

Post Tensioning – Blanchardstown Office Development



A floor slab being cast



Conventional reinforcement is sparse



Column detail



Dead end anchorage



Live end anchorage

Bonded post tensioned slab scheme chosen by leading Irish building contractor to give thinnest and most economical floor option.

Main Contractor	Michael McNamara
Architect	Scott Tallon Walker
Consulting Engineer	O'Connor Sutton Cronin
Post tensioning specialist	Balvac
Site programme	Aug to Oct 2004
Sub-contract value	£ 120,000

In May 2004 Balvac won the sub-contract to design, supply and install a post tensioned slab system in two office blocks, each with four floors. Design was carried out for Balvac by Gifford and Partners, who supplied design calculations and produced drawings of the slab tendon and rebar layouts.

A 250 mm thick flat slab was used with drops on the internal columns, on a regular grid of 7.5 m by 8.8 m. A bonded post tensioned system was used with tendons running in both directions. The tendon type used was the Balvac MK4 4/15 tendon with standard live end anchorages and bulb type dead end anchorages. The duct is “flat oval” - its shape gives the tendon maximum eccentricity from the centre of the slab and therefore makes most efficient use of the pre-stress force.

Each floor area of 52 m by 13 m was cast in one pour. Stressing was from both slab ends for the long tendons, and from one end only for the short tendons. The lift cores at each end of the buildings were cast in advance of the slabs, so pockets were formed in the core walls for stressing jacks. On completion of the stressing, the tendon ducts were filled using a grout mix formulated to minimise shrinkage and voiding. Fully detailed records of the stressing and grouting work were kept and passed on to the contractor.

Balvac, the UK and Ireland licensee of the MK4 post tensioning system, can offer bonded tendons - as used on this project, and unbonded tendons - which can be more suitable for complex or irregular floor plates. The project illustrates well the use of post tensioning in suspended building slabs. It offers the contractor and client a construction method, which is simple, fast, and competitive compared to other options.

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