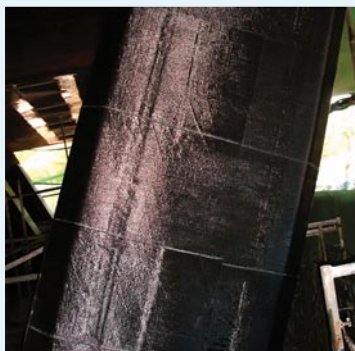


PROJECT BRIEF

Upgrading of Vehicular Bridges for the Transport Authority with the TYFO® Fibrwrap® Composite System



Singapore
Ongoing from February
2005



Small- to medium-span bridges designed and constructed before the 1990's were found to be falling short of the required strength under the enhanced vehicular loading specifications mandated by the Transport Authority of Singapore. Also, due to an increase in the magnitude of collision loads specified for piers located within 4.5 m from the edge of a highway, a number of existing bridge piers needed strengthening. New access manholes were required to enable regular inspection and maintenance of the upgraded concrete box girders. Strengthening around the intended opening was therefore required before cutting out the openings.

Light-weight and easy to install, the TYFO® Fibrwrap® Composite System was the system of choice in this island-wide project as traditional strengthening techniques would have been difficult to implement and cause major disruption to vehicular traffic. The TYFO® Fibrwrap® Composite System uses aerospace technology and materials, i.e. carbon/glass/aramid fibres and epoxy composites and works on the concept of wrapping structural members such as columns, beams, slabs and walls to increase flexural and shear load carrying capacity and enhance ductility of the strengthened members.

Beams of various bridges and flyovers were strengthened for increase in flexural and shear capacities with the TYFO® Fibrwrap® SCH Carbon Systems using the wet lay-up method. This method was also used for the wrapping of pier columns to accommodate the increase in collision loads. Pre-cured TYFO® Fibrwrap® UC laminate strips were used mostly for the flexural strengthening of bridges with box girders where new access openings were to be cut. The TYFO® Fibrwrap® Systems have provided a viable and cost effective solution.

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