

CASE STUDY

Buried Waterproof System

MAKERS

...makes the difference

PROJECT

Tesco Express,
Kidderminster

STRUCTURE

Trafficked Roof
Car Park

CLIENT

Tesco

CONTRACT



The Tesco store in Kidderminster once saw life as a bank, and a nightclub before becoming a key part of the local community. Unfortunately, the asphalt deck had become embrittled and after testing by Westwood's, it was discovered that underlying water beneath the asphalt was resulting in blisters. The asphalt had to a large extent lost its elasticity and the 40mm product was set for removal to be replaced by a Westwood's fully fleeced system.

The upper deck provided staff parking for up to 6 cars and had become a bit of a storage area, so, before work could start, all the accumulated detritus was thrown in a skip, freeing up the area.

Being a land-locked site, we operated a daily skip collection process ensuring that any skips that were placed in the road were collected to avoid any antisocial behaviour. Despite the car park being monitored by CCTV, there are many hidden areas that suffer from drug use and human waste.

The store was suffering from leaks within the main store and stockroom area causing damage to decorations and leading to potential damaged stock and third-party claims. After the removal of 26 tonnes of asphalt, the revealed screed was incredibly damp measuring over 6 % on the Tramex meter. The 3 drain outlets serving the deck were completely saturated and the supporting surround had turned into a mushy paste. Water could be seen travelling down the outside of the pipe. The screed around the 3 outlets was carefully exposed and newscreed applied to ensure the security of the outlets. After the deck was mechanically blasted, adhesion tests were performed on site to measure the cohesive bond available between the existing deck and the Westwood's PMMA system.



Before



Before

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During



During



During

The initial results were very poor with the lowest readings producing results of 0.3Kn/mm^2 and at best, 0.8Kn/mm^2 . These results were way below the required 1.5Kn/mm^2 necessary to successfully apply the system and so after discussions with Westwood's we managed to obtain some of their preprime product, Wecryl 821, which we had successfully used at Tesco Merthyr Tydfil, in the hope that the application of the 821 would significantly improve the adhesion values with follow up tests the 821 had digested it capacity to improve the cohesive matrix of the concrete substrate and so by applying the 821 we were hopeful that the results would significantly improve. Areas tested showed an improvement in the range of .8 to 1 over the base results.

All cracks were banded and in some cases, double banded where the cracks exceeding 1mm wide. The Wecryl 281 was applied the following day and test results obtained. Although we failed to achieve the desired 1.5Kn/mm^2 we saw significant improvement in the adhesion tests with failure just below the required limit but failing within the now less friable substrate.

The upstand details to the main area had the asphalt retained and the full system applied, finished off in the 288 finish in the RAL 7043, dressed onto the deck allowing the tarmac to be applied strictly to the flat surfaces.

After discussions between RLB, Tesco, KCR, Makers and Westwoods, the suggestion to continue to apply the Westwoods system but incorporate it as a buried membrane system was taken. Although results were close to those required and although the car park deck is solely for the use of Tesco staff it was thought the risk was too great to continue with the full Westwoods system and so it would be adapted to receive a 40mm Tarmacadam overlay.

The macadam itself is not waterproof so to protect the structure the fully fleeced system was applied. To protect the fleeced layer from the tarmac installation, process another layer of neat Wecryl 230 was applied but blinded to afford some protection.



During



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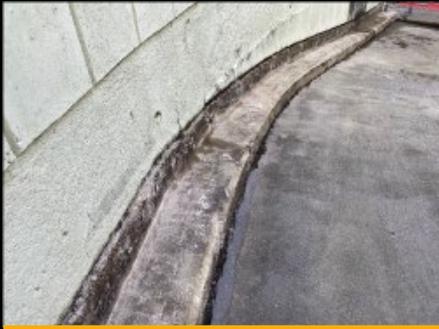
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Before



After



After

The asphalt to the ramp upstands was removed, after close inspection they were in too poor a condition and so the full reinforcement treatment was applied. Removal of the asphalt at the bottom of the ramp revealed a trench filled with cut bricks that had been coated over. The bricks were removed and the trench filled and the area was waterproofed to allow installation of the tarmac. The store had suffered from water penetration particularly around some of the plant details and after careful examination the concrete upstand wall had large cracks between it and the deck. These areas were repaired and treated and fully waterproofed. The asphalt to the plant area was retained and where possible the plant was lifted and fully fleeced beneath. All of the available area was coated.

Concrete repairs were evidently needed in the walls and in the vicinity of the upstands which were repaired to permit application of the system. The plant room door was secured via expanding foam so this was removed and a structural repair affected. After carrying out the repairs we patch painted the isolated repairs to protect the surface.

The plant room areas that were used as an adhoc storage were protected by key clamp posts and rails. These were removed and the existing fixings replaced with resin fixings to maintain the water tightness. The bases were staggered from their original fixing position to ensure good embedment.

During the course of the refurbishment the store cupboard to the plant room was provided with a 240v supply and an outside water tap.

The deck and ramp received the fully fleeced layer and a second layer of Wecryl 230 blinded to receive the tarmac. The tarmac was heated to 151oc and then applied directly to the waterproofing membrane. The tarmac was applied at 50mm deep and then rolled by a bomag 1.5 tonne roller to compact the tarmac. Adhesion is advanced further by the application of a tack coat which is a mixture of bitumen and water. The initial 50mm depth was compacted to achieve the 40mm. After 24 hours to oxidize the line marking was applied.



Before



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