Zeitschrift: IABSE structures = Constructions AIPC = IVBH Bauwerke
Band: 13 (1989)
Heft: C-50: Recent structures

Artikel: Pacific Place building complex (Hong Kong)
Autor: Aeberhard, H.U.
DOI: https://doi.org/10.5169/seals-21572

5. Pacific Place Building Complex (Hong Kong)

Owner:	*Swire Properties, Hong Kong*
Engineer:	*Wong and Ouyang, Hong Kong*
Alternative Design:	*VSL International Ltd., Berne, Switzerland*
Contractor:	*Dragages et Travaux Publics, Hong Kong*
Post-tensioning:	*VSL Engineers (HK) Ltd., Hong Kong*
Year of Construction (transfer plate):	*1988*

Pacific Place is a major commercial development presently under construction in Hong Kong Island. It will consist of four towers on top of a large podium area. Tower B will house a hotel and service apartments, which require shear walls at close centres.

In order to avoid the need for columns at close centres through the commercial area in the podium, the consultant decided to provide a transfer plate 4.50 m thick to transfer the loads from the shear walls to large columns at wider spacing. This resulted in a reinforced concrete slab containing a massive quantity of reinforcement (approx. 500 kg/m^3!) with stirrups at very close centres in both directions. As the plate had to be completed in a very short period, the large quantity and tight spacing of the reinforcement would have caused great problems in achieving the programme.

Before tenders were invited, VSL had discussions with the consultant and made him aware of the advantages of incorporating post-tensioning. The consultant provided sufficient information to VSL, who then made a preliminary design of a post-tensioned transfer plate. This showed good savings and made the plate constructable within the time allocated. Post-tensioning therefore suited everybody: the owner as savings were obtained, the contractor as work became easier and could be carried out in the time allocated, and VSL who got a contract where none existed before.

The transfer plate has the form of a whalebone. In the centre, voids for staircases and lifts are provided. The slab has a maximum length of 78.67 m and a maximum width of 31.47 m. The post-tensioning cables, all of VSL type 5-31, are arranged in two layers, one near the

Fig. 1 Artist's impression of the complex; Tower B is to the right

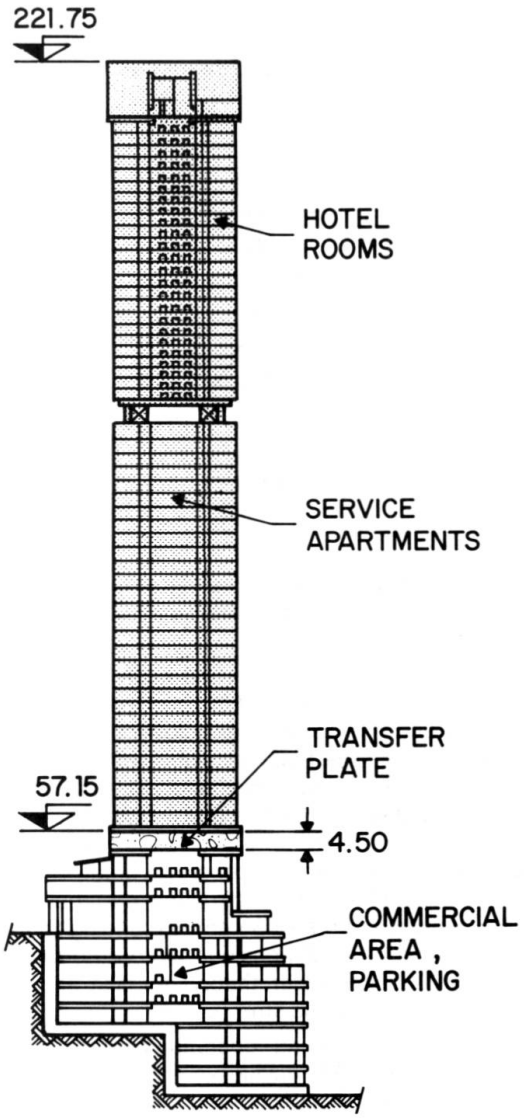

Fig. 2 Cross-section of Tower B which contains the post-tensioned transfer plate

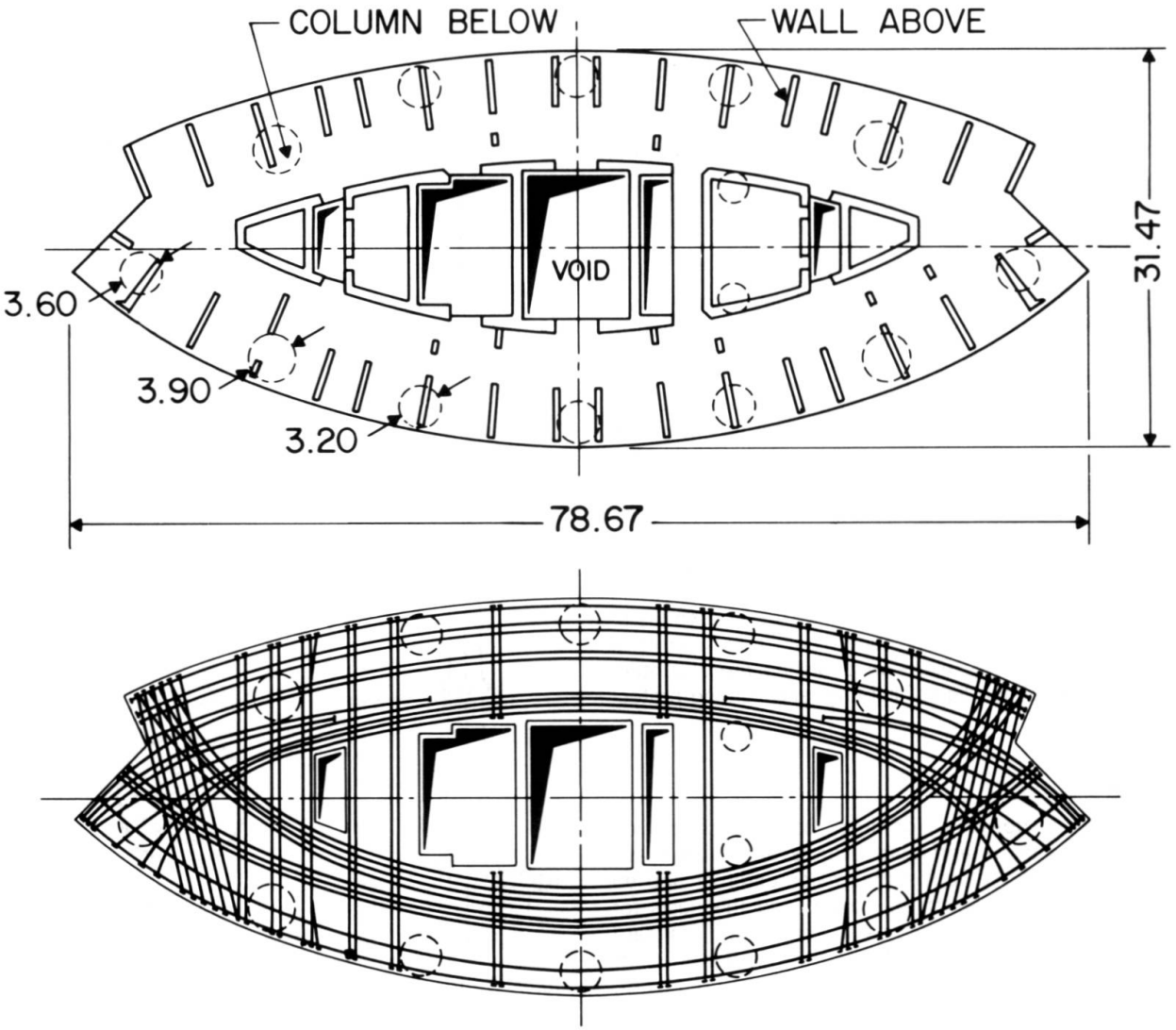

Fig. 3 Layout of the transfer plate's bottom tendons (all tendons VSL type 5-31)

Fig. 4 Transfer plate of Tower B under construction (June 1988)

bottom and the other near the top of the transfer plate. Longitudinal tendons were stressed from both ends, transverse tendons from one end only.

Construction of the transfer plate started early in June and lasted until mid-August 1988. There were seven concrete pours in total. The first stage was poured in two lifts of 750 mm on July 11 and 12; the second stage was poured in three operations with vertical construction joints at third points between the columns (July 21 to 23); the final stage was poured in two operations with one vertical construction joint (August 6 and 8).

In the first stage, duct placing and cable installation, which was by the VSL Push-Through Method, took 3 weeks, as the ducts had to be placed in a "forest" of stirrups, which made working conditions very tight. 40% of the first stage tendons were stressed four days after concreting and were subsequently grouted. Second stage tendons were installed in two days, third stage tendons in six days. The remainder of the tendons were then stressed and grouted.

(H. U. Aeberhard)