

4.1 Eurocode 8: Seismic Design of Buildings (European Union)

OECD GP Activity	UN SF Activity	UN SD Goals / Targets
4. Natech prevention: consideration of natural hazards in design and layout	3. Investing in disaster risk reduction for resilience	3.D Strengthen the capacity of all countries ... for early warning, risk reduction and management of national and global health risks

Classification according to OECD Guiding Principles, UN Sendai Framework Priorities/Activities, and UN SDGs and Targets

Figure 1: Example of damages to a building caused by liquefaction of the foundation soil



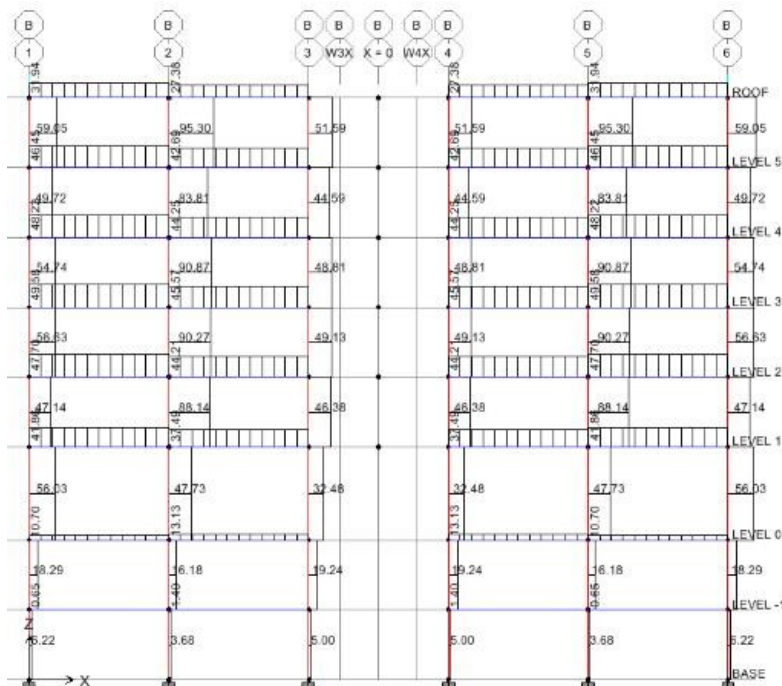
Source: © JRC, 2011: EUR 25204 EN - 2012

Figure 2: Example of pounding of adjacent buildings in Mexico City in 1985 due to seismic soil-structure-interactions



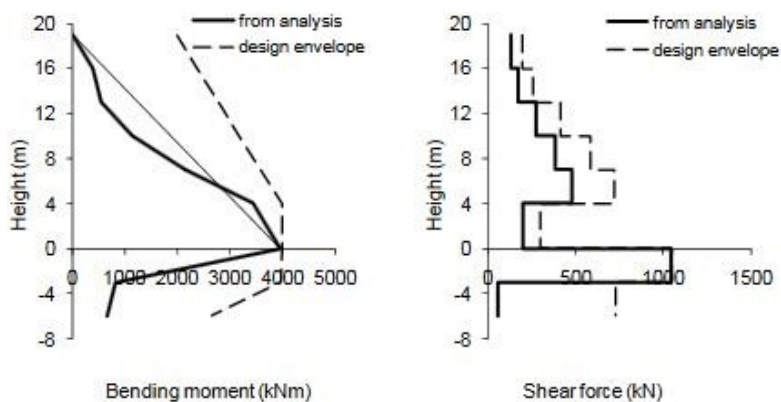
Source: © JRC, 2011: EUR 25204 EN – 2012

Figure 3: Shear forces for a given example by modal response spectrum analysis



Source: © JRC, 2011: EUR 25204 EN - 2012

Figure 4: Design envelop for bending moment and shear of an example wall



Source: © JRC, 2011: EUR 25204 EN - 2012

Short Facts:

Governance approach: Codes
Source: Joint Research Center of the European Commission
Entry into force: 2006
Targeted Stakeholders: Construcion sector, national authorities and other stakeholders
Scope of applicability: Installations, constructions

Natural Hazard(s) Considered:

- Seismic activity
- Climate change:** Not relevant

Description

The Eurocodes are a set of ten European standards (EN 1990-EN 1999) providing common rules to check the strength and stability of building structures against extreme stress like earthquakes and fire. They were published in 2007. Eurocode 8 specifies the design of structures for earthquake

resistance. It was complemented by a workshop held in February 2011 in Lisbon, followed by a technical report with functional examples.

Eurocode 8, denoted in general by EN-1998, applies to the design and construction of buildings and civil engineering works in seismically active regions. It covers common building structures (not included are special structures, such as nuclear power plants, large dams or offshore facilities).

Eurocode 8 is composed of six parts that cover different types of constructions or subjects:

1. Part 1: General regulations, seismic actions and rules for buildings
2. Part 2: Bridges
3. Part 3: Assessment and retrofitting of buildings
4. Part 4: Silos, tanks, and pipelines
5. Part 5: Foundation, retaining structures, and geotechnical aspects
6. Part 6: Towers, masts and chimneys

Part 1 is the most important part, since it contains the basic concepts, the definition of the seismic action, and the rules for buildings made from different structural materials. It is further subdivided into sections that focus on basic performance and compliance criteria, rules for the presentation of seismic actions, general design rules for various structural materials and elements (e.g. steel, concrete, composite steel-concrete, timber) and fundamental requirements for the base isolation of buildings.

Link/Contact:

http://eurocodes.jrc.ec.europa.eu/doc/WS_335/report/EC8_Seismic_Design_of_Buildings-Worked_examples.pdf

http://eurocodes.jrc.ec.europa.eu/showpage.php?id=335_2



Comments by the UN/OECD Natech-Steering Group:

The focus of this code is the safety of buildings. In application it needs to check whether the (additional) hazards of installations storing or processing hazardous substances are considered.

Imprint

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