CRB
CONCRETE REPAIR BULLETIN

May/June 2024
Vol. 37, No. 3

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ON THE COVER: Learn about grouting technology for repair in our featured article on page 13.

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FEATURE ARTICLES

DEPARTMENTS

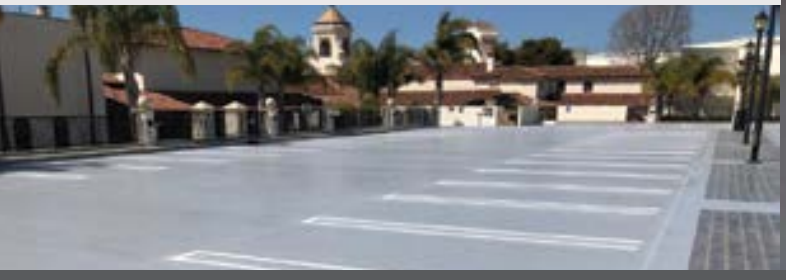
COMMITTEE 710: COATINGS AND WATERPROOFING

MISSION STATEMENT

The 710 Coatings and Waterproofing Committee is committed to developing new documents, guidelines, and webinars that will improve the practices with the waterproofing and coating of concrete structures.

BENEFITS OF COMMITTEE MEMBERSHIP:

By participating in the 710 Committee you will be able to contribute to your industry by creating quality informative guidelines and documents that can assist in improving the service life by making a difference in how materials are used, applied, and ultimately perform.



WHAT WE DO:

We focus on Coatings and Waterproofing of concrete structures where we see a need to develop guidelines that can significantly help owners, specifiers and contractors fill a gap where limited information exists in the market.

GOALS/DELIVERABLES

We are currently working on several guidelines: the revision to Horizontal Waterproofing for Traffic Surfaces, Moisture in Concrete Floors, the revision to The Guide for Selection of Grouts to Control Leakage in Concrete Structures. And we will be starting a new guideline for Exterior Wall Coatings for Concrete Structures.

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INTERNATIONAL CONCRETE REPAIR INSTITUTE

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PRESIDENT'S MESSAGE


BRIAN MACNEIL

GROUTING TECHNOLOGY FOR REPAIR

In my earlier years, I had the privilege of exploring a few associations that relate to the construction world. To name the obvious, there was ICRI—but also there was ACI, ASCC, NRMCA, CSI (CSC for Canadians), Structural Engineering Associations, AIA, Concrete Precast Association, and a few more. Most of these associations had a national organization and local chapters. Whenever I traveled to a territory across Canada or the USA, I could look up whether there was a local chapter meeting and attend if I could work it into the schedule. The people you met at these events were the movers and the shakers in the industry. The ones who were deeply involved on the committee or governance level were typically very high-caliber individuals.

With time, I realized that I could make a career out of being a professional association participant. The two I ended up focusing on were the International Concrete Repair Institute and the American Concrete Institute. For about 15 years or more before the pandemic, I attended Spring and Fall conventions for both associations. My passion for our repair industry and the people involved in our industry got me involved to the extent I am today in ICRI. During the ACI conventions, I focused on networking and making/keeping connections.

I had the pleasure of representing ICRI at the most recent ACI Convention in New Orleans this March, and it is the first time I have been back since before the pandemic. When you talk about high-caliber individuals, there are so many ICRI members who don't just give back to the industry through ICRI, they take the time to give back and share their knowledge in other organizations as well. Their presence was strongly felt at this ACI Convention and in the overall concrete community.

The importance of giving back through industry associations cannot be overstated, as these organizations play a crucial role in the growth and development of both individuals and their respective fields. By participating and contributing to industry associations, professionals can foster a culture of continuous improvement, collaboration, and innovation.

First, industry associations offer a platform for knowledge sharing and professional development. Through seminars, workshops, and conferences, members gain access to the latest trends, technologies, and best practices. This continuous learning environment encourages professionals to stay ahead of the curve, ensuring the overall advancement of the industry. Moreover, these associations facilitate networking opportunities that are invaluable for career growth and business development. Connecting with peers, mentors, and industry leaders can lead to collaborative projects, job opportunities, and partnerships. Such relationships not only benefit individuals but also contribute to the industry's ecosystem by fostering a collaborative spirit.

Giving back through industry associations also means contributing to the setting of standards and policies that govern professional practices. Active participation allows members to have a voice in shaping the future of their profession, ensuring that ethical, quality, and safety standards meet the community's needs and societal expectations.

Also, involvement in industry associations demonstrates a commitment to one's profession and community. It reflects a willingness to invest time and resources into the growth and development of others. Giving back through industry associations is vital for the advancement of professions and industries. It promotes a culture of learning, collaboration, ethical standards, and community support, benefiting individuals and the broader community alike.

With the above in mind, I end this message with the following questions:

- How do we get younger professionals to see the value in industry association involvement and giving back?
- How do we get them to budget their time and see the value in participating in ICRI and other organizations that will help with their personal and professional growth while making the industry stronger?

I encourage you to ask these questions in your network. Let's all keep doing our part to help young professionals see how they can continue growing their careers and advancing the profession through great organizations like ICRI!

Sincerely,

Brian MacNeil
Brian MacNeil
President, International Concrete Repair Institute

PS: Thank you to Jason Coleman, David Tepke, Joni Jones, Alex Somohano, Curt Costello, James Masterfield, Amy Woods, Peter Emmons, David Whitmore, Jessi Meyer, Todd Allen, Liying Jiang, Matthew Sherman, and Lisa Viker for your time at this past ACI Convention and for including ICRI as one of the pathways you use to give back to the industry. Also special thanks to Eric Hauth and Matthew Carter for proudly representing ICRI at the show and raising our image in the concrete community. And thank you to the ACI Community for being such gracious hosts!

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CERTIFICATIONUPDATE

CSMT PROGRAM AT IUPAT

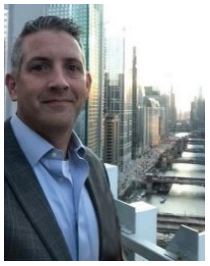
The ICRI Concrete Slab Moisture Testing (CSMT) Program was held twice in February 2024 as ICRI joined forces with a Northern California-based organization, the International Union of Painters and Allied Trades (IUPAT). ICRI was in San Leandro, California (near San Francisco) and Sacramento, California over 6 days to host in California to host 27 local representatives of contractors and customers of IUPAT who all wanted to learn more about moisture testing and become ICRI Certified Moisture Testing Technicians. The IUPAT leadership as well as the participants were thrilled with the educational offering of the program and plans are underway to bring more classes to the IUPAT training centers in Northern California and Nevada.

If your company or your Chapter wishes to schedule a CSMT Program, please contact Dale Regnier (daler@icri.org) and provide him with contact information for the point person who will be in charge of coordinating the event, the proposed exam location, and potential date(s).

The winners of the drilling contest that accompanies the testing for ASTM F2170 during the CSMT program are seen here with our favorite West-Coast based Subject Matter Expert and CSMT Instructor Roland Vierra (2nd from the right in the safety vest).

Introduction to the Edition

by Matthew Carter, ICRI Technical Director



MATTHEW CARTER

This edition's topic, "Grouting Technology for Repair", is a broad topic that stretches across multiple disciplines of ICRI. Grout as a material has become such a common term in the construction industry and has multiple definitions depending upon the application, that it has over ten subcategories when referring to ICRI's "Concrete Repair Terminology".[1] Comparatively, the "act of grouting" in ICRI terminology features more than fifteen types of grouting applications, which is not inclusive of the entire construction industry. These grout products and grouting methods are used across the repair industry in the concrete repair, masonry, strengthening, bearing, stabilization, and waterproofing markets.

In this edition of the CRB, contributors provide their insights on grouting applications and technology, unique masonry grouting for tower stabilization, and chemical grouting for subgrade waterproofing. While the full breadth of grouting cannot be covered in a single edition, I would encourage the reader to learn more about grouting materials and applications by exploring ICRI's publications and technical committees.

Information on grouts and grouting in the repair industry can be found in the following ICRI committees and documents:

Committee 320—Concrete Repair Materials and Methods

- ICRI Guideline No. 320.1, "Guide for Selecting Application Methods for the Repair of Concrete Surfaces"
- ICRI Guideline No. 320.2, "Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces"
- ICRI Guideline No. 320.6 / PTI DC80.3, "Guide for Evaluation and Repair of Unbonded Post-Tensioned Concrete Structures"
- ICRI Guideline No. 320.7 (Pending), "Guide for Structural Grouts Material Data Sheet Protocol"

Committee 330—Strengthening and Stabilization

- ICRI Guideline No. 330.1, "Guide for the Selection of Strengthening Systems for Concrete Structures"

Committee 410—Masonry

- ICRI Guideline No. 410.1, "Guide for the Evaluation of Masonry Façade Structures"

Committee 710—Committee 710 Coatings and Waterproofing

- ICRI Guideline No. 710.1/ NACE TR02203/ SSPC TR 5, "Guide for Design, Installation, and Maintenance of Protective Polymer Flooring Systems for Concrete"

Subcommittee 710E—Grouting

- ICRI Guideline No. 340.1, "Guideline for Selecting Grouts to Control Leakage in Concrete Structures"

These committees are populated with subject matter experts from across the industry including specifiers, engineers, contractors, manufacturers, and testing agencies, and their documents reflect a consensus-based approach in their development. Investigate your interests and lend your expertise to the industry by joining one or more of the twelve technical committees that ICRI offers by visiting the Committees page at https://www.icri.org/icri-committees/ or contact me at matthewc@icri.org.

REFERENCES

1. "Concrete Repair Terminology," International Concrete Repair Institute, Minneapolis, MN 2022, 112 pp. https://www.icri.org/wp-content/uploads/2024/01/icri-crterminology-2022.pdf

Federal Building Rehabilitation Project Selects Curtain Grouting Technique to Stop Masonry Wall Leaks

Proven waterproofing injection solution forms a curtain wall to repair water intrusion in an aging parking garage, eliminating costly excavation.

by Andrew Derenski, P.E.

PROJECT OVERVIEW

A federal facility in Pittsburgh, Pennsylvania was undergoing major rehabilitation. Built-in the 1960s, the structure includes a basement parking garage with foundation walls constructed of concrete masonry units (CMUs), also known as concrete blocks.

An urgent portion of the project was to mitigate water intrusion through the CMU foundation walls of the parking garage, as the existing waterproofing was failing. Water staining was coming through the masonry walls, including discoloration that indicated the water intrusion was affecting the reinforcing steel, causing concern for the structural integrity of the garage (Fig. 1). An allowance was carried to strengthen the wall during construction, although based on the engineer's observations during the project, structural strengthening was determined not to be necessary. The scope of the waterproofing for the curtain wall was 3,700 square feet for $160,000 for a total rehabilitation project of $750,000.

Fig. 1: Water intrusion through CMU wall before grout injection (Picture courtesy of Martin/Martin Consulting)

CHALLENGES

The rehabilitation project presented two critical challenges. The first challenge was the urgency to repair the leaks coming through the parking garage's CMU foundation walls to stop the deterioration and protect the structural integrity. As an active and occupied government facility, safety is the number one priority for guests and employees utilizing the garage.

The second challenge was that the parking garage foundation walls were located next to a road as well as a busy loading dock. Excavating the masonry walls to remove the existing below-grade waterproofing and replace it with a new system would require shutting down the road as well as use of the loading dock for months. This type of disruption would have a major impact on the public and severely limit the function of the facility, which was unacceptable.

THE PROCESS

Soil Testing: To select the chemical grout product for the curtain grouting, the project's Geotechnical Engineer first conducted on-site soil tests to determine if polyurethane versus acrylate chemical grout was a better fit. It was found that acrylate was the fitting chemical grout for the soil.

Requirements for the acrylate chemical grout included:

- The grouting material needed to be a two-component, ultra-low viscosity hydrophilic acrylate.
- The grout needs to be non-toxic after curing.
- The cured acrylate grout must form a flexible gel barrier that is resistant to water migration.
- For safety and environmental concerns, the grouting material must be certified by the manufacturer to contain no acrylamides.
- The grout must have an up-to-date approved certification by an accredited 3rd party testing agency such as UL Solutions (UL) or Water Quality Association (WQA) verifying that it complies with the Drinking Water System Components ANSI/NSF/CAN 61 standard.[1]

Product Selection: The grouting product selected to meet all these requirements was a federally approved waterproofing injection solution that has proven performance on curtain grouting projects. It is a unique blend of methacrylic acrylate copolymers, combining the low viscosity of traditional acrylate resins with the elongation and adhesion that exceed most polyurethane resins. This product's reaction time can also be adjusted so the applicator can control material travel based on project conditions.

Execution: The design team considered multiple types of grout injection methods. It was narrowed down to both probe grouting and through-wall grouting. Ultimately, the Geotechnical Engineer's report guided the decision, and it was determined that the on-site soil was better suited for through-wall injection.

The through-wall injection method consists of drilling a series of holes through the wall of the structure and placing a layer of chemical grout, which fills voids and permeates soils to create an impermeable barrier along the exterior surface of the structure (Fig. 2).

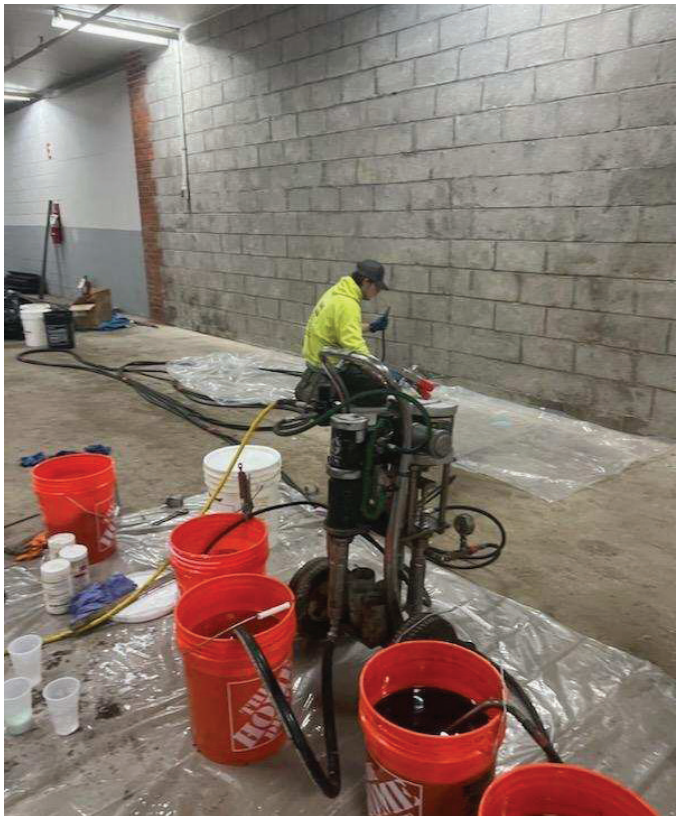


Fig. 2: Injection of the chemical grout through the wall (Picture courtesy of Jeans Waterproofing)

As the foundation walls were masonry, long injection ports were required to ensure that the material was injected on the positive side of the wall instead of filling up the wall cavity (Fig. 3). Injection holes were located at the mortar joints and drilled through to the positive side of the wall.

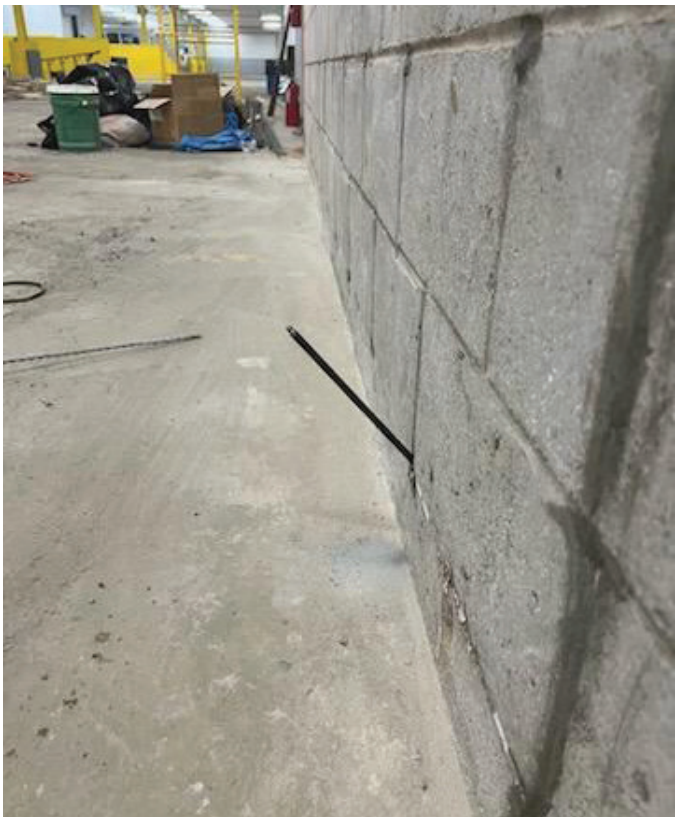


Fig. 3: Extra-long injection ports used due to masonry block wall (Picture courtesy of Jeans Waterproofing)

With the grouting method selected, a coordinated approach was taken between the installation contractor, engineer, and product manufacturer. The grout manufacturer had field representation available throughout the process to support the project and ensure the material was installed in accordance with the manufacturer's recommendations.

"The manufacturer's team helped us understand all of our options," said Tami Worker, P.E., with Martin/Martin Consulting Engineers. "Together, we meticulously evaluated various grout types to be tailored to the specific soil conditions on site. Their collaboration proved instrumental in navigating the requirements outlined in the geotechnical report, truly establishing them as indispensable partners in our project."

Additional Considerations: Structural considerations for lateral pressure behind the wall need to be studied with masonry basement walls. To manage that concern, the team injected the grout in small stages, so that one area was cured before they moved to the next area. The waterproofing injection grout product also provides benefits as it is not expansive and cures in a short period so that any fluid pressure behind the wall is localized and quickly dissipated.

RESULTS

The completed grout curtain wall is 3,700 square feet with two rows of ports also extending onto the slab-on-grade adjacent to the wall. This through-wall curtain grouting created an impermeable barrier on the outside of the walls, between the structure and the soil.

The curtain grouting process took just over six weeks to complete, waterproofing the masonry walls efficiently without major disruptions. Had excavation been selected, months of disruptive construction would have required—shutting down the neighboring road and loading dock.

The material used in the curtain wall installation has an expected service life exceeding most traditional waterproofing systems, protecting the structure for longer than it is likely to be in use. In addition, the consulting engineers for this project will conduct annual inspections to observe that it remains watertight (Fig. 4).

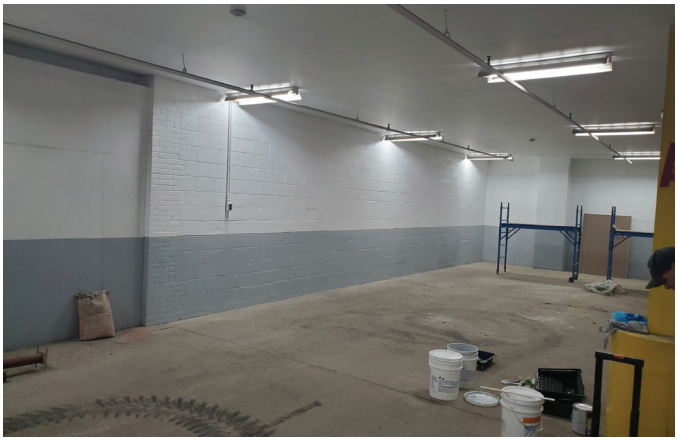


Fig. 4: CMU wall after injection grouting and re-painting (Picture courtesy of Martin/Martin Consulting)

Curtain grouting is a proven and reliable waterproofing technique. With no excavation required, it saves valuable time and money and is extremely effective for stopping active leaks. By simply carefully evaluating the proper materials and injection techniques that are the best fit for your project, curtain grouting will provide a permanent waterproofing solution when water is flowing through a wall into the structure. Minimizing disruption, time, and cost while increasing the long-term performance of the waterproofing certainly places curtain grouting as an effective and practical solution for subgrade waterproofing techniques.

REFERENCES

1. NSF/ANSI 61-2023/NSF/ANSI/CAN 600-2023, "Drinking Water System Components—Health Effects," NSF International, Ann Arbor, MI, 2023.

Andrew Derenski, P.E. is a commercial territory manager for DE NEEF® Waterproofing Injection Solutions at GCP. A Professional Engineer (P.E.) and LEED Accredited Professional, he has 15 years of experience in commercial construction management before joining the chemical injection grouting industry in 2013. Andrew oversees DE NEEF in the Southeastern and Central United States as well as Central Canada. He has a BS in Civil Engineering from the University of Cincinnati, cum laude.

Project: Parking Garage Federal Building Pittsburgh, Pennsylvania

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GROUTING TECHNOLOGY FOR REPAIR

by Monica Rourke, F-ICRI

OVERVIEW

The word “grouting” covers everything from bathroom tile to underground mining operations. At ICRI, we look at grouting for concrete repairs in diverse ways.

In general, “grouting” is the process of injecting, filling, or displacing a volume with a grout using liquids, mixed suspensions, or semi-solid mixtures under pressure to achieve one or more desirable end results.[1] While we may employ more than one grouting operation on the same project, the results are defined by the “means and methods” and materials utilized (Fig. 1).

Fig. 1: Underground injection

Although cement and chemical grouts can differ in composition, application, and cost, they are complementary products on the same projects. Within each grout family, there are subtypes and combinations of characteristics and properties.

Cement grouts contain particulates and therefore are “suspended solids grouts” and fall into the family starting with regular Portland cement down in particle size to microfine cement.[2] These particle grouts are used in large civil structures to stabilize soil and/or control water intrusion.

The primary types of chemical grouts (silicates, acrylics, and polyurethanes) are each unique in composition. They are truly suspended solids grout because the particulate size is so small that they can easily penetrate soil and rocks, which is very similar to “true solution grouts” like acrylics which have no suspended solids.

Fig. 2: Two-component chemical injection

Chemical grouting for control of water leakage encompasses everything from particulate, non-particulate, gels, and resins —which range from extremely high expansive foams to non-foaming gels (Fig. 2). Much of chemical grouting for water mitigation tends to be a generic term for grouts which are non-cementitious such as polyurethanes, polymers, acrylics, acrylamides, acrylates, and combinations which do not contain cement (Fig. 3).[3]

PRESSURE GROUTING AS A METHOD OF INSTALLATION

Why pressure grout?

Grouting can be used to improve the mechanical properties of soil or rock foundation materials and for structure or excavation support purposes and enhancement of bearing capacity. Pressure grouting can also be used for compensation methods to prevent or repair damage to structures, improve shear strength, and provide support for settlement-related conditions due to soil porosity and voids (Fig. 4).

Fig. 3: Three-component chemical injection

Fig. 4: Grouting for soil stabilization

What are the four major types of pressure grouting?
Although all varieties of grouting contain some measure of permeation grouting, there are four distinctive approaches: Permeation, Compaction, Fractural, and Jet Grouting.

I. **Permeation Grouting**:[4] Permeation grouting refers to the injection of high-mobility grouts (HMGs) into small voids within soil or rock masses. The most typical use of permeation grouting is to increase the soil strength and bearing capacity. Permeation grouting uses very low-viscosity grouts to uniformly seep into soils before curing, thereby increasing stability, strength, and reducing permeability. **Pressure Grouting Similar to Permeation Grouting**: Pressure grouting is the process of pumping a cement or chemical grout into soft or weak soil and/or voids. The grout fills the void(s), stabilizing and strengthening the soil. Pressure grouting has several applications. Compaction grouting is one of these applications often used for the support of existing structures or where foundations have shifted.

II. **Compaction Grouting**: Compaction grouting is a ground improvement technique that uses a high-pressure injection of low-mobility cementitious grout to displace and compact soil.[5] Low mobility (compaction) grouting involves the injection of a low slump, mortar grout to densify loose, granular soils and stabilizes subsurface voids and/or sinkholes. Limitations of compaction grouting are wet soil conditions, clay-based soils with low permeability, and requirements for over five feet (1.5 meters) of overburden. Another issue to take into consideration is noise, dust, vibrations, and environmental concerns, especially in heavily populated areas.

III. **Fractural Grouting**: Fracture grouting, compensation grouting, and hydro fractures involve injection via a sleeve port using cement slurry grout. A sleeve port pipe is grouted into a pre-drilled hole beneath a structure. The grout is injected under pressure at strategic locations through the ports in the pipe to lift the overlying soil and/or structure.

IV. **Jet Grouting**:[6] Pressure grouting or jet grouting involves a ground improvement system to create in situ cemented soil, and columns via high-pressure jetted fluids. The grout may be a cementitious, resinous, or solution chemical mixture. Jet grouting is a ground improvement technique that reinforces the soil by installing a network of high-pressure jetted columns in the soil. The jet grout columns comprise a mixture of the original in-situ soil and a cementitious grout. The mixed material can have a significant compressive strength and is commonly referred to as "soil-crete." It is also possible to incorporate bentonite into the grout mix, thereby producing a low permeability and non-brittle soil-crete material.

GROUT MATERIAL TYPES

Particulate Grouts:[7] Particulate grouts (e.g., cement or bentonite) are used for medium to coarse-grained sands, to which the particles can easily permeate. Microfine cement is also used for fine-grained sands where ordinary Portland cement cannot percolate through the soil matrix and cement combinations are commonly used in grouting, most notably in grout cut-off walls.

Sodium Silicate and Colloidal Silicate Grouts:[8,9] Sodium silicate grout is a two-component, exceptionally low-viscosity gel typically used for temporary soil stabilization and water control applications.

Colloidal silica grout is a low-viscosity, cement-free binder that becomes a super-fluid solution and easily penetrates the ground needing treatment, even with a matrix of fine to medium granulation. This two-component, environmentally friendly grout typically has a 3-hour working time and can waterproof gravel and alluvium and provide strengthening for unconsolidated ground.

The estimated life span of both sodium silicate and colloidal silicate grouts is not more than a few years, depending on the soil being injected.

Fig. 5: Polyurethane injection

Polyurethane Grouts:[10] Two primary polyurethane grouts fall under the categories of hydrophobic and hydrophilic. Hydrophobic polyurethane resins react with water but repel it after the final (cured) product has been formed. Hydrophilic polyurethane resins react with water but continue to physically absorb it after the chemical reaction has been completed. Polyurethanes, depending on how they are mixed and/or injected, can form a cured foam, gel, or solid resin (Fig. 5).

Hydrophilic polyurethanes are typically one component and will react upon contact with water without the addition of an accelerator or catalyst. Being a hydrophilic material means that the water is incorporated into the resin during the expansion process and cures into a flexible foam. Hydrophilic polyurethanes can repeat the absorption of water more than one time. It is important to check with the manufacturer of the hydrophilic polyurethane to determine the ability of the cured resin to react multiple times. Many hydrophilic polyurethanes can expand 4 to 6 times their original volume.

Hydrophobic polyurethanes can be one-component or two-component and will require the addition of an accelerator or catalyst. The hydrophobic polyurethanes will expand from 10 times to over 200 times. Once in contact with water, the resin will cure into a solid and/or semi-flexible foam depending on its chemical composition. Here again, it is important to check with the polyurethane manufacturer to determine the results desired for a closed-cell solid foam and/or an open-cell, semi-rigid flexible foam.

One-component water-reactive polyurethanes are typically used for injection into the cracks and/or joints in concrete structures. They have been known to last in some cases over 50 years depending on the application. Two-component polyurethanes are utilized when high-pressure water intrusion is encountered in subterranean constructions such as in tunnels and through the concrete segments created by TBMs (tunnel boring machines) (Fig. 6, 7, 8). Two-component polyurethanes consist of Component A resin and Component B catalyst resin. Therefore, the additional use of an accelerator or catalyst is not required for fast cure times. However, in jobsite situations where high-pressure water leakage requires an extremely fast cure time, i.e., 10 seconds, an accelerator along with water can be added to the Component A resin before injection. The injection process requires the use of a two-component pump specifically designed for 1:1 injection of chemical grouts. The two components, A&B, travel through hoses that connect to a mixing head/manifold into a static mixer and are injected as a “mixed” product. An additional sub-group of two-component polyurethanes can cure independent of contact with water.

Fig. 6: High-pressure water leakage in a tunnel boring machine (TBM) underground

Single component polyurethanes are defined as quick and controlled reaction time (20 seconds or longer), and expansion in the presence of water with high expansion ratios of 40 to over 200 times the initial volume. Two component polyurethanes have quick and controlled reaction times (10 – 30 seconds) and can cure independent of contact with water, with expansion ratios between 3 to 20 times the initial volume. Depending on the composition and mixing activities; either twin-streaming with water, injection of components of A& B, or single pre-activated resin, will yield gel, foam, or solid resin. Non-foaming polyurethane resins are 100% solid and can achieve remarkably high compressive strengths. Many manufacturers offer polyurethanes with potable drinking water approval as noted in Standard 61 either through NSF or UL certifications.

Acrylic, Acrylate, and Acrylamide Grouts: Acrylics are defined as "true solution grouts" which are free of suspended solids and have extremely low viscosity—like water. The two groups of acrylics are acrylamide and acrylates. The material is two components, A&B, which are comprised of a base resin on the A side mixed with an accelerator and water with a hardener powder on the B side. Once the two components are mixed, they are pumped 1:1 by volume through a two-component stainless steel pump. Stainless-steel is required because Component B is water with the hardener powder which is either sodium persulfate or ammonia persulfate and this family of sulfates are salts that are reactive with metal components.

Fig. 7: Tunnel Injection

Fig. 8: Tunnel injection

Acrylamide has an exceptionally low viscosity and can cure from 3 seconds to one hour. The product contains toxic components in the uncured state. Acrylamides have been known to have a longevity performance over 100 years while acrylates have been monitored for longevity for approximately 50 years—all of which depends on the application.

Acrylate and polyacrylates have extremely low viscosity, are safe for the environment, and have potable drinking water approval. Cure times range from 15 seconds to one hour and sometimes longer with an inhibitor added. Acrylates can be mixed with a co-polymer latex instead of water for Component B and yield higher compressive strengths with stronger adhesion.

Both acrylamides and acrylates can be used for soil stabilization, waterproofing, injection, and grouting operations for mitigation of water leakage. These products are hydrophilic and can "swell and re-swell" as the injected medium changes with water flow. This ability to "swell and re-swell" is dramatically different than the expansion of a polyurethane grout.

Acrylates, Poly Acrylates, and Acrylate Esters are gels and resins belonging to the hydrogel family. Hydrogels are polymers characterized by hydrophilic properties and insolubility in water. In water, hydrogels swell to an equilibrium volume but preserve their shape.

The ability to imbibe water or liquid and ions without loss of shape or mechanical strength is valuable in many natural hydrogels, such as those found in human muscle, tendons, cartilage, intestines, and blood.

Acrylamides and acrylates are used for crack injection, creating waterproofing barriers or building envelopes, leak mitigation grout curtains, soil stabilization, and filling of voids between two segments if water intrusion is a concern.

Other Cementitious Grout for Concrete Repair: "Non-shrink" grouts and those conforming to ASTM C1107 are commonly used for a range of concrete repair applications including bearing applications, patching of honeycombs, tie-bolt holes, accidental damage, breakouts, and pack-filling of gaps and voids.[11] Non-shrink grouts are selected because they are seen as good-quality, high-strength mortars.

Epoxy & Epoxy Grouts for Concrete Repair:[12,13] Epoxy Resins are available in varying viscosities and physical properties depending on the application.[14] Low-viscosity epoxy resins can provide a monolithic repair of structural cracks or fissures caused by accidental impacts and earthquakes; restore various architectural elements that are loose; and structural repairs of beams, pillars, and fissured floors by low-pressure injection. Epoxies are not used for expansion joints nor are they designed to control visible water leakage seeping and/or flowing into concrete structures.

Epoxy is available in two-component, low-viscosity and ultra-low viscosity formulations which can be used to inject or gravity feed static cracks, i.e., shrinkage and settlement cracks that are not moving. The resin penetrates and fills the crack to form a solid polymer plug which seals the crack and restores the bond. These injection epoxies polymerize without shrinkage, and once hardened are waterproof and adhere both to concrete and steel.

Epoxy grouts are most notably used for structural repairs. Unlike cementitious grout, which contains exactly one component until mixed, epoxy grout is comprised of two-component and three-component systems which include

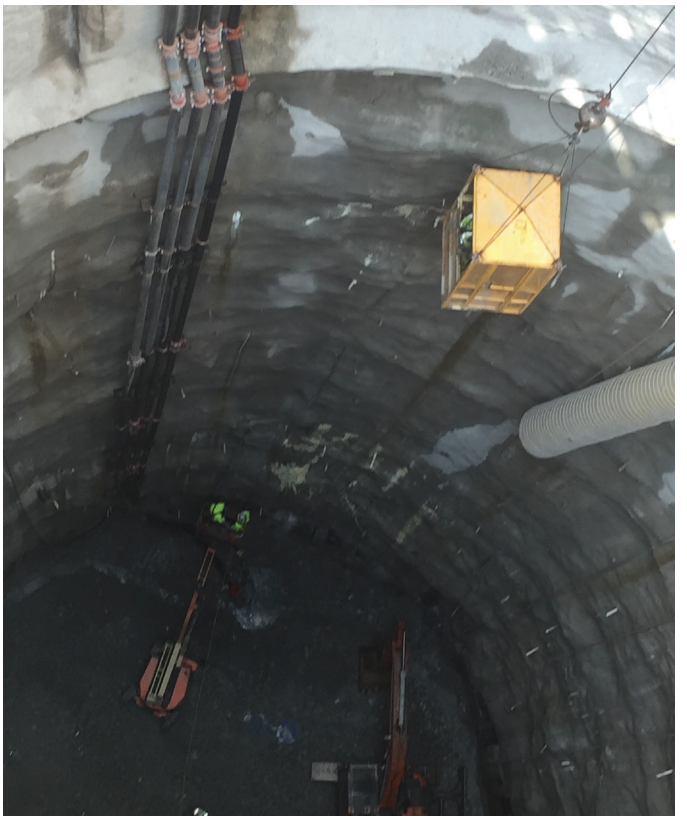

Fig. 9: Injection in a shaft from a man cage

resin, a hardener, and an aggregate, like sand or ground stone. Epoxy grout will develop a compressive strength greater than the concrete compressive strength between 24 and 48 hours after placement.

Epoxy grout in the two-component formula can be a 100%-solids, moisture-tolerant, structural epoxy used as an adhesive and for leveling uneven concrete or masonry surfaces for applications of FRP (fiber reinforced polymers) composite systems.

Other epoxies are used in the flooring industry for moisture suppression. They can be used on concrete, brick, stone, stucco, concrete block, and tile, in combination with strengthening applications and on other substrates.

IN CONCLUSION

Each project is different and may require the adoption of a "means and methods" application (Fig. 9). Each grout family has sub-groups, combinations, formulas, and unique characteristics and properties that allow the user to have options for each repair scenario.

Cement and chemical grouts cover a myriad of uses within the concrete repair industry. Before selecting a grout, it is always best to consult a qualified engineer/consultant, along with an experienced grout contractor and the grout manufacturer's technical representative. Please reference the ICRI Technical Guidelines, Webinars, and associated ACI Rap Documents.

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Monica Rourke, F-ICRI, Regional Manager has an extensive history of projects in waterproofing and chemical grouting. She has worked as a contractor, manufacturer's representative, and as a specification engineer and consultant. Monica concentrates her efforts on providing products and support services for chemical grouting in tunneling projects, concrete repair, and waterproofing applications along with strategies for the stabilization of underground structures. Monica is a Fellow of ICRI (International Concrete Repair Institute). She has co-authored the ICRI Technical Guideline No. 340.1 entitled: *"Guide for the Selection of Grouts to Control Leakage through Concrete Structures,"* and is currently chair of the ICRI 710 Committee covering – Curtain Grouting Techniques and Applications for creating barrier membranes and mitigating water through underground structures. Monica participates as a speaker at national conventions along with presentations at IBEC, Waterproofing Contractors Association, DFI, and other industry and trade associations. Monica Rourke is a member of APWA – American Public Works Association; DFI – Deep Foundations Institute, UC of SEM –Society for Mining, Metallurgy and Explorations, Inc. and the FHWA Transportation Research Board's committee on Tunnels and Underground Structures.

Correction to Previous Edition

In the project profile, "Marina Place Condominium Building Rehabilitation – Water Intrusion and Structural Strengthening" by Matt Dougherty, P.E. (*Concrete Repair Bulletin*, March/April 2024 Vol. 37, No. 2), there was an error in the team credits under the stucco supplier. The correct stucco supplier information should be reflected as Sto Construction Materials, Atlanta, Georgia.

The project team's information should read as follows:

Project: Marina Place Condominium Building Rehabilitation—Water Intrusion and Structural Strengthening

BUILDING ENVELOPE CONSULTANT AND STRUCTURAL ENGINEER
Walker Consultants
Tampa, Florida

CONTRACTOR
Valcourt Waterproofing & Restoration
Bradenton, Florida

MATERIAL SUPPLIER
Elastomeric Coating:
Master Builders Solutions
Shakopee, Minnesota

STUCCO SUPPLIER
Sto Construction Materials
Atlanta, Georgia

Injection Grouting and Cross-Tying of Mass Masonry Collar Joints

by John Wathne

BACKGROUND AND CAUSE OF DECAY

In the most simplistic terms, masonry is an assembly of solid stone, brick, or block units and mortar that beds and bonds them together. Most modern building wall construction consists of either exterior weather-exposed "veneer" construction, interior weather-protected "back-up" construction, or a separate combination of the two.

Common construction types may consist of reinforced Concrete Masonry Unit (CMU) masonry backup wall construction with an Indiana limestone veneer, brick backup wall construction with metal skin, or a wood or metal stud backup wall with a brick veneer. All three of these most commonly have an intentional airspace between the veneer and the backup, and a waterproof or water-resistant membrane against the backup construction that collects and channels water out from behind the skin or veneer and keeps the backup in a dry, protected state.

Historic masonry construction consisted of "barrier wall," mass-masonry assemblies where the exterior skin consisted of the same or, more commonly, different construction from the back-up construction physically bonded to the back-up construction, creating one composite mass. Rather than having an internal drainage system that channels water away from the building interior, these functioned on the theory that they would absorb whatever water seeped into it when it rained, hold the water like a reservoir before it reached the building interior, and then evaporate it back out into the atmosphere after the rain stopped.

Efforts would be made to make the exterior wythe as impenetrable as possible to seepage, typically through the use of large cut stones or hard-fired brick with narrow joints. In stone construction, this exterior wythe often required significant effort and expenditure in obtaining large stone units and cutting and carefully fitting them together to reduce mortar joint area and width. Laying of the backup, however, required no careful fitting as stones could be of any size or shape with the irregular gaps between them filled with varying volumes of mortar, wedge-shaped "chinker" stones, and occasional empty void spaces.

This method of construction created a much more absorbent and breathable mass behind a less breathable and absorbent one. Because of the geometrically irregular construction of the back-up and the geometrically more regular construction of the outer skin, the vertical mortar joint between the two, called the "collar joint," typically consisted of an irregular slushed-in mortar mass of varying thickness and quality.

As this composite masonry assembly goes through its regular cycles of wetting and drying, there is a tendency for the water that seeps into the mass through the skin to be pulled into the porous back-up construction, which becomes saturated. After the rain stops and the evaporation cycle begins, there is a tendency for this water to back up against the interior surface of the exterior skin, where it becomes trapped within the soft mortar collar joint until it can eventually evaporate out through the skin's thin joints.

Over the years, the environmental load on the collar joint takes its toll, especially when cycles of freezing and thawing occur, and the collar joint mortar becomes physically pulverized by cyclical ice lensing and often expands into a composition of loose, unbonded sand. This expansion can sometimes push the stone skin out of its original position, causing a noticeable bulge on the exterior.

From our many years of experience with mass stone masonry, although the collar joint mortar fails and sometimes bulges, the mortar in the backup construction as well as the stone wythe construction usually remains mostly undamaged. This is because the compression from gravity load on the horizontal "bed" joints and restraint of surrounding construction on the vertical "head" joints physically resists the ice lensing and expansion, not to say that it will not happen eventually. The fact that the exposed joints on the skin are easily maintained helps as well.

This condition is what occurred at the First Church UU, in Jamaica Plain, in the City of Boston, Massachusetts, where the exterior skin had separated from the backup construction by several inches on the north face of their tower (Fig. 1). The structure was built in 1853 in the Gothic Revival style with random rubble backup with a Quincy granite exterior skin. The tower is approximately 100 feet tall.

Fig. 1: First Church in Jamaica Plain, Exterior Wall of Tower

INVESTIGATION AND DIAGNOSIS

In 2020, our firm was retained as part of a preservation team to evaluate and help restore the tower, accessing it from the interior, and the exterior via aerial lift. In addition to visual inspection, the tower walls were test-drilled and borescopically examined from both faces. Small exploration holes were additionally hand-excavated through the backup construction from the interior (Fig. 2).

Fig. 2: Image from Inside the Wall Cavity; Exterior Wythe (Left), Back-Up (Right)

We determined that the exterior wythe had debonded from the backup and bulged by several inches at mid-height on the north face of the tower. While the mortar bed and head joints in the backup and exterior skin construction were generally intact, the collar joint had substantially failed, degraded, and expanded to damp loose sand, which sifted downward, leaving an empty cavity.

Given the relatively sound condition of the individual separated wall planes and the heavy mass of intact construction above, we determined that rather than partially dismantling and reconstructing this portion of the tower, it would be safest and most economical to tie and bond the separated wall planes back together using a patented tying and bonding system with an established history of correcting similar conditions on other projects (Fig. 3).

Fig. 3: Port Anchor Mock-Up

METHOD OF REPAIR

This masonry repair was performed in the following steps (Fig. 4):

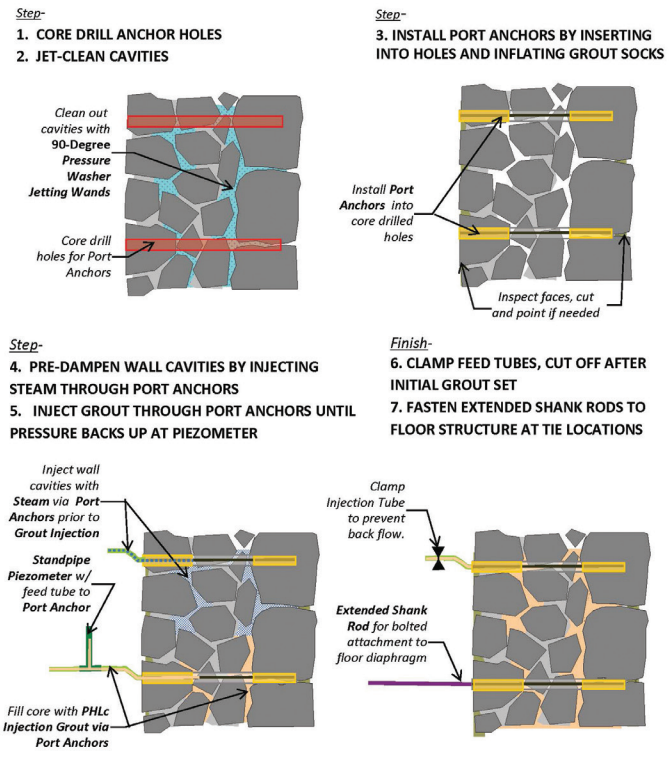


Fig. 4: Step by Step Illustration

Before pinning and grouting work began, and to keep the exterior skin from peeling off when we were working on it, an array of wooden dunnage timbers was placed against the outside of the wall. Metal rods were run from the dunnage to the interior of the tower via small holes drilled through the wall and tied the dunnage back to the timber-framed floor diaphragms to physically restrain the wall.

1. The first step was to core drill from the interior through the backup construction, across the collar joint cavity, and into the back face of the exterior skin.
2. These holes were then used to jet out the collar joint cavity using 90-degree pressure washer wands, flushing out all the materials through cored holes and small openings made in the bottom of the bulged portions.
3. The next step was to install Grout Injecting Port Anchors into the holes to lock layers together. These specialty anchors have a fabric sock at each end of a solid stainless-steel shank, each with its inflation tube. The shank is freely exposed between the socks, where there is a third tube. The anchors were inserted and the socks at each end inflated with a high-strength grout that locked the inner sock into the back-up and the outer sock into the outer wythe, thus establishing a strong and permanent tie between the planes of the wall. The inflation tubes were then crimped and ultimately cut off. The installed Port Anchors were used to prepare and fill the cavities with grout, thereby re-solidifying the once-composite wall construction.
4. Before injecting the grout, the cavity needed to be pre-dampened to keep the porous substrate backup materials from sucking water out of the grout and preventing flow. This was done before injecting steam into the cavity feed tubes in the Port Anchors immediately before grouting.
5. The next step, after the socks had cured, was to fill the cavity with grout. An ultra-low shrinkage pozzolan lime PHLc Grout was selected for this purpose for the following reasons:
   - Considering the original mortar was mostly lime and sand, the PHLc Grout was selected as a "softer" and more breathable material than the higher strength, all-cement grouts that are more common in new construction, thus being more compatible with the existing construction.
   - The pozzolan reacts with the lime in the grout and allows it to harden in an enclosed environment where it would not be able to absorb enough atmospheric carbon dioxide for it to harden atmospherically. Also, the PHLc grout is denser, of modestly higher strength, and more durable than the original pure lime-based collar joint mortar, and acts as a buffering transition between the very porous backup construction and the lower permeability stone skin, while being resistant to freeze-thaw deterioration.
   - A small amount of cement (less than 10 percent of binder) is used in the grout to allow an initial set so that daily grout lifts could be employed without a chance of a blow-out.
   - The ultra-low shrinkage of this grout (less than 0.1 percent) versus the expansivity of a "non-shrink" grout prevents the expansion of the cavity from causing damage.

   Grout injection was performed using a customized pressure pot with an integral mixing screed and a flex-tube feed line with an in-line standpipe piezometer and cut-off valve to control grouting pressures. Injection through the Port Anchors was done in limited daily lifts until the cavity had been filled.
6. As the grouting progressed, the feed tubes were crimped and then cut off after the grout initially stiffened.
7. After a curing period of several weeks, the external dunnage was removed and the Port Anchors, which were provided extended shank rods at the floor levels, were tied to the floor diaphragms to provide permanent lateral restraint to the exterior wall.

The stabilization work was completed in the summer of 2022 and should extend the life of the tower by at least another 100 years.

John Wathne is a Structural Engineer, specializing in the evaluation, stabilization, and restoration of historic structures, with an emphasis on masonry and timber. A graduate of Lehigh University, he is the founder and president of Structures North Consulting Engineers, Inc., a New England-based structural preservation engineering consulting firm. He is also the inventor of the Grout-Injecting Port Anchor, for which he holds two patents, and the founder of VoidSpan Technologies which provides Port Anchors, restoration grouts, cleaning, and injection equipment on-site training specific to the restoration and structural stabilization of historic masonry.

John's industry involvement includes being the chair of the ASTM Task Group that wrote and published ASTM C1713, the Standard Specification for Mortar for Repair of Historic Masonry (and the primary author of its commentary) and was the former Co-Chair of the International Concrete Repair Institute's Committee 410.

John is also an artist member of the Salem, Massachusetts, Arts Association and frequently exhibits his oil paintings of urban and rural landscapes (www.johnwathne.art).

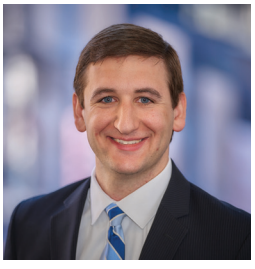
2024

40 UNDER 40

Tomorrow's Leaders in Concrete Repair

ICRI CONCRETE REPAIR
Restore | Repurpose | Renew

ICRI congratulates these 40 individuals who exemplify dedication to the concrete repair industry. Nominated by their peers, these individuals have demonstrated their commitment to continued professional growth, high potential for continued success in leadership roles, and a strong passion for—and commitment to—the mission of ICRI.



Robert Antes

Senior Project Manager
Simpson Gumpertz & Heger (SGH)

Bob has demonstrated a commitment to the Concrete Repair industry through his hard work and leadership. Bob has worked at SGH for 12 years starting in the Washington DC office and transitioning to the New York office afterward. Bob is a licensed engineer in Maryland, New Jersey, New York, Pennsylvania, and Connecticut, where he focuses on investigation, repair, and rehabilitation of concrete, steel, masonry, and timber. Bob is highly involved in the ICRI as a member of the Metro New York Chapter Chapter board of directors and as the president of Committee 110-Guide specifications. Bob is highly committed to the ICRI and concrete repair in general.

Mark Aylward

Senior Estimator/Project Manager
Mid-Continental Restoration Company

Mark attends meetings in Tulsa regularly. Mark was involved in the original steering committee for the development of the ICRI Oklahoma Chapter. Mark is a contractor member of the Oklahoma State University Construction Management Department. Mark is an Estimator/Project Manager for Mid-Continental Restoration Company Inc. Mark's job description at MCR is estimating, business development, and managing exterior concrete and masonry restoration projects in the territories of Oklahoma and Arkansas. Mark has successfully restored over 100 iconic structures in the Oklahoma and Arkansas areas in the last 4 years. He has helped repair and preserve these structures for many years.

Ricardo Arrechea, PE

Senior Project Manager I/ Senior Associate – Diagnostics
Walter P Moore

Ricardo often works with design-build-repair contractors, property managers, architects, and owners on repairs to existing concrete structures. Even if the structure is in poor shape, he finds the best way to shore it up and repair it cost-effectively. That is not a skill everyone has or is willing to develop, so it makes him sought after. Ricardo is a member of ICRI National and the Houston Chapter. His work has had a lasting impact on the community. For example, Ricardo managed a significant repair project for a chemical plant in Lake Charles, Louisiana. The two-year project involved shoring it up and replacing reinforced concrete beams in situ while holding the piping in place.

J. Vincent Barnes III, PE

Forensic Division Manager
Pennoni Associates Inc.

Vince has been an active member of the Florida West Coast Chapter for the last 10 years. Throughout this time in the chapter, he has endeavored to help overhaul the chapter and expand its influence and outreach to both peers and professionals in the industry. Mr. Barnes has attended two national ICRI conventions, including Jacksonville (Florida) and Omaha (Nebraska), where he acted as the chapter delegate. He has been involved in both attending and planning every chapter event since 2020. Mr. Barnes is currently the chapter's treasurer and has worked to expand the chapter's reserve funds.

Jacqueline Bascetta

Project Director
Pullman SST

Jacqueline graduated with a dual bachelor's degree in physics and religious studies from Duke University in 2012 and a master's degree of Science in Conservation of Historic Buildings from the University of Bath (United Kingdom) in 2014. She started working with Pullman Services NYC in November 2015 as an Assistant Project Manager and quickly moved up to Senior Project Manager. Jacqueline is a leader in the historic preservation community and is active in several professional associations, including ICRI Metro New York and the Association for Preservation Technology. Jacqueline is a member of ICRI and regularly attends Metro New York ICRI technical and social events, going back to the beginning of her career.

Thomas Behr

Senior Project Manager
Concrete Strategies

Tom works as a Senior Project Manager for Concrete Strategies. His career began in high school as a field laborer and evolved into summer internships while in engineering school. He started as a Project Engineer after graduation and has grown to be a Senior Project Manager for the Restoration Services Division. He began in the field understanding the day-to-day work of concrete restoration and now manages multiple high-profile projects concurrently and several project engineers and managers underneath him. Tom holds several certifications from the Post-Tension Institute (PTI). Tom was an integral part of what led to Concrete Strategies being awarded the 2023 ICRI President's Award for Safety.

Niels Berg

Project Manager/Estimator
Robert E. Porter Construction Co., Inc.

Niels is a great example of growing up in the repair industry, continuing in the profession, and rising through the ranks. He's currently a project manager/estimator for one of the largest concrete repair contractors in the Southwest. Niels comes from a family of concrete repairers, with his father being a long-time employee of Structural. While working as a project manager for concrete repairs at the Palo Verde Nuclear Generating Station in Arizona, he transitioned to Robert Porter Construction 4 years ago. He is responsible for their most complex repair projects and is nearing the end of a multi-year project on a 17-story residential hi-rise with repairs to every balcony.

Thomas Brennan

Sales and Quality Manager
US Concrete Products (USCP)

Thomas joined USCP 3 years ago. Since arriving at USCP he has shown excellent leadership, customer service, and management skills. He immediately joined ICRI and involved himself with the local chapter (Baltimore/Washington) as a board member and assumed the role of committee chair for the Education and Scholarship Committee. He also co-chairs the Membership Committee. Thomas has attended all the local chapter meetings. Additionally, Thomas has joined the Delaware Valley and New England Chapters and attended the past two national ICRI meetings. He brings his strong organizational skills and energy to local chapters, helping promote good, safe practices in the concrete repair industry.

Denis Brown

President
Building and Restoration Technology (BRT)

Denis is the owner of BRT, a New York City local rep group and sits on tthe Metro New York Chapter board. He has over 15 years, possibly more, of construction experience and has influenced the direction of many waterproofing and roofing projects. Whether it's leveraging his relationships with the contractors and owners, or the many contacts in the AEC community he has, Denis can work any angle to improve all opportunities present. He continues to grow year over year by picking up various new and influential powerhouse vendors to rep, as well as new team members at BRT to work these new alliances. He is an impressive addition to the arsenal as a teammate.

Candon Clemmer

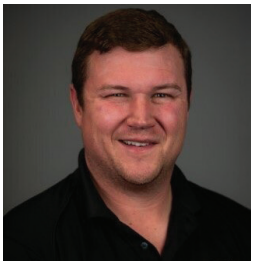
Sales Executive
Rocket Supply

Candon is new to the construction industry but has taken it upon himself to dive in headfirst. He is incredibly engaged in the the ICRI Rocky Mountain Chapter, and has held a position on the board for 2022 and 2023. Candon works with some of the market's biggest contractors at Rocket Supply in Denver. When facing obstacles, Candon will overcome and excel. He is a great benefit to the construction industry in Denver and an even bigger addition to the Rocky Mountain Chapter. His enthusiasm is welcome and much appreciated. Candon works at Rocket Supply in Denver, Colorado. Rocket Supply is a distributor of tools, supplies, and equipment for the concrete industry.

William Cooper

Project Manager
SGS

Will does not hesitate when it comes to helping with ICRI. He is active on multiple committees, particularly Committee 320, where he has served as the backup secretary to Shawn McCormick when needed. He also has been very active in helping with chapter events, particularly with manning the BBQ pit during some of the fundraiser events. Many of Will's clients at SGS-TEC Services are active members of ICRI and rely on his skill and expertise to provide them will quality independent testing results for them to market their products and ensure they meet the stringent requirements of the job. He is active on the Chapter and National level, attending many events.



Alex Daddow, PE, CDT

Senior Composite Strengthening System Field Engineer
Simpson Strong-Tie

Alex Daddow serves as the ICRI Pacific Northwest (PNW) Chapter Secretaryand has been working with the rest of the ICRI PNW Board to re-launch ICRI in the PNW. He has helped run chapter events and will continue to serve the board into 2024. Alex works as a Composite Strengthening System's field engineer for Simpson Strong-Tie. His work spans from Colorado to Montana to Oregon to Alaska and all the states in between. He references ICRI standards in all his presentations and helps engineers specify repairs utilizing ICRI repair procedures. Alex moved to Simpson in 2019 after deciding he had a passion for the repair and strengthening of the complex problem. Alex received the Excellence in Engineering award from Simpson Strong-Tie.

Sean Davis

Senior Director, Waterproofing and Restoration
Pierce Property Services

Sean loves concrete repair! His entire professional career has been in the industry. He has been an active member of the New England Chapter and is currently Chapter President. Sean has the innate ability to build community in our region by constantly connecting people. Currently, Sean works for a large Property Services company. He was hired to build and develop a repair and restoration wing of the company. Before that, Sean was a leading Project Manager for two key contractors in the region.

Josh Diner

Sales Development Manager
Westcoat Specialty Coating Systems

Josh joined the ICRI Rocky Mountain Chapter in January 2020. Then everything went virtual. Josh stuck with ICRI. When things started to open, Josh jumped right in got more involved, and offered to help with anything. He then stepped up and stepped in to be the Secretary for the chapter in 2022 and now is the Vice President of the Rocky Mountain Chapter. Josh has worked for a distribution firm and then matured into working for a manufacturing firm, Westcoat.

Nick Drews

Business Development Manager
Vector Corrosion Technologies, Inc.

Nick Drews is Vector Corrosion Technologies' ICRI champion in the Midwest United States. Nick helps organize Vector attendance for various ICRI events, local and national, evaluates ICRI sponsorship opportunities, and ensures Vector takes advantage of ICRI member benefits. Nick and Vector are very involved throughout ICRI, supporting from a member standpoint across the country at local chapter events as well as sponsoring and exhibiting at national events. Vector also has a history of high involvement on several different ICRI committees, most notably the Corrosion Committee, which Nick stands on and was involved in guideline standard meetings. Nick has also assisted with the preparation and review of Vector's ICRI project award submittals.

Taylor Feinman

National Recruitment and Marketing Manager
Gutknecht Construction

Taylor's enthusiasm and positive attitude have sparked the revitalization of the Central Ohio Chapter in recent years. Due to the pandemic, the chapter hadn't seen much movement. Taylor assisted in getting a January meeting on the books and worked with the owner of a centrally located restaurant/bar to open for the meeting. At that meeting, Taylor accepted a position on the Board and volunteered to be the sole planner for the next year's Fall golf outing. Taylor is eager to learn and has found a space within ICRI where she feels comfortable doing so. She wants to continue to learn the industry. Taylor routinely attends meetings and volunteers to help with whatever she can.

Fernanda De Figueiredo

Estimator/ Project Engineer
Concrete Protection & Restoration, Inc. (CP&R)

Fernanda has been a member of ICRI since she started with CP&R in 2021. She has attended and is active in both national and local chapter ICRI events. As one who strives to stay informed and up to date on the latest repair techniques and technologies, Fernanda attends these events to interact with other ICRI members and discuss what is new. More importantly, she then brings this information back to her team, keeping everyone up to date regarding the latest ICRI repair guidelines and news. Finally, Fernanda has a strong relationship with others in the industry and is always promoting the benefits of ICRI.

Christian Hancock

Business Development Manager
Valcourt Exterior Building Services

Christian has attended numerous ICRI events in the more than five years I've known him. This has been in his role in business development for the restoration division at Valcourt, as well as his previous employer. If I had to put a number on how many events he's attended, it would be a minimum of 20 as he is very involved locally. Christian started his career as a manufacturer's representative for APT (Advanced Polymer Technology), specializing in coating/deck membranes. After 3 years he moved into his current role at Valcourt Building Services, where he has represented his company very well while advancing their industry presence.

Chris Hill

Director of Strengthening OPS
Structural Technologies

Chris Hill joined the concrete repair industry fresh out of college and has been working proactively in this space ever since. He has progressed dramatically through his career, including a nearly-decade-long stay in the Middle East, and currently works for Structural Technologies. During his time in the Middle East, Chris worked on several high-profile strengthening and repair projects while starting and eventually running the contracting operations in the region as a Division Manager. Chris has been involved in ICRI since he joined the concrete repair industry in 2006. He has worked on many high-profile projects that were ICRI Project Award winners. He has also been an author in the *Concrete Repair Bulletin*.

David Klein, PE

Assistant Project Manager
SK&A Structural Engineers

David has been a member of ICRI since joining SK&A in 2018. Since becoming a member, David has been actively involved in the local Baltimore-Washington Chapter—attending quarterly meetings, technical seminars, and other events. David stands out amongst his peers through his technical competency as a structural engineer and his leadership qualities. David spends time educating clients, peers, contractors, and other stakeholders about the concrete repair and restoration industry. Each year, David spends a considerable amount of time providing technical presentations, volunteering his time for education events, mentoring other engineers and contractors, and sharing his knowledge/ experience following the completion of complex and challenging projects.

2024 40 UNDER 40

Amanda Kollasch

Project Sales Representative AZ & Southern NV
Sika Corporation

Amanda is the president of the ICRI Arizona Chapter and trying to pull the chapter back together again. She is a go-getter and will help to get the chapter back to what it once was. She is pushing for good surface preparation, placement, curing, and protection on repair projects, both with design professionals and in the field with contractors. She has taken over for a local Sika rep, who has retired, and she has done very well in that position. She is now in charge of the Arizona and Las Vegas markets.

Mike Kurinka

Director of Strategy & Innovation
Structural Restoration Solutions

Mike has shown incredible growth at the Georgia Chapter and his participation has continued to increase. He is a part of the board and did a great job increasing membership numbers. He is always looking to volunteer when others won't. Mike works for a specialty contractor in concrete repair and has become a concrete flooring repair specialist. He started in this industry as a laborer and has worked his way up to foreman, to assistant project manager, and is now a high-achieving Project Manager. Mike understands field operations and has technical expertise. He can grasp new concepts and technologies that help him develop projects while looking to do things the right way.

Rich Larson

Construction Manager
Structural

Rich is now the Field Operations Manager for Arizona and Colorado for Restruction Corporation, which was just acquired by Structural. He is responsible for making sure that the repairs are done following drawings and specifications, ICRI guidelines, and with good quality workmanship. He's committed to high quality, and making sure that things are done right the first time. This last summer, Rich took on the role of president for the Arizona Chapter of ICRI to try to pull the chapter back together again. He has since transferred back to Colorado, and therefore has transferred those responsibilities to the vice president.

Cory Littlejohn

Project Manager
Tarlton Corporation

Cory is an active participant in the Great Plains Chapter. He is involved in the St. Louis meetings and has attended golf tournaments since he was hired by Tarlton. Cory has a great attitude and is willing to participate in his chapter's success. Cory started working at Tarlton Corporation as an intern. After graduating from Southern Illinois University Edwardsville (SIUE), with a degree in construction management, he was hired full-time. He has been with the company for 5 years and has been promoted four times. He has been involved in Historical Renovations as well. Cory shows great promise for our industry.

Jeremy Lucas

Vice President
Robert E. Porter Construction Co., Inc.

Jeremy is a great example of starting young and progressing through the ranks in the repair industry. He is now Vice President of one of the largest concrete repair contractors in the Southwest. He is responsible for making sure that things get done and get done right. Jeremy started at age 16 as a general laborer, and over the last 18 years has progressed from labor to carpenter, to concrete repair technician, to foreman, superintendent, general superintendent, project manager, and now Vice President. He has helped to make this repair contractor very successful.

Amir Manafpour, PE, SE

Senior Project Manager
Walter P Moore

Amir Manafpour has been passionate about concrete repair since 2012 when he started contributing to academic research in this field. He has since published 5 peer-reviewed papers. His professional career has primarily focused on the repair/renovation of existing structures, with over 100 completed projects. He has been an active member of ICRI since 2016 and currently sits on the Board of Directors for ICRI's Baltimore/Washington Chapter and is an active member and contributor of ICRI Committee 160. He has spent over 2,000 hours in the field conducting condition assessments of existing structures before repair, as well as inspecting and monitoring ongoing work during the construction administration phase.

Maxwell McCarthy

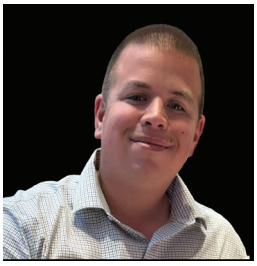
Business Manager
Evonik Corporation

Max is an active member of the ICRI community and is involved with the success of the Metro New York Chapter. As a chemist, Max developed an in-depth knowledge of concrete sealers and the protection of concrete structures. He shares his knowledge of concrete protection and preservation with others in the industry to help increase awareness and improve the sustainability of concrete structures. Max is passionate about his involvement with ICRI and is actively involved with the organization and operation of the Metro New York Chapter. He has been involved nationally for several years. He helped lead the subcommittee to bring about the first awards in sustainability for concrete repair.

Sarah Migliore

Project Director
Pullman

Sarah began working with Pullman NYC in July 2017. Before joining Pullman Services, she performed forensic investigations using Non-Destructive Evaluation (NDE) of existing structures throughout the US, England, and Canada. Previously, Sarah was the Project Manager for the exterior masonry restoration and cleaning at the Landmarked Con Edison Headquarters, which won the 2022 Metro New York Project of the Year. She started as a project manager in 2017 and has progressed to Project Director, managing several complex rehabilitation projects, including complex ICCP installation at a Manhattan high rise and the restoration of the Alexander Hamilton Customs House.



Ben Nein

Account Manager
All-Tex Waterproofing Solutions, a White Cap Company

Ben has been a member of the ICRI Oklahoma Chapter since it was founded in 2019. Since he has joined, he has shown interest in being more involved. Ben has brought guests and coworkers to meetings to boost membership. His recruitment efforts have paid off! He got his company to sponsor one of our social meetings, helping us grow our funds in our bank account. Ben is also involved in AGC and is a member of ABC, where he has assisted in safety training and sponsoring events for the construction industry. Ben graduated from Northeastern State University (NSU) in 2014 and has been employed by White Cap for the past 7 years as an Account Manager.

Peter Nelson

Senior Associate & Associate Unit Manager
Wiss, Janney, Elstner Associates, Inc.

Peter Nelson has been involved in ICRI since starting his career in 2009. As a young engineer, he was a regular at the ICRI golf outings and Cubs rooftop events. Over the last couple of years, Peter has increased his involvement in ICRI on both a national and local level. In 2021 Peter joined 3 national committees. He is an active local Chicago Chapter board member and participates in the Technical Seminar and Awards Committees. In 2015 Peter was awarded the Trinity Award from SWRI which is a recognition for outstanding collaborative partnership in the restoration category. Since joining Wiss, Janney, Elstner Associates, Inc., most of his work has been involved in the evaluation and restoration of reinforced concrete structures.

Jeffrey Owad, PE, PMP

Engineering Manager
Structural Technologies

Jeff Owad joined ICRI in 2021 after starting employment with Structural Technologies. As a new ICRI member, he has already attended three National Conventions and was a speaker at the Fall 2021 Convention. He also joined Committee 160 - Life Cycle and Sustainability and has participated in the Sustainability Award Task Group. During his full-time employment, Jeff contributes his spare time to education and teaching—a significant contribution to this industry. Jeff is currently working on a corporation research project that involves the improvement of the pull-off test and QA/ QC process. The promising outcomes, once achieved, will be a great contribution to our repair industry.

Isaac Pitre, P.Eng.

Project Director
Structural Preservation Systems, LLC

Since first joining ICRI as a university student in 2013, Isaac has demonstrated an unwavering commitment to the organization's mission, actively participating in chapter activities and significantly elevating the ICRI's standards and presence in the concrete industry. In a notable capacity as a director of the Quebec Chapter for two years, Isaac was instrumental in expanding ICRI's influence across the area. This period was marked by a notable increase in membership and visibility of ICRI, primarily attributed to Isaac's dedicated efforts. Isaac's involvement extends beyond administrative duties, as Isaac contributed to winning an ICRI project award, reinforcing its role in advocating for excellence and innovation in concrete repair.

Dylan Reynolds

Project Manager
Restoration Systems Inc.

Dylan has made a name for himself within the Minnesota concrete repair industry as a dedicated, motivated, knowledgeable, and dependable project manager. Working for Restoration Systems Inc. (RSI), Dylan plays a critical role on our team as our go-to for estimating and managing major concrete restoration projects in the Minneapolis/St. Paul metro area. An enthusiastic active member of the Minnesota Chapter for more than 3 years, Dylan regularly encourages additional RSI employee involvement such as attending annual events, technical sessions, and golf outings. Dylan makes the most of his ICRI involvement to promote Restoration Systems Inc., gain cutting-edge knowledge on products, techniques, and technologies, and network with peers within the concrete repair industry.

Ryan Roberts

Senior Technician
ARSEE Engineers

Ryan Roberts contributes to ICRI through his involvement in Indiana Chapter functions. For example, Ryan regularly participates in the local chapter golf outing in the fall, various technical presentations offered throughout the year, and social gatherings. He has attended over 15 local chapter events over the nearly 8 years he has been working at ARSEE Engineers. Ryan has experience and knowledge in concrete repair, and this is evident in his regular interactions and site visits with concrete repair contractors, manufacturers' representatives, and clients. Ryan is familiar with and understands the value of ICRI's technical guidelines on concrete repair, and he believes in the importance of repairing concrete the right way.

Steven Royalty

Senior Project Manager
LRT Restoration Technologies

Steven is a true professional and is full of passion for the concrete and masonry repair industry. As a result, he is actively involved in the local chapter and takes leadership in nominating projects for ICRI awards. Steven is an example of a person who does not simply see what he does as a job. It is something he enjoys, and he is always desiring to increase his technical knowledge and get better at what we do in the concrete repair business.

Stephen Schmitt, Jr.

Associate Principal
Wiss, Janney, Elstner Associates, Inc.

Stephen has been an active ICRI Chicago Chapter and National member since 2017. He currently serves on committees for SEAOI and ICRI Chicago to develop and coordinate local education programs, and his involvement in these organizations has significantly expanded and strengthened his relationships with local professionals, contractors, and product manufacturers. Since 2019, Stephen has been on the ICRI Chicago Board of Directors and Chair of the Technical Seminar Committee to coordinate and moderate one technical seminar per year related to concrete repair.

Evan Swaysland, PE

Vice President
Swaysland Professional Engineering Consultants, Inc.

Evan has been in the industry for 15 years as an engineer, first working with his father's firm and since then taking over the entire operation. He regularly attends meetings, is our past president, and continues to be involved with the local chapter even though he is not on the board. He assists the board in planning events, sends reminders for compliance with national, etc. He is a true advocate for the ICRI. He has developed an excellent reputation over the years as one of the top engineers in the South Florida area and is a true asset to the restoration community.

Chris White

Director & General Manager of CTS Tomes
CTS Cement Manufacturing Corporation

Chris has an impressive track record of leadership and contributions within ICRI which has shown to help promote ICRI's mission for educating our peers in the concrete repair industry. The Chicago Chapter is fortunate to have Chris White serve on the board and as President in 2022. He has served on every local chapter committee and has attended countless local chapter events. Chris's expertise in the design, manufacturing, sale, and use of packaged concrete repair materials is unparalleled. His knowledge and experience have helped him to develop innovative solutions to complex problems in the industry. Chris is already a mentor to younger members of the industry, helping to shape the future of concrete repair.

Sarah Whitmore-Medeiros

Business Development Manager
Vector Corrosion Technologies, LTD

Sarah is a passionate corrosion specialist and ICRI advocate amongst her industry peers and colleagues at Vector Corrosion Technologies. She has been an active ICRI British Columbia Chapter member since 2021 and has participated in several local chapter events. Sarah has also participated in four National ICRI Conferences. As an ICRI advocate amongst her peers at Vector Corrosion Technologies, Sarah leads her organization through national ICRI events through constant communication and promotion of booth registrations and employee attendance. She also ensures all ICRI member benefits are taken advantage of, and sponsorships are utilized where needed.

Shayan Yazdani, P.E.

Project Manager
VCS Engineering, Inc.

Shayan is a passionate Professional Engineer and ICRI advocate amongst his industry peers and colleagues at VCS Engineering. He has been an active ICRI Florida West Coast Chapter member since 2017 and participates in all the local chapter events. As an ICRI advocate, Shayan leads the organization of national ICRI events amongst his peers at VCS Engineering through constant communication and promotion of event attendance. He also ensures all ICRI member benefits are taken advantage of, and sponsorships are utilized where needed.

Do you know someone who stands out from the crowd?

40UNDER**40** nomination eligibility:

- Current member of ICRI (or work for a current company member) and employment within the concrete repair industry.
- Plan to continue in roles that aid the future of concrete repair.
- Exhibit characteristics that demonstrate continued success and leadership skills.
- Active participant in ICRI on either the chapter or national level.
- Under the age of 40 as of January 30 of the award year.

40 UNDER 40

Tomorrow's Leaders in Concrete Repair

WOMENINICRI

SPOTLIGHT— Dunja Vla

DUNJA VLA

As part of our ongoing series to spotlight Women in ICRI, we would like you to meet Dunja Vla, an Associate Principal at Wiss, Janney, Elster, and Associates in Northbrook, Illinois. She is a member of ICRI and SWRI (Sealant, Waterproofing, Restoration Institute). Dunja graduated from the University of Novi Sad, Faculty of Technical Sciences, in Novi Sad, Serbia, with a master's degree in civil engineering. After college, Dunja moved to the United States with her American husband.

In Serbia, Dunja worked for architects on new construction projects because they don't do as much restoration there. In America, restoration is a big market. She has experience with restoring parking garages, concrete and masonry façades, pools, and utility tunnels.

Dunja enjoys the diversity of the restoration industry. She has worked on projects that change from day to day. She could be working on a parking garage, designing support for a chandelier, or restoring a façade. She says, “I don't think I have experienced the same day twice. Every day is very dynamic and very diverse.” Her favorite project to work on is the façade restoration of stone buildings. Her second favorite is the restoration of pools at universities, apartment buildings, and hotels. She enjoys being outside and active instead of sitting behind a desk. Dunja loves seeing the project conditions before and the results after the repairs have been implemented.

Dunja is married with two children. Thanks to her husband, who is an extremely passionate fisherman, she enjoys fishing and hunting with her family. She loves being outside and on the water. She is also into biohacking and nutrition, in search of ultimate health.

I had the pleasure of meeting Dunja at the 2023 ICRI Fall Convention in St. Petersburg, Florida. At that convention, Zelina Johnson introduced us and mentioned she would be a great woman to spotlight. I'm looking forward to hearing her speak at the 2024 ICRI Spring Convention in Boston and learning about her contributions to the repair industry.

PRODUCTINNOVATION

MCI® CORROSION INHIBITING ADMIXTURES

It's not too early to think about summer and the busy construction season ahead. Unfortunately for ready-mixers, that also means hot temperatures are on their way with special challenges for laying and finishing concrete. Cortec® wants to help turn those potential nightmares into a dream come true by introducing contractors to MCI® corrosion inhibiting admixtures.

Learn how to prepare for heat wave pours when you read this news alert: https://www.cortecmci.com/news-alert-ready-mixers-are-you-ready-to-face-100-degree-days-this-summer/

CORTEC® MCI® COATINGS

Construction is a challenging industry with tough working conditions, harsh weather, and unexpected delays. To make matters more difficult, workers are responsible for high value equipment and building materials that can easily be damaged on the job. Fortunately, contractors can make life easier for work crews by implementing three versatile Cortec® MCI® coatings for the construction site.

MIGRATING CORROSION INHIBITOR™

What can be done when corrosion protection is needed in a reinforced concrete structure that holds drinking water or is located in an environmentally sensitive waterway?

Due to the possibility of harmful chemicals leaching into water, contractors are limited on which products they can apply to concrete elements in contact with potable water. Fortunately, Cortec® Corporation offers a variety of Migrating Corrosion Inhibitor™ products that are certified to meet ANSI/NSF Standard 61 for use in drinking water system components.

Learn more about these applications in our press release: https://www.cortecmci.com/press-release-fight-corrosion-in-concrete-potable-water-structures-with-mci/

ICRICHAPTERNEWS

CHAPTERS COMMITTEE CHAIR'S LETTER

DAVID GRANDBOIS
Chapters Chair

Alright, now that we have the introduction out of the way and we have poked fun at Jon, it is time to get to work.

In a world filled with constant distractions, complexities, and so much nonsense, I believe we must get back to the basics. If our [ICRI] goal is to provide the best possible experience to members and non-members alike, I'd like to encourage us Board Members to make a conscious effort to implement the guidelines listed in the Chapter President's Guide. What comes across as quite the list, can be broken down into a few strong commitments monthly:

- Check the monthly roster and update contacts, welcome new members, and check on and follow up with renewals.
- Complete event checklists and provide event information to ICRI national to be shared on the website.
- Email chapter news items to ICRI national so the newest information is shared.
- Update the calendar of events to have the most current information and share this information with ICRI National.
- Update the chapter website and webpage so that all information about events and the chapter is current.
- Promote chapter events, national events, and ICRI certifications.

Each of our chapters plays a crucial part in the success of our organization and commitment to these duties is a win for all. This ensures that all Board Members are working efficiently, effectively, and energetically toward ICRI common goals.

Thank you for your dedication and hard work towards making ICRI an amazing organization. Looking forward to our best turnout yet at the Chapters Committee Meeting!

David Grandbois, ICRI Chapters Committee Chair
Western Specialty Contractors–Minneapolis, MN

Join your local chapter!

ICRI has **38 chapters**, including **2 student chapters**, in metropolitan areas around the world. Chapters hold technical presentations, educational meetings, symposiums, and local conventions on repair-related topics.

Visit www.icri.org/chapters for more information.

ICRI**CHAPTER**NEWS

CHAPTER CALENDAR

ICRI Chapters are hosting events in 2024. Be sure to check with individual chapters by visiting their chapter pages to determine if they have made any plans after this publication went to print. You can also contact a chapter leader from any chapter about added events.

BALTIMORE-WASHINGTON
May 16, 2024
SECOND QUARTER DINNER MEETING
Lakewood Country Club
Rockville, MD

CAROLINAS
May 16 & 17, 2024
SPRING CHAPTER CONFERENCE
Hotel Indigo
Mount Pleasant, SC

CENTRAL OHIO
June 17, 2024
SECOND ANNUAL GOLF TOURNAMENT
Glenross Golf Club
Delaware, OH

CHICAGO
June 13, 2024
CHAPTER GOLF OUTING
White Pines Golf Club
Bensenville, IL

FLORIDA WEST COAST
June 26, 2024
CIGAR SOCIAL
Grand Cathedral Cigars
Tampa, FL

GEORGIA
May 13, 2024
SPRING GOLF TOURNAMENT
Heritage Golf Links
Tucker, GA

METRO NEW YORK
May 8, 2024
ANNUAL SYMPOSIUM
Concrete in a Sustainable World
Club 101
New York, NY

MINNESOTA
May 2, 2024
SPRING TECHNICAL SESSION
Braun Intertec
Bloomington, MN

MINNESOTA
July 16, 2024
ANNUAL GOLF TOURNAMENT
Bunker Hills Golf Club
Coon Rapids, MN

NEW ENGLAND
May 21, 2024
CHAPTER DINNER MEETING
Topic: Diagnosis & Repair of Settling Concrete Structures
Bellevue Golf Club
Melrose, MA

PITTSBURGH
June 7, 2024
ANNUAL GOLF OUTING
Birdsfoot Golf Club
Freeport, PA

VIRGINIA
May 8, 2024
CHAPTER GOLF OUTING
The Club at Viniterra Golf Course
New Kent, VA

INTERESTED IN SEEING YOUR CHAPTER NEWS & EVENTS LISTED HERE?

2024 Chapter News & Event Deadlines

JULY/AUGUST 2024 CRB
Deadline: May 1, 2024

SEPTEMBER/OCTOBER 2024 CRB
Deadline: July 1, 2024

NOVEMBER/DECEMBER 2024 CRB
Deadline: September 1, 2024

Send Chapter News and Events by the deadlines above to Program Director Dale Regnier at daler@icri.org.

ICRI CONCRETE REPAIR CHAPTERS

CHAPTER NEWS

FLORIDA FIRST COAST PRESENTS ANNUAL SCHOLARSHIP

The ICRI North Texas Chapter welcomed speaker Doug Beer, PE, to their Membership Meeting on November 29, 2023, at the Terracon office's training room in Dallas. Mr. Beer, who is the Construction & Maintenance Branch Manager for Texas Department of Transportation (TxDOT), presented a range of topics related to bridge repair and maintenance in Texas. The topics included current and forecasted bridge letting, funding sources for bridge rehabilitation and preservation, common structural repair methods, and recurring challenges associated with repair. The Chapter appreciated the opportunity to meet Mr. Beer and learn more about the massive effort associated with maintaining Texas's bridge inventory.

Doug Beer, PE (center), discusses TxDOT bridge maintenance and repair at the North Texas Membership Meeting

CHAPTER NEWS

FLORIDA FIRST COAST PRESENTS ANNUAL SCHOLARSHIP

Members of the Florida First Coast Chapter attended an E-week luncheon in February to present their annual ICRI Florida First Coast chapter scholarship to the winning recipients at the University of North Florida. In 2022, the Florida First Coast Chapter made a 3-year, $12,000 pledge to the University of North Florida, School of Computing, Engineering & Construction, establishing two yearly scholarships of $2000 each year. Each student is selected by a committee and chosen by the dean of the college. The scholarship is used toward the student's education in engineering.

As well as attending the luncheon to present our scholarship, Brittany Hill was asked to give a brief overview of ICRI to the attendees. This proved extremely helpful, because many in the audience did not know what ICRI stands for and what we do.

Florida First Coast presents a scholarship award. Pictured (left to right) are Brittany Hill from Sika, Isabella Matsuda Tamada, UNF Student, and Ashly Ellison with Coastal Construction Products

Chapter President Brittany Hill presented about ICRI to those gathered at the University of North Florida

ICRI MINNESOTA MEGA DEMO

The ICRI Minnesota Chapter hosted its 20th Annual Mega Demo at Local 633 Cement Masons, Plasterers, & Shop Hands Training Center on Friday, Feb 2, 2024. They were excited to see that nearly 100 participants attended, the largest attendance since 2019. The Chapter welcomed several special guests at the event. This list included a group of students along with their Program Director, from the Concrete Industry Management Program at South Dakota State, Brookings. This Bachelor of Science program is new to the Midwest and will prepare students with technology and education focused on the Concrete Industry. The Chapter also welcomed three apprentices representing the Bricklayers Local 1, Laborers Local 563, and the Cement Masons Local 633. These apprentices are stand-out pupils in their trade. As recognition, they all received a $500 scholarship for new tools from the Chapter.

Another highlight of this event was the presentation of the chapter's Lifetime Achievement Award to Keith Pashina, Senior Consultant at Building Consultants Group, for his dedication to the concrete repair industry.

The Mega Demo lineup included seven speakers who educated the audience on the use of remote-controlled equipment, new cement formulas, digital twin technology, and exterior building assessment with the use of drones. This event also included huge support from sponsors with a total of 15 vendor tables set up around the room.

The presentations included:

- Droning on about Building Enclosures, by Pamela Jergenson and Brett Bertram from Braun Intertec
- Hydo Demolition Technology, by Brian Gaede and Chad Diacek with Aquajets Midwest
- Concrete and Sustainability, by John Lee at Cemstone
- Defining Reality Capture and How Its Being Used in Construction, by Nathan House and Joe Pritzkow from Mortenson Construction

The chapter is grateful to the staff of the training center for their hard work to prepare the facility for the event. Year after year, this space does not disappoint as it has a perfect balance of classroom space with a separate indoor space for demonstrations that can get loud and messy. The room was abuzz all day with networking amongst professionals, education sessions to expand our knowledge, and recognition for those that shine. Save the date for the next Mega Demo on Friday, January 10, 2025.

NEWMEMBERS

COMPANY MEMBERS

Alpha Weatherproofing Corp.
Somerville, Massachusetts
United States
Paul Capobianco

BTL Architects, Inc.
Chicago, Illinois
United States
Delph Gustitus

Full Circle Water
Saint Joseph, Minnesota
United States
Liz Meyer

H.J. Cannon Group
Mount Laurel, New Jersey
United States
Herbert Cannon

John Rohrer Contracting Co., Inc.
Kansas City, Kansas
United States
Curtis Barkley

Kawika's Painting, Inc.
Honolulu, Hawaii
United States
David Dunham

Kraja Construction & Painting, LLC
Largo, Florida
United States
Irsid Kraja

Nexus Caulking & Waterproofing
Norfolk, Virginia
United States
Jordan Fox

Patuxent Engineering Group
Elkridge, Maryland
United States
John O'Connor

Shannon Construction Company
Pittsburgh, Pennsylvania
United States
Sandra Shaw

Southeast Restoration & Fireproofing
Stone Mountain, Georgia
United States
Thomas Deeds

Statesville Roofing & Building Restoration, Inc.
Statesville, North Carolina
United States
M. Davidson

Structural Systems, Inc.
Honolulu, Hawaii
United States
Damien Enright

ADDITIONAL INDIVIDUALS FROM COMPANY MEMBERS

Susana Amaral
Walter P Moore & Associates, Inc

Andy Anderson
Conjet Inc.
Charlotte, North Carolina
United States

P. Boulet
MAPEI Inc.
Laval, Québec
Canada

John Breska
PROSOCO Inc
Lawrence, Kansas
United States

Jeff Browning
Browning Chapman, LLC
Westfield, Indiana
United States

Francesco Capasso
Northford Structural Connections
New Haven, Connecticut
United States

Melike Celik, EIT
MAPEI Inc.
London, Ontario
Canada

Jesse Curtis
P&R Pro Coatings, Inc
Clearwater, Florida
United States

Fabio De Leon
Concrete Protection & Restoration, Inc.
Baltimore, Maryland
United States

Jonathan Drury
Simpson Gumpertz & Heger Inc.
Highlands Ranch, Colorado
United States

Sean Gownley
Miracote Division of Crossfield Products Corp.
Annapolis, Maryland
United States

Yon Hammel
Coastal Construction Products
Jacksonville, Florida
United States

Henri Johnson
The Quikrete Companies, LLC
Johns Creek, Georgia
United States

Jeff Keeling
Brokk Inc.
Monroe, Washington
United States

Karen Loweth
Walker Consultants
Waltham, Massachusetts
United States

Brian Terry
MAPEI Corporation
Richmond, Virginia
United States

John Wallace
Corrpro Companies Inc.
Conyers, Georgia
United States

Jack Wohlert
Browning Chapman, LLC
Westfield, Indiana
United States

INDIVIDUAL MEMBERS

Bruno Calado
Saint Johns, Florida
United States

William Cooper
Lawrenceville, Georgia
United States

Mitch Dehnert
Kent, Washington
United States

Jeffrey Diguette
Mclean, Virginia
United States

NEWMEMBERS

Bryon Elam
Normandy Park, Washington
United States

Casey Ford
Pembroke Park, Florida
United States

Adam Gdowski
Glendale Heights, Illinois
United States

Brian Hawk
King of Prussia, Pennsylvania
United States

Sam Keske
Austin, Texas
United States

Alex Laviolette
Beloeil, Québec
Canada

Darian Medeiros
Wellesley, Massachusetts
United States

Albert Meyer
Woodbury Heights, New Jersey
United States

Kelly Moorman
Bloomington, Indiana
United States

Anthony Noto
Lantana, Florida
United States

Jesse Osmond
Long Beach, California
United States

Chris Patterson
Houston, Texas
United States

Charlie Reber
Kansas City, Missouri
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Volunteer

Why 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—and available to assist you to answer questions about how ICRI operates, and to help you be the most effective volunteer possible.

Follow Your Interests

Check out the administrative and technical committees of ICRI, attend their meetings and learn what each is working on. Then decide where your area(s) of interest fit best. The ICRI staff is here to answer your questions and help align you with your interests. You are welcome to attend any meeting of any committee on the administrative or technical committee list. You attend—you can decide if you want to join.

Length of Commitment

Most volunteer commitments are ongoing; leadership positions are a 3-year commitment. Committees usually meet monthly for 1-1.5 hours. In addition, committees often require tasks to be completed outside of the meetings on the volunteer's own time. **Visit www.icri.org for more information**.

We are focused on the industry's future and **your success.**

ICRI
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Restore | Repurpose | Renew

ICRI is the center for concrete repair and restoration leadership, supporting a profession built on science and craftsmanship—making the built world safer and longer lasting.

1. Developing an industry of professionals through networking and best practices
2. Expanding certification programs and services to educate and build skills
3. Building strategic partnerships to strengthen the relevance of ICRI and the concrete restoration industry
4. Serving the needs of members and customers with staff, volunteers, and our chapter network

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Project Awards

Recognizing Outstanding Concrete Repair, Restoration, and Preservation Projects

ICRI conducts an annual awards program to honor and recognize outstanding projects in the concrete repair industry. Entries are received from around the world, and the winning projects are honored each year at the annual ICRI Awards Luncheon at the ICRI Fall Convention.

ICRI Project Awards

Honor and recognize concrete repair projects in the following categories, as well as an overall Project of the Year Award: High-Rise; Historic; Industrial; Longevity; Low-Rise; Masonry; Parking Structures; Special Project; Sustainability; Transportation; and Water Systems.

Start preparing now. The submission form is extensive and will take some time. You will need the following:

- Current ICRI Company Membership
- Owner Permission Letter
- Brief Project Abstract
- Detailed Project Presentation
- Pictures
- Payment

Scan the QR code to learn more about the ICRI Project and Safety Awards

Submit your entry by July 12, 2024

Entry fee discount if you submit by June 7.

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Concrete Slab Moisture Testing (CSMT) Program

If you are involved with the measuring or assessment of moisture in concrete floor slabs, ICRI's CSMT program is for you!

Comprehensive Education and Certification Courses will give you the knowledge and skills to:

- ✓ Improve the performance of concrete slab moisture testing
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- ✓ Make better decisions on when a concrete slab is ready for a floor covering installation
- ✓ Reduce risks for your clients and your team

ICRI CONCRETE REPAIR CERTIFICATION

Learn more at **www.icri.org**

Questions? Contact ICRI Program Director Dale Regnier at daler@icri.org

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