

## Post Tensioning – Morrison's Distribution Warehouse, Kettering



Scale of project undertaken



Conventional rebar reduced



Live End Anchorages



Dead anchorage installation



Stressing of tendons

Un-bonded post tensioned slab scheme chosen by leading British supermarket chain to give durable and joint free warehouse floor.

Client	Morrisons Supermarket
Main Contractor	Carillion
Consulting Engineer	3E
Post Tensioning Specialist	Balvac
Floor Subcontractor	Stanford Flooring
Site programme	March to July 2005
Subcontract Value	£500,000

This post tensioned slab was specified by 3E to achieve the clients requirements for the warehouse floor slabs. In Dec 2004 Balvac won the sub-contract to design, supply and install a post tensioned slab system in what is the largest post tensioned slab in the UK. The project was also the first application in the UK combining the technique of post tensioned ground slabs with concreting by laser screed machine.

This order was won after a long period of negotiation with Stanford Flooring, the successful flooring subcontractor. Design was carried out for Balvac by Matthew Consultants.

### Key Facts:

- Total area of ground slab, 42000 m<sup>2</sup>
- A 180mm thick flat slab was used
- Significant reduction in construction joints and movement joints.
- Superior control of concrete shrinkage and durability

A 180 mm thick flat slab was used with unbonded, post tensioned tendons in both directions. The tendon type used was the Balvac MK4 12.9mm Super tendon with live, dead end intermediate anchorages.

Each floor slab area - of approximately 1600 m<sup>2</sup> - was cast in one pour, with four consecutive pours programmed in a week. Stressing was from both slab ends for the long tendons, and from one end only for the short tendons. A stressing method was devised to ensure optimum crack control of concrete while curing. On completion of the stressing, the tendons were cut and sealed with grease filled plastic caps for corrosion protection prior to concreting of the adjacent infill strips.

Balvac, the UK and Ireland licensee of the MK4 post tensioning system, can offer unbonded tendons - as used on this project, and bonded tendons - both of which are also utilised on suspended floor slab. The project illustrates the use of post tensioning in a large building slabs and demonstrates Balvac's ability to successfully deliver projects on time and to budget.