Eurocode 8: Seismic Design of Buildings - Worked examples
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Worked examples

Support to the implementation, harmonization and further development of the Eurocodes

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Abstract:
This document is a Technical Report with worked examples for seismic design of buildings following the Eurocodes. It summarizes important points of the Eurocode 8 for the seismic design of concrete and steel buildings including foundations utilizing a common generic building as a basis. An overview of EN 1998 with focus on the performance requirements and compliance criteria for structures, ground conditions and seismic actions is presented at the first section. An introduction to the example reinforced concrete building with its geometrical and material properties as well as the main
assumptions for analysis and the detailed structural analysis calculations are presented in the second chapter of the report. Specific rules for design of the building for ductility and the design of concrete foundation elements are presented in the following chapters. For the sake of completeness, the details of design and detailing of the same example as a steel building with three different configurations, namely; with (i) steel moment resisting frames, (ii) composite steel concrete moment resisting frames, and (iii) composite steel concrete frames with eccentric and concentric bracings is also presented afterwards. Key concepts of base isolation is summarized by utilizing the example building. Seismic performance assessment and retrofitting according to EN 1998-Part 3 is explained as the last past of the report. The reinforced concrete/steel building as worked example analyzed in this report was prepared and presented at the workshop “Eurocode 8: Seismic Design of Buildings” that was held on 10-11 February 2011 in Lisbon, Portugal. The workshop was organized by JRC with the support of DG ENTR and CEN and in collaboration with CEN/TC250/Sub-Committee 8 and the National Laboratory for Structural Design (Laboratorio Nacional de Engenharia Civil - LNEC, Lisbon). The document is part of the Report Series ‘Support to the implementation, harmonization and further development of the Eurocodes’ prepared by JRC in collaboration with DG ENTR and CEN/TC250 “Structural Eurocodes”.

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