

MARKET APPLICATION FOCUS

New Construction

Ready Mix Concrete

Corrosion Inhibitors in Reinforced Concrete

Project: Port of Wilmington, DE
Owner: Port of Wilmington, DE
Specifier: Ram Construction
Year: 1998

THE PROBLEM



The purpose of the project at the Port of Wilmington (DE) was the extension of one of the ports piers. Since the chlorides in the seawater can cause, even at an early stage, corrosion of the reinforcement bars in the concrete, the contact with seawater reduces the service life of concrete structures significantly.

To extend the service life of the concrete structure exposed to the seawater and to reduce the risk of early damage due to steel corrosion induced by chlorides, the owner decided that an additional protection of the steel reinforcement in the concrete was needed.

THE SIKA SOLUTION

To extend the service life of the reinforced concrete in such severe conditions the owner decided to use FerroGard-901 as a corrosion inhibitor, which would bring the best results in reducing the corrosion rate of the reinforcement bars. Sika's penetrating corrosion inhibitor FerroGard-901 used as a concrete admixture in fresh concrete has the ability to form a protective layer on the steel. This protective layer will increase the service life by doubling the time to the start of corrosion and once started reduce the corrosion rate by at least 50%.



Since FerroGard-901 doesn't change the properties of fresh concrete, the placing and finishing of the concrete was done without any problems.

CASE STUDY

The Sika logo, featuring the word "Sika" in a stylized font inside a red triangle.

Sika's Product Range for High Performance Concrete



Anti-Corrosion Primer and Bonding Bridge Plastocrete® 161 - Is a highly effective general purpose water reducer and plasticizer enhances cement paste quality. (ASTM C-494 Type A)

High Performance Repair Mortars

Sikament® 10 ESL - Is a High Range Water Reducers (ASTM C-494 Type A & F). Its patented formaldehyde-free formulation delivers up to 30% water reduction, increased strengths, and extended slump life.

Leveling mortars for Coating Damp Concrete

Sikament® 86 - Is a High Range Water Reducers (ASTM C-494 Type A & F). Its excellent water reduction capability allows the use of lowest water cement ratios.

Problem Joint/Cracks Sealing System

Sikament® FF - Is a High Range Water Reducers (ASTM C-494 Type A & F). Its superior high range water reducer delivers consistently high early strengths for early stressing and form release

Joint Sealing

Sikament® HP - Is a Mid Range Water Reducer (ASTM C494 Type A & F). Sikament HP reduces water requirements while producing concrete with superior workability and placement characteristics

Surface Sealing/Waterproofing Mortar

Plastiment® - Is a highly effective retarding admixture, which delivers concrete with controlled and predictable slump life. (ASTM C494 Types B & D)

Protective Epoxy Coating

Plastocrete® 161 FL - Is a non-chloride formulation, which protects concrete from cold and freezing weather conditions, suitable for steel reinforced construction. (ASTM C494 Types C & E)

Epoxy Injection and Bonding

Sika Rapid® -1 - Is a hardening accelerator (ASTM C-494 Types C). Sika Rapid-1 is a unique non-chloride, hardening accelerator, which achieves very early high strengths without set acceleration.

Structural Strengthening Systems CFRP

Sika AEA15® - Is a Air Entrainment Agent (ASTM C-260). Sika AEA-15 is a concentrated synthetic admixture improves resistance freeze/thaw damage or scaling, and improves workability.

Chemical Grouts for stopping water leaks

Sikacrete® 950 - Is a microsilica slurry form for efficient dispersion throughout concrete matrix (ASTM C1240). Sikacrete 950 will improve strength and durability of the concrete.



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