



MIGRATING CORROSION INHIBITORS
FROM GREY TO GREEN

Newsletter

March 2011

Concrete Durability Conference held in Oman

United Corrosion Technologies (UCT), together with Texel Energy, held a concrete durability conference on Wednesday, March 2, in Muscat, Oman. The well organized, half day event featured four presentations and drew in 130 attendees representing over 70 countries! Attendees included specifiers and owners from municipalities and local oil development firms. After a welcome and introduction by Usama Jacir of UCT, Dr. Mohamed Nagi gave a presentation on factors affecting concrete durability. This was followed by a presentation from Dr. Yahia Alhassani on SCC and how it enhances concrete durability. Ms. Jessi Meyer of Cortec® presented on migrating corrosion inhibitors for increased concrete durability in both new construction and repair applications. The final presentation was by Dr. Nagi on service life and ways to achieve a 100 year design life for structures in the Middle Eastern region. The event was wrapped up with an introduction of the American Concrete Institute and request for those interested to sign a petition to start a new Oman Chapter of ACI. This was very well received with over 60 people signing up for the chapter on site. Cortec® Corporation would like to congratulate UCT and Texel on their accomplishments achieved during this event!



Emergency Stabilization of Alcatraz

Alcatraz Island is the site of the well-known Alcatraz Federal Penitentiary. This island is located in the center of San Francisco Bay and being surrounded by salt water and fog year round causes numerous corrosion issues for the current stewards of Alcatraz, the National Park Service (NPS). Alcatraz Island receives over a million visitors a year and their safety is paramount to the NPS staff. The NPS noticed potentially hazardous loose concrete on walls of the main prison building high above the open visitor areas. The spalling concrete had to be removed and the corrosion slowed with a limited budget. Further complicating the work schedule is the fact that Alcatraz is also a sanctuary for sea and for water birds. Nesting birds are surveyed on a yearly basis, and management actions are adjusted to avoid disturbance during this sensitive time. Therefore work is prohibited from February through September.



To slow corrosion the NPS staff removed the loose concrete and applied CorrVerter to the exposed steel reinforcement. Then, the entire area was treated with MCI®-2020 to address corrosion that was undoubtedly beneath the surface. MCI®-2020 was very easy to apply, cost effective and allowed the treatment of larger areas thus providing a cost savings to the NPS for future repair projects.

Northwest Paper Mill

Recovery Boiler Concrete and Slab Replacement

A paper mill, located in the Pacific Northwest region of the United States, was experiencing corrosion from sulphur dioxide gas, SO₂. Concrete was in danger of falling 25 feet between deck levels. Concrete curbs were severely deteriorated and drainage needed to be resloped. Wall cladding would be difficult to remove because it was transite, a combination of asbestos and cement. Therefore, the customer determined that the anchoring needed to stay.

MCI®-2005 AL was used as a corrosion inhibiting admixture in all of the concrete to protect against SO₂ corrosion and the ring anode effect at the transite anchors. MCI®-2005 AL provided a solution to the customer where they were able to repair the concrete slabs and they did not need to disturb the asbestos cladding.



Penescal II

Hot ambient weather, high humidity, brackish ground water, and salt air created an extremely corrosive environment for this structure and the reinforcing steel. MCI®-2005 NSB was chosen over Calcium Nitrite (CNI) because of CNI's effect on slump loss and set time acceleration during the long haul times to the job site. MCI®-2005 NSB was dosed at 1.5 pints for each cubic yard of concrete in order to protect embedded reinforcement. Cortec's MCI®-2005 NSB was a great product for this project given the conditions and challenges. The low dosage rate was beneficial due to high volume of daily concrete production that the project demanded. That and normal set times made it easier to store more product on-site and keep up with the daily concrete production in a very remote location. The presence of chlorides in this aggressive environment made MCI® the ideal choice to prevent corrosion of the reinforcing steel.



MCI® POWR

Penetrating, Oil and Water Repellant

MCI® POWR is a clear, penetrating, water-based, alkylalkoxy silane containing Cortec's migrating corrosion inhibitor technology. MCI® POWR is specifically designed to protect new and existing concrete structures against the damaging effects of moisture intrusion, freeze/thaw scaling, chloride-ion (salt) intrusion, and oil and water staining.

MCI® POWR penetrates the concrete and provides water repellency by chemically reacting with the cementitious substrate under proper application. Treated substrates are hydrophobic and retain their original appearance. Once applied, MCI® POWR not only provides water repellency, but protects concrete from oil and water staining. Its Migratory Corrosion Inhibitor action allows this product to penetrate to embedded reinforcement where it forms a protective, monomolecular, corrosion inhibiting layer. MCI® POWR meets requirements for Alberta DOT Type 1B penetrating sealer. (Requirements for initial water repellency and repellency after abrasion are 70% and 86% respectively.)

Repair of Corredor Sur-Tramo Marino Bridge

Precast Beams

The precast beams of the Corredor Sur-Tramo Marino bridge were showing signs of corrosion from ten years of exposure to the extreme surrounding environment. The bridge had to be repaired and protected from future corrosion problems.

The concrete beams were cleaned and prepared. All spalls and areas where corrosion was evident were chipped out. Rebar was exposed and rust was removed mechanically; in some places the rebar was replaced. Two coats of MCI®-2023, a passivation repair grout, were applied on the exposed rebar, a repair mortar was then used to patch the spalling areas, and a single coat of MCI®-2020 V/O was applied to the beams. Finally, the beams were painted with an epoxy protective coating. These Cortec® products were very easy to apply, especially in the job conditions where the crew had to work.



Wilton Manors Bridge

The Wilton Manors Bridge spans a salt water canal which exposed it to severe elements. The corrosion of steel reinforcement led to the deterioration and spalling of the underside concrete. Tidal changes in the area required the repair to be timed with the tide levels.

At low tide the dirt, grime, and loose concrete was removed. Then MCI®-2023 was applied by brush to all exposed reinforcement and damaged areas. The next day a second coat of MCI®-2023 was applied just before applying MCI®-2039 repair mortar. After curing of the repair mortar, MCI®-2020 V/O was applied to the entire underside of the bridge.

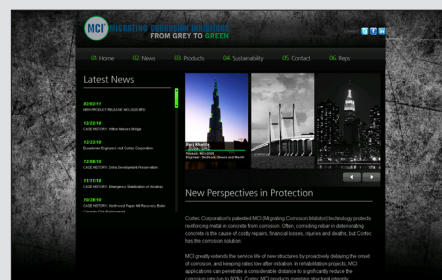
The MCI® products were selected because of their ability to decrease corrosion rates and migrate through the existing concrete to embedded reinforcement. MCI® products were easily applied and will provide many years of protection. The City of Wilton Manors anticipates additional prolonged life for the bridge and reduced maintenance expenses.



New MCI® Website!!

Cortec® has recently published a new and improved MCI® website. The new website has been found to be much more user friendly while still providing all necessary MCI® information to users. MCI® CDs have also been updated to reflect this new design and are available for shipment immediately!

<http://cortecmci.com/>



Doha Development Preservation

Barwa Commercial Avenue is an 8 km (4.97 mile) commercial and residential development that houses ultra-modern homes, commercial complexes, restaurants, showrooms, and offices. It was constructed over an area of 894,000 m² (1,069,200 yd²) with a built-up area of 462,000 m² (552,550 yd²). In the design of this landmark project in Doha, Qatar, attention was given to providing durable concrete structures that would provide the desired service-life and maximize investor value.

The main threat to the structural integrity of buildings in this region lies in the highly saline soil and shallow groundwater. The prevalence of Sabkha in the Gulf region introduces highly corrosive mineral deposits in the soil with salinity levels exceeding three times that in seawater. To mitigate this threat, a high performance concrete mix was used that incorporated Cortec's MCI®-2005 corrosion inhibiting admixture. United Corrosion Technologies supplied the MCI®-2005, which helped to protect reinforcing metal in the concrete from corrosion.



Rebar Recap

Starting again this spring, Cortec® will continue to host bi-weekly WebEx meetings to discuss MCI® topics, such as new products, projects, and testing. We will also host some MCI® Technical Basics webinars that will be open to all representatives, distributors, and existing or potential customers. Meetings will be held on Mondays at 9 A.M. and 6 P.M. Central Time unless otherwise noted. The exact dates will be determined shortly and a schedule will be sent out. Invitations to join the webinars will be sent the week prior to the meeting date and will contain all information needed to participate in the meetings. All webinars will be recorded and saved. If you have any questions or concerns, please contact Matt Drew at mdrew@cortecvci.com. As always, if there is a specific topic you would like to learn more about, please let us know and we will be happy to use those topics in future webinars.

World of Concrete 2011

Once again, Cortec Corporation was well represented at the World of Concrete, held January 17-21, 2011 at the Las Vegas Convention Center. The event was another big success with over 48,500 professional registrants in attendance. WOC also showcased just over 1,200 indoor/outdoor exhibitors in more than a half-million square feet of exhibit space.

On Thursday, Jessi Meyer and Matt Drew hosted a Distributor and Sales Representative luncheon at the Embassy Suites discussing Cortec's newest products, projects and testing. MCI POWR, a penetrating, oil and water repellent was presented.

Upcoming tradeshow

ACI Spring Convention:

PTI Conference:

ASBI Annual Convention:

ICRI Fall Convention:

ACI Fall Convention:

April 3-7, 2011 in Tampa, FL

May 1-3, 2011 in Kansas City, MO

November 7-8, 2011 in Washington, DC

October 12-14, 2011 in Cincinnati, OH

October 16-20, 2011 in Cincinnati, OH



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