

PROJECT BRIEF

Strengthening of Beams and Slabs of at Multipurpose Building with the TYFO® Fibrwrap® Composite System



Ampang, Malaysia
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This relatively new commercial-plus-residential building in Ampang, Malaysia, showed signs of concrete distress in typical patterns on slab areas. A preliminary structural investigation was carried out in the affected portions to establish the cause of this cracking in the floor slabs and some beams. The cracks in the slab were found to co-incide with the location of service conduits embedded within the slab, affecting its load carrying capacity. Further investigation near cracked beams showed some areas with lower than designed concrete grade. Flexural capacity of the affected slabs and certain beams needed to be enhanced. Shear capacity of a few beams also required enhancement.

Due to its ease of installation, long-term track record, cost-effectiveness and minimal disturbance to day-to-day operations of the complex, the TYFO® Fibrwrap® Composite System was chosen as the preferred strengthening method. The patented TYFO® Fibrwrap® Composite System uses aerospace technology and materials, i.e. carbon/glass/aramid fibres and epoxy composites and works on the principle of wrapping structural members such as columns, beams, slabs and walls to enhance ductility and load carrying capacity of the members.

After grouting the redundant conduits and epoxy injecting the cracks on the floor slabs and beams, the TYFO® SEH51 Glass System was subsequently used to restore the structure to its intended load carrying capacity. The composite system was applied in strips to the top of the slab over supports to enhance negative movement capacity. Strips were applied at the soffit of slabs and beams for positive movement enhancement and on the sides of beams for beam shear enhancement.

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