C-06: Design of spillway, Mallipotha tank

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Mallipotha is an abandoned tank found in Bibile Divisional Secretary's Division. FSL, of the tank is 977 ft. RL. The river bed elevation is 925 ft. RL. A spillway has to be designed for a 100 year flood discharge of 897 cusecs. Geological investigations carried out at the spillway site revealed that the rock is not available at shallow depths. Alternate types of spillway were proposed and due to topography and geology, Chute type spillway was decided as the most appropriate type.

Crest of the spillway was designed as an Ogee. Slope of the chute was designed to suit site conditions. Elevation of the stilling basin was designed so that, elevation of the water surface of the hydraulic jump is less than that of the water surface of the river at the design discharge, to ensure downstream protection. Angular variations of the flow boundaries were designed to avoid cross waves. Type II basin was adopted as it is more appropriate. The spill tail canal will have an upward slope. The side walls of the chute and the stilling basin were designed as cantilever walls. The weight of the chute slab and the base of the basin were designed to take up the remaining uplift force.

Staggered weep holes were provided in the side walls of chute and basin. Pressure release filters and drainage were provided across and along the chute slab. No cut off walls were provided for creep problems, but to take up possible shear.

Due to the curvature of the approach channel, flow was more towards the right hand side wall of the chute. To avoid this a curved divide wall was provided at the centre of the approach channel close to the crest.

Chute type spillway with bottom width 28ft. and Type III stilling was possible.