March 2022





### Face to Face at World of Concrete 2022!

The World of Concrete (WOC) was a great opportunity for many of us to not only escape the snow and cold of our home environments, but also to see the whole MCI<sup>®</sup> team and some of our distributors and reps face to face once again! The excitement of being back in person January 18<sup>th</sup>–21<sup>st</sup> in Las Vegas was visible among the audience, which, although smaller than pre-COVID shows, was noticeably larger than the June 2021 WOC when construction season was in full swing.

As usual, the MCI<sup>®</sup> Lunch & Learn was packed with discussion about MCI<sup>®</sup> business strategies, challenges, mar-

ket changes, and industry reception, as well as product updates and relevant case histories. Business aside, our reps and distributors had time to relax and attend "WOW – The Vegas Spectacular," to be entertained by acrobats in a theatrical setting.

WOC also brought opportunities to talk with current and potential customers—some of whom seemed genuinely interested in learning about MCI<sup>®</sup> Technology for the first time. Another potential benefit of the conference was connecting with material suppliers who may be helpful resources for future R&D efforts. Although we missed the presence of our international distributors this year, it was great to see those of you who were able to attend from Alpine Summit Enterprises, JN Lucas & Associates, M2, and SMART. We were happy to be together once again, and we look forward to seeing even more of you at other conferences throughout the year! Check out our list of upcoming events on the last page for ideas.





### News

#### MCI® Exposure at Nebraska's Biggest Annual Concrete Conference

It was an honor to have Jon Connealy, our Regional Sales Manager for MCI<sup>®</sup> Central, speak January 11<sup>th</sup> and 12<sup>th</sup> at the annual NC&AA (Nebraska Concrete and Aggregates Association) Quality Concrete Conference (QC Conference for short). Jon has presented at several NC&AA events in the past and was happy for the opportunity to bring a familiar crowd up to date on his current work with MCI<sup>®</sup> Technology.

Jon spoke on "Cures, Sealers, and Admixtures to Improve Durability." Although he was only able to touch on MCI<sup>®</sup> during the admixtures section, the overall topic went hand in hand with Cortec's MCI<sup>®</sup> Technology concept of extending service life to reduce maintenance and repair costs in the long run. He was one of several presenters who gave a series of talks that built on each other starting with smart design, quality placement, quality curing and sealing, and so on. The four speakers addressed an audience of about 150 people each day, taking the same presentations from Kearney, NE, on the first day to Omaha, NE, the second day.

Jon's presentation was very well received and followed by a good Q&A session as were the other presentations. As an immediate result, Jon was able to schedule follow-up meetings with an engineering firm, two ready-mix providers, and other key players. The NC&AA QC



Conference is one of the biggest annual concrete-related and technical seminars in the state of Nebraska each year, and it will be exciting to see what projects develop from the exposure!

#### **MCI® Grenades Now Available at Lowest Price Ever!**

We are excited to announce competitive new pricing for MCI<sup>®</sup> Grenades! The cost-reduction comes thanks to the automation of our MCI<sup>®</sup> Grenade<sup>™</sup> packaging system, which lowers production costs by allowing greater economies of scale. This translates into cost savings for customers who will be able to get more for their money next time they order MCI<sup>®</sup> Grenades. Customers will enjoy more savings per MCI<sup>®</sup> Grenade while also getting them in larger quantities: 40 MCI<sup>®</sup> Grenades (32 Metric MCI<sup>®</sup> Grenades) per drum



instead of only 20 MCI<sup>®</sup> Grenades per carton. This is a great opportunity to stock up for emergencies on an economical, easy-to-use form of concrete corrosion protection and encourage more widespread use among ready-mix suppliers, contractors, and engineers.

MCI<sup>®</sup> Grenades have long been a convenient, cost-effective method of adding Migrating Corrosion Inhibitor<sup>™</sup> admixtures to construction projects. Whether for a concrete repair or simply as a backup admixture for a new concrete pour, the MCI<sup>®</sup> Grenade<sup>™</sup> is a great way to toss a powerful dose of corrosion protection into the ready-mix, while getting all the advantages of a nitrite-free admixture. The water-soluble packaging dissolves in contact with the mix water, releasing Migrating Corrosion Inhibitors to be dispersed throughout the batch. MCI<sup>®</sup> Grenades can be incorporated at the ready-mix plant or added directly to ready-mix trucks and portable mixers at the jobsite. One MCI<sup>®</sup> Grenade<sup>™</sup> provides enough corrosion protection for 1 cubic yard of concrete (one Metric MCI<sup>®</sup> Grenade<sup>™</sup> protects 1 m<sup>3</sup>) and migrates to adjacent areas to protect surrounding metals and minimize the ring anode effect.

Contact us for more information on our new MCI<sup>®</sup> Grenade<sup>™</sup> quantities and pricing: <u>https://www.cortecmci.com/contact-us/</u>



## **Product and Resource News**

#### New Quick Start Guide on DTM Coatings for Construction!

Our new two-page "Cortec's Coatings Guide for Construction Applications" gives you a quick intro to Cortec<sup>®</sup> Micro-Corrosion Inhibiting Coatings<sup>™</sup> Technology before getting down to basics on how and where to apply which coatings. This is a great resource for everyone in the MCI<sup>®</sup> field to have on hand



to help engineers, contractors, and maintenance crews who naturally need to protect metal structures and equipment in their facility or on the job site.

Download the new guide for yourself here (scroll down to access PDF version): <u>https://www.</u> <u>cortecmci.com/mcicoatings-guide-for-construction-applications/</u>

#### Fresh New Look to HPRS<sup>®</sup> Brochure!

Our "HPRS<sup>®</sup>: High Performance Repair Systems from Cortec<sup>®</sup> MCI<sup>®</sup>" brochure has a fresh new look! The brochure explains the importance of adding MCI<sup>®</sup> to a concrete repair to combat the insidious ring-anode effect. MCI<sup>®</sup> helps even out the corrosion potential between areas of new and old concrete and

works to mitigate corrosion in both the patch material and adjacent concrete. This brochure includes step by step repair instructions that identify appropriate MCI® repair materials to use for the best effect in making your repair. Browse the brochure now: <u>https://www. cortecvci.com/Publications/</u> <u>Brochures/HPRS\_01-2022.</u> pdf



#### **Feature Article**

'Approaching concrete longevity in corrosive water environments'

*The Construction Specifier* October 2021

This article covers the intriguing topic of concrete corrosion mitigation in a variety of interesting applications including the



repair of an Olympic sized pool and the construction of the Sorek Desalination Plant. Both of these projects used MCI® to counteract the extreme corrosivity of the environments to which they were exposed and are great examples of the versatility of Cortec® MCI<sup>®</sup>. Read the full article https://www.conhere! structionspecifier.com/ approaching-concrete-longevity-in-corrosive-waterenvironments/

### **New Concrete Repair Product!**

We have recently expanded our MCI<sup>®</sup> HPRS<sup>®</sup> (High Performance Repair System) to include MCI<sup>®</sup>-2044 Self-Consolidating Concrete Mix for greater repair flexibility! In the past, Cortec<sup>®</sup> was only able to offer MCI<sup>®</sup> enhanced repair mortars for vertical and overhead use. With MCI<sup>®</sup>-2044, contractors now have an MCI<sup>®</sup> enhanced concrete mix for use in form and pour applications, including horizontal, vertical, and overhead areas.

MCI<sup>®</sup>-2044 is self-leveling and self-consolidating with a slump/flow of 24-30 inches (61-76 cm). As a single component mix containing factory blended coarse aggregate, it is convenient to use and eliminates the need for extending material in the field. Learn more here: https://www.cortecmci.com/product/mci-2044-self-consolidatingconcrete-mix/





# Food for Thought

A Serious Reminder on the Implications of Corrosion

The tragic collapse of the Champlain Towers South last June has led to a Miami-Dade County Grand Jury report handed down in December with a long list of recommendations to avoid future tragedies of the same kind. These recommendations include more frequent recertification inspections by engineers every 10 years instead of 40 (after the first 10-15 year initial inspection), as well as repainting and waterproofing every 10 years for corrosion protection.

Corrosive saltwater in the air has been suggested as one of the potential causes for concrete and structural damage that may have led to the tragic collapse that claimed 98 lives at the Surfside condos. This report is a grave reminder of the serious impact corrosion can have on the safety of structures and why appropriate precautions are much more than a mere business-savvy decision.

Read more about the Grand Jury report here: <u>https://abcnews.go.com/</u> <u>US/wireStory/florida-condos-frequent-inspections-panel-81778018</u>



#### MCI<sup>®</sup>-309: Around the World in 20 Years

Over the last two decades, MCI<sup>®</sup>-309 has been used around the world, from Murmansk to Dubai and from Montreal to Oahu. Since 2001, it has been applied in at least 23 of the United States (plus D.C.), two provinces, and 10 countries. Usually, it is applied to inhibit corrosion in PT bridge components with grouting delays, but it has also been applied to floating bridges and flex-float internal cavities. Here's a fun look at some of the highlights!

Project Name	Location	Year
Round Butte Reservoir	Madras, Oregon (USA)	2009-Present
St. Croix River Crossing	Oak Park Heights, Minnesota/Houlton, Wisconsin (USA)	2014-2017
Samuel De Champlain Bridge/ Réseau Express Métropolitain (REM) Light Rail System	Montreal, Quebec (Canada)	2016-2019
Frederick Douglass Memorial Bridge Project	Washington, DC (USA)	2020





# Food for Thought

#### **Carbonation Corrosion: The MCI® Admixture Advantage**

Why might an engineer specify a corrosion inhibiting admixture for a parking ramp in a hot climate more than 200 miles (322 km) from the ocean where there is rarely a need to use deicing salts?

The answer is carbonation corrosion, a slow but corrosive enemy to steel reinforcement in concrete. Carbonation is a natural process that occurs as concrete absorbs  $CO_2$  from the air, gradually lowering the initially high alkalinity/pH that serves as a natural protective environment for reinforcing steel. According to Jon Connealy (RSM – MCI<sup>®</sup> Central), carbonation takes place at an average rate of 0.039 inches per year—slightly less than 1 millimeter, which means carbonation may not reach the reinforcing steel for a good 50 years if the concrete cover is 2 inches (5 cm) thick.

Cortec<sup>®</sup> was recently called in to help with this problem—not on an aging structure nearing its carbonation "doomsday," but on an entirely new parking ramp at a future mixed-use structure in the Dallas/Fort



Worth area of Texas. At first glance, this climate hardly seems like a corrosion inhibiting admixture would be needed, as there is no nearby ocean saturating the air with chlorides and the winter climate is mild. Still, the engineer chose to specify MCI<sup>®</sup>-2005 NS, likely looking ahead to the days of carbonation as the structure ages.

Interestingly, Migrating Corrosion Inhibitor<sup>™</sup> admixtures are the only kind of admixture that work against carbonation corrosion. Calcium nitrite admixtures do not, because they can only counteract chloride-based corrosion and hence are dosed specifically based on expected chloride loading in the concrete. However, MCI<sup>®</sup> admixtures provide corrosion protection in the presence of both chlorides and carbonation by forming a protective molecular layer on the rebar surface.

This unusual Texas project is a great reminder of the versatility and advantages of MCI<sup>®</sup>, which can be used to fight both types of corrosion at just about any stage in a structure's lifecycle—new construction, maintenance, or repair!





## **Case Histories**

### Case History #736: Bahamas Balcony Repair

A resort in the Bahamas was less than 15 years old (built in 2007, repaired in 2019) when it started experiencing corrosion damage on balconies due to the naturally harsh environment. Concrete was spalling off balcony slabs and beams, and some areas of reinforcing steel were severely rusted. The client chose to include MCI<sup>®</sup> in the repair, adding MCI<sup>®</sup> Mini Grenades to the local ready-mix concrete used to pour new concrete beams. CorrVerter<sup>®</sup> MCI<sup>®</sup> Rust Primer was applied to rusty rebar in patch repair areas. MCI<sup>®</sup>-2020 Gel was also injected into concrete where it was deemed important for corrosion inhibitors to migrate to reinforcing steel beneath the concrete surface. The client was very happy with the Cortec<sup>®</sup> solution and planned to use it in later phases of the repair as well as the initial stage. Log in to read more: <u>https://www.corteccasehistories.com/?s2member\_file\_download=access-s2member-level1/ch736.pdf</u>



#### Case History #738: Medical Center Substructure Enhancement

A medical center designed for construction in Abu Dhabi, UAE, had to fight with high salinity soil and a high water table in trying to achieve the desired service life. As a result, MCI®-2005 corrosion inhibiting admixture was chosen for use in the concrete substructure. This was due in part to its trusted reputation from past projects for the same client. Log in to read more: <u>https://www. corteccasehistories.com/?s2member\_file\_download=accesss2member-level1/ch738.pdf</u>



#### Case History #741: Corrosion Protection of New Potable Water Tank

A regional water consortium in Spain was getting ready to build a new 25,000 m<sup>3</sup> (6,600,000+ gallons) capacity regulating water tank to support the dependability of their water supply. Past problems prompted them to add a corrosion inhibitor to the reinforced concrete elements of their 2021 project. The water consortium chose MCI®-2005 admixture because of its certification to meet NSF Standard 61 for use in large potable water structures and because they had previously used the corrosion inhibitor in 2003 and 2016. The admixture will be an important factor in maximizing the service life of the new tank for years to come. Log in to read more: <u>https://www.corteccasehistories.com/?s2member\_file\_</u> download=access-s2member-level1/ch741.pdf





## **Case Histories**

### Case History #743: Repair and Protection of Shipbuilding Docks

A shipbuilding company in Spain needed to repair their north and south docks in 2020 due to chloride ion corrosion deterioration. Spalling and concrete detachment had reduced the resistance capacity of both the concrete and reinforcement. The repair included inspection and removal of deteriorated concrete and rust. Reinforcement was passivated, protected, and replaced as needed before the application of a single-component repair mortar to areas of missing concrete. MCI®-2021 was applied to both repair areas and those with no obvious damage, for a total treated surface area of 9,000 m<sup>2</sup> (10,764 yd<sup>2</sup>). A UV tracer was used for detection. MCI®-2021 was chosen for its ability to reduce corrosion rates and was especially intended to protect areas where underlying corrosion problems had not yet surfaced. Log in to read more: <a href="https://www.corteccasehistories.com/?s2member\_file\_download=access-s2member-level1/ch743.pdf">https://www.corteccasehistories.com/?s2member\_file\_download=access-s2member-level1/ch743.pdf</a>



#### Case History #744: Ruitelán Viaduct Repair and Corrosion Mitigation

Deicing salts used in winter were the main cause of corrosion damage prompting repair of the Ruitelán Viaduct in 2020. Built in 1978 and rehabilitated in 2001 to adapt to the A-6 highway, the bridge was now suffering from rust stains, concrete delamination, and exposed reinforcement. After inspection and removal of deteriorated concrete, the reinforcement was sandblasted and treated with a passivating grout. Missing concrete was replaced with a single-component repair mortar. Then MCI®-2020 was applied to the entire 8,800 m<sup>2</sup> (10,525 yd<sup>2</sup>) surface area before cleaning off precipitates and applying the finishing coatings. MCI<sup>®</sup> coverage was verified using a UV tracer for detection. The customer was happy with the product, and the repair is expected to last much longer than it would have without fortifying the structure against future corrosion using MCI<sup>®</sup>. Log in to read more: https://www. corteccasehistories.com/?s2member file download=accesss2member-level1/ch744.pdf



#### Case History #746: Enhancing Service Life of Pelješac Bridge

The new Pelješac Bridge connecting two parts of Croatia to avoid border crossings near Neum was designed to have a 130-year service life. A combined strategy of corrosion protection was chosen that included the use of AC coatings, cathodic protection, a 65-85 mm (2.6-3.3 in) concrete cover, stainless steel reinforcement, and the application of MCI®-2018 to the entire concrete substructure. MCI®-2018 will help fight long-term corrosive influences by providing water repellency and actively protecting against corrosion at the level of the reinforcing steel. Log in to read more: <u>https://www.corteccasehistories.com/?s2member\_</u> file download=access-s2member-level1/ch746.pdf





## **Case Histories**

#### Case History #759: Grouting Delays on the Skulte Overpass

The Riga-Skulte railway overpass is one of the largest Latvian bridge projects to take place in the last decade. Although the size of the project made it almost certain that tendon stressing and grouting could not be completed in one construction season, the general contractor crew did their best and only missed their goal by about one or two weeks. Unfortunately, the arrival of freezing winter temperatures meant a delay of two to three months minimum before grouting could be continued. In the meantime, the contractor decided to protect the tendons by fogging the ducts with MCI®-309, recommended by their connections abroad. This was the first time such a material had been proposed, and everyone was interested in the prospect. The crew found that it was easy to apply without special equipment other than conventional air compressors. MCI®-309 will provide active corrosion protection during the waiting period and will not need to be flushed out prior to grouting. Log in to read more: https://www.corteccasehistories.com/?s2member file download=access-s2member-level1/ ch758.pdf



### **UPCOMING EVENTS**

We would love to connect with any of you who are able to attend these current and upcoming events!

#### ACI Concrete Convention on Innovation

March 9<sup>th</sup>-10<sup>th</sup> Address Dubai Mall Dubai, UAE (Ash Hasania attending—no booth) https://aci-cci.com/about.html

#### **STAY CONNECTED**



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#### ACI Concrete Convention – Spring 2022

March 27<sup>th</sup>-31<sup>st</sup>, 2022 Orlando, Florida (Jessi Meyer and Lisa Marston attending—no booth) https://www.concrete.org/ events/conventions/currentconvention.aspx

#### **ICRI Spring Convention**

April 4<sup>th</sup>- 6<sup>th</sup>, 2022 Baltimore Marriott Waterfront Baltimore, Maryland (Jon Connealy, Kevin Quan, and Lisa Marston hosting a tabletop booth) <u>https://www.icri.org/ events/EventDetails.</u> aspx?id=1612473&group=

#### Cortec<sup>®</sup> World Sales Meeting 2022

June 15<sup>th</sup>-17<sup>th</sup> Saint Paul Hotel Saint Paul, Minnesota, USA <u>https://www.cortecvci.com/</u> <u>news-alert-save-the-date-</u> <u>cortecs-world-sales-meeting-is-</u> <u>coming-back-this-summer/</u>











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