

Resurrecting Allhallows



Allhallows' original exterior

A car park in Bedford was spared the wrecking ball to become a gateway

A 1960s multi-storey in the centre of Bedford has been completely refurbished as part of the new gateway to the town centre. The Allhallows car park was fully reopened to the public over the Easter weekend in April this year following a 52 week programme. It has been revamped by Makers Construction for Bedford Borough Council.

Graeme Middleton, Makers' business development manager, said combined cost of the car park refurbishment alongside the ongoing new build of Bedford Bus Station following demolition of the old one is £8.8m.

Modernising the exterior

One of the most conspicuous changes is the façade. "The brickwork elements of the exterior have been repaired and enhanced receiving a three-coat render to give it a more modern look," says Middleto. "Work on the external façade was carried out from scaffolding to access edge slab repairs and install windows. New & specially

designed multi-coloured aluminium aerofoil fins have been installed to create a more attractive façade, fixed via a secondary framing system following the completion of structural repairs."

At night LED uplighters create colour washes on the façade.

Creating a tidier entry

The car park's original vehicle entrance was cluttered and failed surfacing allowed water penetration into the concrete structure below. "The existing surface of the entrance ramp was planed off and the exposed concrete re-waterproofed with a spray-applied waterproofing membrane and resurfaced in tarmac by Bedford council's highways contractors. Entry and exit signage has been simplified to provide fewer distractions."

With vagrancy a problem, security grilles and gates have been added to prevent unauthorised access with the entrances and exits now protected at night using roller-shutters. The addition of a new CCTV system connected to



Allhallows' new look façade

Bedford's operational HQ means round the clock remote surveillance of the car park enhancing security yet further.

Repairing the interior

Inside, extensive concrete repairs were undertaken to the decks and soffits throughout. This work started with testing and identifying defects using Electro Magnetic Anomaly Detection (EMAD), which revealed areas where steel reinforcement continuity and structural integrity had been lost. Detected anomalies were then investigated further to identify causes of the problems.

Hydrodemolition was used to remove the defective concrete from areas of deck and soffit. "The 'hydrodem' process simultaneously removes concrete and cleans the steel reinforcement," says Middleton.

On the soffits, where required, new 6mm steel reinforcement bars (rebar) had to be installed. The repaired areas were spray-applied with the Sikacem 133 system and the soffits trowelled off but one of the challenges was to retain the 'board mark' shuttering to help the repairs blend in with the non-repaired areas. The repaired soffits and

walls were next coated with the Sikagard 675w anti-carbonation coating. In the decks adjacent to the bases of the columns, much of the steel reinforcement had to be exposed followed by repairs.

Many areas had suffered loss of steel section and were treated as per structural designs drawn up by project engineer Nick Hirschmann of Mark Brock & Associates.

The strengthening works on deck slabs required a variety of chases to be formed into which new reinforcement bars were introduced and grouted in. As the grout cured it was weighted to prevent the bars rising to ensure adequate cover.

"The repair strategy reduced the initial cost from £800,000 down to around £350,000," estimates Middleton.

The car park's expansion joints were also replaced. "Joints fail for many reasons and are the most vulnerable part of a structure," he says. The failed joints were replaced with US-manufactured Emseal DSM joints, for which Makers are the sole approved UK installer. "The DSM joint is held in place using a structural adhesive followed by the application of the decking system to provide continuity of the waterproof system," he says.

There were serious problems with water management in the car park, including drainage channels from Level 8 discharging directly onto level 2 so a revised drainage plan was created via new pipework.

The interior parking decks were treated throughout with Sikafloor car park decking



Repairing the access ramp



Laying new Emseal expansion joints



The transformation

systems following the application of Sika's Ferrogard 903 migratory corrosion inhibitor.

"The decks were prepared with captive blasting prior to the installation of the Sikafloor 161 decking system for intermediate decks. Driving aisles were marked in dark grey and parking bays in dark blue, while white lines were used to mark out parking bays and walkways"

Middleton says: "Each floor is now numbered and colour-banded with corresponding colour-coordinated doors in each stairwell to help with floor location. Allhallows had originally operated as two separate car parks, which meant it used to have two circulation paths. The circulation has now

been simplified."

The car park's lighting has also been replaced with a PIR system, which reacts to movement of both pedestrians and vehicles on the decks, helping to reduce running costs.

As a pay & display site, the parking required enforcement. It is now barrier-controlled, with a Metric Amano Xparc pay-on-foot system replacing the pay & display system.

The car park's passenger lifts have been replaced and its three stairwells redecorated, with all glazing replaced. A new disabled access lift has been created to provide direct access to a newly created dedicated Blue Badge parking area on level one. The entrance to the lift is locked at

night to prevent vagrants and the like from entering.

A solar car park

The car park's rooftop decks are now home to a set of solar panel arrays, which generate power and revenue for the local authority. "The original intention was only to have solar panels on top level 10," says Middleton, "but after examining the security risk and generation profile,



Solar panels

Makers proposed that the panels be installed on both exposed top decks, Levels 9 and 10. Access ramps were closed off with security gates and staircores to level 9 were bricked up and this actually led to a further cost-saving by this approach."

Prior to installation of the solar farm, Makers completely removed the existing finish and applied a new Sikafloor top deck coating Emseal DSM joints. "The solar panel system is freestanding so as not to puncture the membrane system and weighted down using correctly designed ballast blocks. As it is freestanding, this gives the client flexibility to change it back to parking capacity in the future should they require it."

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The interior: Before



The interior: After