

Seismic design guidelines for building included in the Manual of Civil Structural Design of CFE, Mexico

Ulises Mena-Hernández, Arturo Tena Colunga and Luis Eduardo Pérez-Rocha
Instituto de Investigaciones Eléctricas, Cuernavaca Morelos, México

Keywords : Manual of Civil Structures Design, design of structural systems, seismic design of building structures

Abstract

Recently, a new version of the seismic design chapter of the Manual of Civil Structures Design of CFE (CDS-MDOC-CFE) was released. CDS-MDOC-CFE was finished in 2008 and officially it's mandatory since 2010. Like ASCE-7 (2005), CDS-MOC-CFE is a very comprehensive code that specifically addresses the design of structural systems of electrical infrastructures (buildings, dams, industrial facilities, chimneys, silos, pipelines, tanks and deposits, vessels, bridges, inverted pendulums, retaining walls, etc.) to such hazards as earthquakes and winds. Modern technologies, such as base isolation and passive energy dissipation, are now addressed, along with the use of modern materials like carbon fibers and composites. Specialized topics, including soil-structure interaction, the monitoring of structures, and the evaluation and rehabilitation of existing structures, are also covered.

A major update from the 1993 version was performed in the section for the seismic design of building structures. This paper summarizes the most relevant changes of this building code and their relation to research efforts conducted within Mexico and worldwide to improve the seismic design of building structures. One goal is to make the guidelines as transparent as possible to users, so that the design process will be clearer to structural engineers.

Additionally, in this paper, the functionality of the PRODISIS program is shown. The PRODISIS program was developed as a complement of the CDS-MDOC-CFE 2008, in order to get the peak rock acceleration. Nevertheless, it has more options like getting the seismic design spectra, generating synthetic accelerograms and getting the seismic coefficient for the simplified method.