Introduction to EN 1991
(Eurocode 1: Actions on structures)

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Planning and Public Works - GREECE
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LINKS BETWEEN THE EUROCODES

EN 1990

EN 1991

EN 1992  EN 1993  EN 1994
EN 1995  EN 1996  EN 1999

Structural safety, serviceability and durability

Actions on structures

Design and detailing

Geotechnical and Seismic design
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Phase</th>
<th>CEN/TC250 Chairman</th>
<th>CEN/TC250/SC1 Chairman</th>
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<tr>
<td>1980 's</td>
<td>Technical preparation under EC Steering Committee</td>
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<td></td>
<td>• Implementation</td>
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<td>• Maintenance</td>
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<td>• Harmonization</td>
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<td>• Dissemination</td>
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<td></td>
<td>• Further development</td>
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<tr>
<td>2008 - ?</td>
<td></td>
<td>Prof. Calgaro</td>
<td>Dr Malakatas</td>
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## Parts and implementation of EN 1991

<table>
<thead>
<tr>
<th>Part of Eurocode 1: Actions on structures</th>
<th>Title (Subject)</th>
<th>Issued</th>
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<tbody>
<tr>
<td>EN 1991-1-1 General actions – Densities, self-weight, imposed loads for buildings</td>
<td>April 2002</td>
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<td>EN 1991-1-2 General actions – Actions on structures exposed to fire</td>
<td>November 2002</td>
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<td>EN 1991-1-3 General actions – Snow loads</td>
<td>July 2003</td>
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<td>EN 1991-1-4 General actions – Wind actions</td>
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<td>EN 1991-1-5 General actions – Thermal actions</td>
<td>November 2003</td>
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<td>EN 1991-1-6 General actions – Actions during execution</td>
<td>June 2005</td>
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<td>EN 1991-1-7 General actions – Accidental actions</td>
<td>July 2006</td>
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<td>EN 1991-2 Traffic loads on bridges</td>
<td>September 2003</td>
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<td>EN 1991-3 Actions induced by cranes and machinery</td>
<td>July 2006</td>
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<tr>
<td>EN 1991-4 Silos and tanks</td>
<td>May 2006</td>
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Partitioning of the NDPs among the Eurocodes
### Types of NDPs in the Eurocodes

**Type 1**: Value(s) of (a) parameter(s).
**Type 2**: Reference to some set of values – table(s).
**Type 3**: Acceptance of the recommended procedure, choice of calculation approach, when alternatives are given, or introduction of a new procedure.
**Type 4**: Country specific data (geographical, climatic, etc.).
**Type 5**: Optional National chart(s) or table(s) of a parameter.
**Type 6**: Diagram(s).
**Type 7**: References to non-contradictory complementary information to assist the user to apply the Eurocodes.
**Type 8**: Decisions on the application of informative annexes.
**Type 9**: Provision of further, more detailed information.
**Type 10**: Reference to information

<table>
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<tr>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
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<th>Type 5</th>
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<th>Type 7</th>
<th>Type 8</th>
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EN 1991-1-1: Densities, self-weight, imposed loads for buildings

- Forward
- Section 1 – General
- Section 2 – Classification of actions
- Section 3 – Design situations
- Section 4 – Densities of construction and stored materials
- Section 5 – Self-weight of construction works
- Section 6 – Imposed loads on buildings
- Annex A (informative) – Tables for nominal density of construction materials, and nominal density and angles of repose for stored materials.
- Annex B (informative) – Vehicle barriers and parapets for car parks
EN 1991-1-2: Actions on structures exposed to fire

- Forward
- Section 1 – General
- Section 2 – Structural Fire design procedure
- Section 3 – Thermal actions for temperature analysis
- Section 4 – Mechanical actions for temperature analysis
- Annex A (informative) – Parametric temperature-time curves
- Annex B (informative) – Thermal actions for external members – Simplified calculation method
- Annex C (informative) – Localised fires
- Annex D (informative) – Advanced fire models
- Annex E (informative) – Fire load densities
- Annex F (informative) – Equivalent time of fire exposure
- Annex G (informative) – Configuration factor
EN 1991-1-2: Actions on structures exposed to fire (cont.)

Figure 1 — Alternative design procedures
EN 1991-1-3: Snow loads

- Forward
- Section 1 – General
- Section 2 – Classification of actions
- Section 3 – Design situations
- Section 4 – Snow load on the ground
- Section 5 – Snow load on roofs
- Section 6 – Local effects
EN 1991-1-3: Snow loads (cont.)

- **Annex A** *(normative)* – Design situations and load arrangements to be used for different locations
- **Annex B** *(normative)* – Snow load shape coefficients for exceptional snow drifts
- **Annex C** *(informative)* – European Ground Snow Load Maps
- **Annex D** *(informative)* – Adjustment of the ground snow load according to the return period
- **Annex E** *(informative)* – Bulk weight density of snow
Greece: Snow Load at Sea Level
EN 1991-1-4: Wind actions

- Forward
- Section 1 – General
- Section 2 – Design situations
- Section 3 – Modelling of wind actions
- Section 4 – Wind velocity and velocity pressure
- Section 5 – Wind actions
- Section 6 – Structural factor $c_s c_d$
- Section 7 – Pressure and force coefficients
- Section 8 – Wind actions on bridges
EN 1991-1-4: Wind actions (cont.)

NOTE For values exceeding 1.1 the detailed procedure given in 6.3 may be applied (approved minimum value of $c_s c_d = 0.85$)
NOTE For values exceeding 1.1 the detailed procedure given in 6.3 may be applied (approved minimum value of $c_s c_d = 0.85$)
EN 1991-1-4: Wind actions (cont.)

- Annex A (informative) – Terrain effects
- Annex B (informative) – Procedure 1 for determining the structural factor $C_s C_d$
- Annex C (informative)