



research bridges railways tunnelling monitoring technology management international

## Estakáda Masaryk

The Estakáda Masaryk in the centre of Prague is part of the new railway connection between Prague's main station and Prague Holešovice station. The bridge deck carries four tracks and even five tracks in the western side span. The structure is predominantly composed of prefabricated compound units and is pre-stressed in longitudinal and transversal direction. The load carrying structure is divided into of twelve spans with different span length ( $l = 39.9 / 34.9 / 9 \times 37.0 / 31.5$  m) and a total length of 439.3 m. The bridge follows a strongly curved ground view and its deck's width varies between 29 and 22 m (3 – 5 cellular box girders). The construction height of the bridge deck – without the roadbed – varies between 3.20 m and 3.70 m. The railway bridge was finished in summer 2008 and was assigned as bridge construction of the year by the Czech association of civil engineering.

In the course of the prevailing investigation an extensive dynamic monitoring campaign was undertaken in order to examine the Estakáda Masaryk's initial condition. The dynamic assessment with BRIMOS was widely performed according to the Czech code ČSN 736209 but in addition to that the measurement provided several supplementary information. Part of the Czech assessment procedure is the comparison of the measurement with a finite element model. Within the scope of the present assessment the live loads' dynamic effect on the load bearing capacity and on the operability was evaluated and recommendations for the further service life were made. Special attention was paid to the analyses of the internal prestressing of the primary load bearing structure (main girders in the longitudinal direction) and of the secondary load bearing structure (track slab and ground plate – in transversal direction).

The present investigation (measurement 2009) is to be understood as an initial measurement. Possible upcoming measurements are to be referred to this initial one - possible changes of the structure's operational integrity can be quantified with this approach.

- Client: EURAVIA CS a.s  
závod Řevnice
- Location: Prague, Czech Republic
- Checking Period: 2008 – 2009
- Services: Dynamic measurement  
BRIMOS® - Assessment and rating  
According to Czech Standard CSN 736209  
Finite Element Simulation



### BRIMOS® Services conducted:

- |                              |  |   |   |   |
|------------------------------|--|---|---|---|
| <b>Lifecycle Management:</b> | <input checked="" type="checkbox"/> Condition Assessment | <input type="checkbox"/> Condition Monitoring | <input type="checkbox"/> Rehabilitation Planning            | <input checked="" type="checkbox"/> Quality Control |
|                              | <input type="checkbox"/> Lifetime Assessment             | <input type="checkbox"/> Traffic Analysis     | <input type="checkbox"/> Environmental Influences           | <input type="checkbox"/> Risk Assessment            |
| <b>Special Measurements:</b> | <input type="checkbox"/> Attendant Monitoring            | <input type="checkbox"/> Noise and Vibrancy   | <input checked="" type="checkbox"/> Deflection Measurements | <input type="checkbox"/> Seismics                   |