



## Cost and time cuts

The dramatic 18-storey-high Exchange Tower at One-Two Harbour Exchange Square on the Isle of Dogs in London's Docklands is the largest speculative office building completed in the UK during 1989. It forms the centrepiece of Harbour Exchange, a 1.25 million ft<sup>2</sup> (116,125m<sup>2</sup>) integrated office complex within the Enterprise Zone which will provide a working environment for more than 7,000 people, staffing state-of-the-art offices and facilities within the carefully-landscaped waterside area.

Essentially, the building comprises two towers and a Galleria to give a combined total area of more than 500,000ft<sup>2</sup> (46,450m<sup>2</sup>), together with three levels of underground car parks. As the judges' report points out, the glass-clad exterior of the building totally conceals its claim to be highly commended in the awards. In fact, the concrete frame of Exchange Tower is one of the largest post-tensioned prestressing contracts ever placed for a commercial office building, and was a form of construction chosen for the significant benefits of its costs, timing and design.

The reduction in weight and depth of floor slabs using post-tensioned prestress produced savings in the overall height of the building and provided an automatic reduction in the cost of services, lifts, facades and the structural frame itself, as well as the size of foundations required. In addition, the cashflow was more evenly spread using a concrete frame, compared with structural steelwork,



**High Commendation  
Building Category**

**Judges' comment**  
*"... a fresh and radical  
 approach to a structural  
 problem ..."*

<b>Exchange Tower, Harbour Exchange Square, London</b>	
Client	: Charter Group Developments plc
Architects	: (Concept Design) Trevor Davison, Charter Group Developments plc
Project architects	: Frederick Gibberd Coombes
Consulting engineer	: Bunyan Meyer & Partners
Contractor	: Fairclough Building Limited
Project manager	: AYH Partnership
<b>Sub-contractors</b>	
In situ concrete construction	: R O'Rourke and Son Ltd
Prestressing	: PSC Freyssinet Ltd

which would have required substantially longer advanced ordering.

In comparison with traditional techniques, prestressed post-tensioned methods allowed erection of the frame to progress at a rate of one floor of 30,000ft<sup>2</sup> (2,790m<sup>2</sup>) every nine days.

Other advantages included the improved quality of crack-free concrete, preventing water penetration and enabling the finishing trades to have early access to the building. Flat soffits, too, allowed prefabrication of services to be utilised to their full, as well as making installation and maintenance easier.

The judges were impressed by the "hard-headed analysis of the



economics of alternative forms of structure for the multi-storey office block" which led to the "wholly convincing choice of post-tensioned concrete as the structural medium." They agreed that the analysis, design and execution of the frame represented a new and different approach to structural problems that frequently received a tired old response.

"Time, cost, cashflow, integration of services, minimum floor-to-floor height," states their report, "even the problems of ultimate demolition, were thrown into the pot." □

