

Heathrow Main Access Tunnel

Case study

Focus products: Intercrete® 4820, Intercrete 4872, Intercrete 4841

Location: Heathrow Airport, UK

Client: Heathrow Airport Holdings

Specifier: Mott MacDonald Bentley

Contractor: BAM Nuttall

Summary: Waterproofing of expansion joints



Background

A major £130 million refurbishment contract is being carried out to upgrade road tunnels at Heathrow Airport. Undertaken by BAM Nuttall in conjunction with M&E specialist VVB Engineering, part of the contract has involved the refurbishment of the Main Airport Access Tunnel. Originally built in the 1950's, the Main Tunnel is a 630m twin-bore road tunnel with two lanes per bore and two additional single lane side bores. It is the primary entrance to the central terminal area, serving Terminals 1, 2 and 3.

Since the Main Tunnel was originally constructed, it has received limited attention and major works are required over a three year period. As well as concrete repair work, other works include installation or replacement of ventilation equipment, lighting and electrical systems, telephones and CCTV systems.

The solution

The expansion joints in the access tunnel had previously been protected with a waterproofing system some 30 years ago but this had deteriorated significantly. The existing failed bandage system and delaminated epoxy coating were removed in the areas of repair and it was necessary to fill voids and defects to reinstate

the surface profile. Intercrete 4820, a single component, polymer modified engineering grade screed, was rapidly applied by trowel to provide an even substrate for coating and provide effective waterproofing as it resists 10 bar hydrostatic pressure under 100 metre head of water.

Intercrete 4872, a flexible, waterproof sealing tape, was applied to the expansion joints before the application of Intercrete 4841. Intercrete 4872 was applied in two widths; smaller joints were covered with 120mm tape and any joints larger than 40mm were treated with 200mm tape. The Intercrete 4872 tape was fully encapsulated with Intercrete 4841, a waterborne, cementitious modified polymer coating which provides exceptional waterproof protection, is backed by British Board of Agrément (BBA) approval and is CE marked in accordance with BS EN 1504 Part 2. As Intercrete 4841 is waterbased, it releases no strong odour or harmful solvents during application which is critical in enclosed environments.

The rapid curing and non-hazardous nature of Intercrete products were absolutely critical for this project, as the bulk of the construction work was carried out between 10.30pm and 5.30am, with one inbound lane and one outbound lane always remaining open during the construction working hours.