



# PAPPADAI DAM

## Italy, 1989

### PROJECT CHARACTERISTICS

**Works:** Earthfill dam with bituminous facing, inspection gallery and plastic concrete cut-off walls, 4 secondary earth dams lined with PVC geomembrane, bottom outlet diversion tunnel, gate shaft, intake tower and bridge.

**Purpose:** irrigation

#### Dimensions:

- height: 27 m,
- embankment volume: 700 000 m<sup>3</sup>
- storage: 13 000 000 m<sup>3</sup>
- crest length: 890 m

**Watertightness:** bituminous liner on the upstream slope, vertical plastic concrete diaphragm wall in the foundation.

#### Materials:

- foundation: Plio-pleistocene clay;
- embankment: homogeneous calcarenite fill.



### PROFESSIONAL SERVICES PERFORMED

Geotechnical characterisation of the foundation clay and of calcarenite as construction material, seepage and deformational analysis of the main dam by the finite element method, construction design, assistance during construction, quality control, analysis of dam's settlements during and after construction. Design of re-shaping of the reservoir banks to increase the net reservoir capacity by 6 000 000 m<sup>3</sup>.

*Pappadai main and secondary dams, built in the years 1990 - 1992 near Taranto, Italy, create a compensating reservoir intended for irrigation. The upstream slope of the main dam is set at 2H/1V and lined with bituminous concrete, which ends on the top of a concrete culvert. A concrete diaphragm, 10.0 to 19.0 m long and 0.8 m wide, is keyed in at the base of the culvert. The crest is 6.4 m wide and is set at 112.0 m a.s.l. The downstream slope, set at 2H/1V with 2 berms at el. 103.0 and 93.0, is lined with a 0.3 thick layer of vegetable soil laid over a geotextile separator. A rock toe drain runs along the toe of the slope and collects the slope rainfall as well as seepage discharges collected by the horizontal drain. A culvert, 110 m long, crosses the dam connecting the longitudinal culvert to a control chamber where seepage gauging weirs are installed.*

*The bottom outlet tunnel underpasses the left bank of the dam. The upstream pressure portion, some 330 m long and 3.6 in diameter, ends in the gate shaft, 25.7 m high and 6 m in diameter. The downstream portion of the tunnel provides access to the gate shaft and houses a steel pressure conduit. This part of the tunnel is 700 m long and 6 m in net diameter.*

