

Comparison of Egyptian Code 2012 with Eurocode 8-2013, IBC 2015 and UBC 1997 for seismic analysis of residential shear-walls RC buildings in Egypt.

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This paper presents comparative study for seismic provisions of four building codes (Egyptian Code for Loads ECL2012, Eurocode 8-2013, IBC2015 and UBC1997) to the prevailing multistory residential reinforced concrete buildings comprising shear-walls (SW) and located in Cairo-Fayoum zone. Ten-story and twenty-story buildings were analyzed using the equivalent static load method (ESL) and modal response spectrum method (MRS). Simplified time approach (STA) and realistic time approach (RTA) were adopted for estimating the fundamental time period (T). The building base shear, SW moment, SW steel reinforcement, and story-drift resulted from 32 three-dimensional finite element numerical simulations (two buildings \times four codes \times two analysis methods \times two T approaches) were compared to draw conclusions for safe design without exaggerated conservativeness. The results motivate engineering firms to stop using highly conservative UBC1997, encourage engineers to adhere to MRS and RTA, increase the confidence level in ECL, and prompt ECL committee to provide T -formula for SW buildings.