

### Replacement of British Structural design codes by Eurocodes

Structural design codes include codes for loading and structural design in different materials. In the UK the principal codes used in the design of facades are BS 6399 for loads and BS 8118 for the structural design of aluminium.

UK structural design codes were withdrawn by BSi at the end of March 2010 and replaced with Eurocodes. Use of Eurocodes requires reference to the appropriate National Annex in addition to the text of the Eurocode. The UK structural design codes are likely to continue in use for some time but they will not be updated by BSi.

The CWCT Standard for Systemised Building Envelopes makes a number of references to structural design codes. This Technical Update identifies the references to structural design codes in the CWCT Standard and gives the corresponding Eurocode reference. Comments are also given on differences in the Eurocode and in particular omissions that will occur if the Eurocode is used in place of the UK Code.

#### Clause

Clause in CWCT Standard	Reference to UK Structural design code	Equivalent Eurocode
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#### Part 2

<b>2.2.1</b>	The clause refers to BS 6399-2 for calculation of wind loads.	BS EN 1991-1-4 is the relevant Eurocode. It can generally be used in place of BS 6399-2 however an advisory note in the National Annex warns that the pressure coefficients for roofs in BS EN 1991-1-4 give different results compared to BS 6399-2 and recommends using the pressure coefficients in BS6399-2.
<b>2.2.3</b>	The clause states that under normal circumstances there shall be no horizontal zoning of wind pressure to give lower design loads on the envelope nearer the ground.  An advisory note refers to BS 6399-2 to justify this advice.	BS EN 1991-1-4 differs from BS 6399-2 as it permits zoning for cladding but only for positive pressures on the windward face of the building. This change is supported by results of wind tunnel tests.  The clause in the CWCT Standard remains valid as normally cladding design is governed by negative pressures and zoning of horizontal positive pressures is seldom of benefit.
<b>2.3.3</b>	The clause refers to BS 6399-1 for horizontal occupancy loads. The clause states that the load is to be applied as a line load 1100mm above finished floor level, or a distributed or point load on infill panels below this level. Reference must be made to BS 6399-1 for values of load.	BS EN 1991-1-1 is the relevant Eurocode.  BS EN 1991-1-1 gives horizontal occupancy load in terms of a line load at the barrier height and the National Annex gives the same values as BS 6399 1.  BS EN 1991-1-1 Does not give occupancy load as a distributed or point load on infill below the barrier level. It is recommended that distributed and point loads given in BS6399-1 should be retained. It is understood that a revision to BS 6180 will also do this.

<b>2.3.3</b>	The clause requires a vertical occupancy load on horizontal ledges and framing members. The appropriate value of the load is given in the CWCT Standard and an advisory note explains that the requirement comes from BS 6399-1.	BS EN 1991-1-1 does not give vertical occupancy loads. However the requirement of the CWCT Standard remains as this type of load is realistic.
<b>2.3.3</b>	The clause refers to BS 6399-3 for calculation of snow loads.	BS EN 1991-1-3 is the relevant Eurocode.
<b>Part 3</b>		
<b>3.5.2.2</b>	The clause gives deflection limits. The advisory note refers to BS8118 as the basis for the deflection limit for spans over 7.5m.	The relevant Eurocode is BS EN 1999-1-1. This document does not give deflection limits and states that appropriate deflection limits should be agreed for a project.  PD 6702-1 provides guidance on the use of BS EN 1999 and gives the same deflection limits as BS 8118.
<b>3.5.2.4 and 3.5.2.5</b>	These clauses give deflection limits for framing members supporting glazing.  The advisory note explains that BS 8118 would give different limits.	The relevant Eurocode is BS EN 1999-1-1. This document does not give deflection limits and states that appropriate deflection limits should be agreed for a project.  PD 6702-1 provides guidance on the use of BS EN 1999 and gives the same deflection limits as BS 8118.
<b>Part 7</b>		
<b>7.2.7.1</b>	The advisory note refers to BS 8118-2 for durability of aluminium alloy components	The relevant Eurocode is BS EN 1999-1-1. The Eurocode follows similar advice but in somewhat greater detail.

#### List of Standards

BS 6399-1 Loading for buildings. Code of practice for dead and imposed loads

BS 6399-2 Loading for buildings. Code of practice for wind loads

BS 6399-3 Loading for buildings. Code of practice for imposed roof loads

BS EN 1991-1-1 Eurocode 1. Actions on structures. General actions. Densities, self-weight, imposed loads for buildings

NA to BS EN 1991-1-1 UK National Annex to Eurocode 1: Actions on structures. General actions. Densities, self-weight, imposed loads for buildings

BS EN 1991-1-3 Eurocode 1. Actions on structures. General actions. Snow loads

NA to BS EN 1991-1-3 UK National Annex to Eurocode 1. Actions on structures. General actions. Snow loads

BS EN 1991-1-4 Eurocode 1. Actions on structures. General actions. Wind actions

NA to BS EN 1991-1-4 UK National Annex to Eurocode 1. Actions on structures. General actions. Wind actions

BS 8118-1 Structural use of aluminium. Code of practice for design

BS 8118-2 Structural use of aluminium. Specification for materials, workmanship and protection

BS EN 1999-1-1 Eurocode 9. Design of aluminium structures. General structural rules

NA to BS EN 1999-1-1 UK National Annex to Eurocode 9. Design of aluminium structures. General structural rules

PD 6702-1 Structural use of aluminium. Recommendations for the design of aluminium structures to BS EN 1999