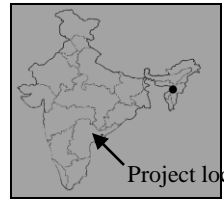




अनुसंधान के माध्यम से सेवा
Service Through Research

POLAVARAM IRRIGATION PROJECT, ANDHRA PRADESH.



Project location

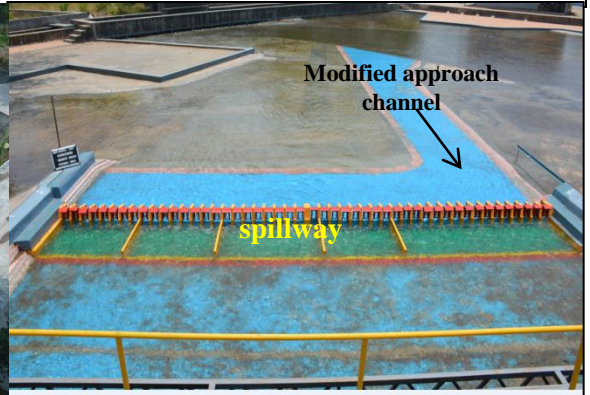
SALIENT FEATURES

Location	: West Godavari District
State	: Andhra Pradesh
River	: Godavari
Power Generation	: 960 MW
Design Discharge	: 1,41,583 Cumec
Type of dam	: Earth and Earth Cum Rock Fill (ECRF)
Spillway	: 48 spans of 16 m wide x 20 m high
Energy dissipator	: Stilling basin with solid endsill

MAJOR STUDIES

Comprehensive model scale 1: 140

- ☺ Assessment of discharging capacity of spillway
- ☺ Approach flow conditions upstream of spillway and power intake
- ☺ Flow conditions in approach channel, spill channel and pilot channel
- ☺ Performance of energy dissipator
- ☺ Adequacy of divide walls, training walls and guide walls



RESULTS

- ❖ Probable Maximum Flood (PMF) of 141583 m³/s can be passed at RWL El. 45.35 m with all 48 gates fully open against FRL El. 45.72 m. The discharging capacity of the spillway is adequate.
- ❖ Approach flow conditions in front of spillway were oblique due to curved guide bund and needs review of its design.
- ❖ Trunnion of gates is above water surface for all discharge conditions
- ❖ The performance of stilling basin was satisfactory for various discharges for ungated and gated operation of spillway.
- ❖ Recommended the straightening of spill channel and widening of pilot channel by removing sand mound. Also suggested adoption of modified approach channel.
- ❖ The flow conditions in the vicinity of power intake were found satisfactory for spillway in closed and open condition for FRL and MDDL



अनुसंधान के माध्यम से सेवा
Service Through Research

AREAS OF ACTIVITIES AT THE CWPRS

- * HYDROLOGY AND WATER RESOURCES ANALYSIS
- * RIVER ENGINEERING
- * RESERVOIR AND APPURTENANT STRUCTURES
- * COASTAL AND OFFSHORE ENGINEERING
- * SHIP HYDRODYNAMICS
- * HYDRAULIC MACHINERY
- * APPLIED EARTH SCIENCES
- * MATHEMATICAL MODELLING
- * INSTRUMENTATION AND CONTROL ENGINEERING
- * FOUNDATION AND STRUCTURES
- * INFORMATION SYSTEM (WATER AND POWER)

RESERVOIR AND APPURTENANT STRUCTURES

FACILITIES

Large size covered and open model trays, Glass sided and Tilting flumes for hydraulic model studies. Precision Equipment for measurement of hydraulic parameters with data acquisition system. Workshop facilities for fabrication models Equipment for Field data Collection, Computer Center Numerical models for aeration devices and water hammer analysis.

AREAS OF SPECIALIZATION AND MAJOR STUDIES

STORAGE AND DIVERSION STRUCTURES

The study of storage and diversion structures include spillways, energy dissipators and appurtenant structures such as training walls, divide walls, downstream protection works.

❖ Spillway and Energy Dissipators : Bhakra, Salal, Sardar Sarovar, Chamera, Srilsailam, Nathpa Jahakri, Dhauliganga, Tala (Bhutan), Kurichu (Bhutan), Chukha (Bhutan), Bekhme (Iraq), Bakurman (Iraq), Khaliikan (Iraq), Sedwagyi (Myanmar), Ukai, Kadana, Dharoi, Baira-Siul, Mahi Bajaj Sagar, Matrikundai, Ranjitsagar, Icha, Rajghat, Khandong, Thoubal, Doyang.

❖ Appurtenant Structures : Assessment of hydrodynamic pressures/forces and bending moments on divide walls, chute, baffle blocks, breast walls, stilling basin apron and plunge pool lining for Sardar Sarovar, Salal, Bekhme (Iraq), Icha, Ranjitsagar, Ranganadi and Koyna Projects.

CONTROL STRUCTURES

The study of structures controlling and guiding high velocity flows include gate, tunnels and outlets. The major studies include assessment of hydrodynamic uplift and downpull and estimating air demand of gated outlets. CWPRS is the only laboratory in India using the state-of-art equipments for studies with the help of hydraulic models.

❖ Gates : Sardar Sarovar, Tala, Chamera, Supa, Beas, Mahanadi, Malaprabha, Cheruthoni, Kadana, Ukai, Idukki, Bhira.

CONVEYANCE STRUCTURES

The studies include intakes, penstocks, surge shafts, tunnels.

❖ Projects : Sardar Sarovar, Bhira Surge Tank, Indira Sarovar, Kakkad, Indravati, Doyang, Baira-Siul, Beas P3R, T1, T2 Tunnels, Pandoh Baggi, Koyna and Salal Tail Race Systems, Koyna Lake Tape, Srisailam Intake, Kalinadi Surge Shaft.

❖ Mathematical Modelling for water hammer analysis for Ghatghar and Kal Projects.

CENTRAL WATER AND POWER RESEARCH STATION,
PUNE - 411 024, INDIA.

CENTRAL WATER AND POWER RESEARCH STATION, KHADAKWASLA, PUNE - 411024

Tel : (020) 4391801-14

Fax : (020) 4392004

Website : www.mah.nic.in/cwprs

E-Mail : wapis@mah.nic.in