

CASE STUDY

Car Park Refurbishment

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PROJECT

Middleborough MSCP

STRUCTURE

Cast in situ & lift slab form with precast columns

CLIENT

Bluebrick Building Consultancy

CONTRACT



Middleborough Car Park was built in 1979 as part of the Octagon Office Block development. The car park is located between Middleborough and the River Colne and is surrounded by a mix of commercial offices, retail & leisure with a restaurant next door and residential dwellings on the opposite side of the River Colne.

The car park comprises of five storey reinforced concrete structure constructed using the lift slab form of construction for levels 1 – 4 onto precast columns with the ground level 0 cast in-situ and supported by 54 precast concrete columns.

The structural frame is enclosed by external brick cladding, with precast concrete feature panels around the perimeter at levels 1,2 and 3. The car park walls at level 3 are set back behind an external perimeter gutter and they are tile hung, which give the appearance of a mansard roof.

The car park has a shared tenancy, with levels 0 – 2 leased to Colchester Council for general public use and levels 3 – 4 for the private use of both tenants and staff of the Octagon.

The car park required a full refurbishment due to its age as it was displaying signs of deterioration and defects principally due to poor design and construction, as car parks of this age were designed to normal building standards, whereas experience has shown that car parks of this nature are subject to much more exposed environments.

The top deck coating was debonding, showing signs of wear and was allowing water penetration to the levels below through cracks in the soffits and leaking gulleys.

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Before



Before



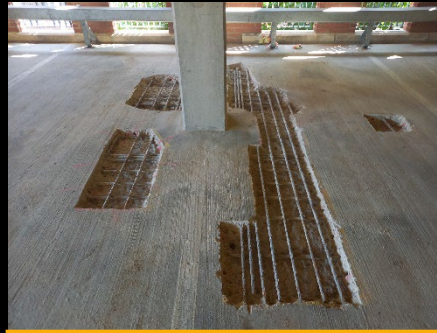
CASE STUDY

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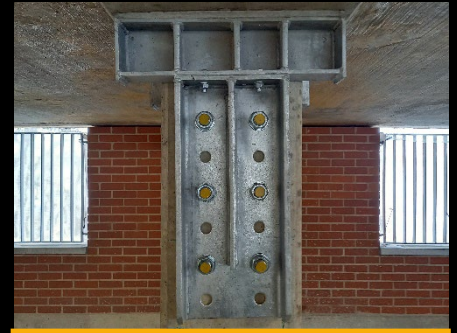
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During



During



During

The car park required a full refurbishment inside and out so scaffold and cradles were installed. External elevations were pressure washed to remove deleterious materials and concrete repairs were carried out after hammer test and repairs were reinstated using Fosroc Renderoc HBM.

The top deck down to level 4 had the parapet walls jet washed. The decks were planned and vacuum blast cleaned along with all edge details prepared and repaired. Installation of galvanic anodes were required in the treatment and control of identified reinforcement corrosion to the existing concrete decks. Repairs were reinstated using Fosroc Renderoc HBM and Fosroc Patchroc GP and CPT Patchguard and Connect 350 Anode Systems were installed.

A new high performance waterproof coating system was installed using Triflex Deckfloor and detailed works such as upstands and cracks in the substrate were primed with Triflex Pro-detail with reinforcing embedment fleece to give additional strength to areas of potential movement.

Level 3 down to Ground received pressure jet washing to soffits, columns and walls to remove deleterious material and decks were blast cleaned to remove existing line-marking, again all edge details were prepared and repaired.

Each column had a shear connection to help spread the weight of the slab above. Repairs were required to the existing shear connections at the juncture of columns and decks, and installation of supplementary engineered fail-safe brackets were installed for strengthening support. The deck repairs included cutting out and repair of all cracked, loose and spalled concrete, including treatment of exposed corroded reinforcement. Concrete repairs were reinstated using Fosroc Renderoc HBM and Fosroc Patchrock GP.

A new deck coating of Triflex CPSC was applied and also the installation of replacement inter-level containment barriers was included in the refurbishment along with an overhaul and repair of existing mechanical expansion joints and speed bumps. A new lighting system and emergency lighting was installed as well as the redecoration of all communal areas excluding the passenger lifts and walkway. A new improved vehicle movement layout and deck line markings were installed using Triflex Precoline and Kaltplastik products.



After



After



After

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