

Preston Bus Station MSCP

Preston Bus Station and Multi Story Car Park was built in the 'Brutalist Style' and completed in 1969. Consisting of in-situ concrete slabs and columns with distinctive curved balcony fins, its 190m length made it the largest bus station in Europe. After decades of use the structure was in need of extensive renovation and under threat of demolition. A campaign was launched to save the iconic building and in 2013 Preston Bus Station was granted the protection of Grade II listed status.

Location
Preston

Client
Lancashire County Council

Completed
2019

Structure
**Bus Station and
Multi-Storey Car Park**



The Problem Identified

50 years exposure to chloride salts and atmospheric carbon dioxide had caused widespread cracking and spalling of the reinforced concrete decks and other structural elements of the the 9 level 1150 space Preston Bus Station multi story car park.



The Solution Developed

CPT undertook extensive non disruptive assessment surveys of the car park utilising half-cell potential analysis. Using the survey data an innovative cost effective refurbishment solution was designed with a targeted treatment approach and a range of corrosion mitigation solutions.

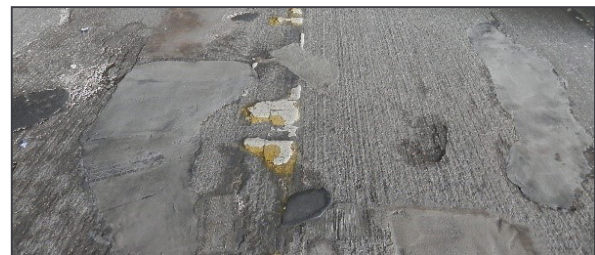
DuoGuard™ hybrid anodes were installed into the decks on levels 3,4,5,6 and 7. By using an external power source an impressed current was applied to stop active corrosion and render the steel passive. The DuoGuard anodes were then disconnected from the power source to self-generate a galvanic current, sufficient to maintain steel passivity and control corrosion. On going monitoring was included as part of the Building Management System.

Impressed current cathodic protection (ICCP) was installed to all three external ramps and selected areas of levels 7 and 5.

In areas outside of the Hybrid and ICCP treatments, traditional concrete repairs were undertaken. All decks were coated with bespoke polymeric deck coating systems to

form a barrier to ingress of aggressive agents and reduce the probability of future corrosion damage.

The £23m refurbishment of Preston Bus Station and Car Park by Lancashire County Council fully restored and protected the original 1960's design. Throughout the work the multi-story car park remained operational resulting in minimal loss of earnings.



Extensive concrete damage on car park deck and DuoGuard installation.



The Benefits Provided

Corrosion related deterioration of the Preston Bus Station MSCP has been halted. After the initial power up period using an external power source the DuoGuard system is self-powered thus minimising future maintenance requirements and associated life costs. The DuoGuard hybrid anodes will provide effective corrosion control for the 20 year design life.

CPT are proud to have been involved in this refurbishment project which picked up a coveted Inspiration Award at 2019 British Parking Association Awards.

CPT Products Used



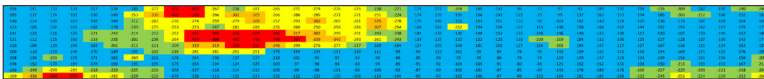
DuoGuard™ 500



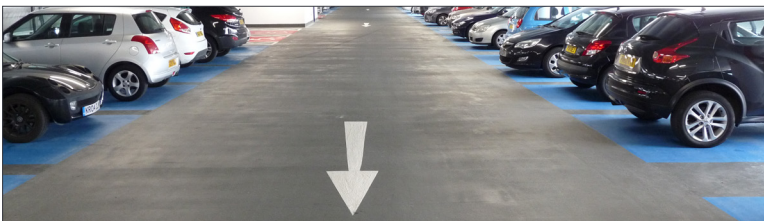
MN15 Reference Electrode



CPT Monitoring System



Steel half-cell potential data identifying corrosion 'hot spots' on level 7



Completed ramp and deck.

