



## The Balsberg Viaduct of the new light rail network to Zurich-Airport

### Daia ZWICKY

Dr. sc. techn., dipl. Ing. ETH  
SYNAXIS

Zurich, Switzerland

[daia.zwicky@alumni.ethz.ch](mailto:daia.zwicky@alumni.ethz.ch)

Daia Zwicky, 1971, civil engineering degree and PhD from Swiss Federal Institute of Technology Zurich (ETH), 1996 and 2002. Currently Vice-Chair of IABSE Swiss National group.



### Thomas LÜTHI

dipl. Ing. ETH, director  
SYNAXIS

Zurich, Switzerland

[t.luethi@synaxis.ch](mailto:t.luethi@synaxis.ch)

Thomas Lüthi, born 1969, received his civil engineering degree from Swiss Federal Institute of Technology Zurich (ETH) in 1993.



## Summary

This paper reports on the key structure for the new light rail network in the area of Zurich-Airport – the Balsberg Viaduct. The project was published for total contractor submission in October 2005 based on a highly detailed preliminary project. The contract was awarded to a local joint venture team comprising two contractors (Marti AG / Stutz AG) and two civil engineering consultancies (Synaxis AG / Henauer Gugler AG). The paper comments on the several optimizations to the preliminary project made by the winning team. The challenges presented by the local soil conditions and the particularly restraining construction site conditions are also described. The Balsberg Viaduct is currently the major bridge project under construction in Switzerland. The viaduct will play a key role in bringing people closer to Zurich Airport – and thereby bringing Zurich and Swiss people closer to the world.

**Keywords:** Viaduct, concrete bridges, light rail, pile foundation, soil conditions, construction site conditions, pre-stressing, box girder, monolithic structure, total contractor submission.

## 1. Introduction

The area around and including Zurich Airport, is steadily growing. Located in the Glatt valley near Zurich, the area is home to many national and international firms that have their headquarters and production facilities close to the airport. Public transport to the airport and its surrounding region is currently provided by the Swiss Federal Railways, Zurich's local commuter rail network as well as local buses, taxis and hotel shuttle services. In order to increase the capacity of the public transportation system, it was decided to build a new set of light rail lines to Zurich Airport and surroundings in the Glatt valley – the new network of the “Glattalbahn”. These new lines will be built in several stages and the tender for each stage was submitted in a separate lot.

Within the direct extension line from Zurich-City to the airport, the Balsberg Viaduct may be considered the key structure. This viaduct – passing the name-giving former headquarters of Swissair at Balsberg – has a total length of almost 870 m. After the total contractor's optimization, it consists of four box girder bridges with lengths of 72 m, 146 m, 154 m and 104 m, a high-level station approx. 66 m long, a T-beam bridge of 94 m length, two approach ramps with 94 m and 138 m length, and two pedestrian bridges of 19 m and 28 m length, ending at the station.

The Balsberg Viaduct was published for total contractor submission in October 2005. The contract was awarded to a local joint venture team; several other teams from Switzerland, Germany and Austria also tendered for the contract. The paper highlights the optimizations made to the preliminary project in terms of expansion joint layout, pile foundation and structural details.