

RESTEK

Sherwood Lodge Armory Concrete Repairs

December 2016

Spalling Concrete

Restek were approached by Nottinghamshire Police to assess problems that they were experiencing with spalling concrete within their secure store. Previously a coal bunker it was extended to create a secure housing for the county constabulary firearms store

We attended site where we viewed various areas within the concrete bunker. The walls and ceiling of the armory were showing obvious signs that the concrete structure had begun to fail and subsequently large pieces of the structure were beginning to break away from the structure. Once we had fully established the severity of the problem and the level of repairs required, the specification we had initially provided (based on the clients report) for spalling to the armory was certainly not suitable to reinstate the supporting walls that had suffered serious section loss as a result of the water infiltration which had contributed to the corrosion of the reinforcement and subsequent delamination of the concrete.



The Proposal:

As a result of the severity of the section loss, we made the decision to temporarily support the roof structure which had been cast on top of the reinforced concrete construction. These supports could then be removed once the reinforced wall had been re-profiled back to its original dimensions following the curing period.

Based on the surface area and level of section loss we recommended a dry spray concrete method as this would least effect the program in comparison to hand applied techniques which would prove much costlier and result in an over-run of at least four to five weeks.



Prep for dry spray application



Finished surfaces

The Materials:

Renderoc DS

Polymer modified dry spray repair mortar conforming to the requirements of BS EN 1504-3 Class R4

Renderoc DS is designed for large area repairs such as bridges, tunnels, retaining walls, dams, etc. The aggregates are chosen so as to be classified as 'non-reactive', and the product has an alkali content (expressed as Na₂O) of less than 3.0 kg/m³.

Renderoc DS is specifically designed to comply with the Highways Agency Specification Series 1700 and BD27/86 PE5).

Renderoc DS is suitable for repair method 3.3 and 4.4 as defined by BS EN 1504.

Advantages

Non-reactive aggregates

Controlled alkali level

Low rebound

Rapid strength gain

Low water absorption and chloride ion diffusion

High resistance to carbon dioxide penetration

Excellent bond to the concrete substrate

Single component — ready to use

No added caustic accelerators

Contains no chloride admixtures

The cured mortar achieves a compressive strength of 60 mPa at 28 days and a drying shrinkage of <300 micro-strain at 7 days. This was a three-man operation and took three days to complete Phase 1

RESTEK