

# Cementation

## SKANSKA

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# Hangar Lane to Perivale

## Embankment Stabilisation

### Client

London Underground

### Main Contractor

Cementation Skanska

### Engineer

Mott MacDonald



Cementation Skanska were contracted to design and construct earth structure remediation works to approximately 700m of Central Line railway embankment on behalf of Metronet between Hangar Lane and Perivale stations. This stretch of the Central Line was first opened in 1900 and widened in 1935 and runs parallel to the A40 immediately west of the Hangar Lane Gyatory.

The works involved the installation of some 6000 linear metres of piles, 700m of CemRailBeam® and was constructed from minor access points from within Perivale station Car Park and Tesco's car park at the rear of the famous art deco Hoover Building.

The Piling works were carried out using two TD308 Piling Rigs and a Klemm 702 piling rig operating off earthworks access platforms and temporary guide walls, which in turn served as a solid base for the placement of the CemRailBeam® units.

Prior to the commencement of the project extensive environmental impact studies were carried out to ensure that any environmental effects were minimised.

The initial works consisted of the clearance of vegetation from the embankment and the construction of toe drainage along the toe of the embankment.

Following the construction of the toe drainage works temporary earthworks access platforms were constructed along the length of the embankments. The platforms were designed both to provide access along the embankments for the construction plant but also to improve the embankment stability during the construction phase.

Following construction of the piles, the capping beam was constructed in a fast track manner using the patented CemRailBeam®. The CemRailBeam® ties together the vertical and raking piles which pin

the potential slip planes within the embankment and provides a retained shoulder to the railway and the critical line side services.

On completion of the CemRailBeam® the embankment shoulder was formed by recycling the temporary access platform upslope of the capping beam to provide a walkway for the maintenance of the tracks. The remaining slopes down slope of the CemRailBeam® were subsequently regraded and re-vegetated to provide an even water demand along the earthstructure.

The project also involved considerable communications with external stakeholders including, Tesco, local nursery, residents association and the London Borough of Ealing Council.

During the works, temporary structures and the running rails of the Central Line were monitored using surveying techniques to monitor their performance in line with designed criteria.

