

# CASE STUDY

## Car Park Refurbishment

# MAKERS

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### PROJECT

TESCO Merthyr Tydfil

### STRUCTURE

Steel Frame

### CLIENT

TESCO

### CONTRACT



Tesco Merthyr Tydfil is a car park constructed from a steel frame, precast concrete planks, together with a structural topping receiving 40mm of asphalt providing a protective waterproofing layer.

The steel frame was constructed so that a single fall from the store to the end of the car park collected rainwater run off in one large singular curved gutter. This gutter was poorly constructed allowing water to bypass between the steel frame and gutter supports resulting in heavy corrosion and large volumes of water dropping onto vehicles below.

The existing asphalt layer had a heavy stone content but was suffering from splits and adhoc repairs which had failed resulting in water penetration and the formation of stalactites on the soffits below. Continued water penetration had caused the existing painted steel structure to corrode and begin to lose sectional thickness.

The project required the removal of 550 tones of asphalt, the preparation of the slab through captive blasting, applications of pre-primer to reduce the effect of out-gassing, banding reinforcement to all day joints and cracks and the application of a fully fleeced WestWood Wecryl system.

The contract commenced in September where the top deck was totally closed to allow the removal of the asphalt. Once prepared 50% of the deck areas received a primer and sand coat to protect the structural topping and then opened to the public, the remaining 50% received the full system.

After the required departure from site to accommodate retail requirements the remaining 50% of the car park was completed.

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Before



Before



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Asphalt Removal



Substrate Cracking



Reinforced

During the removal of the 550 Tonnes of asphalt process, water was discovered beneath the asphalt with cracking in the slab traversing the walkway. This left no alternative than to remove the asphalt and deal with substrate issues. It was also evident that when the car park was built, the structural topping day joints were created directly above the supporting beams which when cracked provided a direct route for water to hit the metal steel work. The deck was blasted removing friable material from the top surface of the slab and so the slab was pre-primed using WestWood's pre-primer to ensure that there was enough bond strength and structural topping to provide a suitably strong surface to apply the waterproof system. Once repaired it was waterproofed using the WestWood fully fleeced system. This was particularly important as the slab is likely to have a significant degree of movement and the banded, fully reinforced system is designed to copy with the movement expected from such a car park design.

The car park is served by 3 stair cores each of which were suffering from the ravages of the weather and corrosion which were unsightly and needed improvements to physical appearance. This was caused due to no drainage within the structure and water cascading down the stair cores. The original intention was to leave the asphalt in place around the stair cores but after removal of the other areas the asphalt had become de-bonded and as such had to be removed. This created a water control issue and so using WestWood's Wecryl 242 product, screed diamonds were created to direct water along the sides of the stairwells. This was combined with installing fleeced trims to prevent water from travelling and falling into the public stair cores. The cores were treated and then subjected to new coatings to protect the steel and extend the life.

The walkway canopy and bollards were removed, on removal of the bollards it revealed that the fixings to many of the bases had corroded and that they were reliant on the asphalt holding them in place. New bollards sourced from Watts Polyurethane which come in component parts and consisted of a cast base plate which is resin fixed into the slab. They were fitted directly onto the WestWood's fleeced layer. Once drilled and resined into position the plate was then dressed and filled to ensure it was watertight and then sealed in and bonded to the remaining membrane system.



Stair Cores



Walkway



Bollards

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Primed



Stair Cores



Bollards

Battling the elements and the shorter days with their resulting drop in temperature meant that we suffered from heavy condensation each morning which saturates the deck, so a scrubberdryer was used to help in the force drying of the system to allow us to continue with the installation of the WestWood system. The design of the car park with no drainage within the structure to isolate the water meant that water/residue travelled along the length of the structure, so operatives were instrumental in pushing the remaining water to the end of the car park where drainage is installed

The canopy and walkway area falls towards the store and the ramp from the store entrance falls in the opposite direction and without any drainage and the subsequent change in levels this meant that there would be a ponding issue where both positions intersect. We introduced a drainage outlet in this area and a pipe into the rainwater system below to alleviate this situation.

The car park had a transition between the ramp and parking deck and also at street level where vehicles can exit the car park. Both areas were causing significant issue for the steel work below as they had been allowing water to penetrate the structure causing heavy corrosion to the structural members. An Emseal™ gland bridge joint was installed to remove the issue.

Makers were contracted during COVID-19 and so extra precautions were taken to ensure adherence to the strict guidelines whilst observing the store rules as they apply.

Our welfare set up meant that all site operatives and contractors were self-contained with the appropriate provisions and separate offices for the management team.



Canopy and Walkway



Ramp Joint in Progress



Ramp Transition Joint

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