Koralm Railway Tunnel, Exploratory Tunnel Paierdorf, Austria

The future railway connection between Graz and Klagenfurt is an important part of the international traffic route "ADRIATIC-BALTIC-AXIS" from Venice in Italy to Gdansk, Poland. The core piece of this railway section is the 32.8 km long Koralm Tunnel, which will go into operation as a double-tube tunnel in 2016. The costs for this project are in the range of 1.8 billion Euros.

Beginning in 1998, extensive exploratory work has been conducted to obtain information about the geological conditions in the area of the future Koralm Tunnel. A total of 11 km's of exploratory tunnels will be constructed before work on the final tunnel will start. For the best possible survey, the exploratory program was divided into four separate lots - one in the eastern area and three in the western area.

As part of the exploratory program for the Koralm Tunnel, the Paierdorf lot in Carinthia is being constructed in two stages: first an exploratory shaft with a depth of 125 m, followed by an exploratory tunnel to the east and to the west. Thus, the shaft was constructed to gain access to the future tunnel level. Since July 2005, construction of the 5.1 km long explora - tory tunnel has been ongoing. The construction of this largest exploratory section is on schedule and should be completed in 2009. The construction of the tunnel is being affected by difficult and changing ground conditions. In addition, the predicted groundwater inflow has caused problems during excavation.

ALWAG supports the construction of the Paierdorf exploratory tunnel with advanced reinforcement and support products, such as the AT-Casing System and the recently developed AT-Power Set self-drilling Vacuum Tube Spiles. These Vacuum Tube Spiles are used both for reinforcement ahead of the tunnel face and handling of the groundwater through coupled vacuum pumps.

The patented AT-Casing System is being used at the Paierdorf site in terms of the pipe roof system AT-114/T, in combination with the ATautomation unit for pipe roof drilling. The advantages of this system are the fast, safe and efficient drilling of pipe roof umbrellas for the reinforcement ahead of the tunnel face. An experienced technical support team from Alwag is on hand to provide advice to the crews performing the Pipe roof drill installation.

Reference Details:

Owner ÖBB Infrastruktur Bau AG, Austria +++ **General Contractor** ARGE EKT Paierdorf: Swietelsky Tunnelbau GmbH & Co. KG, Austria and Max Bögl Austria GmbH, Austria +++ **Planning Agency** Geoconsult ZT GmbH, Salzburg, Austria +++ **Supervisor** ARGE IGT-3G: IGT Geotechnik & Tunnelbau GmbH, Salzburg, Austria; 3 G - Gruppe Geotechnik Graz ZT GmbH, Graz, Vienna, Austria; Bernard Ingenieure, Hall, Austria +++ **Engineering** Metz & Partner, Baumanagement Ziviltechniker GmbH, Vienna, Austria

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DSI Scope Supply of IBO R32 Hollow Bar Bolts, Lattice Girders, Lagging Sheets, AT-Power Set self-drilling Vacuum Tube Spiles, AT-89/T and AT-114/T-Casing System, AT-118/DR Drainage System; rental of Rock Drilling Equipment and Injection Flow-Pressure Meter; technical assistance

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