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Comparative Study of Dynamic Effect on Analysis Approaches for Circular Tanks Using Codal Provisions

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Abstract : Liquid storage tanks have become widespread during the recent decades due to their extensive usage. Analysis of liquid containing tanks is known to be complex due to hydrodynamic force exerted on tank which makes the analysis a complex one. The objective of this research is to carry out analysis of liquid domain along with structural interaction for various geometries of circular tanks considering seismic effects. An attempt has been made to determine hydrodynamic pressure distribution on the tank wall considering impulsive and convective components of liquid mass. To get a better picture, a comparative study of Draft IS 1893 Part 2, ACI 350.3 and Eurocode 8 for Circular Shaped Tank has been performed. Further, the differences in the magnitude of shear and moment at base as obtained from static (IS 3370 IV) and dynamic (Draft IS 1892 Part 2) analysis of ground supported circular tank highlight the need for us to mature from the old code to a newer code, which is more accurate and reliable.

Keywords : liquid filled containers, circular tanks, IS 1893 (part 2), seismic analysis, sloshing
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