

## Post-tensioning and incremental launching of 2 bridges technology limit conditions



▲ View in bridge launching direction.

Two tram bridges SO 6001 and SO 6002 belong to the new built tram track Hlubocepy–Barrandov. The main contractor of both bridges is ZS Brno Company.

Due to deep valleys and difficult accessibility it was impossible to apply traditional methods for the construction. For this reason the designer of both bridges, Novak & Partner Ltd., applied incremental launching method for the total length of the SO 6002 bridge and for the prevailing part of the SO 6001 bridge already in the tender stage of the project design.

Incremental launching method hasn't been used in the Czech Republic for a long time and in these limit conditions it is the first application in the region. Bridge construction by means of this method is based on segmental deck production in casting yard, that is located in front of the bridge abutment. The deck is pulled out of casting yard after particular segment tensioning. The bridge is incrementally launched on supports, that are equipped by lateral guides and sliding bearings. Steel nose is fixed to the front of the deck to reduce the bending moment of the first segments. Nose is equipped with tipping device to allow to adjust nose deflection.

### VSL Scope of Work:

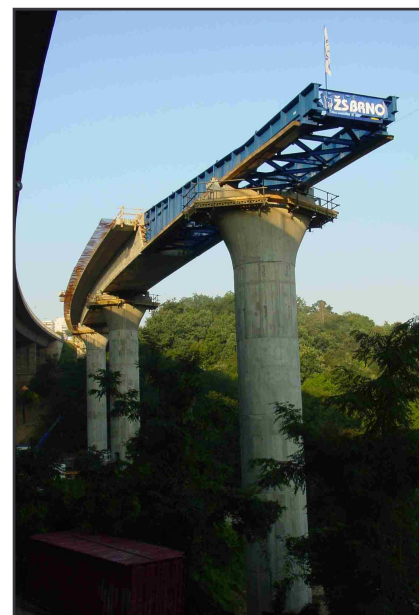
- Project of steel grid in factory, lateral guides, and launching equipment attachment
- Supply of launching hydraulic
- Launching performance
- Post-tensioning

### Project Technical Data

- Bridges length 472m and 298
- no. of launched spans 6 and 7
- no. of spans on scaffolding 5
- Longitudinal slope 6,0% and 6,2%
- Transversal slope 2%
- Radius of curvature 787m
- Longitudinal Post-tensioning 315t

Bridges on tram track have slope 6.0% and 6.2%. They are limit conditions for this technology. It was designed downhill launching. It brings more advantages in steeper slopes considering the whole structure. This solution requires pulling of the bridge in the first stage and consequently its retaining. Applied VSL launching system based on synchronized pulling and retaining strand jacks guarantees full launching control during its all stages and ensure its maximal safety.

VSL (CZ) has been participating in technology project preparation and in cooperation with VSL GERMANY, Technical Center VSL in Switzerland, design office PONTEX Ltd., main contractor and bridge designer has supplied particular parts of this project. Technological part of the project is considerably interconnected with



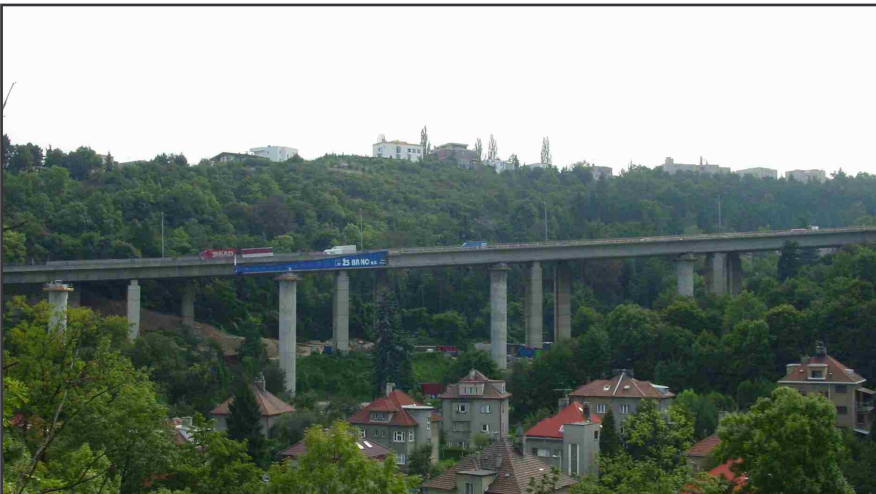
bridge projects. It required bridge design optimization especially regarding longitudinal tendon arrangement.

For the maximal reduction of the risk involved with this construction method the installation in early stage of development was supervised by VSL Swiss field specialists that have considerable experience with bridge constructions using this method.

Due request to short the construction time it was decided during the preparation stage to install simultaneously both launched bridges including the part on scaffolding. For that reason VSL had to double all launching equipment in quite short time. Thanks to considerable capacity and flexibility of the VSL HEAVY LIFTING department it was feasible.



▲ Top slab cantilevers will be poured after launching finishing and precast wings installation.



▲ Side view, tram bridge hides gradually road one.



▲ VSL launching equipment installation, synchronized pulling and retaining strand jacks.

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