

# Fisher Street - Shotcrete

<b>Client:</b>	BFK on behalf of Crossrail
<b>Location:</b>	High Holborn, Central London
<b>Value:</b>	£2m
<b>Duration:</b>	4 Months



Nozzleman applying shotcrete using robot



460m<sup>3</sup> base being poured by 43m boom pump

## In Brief...

**Crossrail is Europe's largest railway and infrastructure construction project, under way mainly in central London to provide a new high-frequency commuter/suburban railway service.**

Barhale undertook a technically challenging project in Holborn in central London working for BFK under the Crossrail project.

The scheme involved constructing a 30m deep shaft solely through the use of sprayed concrete lining (SCL) technique due to its flexibility in use. The shaft will be used for access into the underground tunnels.

## Customer Benefits...

- Shotcrete method provides an improved settlement control with an increased flexibility in connecting to other underground structures
- Excavation and spraying were sequenced to reduce the settlement
- As-built of the excavation and lining profile were produced on a daily basis by using 3D modelling software
- RES (Required Excavation Support) methodology was used daily to control the size and sequence of the excavation and spraying profile.

## Technical Features...

**Sprayed concrete** - Sprayed concrete consists of a mixture of cement, aggregate, steel fibres, admixtures, set accelerators

and water. This is projected at high velocity from a nozzle into place to produce a dense, homogeneous mass

**Quality control** was strictly adhered to in order to comply with the material and workmanship specification for sprayed concrete linings

**Testing** - extensive trial and production testing was carried out in order to determine the performance of the steel fibre concrete applied.

Various concrete parameters were checked including: temperature, flow test, early strength, water permeability, flexural strength, fibre content and drying shrinkage