

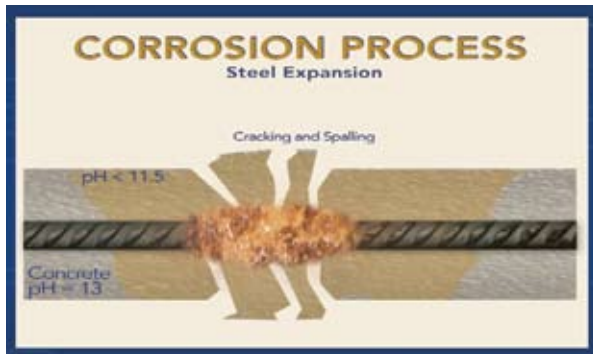
Installation & Markets Applications Pre-installation Testing & Diagnostic Engineering Design Commissioning Direct Assessment Soil Testing & Analysis Metal Failure Concrete Analysis **Expert Witness** News Speaking Engagements Marketing Engagements Archives Articles MATCOR SPL™ Mini-Deep™ Anode NACE Global & NACE Local Cathodic Protection Products & Services Brochure Project Directory Oil & Gas Pipelines Employment Industry Anode Offshore International Reps **Corrosion Protection Engineering** Pre-Installation Testing & Diagnostic Engineering Design Commissioning Inspection Testing **Pre and Post-Installation Engineering** Pipeline Integrity Management Operator Qualification Program Direct Assessment Research & Innovation Soil Testing & Analysis Metal Failure Concrete Analysis Expert Witness Pipeline Integrity Management Operator Qualification Program Direct Assessment Cathodic Protection Materials & Systems **Impressed Current Anode Systems Linear SPL™ Anode Systems Mesh HDP Applications for Above Ground Storage Tanks Model Codes Design Guides Deep Anode Systems Supervent™ Pipe Deep Anode Backfill Off Shore & Marine Systems** Sea Bottom Sea Floor Super-sled™ PW™ Anode Anode Water Tanks PFT™ Anode Internal Cathodic Protection Systems Reinforced Steel for Concrete Systems Cathodic Protection Products Impressed Current **Anodes MMO MMP™ -Anode MMB™ -Wire Anode MMB™ -Tubular Anode Ribbon Titanium Conductor Bar Platinum PL® -Anode Design Guide Installation Guide Graphite Bare Prepackaged Iron Prepackaged Canister Sacrificial Anodes Aluminum Mixed Metal Oxide Ribbon & Rod Inhibitors Conventional Options Model Codes Thermal Electric Generators Power Cable HMWPE, Halar, Kynar Reference Cells MATCOR Supervent™ Vent Pipe Test Equipment Test Stations Accessories Cadweld-Erico Products Kits Coke Breeze MATCOR Metallurgical Coke Deep Anode Backfill Cathodic Protection Installation MATCOR Backhoe, Ditch Witch, Cable Plow, Road Bore, Street MATCOR Mini Deep™ Oil & Gas Pipelines Total Project Capabilities Chile Power Plant **Steel-in-Concrete Rehabilitation** North China Fairless Hills Energy Center Summit Energy Center Decker, Holly & Sand Hill CP upgrades Noblesville Generating Facility Louisa County Energy Pipeline Transmission, Distribution & Storage PG&E Utility Baku-Tibilis-Cehyan Oil Pipeline Texas East Texas Transmission Plantation Pipeline Columbia Gas **Research & Innovation** PECO Energy Kern River Gas Transmission Processing Facilities Syracuse China Clark Oil ABB Lummus Distrigas Civil/Transportation Coral World Mass Transit Railroads p.-Hong Kong Marshall Space Flight Center **Syracuse Airport Reinforcing Steel-in-Concrete Bridge Deck National Geographic Parking Garage Rooney Palace Franklin Field Philadelphia Art Museum** Water Treatment Facilities Wells Wells-Puerto Rico Hetch Hetchy Water & Power Contra Costa Water District Westland's Water District CP of the Contra Costa Reservoir Santa Clara Valley Water District Corrosion Engineering ABB China Seeco Griffin Industries Bucks County Correctional Facility Biothane Central Marin Sanitation Agency Zone 7 of Alameda County Military Integrity Management Project Morgan ECDA Validation Project for Texas Rail Road Commission PRCI Gas Pipeline ECDA Project TXU Energy Integrity Project Marine Unloading Dock Virgin Islands Petroleum Above Ground Storage Tanks Management Cathodic Protection Materials & Systems Cathodic Protection Installation Markets & Applications Pre-Installation Testing**

MATCOR

No stronger name in corrosion protection

Cathodic Protection of Steel-In-Concrete Structures

STEEL-IN-CONCRETE CORROSION: THE MATCOR SOLUTION



When chlorides reach the reinforcing steel, the steel rusts, expands, and causes internal stresses, cracking, spalling, and ultimately, the structure's failure.



Corrosion often damages the rebar on seaside structures. These condominium balconies were damaged enough to require major repairs. Without cathodic protection, similar repairs will be necessary in a few years.

HOW DOES THE MATCOR SYSTEM SOLVE THE CORROSION PROBLEM?

If corrosion is visually evident through cracking, discoloration, delaminations, or spalling of the concrete, there is likely damage to the reinforcing steel. Repair methods such as patching, sealers, or membranes will not stop the corrosion; they are a short term fix and do not solve the problem.

MATCOR's impressed current cathodic protection systems halt the electrochemical corrosion process by introducing low voltage DC electrical current into the concrete through a series of noble metal anodes. Engineers specify these proven systems in several configurations based on the particular application. MATCOR cathodic protection systems are generally designed for a system life of 25 years.

www.matcor.com

WHAT CAUSES CORROSION OF STEEL-IN-CONCRETE?

Most corrosion is caused by chlorides, and they come from:

- Deicing salts
- Seawater
- Calcium chloride added to concrete during construction
- Chemical pollutants
- Salty air near the sea

Chlorides penetrate to the level of the rebar, which then corrodes. The corroded steel expands to four or five times its normal volume, causing:

- Internal stress with pressure up to 10,000 psi
- Cracking and spalling of the concrete, and if unchecked, failure of the structure

**For more information
on concrete corrosion, see
www.stopconcretecorrosion.com.**

WHAT CONCRETE STRUCTURES CAN BE PROTECTED BY THE MATCOR SYSTEMS?

- Buildings and support structures
- Highway surfaces and bridge decks and substructures
- Parking garages
- Marine structures, including piers, support columns, pile caps, dock and sea walls
- Industrial plants
- Ice skating rinks
- Swimming pools
- Vessels and tanks
- Intake structures
- Foundations
- Balconies

WHAT MAKES MATCOR THE SUPERIOR CHOICE IN CORROSION PROTECTION?

Experience: With more than three decades of experience in designing and providing state-of-the-art technology, MATCOR's products and engineering expertise have withstood the test of time.

Technology: MATCOR's wide range of technologies allows our engineers and yours the maximum flexibility to design lasting solutions to your corrosion problem.

Access: Because MATCOR designs and manufactures its own systems, turn around times can be quicker and communication more efficient, making every job easier.

Research and Innovation: Many MATCOR products were designed and patented by our engineers. We are continually seeking new solutions for corrosion problems.

Remote monitoring and monthly data analysis: MATCOR can monitor the corrosion protection system remotely to ensure proper maintenance and functioning anywhere in the world.

Flexibility: MATCOR can design your entire cathodic system, supply materials, and monitor your system once it is installed. Engineers, concrete repair contractors, architects, and owners can choose any or all of these components to protect their structures.



In the National Geographic Society Building's parking garage in Washington, DC, MATCOR designed and installed a cathodic protection system using MATCOR CPBD™-III conductive coating cathodic protection to stop corrosion after an extensive concrete restoration project. For more than a decade, MATCOR has conducted annual tests on the system to ensure proper operation.

With MATCOR cathodic protection, corrosion will be halted and further repairs are unnecessary.

MATCOR'S EXPERIENCE MAKES THE DIFFERENCE

Since 1975, MATCOR has provided corrosion protection for millions of square feet of steel-reinforced concrete using products designed and patented by our own engineers and proven over time in worldwide applications. MATCOR has received numerous technical awards for the longevity of its projects and the ingenuity of its designs. MATCOR offers the total solution to corrosion mitigation: specialized corrosion engineering, state-of-the-art materials, installation, testing, and total project management.

MATCOR professionals are called upon by the industry to present technical papers, by our clients to provide professional services, and by the media to offer expert opinion on corrosion-related issues.

With offices throughout the United States and project capabilities overseas, MATCOR works worldwide.

www.matcor.com

CASE STUDIES

PHILADELPHIA ART MUSEUM STEPS



Visitors to the Philadelphia Art Museum aren't aware of the special precautions taken to preserve the famous "Rocky" steps. Beneath the steps, a MATCOR cathodic protection system safeguards the support structure of the steps in a system that can be remotely monitored.



The tunnels under the Philadelphia Art Museum steps showed signs of corrosion before repairs. MATCOR installed CPBD™-III conductive coating to help protect the steps.

NASA VEHICLE ASSEMBLY BUILDING



A MATCOR system protects NASA's Vehicle Assembly Building, which is large enough to hold four Empire State Buildings.

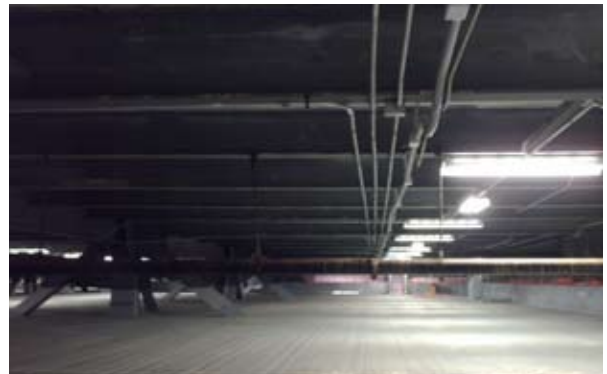
MATCOR has provided corrosion protection for millions of square feet of steel-reinforced concrete, often using products designed and patented by our own engineers and proven over time in worldwide applications.

Before



The Vehicle Assembly Building roof's steel structure was corroded, causing falling debris inside the building.

After



After MATCOR installed a cathodic protection system on NASA's 215,000 square foot crumbling Vehicle Assembly Building roof, the concrete deterioration stopped.

www.matcor.com

CASE STUDIES

MATCOR teamed with Spanish engineers and Chilean corrosion protection installers for this multinational project.

RONNEY PALACE, SOUTH BEACH, MIAMI



The cathodic protection project using MATCOR's conductive coating system (CPBD™-III) covered 125,000 square feet of concrete and approximately 900 balconies at Miami's South Beach landmark residence, Roney Palace. The MATCOR system has a life expectancy of 25 years, compared with the alternative measure of extensive excavation and sealing which only has a life expectancy of 5-6 years.



The most utilized cathodic protection system for concrete is the MATCOR CPBD™-III Conductive Coating System for atmospheric concrete. A small diameter platinum wire anode is embedded in a conductive coating applied to the concrete surface and then covered with a cosmetic coating. The anode system is connected through cabling to a low voltage power unit or controller.

ICCP POWER PLANT, IQUIQUE, CHILE



MATCOR worked with the power plant's engineers to provide several types of cathodic protection systems for this plant in Chile. Concrete slabs, tank foundations, and plant piping were protected with MATCOR's Mixed Metal Oxide Mesh Anode System, ribbon anodes, and more. The corrosion at this site was not related to its proximity to the sea but to chloride contamination of the sand originally used in the building's concrete.



MATCOR Mesh Anode Systems were part of a comprehensive corrosion protection plan for the ICCP Power Plant.



Once energized by MATCOR, the cathodic protection is effective and the corrosion process is stopped.

FOR MORE INFORMATION:

ONLINE

To see an informational video about MATCOR's cathodic protection systems for steel-in-concrete, company qualifications, representative projects, and the economics of MATCOR cathodic protection visit www.stopconcretecorrosion.com.

PERSON TO PERSON

To speak with a MATCOR expert, call 800.523.6692 or email matcorsales@matcor.com.

www.matcor.com

Impressed Current Anode Systems Linear SPL™ Anode Systems Mesh FBR GFC HDP Applications for Above Ground
s & Systems
Innovation Soil Testing Metal Failure Concrete Analysis Expert Witness Pipeline Integrity Management Operator Qualification Program
p Anode System Superver™ Pipe Deep Anode Backfill Off Shore & Marine Systems Sea Bottom Sea Floor Super-sled™ PW™ Anode H Pile Anod

Established in 1975, MATCOR is one of the most experienced providers of corrosion technology.
We provide comprehensive design engineering services and total cathodic protection solutions worldwide.
We offer a full array of materials, installation, testing, maintenance and total project management.
Call 800.523.6692 to put the benefits of total corrosion protection to work for you.

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