MCI® for Precast Concrete Repair

Sometimes, corrosion has already gone so far that precast concrete elements must be repaired. MCI® Technical Sales and Product Manager, Ash Hasania, found this to be the case when he encountered a client with deteriorating concrete light poles that were more vulnerable to corrosion because of old, poor quality concrete cast in a slender design. MCI®-2023 was used to re-passivate rusted rebars. MCI® Mini Grenades were added to the ready-mix for the new concrete patches. Once the concrete cured, surfaces were treated with MCI®-2020 and MCI®-2018 for additional corrosion protection. Going forward, the customer began adding MCI®– 2005 to the light poles during casting.

To learn more visit https://www.cortecmci.com/

MCI® PRODUCTS FOR HISTORICAL RESTORATION

Two priorities exist when restoring historical structures that have deteriorated from corrosion: (1) Mitigate corrosion to extend service life and minimize future repairs. (2) Do so without changing the appearance of the structure. This is especially difficult with historical concrete structures, as the addition of new materials could alter the color or texture of the concrete. Fortunately, Cortec® MCI® products have proven to be excellent resources for both maintaining and repairing heritage structures.

One of the most difficult parts of a historical concrete repair can be matching new repair mortars or concrete mixes to the old surface where patching is needed. Sometimes this requires highly specialized historical or decorative concrete mixes. MCI® Mini Grenades can be added directly to these specialty mixes to introduce Migrating Corrosion Inhibitors to the repair. These concrete corrosion inhibitors have been successfully used in historical preservation jobs to extend service life without changing the color or look of the final repairs. They may also discourage the progression of the ring anode effect in areas adjacent to the repair by migrating and evening out the corrosion potential between existing concrete and repaired areas.

Rebar and Concrete Surface Prep

Rebar rust is typically the leading cause of concrete deterioration, and good surface prep is therefore integral to a successful repair. Traditionally this involves labor-intensive sandblasting and cleaning of the rusted rebar to white metal. CorrVerter® MCI® Rust Primer offers a convenient alternative to treat and passivate rusted rebars.

A single component, fast drying water based primer, CorrVerter® MCI® can be applied to layers of tight rust, converting it into a hydrophobic passive layer. This method reduces labor and makes re-rusting less likely in the near future.

Another important aspect of surface prep is making sure the concrete is clean. For example, concrete contaminated with oils or greases can be cleaned with MCI®-2061 or MCI®-2062. These cleaners contain microorganisms for extended cleaning power. Left overnight, the microorganisms degrade and digest greasy substances within the concrete. They also continue to provide residual cleaning even after the surface has been rinsed off.

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MCI® SURFACE APPLIED CORROSION INHIBITORS: A RECOGNIZED INDUSTRY STANDARD

ICRI Guideline No. 510.2-2019: *Guide for Use of Penetrating Surface Applied Corrosion Inhibitors for Corrosion Mitigation of Reinforced Concrete Structures* is the culmination of years of expert collaboration among members† of the International Concrete Repair Institute (ICRI). This groundbreaking standard was published in 2019 and defines SACIs as corrosion inhibitors that penetrate through concrete and directly inhibit corrosion on the surface of the metal reinforcement, thus excluding chemistries that act as pore blockers only. It covers known technologies on the market at the time of publication and offers tips on surface prep, application, and detection/assessment.

Cortec® MCIs and the ICRI Standard

Cortec's MCI® SACI chemistries fall under the ICRI descriptions of ambiodic (mixed) inhibitors. They include MCI®-2018, MCI®-2019, MCI®-2020, and MCI®-2021, to name a few. The best SACI to use for a particular product varies from application to application. Factors such as environmental conditions, budget parameters, and the application of water protection products all figure into the decision-making. For example, those in search of the MCI® SACI with the highest concentration of corrosion inhibitors may opt for MCI®-2020. Those looking for convenient two-in-one corrosion protection and water repellency may select MCI®-2018, which combines Migrating Corrosion Inhibitors with a 100% silane water repellent. MCI®-2019, containing Migrating Corrosion Inhibitors and a 40% silane water repellent, may be preferred by those seeking to stay within a more limited budget. When tested according to the U.S. Bureau of Reclamation M-82 Protocol (one of the few existing test methods for SACIs), these three surface treatments* showed a significant reduction of corrosion and cracking in the presence of high chloride exposure.

For more information visit https://www.cortecmci.com.

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Email your 150-200 word news to editor@icri.org. Content for the May/June 2023 issue is due by April 1, 2023, and content for the July/August 2023 issue is due by June 1, 2023. One (1) high resolution product photo may be included. ICRI reserves the right to edit all submissions.