

## **ANALYTICAL AND SOFTWARE BASED COMPARATIVE ANALYSIS OF ON GROUND CIRCULAR WATER TANK**

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### **ABSTRACT**

This paper presents comparative study of analytical and software based methods used for the analysis of on ground concrete circular water tank. An analytical method is considered as per IS 3370 and as given by PCA (Portland Cement Association), which are also compared with the result of FE analysis using software STAAD.Pro. Importance of the present study is to observe actual behaviour of tank subjected to static loading condition with special emphasis on IS:3370, PCA Table and software STAAD.Pro. Different tanks have been considered for the analysis depending on the parameters like dimensional aspect ratio  $H^2/Dt$  (i.e. 14, 8, 4, 0.8) and end conditions at bottom having free at top (i.e. Hinged and Fixed) having similar storage capacity of 1 lac liter. Analytical calculations have been carried out by Excel spreadsheet program and finite element models have been observed in STAAD.Pro having similar parameters. Result output of hoop tension and bending moment shows similarity in the considered analytical approach but significant advantage of software based approach due to finite element modeling. Also, it reveals that, engineers can apply software based approach more flexibly and efficiently to fulfill the practical tasks of structure modeling and analysis in engineering to achieve economy.

**KEYWORDS:** IS 3370, PCA, STAAD.Pro, Tank, Water Tank