CONCRETE DURABILITY

MCI® Migratory Corrosion Inhibitor Newsletter

Featuring:

June 2008

MCI®-2018: Francis Scott Key Bridge
MCI® in Puerto Rico
MCI® Worldwide: France & Dubai
GalvaPulse Test: Cape Canaveral, FL
MCI® at NACE

CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

MCI® 2018: Francis Scott Key Bridge

The last weekend in March proved to be just warm enough in Baltimore, Maryland to apply MCI®-2018 to the Francis Scott Key Bridge. The Francis Scott Key Bridge is located on Interstate 695 and spans the Patapsco River. This continuous truss bridge was opened in 1977 and the four lane span is 1200 feet long.

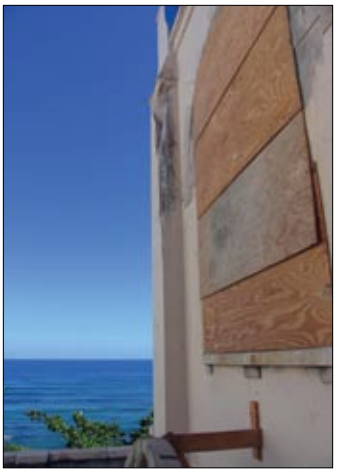
MCI®-2018 is a 100% silane sealer containing Cortec's patented migrating corrosion inhibitors. The corrosion inhibitors will migrate to embedded steel reinforcement and form a protective layer that mitigates the corrosion process.

Patches and repairs were made to the bridge prior to the application of MCI®-2018. A trailer carrying two totes of MCI®-2018 was equipped with a spraying system on the front and rear. Unfortunately, because of code restrictions, it could not be built big enough to spray the entire lane, so the last two feet were hand sprayed. Both methods achieved a wet-wet application that sat on the concrete for a few minutes before drying, giving time for the silane to sink in and react.

Here are photos looking back at the application from on the top of the bridge (a spot most people do not get to stop and view). The darker area shows how uniformly the product went down. The markers placed on the side of the road corresponded with marks on the totes to also keep uniformity in check. Although it was windy on the top of the bridge, the hand built-wood frame around the sprayers caught most of the blowing material, allowing the product to condense on the sides of the wood and drip down onto the concrete.

Puerto Rico

Here are photos from the U.S. Customs and Homeland Security Building (pictured left) and Saint Augustine Church, San Juan, Puerto Rico (pictured right). The church was constructed in 1915 and is now undergoing repair. MCI® 2020 and MCI® repair mortars are being utilized to extend the life of the repairs.

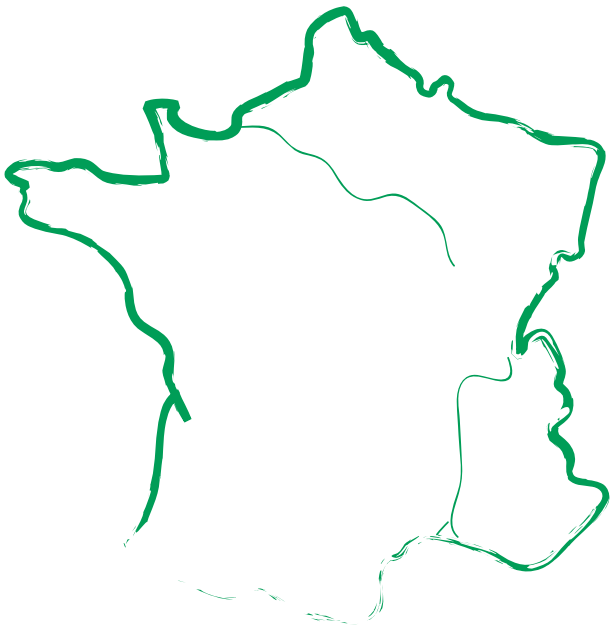


Miguel Caban and Jessi Meyer (pictured left) at the Bacardi Refinery. Miguel presenting (pictured right) at the seminar Cortec® and M.R. Franceschini facilitated for local civil and structural engineers on March 12, 2008.

MCI®: *France*

Worldwide

Jessi Meyer of Cortec® Corporation had a very productive visit in March 2008 with Interface Development Cortec's distributor in France to do sales calls related to Cortec's MCI® line of materials. One of these calls involved viewing a site owned by SVESC. As can be seen in the photos, this site, close to the Seine River is subjected to flooding. There is a concern for the concrete walls that are being degraded by the harsh chemical environment and moisture. Matthieu Biens, Interface Development, can be seen in one photo checking the properties of a trial protective coating that will go over an application of MCI® 2020 corrosion inhbitor.



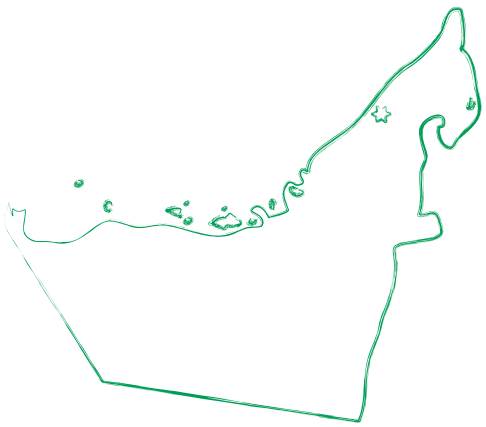
MCI®: Dubai

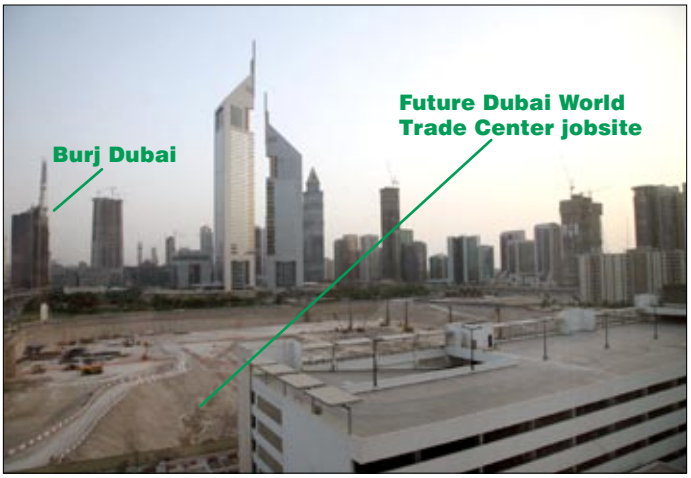
Worldwide

The United Arab Emirates (UAE) is home to almost 6,000 construction companies. In terms of per capita expenditure on construction, this figure is at the top globally, which make sense for a country that currently has such things as the tallest building in the world, the tallest residential building in the world, and the largest mosque in the world.

Cortec Corporation and United Corrosion Technologies (UCT), Cortec's distributor for the Middle East region, are working together to increase the amount of MCI® used in this construction hotspot. Jessi Meyer recently traveled to both UAE and Jordan with UCT to give technical presentations to local engineering firms and ready mix suppliers. While admixtures are certainly a focus during the new construction boom the region is experiencing, the seeds are also being planted on the usefulness of MCI® in repair projects.

To date, MCI® products have been used on the substructures of both the Burj Dubai and Princess Towers (MCI® 2005), as well as on The Grand Mosque (MCI® 2021 & MCI® Architectural Coating). Watch for more exciting projects coming out of this growing region!





Current photo of Burj Dubai

GalvaPulse Test: Cape Canaveral, FL

The city of Cape Canaveral in Florida plays host to the launching of several space shuttles each year. The immense amount of exhaust from each launch has a dramatic effect on the surrounding structures. Chemicals in the exhaust are extremely corrosive, not only to exposed metals, but to reinforcing steel in the surrounding concrete structures.

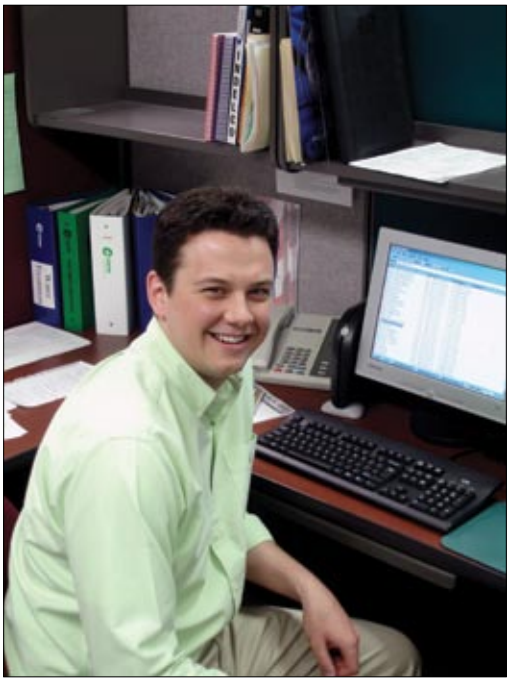
Existing Structures Engineering specified the use of Cortec's MCI®-2020 and MCI®-2020 V/O on the Pad B ECS Cooling Tower of Space Shuttle Launch Pad 39 in 2003 due to direct exposure to these harsh chemicals. The MCI® products were applied in early 2004 and a corrosion rate evaluation was completed on January 8, 2008. A galvanostatic pulse technique, known as a GalvaPulse test was used to determine the corrosion level on both the north and south walls of the cooling tower structure. Testing of the walls showed corrosion rates between 16.72 and 67.91 μm/year, which indicates a low to moderate level of corrosion, showing that MCI® is keeping corrosion rates down and ensuring a longer lifetime for this structure.

MCI® professionals HARD at work!

MattDrew

New Faces

Cortec® would like to introduce Matt Drew as our new Inside Sales Representative. His responsibilities will include project support and follow up, coordination of other needs, and be another point of contact at headquarters.



Matt grew up in Vadnais Heights and went to White Bear Lake High School where he played hockey and baseball. He attended Colgate University in Hamilton, NY where he continued hockey and graduated with a B.A. in Molecular Biology. Outside of work, Matt enjoys working on his new house, golfing, hockey, and softball.

As Matt becomes more acclimated with Cortec® products, projects, and office procedures you can expect an increased level of communication from him. Please join us in welcoming Matt to the Cortec® family.

Material Service Life, LLC.

Material Service Life, LLC. (MSL) has a mission to use advanced science and engineering to lead towards better business decisions. The company has over 175 experts through the U.S. and Canada, providing services such as service life modeling/predictions, case studies, mixture optimizations, and condition assessments. They also offer product evaluations in order to sort through the hundreds of products available to the concrete industry. Recently, the testing of Cortec's MCI admixtures were evaluated by the experts at MSL and found to be adding value to the life of the structures by protecting the reinforcing steel. The report stated, "There is enough reliable information on admixed MCIs to conclude that they are generally effective in new and repair concrete. They have little influence on fresh concrete properties (for NS products), and displayed good corrosion inhibition properties in a variety of tests."

Cortec® requested MSL review literature and data on our MCI® products and provide an independent opinion on the large collection of documents accumulated over time. For purposes of the review, MSL adopted the standpoint of a specifier and maintained a neutral stance on product performance assessment. Although the literature review is critical in nature, it provided Cortec® with the benefit of an unbiased external opinion.

MCI® at NACE

The National Association of Corrosion Engineers (NACE) conference was held this year in New Orleans, LA from March 16-20. At NACE there were technical symposiums held each day. This year, Andrea Hansen, MCI® Technical Service Engineer at Cortec®, presented test paper "Galvanic Liquid Applied Coating for the Protection of Concrete Reinforcement" that had been written by Andrea Hansen, Alla Furman, Marlin Hansen, Angel Green, and Jessi Meyer. This paper discusses the reformulating and testing of the galvanic coating first introduced by NASA and now known at Cortec® as GalvaCorr®.

The goal of this study was to evaluate an existing formulation and optimize the corrosion protection by adjusting powders, resins, and installation techniques. A number of electrochemical techniques were utilized for measuring parameters of the galvanic coating as the formula was tested against the following criteria:

a) **Cathodic potential vs. steel reinforcement potential**

b) **Sufficient rate of anodic reaction to provide the level of current necessary for cathodic protection**

c) **Electrical conductivity**

d) **Good adhesion to the concrete and durability**

e) **Sufficient 'pot life' for the convenience of application**

These studies were performed on concrete lollipop samples and concrete blocks in the lab as well as two field applications here in Minnesota. Below you can see the difference between coated bridge piers and uncoated piers after approximately two years.

Piers Coated with GalvaCorr®

Uncoated Piers

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Environmentally Safe VpCI™/MCI® Technologies

ISO 14001 CERTIFIED ENVIRONMENTAL SYSTEM REGISTERED

ISO 9001 CERTIFIED QUALITY SYSTEM REGISTERED

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