

**DSI References****Reference Details**

Owner Land Transport Authority, Singapore +++ **Architects** Land Transport Authority, Singapore +++ **Consulting Engineers** Land Transport Authority, Singapore and TY Lin International Pte Ltd., Singapore +++ **General Contractor** Sato Kogyo (Singapore) Pte Ltd

DSI Unit Utracon Structural Systems Pte Ltd, Singapore

DSI Scope Supply, installation and post-tensioning of DYWIDAG Post-Tensioning Tendons type 7x0.6", 12x0.6", 19x0.6" and DYWIDAG prestressing bars Ø36mm; technical assistance; rental of equipment



DYWIDAG Post-Tensioning System Secures Bridge over Interchange in Singapore

LTA Contract ER 141, Upgrading of the Braddell Interchange, Singapore

Upgrading of the Braddell Interchange in Singapore is part of the Land Transport Authority's extensive Outer Ring Road System designed to divert traffic away from the city as commuters travel across the island. This project involves the widening of the existing road interchange at Braddell / Thomson / Lornie Road, and the construction of a new dual two-lane vehicular bridge over the existing MacRitchie Flyover.

Utracon Structural Systems Pte Ltd (USS) is the specialist contractor engaged to supply posttensioning material and to erect and prestress the precast segments that make up

the new overpass.

As construction of the new bridge took place over heavily traveled roads, the free cantilever construction method was used by the contractor, with road closures at night for safety reasons and to facilitate the transportation and installation of precast segments.

For the production of the 10.8m wide and 2.1m deep single cell precast segments, Utracon delivered types 7x0.6" and 12x0.6" DYWIDAG external tendons. Type 19x0.6" DYWIDAG Post-Tensioning Tendons were used for permanent external Post-Tensioning. The precast segments were delivered to the launching site by heavy duty hydraulic trailer.

After positioning the precast elements, epoxy glue was applied by Utracon personnel on the match-cast surfaces of the precast segments. The precast segments, which weigh approximately 50t each, were then hoisted into position by either a 500t capacity mobile crane, or by a mechanical winch mounted on Utracon's lifter frame.

As soon as the precast segments were aligned both horizontally and longitudinally with the aid of positioning hydraulic jacks, the precast segments were stressed against the previously installed segments using 36mm dia. DYWIDAG prestressing bars. Once the prestressing bars were fully stressed, the crane and winch respectively were disengaged from the precast segment, and the stressing of all DYWIDAG permanent internal tendons was carried out by Utracon personnel.



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