CPT protects Sherborne footbridge

Concrete Preservation Technologies is treating ongoing corrosion-induced concrete damage on various structural elements of the Sherborne footbridge, which spans the river Irwell in Salford.

Of particular interest were 9 post-tensioned beams which exhibited visible corrosion damage to the ducts and tendons.

Post-tensioned beams are particularly difficult to treat since standard cathodic protection methods have the potential to induce hydrogen embrittlement of the steel tendons which could lead to failure.

A corrosion survey of the structure (visual, hammer-tap, steel half-cell potential, chloride profiling and carbonation depth analysis) revealed significant corrosion-induced damage and areas at risk of future corrosion. The source of the damage was determined to be chloride salts from de-icing of the bridge, which had leaked through joints and cracks, contaminating the substructure.

A DuoGuard hybrid system designed to ISO 12696:2012 was used by CPT to halt ongoing corrosion and prevent future corrosion damage to the deck support beams, bridge piers and post-tensioned beams spanning the river.

The DuoGuard system was installed in phases to fit with the bridge refurbishment programme. The initial impressed current phase of the hybrid system applied to the post-tensioned beams was closely monitored and controlled before the system was switched to long term sacrificial mode.

The system has insufficient voltage to cause hydrogen embrittlement and offers a safe long term solution. IP66 rated termination enclosures were installed on the piers to allow ongoing steel corrosion rate monitoring.

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