr

Learn more about each of the awards listed above at concrete.org.

AMERICAN CONCRETE INSTITUTE ANNOUNCES WINNER OF ANNUAL EXCELLENCE IN CONCRETE CONSTRUCTION

The seventh annual ACI Excellence in Concrete Construction Awards showcased dozens of innovative concrete projects from around the world.

The "Overall Excellence" award was presented to Aldilonda promenade around Bastia fortress, located in Corse-du-Sud, France. The winning concrete project also received first place in the flatwork category at the ACI Excellence in Concrete Construction Awards during the ACI Virtual Concrete Convention on Monday, October 18, 2021.

The awards were created to honor the visions of the most creative projects in the concrete industry, while providing a platform to recognize concrete innovation, technology, and excellence across the globe. To be eligible for participation in the ACI Excellence in Concrete Construction Awards, projects need to be nominated by an ACI Chapter, International Partner, or selected through self-nomination.

The winning project details can be found at ACIExcellence.org.

CONCRETE INDUSTRY MANAGEMENT PROGRAM CELEBRATES 25TH ANNIVERSARY

The Concrete Industry Management (CIM) program – a business-intensive program that awards students with a four-year Bachelor of Science degree in CIM – is pleased to announce it is celebrating its 25th anniversary this year. A first-of-its-kind college degree program for concrete construction in the United States, the CIM program ensures the industry has a continuous stream of professionals trained in concrete technology and management.

The National Steering Committee (NSC) of CIM, a national-level, broad-based industry coalition dedicated to the support of CIM institutions, has planned an anniversary celebration which will take place on Oct. 26 at the Embassy Suites Hotel Nashville in Murfreesboro, Tenn.

First introduced in 1996 with two students, the undergraduate program now includes nearly 500 students at program universities including Middle Tennessee State University (MTSU); California State University, Chico; Texas State University and New Jersey Institute of Technology. On Aug. 31, South Dakota State University's Jerome J. Lohr College of Engineering held a ribbon cutting ceremony to officially announce it is now the 5th university in the country offering a degree in CIM.

To date, more than 1,500 students have graduated from CIM programs with the skill set necessary to meet the growing demands of the progressively changing concrete industry.

"For the last 25 years, CIM has remained strong throughout the many changes in the economic climate," said Eugene Martineau, Executive Director of CIM's NSC. "I attribute our success to two things – the dedication of the National Steering Committee and the local patron groups. The NSC exemplifies how firmly entrenched the concrete industry is in CIM."

The leadership of NSC's board of directors is comprised of ready-mix suppliers, admixture suppliers, concrete contractors, engineering firms, research organizations, and trade associations. Their mission is to develop, support, promote and sustain a network of higher learning educational institutions with programs that produce graduates with degrees in CIM. The local patron groups are the backbone of the CIM program. These groups provide guest lecturers, sponsor field trips, hire students and graduates and provide financial support that matches or exceeds that of the NSC.

Seeing the need for concrete industry-specific executive education, the NSC launched an Executive MBA program. In the fall of 2012, the first class of students in the CIM MBA program at MTSU began. This unique degree program was the result of many years of close collaboration between MTSU, the NSC and companies in the concrete industry. The program expands the industry/academic partnership by bringing CIM to the business world through an executive-type MBA and stands alone in its focused curriculum on the concrete production and concrete construction industries. The first cohort graduated in December 2014. The program now allows for entry in any semester and is combined with the MBA Flex program to keep many options for courses available to students. For more information, visit the CIM MBA website.

AMERICAN CONCRETE INSTITUTE ANNOUNCES NEW EDITOR-IN-CHIEF, MANAGING EDITOR OF CONCRETE INTERNATIONAL

The American Concrete Institute (ACI) is pleased to announce that Keith A. Tosolt and Lacey Stachel have been named Editor-in-Chief and Managing Editor of Concrete International (CI). Tosolt takes over for Rex C. Donahey, who will serve as Publisher of CI and transition into the new role of ACI's Director of Innovative Concrete Technology.

As Editor-in-Chief, Tosolt will oversee and guide the creation of content for CI, known as "the magazine of the concrete community." He has been an ACI staff member for 25+ years, serving as Associate Editor, Senior Editor, and Managing Editor during that time. Tosolt received his BA in communications, with a concentration in journalism, from the University of Michigan, Ann Arbor, MI, USA.

In her role as Managing Editor, Stachel brings 10 years of editorial and marketing experience in the concrete industry, previously serving as the Marketing Manager for the Slag Cement Association, Editorial and Marketing Manager for the American Shotcrete Association, and Editor for CI. She received her BAA in Integrative Public Relations from Central Michigan University, Mount Pleasant, MI, USA, and is a Certified Association Executive (CAE).

Concrete International is the monthly magazine of the American Concrete Institute. CI is published monthly in both printed and digital formats and is distributed to subscribers and each of the Institute's 30,000+ members. For more information or to subscribe to Concrete International, visit www.concreteinternational.org

INTERESTED IN SEEING YOUR NEWS IN THIS COLUMN?

Email your 150-200 word association news to editor@icri.org. Content for the January/February 2022 issue is due by December 1, 2021 and content for the March/April 2022 issue is due by February 1, 2022. ICRI reserves the right to edit all submissions.

ICRI**CHAPTER**NEWS

CHAPTER CALENDAR

As the global pandemic begins to ebb, chapters are starting to host events. Be sure to check with individual chapters by visiting their chapter pages for any chapter events planned after publication of this *CRB* issue.

BALTIMORE-WASHINGTON
November 11, 2021
LOCAL PROJECT AWARD BANQUET
The Hotel
College Park, MD

December 2, 2021
FALL SEMINAR
CP&R Offices, 2811 Lord Baltimore Drive
Baltimore, MD

CAROLINAS
November 4 & 5, 2021
CHAPTER MEGA DEMO
North Carolina State University
Raleigh, NC

CHICAGO
November 16, 2021
DINNER MEETING/ROUNDTABLE DISCUSSION
Topic: Expansion Joint Systems
Moderator: Diego Romero
Panelists: Natalie Faber, Tom Lavin, and Bill Carlson
Erie Cafe
Chicago, IL

DELAWARE VALLEY
November 16, 2021
FALL SYMPOSIUM
Philadelphia Marriott Downtown
Philadelphia, PA

FLORIDA WEST COAST
December 2, 2021
CHRISTMAS HAPPY HOUR
The Canopy at the Birchwood
St. Petersburg, FL

GEORGIA
December 3, 2021
ANNUAL HOLIDAY AND SCHOLARSHIP BANQUET
TopGolf Atlanta Midtown
Atlanta, GA

WWW.ICRI.ORG

NEW ENGLAND
November 3, 2021
CHAPTER DINNER PRESENTATION
Topic: Assessment and Repair of a Hydraulic Structure
Speaker: Liying Jiang, Jensen Hughes
Granite Links Golf Club
Quincy, MA

December 6, 2021
HOLIDAY SOCIAL & CASINO NIGHT
Granite Links Golf Club
Quincy, MA

QUEBEC PROVINCE
November 18, 2021 & December 2, 2021
VIRTUAL REPAIR PRESENTATIONS
Topics include: Construction and Infrastructure Repair
Visit the Quebec Province webpage to log in

ROCKY MOUNTAIN
December 9, 2021
ANNUAL HOLIDAY PARTY
TopGolf Centennial
Centennial, CO

CHAPTER ACTIVITIES

NEW ENGLAND HOSTS GOLF TOURNAMENT

The ICRI New England Chapter of ICRI hosted its annual golf tournament on September 27, 2021, at the Turner Hill Country Club in Ipswich, Massachusetts. The event was sold out with more than 130 attendees. The chapter hosted dinner in a tent after golfing where they were able to announce the tournament winners and raffle off a number of great prizes. The chapter welcomed a great mix of contractors, engineers, and manufacturers to this annual event. Overall, it was a very successful event!

The scenery at Turner Hill Country Club was the perfect backdrop for a day of golf

A variety of members and guests filled the ranks with more than 130 golfers

Tournament play and a beautiful September day made for a magical combination out on the links

After golf, gathering in the tent for dinner, the chapter celebrated the winners and raffled off a number of prizes

ICRI CONCRETE REPAIR CHAPTERS

ICRI has 39 chapters, including two student chapters, in metropolitan areas around the world. Chapters hold technical presentations, educational meetings, symposia, and local conventions on repair-related topics.

Chapters also provide an outstanding opportunity to meet and build relationships with repair specialists in your area. In addition to the technical meetings, chapters also host golf outings, social evenings, dinner cruises, and other networking events.

"As someone relatively new to the concrete restoration industry, one of the very first things I did after starting my new job was join my local ICRI chapter. It immediately gave me access to best-in-class training documents (especially the ICRI Guidelines). ICRI also offered informational videos and a peer network that accelerated my knowledge and confidence out of the gate. I highly recommend membership to anyone new thinking about entering the field."

Jeff Konkle
MAK Construction Products Group

CHAPTERS COMMITTEE CHAIR'S LETTER

MICHELLE NOBEL
Chapters Chair

I can't believe we're in the last quarter of 2021. I was hoping that as a country we would be farther along than we are in the fight to eradicate COVID. I realize that we all have our ideas and opinions, but we can be stronger as a country if we fight together. In the ever-inspiring words of John Lennon, *"You may say I'm a dreamer, but I'm not the only one. I hope someday you'll join us, and the world will live as one."*

Well, if you weren't in Minneapolis for the 2021 Fall Convention, you missed a good one! The Minnesota Chapter pulled out all the stops and hosted a fantastic convention for us! I started the week with a tailgate party and then attended the Minnesota Vikings versus Detroit Lions football game. The Vikings came back and won late in the 4th quarter. All I can say is Skol!

The festivities continued Monday with an axe-throwing event that included a highly contested Jenga competition and a Thump the Stump competition where I came in third. It was a great event for all who attended.

We followed that up with the Women in ICRI Reception at the beautiful Fhima's restaurant in Minneapolis and the Welcome Reception at the Marriott Minneapolis City Center, convention headquarters. The convention continued Tuesday with the highlight being the riverboat cruise with live music and blackjack to win raffle prizes. Wednesday was the final day of the ICRI Fall Convention. The Inter-Chapter Luncheon and Chapters Committee Meeting was the highlight of my day. We had a spirited conversation about membership—both national and international—and the first-time attendees discussed what they enjoyed most about the convention. All-in-all, I'd say it was an inspiring convention. It was nice to see everyone in person again.

I also want to give a special shout-out to ICRI Board Member Natalie Faber, from the Rocky Mountain Chapter. Natalie started the 3C Program—a program that focuses on foster children growing out of the foster care system and places them in construction jobs. Natalie placed 155 interns in 2021, some of them making $20.00 an hour. If you would like to learn more about Natalie's program, please reach out to her at n.faber@mmsystemscorp.com. Congratulations, Natalie! Your hard work and dedication to the 3C Program garnered you rave reviews and, I can say, you were trending at the ICRI Convention!

The Women in ICRI Committee is always looking for more participants. Please, join this group of incredible women. We strive to highlight the accomplishments of all women from around the world. If you would like to join the Women in ICRI, please reach out to Tara Toren-Rudisill, TTorenrudisill@ThorntonTomasetti.com, Monica Rourke, MRourke@mapei.com, or me at mnobel@mapei.com.

ICRI has hired Dave Fuller to replace Ken Lozen. Dave has been in the construction materials industry for over 30 years holding technical positions with several companies, the last being Master Builders Solutions. Dave will be an asset to ICRI. On behalf of all the members of ICRI, welcome Dave!

Ken Lozen will be with us until the first quarter of 2022, but when he officially retires, we will miss him. So, as we welcome Dave, we also must remember to wish Ken well in all his future endeavors!

The Certification and Education programs offered by ICRI are active and in full force. The information is on the Certification and Education tab on the ICRI.org website. Hosting a certification program at your local chapter can benefit your chapter and add money to your coffers. Explore the same tab to learn about the CSRT program, CSMT program, webinars, training, tips on the learning center, and all that ICRI has to offer.

Dates to mark on your calendar:

- World of Concrete 2022—January 17-20, 2022, in Las Vegas, Nevada

Please email Dale Regnier, daler@icri.org, your ICRI chapter meetings and events so he can post them on the ICRI website. Always check out what's happening in the area where you're traveling. What's better than making new friends? New friends that are in your industry! It beats eating alone!

Here's a link to the calendar on the ICRI website for more information: https://www.icri.org/events/event_list.asp

If you need any help, please reach out to the ICRI staff, the Executive Committee, your Regional Director, or the leaders of your local ICRI chapter. ICRI wants to help you and support you in all your efforts. As the sagacious Charles Dickens once said, "The pain of parting is nothing to the joy of meeting again."

Please be safe, be kind, and I hope to see you all very soon!

Sincerely,

Michelle Nobel
2021 ICRI Chapters Committee Chair
MAPEI Corporation

ICRI CONCRETE REPAIR CHAPTERS

PRODUCTINNOVATION

THE SQUEAKY WHEEL GETS THE (BIOBASED) OIL!

It is often true that "the squeaky wheel gets the oil," both literally and figuratively. For example, a door that starts to squeak is naturally much more likely to get lubricated than one that is moving quietly on its hinges. In the past, this maintenance activity had to be done with a petroleum-based lubricant. Fortunately, in answer to today's emphasis on greater environmental responsibility, Cortec® has made it possible to give the squeaky wheel the biobased oil in the form of EcoLine® ELP all-purpose lubricant.

EcoLine® ELP is a high-performance biodegradable soy-based lubricant and penetrant for general purpose use. It is formulated from natural seed oils and select additives that offer lubricity and performance superior to conventional lubricants. Its excellent performance, biobased nature, and low environmental impact make EcoLine® ELP a highly desirable option for environmentally conscious industries or federal agencies and their contractors seeking to comply with mandatory federal purchasing guidelines of the USDA BioPreferred® Program.

EcoLine® ELP contains 95% USDA certified biobased content, surpassing minimum biobased content requirements for products falling into the BioPreferred® category of multifunctional lubricants. When purchasing products in this category, federal agencies and their contractors are required to buy products with at least 88% percent biobased content, thus promoting the development and use of products made from renewable materials. In addition to being biobased, EcoLine® ELP is biodegradable, chlorine-free, and not toxic to plants—a much friendlier environmental prospect than petroleum-based products in case of the incidental leak or spill

To learn more about EcoLine® ELP, please visit: https://cortecvci.com/Publications/PDS/EcoLine_ELP.pdf.

MAXIMIZING SEAWALL SERVICE LIFE WITH STRATEGIC CORROSION INHIBITING CONSTRUCTION AND REPAIR!

Seawalls are important structures typically designed to protect buildings from tides, waves, coastal flooding, and shoreline erosion. The use of seawalls is on the rise and expected to increase along with rising sea levels. In addition to their vital role of protecting assets and properties from water attack, seawalls have a crucial need for proper protection and maintenance themselves. This is especially true because of constant exposure to a naturally corrosive environment-water, chlorides, and humidity-that gradually deteriorates and destroys the reinforced concrete structure.

To maximize service life and keep the seawall from total destruction, taking strategic steps to inhibit corrosion with Cortec® Migrating Corrosion Inhibitor™ Technology at the time of construction and repair is strongly recommended.

Contact Cortec® MCI® for guidance on your specific construction or repair project: https://www.cortecmci.com/contact-us/

TACTILE COMPOSITE FIRE RESISTANCE: DETECTABLE WARNING SYSTEMS' ADA/AODA COMPLIANT ALERTTILE® FR TACTILE WARNING DELIVERS SURFACE APPLIED INTERIOR CONSTRUCTION AND SAFETY SOLUTIONS WITH < 5 FLAME SMOKE RATING (FSR).

Detectable Warning Systems™ (DWS) is launching their AlertTile® FR detectable warning product–a fire-resistant detectable warning to its line of ADA tactile safety products.

Durable and lightweight, the glass-reinforced thermoset composite product is engineered for superior impact resistance, slip resistance, wear resistance, and long-term durability for both new and retrofit applications. The exclusive design of AlertTile FR incorporates a thin, semi-rigid profile with a perimeter beveled edge, to provide a safe and easy pedestrian transition. Mar-Bal's vertical integration ensures quality throughout the entire manufacturing process.

The purpose of the Canadian Accessibility Code's Disability (Access to Premises-Buildings) Standards is to improve the accessibility of public buildings for people with disabilities. Given the indoor requirements, per the ULC Fire Standards Canada, DWS' AlertTile FR meets these stringent requirements and ensures that public domains in the United States and Canada are safe and accessible to everyone–regardless of health or disability.

AlertTile FR joins one of the industry's most complete lines of ADA/AODA compliant tactile warning surfaces engineered for visually impaired pedestrians.

For more information visit: www.detectable-warning.com

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