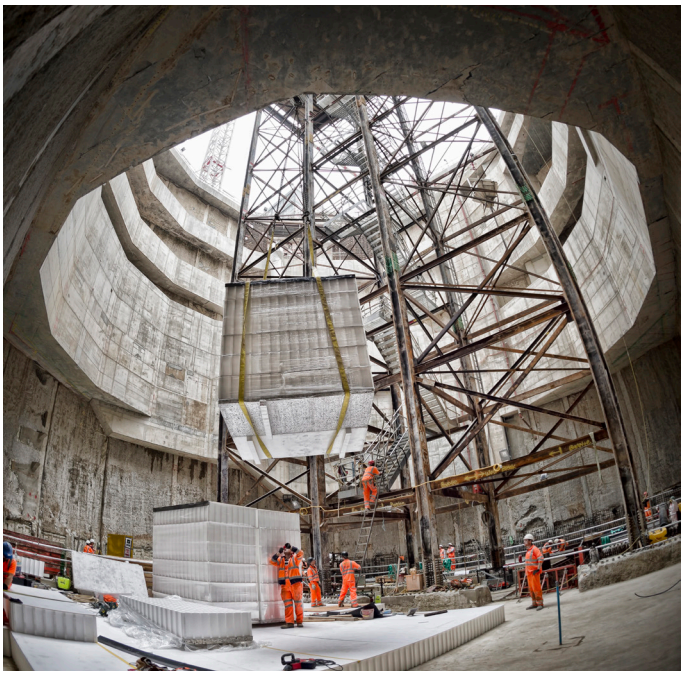
CASE STUDY

Moorgate Shaft

Liverpool Street Station / Moorgate Underground Station, London



Contractor: BAM Nuttall / Kier Joint Venture
Market Sector: Ground Heave Solutions
Product: Cellcore CC 400mm 65/90 with 10mm Correx Top

The western ticket hall for the new Liverpool Street Crossrail station will be constructed in Moorgate and as part of the ongoing redevelopment, the existing Moorgate Underground Station and ticket hall in Moorfields are being enlarged. A 42-metre deep shaft has been built next to the existing station, with piles 60 metres deep and steel reinforced concrete rings to secure the permanent structure. Cordek worked closely with joint venture partners BAM Nuttall / Kier to provide a bespoke, cost effective, ground heave solution for the Moorgate Shaft development.

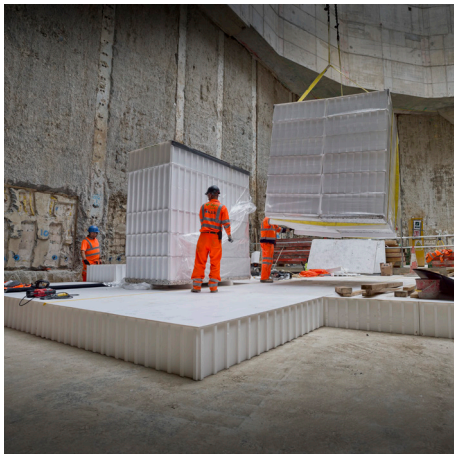
Project Scope

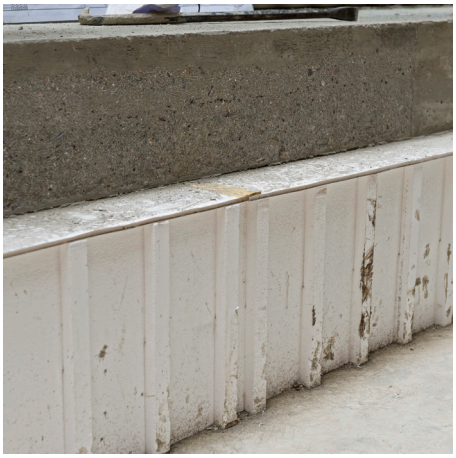
Cordek were approached to provide a solution for the ground heave protection requirements of the reinforced concrete slab at the base of Moorgate Shaft. We were called upon to ascertain the appropriate protection needed, taking into consideration the weight of reinforced concrete slab and the heave potential of the soil beneath, along with the space and delivery constraints in place on site. Construction of the Moorgate Shaft was at one of Crossrail's most constrained sites, with the Hammersmith & City line to the north, the Northern line to the east, two grade II listed buildings to the south, and the existing Moorgate station ticket hall nearby.

The Solution

Cordek undertook a period of product testing to determine the most cost effective product that would meet the required performance criteria given to us by joint venture partners BAM Nuttall / Kier. It was necessary to calculate the thickness of the Cellcore panels and the load capacity (both safe and failure loads) to establish the design of the optimum product; the Cellcore CC 400mm 65/90.

Following this initial testing phase, a number of sample panels were produced and delivered to site for use as part of a site trial to confirm the suitability of the product and the best method of installation.

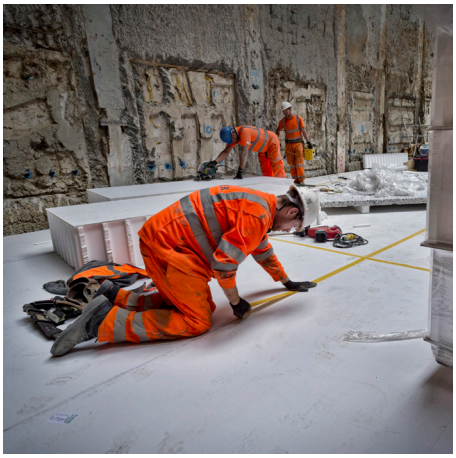




The Process

Cordek undertook a period of product testing and development which enabled us to provide the client with test data to demonstrate the suitability of the proposed solution. Cordek manufactured the Cellcore panels, following successful site tests and supplied the final product within a tight timeframe, enabling quick progress on site.

After the successful site trial, Cordek manufactured a total of 1,250m^2 Cellcore panels, which were delivered on our own Crossrail compliant vehicles. Due to the lack of storage space on site, a total of ten deliveries were made in line with a delivery schedule provided by the contractor, in order to ensure installation of the Cellcore panels remained on schedule ahead of each proposed concrete pour.



Summary

Construction of Moorgate Shaft is now complete and the final concrete pour of 1,800m^3 is one of the largest on Crossrail, taking 32 hours to complete.

The shaft has now been handed over to the follow-on contractors for the next three years to complete the fit out of the new station ticket hall and all the mechanical and electrical equipment necessary for the operational railway.

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