

## An application of VSL Stay Cables with Single Strand Installation System (200 SSI)



▲ *The River Leven Bridge under construction*

**T**he River Leven Bridge links the Leslie Roundabout to the Southfield Roundabout in Glenrothes, 30 miles north of Edinburgh in Scotland. The bridge is situated in a park area and crosses 17 m above the water level of the River Leven.

The metal pylon head is supported by two cylindrical concrete legs and rises 60 m over the deck which is a 240 m long, 7.3 m wide single carriageway. The deck is supported by 28 stays ranging from 6-31 to 6-55 capacity. Seven groups of two parallel stays support a main span of 133 m and seven groups of two parallel stays support the smaller 64.5 m long span.

The scope of VSL's services and responsibilities included :

- Design, supply and installation of the 200 SSI system
- Definition of the cable stressing sequence slab

The 200 SSI system, presented as an alternative to the original locked coil system, gave the Main Contractor a

competitive edge and finally enabled him to be awarded the project. Thus, superior performances of the 200 SSI concept translated into value for our client.

After the award of the contract, VSL redesigned the bridge deck to optimize the anchorage area and minimize the weight of the structure. As a consequence, the weight of the deck and the necessary stays was diminished by 10%. During all the phases of the project VSL's technical expertise was paramount for the commercial success of the operation.

The multi-layer conception of the 200 SSI system guarantees optimal corrosion protection.

The strands, greased and covered with a tightly extruded PE sheath, are guided from anchor head to anchor head by individual PE tubes. Finally, an outer PE pipe protects the bundle formed by the guide tubes.

The main feature of the 200 SSI concept

is its ease of installation.

Having installed the preassembled bundle of PE tubes in the stay pipe, the strands are individually pushed through the anchor head. This system allows for a non-destructive inspection and replacement of the strands if necessary during the live span of the structure.



An international site team was brought together to ensure the success of the 200 SSI. Installation and stressing of stay cables were completed in a record time of 8 weeks. This feat highlights the advantages of the system : possibility of preassembly, lightness of stay pipes and single strand installation.



▲ Anchorages ready for erection



◀ Lightness of the 200 SSI cables speeds up erection

▼ Anchorages are already in place



## Main Participants

### Owner:

File Regional Council

### Engineer:

Babbie Shaw and Morton

### Main Contractor:

Balfour Beatty Construction  
( Scotland ) Ltd.

### Stay Cables:

VSL France S.A.

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