

## ARLBERG RAILWAY LINE, RENEWAL OF THE LANDECK INN BRIDGE

Client: ÖBB-Infrastruktur Bau AG (Austrian Railways Infrastructure Construction AG)

Development Period: 2006 to 2009

### THE PROJECT

Within the scope of this project, the steel lattice girder railway bridge over the *Inn River* in the community of Landeck, which existed since 1883, has been replaced by a steel arch bridge.

Additionally, the adjacent viaducts have been renovated and noise control measures implemented on the bridges and on the embankments.

The new arch bridge features a total length of 64 m and a width of 7 m. The gradient of the track is 25 ‰. The weight of the new bridge amounts to 1400 t, which is about five times the weight of the original structure.

Due to the restraint of a limited service interruption of the line, the new bridge was prepared at a distance of 10 m to the existing bridge on temporary foundations and abutments. During a service interruption of 16 days, the new bridge was slid in the final place after the removal of the old bridge.

### OUR FUNCTION

BGG Consult was commissioned for this project with the investigation of the condition of the existing structures and with the geotechnical consulting. Within this scope, numerous vertical and horizontal exploration drillings were conducted within the brickwork of the viaducts. Additional investigations were carried out in the areas of the foundations and the embankments.

For the construction tender, a geotechnical expert's report has been compiled based on the exploration results and the laboratory analyses. The report covered especially statements concerning the permanent and temporary foundations as well as the sliding tracks.

During construction, our job comprised the geotechnical consulting for the client with regard to the execution of special underground engineering works, the evaluation of alternative designs and the quality management.

#### *Foundation on Historic Abutments:*

Due to the demand of the preservation of the historic abutments, the new, substantially heavier structure had to be placed on the existing foundations. This posed a special challenge with regard to geotechnics, because both the subsoil under the foundations and the condition of the brickworks had to be considered. Furthermore, no settlements were permitted next to the existing bridge. For this reason, a deep foundation with bored piles was chosen for the new abutments and the temporary foundations.

With this method, the historic bridge arches could be preserved without significant settlements.

*View of the new steel arch bridge in front of the existing lattice girder bridge, during construction*

