

## EXCAVATED BASEMENTS



February 2015 : frame assembly

Expected Autumn 2015



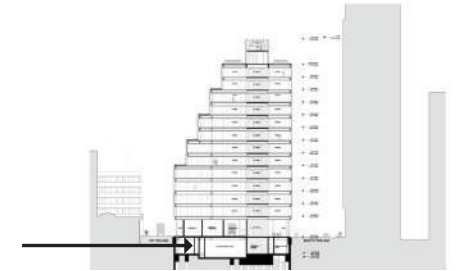
### Excavation process

- The most interesting element of this building is the 9m deep basement. It provides a plant, storage and bicycle storage space. Originally the temporary support for the project's basement was designed using a fixed steel frame, but programme constraints meant that modular propping had to be considered to keep construction on track. The shape of the site is slightly unusual - it is described as a squared off triangle. The challenge presented by the shape is illustrated by the fact that almost every prop used on the scheme is a different size.

Example of modular propping for the building of a basement



basement of 12 New Fetter Lane



Sheet piles installation



Steel sheet piles

- The first step of excavating a basement is to install sheet piles. Sheet piling is versatile and widely used as a quick and economical method of installing cofferdams and retaining walls, both on temporary works and permanent structures. Sheet piling is used to hold back substances such as earth, water etc. whereas steel piling is designed for structural and load bearing applications. Sheet pile walls are constructed by driving (or hammering) prefabricated sections into the ground. The sheet piles used for that building are made of steel.

Advantages of steel sheet piles:

1. Provides high resistance to driving stresses.
2. Light weight
3. Can be reused on several projects.
4. Long service life above or below water with modest protection.
5. Easy to adapt the pile length by either welding or bolting
6. Joints are less apt to deform during driving.

Disadvantages of steel sheet piles:

1. Sections can rarely be used as part of the permanent structure.
2. Installation of sheet piles is difficult in soils with boulders or cobbles. In such cases, the desired wall depths may not be reached.
3. Excavation shapes are dictated by the sheet pile section and interlocking elements.
4. Sheet pile driving may cause neighborhood disturbance
5. Settlements in adjacent properties may take place due to installation vibrations

### Basement construction

After the excavation reached full depth, the props were removed, as the permanent works progressed.

The main material used for the basement is concrete cast on site.

First, the basement slab is cast and then the vertical columns were cast within the sheet piles with jacks installed between them to support the sheet piles as the props are removed.



site cast columns of reinforced concrete in sheet piles



site cast concrete slab