

## Slabstress

Bermondsey Spa



**FREYSSINET**  
SUSTAINABLE TECHNOLOGY

### Client

Hyde Group

### Principal Contractor

Willmott Dixon Housing

### Structural Engineer

Clancy

### Frame Contractor

Mitchellson

### Post-tensioning Contractor

Freyssinet Ltd

### Contract Duration

1 year

### Works Completed

October 2011



Located close to Bermondsey tube station and within easy walking distance of Tower Bridge, the Bermondsey Spa complex in SE London has become a highly desirable residential area. This latest and largest phase of the development features four post-tensioned concrete frames up to ten storeys high.

The largest block, F North, contains transfer structures at ground and second floor levels but otherwise is a 220mm deep, 2-way post-tensioned flat slab. External balconies and walkways are reinforced concrete, separated from the PT slabs by Isokorb Schoek thermal break connectors. Freyssinet's in-house design team designed and detailed the RC and PT areas.

The ground level transfer slab supported the 10 storey superstructure above a basement car park. It was mainly 550mm thick and was temporarily isolated from the retaining wall capping beam using a slip bearing on a nib left in the capping beam. Long term stability was assured by grouting bars into sleeves, once sufficient slab shortening had taken place.

The most interesting feature of the design concerned the Jubilee Line tunnel serving Bermondsey Underground Station. The tunnel ran under the tips of the C-shaped block F South. The original solution involved excavating to a 3m depth over the tunnel and backfilling with light-weight backfill then building the superstructure in metsec construction above. Meanwhile, the spine of the C was built in RC. Freyssinet proposed to cantilever the fingers of the C out over the tunnel using five PT ground beams. The advantages were 4-fold:

- Less excavation – because the beams were 2m deep (shallower than the original depth of dig) and between the beams the soil could be left.
- Better structurally – the whole frame could now be PT concrete rather than a RC spine with metsec fingers. The same detailing and performance could be expected throughout the building.
- Better architecturally – there would have been two movement joints where the metsec abutted the RC spine. These were eliminated with the wholly PT alternative, avoiding waterproofing headaches and architectural treatment in the facade at the joints.
- Economy – this option is believed to have saved in excess of £100,000.

The other two blocks, F South and Block S1, were completed in simple 220mm deep PT flat slabs, in the main, and brought the total PT slab area on the job to 28,500m<sup>2</sup>.

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