



BOVILLA DAM

Albania, 1995

PROJECT CHARACTERISTICS

Works: homogeneous gravel fill dam with upstream impervious facing made of a system of geosynthetics protected with cast in place concrete slabs.

Purpose: city of Tirana water supply and irrigation.

Dimensions:

- height: 91 m
- embankment volume: 650 000 m³
- storage: 80 000 000 m³
- crest length: 135 m

Watertightness: geocomposite on the upper 58 m of the upstream slope, concrete gravity plug, grout curtain through the foundation rock.

Materials:

- foundation: karstified limestone overlying flysch;
- embankment: alluvial sands and gravels;
- lining support: sand free concrete.



PROFESSIONAL SERVICES PERFORMED

Conceptual and detailed design of the impervious liner, laboratory tests, computations, construction drawings of the lining system and of the cast-in-place concrete protection. Assistance during placement and protection of the lining.

Bovilla dam, completed in 1996, is located on Terkuze river, in a steep and narrow gorge 15 Km North-East from Tirana. The lining system is formed by a heavy composite made of a 3 mm extruded PVC geomembrane coupled to a 750 g/m² polyester nonwoven geotextile adhered to the geomembrane by hot calendaring. Loading and unloading cycling tests under pressures 1.5 time greater than the real ones were carried out to check the geomembrane adequacy under real operating conditions. Shear tests were carried out to assess the actual friction angle at the interface and within the geosynthetic system. The composite was placed on the 1.6H/1V upstream slope in rolls from the dam's crest. Each roll covers the entire length of the slope thus making unnecessary horizontal weldings.

*Weldings were double track allowing pneumatic testing of the entire weld length. The anchoring of the composite to the concrete peripheral beam was of the clampdown type obtained with smothering resins, rubber washer, bolts and stainless steel profiles. Protection is ensured by 3 * 6 m, cast-in-place concrete slabs cast over an 800 g/m² decoupling polypropylene nonwoven geotextile.*

