

# STUDY OF UPLIFT PRESSURE EFFECT IN ROLLER COMPACTED CONCRETE GRAVITY DAM.

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## ABSTRACT

In recent past, researches have done to properly investigate the uplift pressure effect at the base level of concrete dams, in particular for a cracked-base situation under static conditions. This paper attempts to implement two and three-dimensional Finite Element (FE) Models for nonlinear static analysis. To aid the aim, Kinta Roller Compacted Concrete (RCC) gravity dam is selected as a case study and FE ABAQUS software is used to investigate the responses of the dam under full reservoir hydrostatic pressure and uplift effect as well as the effect of different densities of the dam for the stability purpose. In addition, Concrete Damaged Plasticity (CDP) model is conducted to monitor the crack propagation in the dam. The results show that, the uplift pressure affects considerably the relative displacement more than the hydrostatic pressure. The relative displacements increase when the concrete density of the dam goes up unlike the maximum and minimum principal stresses and crack propagation.

**Key words:** *Crack, Dam, FEM, Hydrostatic pressure, uplift pressure, RCC dam.*

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