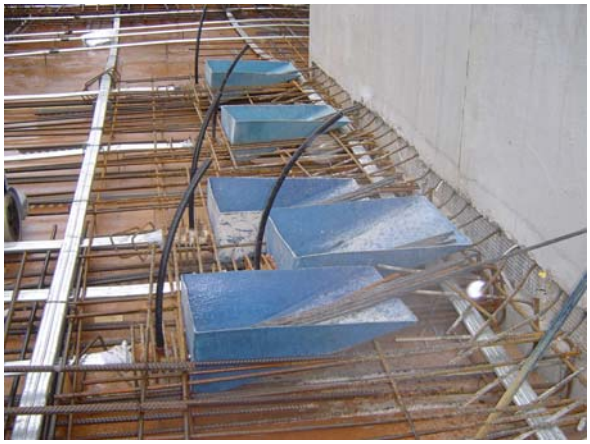
Project name, location	**No 2 Hardman Street, Spinningfields, Manchester**
Year of completion	2005
Contractor	Sir Robert McAlpine
Engineer	Roscoe Capita



Project description

The 9 x 9m grid is often encountered in office developments. It is a good compromise between usage of space, flexibility of internal layout and efficiency of structure. By far the most efficient form of structure in terms of economy and construction programme is the flat slab which uses simple formwork, usually table forms, quick to erect and quick to strike.

By introducing post-tensioning, the slab depth for office loading is 250mm deep, about 25% less than the equivalent RC slab. There are no drop panels or column capitals. The reduced slab thickness can either be used to decrease the total building height or be used to enlarge the services zone which can save money on the M & E package. There can be further savings in foundation and column size.

Environmentally, post-tensioned slabs contain less concrete and less steel than RC slabs. Not only is there less direct material content in the job but fewer road journeys are needed too. Additionally there is less storage required on site and fewer crane lifts. When it comes to demolition, recycling is easier as the concrete is won from the steel more easily.

Regarding Spinningfields, Structural Systems became involved very early on in the feasibility stage assisting Roscoe Capita with defining the structural form for the typical areas, edges sensitive to deflections and various transfer beams at upper levels. The standard office solution has worked well for this development which consists of 9 levels measuring approximately 51 x 50m each.

PT tonnage	100t
PT system(s) and size(s)	Bonded flat duct, 5no 12.9mm dia strands
Principal benefits of using PT on this project	Thin slabs so building fits within planning height.