

## Post-tensioning of the longest bridge in the Czech Republic



▲ Overall view on the bridging of "514 Lahovice - Slivenec construction, SO 204" section.

The 514 Lahovice – Slivenec section is a part of the Prague Ring Road under construction. The Prague ring prolongation by this section implemented by Bögl a Krýsl, k.s., Hochtief, a.s. and Strabag, a.s. will enable along with the 513 and 512 section the interconnection of D1 and D5 motorways, which is currently only enabled by the questionable inner city belt highway.

The construction is invested by the Czech Republic Directorate of the Roads and Motorways, the bridge SO 204 is supplied by Bögl a Krýsl k.s., the bridge SO 209 is supplied by STRABAG a.s. and the executive construction documentation is coordinated by Valbek, s.r.o. The post-tensioning of these bridges was supplied by VSL SYSTEMS (CZ) Ltd. These bridges are integrated in the bridge elevated road across Berounka and Radotín valley. The SO 204 bridge is among the most important constructions not only within this section. With its total length of 2km and the linking-up bridge objects, this is the longest bridge in the Czech Republic. The SO 204 consists of four

### Scope of VSL's works:

- Designer support during the application of the VSL post-tensioning system
- Alternative SO 204 1.4 proposal
- Supply of the VSL Ec / K 6-19 post-tensioning system
- Tendon placing , stressing and grouting

construction sections called 1.1 to 1.4. The superstructure of 1.1 to 1.3 sections formed by the box section with the typical spans of 46 and 49m was made on scaffolding and on overhead movable scaffolding system. This movable scaffolding system is equipped with a suspension travelling at the girder level which can be used to place the prefabricated cables in a comfortable way by unwinding them from their coils supplied from the preparation room to the construction. For this reason, VSL implemented this technology primarily for the purposes of placing in sections where movable scaffolding was supposed to be used. However, VSL subsequently used this method of placing PT tendons also in scaffolding locations in combination

with mobile cranes in order to speed up the work progress on this section. The design of these sections was supplied by Pontex, s.r.o. The construction of the bridge's main part, 1.4 dilatation of 560m in length,



▲ Stressing in a typical construction joint.



designed by Novák & Partner, s.r.o., was made using the balanced cantilever method. The new construction consists of 6 fields in total with spans 72 + 84 + 101 + 2 x 114 + 72m, so there are totally 2 x 5 cantilevers. In the preliminary project stage, VSL came with an alternative construction proposal which resulted in material savings, overall simplification as well as speeding up the construction progress. Subsequently, the designer integrated this proposal into the executive construction documentation. Up to 4 pairs of form travellers were gradually involved in the construction while pre-stressing works flexibility was crucial for a smooth construction progress. Also, the SO 209 object had its own specific features particularly

as regards the implementation procedure. The bridge was constructed from one of the middle spans using the stressing pockets to enable threading the pre-stressing strands with a time delay in order to coordinate the works due to the traffic diversion in Strakonická street which is crossed by this flyover.

The post-tensioning works on the SO 204 were launched in 2008, their termination is expected by the end of 2009. The total volume of the pre-stressing strands is nearly 1500 tons. As already stated above, this is one of the most important bridge constructions in the Czech Republic while VSL SYSTEMS (CZ) have contributed to a successful realization of this construction in co-operation with their project partners.

**OWNER:**

RSD CZ

**MAIN CONTRACTOR:**

SO 204: Bögl a Krýsl, k.s.  
SO 209: STRABAG Co.

**DESIGNER:**

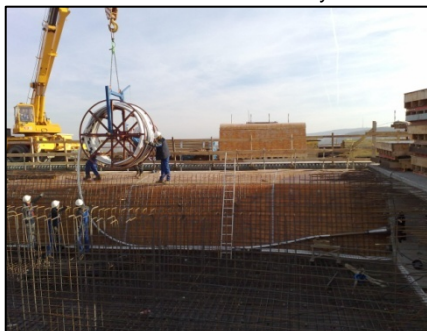
Coordinator : Valbek, Ltd.  
SO 204 1.1-1.3 Pontex, Ltd.  
SO 204 1.4 Novák & Partner, Ltd.  
SO 209 Valbek, Ltd.

**POST-TENSIONING SYSTEM:**

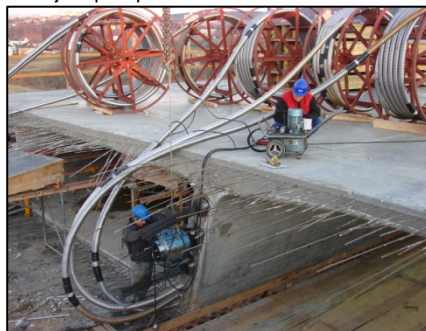
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▲ A view on the Berounka valley from the SO 209 object perspective.



▲ Placing prefabricated cables using a mobile crane.



▲ The benefits of cable prefabrication are obvious.



▲ A pier table ready for concreting .



▲ Strand coils suspended on overhead movable scaffolding system.

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