

ADDITIONAL SPILLWAY OF HIRAKUD DAM, ODISHA

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SALIENT FEATURES

Location	: Sambalpur, Odisha
River	: Mahanadi
Maximum Discharge	: 9122 m ³ /s
Type of Dam	: Concrete gravity
Height of Dam	: 33 m
Spillway	: Overflow spillway with 5 spans 15 m (W) x 15 m (H)
Energy Dissipator	: Stilling Basin



2-D SECTIONAL MODEL STUDIES

- Discharging capacity of spillway with full as well as with partial opening of gates
- Assessment of pressures and water profiles on spillway
- Performance of stilling basin

SIGNIFICANT ACHIEVEMENT

- ✳ The discharging capacity of the spillway was adequate as for all the five spans fully open a maximum discharge of 10,257.7 m³/s could be passed at MWL El. 192.454 m and the design maximum discharge 9122 m³/s could be passed at El. 191.45 m
- ✳ It was observed that the performance of stilling basin was unsatisfactory as the length of the stilling basin provided was insufficient to contain the hydraulic jump.
- ✳ Therefore, it was recommended either to increase the length of the stilling basin or to adopt optimum combination of increasing the length as well as lowering the stilling basin floor level considering the techno-economic feasibility.
- ✳ Two modified designs for the energy dissipator have been recommended by CWPRS. In Alternative –I, length of the stilling basin is extended from 71 m to 90 m with SBL El. 151 m whereas in Alternative –II, the SBL was lowered by 2 m i.e. El. 149 m with length 90 m.
- ✳ Finally the design with Stilling Basin Floor Level El. 151 m and length 90 m has been recommended.



Original Design



Alternative-I



Alternative-II