

## DSI References

## Reference Details

**Owner** Road Development Authority, Sri Lanka +++ **General Contractor** Hazama Corporation, Tokyo, Japan +++ **Architects** Road Development Authority, Sri Lanka +++ **Consulting** Oriental Consultants Company Limited and Nippon Koei Co., Ltd., Tokyo, Japan  
**DSI Unit** Utracon Structural Systems Pte Ltd., Singapore  
**DSI Scope** Supply, installation and tensioning of DYWIDAG THREADBAR<sup>®</sup>s Ø32mm and DYWIDAG Post-Tensioning Tendons 2x0.5" and 12x0.5"; technical assistance; rental of equipment



## Highway Bridge in Sri Lanka Stabilized using DYWIDAG Post-Tensioning System

Peace Bridge between Polonnaruwa and Manampitiya, Sri Lanka

The newly constructed Peace Bridge, which crosses the Mahaweli River, is the only connection between the North-Central Province and the Eastern Province of Sri Lanka. The existing steel bridge, which was opened in 1922, can only be used for traffic in one direction at a time due to its narrow width of merely five meters. Since trains also used the bridge, traffic jams at both ends of the bridge were exacerbated every time cars had to make way when a train crossed the bridge. In addition, heavy truck traffic over the years had overstressed the bridge structure. Consequently, in 2006, the Sri Lankan government decided to eliminate this bottleneck by building a new concrete bridge.

The feasibility study conducted by the financing agency JICA (Japan International Cooperation Agency) concluded that the Incremental Launching Method (ILM) with preassembled box girders was the best method for constructing this bridge. The method was preferred in view of the bridge's geometry and long span over the Mahaweli River, which carries a great amount of water during the monsoon season.

Utracon Overseas Pte Ltd, a foreign subsidiary of DSI licensee Utracon Structural Systems Pte Ltd in Singapore, was the specialist contractor engaged to carry out the entire construction of the bridge superstructure, including incremental launching, formwork, post-tensioning, etc.

After a detailed study of site conditions, a precast bed was set up adjacent to one of the bridge abutments located near the river bank. Here, 25 concrete box girder segments with a width of 10.4m and a height of 3.6m each were produced, with lengths varying from 6.15m to 14m.

The entire post-tensioning works of the concrete box girders were carried out using the easy-to-install high quality DYWIDAG Post-Tensioning Systems:

- DYWIDAG Ø32 mm THREADBAR<sup>®</sup>s, for the longitudinal tensioning of the bottom and top deck slabs
- DYWIDAG 2x0.5" strand Post-Tensioning Tendons with flat anchorages for the transverse tensioning of the top deck slab
- DYWIDAG 12x0.5" strand Post-Tensioning Tendons for the longitudinal tensioning of the entire bridge

Having been designed to stabilize extremely thin post-tensioned concrete slabs, DYWIDAG flat anchorages were best suited for transverse tensioning.

Utracon supplied all the post-tensioning materials required and carried out the complete post-tensioning works. The precast and preassembled segments were launched using a steel launching nose with a length of 39m and two hydraulic jacks with a pulling force of 480t each. Thanks to the combination of high quality construction systems, technical know how and equipment with sophisticated logistics and a highly skilled and competent workforce, the production and installation cycle for each segment could be achieved within 7 to 9 days depending on the length of each box girder segment.

The bridge was inaugurated in October 2007 during a festive ceremony at which both the Sri Lankan president and the Japanese ambassador were present.



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