



# VIOLA TUNNEL

## Italy, 1996

### PROJECT CHARACTERISTICS

**Works:** free flow tunnel, circular section, concrete lined, with 5 inlets and relevant inlet tunnels and diversion structures on mountain creeks, outlet works, access roads and landscaping works.

**Purpose:** water diversion from near catchment basin and conveyance to an existing dam's reservoir to increase the water supply.

### Dimensions:

- Internal Diameter: 3.04 m
- segmental precast lining thickness: 0.20 m
- overall length: 15,8 km

### Subsurface conditions:

- Mica-schist

### Construction method:

- Full-face excavation within double shield TBM
- First supports consisting of bolting and gunite where necessary
- Precast reinforced concrete, lining segments locked with bolts



### PROFESSIONAL SERVICES PERFORMED

Jobsite equipment list and personnel organisation, construction programme, detailed cost estimate.

The new Viola tunnel will catch the discharges of 5 creeks and will lead them in the Cancano reservoir, which feeds the Premadio power plant located near Bormio, in the central Italian Alps. A comprehensive cost estimates was done to provide a basis for tendering the work.

The costs estimate of Viola tunnel and appurtenant works was carried out computing investment and operating costs price of equipment, the related consumable and the necessary personnel. The method adopted for the analysis of the costs was based on state of the art technology, present market costs and best estimates for production, consumable, operation and maintenance.

