"Ending Concrete Corrosion"

***Burlington County, New Jersey*, Bridge Abutment *Overlook* (2017)**
Applied 2007 by Rutgers University
Looks like new at 10 years

Orange, NJ, Route 280 merges w/*Route 295 Scenic* Garden State Parkway (2020)
Applied by NJDOT in 2008
Looks like new at 12 years

Problem: This bridge abutment (left), and support block wall (right), are located in New Jersey, where the environment presents weathering and chemical exposures year-around that cause concrete corrosion. In particular: freeze/thaw cycles, salt used for roadway deicing, and very humid summers that encourage biological growth (algae, fungi) and associated bio-acids, eating the concrete away. However, the CeramycGuard™ coating, grey and red respectively, offers a durable ceramic barrier which is immune to temperature, stops chloride intrusion and carbonation, while also inhibiting biological growth. This is an ideal result for increasing the durability and lifespan of concrete roadway infrastructure.

Solution: CeramycGuard coating technology is an analogue of granite (i.e., man-made-stone), using micro- and nano-scaled ceramics, so literally a "skin of granite". Application of CeramycGuard to concrete forms a composite layer, which chemically stabilizes the concrete surface, and eliminates porosity permanently. The previously porous and chemically unstable concrete surface is now a dense, continuous ceramic composite, which, though breathable, is non-porous. As such, contaminants like salts, which would normally infiltrate through surface pores and capillaries, can no longer do so.

The stability of the CeramycGuard ceramic polymer (alumina-silicate) layer stops any cracking, chalking, or spalling activity from surface corrosion, ensuring that consequential forms of advanced concrete failure cannot occur. This technology, being similar to Roman Cements, has an extremely long (indefinite) lifespan, ensuring the lifespan extension of treated assets (i.e., bridges, dams, wastewater infrastructure).

CeramycGuard™ Ceramic Surface Treatment

- Chemically bonded with the concrete surface; will not delaminate
- Immune to salt & carbonation corrosion
- Immune to freeze/thaw
- Immune to UV
- Biologically Impervious (oxidative, antimicrobial/photocatalytic surface)
- Non-porous but breathable
- Surface void spaces and micro cracks are infilled and sealed

Clean Technology: CeramycGuard is an inorganic, water borne, non-toxic coating, with almost no VOCs. It mixes and applies like paint, then cures into a ceramic polymer. It is a green chemistry designed to make concrete infrastructure virtually immortal, and thus, reduce the amount of greenhouse gas emissions from the remanufacture of concrete infrastructure.

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