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# SAN ROQUE DAM

## Philippines, 2000

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### PROJECT CHARACTERISTICS

**Works:** zoned earth – rock dam, built between 1998 and 2002

**Purpose:** hydropower, irrigation, flood control, pollution dilution and sediment catch.

#### Dimensions:

- *height:* 198 m
- *embankment volume:* 43 000 000 m<sup>3</sup>
- *storage:* 1000 million m<sup>3</sup>
- *crest length:* 1097 m

**Watertightness:** central clay core

#### Materials:

- *foundation:* granite - granodiorite
- *embankment:* shells: alluvial gravel, transition zones: processed gravel / sand, core: clay blended with monogranular gravel .

### PROFESSIONAL SERVICES PERFORMED

Review of: embankment cross section, design criteria and specifications, seepage, dynamic stability and deformation.



*San Roque dam, located in northern Luzon, in operation since 2002, is an important structure performing various functions. The reservoir water is used to irrigate up to 67000 hectares of land, now producing 3 rice crops per year.*

*The dam and appurtenant structures was built based on a previous design prepared in 1982 by P. Sembenelli. At that time San Roque was 215 m high, the 6<sup>th</sup> highest dam world wide.*

*In the earlier nineties, as new data on foundation and construction materials become available from additional investigation and excavations prior and during construction, the design was further refined.*



*The review led to the following modifications with respect to the original design:*

- *removal of considerable amount of potentially unstable cover materials beneath the shells (due to the higher seismic loading requirements following the 1990 earthquake) and replacement with compacted competent materials,*
- *use of a two-zone processed filter and transition on the u/s and d/s sides of the core instead of a wider single zone*
- *horizontal drainage blanket layer beneath the d/s shell*
- *reduction of the crest width from 20 to 12 m*
- *reduction of the dam height from 215 to 198m.*