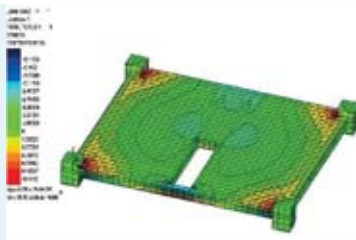


PROJECT BRIEF

Slab Strengthening at the Hiroshima Prefecture Choujuen Housing Complex with the TYFO® Fibrwrap® Composite System



Hiroshima, Japan
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The Hiroshima Prefecture Choujuen Housing Complex is located in the heart of Hiroshima city and commands a splendid view of the Ohta River and Shinkansen Bullet train railway. The housing complex, which was constructed in 1970, consists of three main high rise buildings of 16 floors each.



During a periodic assessment and maintenance exercise of these public housing buildings, cracks in the concrete slabs were noticed on almost every floor. The location of the cracks were concentrated in two main areas. The first area was the centre span of the slab, in which the occurrence of the cracks were attributed to insufficient steel reinforcing bars. The second area was close to the column-beam joints on the top surface of the slab.



A three-dimensional Finite Element Method (FEM) analysis was conducted to simulate the actual behaviour of the floor system under loadings. The results showed a very high concentration of tensile stress in the top surface of the slab, next to the columns, and in the span centre bottom face of the slab. The applied stress was three times higher than the concrete tensile strength, which was the main cause of cracking and slab defect.

A strengthening scheme using TYFO® Fibrwrap® Composite System was introduced to enhance the flexural capacity of the slab. The TYFO® SEH51 System was applied with the designed number of layers after epoxy injection of the initial cracks. The entire operation was quick, neat and easy. The client was satisfied with the speed and quality of the work.

FYFE Asia Pte Ltd

8 Boon Lay Way, #10-03 Tradehub 21, Singapore 609964

Tel: +65 6898 5248 • **Fax:** +65 6898 5181 • **E-mail:** info@fyfeasia.com • **WWW:** www.fyfeasia.com