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# Cemloc® for Embedded Columns

### Positional tolerances

Orientation in plan + or - 2.5°

Level of top of column + or - 5mm

Plan position at ground level  
error circle max 10mm radius

Plan position at reduced level  
error circle max 20mm radius

### Application

Equally accurate in dry bores  
and under bentonite

Embedded columns can be  
plunged after or positioned  
before the concrete has been  
placed

### Advantages

Top-down basement  
construction gives significant  
advantages in four areas:

- Safety
- Cost
- Programme
- Structural accuracy

### Trademark

CEMLOC®

### Patents

CEMLOC® 77/697071  
CEMLOC®-IM 2399413  
1604068: 04718348.8  
10/549363  
CEMLOC®-VL 2399376  
04718335.5  
10/549362



The proprietary CEMLOC® system has been specifically developed by Cementation Skanska to accurately place plunged columns into piles or diaphragm walls. The main advantage is for 'top-down' construction, where the concrete in piles is cast to a reduced level. The system can be suitable for dry bores or for use under bentonite, without loss of accuracy.

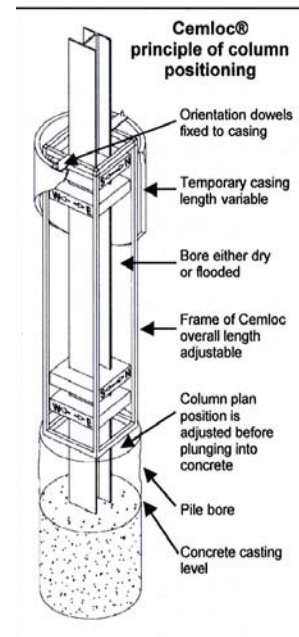
### Procedure

Standard techniques for constructing a rotary bored pile are used when placing plunged columns. After the pile bore has been completed the reinforcement is installed. One of two different techniques is then used, depending on circumstances. For one technique, concrete is then placed, if necessary by tremmie, to the required low casting level. The CEMLOC® unit is lowered into the temporary casing and the correct orientation is achieved by means of locating dowels. The unit is then locked

onto the inside of the casing using four hydraulic rams near the head and four near the base of the CEMLOC®.

The column is lowered through the CEMLOC® and held with its base just above the cast concrete level. The plan location of the column, at ground level and reduced level, is adjusted by the CEMLOC® steering mechanism and confirmed by surveying techniques. The column is then accurately plunged into the fresh concrete. Alternatively the column can be accurately positioned first and then the concrete placed by pump line or tremmie.

For both techniques, the CEMLOC® is left in position until the concrete has gained adequate strength (generally overnight). It is then withdrawn and the annulus around the column is filled with an appropriate material.



In certain circumstances layers of a weak concrete fill may be placed to give additional lateral support. Finally, the temporary casing is withdrawn.

The combination of the above leads to substantial savings in time and cost compared with traditional methods.

### Advantages of Using the CEMLOC®

- Programme times are reduced.
- Structural steel tolerances are achieved in accordance with BS4: Part 1: 1993 and BS EN 10034:1993.
- Permanent liners are not required.
- No need for personnel to descend to trim back the pile head.
- No need for pile cap or base plates

### Load Transfer

Our design of the load capacity of an embedded column is based on the results of numerous full-scale tests carried out under actual site conditions. A series of complementary tests, on a reduced scale, were undertaken by the British Cement Association.

The data obtained from both sets of tests are used to design the appropriate embedment length and shape for any combination of column size and load.

