

## Temporary SBMAs for Excavation support, MIT, Boston, Massachusetts, USA

**Client:** MIT

**Engineer:** Hyder Consulting Group & Arup

**Specialist Anchor Contractor:** Moretrench

**Specialist Consultant:** SBMA Ltd

### Overview

Temporary Single Bore Multiple Anchors (SBMA) were installed to support a large diaphragm wall at MIT, Boston, Massachusetts, USA .

### Project

The construction of deep basement structures for the Management Building at MIT in Boston Clay demanded the use of innovative techniques to provide temporary support to a diaphragm wall. The use of conventional ground anchors imposed serious programme restraints by virtue of the numbers required and an alternative solution incorporating the use of SBMAs was considered.

### Ground Conditions

Weak Boston Blue Clay (SPTs varying between 2 and 7).

### Solution

In August 2007 SBMA assisted a USA based contractor with a series of field trials using single bore multiple anchors in the Boston Clay. The objective of this work was to ascertain the ultimate bond stresses that could be achieved in the ground in order to confirm parameters used for the design of production anchors.



### Construction

Various test anchor designs were adopted but these generally comprised up to four 3m long units with between 2No. and 4No. 15.2mm diameter 'noded' strands per unit. The nature of the ground also necessitated the use of sophisticated post-grouting techniques in order to maximise the capacity of the unit anchors. The carefully supervised work successfully demonstrated test loads of up to 1200kN (on only 3No. unit anchors), which exceeded the load capacity achieved with conventional anchor systems. Bearing in mind that the addition of more units achieves a proportional increase in load expectation, the use of six unit anchors provided a capacity in excess of 2400kN.

#### SBMA Ltd

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