

# Tottenham Court Road Station

**Sprayed concrete lined tunnels using and a sprayed waterproofing membrane**



Our reference in London (United Kingdom): Tottenham Court Road Station

## The background

Built over 100 years ago, the Tottenham Court Road underground station was not designed to cope with the level of passengers it experiences today. The station occupies an important access point to one of Europe's busiest shopping districts.

With over 100,000 passengers estimated to use the station daily, it is essential that the new larger ticket hall, along with additional escalators and new access to the Northern and Central lines, were constructed to ease congestion.

## The challenge

The project involved the construction of two brand-new watertight ticket halls with the inclusion of cross-passages and enlargement of the two 260-metre long platforms, which are designed to surpass a minimum of a 100-year life span.

Restricted site space and a tight programme, in addition to logistical problems, required clinical communication and planning to ensure works were completed on time.

### Project:

Tottenham Court Road Station

### Location:

London

### Client:

Crossrail

### Contractor:

Bam Ferrovial Kier JV (BKF)

### Designer:

Mott McDonald

### Market sector:

Underground Construction

### Products used:

MasterRoc MSL 345

MasterRoc TSL 865

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## Our solution

Master Builders Solutions Underground Construction experts worked closely with the main contractor, BFK (Bam Ferrovial Kier), to not only supply the sprayed applied waterproofing membrane used throughout the whole of the Sprayed Concrete Lined (SCL) works, but to ensure that, with a high level of support and training, the works were completed with minimal disruption and improved efficiency.

Areas of damp regulating layers were found within the tunnels prior to waterproofing. Instead of penetrating the concrete substrate for injection, MasterRoc TSL 865 was used. MasterRoc TSL 865, a rapid-setting version of MasterRoc MSL 345, was sprayed over the patches of damp substrate. Once tacky, MasterRoc MSL 345 was then sprayed over the full tunnel section, consequently reducing time spent on the activity and costs involved.

Unrivalled training enabled a network of sprayers to consistently achieve the high standards of quality set out by the client, with training courses allowing sprayers to master both the theoretical and practical elements of the task. In addition, with the arrival of the Meyco Logica - a fully automatic spraying robot, Master Builders Solutions technical experts were on hand to provide a smooth transition from the traditional manual method of spraying.

## The customers benefit

- MasterRoc TSL 865 allowed greater production and a simpler process than traditional methods of stopping water ingress
- Logica technology provided pin-point accuracy, for both SCL and MasterRoc MSL 345
- Reduced possibility of human error aspect of spraying

## Project facts at a glance

- A total of 124 tonnes of MasterRoc MSL 345 and 2.5 tonnes of MasterRoc TSL 865 were used within the SCL tunnels at Crossrail's Tottenham Court Road.
- 7 million tonnes of excavated material will be created during the construction of Crossrail, 98% of which will be re-used.
- Eight tunnel boring machines (TBM's) were used to create the 26 miles of new tunnels beneath London.
- Over 400 apprenticeships have been created on the project, as well as it creating thousands of business and job opportunities.

