January/February 2019
Vol. 32, No. 1

CONCRETE REPAIR BULLETIN

A Bimonthly Publication of the International Concrete Repair Institute

CRACKS AND JOINTS

2019 ICRI President CHRIS LIPPMAN

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INTERNATIONAL CONCRETE REPAIR INSTITUTE

ON THE COVER: 2019 ICRI President Chris Lippman. See page 2 for a Q&A with the new ICRI president.

CONCRETE REPAIR BULLETIN

January/February 2019
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FEATURES

DEPARTMENTS

NOTE FROM THE EDITOR

The new year has started for all ICRI members and this will be a year of change for ICRI. We will be rolling out our new logo, new programs and guideline updates.

The year started off with the Annual ICRI Kick-off Party held in conjunction with the World of Concrete at the Chateau Paris at Paris Las Vegas Hotel in January.

In April we will be heading south to Jacksonville, Florida, for the Spring Convention, and then to Philadelphia for the Fall Convention in November. Throughout the year ICRI will be holding Concrete Slab Moisture Testing (CSMT) and Concrete Surface Repair Technician (CSRT) Certification Programs at various locations a crossed the country.

This issue of the *Concrete Repair Bulletin's* theme is Cracks and Joints. The issue has several articles about cracking in concrete structure, an article on How to Avoid Potential Issues with Expansion Joints, and a Q & A article featuring incoming ICRI President Chris Lippman.

I hope you have all have a successful and safe 2019 and look forward to seeing you at this year's events!

Jerry Phenney, Editor, CRB
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2019 *CRB* EDITORIAL DEADLINES

May/June 2019 Issue—March 1, 2019
Theme: *Corrosion*

July/August 2019 Issue—May 1, 2019
Theme: *Strengthening*

September/October 2019 Issue—July 1, 2019
Theme: *Waterproofing with Aesthetics: Making it Dry and Appealing to the Eye*

November/December 2019 Issue—September 3, 2019
Theme: *2019 ICRI Project Awards*

Q&A WITH CHRIS LIPPMAN

We recently sat down with new ICRI President Chris Lippman (also featured on the cover of this issue of the *Concrete Repair Bulletin*) and asked him about ICRI and his thoughts on its future.

Can you share with us your upcoming goals for ICRI?

My top priority is to strengthen national support of involvement with chapters through the development of products and programs for chapters to deliver. The secretariats have over 30 initiatives that are currently in production. 2019 should be a groundbreaking year of new product offerings which include certifications, guidelines, videos, and webinars. We may have big goals ahead, but these new product offerings can only help our chapters grow and assist with the creation of new ones. Further, I want to enhance the engagement and commitment of members and directors of chapters at the national level using programs like our popular chapter roundtable and other platforms.

What do you see for the future of ICRI?

The future is bright in many ways, and I can forecast that ICRI will truly become an international identity beyond North America. A lot has happened over the past year to prove this theory. We were recently invited to the "The Strategic Concrete Alliance" of the United Kingdom where our acting treasure John McDougall gave a presentation on the benefits of membership of ICRI. Within the organization, a new Global ExpansionTaskforce was created, and they are actively pursuing different types of International organizational growth. We continue to get more International project award submissions which included one of this year's Awards of Excellence from Sanika Waterproofing Specialist of South Africa. I am told that we recently received an application for a new chapter in Mumba, India and South Africa has also expressed interest in starting a future chapter. International growth is well on its way.

What advice would you give a new member of ICRI?

Don't be bashful to get involved. Fill out your online membership profile and connect with the different groups and activities within the organization. Get involved in as much as you can and be prepared to be recognized as an industry leader. Chapter leaders are always looking for help, and they need all the support they can get. Whether it is a leadership position in your local chapter or getting involved with the 35 technical or administrative committees on a national level you would be surprised how much you can make a difference. This industry changes daily and our organization needs to hear from our new members just as much as the current ones.

CHRIS LIPPMAN

What is has been your biggest accomplishment to date?

It has to the implementation of our new ICRI strategic plan. Thirteen members and I took an incredible visionary plan and put it to work. It was a lengthy and challenging task which included the creation of the new Secretariat group. When I look back and see the results of the implementation, I could not be more proud of the organization's accomplishments and the efforts the implementation team put into it.

Can you share with us, one thing that you really think reflects positively on our organization?

There are so many positive things but If I have to pick one, it is the spirit and passion of our membership. We are all in this together making the built world safer and longer lasting. Whether you attend a local chapter meeting or the national convention we all come together to learn from shared experiences. We are not an exclusive type of membership and all chapter and committee meetings are always open to everyone. ICRI gives us the ability to network with the best minds in the industry. This allows us to grow as professionals giving the organization the outstanding credibility it has today. We truly are the recognized leaders of the concrete repair industry! ■

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TACTALK

The Future of Concrete Repair

FRED GOODWIN

Welcome back to TACTalk. Following is a summary of the ICRI technical committeess' activities from the 2018 ICRI Fall Convention in Omaha.

Technical Activities Committee (TAC)

First, Jim McDonald is retiring as TAC Secretary. Jim is a founding member of ICRI, a past president, and has served for many years as the TAC secretary. His behind the scenes work has kept TAC and ICRI running and he deserves our upmost appreciation for all his efforts. Anyone who has served on TAC, and especially the previous TAC chairs, know how important he was to the operation. He leaves some big shoes to fill. At this time, his work will be split between Ken Lozen, ICRI Technical Director; Mark Nelson, TAC Vice-Chair; and me.

Before the 2019 ICRI Spring Convention, there will be some TAC roster changes. TAC consists of the Chair, twelve members, a Secretary, and the ICRI Technical Director (non-voting staff member). TAC members are appointed by the TAC Chair for three-year terms and can be reappointed for one additional term. Appointments are based on balancing diversity among contractors, engineers, and manufacturers. One-third of the members are appointed or reappointed each year. Aamer Syed of Sika is retiring from TAC having already served two terms. Peter Denicola and Rick Edelson are also stepping down but will continue their involvement in ICRI. ICRI and TAC thank them for their service. Rick will continue as chair of the Coordination Committee, as well as reactivate Committee 150 to update the Guide to the ACI 562 *Code for Assessment, Repair, and Rehabilitation of Existing Concrete Buildings* jointly authored by ACI and ICRI.

There are also some upcoming vacancies in technical committee chairs. Technical committee chair appointments and reappointments are among TAC's most critical responsibilities, and TAC requests and considers the advice of the current committee chairs. There are currently eleven technical committees with chairs serving a term of two years—usually expiring at the ICRI spring conventions. Chairs can be reappointed for 3 terms of 2 years each. Unusual circumstances are required to justify reappointments beyond this to keep fresh ideas flowing and share the leadership responsibilities.

- Committee 160 Sustainability Chair Leo Whiteley will be replaced by I-Wen Huang who has accepted this appointment pending ratification by TAC.
- Committee 410 Masonry Co-Chairs Pat Morrissey and John Wathne will be replaced by Jason Coleman.
- Committee 210 Evaluation Co-Chairs Todd Allen and Dennis Wipf, 320 Materials and Methods Chair Ashish Dubey, and Committee 710 Coatings and Waterproofing Chair Peter Golter have terms expiring.

Filling these vacancies is an ongoing project that needs completion prior to the Spring convention being held on Monday-Wednesday, April 8-10, 2019 at the Omni Hotel & Resorts Jacksonville in Jacksonville, Florida. Please note the change of meeting days for the spring convention.

Other activities in TAC include:

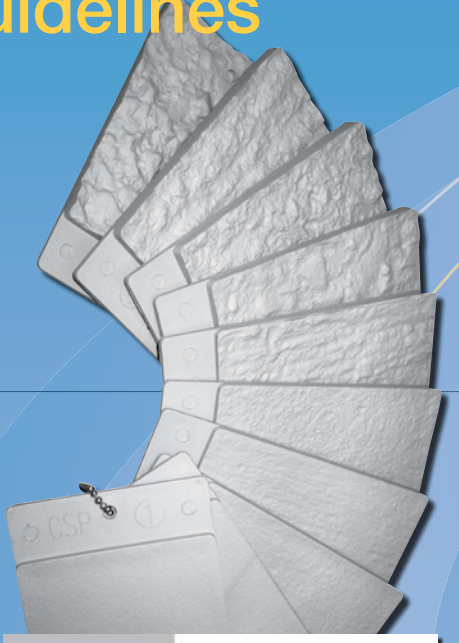
- developing a job description for TAC contacts and a training manual for technical committee chairs. Draft guidelines are nearly completed for both documents. TAC will vote on the guidelines and if passed will be included in the Technical Committee Manual (TCM).
- An appeals process is mentioned in the TCM, but a guidance document is being developed to improve the process. This document will be balloted by TAC and then will go into the TCM.
- A grievance committee will also be formed by ICRI to deal with ICRI complaints and details will be included in the policy manual.
- A procedure for separating voting members from consulting members in technical committees is also being developed for Causeway (ICRI's committee project management system) to follow the TCM ½ and ⅔ rules.
- Ken Lozen will continue to send the Document/Product Tracking Table to the technical committee chairs one month before each convention summarizing the status of each of its documents and educational products.
- A refinement of the compliance check for TAC document review is being adopted. If the TAC review group wants to review specific requests, those will be resolved by the review group. Ken Lozen as Technical Director will address editorial comment reviews for the TAC compliance check unless directed otherwise by the TAC review group.

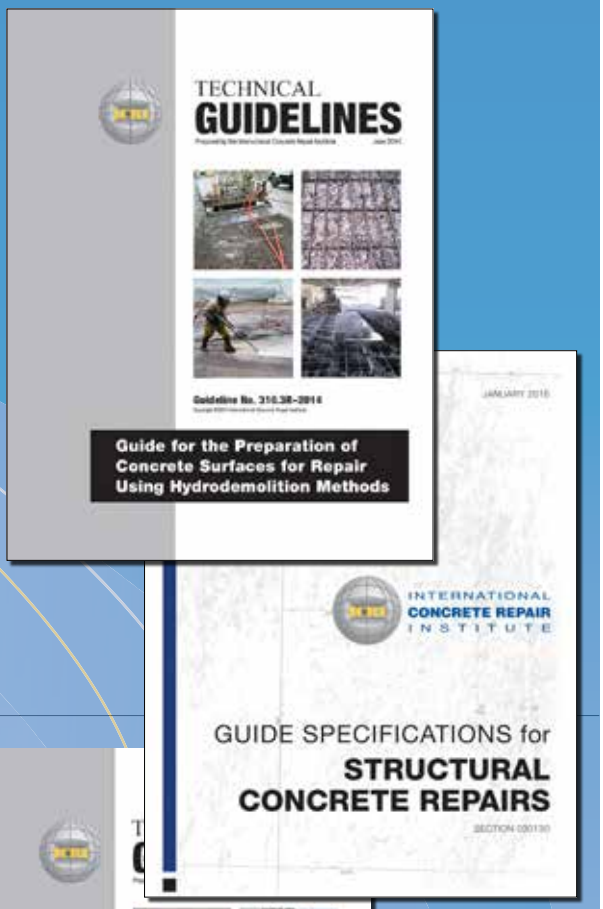
TAC has several standing subcommittees, including one to prepare and compile updates to the Technical Committee Manual (TCM) with Matt Sherman as the subcommittee chair. Mark Nelson will chair another subcommittee working to develop a document creation guideline to provide needed guidance on improving the development of current documents and alternative formats not currently included in the TCM.

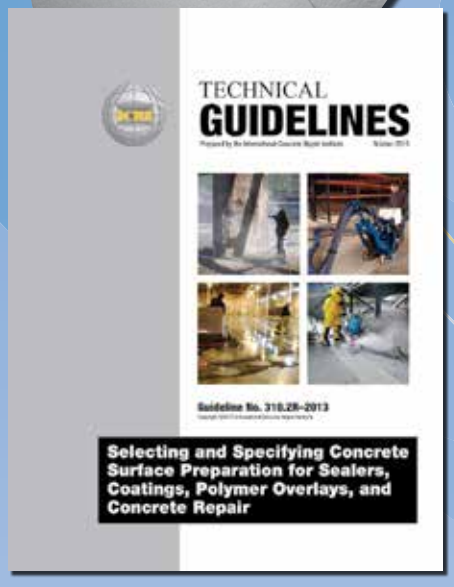
Another subcommittee chaired by Peter Kolf is updating the Concrete Repair Terminology published on the ICRI website.

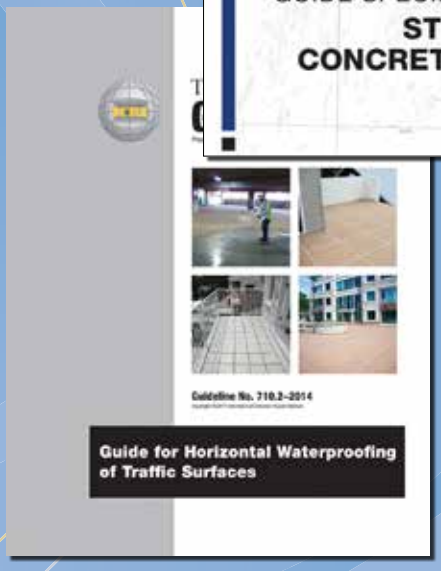
Continued on page 6

Concrete Surface Profile Chips and Guidelines









PDFs of ICRI Technical Guidelines* are FREE to MEMBERS!

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Continued from page 4

A standing subcommittee for review of technical programs chaired by Peter Golter will continue its excellent work reviewing presentations and the selection of speakers for technical sessions at ICRI conventions.

Technical Committees

The Technical Committees have also been very busy. Budgets for technical committees will need to be prepared prior to the spring convention to be included in the TAC budget. If specific initiatives of a technical committee require funding, this is the opportunity to plan for these activities.

Committee 110 Guide Specifications has developed a promotional PowerPoint presentation on its Structural Concrete Repair Specification and will be submitting its Epoxy Injection Specification to TAC for review shortly. A Bonded Overlay Specification is also under development.

Committee 120 Environmental Health and Safety is nearing completion on a safety discussion outline for ICRI meetings. Revision of the 120.1 *Guidelines and Recommendations for Safety in the Concrete Repair Industry* is progressing slowly and likely will be updated on a section by section basis.

Committee 130 Procurement Methods did not meet at the Fall convention. Activities in committee include updating 130.1R *Guide for Methods of Measurement and Contract Types for Concrete Repair Work* and developing a guideline for Procurement of Concrete Repair Services.

Committee 160 Life Cycle and Sustainability is considering a roadmap for information on sustainability and service life information in the public domain. Other documents in committee include guidelines for evaluating both concrete and masonry buildings.

Committee 210 Evaluation is developing reinforcing bar cleanliness descriptions and samples. The tensile bond pull-off testing webinar has been formatted, submitted and reviewed by TAC. The TAC comments are being addressed and will be developed into a no-protest consent ballot.

Committee 310 Surface Preparation is looking to develop a webinar for surface preparation and is discussing having alternative surface profile chips produced from concrete.

Committee 320 Materials and Methods is developing online training modules on cracking. A prototype has been developed and three more are planned to ballot in December. The first module in the Learning Management System (LMS) format will go to TAC for review and the others will be reviewed by TAC as scripted PowerPoint presentations. The revision of 320.1R *Guide for Selecting Application Methods for the Repair of Concrete Surfaces* has passed committee ballot and a TAC review group has been formed. The 320.2R *Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces* revision is being published. The 320.7R *Guideline for Structural Grouts Material Data Sheet Protocol* was reviewed by TAC and the committee is preparing responses. ACI 364 prepared and sent a draft document to Committee 320 for merging the 320.3R *Guideline for Inorganic Repair Material Data Sheet Protocol* with ACI 364.3R *Guide for Cementitious Repair Material Data Sheet*. A Memorandum of Understanding (MOU) will be necessary between ACI and ICRI to cover this document.

Committee 330 Strengthening and Stabilization is working on the completion of online training modules for development of a fiber-reinforced polymer (FRP) inspector certification program.

Committee 410 Masonry: Jason Coleman agreed to chair and was approved at the TAC meeting at the Fall convention. TAC thanks Patrick Morrissey and John Wathne for their service over the past several years as co-chairs of this committee. The *Guide for In-place Restoration and Stabilization of Architectural Terra Cotta is* close to being balloted in committee. Interest in starting development of a masonry specification was discussed.

Committee 510 Corrosion: 510.2R *Guideline for Use of Surface Applied Corrosion Inhibitors for Corrosion Mitigation of Reinforced Concrete Structures* will be sent to TAC for a compliance check after a successful committee response to appeals was balloted. A *Guide for Conducting Corrosion Potential (Half-Cell) Testing for Steel Reinforced Concrete Structures* will be balloted by the committee. Plans to develop a basic corrosion of steel in concrete white paper were discussed. Efforts continue for development of a *Guide for Conducting Corrosion Rate Testing for Steel Reinforced Concrete Structures* and a *Guide for Resistivity Testing for Steel Reinforced Concrete Structures*.

Committee 710 Coatings and Waterproofing: In subcommittee 710-B, *Moisture-Related Issues with Concrete Floor Finishes* has passed committee ballot with some editorial changes pending. 710.1 *Design, Installation and Maintenance of Protective Polymer Flooring Systems for Concrete* is being concurrently balloted by ICRI, NACE, and SSPC to update this joint document. The 710-E subcommittee's *Guide for the Selection of Grouts to Control Water Leakage through Cracks in Concrete Structures* (formerly 03738) is close to balloting with some changes needed to the references section. ■

***Fred Goodwin** is chair of the ICRI Technical Acivities Committee (TAC)*

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SECRETARIATUPDATE

JEFF BARNES

The Secretariat, born out of the Strategic Implementation Group, is now completing its second year. In that time, we have had upwards of sixty ideas presented to us for discussion and consideration—of those 60, roughly 85% have been accepted as being beneficial to ICRI. Within that 85%, close to half of them have been completed—meaning the idea was converted into an initiative; turned over to a committee, person, or task group; to be seen through to the very end, resulting in the creation of webinars, certification programs, new committees and, yes, with the creation of a global strategy task group, one could say ICRI is in the process of affecting global change.

Combined with this success of the Secretariat is the rebranding effort taking place in the Marketing Committee. This rebranding effort, while not a direct result of an idea submission, was initiated around the same time as the creation of the Secretariat. This rebranding effort has resulted in the creation of a new logo for ICRI, which was unveiled during 2018 ICRI Fall Convention in Omaha. Other items are being addressed as part of the rebranding effort are updating the website and getting more social media involvement.

You may be wondering what the success of the Secretariat and the rebranding efforts have in common. Well, they speak to change and growth. They speak to an energy within the organization that is only getting stronger. They speak to an increase in committee involvement and more energized conversations in the halls and lobbies at conventions. These are all great and amazing things and they are taking place because of ideas. So please, take a moment and submit your idea. ■

Jeff Barnes is an ICRI Secretariat and serves on the ICRI Board of Directors.

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ICRI Mission: ICRI provides education, certification, networking and leadership to improve the quality of repair, restoration, and protection/preservation of concrete and other material systems.

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2019 ICRI Project Awards

ICRI conducts an awards program each year to honor and recognize outstanding projects in the concrete repair, restoration and preservation industry. Entries are received from around the world, and the winning projects will be presented during the Awards Banquet at the 2019 ICRI Fall Convention. Each winning project will be featured in an article in the Concrete Repair Bulletin.

For 2019

- All entries must be submitted using our online submission form.
- Deadline for receipt of entries is Monday, June 3, 2019, 5:00 pm CDT.

Save On Your Entry Fee!

- Submit your entry by May 1, 2019 and pay an entry fee of $250.
- Submit your entry between May 2, 2019 and June 3, 2019 and pay an entry fee of $300

Judging Criteria

Entries will be judged on uniqueness, use of state-of-the-art methods, use of materials, functionality, value engineering, and aesthetics. The panel of five judges—selected by the ICRI Awards Committee—consists of engineers, contractors, and manufacturers from all over North America.

Eligibility

The project must be either completed after January 1, 2017, or be substantially complete before March 31, 2019. The company submitting the entry must be an ICRI company member. The portion of the project performed by the submitting company must amount to at least 25% of the project cost. (This does not apply to design firms or owners.) A subcontract for the repair portion of a larger project will be considered as the project.

*Optional Sustainability Award Entry

Did your project incorporate sustainable repairs or modifications? To be considered as an outstanding sustainability project, in addition to your selected category, you will given the opportunity on your entry form to elaborate on sustainability considerations as set forth in the ICRI Sustainability for Repairing and Maintaining Concrete and Masonry Buildings White Paper.

Complete rules can be found at

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How to Avoid Potential Issues with Expansion Joints

BY SUZANNE PHILLIPS

Fig. 1: Expansion joint "failure" showing water and rust staining at the slab underside

The primary indication of an exterior expansion joint *failure* is water penetration, or leaking, in the area of the expansion joint (Fig. 1). However, this condition may not be due to a failure with the expansion joint system but may be caused by other conditions. The definition of an expansion joint system failure is: *The expansion joint system fails to perform to manufacturer's published specifications*.

Manufacturers conduct rigorous testing on their products with quality control programs in place to assure that the products meet published specifications. So, what are the potential causes of expansion joint failures, and how can they be avoided?

Failure modes vary by the type of expansion joint system, but there are common potential causes that can be addressed during each stage of the project from design through post-installation maintenance. This article focuses on restoration projects.

Design

Restoration projects present unique challenges in every phase of the project, but particularly in the design phase. Many repair and restoration projects are conducted on older structures where original plans and structural design criteria may not be available. Constraints from existing designs including structure movement, transitions, and existing materials may limit the choices for expansion joint systems to be used in the repair. Often it is difficult to know the extent of required repairs until the existing material is removed (Fig. 2), and that typically does not take place until a contract has been awarded. In addition, complicated existing conditions, budgetary constraints, unique applications, and interfacing new material with existing or dissimilar materials can all present significant issues.

Specifying the proper expansion joint system for the application is critical to the overall success of the system's performance. There are several areas that need to be considered when selecting the correct expansion joint system including:

- Type of structure—precast, cast-in-place, post-tension, plaza pavers, etc;
- Type of movement—thermal only or seismic requirements;
- Type of traffic —pedestrian, special needs, vehicular, heavy duty;
- Application—horizontal, vertical, below grade;
- Expected overall joint movement;
- New construction or restoration; and
- Warranty requirements.

While it is not feasible to go into detail regarding each of these areas, the most important consideration is to *clearly define how*

to handle these situations during the design phase of the project. This includes providing instructions on how to deal with unique conditions. Manufacturers have extensive experience with a variety of projects and applications, and they can be instrumental in assisting with determining the best product(s) for the application, providing guidance for "difficult to seal" conditions, and handling complex transitions (Fig. 3). Further support can be provided after the contract is awarded by working with the contractor in the field to assure that the material is installed properly and to address any additional concerns that may arise.

Installation

After the expansion joint system has been clearly defined during the design phase of the project, installation of the expansion joint system is the next critical stage. This can generally be divided into three parts: proper size seal selection, preparation of substrate, and installation of material per the manufacturer's directions.

Proper size seal selection is essential to the overall performance of the expansion joint system. This is determined by the size of the joint opening (as measured in the field), and the *temperature of the substrate at the time the measurement is taken* (Fig. 4). Joint opening sizes on drawings are typically shown at "mid-range" temperatures (generally 70°F [21°C]). If the substrate temperature varies significantly from this mid-range temperature, the seal size selected and ordered may not be correct. Manufacturers have temperature-movement charts that can be used to determine the correct size seal based on the substrate temperature at the time the measurement was taken.

The importance of preparation of the substrate cannot be overstated. The substrate provides support for the expansion joint material, regardless of the type of system used. If the substrate is not secure, sound, and solid, the material surrounding the joint will fail causing a failure of the system. In addition to the joint opening, the surrounding areas need to be free of cracks, delamination and spalling to assure that water cannot penetrate the area and/or migrate to the expansion joint.

The joint opening must be of uniform width, parallel and true. Although some systems are more forgiving than others, the better the joint opening preparation, the less chance of a future callback or warranty issue. For wing systems and urethane wide joints, the blockouts used for installation need to be sized to manufacturers' requirements without cracks, holes, or spalls. Patching, repairs and re-work may be necessary to correct these issues (Fig. 5). For all expansion joint systems, substrate preparation must include achieving the required surface roughness. Although sandblasting is typically used, other methods can achieve the necessary surface roughness, commonly ICRI Concrete Surface Profile (CSP) 3 to 5. Inspection of the joint opening prior to installation of the material should be conducted by an individual experienced in expansion joint installation to assure these requirements are met.

Installation of the expansion joint should be performed by crews that have been trained by the manufacturer in proper procedures

Fig. 2: Restoration projects present unique challenges – difficult to assess extent of repairs required until existing material is removed

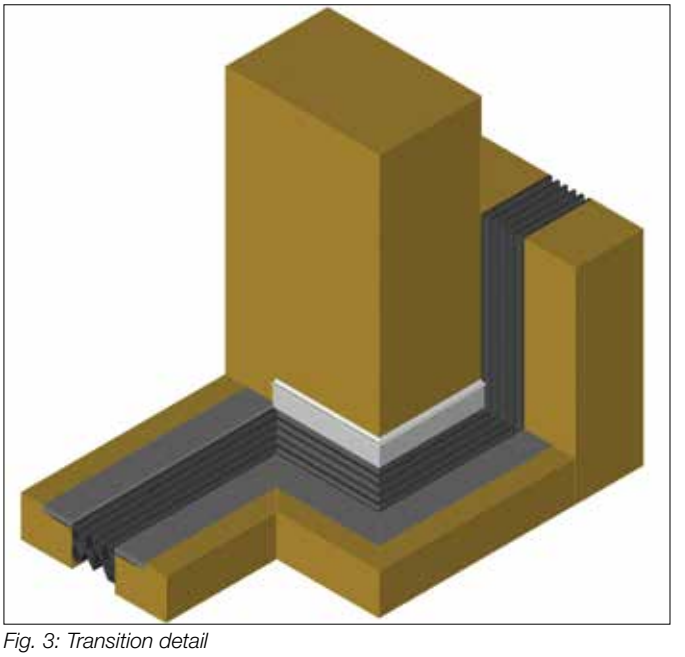

Fig. 3: Transition detail

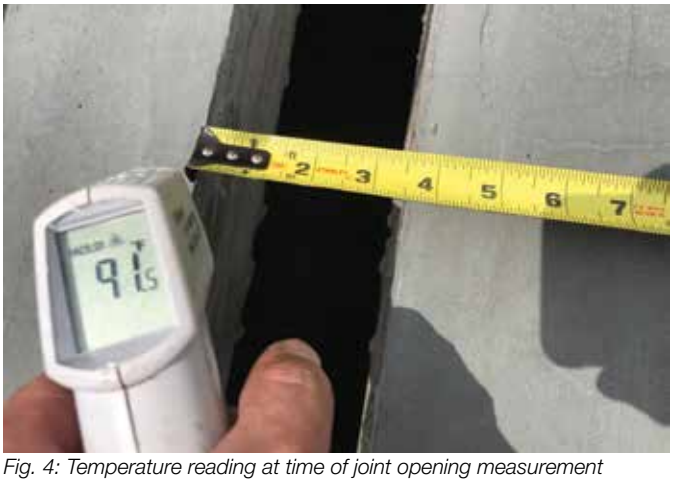

Fig. 4: Temperature reading at time of joint opening measurement

Fig. 5: Expansion joint blockout preparation

Fig. 6: Complicated transitions

Fig. 7: Expansion joint seal damaged by snowplow

for their specific products (i.e., approved applicator). It is not necessarily sufficient to have one or two people attend a training session. The people actually installing the product need to be trained in proper procedures, with on-site support provided by the manufacturer as needed.

Transitions

Transitions can be challenging on any project (Fig. 6). Transitions are generally found in the horizontal plane (around columns) and/or in the vertical plane (curbs and upturns at the end of the expansion joint run). Transitions can also occur between dissimilar materials where new material is installed adjacent to existing material. *Every transition is a potential leak point*, so they must be addressed in the design, installation, and maintenance phases of the project.

In the design phase, it is very important that the project engineer/architect define how the transition is to be handled by the contractor. This may require factory-fabricated transitions that are spliced into longer runs on site, splices that are completed on site (due to difficulty in obtaining accurate measurements or unusual conditions), or some combination thereof. This will be dependent on the site conditions and the type of material used; foam seals are generally easier to splice on-site than wing seals or compression seals.

For transitions completed on-site, the construction crew must be properly trained and have the correct equipment available, especially for heat welded wing seal transitions. Training and splice kits, with all required tools for splicing materials, are generally available from the manufacturer.

Maintenance

The final phase involving expansion joint systems is post-installation maintenance by the owner of the structure. This is important for meeting the requirements of the written warranty provided with the system, and to extend the life of the material. Maintenance generally involves keeping the expansion joint clean and free from dirt and debris, as well as periodic inspections (bi-annual) to check for potential leak points and damaged areas of the joint. These inspections allow the owner to take proactive measures to correct potential minor issues before they become more significant.

In areas where snowfall is common, damage from snow plows is equally common (Fig. 7). The maintenance instructions provided by manufacturers should clearly state precautions that need to be taken regarding snow plows (i.e., rubber tipped plows or lifting the blade in the expansion joint area among others). It is recommended that an inspection be conducted in the spring to assess the damage from snow plows and repairs undertaken as quickly as possible. Although this will not be considered a warranty repair, these smaller repairs will save more extensive repairs in the future.

Material Manufacturer

Manufacturers have a responsibility to provide high-quality

products that meet published specifications. Product testing and evaluation are essential to assure quality standards are consistently met (Fig. 8). In addition to routine lot testing, specialized testing can be conducted to determine a product's suitability for different and unique applications. Research and development testing is also used for new products prior to their introduction to the marketplace.

Although the definition of an expansion joint failure outlined above may appear to absolve the manufacturer of responsibility beyond providing a product that meets published specifications, the role of the manufacturer does not end there. The manufacturer should consider their function to be that of a participant throughout the entire project from design through post-installation maintenance.

Manufacturers can act as consultants during the design and installation phases of the project. They know their products and the potential limitations. They have experience with many unique applications that can be used by architects, engineers, and contractors to develop solutions for "difficult to seal" conditions. They can also provide valuable technical support for contractors both on-site and in classroom training sessions.

If an issue does arise, it is important to get to the root of the problem to determine the proper corrective action for a permanent fix. The problem may be with the expansion joint material, the substrate surrounding the material, issues during installation, snow plow damage, or some other cause. All parties (owner, A/E firm, contractor, manufacturer) need to work together to determine the best course of action for resolving the issue.

If the root cause is determined to be an issue with the expansion joint product, the manufacturer must honor their warranty and work with the contractor to resolve the issue quickly. It is in the best interest of all parties to work together to address the issue without wasting valuable time and effort with blaming and finger pointing.

Conclusion

Most of the issues with expansion joint systems can be avoided by taking proactive measures during all phases of the project to identify and address potential problem areas. This requires that the owner, architect/engineer, contractor, and manufacturer work together as a team from design to post-installation maintenance. The efforts put forth above to deal with potential issues at each stage of the project will provide significant long-term dividends, with less callbacks, warranty issues, and future repairs. ■

Fig. 8: Product testing to extremes

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Cracks and Joints in Concrete Structures

BY MARK DE STEFANO

CRACKS

Cracks, what are they, what causes them and how to prevent them? Merriam-Webster[1] defines a crack as to break, split, or snap apart. In terms of concrete, a crack is a separation of the concrete media.

Concrete provides structures with strength, rigidity, and flexibility from deformation. These characteristics, however, result in concrete structures lacking the plasticity to move in response to environmental or volume changes. Cracking is usually the primary sign of distress in concrete. It is, however, possible for deterioration to exist in advance of the crack's appearance. Cracking can occur in both hardened and plastic concrete as a result of volume changes and recurrent loading.

***Crack:** a complete or incomplete separation of concrete into two or more parts produced by breaking or fracturing.*

It is important to identify the principal concern regarding any cracking. The main concerns are whether the cracks are affecting structural integrity, caused by an unsuitable design, aesthetically unacceptable, or reducing durability.

A crack's environmental conditions influence the extent to which it affects its structure's integrity. Greater exposure to aggressive conditions increases the possibility of structural instability. Crack sizes range from micro-cracks that expose the concrete to efflorescence to larger cracks caused by external loading conditions. Recording crack sizes, shapes, and locations can aid in determining their initial causes. Failure to properly evaluate cracks can cause additional distress and can cause the cracks to reappear.

Cracking in Plastic Concrete

Cracks that form in plastic concrete can be categorized as either plastic shrinkage cracking or plastic settlement cracking. Both types result from the bleeding and segregation process that occurs when fresh concrete is placed. Cracks caused by excessive drying from exposed surfaces (plastic shrinkage cracks) can form in young concrete within the first few hours after placing. During this period, the concrete is plastic and has little strength. Water can move relatively freely and tends to move upwards towards the surface, a phenomenon known as bleeding.

Plastic Shrinkage Cracking

Evaporation of water occurs at the surface and is accelerated at high temperatures and/or low humidity, particularly in windy weather. If evaporation occurs at a quicker rate than bleeding, there is a net loss of water from the surface layer of concrete, resulting in a net reduction in volume. The surface layer of concrete attempts to contract but is restrained by underlying layers which are not subject to the same reduction in volume. The result of the restraint is tensile stresses develop at the surface layer and cracks form.

As the concrete has very low strength at this stage, the pattern of plastic shrinkage cracks is usually random but may be influenced by the direction of finishing operations. Plastic shrinkage cracks are usually shallow and generally measure from 0.04 to 0.08 in (1 to 2 mm) in width and form in the laitance layer of the concrete. Laitance is an accumulation of fine particles on the surface of freshly placed concrete occurring when there is an upward movement of water through the concrete due to the presence of too much mixing water, excessive tamping, or vibration of the concrete. As the concrete's heavier particles settle due to gravity, they push the water and lighter particles toward the surface. Failure to properly monitor the temperature, wind, and humidity conditions can cause the evaporation rate of the surface water to exceed the bleed rate, drying out the concrete's superficial layer and therefore shrinking it due to dehydration. The concrete beneath the surface layer is still well hydrated, however, and maintains its volume. This applies opposing tensile forces to the lower part of the drying concrete on the surface, causing a cracked concrete profile.

Plastic Settlement Cracking

Plastic settlement cracking can occur as a result of such restraints to the consolidation of the fresh concrete as the use of steel reinforcing bars or formwork. As the concrete bleeds, the water migrates its way to the surface. Settlement occurs as the aggregate and cement progress downward due to gravity.

This separation forms a weaker layer of concrete at the surface. Restraints such as steel reinforcing steel close to the surface and insufficiently covered with concrete can cause a crack to occur over the reinforcing steel.

Plastic settlement cracks may also occur in forms involving a sudden change in the concrete's depth, as it settles more in the deep sections than the shallow ones, forcing cracking at the point of change. A good example of this is waffle troughs, in which the depth changes constantly across the length of the form.

Cracking in Hardened Concrete

Cracking in hardened concrete can result from any one of many causes. The causes that influence the implementation of joints include: drying shrinkage – which is the main cause – and thermal stresses.

It is imperative to understand the effects that influence the causes of cracking in order to eliminate the cause and select the correct repair method.

Drying Shrinkage

This is the principal cause of cracking in hardened concrete. This cracking occurs near the restraints caused by volume changes in the concrete. Cracks are formed by restraint to volume changes caused by the loss of excess water. Shrinkage cracks occur depending on the rate of drying but usually occur several months to three or four years after casting. The loss of moisture from fresh concrete results in a reduction in volume. If the shrinkage movement is opposed by some external or internal restraint, stresses will develop. When the stress exceeds the tensile capacity of the concrete, cracks develop.

Joint: *a physical separation in concrete, including cracks if intentionally made to occur at specified locations.*

Thin members with a large surface area such as slabs are particularly vulnerable. Drying out occurs from the surface and hence the surface layer is first affected. The surfaces of large cross-section members may crack because movement is restrained by the inner section of concrete. Concrete near to corners and edges is particularly prone to cracking as loss of moisture takes place from the adjacent surfaces. There is no typical pattern of drying shrinkage cracking as the cracks form at any location where there is a restraint to shrinkage movement. The cracks usually occur perpendicular to the direction of the restraint.

This cracking is the result of a combination of factors that influence the magnitude of the tensile stresses that cause it. These factors include the amount and rate of shrinkage, the degree of restraint, the modulus of elasticity, and the amount of creep. Additional factors to be aware of include the type of aggregate, water content, binder type, and the concrete's mix proportions and mechanical properties.

The amount and type of aggregate and the cement paste are the main influences on the amount of drying shrinkage. To minimize the amount of shrinkage, it is best to use a stiff aggregate in high volumes relative to the cement paste. The rate of shrinkage increases with the volume of cement paste. The aggregate provides internal restraints to shrinkage. Similarly, increases in the ratio of water to cement in the cement paste increase the level of shrinkage by increasing the potential for volume loss through water evaporation.

Thermal Stresses

Temperature differences within a concrete structure may be caused by portions of the structure losing heat of hydration at different rates or by the weather conditions cooling or heating one portion of the structure to a different degree or at a different rate than another portion of the structure. These temperature differences result in differential volume change, leading to cracks. This is normally associated with mass concrete and large and thicker sections of column, piers, beams, footings and slabs.

JOINTS

Basically, there are two type of joints: control joints and expansion joints.

Control Joints

Control joints are used to control and reduce cracking due to shrinkage, creep, and thermal movement. Control joints in concrete are provided at regular intervals to form a weak plane, so that cracks are formed at the joints but not in undesired places. Control joints are provided in concrete pavements, slabs, walls, floors, dams, canal linings, bridge, retaining walls, etc. Another way to look at these joints is a controlled cracking joint. These cracks are restricted and prevent the formation of large cracks due to the presence of reinforcement in the concrete. In unreinforced concrete, the small cracks tend to develop into large cracks at irregular intervals. To prevent such cracks, control joints must be installed at appropriate intervals. These joints, if installed properly, create a coordinated weakness in the concrete so the cracks can be directed to a specific location which can be maintained.

Expansion Joints

An expansion joint is comparable to a control joint, as expansion joints are placed in concrete to prevent expansive cracks to form due to temperature change. Concrete undergoes expansion due to high temperature when in a confined boundary

which leads to cracks. Expansion joints are provided in slabs, pavements, buildings, bridges, sidewalks, railway tracks, piping systems, ships, and other structures.

Concrete is not an elastic substance, and therefore it does not bend or stretch without failure. However, concrete moves during expansion and shrinkage, where the structural elements shift slightly. To prevent harmful effects due to concrete movement, expansion joints are incorporated into concrete construction, including foundations, walls, roofs, and paving slabs.

These joints need to be carefully designed, located, and installed. If a slab is positioned continuously on surfaces exceeding one face, an expansion joint will be necessary to reduce stresses. Concrete sealers may be used for the filling of gaps produced by cracks.

Expansion joints permit thermal contraction and expansion without inducing stresses into the elements. Expansion joints are incorporated to endure the stresses and act as a disconnect between segments of the same materials. An expansion joint is designed to safely absorb the expansion and contraction of several construction materials, absorb vibrations, and permit soil movements due to earthquakes or ground settlement. Expansion joints are normally located between sections of bridges, paving slabs, etc. ■

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Concrete Problems Today are Multifactorial—Root Causes

BY HAMID KHAN

Concrete cracks provide easy access to corrosive agents

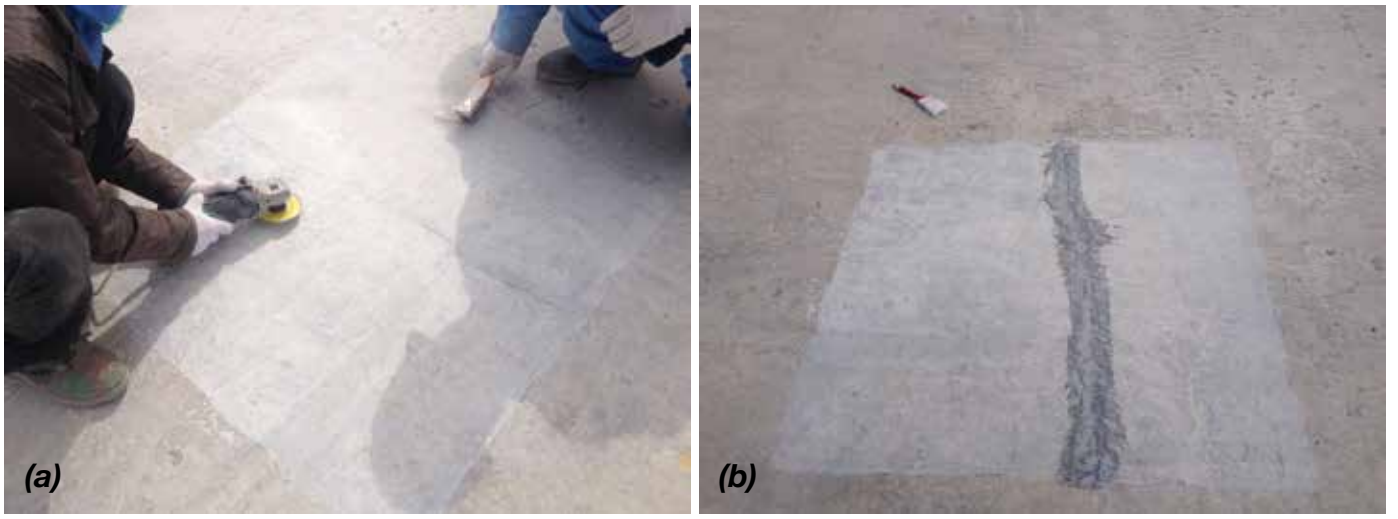
Regular and planned asset maintenance is vital for reinforced concrete structures. Such maintenance shall not be a 'cosmetic repair' but rather a proper root cause analysis that must be carried out to identify and understand the actual source of the problem. Material selection is an important step in asset maintenance and refurbishment projects though only after the root cause has been addressed. Conducting proper root cause analysis in restoration and refurbishment projects will prevent one from falling into a vicious cycle of 'repairing the repair'. A study conducted by Jingmond and Agren (2015)[1] has highlighted the importance to look at the root causes of the defects in concrete from the organisational perspective as well, instead of the operational level only.

A defect or problem in an existing reinforced concrete structure is multifactorial; it often stems from obscure reasons. Like the cause of a common headache that is often attributed to a pathological cause leading to expensive and often needless investigations and treatments, whereas, the actual cause may be a stress-triggered tension headache. Similarly, stomach infections are common during monsoons in some countries, which are due to the 100 year-old corroded sewage pipes leaking into the parallel running municipal water pipes. A point to ponder here is whether treating the gastro patient with medicines or changing water filters would make the situation better without addressing the root cause of the problem?

Corrosion of the steel generates iron oxides and hydroxides, resulting in the increase of volume 5 to 8 times of its original size. This increase in volume causes expansive forces to accumulate within the concrete around reinforcement and results in cracking, and in areas with low cover, concrete spalling. Cracks provide easy access to oxygen, moisture, chlorides and other corrosive agents that create conditions suitable for accelerating the electrochemical corrosion process. Pretensioned concrete bridge girders may exhibit unexpected end cracking upon stress release. These cracks may propagate into the bottom flange of the girder where strands are located and can increase in width with increased traffic loads. Leakage from bridge expansion joint could penetrate the bottom flange cracks and trigger severe corrosion. In this case, expansion joints leakage must be arrested prior to the crack and concrete repair activity.

A common form of cracking at an early age on new concrete decks is known as *transverse cracking* which may appear over the length of span above transverse reinforcement. These cracks can accelerate corrosion rates, reduce the service life of the asset and increase maintenance costs. When a mass of concrete that shrinks as it ages is restrained, cracks will occur. For example, restraint of a concrete deck by an integral support girder against its volume change initiates cracking. Multiple factors such as concrete materials and mix design, ambient temperature changes, humidity, bridge design characteristics and construction practices can all contribute to volume change and/or to degree of restraint of concrete mass. However, transverse cracking cannot be attributed to all of the above factors. It is therefore important to identify the major contributing factor(s) to address the root cause of cracking.

A crude approach while examining the corrosion induced damage in bridge structures, particularly in the marine environment, is to assume the presence of chlorides as the main cause of failure. Chlorides might be the reason of corrosion but not the actual cause of the bridge defect. The root cause of failure of the bridge structure cannot be simply corrosion. There are many factors involved that could lead to corrosion and ultimately



Linear transverse cracks on new bridge deck due to plastic shrinkage—surface grinding to open the face of the crack (a) and sealing with epoxy (b)

lead to failure of the bridge, such as, cracks in bridge girder web and flange, poor bridge drainage system, failed bridge deck waterproofing membrane, inappropriate bridge joints, and void in the prestressed or post tensioned cable ducts due to excessive grout bleed. Other factors at macro level are related to design, material, environment and construction practices. It is important to address the main contributing factor(s) of the defects in bridge structures affected by corrosion.

It is quite common to observe local white patch of efflorescence that appears like a chalky powder at ground floors due to rising or penetrating dampness inside institutional buildings, hotels and residential apartment buildings. This phenomenon occurs due to number of factors. For example, one of the factors is the absence of or damage to the damp proof course which allows entry of moisture from the ground below, or from unsealed landscape planters outside hotel rooms, which seep through the external walls and result in white patches of dampness along the perimeter of the internal wall. Treating the damp patch from inside would only solve the problem temporarily as it could recur unless the damp proof course is repaired.

Concrete repairs conducted without considering the actual source are 'cosmetic repairs' and may last only for few months. For instance, repairing the spalled concrete of a balcony with a quick-fix patch method, and even applying the best quality repair mortar, would not solve the problem unless the root cause has been identified and addressed. It could be attributed to more than one cause such as leakage due to failure of waterproofing membrane, a broken drain pipe, leaking concealed pipe joints or a combination of these factors. Corrosion of reinforcement that has caused spalling of the balcony is not the root cause here.

Roof leakages in buildings result in seepage into the rooms below. This causes discomfort to the occupants and frequent disputes between the landlord and the tenant in regard to the liability for repair. The failure of roof waterproofing is often attributed to poor workmanship. Based on this notion, the roof refurbishment is carried out but the leaks appear again after some period of

Cathodic protection to bridge piers affected by cracks, corrosion and spalled concrete, using embedded galvanic anode units (a) and distributed galvanic anode system (b)

time. Research conducted by Lo, Leung and Cui (2005)[2] on roof construction defects have highlighted that the root cause of failure of the roof waterproofing membrane stems from the roof parapet wall cracks. It further concluded that the design and choice of material for a roof parapet wall is critical to avoid waterproofing membrane failures on the roof slab. Other reasons for roof leakage could be wrong termination details of the waterproofing membrane at up-stands and drains, improper selection of the waterproofing system and poor roof joint detailing.

Repair of balcony concrete corrosion and spalling due to multiple factors

External tiles falling from the building façades can cause damage to assets and pose a potential safety hazard to pedestrians. The number of casualties and injuries caused by the failures of external wall finishes is a serious concern to the authorities in many countries. Ho, Lo and Yiu (2005)[3] in their research highlighted various factors that could lead to external tile failures such as thermal and moisture effects that induce movement of tiles, inferior quality adhesive, poor workmanship, improper joints, weathering, vibration and substrate properties. The failure could be due to a single factor or it could be the effect of a combination of the above factors. It is therefore vital to recognize and address all the major contributing factors of the de-bonding and falling of tiles.

Finding the real cause of a concrete problem rather than merely dealing with its symptoms is the key to success for a durable repair and refurbishment project. Aspirin quick-fix approach in handling concrete defects may only provide a temporary cosmetic solution. The aim of this article is to create an awareness among the civil contractors and engineers that to solve the concrete defects effectively, they need to drill down through the symptoms to establish the actual root cause. Re-examining, re-designing, re-assessing, re-selecting, re-applying and lots of 're-s', can easily be avoided by examining and fixing the *root cause* of the concrete defect to ensure the same problems are not recurring. ■

Soffits severely corroded due to roof leakages into a residential building

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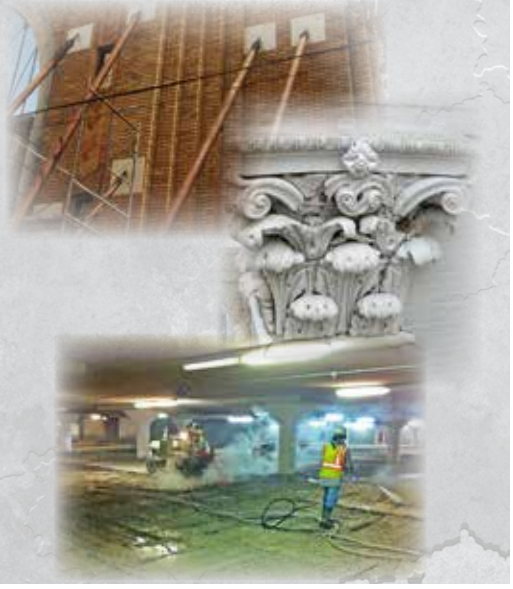
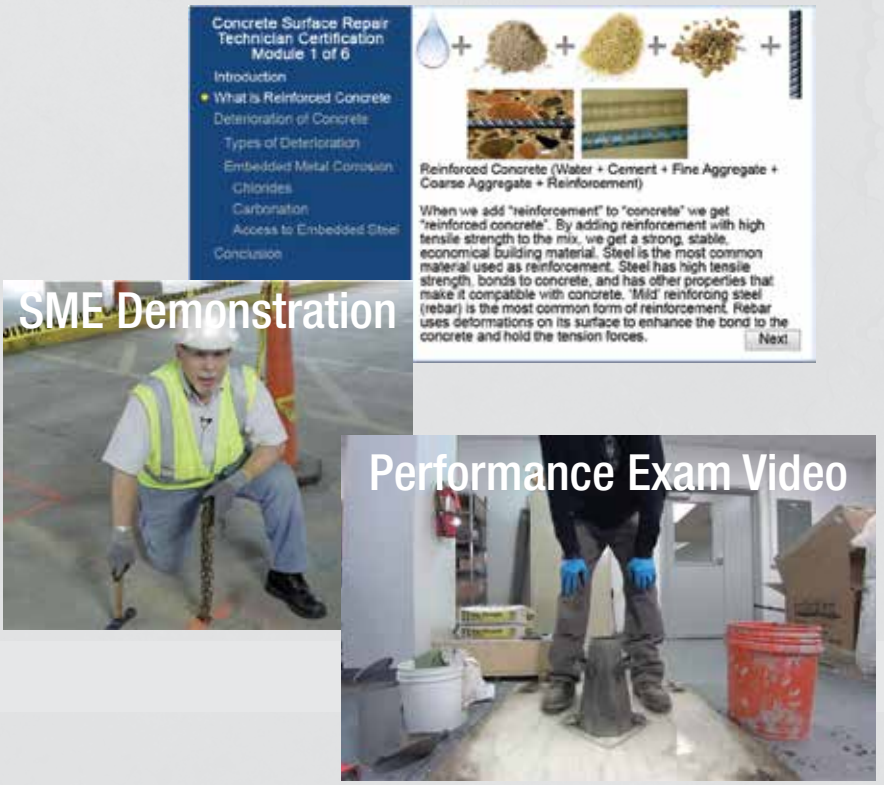


Certification Program Development Resulting from Industry Demand and Code Language



- Competency-based program using current best practices for training and evaluation
- Includes five online training modules, an online knowledge exam, and performance exam (video recorded or live at an on-site location)
- Qualifies individual to perform pre- and post-placement inspections and testing

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INTERNATIONAL CONCRETE REPAIR INSTITUTE

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.

Length of Commitment

Most volunteer commitments are ongoing and 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.

For more information on ICRI committees visit the committee page at ***www.icri.org***.

ICRI Committees

Follow Your Interests

View the list of administrative and technical committees, 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.

To join a technical committee, just complete a technical committee application and the committee chair will place you as a voting or consulting member.

To join an administrative committee, just talk to the committee chair about potential openings. Administrative committees seat new volunteers at the beginning of each year.

INTERNATIONAL CONCRETE REPAIR INSTITUTE

1000 Westgate Drive, Suite 252
St. Paul, MN 55114

Phone: 651-366-6095
www.icri.org
info@icri.org

Administrative Committees

Awards Committee
Chair: Elena Kessi, Aquafin

Certification Committee
Chair: Thomas Donnelly, Sika Corporation

Chapters Committee
Chair: Michelle Nobel, Sika Corporation

Conventions Committee
Chair: Ingrid Rodriguez, Ingrid Shawn Corp.

Education Committee
Chair: Brian Daley, C.A. Lindman

Fellows Committee
Open to attend, must be a fellow to join.
Chair: Peter Golter, 3M

Finance Committee
Chair: John McDougall, Baker Restoration

Marketing Committee
Chair: Jessi Meyer, Cortec Corporation

Membership Committee
Chair: Jeff Barnes, Barnes Consulting

Nominating Committee
Contact chair with questions, open only to those elected.
Chair: Keith Harrison, Capital Restoration & Waterproofing, Inc.

Publications Committee
Chair: Jerry Phenney, MAPEI

Advisory Committees

Coordination Committee
Chair: Rick Edelson, Edelson Consulting Group LLC

Secretariat
Chair: Rick Edelson, Edelson Consulting Group LLC

Special Interests

Women in ICRI
Organizers: Katherine Blatz, BASF South East Asia Pte Ltd, and Monica Rourke, MAPEI

Young Professionals Mentorship Program
Organizer: Elena Kessi, Aquafin Building Product Systems

Technical Committees

Participation on ICRI technical committees and subcommittees increases your knowledge in almost every area of repair and enables you to stay on the leading edge of best industry practices.

Technical Activities Committee (TAC)
Chair: Fred Goodwin, BASF Construction Chemicals

TAC-A Technical Programs
Chair: Peter Golter, 3M

Committee 110—Guide Specifications
Chair: Liying Jiang, Simpson, Gumpertz & Heger

Committee 120—Environmental Health and Safety
Chair: Paul Farrell, Carolina Restoration and Waterproofing

Committee 130—Procurement Methods and Relationship Arrangements
Chairs: Jeff Carlson, Consulting Engineers Group, Inc., and Michael Saulnier, ABC Supply

Committee 160—Life Cycle and Sustainability
Chair: Peter Denicola, Evonik Corporation

Committee 210—Evaluation
Chairs: Todd Allen, Universal Construction Testing, and Dennis Wipf, Gervasio & Associates, Inc.

Committee—310 Surface Preparation
Chair: Pete Haveron, Texas Concrete Restoration, Inc.

Committee 320—Concrete Repair Materials and Methods
Chair: Ashish Dubey, PhD, FACI, USG Corporation

Committee 330—Strengthening and Stabilization
Chair: Tarek Alkhrdaji, Structural Technologies

Committee 410—Masonry
Chairs: Patrick J. Morrissey, Conspec Associates, Inc., and John M Wathne, PE, Structures North

Committee 510—Corrosion
Chair: Jorge Costa, Durability, Inc.

Committee 710—Coatings and Waterproofing
Chair: Peter Golter, 3M

ICRI committees are open to ***all*** and they are looking for ***your*** involvement.
Lend your expertise and help improve the industry!

SIMPSON STRONG-TIE DONATES TO RED CROSS TO HELP WITH HURRICANE MICHAEL AND INDONESIA EARTHQUAKE DISASTER RELIEF

Simpson Strong-Tie, the leader in engineered structural connectors and building solutions, donated $30,000 to the American Red Cross Disaster Relief Fund to assist with relief efforts for the many communities affected by Hurricane Michael in the US Atlantic states and Central America, as well as by the earthquakes in Indonesia.

Several states continue to work through the fallout of Hurricane Michael, with federal assistance programs for individuals declared for multiple counties across Florida, Georgia and Alabama. Hurricane Michael has been named the strongest storm in terms of maximum wind speed to strike the contiguous US since Hurricane Andrew.

In late September, a deadly earthquake and tsunami struck the Donggala Regency area of Indonesia. The quake was followed by hundreds of aftershocks, resulting in more than 2,000 deaths with 82,000 people displaced and more than 67,000 homes damaged or destroyed.

"As so many people struggle to recover from the effects of these natural disasters, we support continued relief efforts in the areas hardest hit," said Simpson Strong-Tie Chief Operating Officer Ricardo Arevalo. "We are thankful for the work the Red Cross and other relief organizations do throughout the globe to help people get back on their feet."

To make a contribution and aid in disaster recovery efforts through the American Red Cross, visit redcross.org or send a donation to your local Red Cross chapter.

CIM ANNOUNCES DONATIONS BY MACK AND KENWORTH TRUCKS, BECK INDUSTRIAL AND CON-TECH MANUFACTURING FOR ANNUAL AUCTION AT WORLD OF CONCRETE

The Concrete Industry Management (CIM) program—a business intensive program that awards students with a four-year Bachelor of Science degree in Concrete Industry Management—is pleased to announce that the signature item for their annual auction at World of Concrete is a Mack® Granite® Bridge Formula mixer donated by Mack Trucks, Inc. and equipped with a Beck Industrial mixer.

"Mack Trucks and Beck Industrial have stepped up by making a significant donation to support the CIM Auction," said Mike Philipps, CIM Auction Committee Chairman. "This mixer truck will help ensure a successful CIM Auction at the 2019 World of Concrete. We are very appreciative of the support from Mack Trucks and Beck Industrial. It speaks volumes to their commitment to the concrete industry and the importance these leading companies place on the CIM program."

CIM is also pleased to announce that Kenworth and Kenworth of Central Florida have once again donated a 2019 Kenworth T880S truck with a Con-Tech Manufacturing bridge-formula rear-discharge BridgeKing mixer for the annual CIM Auction at World of Concrete.

"Con-Tech Manufacturing is happy to announce that we will again be partnering with Kenworth and Kenworth of Central Florida to offer a Kenworth T880S chassis with a Con-Tech Manufacturing BridgeKing Mixer," said Con-Tech Manufacturing President Dan Welsh. "What a great industry to support and thank you to all of our loyal customers which makes this donation possible. Let's get ready to bid it up and support our young people in the concrete industry,"

For more information on CIM visit www.concretedegree.com.

SIMPSON STRONG-TIE AIDS RECOVERY FROM CALIFORNIA WILDFIRES

Simpson Strong-Tie, the leader in engineered structural connectors and building solutions, donated $10,000 to the American Red Cross Disaster Relief Fund to assist with relief efforts for communities affected by the wildfires in Northern and Southern California.

Both ends of the state have experienced massive devastation from the blazes. The Camp Fire that began in Butte County has claimed the lives of at least 79 people, with more than 600 individuals still reported as missing. The Woolsey Fire in Ventura County has caused three deaths, and more than 9,000 homes and other structures have been destroyed.

"Along with so many others, employees at our headquarters in Northern California and at our Riverside manufacturing facility in Southern California have been directly affected by the fires," said Simpson Strong-Tie Chief Operating Officer Ricardo Arevalo. "Our thoughts go out to everyone as the work to contain these blazes continues."

To make a contribution and aid in disaster recovery efforts through the American Red Cross, visit redcross.org or send a donation to your local Red Cross chapter.

MAPEI EXTENDS INTERNATIONAL PRESENCE TO EAST AFRICA

MAPEI Group, headquartered in Milan, Italy, has grown to include 87 subsidiaries with the addition of Mapei East Africa Ltd, located in Nairobi, Kenya. The office joins existing MAPEI facilities in Egypt, South Africa and the United Arab Emirates to increase MAPEI's reach in the growing African and the Middle Eastern construction industries.

According to Veronica Squinzi, MAPEI's Global Development Director, "Mapei

East Africa Ltd will be focused on developing the markets in Kenya and surrounding countries – an area having almost 300 million citizens where major investments in infrastructure, residential and industrial buildings are foreseen for the next years."

Mapei East Africa Ltd is staffed by a team with broad experience in the construction and chemicals markets. Led by Middle East and East Africa Regional Director, Stefano Iannacone, the new facility enhances MAPEI Group's presence in Africa and the Middle East.

For information about the new Mapei East Africa Ltd office, please visit www.mapei.co.ke.

CONCRETE SHOW SOUTH EAST ASIA 2019 - THE 7TH CONCRETE AND CONSTRUCTION SHOW IN JAKARTA

The 7th edition of Concrete Show South East Asia will take place from 18-21 September, 2019 in Jakarta. The Organizer is PT. UBM Pameran Niaga Indonesia. MEREBO Messe International based in Hamburg/Germany is in charge of the "Europe, America & Australia/NZ Pavilion" dedicated to companies, associations, chambers and trade press of these regions.

Concrete Show South East Asia 2019 features a wide range of products and technology, covering raw materials, ingredients, reinforcement technology, prefab techniques and construction related services. The last event in 2018 attracted over 7500 attendees and 230 exhibitors from more than 20 countries.

Co-locating Concrete Show South East Asia with Construction Indonesia will allow participants in the wider construction and infrastructure sectors enhanced access to this important event.

For more information please contact: MEREBO GmbH in Hamburg/Germany, contact@merebo.com or www.cssea.merebo.com.

SIMPSON STRONG-TIE COMPANY INC. ANNOUNCES ACQUISITION OF READY PRODUCTS AND RADIUS TOOLS FROM RADIUS TRACK CORPORATION

Simpson Strong-Tie, the leader in engineered structural connectors and building solutions and a subsidiary of Simpson Manufacturing Co., Inc., recently acquired the Ready Products (Ready-Hat®, Ready-Track®, Ready-Arch® and Ready-Angle®) and Radius Tools (Radius Track Bender® and Radius Trim Bender™) from Radius Track Corporation headquartered in Minneapolis, MN.

The strategic acquisition is expected to help Simpson Strong-Tie expand its offering of solutions for cold-formed steel construction. Radius Track Corporation will continue as its own separate entity focused on the design, engineering and fabrication of sub-systems for curved and complex services, both preconstruction and post-contract award.

The Ready Products are hand-bendable curved framing solutions for light-gauge steel framing invented by Radius Track owner Chuck Mears and introduced to the market in 2004. They are an alternative to the manual, labor-intensive jobsite methods of cutting, snipping and shaping of cold-formed steel (CFS) framing. The Radius Tools are portable curved framing hand tools enabling the user to bend CFS framing to create curved walls and soffits quickly and accurately on the jobsite. Radius Track was originally founded in 1997 to distribute these tools.

Radius Track Corporation President, Bob Krebsbach, added, "The Radius Track team is delighted that Simpson Strong-Tie will now be offering the Ready Products and Radius Tools as part of their solution for CFS construction. With their focus on exceptional customer service, we believe this acquisition will benefit their customers in providing time- and labor-savings on the jobsite."

AWARD FOR EXCELLENCE PRESENTED TO VOLUMETRIC CONCRETE AUSTRALIA FOR PROJECT SUCCESS ON THE M1 MOTORWAY USING RAPID SET

CTS Cement Manufacturing Corp. – manufacturer of Rapid Set® professional-grade cement products – is proud to announce the Australasian Concrete Repair Association (ACRA) has presented its Award for Excellence in the Research, Design and Innovation category to Volumetric Concrete Australia Pty Ltd., for the Slab Replacement project on the M1 Motorway Queensland between Reedy Creek and Yatala. The biennial ACRA Awards showcase members' outstanding work in the repair and protection of concrete structures across a wide range of industries and market sectors. The awards honor the most creative projects in the concrete repair and refurbishment industry and highlight projects that are "setting the standards in concrete repair."

For this award, Volumetric Concrete Australia (VCA) was invited to investigate the use and adoption of CTS Rapid Set Cement Technology in developing a CTS Rapid Set Concrete Mix produced by Volumetric Mixers.

Queensland Transport and Main Roads (TMR) - Roadtek Division identified defective concrete sections on the M1 Motorway that required immediate replacement to ensure that safety was maintained for the M1 drivers. Additionally, the goal was to extend the service life of the pavement. It was also imperative that a safe work zone was maintained while the slab replacements were being performed.

The Scope of the project involved performing over 200 slab replacements on the M1 Motorway while minimizing lane closures and disruptions to the users of the Motorway. To do so involved a col-

laborative approach among all parties in adopting the innovative CTS Rapid Set Cement Technology.

For the work, limits were set between six and eight hours per night-time shift, so as not to disrupt the local and interstate drivers, as well as to minimize any negative economic impact upon the local community and business operators.

The work began with project-specific trials, where VCA produced concrete slabs utilizing various mix designs to meet the specification criteria. The trials not only monitored the finishing time and techniques but included rigorous concrete testing to ensure that the required specification would be met. Additionally, the trials provided extensive training to the concrete crew in working with the CTS Rapid Set cement concrete and the volumetric concrete mixers. VCA was engaged with the responsibility to test, produce and place the concrete to the TMR/Roadtek specification within a 3-hour timeframe.

A maximum of 57 night-shifts were allotted. The project criteria required early age strength of 20MPa at 2 hours to enable the M1 to be re-opened prior to 4.30 a.m. to provide a smooth, uninterrupted flow of traffic.

The results were, that by using CTS Rapid Set Concrete, VCA was able to provide the following:

- Minimal disruption to M1 traffic or operations
- Savings to project program and project cost due to reduced timeframe
- No disruptions to the general public and M1 roadway drivers—particularly during the daily peak traffic periods
- No high-profile delays to operations
- Productivity improvements over traditional slab replacement methods —less closures were required to perform slab replacement
- A safe and expedient method of slab replacements

The final tally was 51 shifts and 207 slabs replaced. Approximately 1,000 cubic meters of CTS Rapid Set Base Mix Concrete and CTS Rapid Set Lean Mix Concrete were supplied and placed. M1 re-opened to traffic with no delays to the drivers, providing a safer M1 Motorway for the future.

For these results, VCA was awarded the 2018 Award for Excellence in the Research, Design and Innovation.

For more information, please visit www.ctscement.com.For more information a bout VCA, please visit www.volumetric.com.au.

CCL CELEBRATES ACI AWARD WIN FOR RESTON STATION OB1 SCHEME

Post-tensioning specialist, CCL, is celebrating a prestigious US award win for one of its complex commercial building projects after Reston Station OB1 Tower in Reston, VA, achieved first place in the 'High Rise' category at the ACI 2018 Excellence in Concrete Awards.

The company's team supplied the post-tensioning systems to enable the landmark office building to achieve its distinctive structure. Designed by architectural firm, JAHN, and engineered by Thornton Thomasetti, the 16-story office tower boasts a unique lateral force-resisting system, utilizing a diagonalized, exposed concrete exoskeleton with columns that resist both gravity loads and lateral loads in the north-south direction, sloping at 11° from vertical.

CCL provided the post-tensioning systems for the slabs, which are cantilevered to allow the building to extend outward at a consistent angle over an open-air plaza, supported by tree-like columns. This complex engineering challenge involved crossing the post-tensioning tendons mid-span, to allow the dead ends to be concealed in the columns, while the stressing ends were hidden behind spandrel panels. The solution enabled the construction of thin, lightweight but extremely strong slabs that create the illusion that the cantilevered glazed section is 'floating' above the plaza.

Appointed as the project's post-tensioning systems supplier by concrete subcontractor, Miller & Long, CCL worked closely with the contractor team and Thomson Thomasetti to ensure the post-tensioned slabs were installed in line with the engineering and buildability requirements of the project.

Comments Marc Khoury, chief operation officer – America, and president of CCL USA: "This remarkable building has successfully achieved the design intent of creating a strong architectural identity unlike any other office building. It is an extraordinary piece of engineering and we are both proud to have been involved in the project, and totally delighted to see it win this prestigious award.

"Our team works extremely hard and it's wonderful to have their work recognized like this at the highest international level, showcasing just one of the groundbreaking projects that CCL helps to deliver around the world."

For more information on CCL visit www.cclint.com.

INTERESTED IN SEEING YOUR NEWS IN THIS COLUMN?

Email your 150-200 word industry news to editor@icri.org. Content for the March/April 2019 issue is due by February 1, 2019, and content for the May/June 2019 issue is due by April 1, 2019. ICRI reserves the right to edit all submissions.

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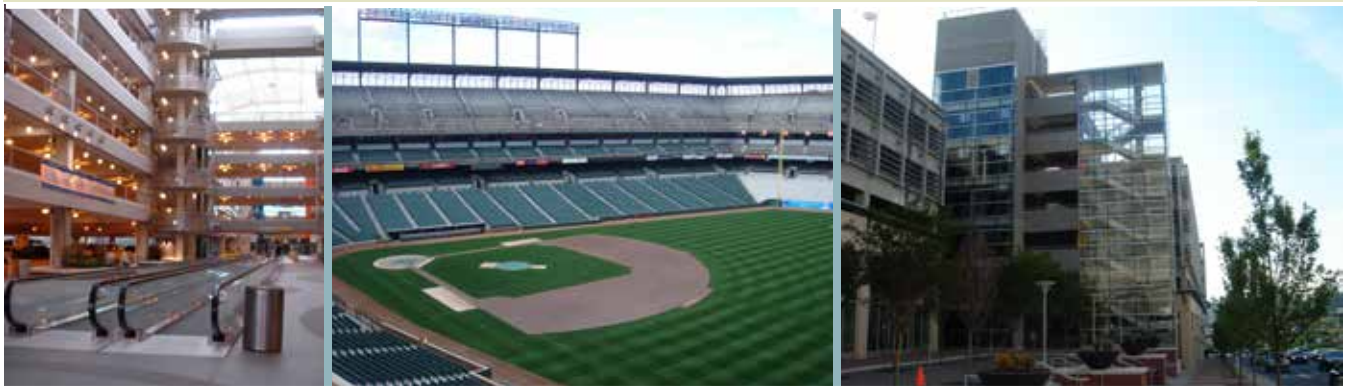

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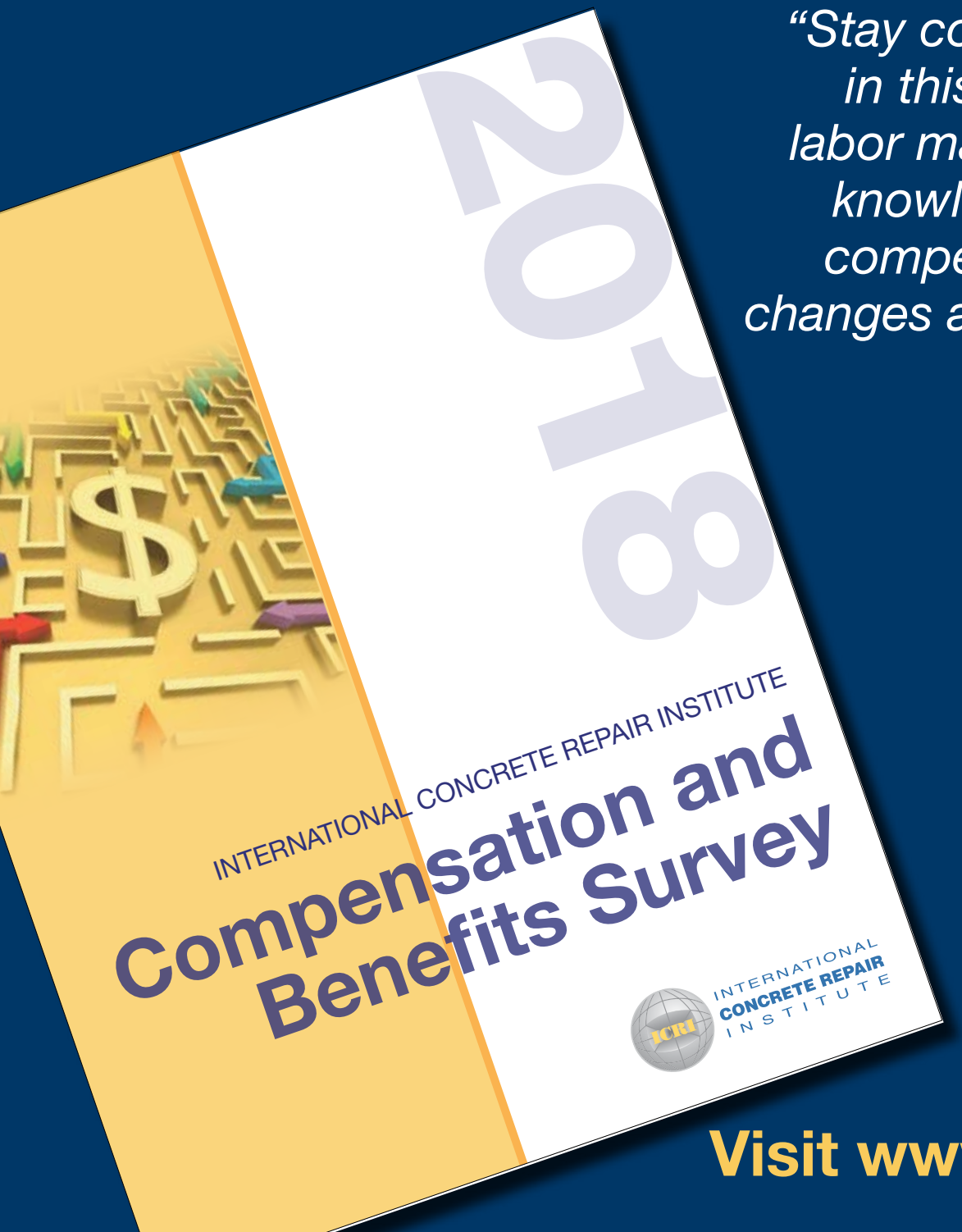
Compensation and Benefits for the Concrete Repair Industry Explored for the First Time

300+ firms throughout the United States surveyed.



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WOMEN in ICRI

"We empower one another by supporting and helping one another."

ADVANCE KNOWLEDGE

address barriers that may be controversial regarding growth and participation in policy making and industrial leadership

network

Recognize the challenges and successes of women who share a place in the concrete repair industry.

INTERNATIONAL CONCRETE REPAIR INSTITUTE

ICRI is pleased to offer this dynamic forum for its female constituents and members. If you are interested in participating in this forum, contact:

- Katherine Blatz, Katherine.blatz@basf.com
- Monica Rourke, Mrourke@mapei.com
- Gigi Sutton, gigij@icri.org

2019 ASA SHOTCRETE CONVENTION & TECHNOLOGY CONFERENCE

Online registration is open until Feb. 18, 2019

The American Shotcrete Association (ASA) is proud to host its second Shotcrete Convention & Technology Conference, at the Omni Amelia Island Plantation Resort, in Fernandina Beach, Fla., February 24 - 26, 2019. The two-day Shotcrete Convention will feature 18 technology conference presentations, providing attendees the opportunity to explore shotcrete applications and innovations as well as future advancements in the industry.

ASA Spring Committee Meetings will be held at the Shotcrete Convention, replacing the Spring 2019 Committee Meetings at the ACI Concrete Convention and Exposition – Spring 2019 in Québec City, QC, Canada. All ASA Committees will be meeting along with the ACI Subcommittee, 506-H, Shotcreting-Pools, and an ACI C660, Shotcrete Nozzleman Certification Committee, special work session. ASA's 14th Annual Awards Banquet will be the highlight event recognizing those who help raise the bar to outstanding shotcrete work in the industry. The 2018 Outstanding Shotcrete Project Award winners will be announced and celebrated at nearby Walker's Landing Tuesday evening, February 16.

Networking Opportunities will be available during meals, breaks, and exhibit hours included with registration as well as optional fun activities including: Group Golf Outing on the Omni's Championship Golf Course, Oak Marsh; Deep Sea Fishing; and Group Tennis Clinic at Omni by Cliff Drysdale Tennis, named the "No. 2 Tennis Resort on Florida's East Coast."

Sunday's pre-convention opportunities include ASA's Contractor Education Seminar and several fun networking events taking advantage of Amelia Island's exceptional destination venue. The conference kicks off with a Sunday evening Dessert Reception and Industry Mixer. For more information, visit www.shotcrete.org/convention.

FOURTH EDITION OF *CONTRACTOR'S GUIDE TO QUALITY CONCRETE CONSTRUCTION* COMING SOON

The American Concrete Institute (ACI), Farmington Hills, MI, and the American Society of Concrete Contractors (ASCC), St. Louis, MO, announce the fourth edition of their best-selling *Contractor's Guide to Quality Concrete Construction* will be available in late January 2019.

First published in 1992, more than 85,000 copies of the *Contractor's Guide to Quality Concrete Construction* have been sold – providing up-to-date knowledge of quality concrete construction practices.

Written by and for contractors, and referenced by many licensing authorities, this guide details proven practices to produce quality concrete construction. Contents include planning for quality, concrete mixtures, specifications, foundations, formwork, reinforcement and embedments in structures, joints and reinforcement for slabs-on-ground, preparing for concreting, concrete placing and finishing, common field problems, safety, and legal issues.

Now 262 pages—over 100 pages longer than the previous edition – the guide includes full-color photos and illustrations, a new, easier-to-read layout, and substantial content updates. Also included in the fourth edition are 43 Position Statements from ASCC, details on ACI's Certification programs, and an appendix introducing several legal issues of interest to concrete contractors. A summary, review questions, and additional recommended reading list accompany each of the 12 chapters.

Published jointly by ACI and ASCC, the guide is intended for all levels of experience. Available in both printed and digital formats, an English version will be available in late January with a Spanish version to follow. Additional details are at www.concrete.org and www.ascconline.org.

NAVY CAPTAIN KENT "EAGLE" EWING TO HEADLINE CSDA ANNUAL CONVENTION

The Concrete Sawing & Drilling Association (CSDA) is proud to announce that Captain Kent Ewing, a retired Naval officer, will be the keynote speaker during the association's 2019 Convention in St. Petersburg, Florida.

The association will hold its 47th Annual Convention & Tech Fair in sunny St. Petersburg, March 11-15, 2019, at the historic Vinoy Renaissance Resort & Golf Club. This was also the site of the popular 2015 Convention, and the association is excited to return to this vibrant destination.

Captain Ewing was Commanding Officer of the USS America (CV-66) during Desert Storm. In his naval career, he also commanded Carrier Air Wing Seventeen and Attack Squadron Sixty Six. He has flown over 18,500 hours in over 100 different military aircraft and made over 1,150 carrier landings. He holds a Bachelor of Science degree in Economics from the University of California at Los Angeles and a Master of Science in Systems Management from the University of Southern California. A Dayton, Ohio native, Ewing is a 1974 graduate of the U.S. Navy Test Pilot School, Patuxent River, Class 65.

Captain Ewing will share stories of his unique experiences leading over 4,000 sailors in wartime and what lessons on leadership he learned from the navy. By successfully commanding men and women from those in their teens to experienced veterans, he will provide CSDA Convention attendees a new perspective on ways to lead and motivate their operators and employees, as well as provide some entertaining stories about life on an aircraft carrier!

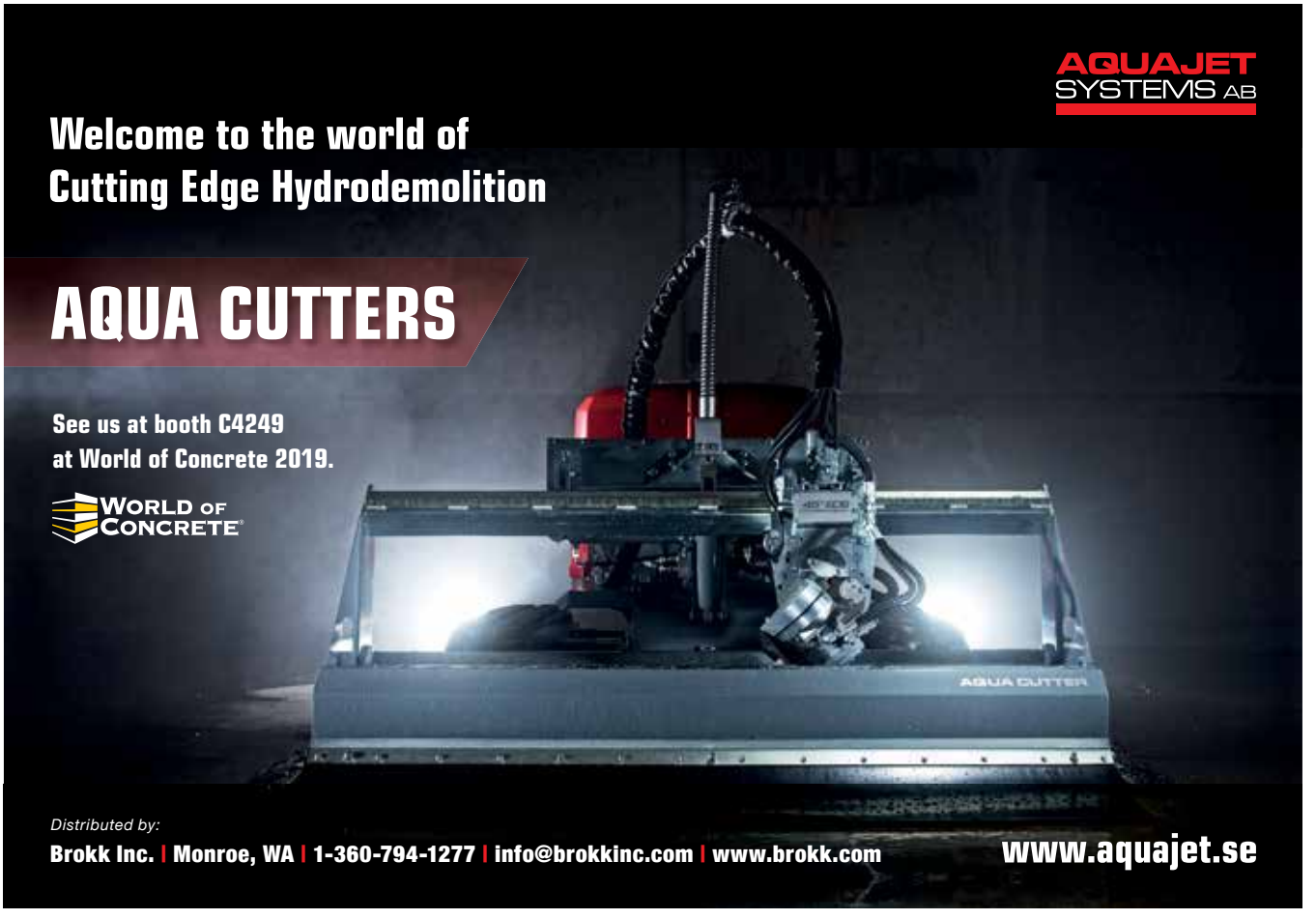
The CSDA Annual Convention & Tech Fair is attended by owners, managers and operators from concrete cutting, polishing and imaging companies as well as representatives from manufacturers and distributors who support the industry with products and services. Anyone who is a part of this industry should join CSDA for this action-packed event. For more information or to register, visit www.csda.org/convention2019, call 727-577-5004 or email info@csda.org.

AMERICAN CONCRETE INSTITUTE ANNOUNCES NEW CONCRETE REPAIR SPECIFICATIONS

The American Concrete Institute announces the availability of important new specifications for concrete industry professionals: ACI 563-18: *Specifications for Repair of Concrete in Buildings*.

ACI 563-18 *Specifications for Repair of Concrete in Buildings* is a reference specification that the Architect/Engineer can apply to any construction repair and rehabilitation project involving structural concrete by citing it in the Project Specifications. Mandatory requirements and optional requirements checklists are provided to assist the architect/engineer in supplementing the provisions of this Specification, as required or needed, by designating or specifying individual project requirements.

"The first of its kind, ACI 563-18 joins ACI's growing family of concrete repair industry documents aimed at demystifying concrete repair and facilitating the delivery of high quality, well-executed, cost-effective concrete repair solutions," states Tracy Marcotte, Principal, CVM, and Chair, ACI Committee 563: *Specifications for Repair of Structural Concrete in Buildings*. "ACI 563-18 can be tailored for any project, big or small, using conventional concrete or proprietary repair materials for any project delivery type, from traditional design-bid-build to design-build, and for both private and public projects. Sections include typical concrete and reinforcement requirements plus those particular to repair projects, including shoring and bracing, as well as existing reinforcement and concrete surface preparation. Architects, engineers, and specifiers will appreciate the minimum basic requirements encoded into the specification, with guidance included for tailoring companion technical drawings and specifications to communicate specific project needs. Owners and contractors will appreciate the clear delineation of responsibilities, QA/QC, and documentation requirements, facilitating



no surprises in procurement and execution of the work."

The document covers general construction requirements for all repair work; shoring and bracing of the structure or member to be repaired; concrete removal and preparation of the concrete substrate for repair and defines common equipment and methods; materials and proportioning of concrete; proprietary cementitious and polymer repair materials; reinforcement; production, placing, finishing, and curing of repair materials; formwork performance criteria and construction; treatment of joints; embedded items; repair of surface defects; mockups; and finishing of formed and unformed surfaces. Provisions governing testing, evaluation, and acceptance of repair materials as well as acceptance of the repair work are included. Sections 9 and 10 incorporate by reference two other specifications—ACI 503.7 and ACI 506.2—into this ACI Standard to cover crack repair by epoxy injection and shotcrete, respectively.

ACI 563-18 complements ACI 562 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures.* The ACI 562 code requirements combine the Institute's historical knowledge with state-of-the-art resources on the evaluation, repair, and rehabilitation of concrete buildings. ACI 562 provides minimum performance requirements that address the unique nature of existing building construction.

AMERICAN CONCRETE INSTITUTE INCREASES 2018 FUNDING FOR ACI FOUNDATION TO $1,000,000

In pursuit of a future where everyone has the information needed to use concrete effectively to meet the demands of a changing world, the American Concrete Institute has increased its 2018 funding for the ACI Foundation to $1,000,000. The ACI Foundation is using these funds to support research, scholarships, new technologies, and issues of strategic importance to the concrete industry.

Funding from the American Concrete Institute includes an annual $500,000 commitment for mission funding, two additional one-time contributions of $360,000 and $126,000, and additional funding for a new Middle East Fellowship.

During 2018, the ACI Foundation distributed 19 scholarships and fellowships to deserving students, funded eight new concrete research projects, and invested in initiatives to advance the implementation of new technology. These and other ACI Foundation initiatives are made possible through generous contributions by ACI, ACI chapters, corporate donors, and individuals within the concrete community. In 2019, the ACI Foundation expects to fund additional research and new strategic initiatives, while also administering fellowships and scholarships for up to 20 students.

"ACI's commitment to research funding, scholarships, and new technologies is demonstrated through the increased funding to the ACI Foundation," stated Ron Burg, Executive Vice President, American Concrete Institute. "The work of the ACI Foundation is guaranteed to improve ACI's technical knowledge and make our world stronger and safer."

Learn more about the American Concrete Institute at concrete.org, and more about the ACI Foundation at ACIFoundation.org

ACI 318-19 BUILDING CODE REQUIREMENTS AVAILABLE FOR PUBLIC REVIEW

The American Concrete Institute expects to publish "ACI 318-19: *Building Code Requirements for Structural Concrete*," in 2019. The new edition will be the first since the reorganized format was published in 2014 and will include new and updated code provisions along with updated color illustrations for clarity.

ACI expects 318-19 to include new code provisions on topics including transverse reinforcement and shear in wide beams, hanger reinforcement, bi-directional interaction of one-way shear, and reference to ACI certifications. Existing provisions expected to receive significant updates and clarifications include two-way shear strength, ordinary walls, seismic loads, reinforcement detailing, analysis, and numerous materials requirements. Analysis methods for two-way slabs and provisions on shearheads and composite concrete columns are expected to be removed.

ACI is publishing the complete draft of the proposed ACI 318-19: *Building Code Requirements for Structural Concrete* for a 45-day public review starting December 21, 2018. It is anticipated that the final code requirements will be published and made available in June 2019 and be referenced in the 2021 International Building Code. Printed and digital formats of ACI 318-19 are expected, as well as versions in inch-pound units, SI units, and other languages. ACI 318-19 will be included in the ACI Collection of Concrete Codes, Specifications, and Practices, and educational seminars will begin in fall 2019.

For more information go to concrete.org/ACI318.

INTERESTED IN SEEING YOUR NEWS IN THIS COLUMN?

Email your 150-200 word association news to editor@icri.org. Content for the March/April 2019 issue is due by February 1, 2019, and content for the May/June 2019 issue is due by April 1, 2019. ICRI reserves the right to edit association news submissions.

INTERNATIONAL CONCRETE REPAIR INSTITUTE
www.icri.org

INTERNATIONAL CONCRETE REPAIR INSTITUTE

ICRI Young Professionals Mentorship Program

Are you a potential mentor?

Share your ideas on how your experience can benefit young professionals

Are you a potential mentee?

Share what you would like to learn from a mentor and where you feel you could benefit

ICRI is developing a Mentorship Program geared toward young professionals within ICRI to help build leadership skills and guide career growth. The program will involve activities and interactions at the National and Local Chapter level.

Get involved and help drive it forward.

Contact Elena Kessi, elena@aquafin.net, to get involved.

PEOPLE ON THE MOVE

THE SIKA CORPORATION, ORGANIZATIONAL ANNOUNCEMENT

Dave White, Michael Mastro, Tim Gillespie and Aamer Syed


DAVE WHITE

We are pleased to announce the promotion of Dave White, P.E. to Senior Vice President of Quality and Risk Management effective January 1st, 2019. Dave received a Master's in Civil Engineering from Polytechnic University and a Bachelor's degree in Civil Engineering from Columbia. Since he started in 1993, Dave has worked his way up to managing the Technical Service group for Sika's Refurbishment, Sealing & Bonding (RSB) Target Market and it has more than prepared him to take on his next role in the company.


MICHAEL MASTRO

Another notable promotion is Michael Mastro who will be the Vice President of Refurbishment, Sealing & Bonding (RSB) this January 1st, 2019. Michael holds a Civil Engineering degree from Clemson University and an MBA from Florida Atlantic University. Since he began his career at Sika in 1998, Michael has worked in various positions within the company and will now be responsible for the development of strategic initiatives to drive profitable sales growth for all regions across the nation.


TIM GILLESPIE

Furthermore, we are excited to announce that Tim Gillespie has accepted the position of Vice President of Product Engineering/Technical Services also for the RSB team. Tim received a B.S. in Civil Engineering from Lehigh University in 1985 and has worked with Sika since 1996. With his experience as VP of Product Management, Tim will excel in his new position.


AAMER SYED

As Dave and Tim begin their new positions, Aamer Syed has accepted a new position as Vice President of Marketing for the RSB team in addition to his current role as National Manager, DOT Business. Aamer graduated in 1995 with a B.S. in Mechanical engineering from NED University in Karachi, Pakistan and completed his MS Management Program at Stevens Institute of Technology in 2003. Since he began with Sika in 1998, Aamer has held many key positions in the company that make him a great fit for this new role.

Please join us in wishing Dave, Michael, Tim and Aamer great success in their new positions!

INTERESTED IN SEEING YOUR PEOPLE IN THIS COLUMN?

Email your 150-200 word People on the Move announcements to editor@icri.org. Content for the March/April 2019 issue is due by February 1, 2019, and content for the May/June 2019 issue is due by April 1, 2019. ICRI reserves the right to edit the length of People on the Move submissions.

National Waterproofing Supply

LEADING THE WAY with product delivery

National owns a fleet of trucks and employs full-time professional delivery personnel. This allows us to schedule immediate deliveries to any project you may have. This valuable customer resource provides our customers with precise times and dates for product delivery and disbursement throughout the project with our "All Terrain On-Board Forklifts".

Once on site, National can assist with the staging and relocation of material and equipment, all at NO CHARGE.

Please call or go to: **nationalwaterproofingsupply.com** to become familiar with the many, many value added services that we offer our customers with every purchase.

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CHAPTER MEETINGS & EVENTS

BALTIMORE-WASHINGTON
January 10, 2019
CHAPTER SOCIAL OUTING
Top Golf
Springfield, VA

February 1, 2019
JOINT DINNER MEETING WITH ACI
Maggiano's Little Italy
Tyson's Corner, VA

CENTRAL OHIO
February 28, 2019
CHAPTER DINNER MEETING
Topic: Certification and ICRI
Bowling Palace - Columbus Square
Columbus, OH

DELAWARE VALLEY
January 17, 2019
WINTER SOCIAL
Axe Throwing at Bury the Hatchet
King of Prussia, PA

February 18, 2019
CHAPTER DINNER MEETING
Topic: Dodge Construction Forecast
Marriott West
Conshohocken, PA

METRO NEW YORK
January 31, 2019
CHAPTER TECHNICAL MEETING
Topic: A Brief History of Durability
Speaker: Norman Weiss
Club 1010
Manhattan, NY

February 20, 2019
CHAPTER TECHNICAL MEETING
Club 1010
Manhattan, NY

MICHIGAN
March 1, 2019
DEMO DAY
J. Dedoes
Wixom, MI

MINNESOTA
January 10, 2019
MEGA DEMO DAY
Topic: Moisture in Concrete
Cement Masons Local 633
Minneapolis, MN

NEW ENGLAND
January 8, 2019
JOINT CSI EVENT
Topic: Avoiding Litigation on Construction Projects
Granite Links
Quincy, MA

PITTSBURGH
January 17, 2019
FREEZE-THAW BALL (NETWORKING)
TopGolf
Bridgeville, PA

QUEBEC PROVINCE
February 5, 2019
ANNUAL CURLING TOURNAMENT
Mount Royal Curling Club
Mount Royal, QC

For the latest ICRI Chapter information visit www.icri.org

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

Jeff Konkle, MAK Construction Products Group

CHAPTER PRESIDENTS

(Listed are the 2018 Chapter Presidents)

Arizona - Joe Sanchez
Baltimore-Washington - Robert A. Radcliff, PE
British Columbia - Meghdad Hoseini
Chico State Student - Jessica Burns
Carolinas - Robert McDowell
Central Florida - Tamer Mercho
Central Ohio - Jay Cheney
Chicago - Jim Fadellin
Connecticut - Lawrence E. Keenan
Delaware Valley - Pat Gallagher
Florida First Coast - David Poulter
Florida West Coast - Jeff Walker
Georgia - Joshua Lloyd
Great Plains - Jon Connealy
Greater Cincinnati - Rick Graman
Gulf South - Danny Horn
Houston - Chris McDaniel
Indiana - Ryan Hill
Iowa/Illinois - George Rucker
Metro New York - Kirk Stauffer
Michigan - Andrew Lobbestael, PE
Mid-South - Glenn Yeargan
Minnesota - Kim Deibel
New England - Timothy M. Montgomery, PE
New Jersey IT Student -
North Texas - R. W. Smith
Northern California - Cruz Carlos
Northern Ohio - Tom Lavelle, Sr.
Pacific Northwest - Joe Hoffman
Pittsburgh - Marie Fallon
Quebec Province - Eric Bellerose
Rocky Mountain - Angela Echols
South Central Texas - Tim Badilla
Southeast Florida - Kristen Foreman
Southern California - Eric Brown
Southwest Florida Chapter
Toronto - David Huggins
Virginia - Dick Frederick

FOR UP-TO-DATE CHAPTER ACTIVITIES AND FULL DETAILS ON THOSE LISTED HERE, VISIT WWW.ICRI.ORG.

CHAPTER NEWS

MID-SOUTH CHAPTER PLANTS SEEDS FOR THE FUTURE

The Mid-South Chapter of ICRI hosted a meeting at Middle Tennessee State University (MTSU) in Murfreesboro, TN, November 7, 2018. The chapter invited an engineer from Euclid Chemical to speak about proper concrete preparation in concrete repair.

The chapter sponsored several students with free attendance and gave them each an opprotunity to share with attendees information about their school's concrete management program. As the chapter continues to develop and grow, it plans to provide a scholarship for students in this program after meeting its financial goals.

A chapter meeting is planned for March 2019 in Little Rock, AR, as well as an all day training/meeting in Memphis in May 2019.

QUEBEC HOSTS ANNUAL CONFERENCE DINNER

The Quebec Chapter held its traditional conference dinner on November 1, 2018. This year it had the pleasure of having two guest speakers from the Society of Transportation of Montreal (STM)—Dominique Chaussée, PE, and Luis Colorado, PE. The chapter welcomed more than 140 attendees, making the event one of the chapter's highest attended, ever. During the 75-minute presentation, strategies employed in underground infrastructure waterproofing were explained. The presenters stated that improvements from injecting concrete with different types of materials depend strongly on choosing the correct material for a specific application, therefore highlighting the need for developing standards around specific types of materials and injection methods.

The Quebec Chapter was thrilled to welcome their largest audience for a Conference Dinner!

BRITISH COLUMBIA CELEBRATES THE SEASON

After another successful year, the British Columbia Chapter hosted a holiday celebration in Vancouver, BC.

Although some member had already departed, the remaining guests posed for a group shot around the tree.

METRO NEW YORK HOSTS 10TH ANNUAL HOLIDAY PARTY

The Metro New York chapter rang in the holiday season on Thursday, December 6, 2018, with its 10th Annual Holiday Party. All 90 attendees had a great time at District Social in Manhattan. Attendees enjoyed hors d'oeuvres and networking with friends—ending a great year. The night concluded with a speech from President-Elect Dennis Orozco thanking members for their participation and sponsors for their generous support. The Metro New York chapter wishes everyone happy holidays and looks forward to many more successful events in 2019!

Helping the Metro New York Chapter celebrate the season are (from left to right) Alex Somohano, Katherine Blatz, and Scott Harrison

CHICAGO LEADERS' PEACEFUL TRANSITION

After the November Chicago Chapter dinner meeting, the leadership was all smiles.

The peaceful transfer of power from 2018 Chicago Chapter President Jim Fadellin (left) to 2019 Chicago Chapter President Tom Lawler.

INDIANA CONTINUES THEIR GIVING TRADITION

Each year for its holiday celebration, the Indiana Chapter hosts a wonderful networking event with great people and great food. What helps this event stand out from any other is its tradition of hosting a charity, foundation or military organization each year—allowing the organization to speak about its activities and providing it with a generous donation. The funds are raised during the year by chapter members and through various events sponsored by the chapter.

On December 6, 2018, the Indiana Chapter presented a check for $3,000 to the Trooper Bartram Memorial Foundation. The Trooper Bartram Memorial Foundation was established in memory of Indiana State Trooper James (Pat) Bartram who was killed in the line of duty in 1998. The mission of the foundation is to support families in need through the Trooper Bartram Christmas for Kids. This event brings law enforcement officers and first responders from state, county, and local agencies together to honor their relationships with the communities they serve. The memory and spirit of service by Trooper Bartram, and other police officers killed in the line of duty, lives on through our caring for those in need during the holidays.

A generous donation from the ICRI Indiana Chapter to the Trooper Bartram Memorial Foundation

IOWA/ILLINOIS HOSTS SPORTING CLAYS SHOOT

The Iowa/Illinois Chapter held its annual Fall Sporting Clays Tournament on October 26, 2018. The winner of the tournament was Devin Mouw from Logan Contractor Supply. The chapter was happy with a great turnout and the weather made for an enjoyable day. The meeting organizers and chapter board appreciates everyone's support and its ability to once again meet their event financial goals. A big thank you goes out to meeting sponsors: Logan Contractors Supply; TCC Materials; BASF; Stetson Building Products; and E&H Restoration L.L.C.

The Iowa/Illinois Chapter had a great turnout for their Annual Sporting Clays Shoot

Ready…

…aim…

… fire!

MICHIGAN HOSTS ANNUAL MEETING

On Thursday, November 8, 2018, the Michigan Chapter gathered at the Motor City Casino for its annual meeting. After enjoying refreshments and social hour, attendees enjoyed an excellent dinner followed by a presentation on hydro demolition for surface preparation by Thomas McCann of Rampart Hydro Services. Thomas kept the crowd entertained and mentioned the ICRI Concrete Surface Profile Chips throughout his presentation. After the technical presentation the chapter held the election of officers for 2019, discussed the events planned for 2019, and held a raffle to benefit the chapter's scholarship program.

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

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

CAROLINAS FALL CONFERENCE

The ICRI Carolinas Chapter Fall Conference took place in Wilmington, NC, October 11 -12, despite the threat of Hurricane Michael approaching the state. The Wilmington area was fortunate to get just the outer edge of the storm on Thursday and our 60 attendees were able to experience the full conference agenda. The conference started out with a group of chapter members conducting our annual service project at the Children's Museum of Wilmington. Just weeks before, the museum had experienced damage from Hurricane Florence that included the partial collapse of a masonry screen wall. Chapter members and volunteers spent Wednesday afternoon onsite making the necessary repairs.

Technical sessions took place on Thursday and Friday and featured a wide range of topics and speakers including:

- *Expansion Joints: Design, Types & Analysis* by Scott Kind, Spirit Sales Group
- *Drone Investigation of Building Enclosures* by Ryan Daugherty, RRO, CIT, Project Manager, Terracon;
- *Legal Toolbox: Collections Resources for Contractors and 2017 Changes to AIA Standard Form Contracts* by Daniel Knight, Anderson and Jones;
- *Lessons Learned – GTCC Parking Deck* by Mike Rohrer, Lithko Contracting, and Ken Grube, Samet Corporation;
- *Carbon Grid Double Tee Collapses, Repair Techniques and Evaluations – A Case Study* by Gordon Reigstad, PE, SE, PhD and Jason Reigstad, VP Special Projects, Reigstad & Associates; and
- *Precast-Prestressed Double Tee Repair* by Gabriel Carrera, Wiss, Janney, Elstner Associates, Inc. .

Attendees enjoy a full day of learning at the 2018 Carolinas Fall Conference

Despite the threat of rain (or a hurricane) golf was on the agenda for day two and it cleared up nicely

Chapter members spent Thursday morning with an eye on the local Doppler radar checking the path of the storm and debated if the planned golf tournament would take place. By noon, the consensus was that the weather was conceding enough that golf would happen! Whipping winds and a few spots of rain made for challenging conditions early, but as the round progressed, the weather improved—even with a few glimpses of the sun. Congratulations to Paul Farrell, Tim Cook, John Ammons and Zach Duggan for braving the elements and shooting a 63 to win the tournament.

Thursday evening featured the chapter's annual awards banquet where we recognized outgoing Chapter President, Robert McDowell and then presented the award for the Chapter Project of the Year. The Carolinas Chapter 2018 Project of the Year Award Winner this year had a very large split slab with an old moisture barrier under the naked topping slab. Removing the topping slab exposed a large volume of structural slab concrete repairs. In addition to the structural slab, a complete repair to the rail bed structure was performed for the site's heavy equipment operations. Installing a new moisture mitigating system & a PMMA Deck coating is no small task on its own, but dealing with summertime heat & humidity can throw all kinds of wrenches into the production levels of working on top of a dam. Apparently, when working high up the dam wall is added, it does not make a project any easier to accomplish. With extra manpower, long work nights, and triple safety checks it can be done. Congratulations to Jim Hadley from SIKA, Mike Jarman from Guaranteed Supply Company and John Lambert, Jr. from Stone Restoration of America for winning the 2018 Project of the Year Award for their project at the Jocassee Hydro Station Power House.

Leaders and volunteers welcome attendees to the ICRI Carolinas Fall event

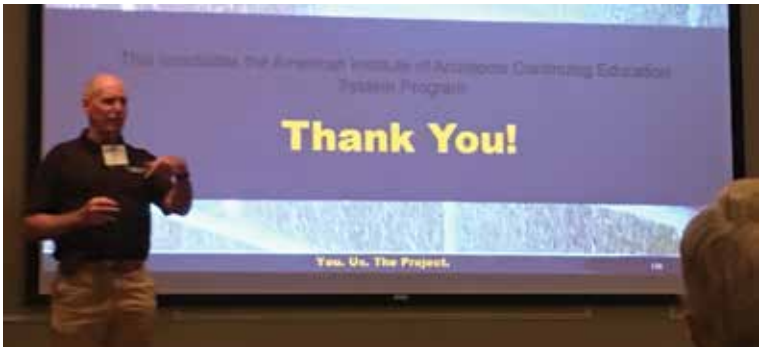
Winners (left to right) Jim Hadley, Mike Jarman, and John Lambert, celebrate their Carolinas Project of the Year success

The Chapter's annual Service Project at the Children's Museum of Wilmington was an opportunity for members to give back

DELAWARE VALLEY HOSTS SYMPOSIUM

The Delaware Valley Chapter hosted its annual symposium on November 17, 2018 at the Bricklayers & Allied Craftworkers Local 1 Union training center in Philadelphia. The topic of the symposium was Stone Repair and featured four presentations and two hands on demonstrations. The first presenter was Steve Long from Prosoco, presenting on why energy efficiency adopted into existing masonry buildings will now benefit from protective treatments. He also discussed how the building envelope in modern construction, due to energy efficiency, will also benefit when the masonry is treated with protective treatments. The second presenter was Allen Roth from Joseph B. Callaghan, a local engineering firm. Allen presented on how glazed architectural terra-cotta is one of the most prevalent masonry building materials found in the urban environment today. In his presentation, he showed repair and replacement options for the façade of a local apartment complex in Philadelphia; a seven-story reinforced concrete frame with brick infill and terra cotta ornamentation. The third presenter was Larry Burkhardt from Conproco who discussed the process of evaluating and determining the material selection process for the preservation of concrete and masonry facades. He also reviewed proper preparation of the substrate, bonding procedures, finishing for vertical repair, color matching, and crack repair. The last presenter was John Shedleski from Helifix. John shared common causes of building envelope failure. He also presented repair options that are minimally invasive and preserve the integrity of the original architecture. The assembly then headed over to the adjacent training center to observe hands-on demonstrations from John and Larry. Larry demonstrated the proper preparation and application techniques for stone repair. He included techniques on how to properly finish a repair by blending it into the surrounding substrate. John demonstrated pinning techniques and application using helical anchors in masonry walls. The half-day symposium featured several tabletop displays and was attended by approximately 50 people.

The Chapter welcomed approximately 50 members and guests



The Delaware Valley Symposium included several technical presentations like this one from Steve Long with Prosoco

After the classroom were several hands-on demonstrations

ICRI Chapter Round Table - Area 4
February 11-12, 2019
Phoenix, Arizona

Chapters in Area 4 include: British Columbia, Pacific Northwest, Northern California, Southern California, Rocky Mountain, North Texas, South Central Texas, Houston and Arizona. Start making plans to attend now, more details to come.

BALTIMORE-WASHINGTON HOSTS YEAR END EVENT

Members of the ICRI Baltimore Washington Chapter attended the 2018 fourth quarter dinner meeting and awards banquet at The Hotel at the University of Maryland located within the University of Maryland Campus at University Park. Many thanks go out to Rich Barrett and the Facilities Committee for setting up the event at the new location. Members enjoyed a cordial social hour as final ballot submissions were collected by Shannon Bentz and the Nominating Committee for 2019 positions to the Board of Directors. Conversation between old friends and new continued into the main dining hall where a delightful spread was provided buffet style for dinner prior to the start of the night's events.

The Baltimore-Washington Chapter's Fourth Quarter Meeting is where friends gather to celebrate the year The Chapter's Facilities Committee chose a new venue for this year's event and it was well-received by members and guests

Final ballots were counted and the following individuals have been elected to serve on the Baltimore Washington ICRI Board of Directors: Kevin Kline with Concrete Protection & Restoration, Inc. is President for 2019. He will serve with Rich Barrett of LymTal International, Inc.as Vice President, Brian J. Radigan with Tremco Sealants and Waterproofing as Secretary, Nicholas M. Henn from Engineering and Technical Consultants, Inc. as Treasurer, and Robert A. Radcliff, PE, with Engineering & Technical Consultants, Inc. as Past President.

Also elected to serve as Directors for 2019 are: Paul Askham, Gale Associates; David Bickel, Sr., Concrete Protection & Restoration, Inc.; Michael Payne, Facility Engineering Associates, PC; Adam Hibshman, Valcourt Exterior Building Services; Justin Long, PE, Smislova, Kehnemui & Associates, PA; Brian Baker, PPSI; Kevin Goudarzi, PE, KGS Construction Services, Inc.; Tommy Dacanay, Building Envelope Consultants & Scientist, LLC; and Matt Smith, Freyssinet.

Attendees enjoyed a delicious buffet while the voting for officers continued

The awards banquet opened with out-going President Bobby Radcliff, providing a summary of the year's events and providing some updates to several events still scheduled prior to the end of 2018. Nick Henn of the Education and Scholarship Committee presented the award of six $1,000 scholarships to go towards tuition of several college students from the University of Maryland and Catholic University, or as a continued education award for several ICRI members looking to obtain professional certifications. Congratulations to all scholarship winners and good luck with your studies.

Following, Bobby began to introduce the night's presenters that consisted of the three winning project teams for the 2018 Baltimore Washington Outstanding Project of the Year Awards. Brian Radigan (Tremco -Awards Committee Chair) and the other sub-committee members received a total of four submissions for consideration for the award. A group of nationally active ICRI members across the country judged the submissions on the basis of the established scoring criteria which included: Planning/Phasing, Design Issues & Project Administration, Structural and Architectural and/or Operational Improvements, Technical Innovation, and Costs.

3rd Place: Liberty Towers. Kaveh Afshinnia with SRG presented this project, which involved structural parking garage restoration work at the Liberty Towers apartment complex in Arlington, VA. SRG utilized in-situ testing such as rebound hammer testing and half-cell potential testing to identify concrete strength deficiencies and possible corrosion of embedded steel reinforcing.

Accepting his Award for 3rd Place in the Project Awards is Kaveh Afshinnia with SRG

2nd Place: Beau Court. Bobby Radcliff of ETC presented the 2nd place project award. The project scope addressed structural deficiencies and settlement concerns with four garden style condominium buildings located at Beau Court Condominiums. 1930's era buildings with wood framing and brick and terra cotta bearing walls were identified with significant settlement and building overturn (up to 7 inches). The project team had to hurdle many issues including completing repairs in phasing without disrupting occupancy of the residents!

Accpeting the Award for 2nd Place is Bobby Radcliff with ETC

1st Place: Waterside Towers. Patrick O'Malley presented the 1st place project award on behalf of CPR. The project involved a multimillion-dollar structural rehabilitation and waterproofing project at the plaza and below-grade parking garage at the Waterside Towers property in southwest Washington, D.C. The property was found to have significant concrete deterioration from leaks in the plaza level which created the need to remove plaza finishes to complete more than 30,000 square feet of concrete repairs (over 28,000 square feet of full-depth concrete repairs) and replace the existing waterproofing membrane. In some instances, overhead repairs in the below-grade garage occurred below occupied space and CPR utilized robot demolition machines to safely complete the work. Some project issues that had to be overcome included difficulties with plaza overburden removal and replacement to fit landscape architect requirements, as well as visual considerations to comply with the local fine arts commission.

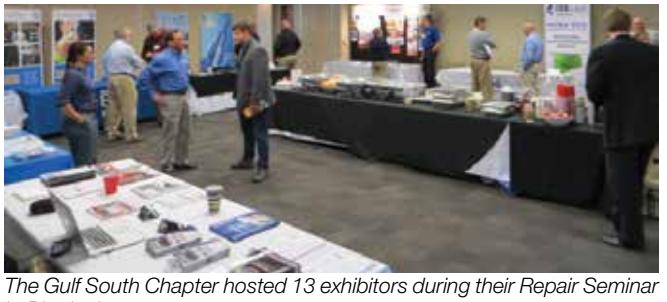
Presenting the 1st Place winning Project is Patrick O'Malley with Concrete Protection & Restoration, Inc.

The three project awardees proved resilience in completing challenges identified during a unique and successful restoration project. Recipients received a plaque celebrating the project award and thanking them for their entry. Although only three winners could be chosen from the submission, the Baltimore Washington Chapter of ICRI commemorates all project teams that chose to submit a project for consideration.

GULF SOUTH HOSTS REPAIR SEMINAR

The ICRI Gulf South Chapter partnered with Structural Engineers Association of Alabama for a *Concrete Restoration and Repair* seminar on November 29, 2018, in Birmingham, AL. It was fortunate to have six guest speakers, including ICRI National President, Ralph Jones from Structural Engineering Associates in Kansas City. Attendees were engaged in the topics of construction law, restoration case studies, the effects of corrosion on reinforced concrete, advancements in specialized concrete mixtures, concrete field testing and important factors in concrete mixture design. Also, an open forum was held discussing the efforts of ACI, ICRI and NCSEA and the adoption of the ACI 562 repair code. Attendees were encouraged to be actively involved in the process with the NCSEA and IBC leadership. In addition to great content, the Gulf South Chapter had a special announcement of its two scholarship winners for the year, Emily Gould and Tanner Carr, both students at The University of Alabama. Congratulations!

This all-day seminar had more than 75 people in attendance. Special thanks go to SEAoAL for their partnership, AGC of Alabama for the excellent venue and, of course, the multiple sponsors: Parrot Structural Services, Brawco and JJ Morley, who provided breakfast, lunch and snacks; along with 13 exhibitors. The chapter knows that without this type of support, an event like this would not be possible. The chapter is grateful and is planning its Spring Meeting in Pensacola, FL in March with more details to come.



The Gulf South Chapter hosted 13 exhibitors during their Repair Seminar in Birmingham

Nothing like the perfect photo opportunity to get all the attendees attention

The repair seminar brought in a great crowd of 75 attendees, members, and guests, all interested in learning more about repair

ICRI President Ralph Jones took the time to help attendees understand the importance of adoption of ACI 562 in the Repair Code →

VIRGINIA HOSTS FALL SYMPOSIUM

The topic of the Virginia Chapter's Fall Symposium was *Codes and Specs for the Assessment and Repair of Existing Concrete Structures*. It was based on the new and updated ACI-562 codes and related topics. The attendance at this Symposium was better in many ways than it has been for a while. The attendance was about 59 guests, 30 of whom were Engineers due to the specifics of the presentations.

The lead presentation for the Symposium was presented by Keith Kesner, CVM Engineers, and who also serves as the chair of the ACI Committee 562. The ACI 562 *Code for Assessment, Repair and Rehabilitation of Existing Concrete Structures* (ACI 562¬-16) was specifically developed to provide design professionals a code for the repair of existing concrete structures and represents the first material specific repair code in US practice and the first code specifically developed to be integrated with the International Existing Building Code (IEBC).

Mr. Kesner's presentation addressed the purpose of the repair code, a guide to the use of the code, and how it will help the design professional and all others in the industry improve concrete repair practices. The next presentation was *Repair Technicians Guide to the 562 Code* presented by Tom Donnelly, Sika Corporation. Where the first presentation dealt mostly on how the ACI-562 relates to the design professionals, the second presentation went into more detail on how this code relates to specifically the repair contractor.

The third facet of the concrete restoration process effected by the code is testing and the effects of the ACI-562 on testing and test procedures was covered by Charles Mitchel from ETI in the third presentation especially as it ties in with Chapter 10 of the Code-Quality Assurance. The 4th presentation took a quick view into the future of concrete repair and construction in general with, *The use of Drones in the Assessment of Concrete Repair Projects*. The speakers on this presentation were Brent Klavon with ASEC (who deal specifically with Drones in general) and Jeff James from James Engineering who is bringing the use of drones into building inspection and concrete repair. The final presentation was *Pre-Cast Double-Tees- Restoration & Repair* given by Carl Larosche, a principal at WJE who was also on the ACI-562 Code Committee as well as many other ACI committees. This presentation gave three case studies involving double-tees and followed the relationship or each aspect of the ACI-562 and how they related to each project: in design; construction; and testing and quality assurance.

After all the presentation, lunch was served and about 26 of the attendees took advantage of the weather and took part in the golf outing. We want to thank all the speakers and attendees for helping make this event a success.

The Virginia Chapter Fall Symposium focused on ACI 562 and brought in a good crowd including many engineers that are potential ICRI members

The opportunity to visit the booths of several local vendors was another benefit to the Fall Symposium attendees

GEORGIA CELEBRATES THE SEASON

The Georgia Chapter of ICRI ended the year with a bang! It held its Annual Holiday and Scholarship Award Party at a new location this year—the Terrapin Taproom and Fox Brothers BBQ in the Battery Atlanta near SunTrust Park (Go Braves!). The chapter hosted approximately 41 attendees for a night of appreciation, a glimpse into the future through our student scholarship award winners, and great food and beer! The chapter gave out two $1,000 scholarships. One scholarship went to Mr. Suleman Rana, a student at the Georgia Institute of Technology and Intern with PM&A (a local structural firm); and the other went to Mr. Michael Wishard, a student at Kennesaw State University as well as current ACI Student Chapter President.

The chapter also ended the year with one of the best luncheons of the year, this one featuring a joint ACI/ICRI meeting over the ACI 562 code presented by Dr. Lawrence Kahn of the Georgia Institute of Technology! We looked back at this busy year and were thankful for the accomplishment's we all made working as great resources using ICRI as our main outlet!

Pictured (left to right) are: Thomas Andrews, President Elect; Joshua Lloyd, PE, President; Michael Wishard, scholarship winner; and James Dunlap, Treasurer

The Georgia Chapter welcomed more than 40 attendees to their recent meeting

Pictured (left to right) are: Thomas Andrews, President Elect; Joshua Lloyd, PE, President; Suleman Rana, scholarship winner; and James Dunlap, Treasurer

NEW ENGLAND HOSTS CASINO NIGHT & SUPPORTS LOCAL CHARITY

The New England Chapter held its annual Holiday Social at Granite Links Country Club in Quincy, MA on December 11, 2018. Once again, the theme this year was a Casino Night and included a craps table, roulette, black jack, and a poker table. Attendance at the event was just over 50 people, and prizes for casino games consisted of Celtics and Red Sox tickets, and various gifts cards. Chapter members and sponsors graciously donated all of the prizes. In addition to the casino games, those in attendance enjoyed hors d'oeuvres, drinks, and a good time catching up with friends and colleagues.

The $20 admission fee and the proceeds from the event all were donated to a local organization known as The Gavin Foundation, that is a Boston-based alcohol and drug abuse rehabilitation program for young men and women ages 16-20. This organization serves close to 100 adolescents and their families each year.

The Blackjack Dealer explaining some of the rules to the New England Chapter members

The Chapter donated proceeds to the foundation from a live auction for some premier sporting event tickets. Altogether, the chapter raised nearly $2,000 for The Gavin Foundation. A special thanks to Sean Davis of Alpha Weatherproofing, Catherine Maloney of Maloney Marketing Associates, and Matt Mead of Neogard for coordinating the event. An extra thanks to Dan Clark of A.H. Harris for coordinating with The Gavin Foundation.

One of the Blackjack tables

Some of the players at the Craps table

CHAPTER NEWS

CHAPTERS COMMITTEE CHAIR'S LETTER

MICHELLE NOBEL
Chapters Chair

Welcome to 2019!! It's a brand-new year and with a new year brings new beginnings. I hope that everyone's holidays were fantastic and that you're looking forward to a great 2019. In the insightful words of C.S. Lewis, "There are far, far better things ahead than any we leave behind." With that in mind, may you all have a gratifying and successful 2019.

The beginning of the year starts off with the 2019 ICRI Kick-Off Party at Chateau Paris at the Paris Las Vegas Hotel, the Monday night before the start of World of Concrete. World of Concrete is at the Las Vegas Convention Center January 21-25, 2019 and the International Surface Event is in Las Vegas at Mandalay Bay January 21-25, 2019.

The next ICRI Round Table will be held on February 11th & 12th in Phoenix, Arizona. The chapters that will be invited to attend are in Area 4, which includes British Columbia, Pacific Northwest, Northern California, Southern California, Rocky Mountain, North Texas, South Central Texas, Houston and Arizona. Start making plans to attend now, more details will be coming shortly.

Other dates to mark on your calendar are:

- The **Canadian Concrete Expo**, February 6-7, 2019, in Toronto, Canada, the International Centre
- The **Shotcrete Convention & Technology Conference**, February 25-26, 2019, in Fernandina Beach, Florida.
- The **ICRI Spring Convention,** April 8-10, 2019, in Jacksonville, Florida.
- The **ICRI Fall Convention,** November 11-13, 2019, in Philadelphia, Pennsylvania.

On the ICRI.org website you can find information about Chapter Resources under the Chapters tab at the top of the page. Here's the information on what you can research in the Chapters Resource section:

Resource Index

- 501 (c)(6) Info
- Chapter Awards Forms
- Chapter By-Laws
- Delegate Program
- Guideline Marketing Presentations
- ICRI Certification Presentations & Marketing Tools
- ICRI Presentation Template
- Insurance
- Leadership Recruitment Presentation
- Marketing
- Meeting Topics
- News Deadlines
- Officer Recruitment
- Operation Guide
- Posting Chapter Newsletters and Meeting Announcements
- Regions
- Chapter Roundtables
- Safety Guideline Presentation
- Taxes Presentation
- Yearly Timeline

We all should be taking advantage of these resources. It's one of the benefits of being an ICRI member that's provided to us all by ICRI, to assist the chapters and the chapter leaders with questions that they may have. So, take advantage of these resources, Dale Regnier and I are always available if you have a suggestion, idea or question, please feel free to reach out to us.

The technical guidelines and the concrete surface profile chips are a great item to sell at your dinner meetings, demo days or any other event your chapter may be hosting. It's another ICRI benefit that can be utilized to increase revenue for your chapter and help your members. Reach out to Dale Regnier and arrange to get these items for your members!

Please turn in your chapter events so they can be listed on the ICRI website, and don't forget to check the ICRI website to see if there's an event in the area you're traveling to or reach out to the local chapter president to see if they're having an event while you're in town. At ICRI we're committed to global networking, which takes networking to whole new level!

If you're looking to become a qualified concrete surface repair technician, the Concrete Surface Repair Technician (CSRT) Certification Program, the Concrete Slab Moisture Testing Technician (CSMTT) Certification Program, and ACI 562-16 Repair Code and Guide Videos are training programs offered by ICRI. To find out more about these programs, please visit icri.org and go to the Education tab at the top of the page or contact the ICRI Office at (651) 366-6095.

Please remember, in the age that we currently live in, it's always better to be kind, courteous and gracious to your neighbor. Lastly, be careful, travel safe, and I'll see everyone in Phoenix for the next ICRI Chapter Roundtable!

Sincerely,

Michelle Nobel
2018 Chapters Committee Chair

For the latest ICRI Chapter information visit www.icri.org

GOING FROM STRENGTH TO STRENGTH IN RAIL

Cintec has an unparalleled international reputation for designing and manufacturing reinforcement and anchoring solutions for masonry and concrete structures

The patented Cintec reinforcement and anchoring system is straightforward: injecting a proprietary cementitious fluid grout into an anchor surrounded by a fabric sock, which has already been placed in an oversized drilled hole. The reinforcement system's ingenuity lies in its versatility. Drawing on decades of experience and testing, Cintec's designers can customize it to any specification.

Electrification projects

The work, which is essential to the electrification process, involves utilising Cintec's patented anchoring system to support the weight of the gantries which will hold the cables needed to electrify the lines, and in some cases to strengthen railway bridges and viaducts to which the gantries are attached.

Maidenhead Viaduct

One of the latest uses for Cintec anchors has been at Maidenhead viaduct. The engineers Balfour Beatty Rail needed to connect a series of concrete slabs for overhead gantries to the existing stone viaduct without any possibility of subsequent movement.

The ballast at the side of the viaduct was cleared away and the concrete slabs were positioned. Cintec's installer Peter Cox drilled 65mm diameter vertical holes through the concrete slab and into the original sub structure, then installing Cintec 24mm stud anchors with an embedment of 1,700mm to tie the new concrete block to the original viaduct. Additional Cintec anchors were then used to fix the gantries into position.

The Chorley Line

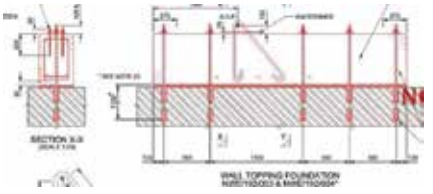
A similar project is at present being carried out on the Chorley line where they are installing gravity foundations. Cintec anchors are being used to connect the new concrete foundation to an existing masonry wall. Vertical Cintec M24 anchors 2,325mm long are installed into the masonry and the new concrete foundation subsequently cast around the exposed ends of the anchors. After casting the concrete 200x100x20mm washer plates are used to secure the concrete to the masonry wall by Cintec installer Lundy Projects.

Once the anchors have been installed any holes or voids have been filled using Cintec Presstec grout. This system is also planned to be used at Bolton station.

GWEP Cutting Bracket Fixings

On the London to Cardiff line near Chipping Sodbury the line exits the long tunnel and continues through a deep cutting with sides at angles between 65 and 75 degrees. The diagram below illustrates the problem as the line had little clearance between track and cutting face.

The inclined face of the cutting consisted of a masonry facing in front of a rockface of variable consistency and internal voids and fractures. Also, as there is insufficient room to accommodate traditional concrete pad foundations to plant electrification gantries upon the obvious and only answer was to use the Cintec anchor system.



The 96 No Grade 316 SS 45mm diameter Cintec anchors in 100mm diameter hole up to 3,300mm long were installed to secure the gantries along a substantial length of cutting under the design of Atkins consulting engineers and Network Rail's team at Swindon.

Mainline station works

Cintec International's work at these major London Stations is ongoing and has been vital to the remodeling and upgrading projects taking place.

Working with an alliance of AECOM, Colas Rail, Mott MacDonald, Network Rail and Skanska on Waterloo the Cintec anchor system was used as high load holding down anchors for the new canopy link between the new and old stations.

In this case, it is Cintec's ability to provide a bespoke system for the problem that has enabled these projects to be so successful. The great flexibility of designs available to the engineers has enabled a large variety of structural challenges to be met utilising Cintec's anchors.

YEAR IN REVIEW: SIMPSON STRONG-TIE TOP 2018 PRODUCT INNOVATIONS

Simpson Strong-Tie, the leader in engineered structural connectors and building solutions, today released a Year in Review look back at the company's top product innovations for 2018. Engineered to enhance jobsite efficiency and to alleviate design and installation challenges, Simpson Strong-Tie products released in 2018 ranged from cold-formed steel seismic connectors to epoxy anchoring adhesives to auto-feed screw driving tools for decking contractors.

In September, Simpson Strong-Tie was recognized by Pro Tool Innovation Awards for its commitment to product improvement and innovation, receiving acclaim in the specialty drill bits category for the Deck-Drive™ DCU screw plug solution and in the drill/driver attachments category for its Quik Drive® PRODW drywall system.

Top Simpson Strong-Tie product innovations for 2018 included the following:

1. The innovative Quik Drive PRODW Drywall System, an auto-feed screw driving system for faster, easier drywall applications using a sturdy, lightweight tool.
2. Stainless-steel Titen HD® heavy-duty screw anchors (THDSS), the first large-diameter screw anchors for use in severely corrosive interior or exterior environments.

3. The Deck-Drive™ DCU screw plug solution, a complete hidden deck-fastening system comprising the premium DCU Composite screw, the DCU screw plug and an Auto-Set Driver™ bit.
4. The code-listed SET-3G™ high-strength anchoring adhesive, formulated for threaded rod and rebar installation and powerful bonding in an exceptional range of temperatures and conditions..
5. An expansion of the Outdoor Accents® decorative hardware line creating a comprehensive collection of connectors and fasteners that provide both structural strength and eye-catching design to outdoor-living structures.
6. The precision-made Yield-Link® connection, designed to simplify and expedite structural steel connections made in the field by eliminating the need for field-welding without compromising structural strength.
7. The SCS seismic bypass framing connector, the first hybrid seismic clip engineered for either slide-clip or fixed-clip applications in high-seismic areas, and the first product of its kind to undergo full-scale cyclic research testing.
8. The high-performance BTH brick tie, a first-of-its-kind, cost-effective product capable of connecting brick and stone veneers to light-frame construction across spans of up to 3".
9. The patent-pending MMHC hinged roof connector, featuring an innovative hinge that rotates to make it easier for modular builders to construct stick-frame roofs in the factory that will fold flat during shipping.
10. The SHH steel header hanger, engineered to reduce drywall buildup and screw count when installed to support cold-formed steel box headers and large-flange lay-in headers used in curtain-wall construction.

For more information visit strongtie.com.

GAME-CHANGING PROSOCO PRODUCT AIDS GRINDING & DENSIFIES CONCRETE IN ONE STEP

New product makes power-trowel polishing applications faster and more efficient.

First Cut with Densifier, a new product from PROSOCO, cuts significant time out of the grinding and polishing process by combining two steps into one for wet-grind applications.

The new product makes the grinding and polishing process more efficient by moving the slurry solids away from the diamond tooling, while also densifying the concrete. This allows contractors to grind and densify floors at the same time, eliminating the need to wait for a floor to be clean and dry before densifying. As a result, contractors can cut up to 40% of time out of the entire process.

First Cut with Densifier can be used with traditional walk-behind grinders or power-trowel machines.

This most recent addition to the Consolideck line of concrete flooring products is in response to the growing popularity of using power-trowels for grind-and-polish jobs over the last few years.

For Joe Ricklefs of Fleshman Construction, the product cut his time on a project in half. His company recently used First Cut with Densifier on an Ace Hardware in Parkville, Mo.

Jason Benjamin, a concrete contractor based in Lawrence, Kan., said he is routinely saving four to five hours on 15,000-square-foot floors by using the product.

Because First Cut with Densifier moves slurry solids generated from wet-grinding away from the machine, it allows the tooling to function more efficiently.

William Saunders, outside sales rep for Bledsoe Rentals, a distributor in the Kansas City area, said his customers appreciate the easier disposal and a more efficient process made possible by First Cut with Densifier.

First Cut with Densifier is ready to use with no dilution needed, and works on new or existing concrete. Easy to apply with a low-pressure sprayer, it's VOC-compliant, non-flammable and non-toxic. For more information visit https://prosoco.com

SIMPSON STRONG-TIE PUTS NEW SCS SEISMIC BYPASS FRAMING CONNECTOR TO THE TEST

Simpson Strong-Tie, the leader in engineered structural connectors and building solutions, has introduced the SCS seismic bypass framing connector, the first hybrid seismic clip engineered for either slide-clip or fixed-clip applications in high-seismic areas, and the first product of its kind to undergo full-scale cyclic research testing to determine load capacities in real-world conditions.

To determine the in-plane performance of the SCS clips, Simpson Strong-Tie conducted full-scale cyclic testing on the uniaxial shake table at our Tye Gilb Research Laboratory. The results were used to develop a representative component test to determine various combinations of stud/clip in-plane capacities. The testing allowed us to a re-engineer the bypass clip to significantly increase the in-plane capacity.

Correspondingly, the SCS seismic bypass framing connector doubles allowable in-plane load capacities, resulting in curtain walls that strengthen the overall integrity of a structure and perform better during seismic events.

Designed for both slide-clip or fixed-clip applications in areas of high seismic

activity, the SCS seismic bypass framing connector is the latest product innovation added to the Simpson Strong-Tie® Complete Connector Solution for cold-formed steel (CFS) commercial curtain-wall, mid-rise and residential construction. Meticulous engineering and exhaustive lab testing have enabled Simpson Strong-Tie to deliver innovative CFS application solutions at lower installed costs to customers.

Additional features and benefits of the SCS seismic bypass framing connector include the following:

- Precision-located ribs that provide enhanced strength while allowing for ductility.
- Simpson Strong-Tie No-Equal® stamps alongside slide slots to indicate proper screw placement.
- A dual-function hybrid clip that includes pre-punched slots for slide applications and small, round holes for fixed applications.
- Slide slots that, when used with shouldered washer screws (included), allow a full 1" of vertical deflection.
- Multiple anchor options (¼" or ½" concrete screws to concrete, or PAFs or screws to steel).
- Available in 3½", 6" and 8" lengths.

For more information visit http://strongtie.com

WAGNER METERS' INTRODUCES NEW ORION® MOISTURE METERS

The new Orion® line of wood moisture meters continues Wagner's 50-plus year tradition of providing accurate, dependable, non-damaging pinless moisture measurement technology, measuring *in* the wood, not just *on* the wood, and backed by Wagner's industry-leading 7-year warranty.

Orion® wood moisture meters are designed for professional wood flooring installers/inspectors, quality control managers, and serious woodworkers who need superior accuracy, versatility, and ruggedness in their critical moisture measurement instruments.

The new Orion® line of wood moisture meters builds on the tradition of its popular MMC/MMI predecessors by adding dual-depth measurement*, true in-the-field calibration with an integral rubber protective boot plus a rugged case design.

For more information about Wagner Meters, visit www.wagnermeters.com

TECHSPEC® LIQUID LENS M12 IMAGING LENS WINS INSPECT AWARD AT VISION STUTTGART

Edmund Optics® (EO), the premier provider of optical and imaging components, is proud to announce that their TECHSPEC® Liquid Lens M12 Imaging Lenses received 2nd place in the Vision category of the 2019 Inspect Awards. The award was presented at the recent VISION Show in Stuttgart, Germany.

The award recognizes the versatility of the TECHSPEC® Liquid Lens M12 Imaging Lenses, which combine the performance of a compact high- resolution imaging lens with the flexibility of a liquid lens. "The combination of high resolution and integrated liquid lens technology makes the lenses ideally suited for high speed machine vision applications," commented Greg Hollows, Vice President of the Imaging Business Unit for Edmund Optics. "It is an honor to be a recipient of the Inspect Award again and to be recognized for our advanced technology and products."

The TECHSPEC® Liquid Lens M12 Lenses feature a high-resolution f/2,4 optical design with an integrated liquid lens for high throughput with fast electronic focus. This quick autofocus solution uses a two-piece housing design that allows easy access and replacement of the included liquid lens. For convenient access to the liquid lens control cable, the liquid lens can be rotated 180° inside the imaging lens.

TECHSPEC® Liquid Lens M12 Imaging Lenses are part of the M12 offering at Edmund Optics. These compact, high-performance lenses feature precision glass designs in a metal housing, with optimized specifications between each product family. TECHSPEC® Liquid Lens M12 Imaging Lenses are available in four models, with focal lengths at 6,0 mm, 8,0 mm, 12,0 mm, and 16,0 mm and working distances from 100 mm to infinity through 220 mm to infinity. The RoHS compliant lenses feature M12 x 0,5 (S-Mounts). A Liquid Lens Development Kit, which includes a required driver and other accessories, is sold separately. These lenses are in-stock and available for immediate delivery.

INTERESTED IN SEEING YOUR PRODUCTS IN THIS COLUMN?

Email your 150-200 word product information to editor@icri.org. Content for the March/April 2019 issue is due by February 1, 2019 and content for the May/June 2019 issue is due by April 1, 2019. One (1) high resolution product photo may be included. ICRI reserves the right to edit all submissions.

For the best in product manufacturers visit www.icri.org

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ICRI
CONCRETE REPAIR
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New Look for ICRI in 2019!

ICRI has been working diligently to bring a fresh modern look to ICRI and will now begin to transition to the new logo and rebranded look. The majority of the transition will take place in early 2019. Watch for more information on the ICRI rebranding process

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