## The Rehabilitation Solutions for the Hydraulic Jump Sweepout: A Case Study from India

Authors : Ali Heidari, Hany Saleem

**Abstract :** The tailwater requirements are important criteria in the design of the stilling basins as energy dissipation of the spillways. The adequate tailwater level that ensures the hydraulic jump inside the basin should be fulfilled by the river's natural water level and the apron depth downstream of the chute. The requirements of the hydraulic jump should mainly be checked for the design flood, however, the drawn jump condition should not be critical in the discharges lesser than the design flood. The tailwater requirement is not met in Almatti dam, built in 2005 in India, and the jump sweep out from the basin, resulting in significant scour in the apron and end sill of the basin. This paper discusses different hydraulic solutions as sustainable solutions for the rehabilitation program. The deep apron alternative is proposed for the fewer bays of the spillway as the most cost-effective, sustainable solution. The apron level of 15 gates out of 26 gates should decrease by 5.4 m compared to the existing design to ensure a safe hydraulic jump up to the discharge of 10,000 m3/s i.e. 30% of the updated PMF. **Keywords :** dam, spillway, stilling basin, Almatti

**Conference Title :** ICCSEIE 2024 : International Conference on Civil, Structural, Environmental and Infrastructure Engineering

1

**Conference Location :** Vancouver, Canada **Conference Dates :** August 05-06, 2024