



## Bridges

## Reference Details:

**Owner City**  
Administration Cairo,  
Bridge and Highway  
Department +++  
**Structural design and  
supervision Arab**  
Consulting Engineers  
(ACE) +++ **General  
contractor Arab**  
Consulting Engineers  
(ACE) +++ **Installation  
of Stay Cables Arab**  
Contractors

**DSI Services** Supply of  
DYWIDAG stay cables  
with bond socket 8 to  
19-0.62" and of 8  
DYWIDAG Smooth Bar  
Tendons dia. 36mm, St  
835/1030; Design and  
supply of DYWIDAG  
form travellers;  
Technical support for  
design; Installation.

**DYWIDAG bond socket stay cables for an outstanding bridge project****Cairo, Egypt: 6th October Stay Cable Bridge**

**The DYWIDAG bond socket stay cable system was chosen to be incorporated into the first stay cable bridge in Egypt. The latest development of this bonded anchorage system combines both superior fatigue behaviour and excellent corrosion protection.**

The 6th October Stay Cable Bridge is part of a 10 km long bridge system that connects downtown Cairo to the outer-ring highway. About half of the overall project has been completed so far. The stay cable bridge is located in the congested Gahmra traffic and railway junction where one other bridge structure already exists. Only a stay cable bridge could provide enough clearance in this situation. The two lane highway bridge separates both traffic directions on different levels. Each

superstructure is a single cell 1.6 m tall and a 10.1 m wide box girder with two main spans of 66.5 m, supported by two planes of stays. The parallel stays rise up to a central 50 m tall pylon consisting of two shafts. Each stay plane has 2 x 11 DYWIDAG stays with 8 to 19 x 0.62" (St 1570/1 770) strands, so that a total of 88 cables were installed.

The DYWIDAG bond socket system was selected using C12 and C19 type anchorages and a multiple corrosion protection system (galvanized strand, greased and individually sheathed in a HDPE pipe). The relatively short spans were best suited for prefabrication of the stays on the bridge deck as outlined in the following steps:

- Uncoiling, stripping and cleaning of the greased and sheathed strand over a predetermined length for the anchorage zone
- Fabrication of the strand bundle using an assembly table
- Pushing of the pipe over the bundle and welding the HDPE pipe segments
- Attaching the bond sockets and wedge plates with wedges
- Lifting the prefabricated cable in place using a sling and two cranes
- Inserting the ends through the deck and tower exit points and spinning on both ring nuts.

The deck itself was free cantilever cast in place construction using two DYWIDAG form travellers. The stays are anchored below the outer wings in the transverse girders. The cantilever segments are 5m long and correspond precisely with each pair of stay cable anchorages. For continuity post tensioning an additional 8 36 mm Ø DYWIDAG smooth bar tendons (St 835/1030) were installed of which four tendons were stressed to couple on to the next segment.