



SURTREAT®

**OCEAN CITY LONG
PORT BRIDGE**

CASE STUDY

PROBLEM

Visual display of micro cracking on the entire length of the bridge deck

STRUCTURE

Cape May County Bridge
Ocean City, New Jersey

PROBLEM

In the late summer of 2002 Surtreat Northeast was asked by Tom Fisher, senior vice president of Parsons Brinckerhoff, to examine the Ocean City Longport Bridge located in the Cape May County of New Jersey. The reason for the examination was the visual display of micro cracking on the entire length of the bridge deck. This is a bridge that is less than one year old and has only been open since last July. Petrographical testing was done to try and to determine the cause of the micro-cracking. The results showed the proper water to cement ratio and were inconclusive as to the reason for the micro-cracking. Surtreat Northeast was asked to do a survey of the bridge and to give a proposal for reducing the porosity of the bridge deck. Surtreat representative Gil Gillespie went to the bridge and made a presentation that was submitted to Tom Fisher and Cape May County Chief Engineer, Dale Foster.

Surtreat Northeast was asked to provide a turnkey solution that would reduce the porosity of the bridge deck. Secondary benefits of the Surtreat Chemical formulations will increase the compressive strength and inhibit corrosion throughout the entire bridge deck. Surtreat Northeast supplied a certified application of Surtreat formulations on April 29th and 30th 2003.



LEFT: The Ocean City Longport Bridge



RIGHT: The Micro-cracking that is throughout the bridge deck

SOLUTIONS

Surtreat's TPS "Total Performance System™" formulations chemically react with concrete and reinforcing steel to arrest and prevent deterioration and corrosion on multiple of fronts.

Surtreat TPS formulations act on many more fronts than sealers and coatings. While acting as excellent initial protection, sealers and coatings can provide little if any protection once deterioration has begun. Surtreat TPS formulations are able to migrate through the pore structure within concrete and chemically react to become a part of the structure.

OUR PROCESS

The scope of work called for applicators to clean the concrete surfaces. The cleaning process included using high-pressure power washers to remove the dirt, chlorides, grime and any other surface debris. Due to site location there is a high amount of chloride activity taking place on this bridge. Once the bridge was clean, the application of Surtreat formulations commenced.

With the use of a 300 gallon tank, a mechanical sprayer and a Tenant 7400 Scrubber we applied the TPS II. TPS II is a Liquid phase migratory corrosion inhibitor that will migrate through the concrete pores and cracks to the reinforcing steel. Once it reaches the steel, it will establish a protective or passivating film, on the steel's surface. TPS II will substantially reduce the porosity of the smaller pores typically 2 to 3 inches below the surface. After allowing TPS II to sufficiently penetrate we then applied TPS IV.

TPS IV was applied the following day using the same application system as the TPS II. TPS IV is a liquid phase migratory chemical formulation that will absorb through the cracks and concrete pores 2 to 3 inches below the deck's surface. Once in the matrix of the concrete Surtreat TPS IV will substantially reduce the porosity, chemically encapsulate chloride contaminants, increase the compressive strength, and increase concrete's surface hardness.

Once these two applications had been completed we applied TPS IV to every crack on the bridge. This was done with a manpower of (8) eight and utilizing hand held sprayers. After each application we placed water mists on the product to drive it in. Visual and physical inspections immediately following showed all the signs of penetration.



CONCLUSION

The SURTREAT Total Performance System is an inorganic, chemically reactive, penetrating system that will protect the concrete bridge deck from exposure to contaminants that otherwise would have deteriorated the bridge over time. Major benefits that will occur to the bridge deck are the reduction of porosity and the increase in compressive strength. All of these benefits work in concert to protect and prevent damage to the bridge deck. Visual and physical testing inspections will be conducted periodically to ensure maximum performance.



ABOVE: Application of the Surtreat TPS system on the bridge using spray application methods.

We invite your comments, questions, and inquiries.
Reach us at one of the below.