

# Diaphragm Wall

## North Quay Shaft, Canary Wharf

London, U.K.



### Diaphragm Wall Shaft by KS Hydraulic Grab technique

#### Introduction

BSL acted as a principal contractor for EDF Energy Networks on this project, who required a circular shaft as part of a cable tunnel project, delivering essential electricity network reinforcement in East and Central London. The nine metre internal diameter shaft acts as an access and ventilation shaft for a tunnel boring machine (TBM) to bore the future cable tunnel. It will also create a general access point for EDF Energy Networks' engineers.

As well as providing the specialist geotechnical works, Bachy Soletanche also carried out the responsibilities of a principal contractor.



<u>CLIENT:</u>	E.D.F. Energy Networks
<u>PRINCIPAL CONTRACTOR</u>	Bachy Soletanche
<u>CONSULTING ENGINEER:</u>	Parsons Brinckerhoff
<u>DURATION OF WORKS:</u>	4 months

#### Scope of Works

5no. 5.6m long panel, 47m deep, 1200mm thick diaphragm wall cable tunnel shaft by KS Hydraulic Grab.



*KS Grab Jaws*

In order to retain verticality while the 47m deep shaft was constructed, BSL required the use of a KS grab, to create the reinforced concrete diaphragm wall shaft at Canary Wharf's North Quay. KS Hydraulic grabs can offer an improved level of verticality over the more common Rope Grab Technique.

This is hydraulic grab designed and manufactured by Soletanche Bachy is fitted with instrumentation allowing verticality correction, and therefore, an ideal solution for the this project.

The first stage in creating the diaphragm wall requires the construction of a guide wall trench.

To maintain the accuracy of the shaft construction of the North Quay shaft, the guide wall is constructed to a depth of one metre. Once this stage is complete, the panel excavation can progress.

The circular diaphragm wall shaft was installed in five separate sections or 'panels'. Each 'panel' is 1200mm in width and constructed using the KS grab. Each panel consists of three "bites" of the 2.8m wide grab – a "virgin" bite, a "stop-end" bite and a "centre bite". When these three bites are complete, each panel is approximately 5.6m in length.



*Digging of panel under Bentonite*

In order to form joints between primary and secondary 'panels', stop end casings are placed at both ends of the primary 'panel'. These stop ends are then withdrawn once the concreting of the primary panel is complete. Leaving the water bar in place.



*Digging of panel under Bentonite*

With the diaphragm wall being excavated to such a large depth, one has to ensure that every stage is completed with great accuracy, including the panels' verticality and width of trench. The KS grab is a great benefit for these quality control checks as its accompanying monitoring equipment can identify the slightest movement off-line.

