New and revised codes & standards

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BS EN PUBLICATIONS

BS EN 13381-4:2013
Test methods for determining the contribution to the fire resistance of structural members. Applied passive protection products to steel members
Supersedes DD ENV 13381-4:2002

BS EN 13381-8:2013
Test methods for determining the contribution to the fire resistance of structural members. Applied reactive protection to steel members
Supersedes BS EN 13381-8:2010

PUBLISHED DOCUMENTS

PD CEN/TR 10261:2013
Iron and steel. European standards for the determination of chemical composition.
No current standard is superseded

UPDATED BRITISH STANDARDS

PD 6705-2:2010+A1:2013
Structural use of steel and aluminium. Recommendations for the execution of steel bridges to BS EN 1090-2.
AMENDMENT 1

BS EN 1998-1:2004+A1:2013
Eurocode 8: Design of structures for earthquake resistance. General rules, seismic actions and rules for buildings
AMENDMENT 1

CEN EUROPEAN STANDARDS

EN 13381-4:2013
Test methods for determining the contribution to the fire resistance of structural members. Applied passive protection to steel members

EN 13381-8:2013
Test methods for determining the contribution to the fire resistance of structural members. Applied reactive protection to steel members

DRAFTS FOR PUBLIC COMMENT

13/30277428 DC
BS EN 14399-2 High-strength structural bolting assemblies for preloading. Suitability for preloading

13/30277431 DC
BS EN 14399-3 High-strength structural bolting assemblies for preloading. System HR. Hexagon bolt and nut assemblies

13/30277434 DC
BS EN 14399-4 High-strength structural bolting assemblies for preloading. System HV. Hexagon bolt and nut assemblies

13/30277437 DC
BS EN 14399-5 High-strength structural bolting assemblies for preloading. Plain washers

13/30277440 DC
BS EN 14399-6 High-strength structural bolting assemblies for preloading. Plain chamfered washers.

ISO PUBLICATIONS

ISO 3452-1:2013
(Edition 2)
Non-destructive testing. Penetrant testing. General principles
Will be implemented as an identical British Standard

ISO 5951:2013
(Edition 5)
Hot-rolled steel sheet of higher yield strength with improved formability
Will not be implemented as a British Standard

AD 376
Fire design of concrete-filled hollow steel columns to Eurocode 4

Depending on the constructional details, Section 4 of BS EN 1994-1-2 [1] presents three alternative design procedures for fire design:
- Tabulated data for specific types of structural members
- Simple calculation models for specific types of structural members
- Advanced calculation models.

For the fire design of concrete-filled hollow steel columns, clause 4.3.5 describes simple calculation models and clause 4.3.5.3 addresses unprotected concrete-filled hollow sections: the designer is directed to Annex H for the simple calculation model. However, the UK National Annex (NA to BS EN 1994-1-2:2005) states that Annex H of the code should not be used. This Advisory Desk note provides some background on Annex H and an update on the status of alternative guidance.

Annex H is informative and puts forward a method for calculating the design axial buckling load for concrete-filled hollow steel columns at elevated temperatures. A simple method is also given to account for the effects of eccentricity of the axial load.

Annex H follows an old method of calculating axial resistance of composite columns at ambient temperature. For fire resistance calculations, this method is particularly difficult to implement, as the composite cross section must be divided into many blocks and the calculations involve many iterations. Each round of iteration needs to use the detailed material non-linear stress-strain relationships of steel and concrete at different temperatures, for each block in the cross section.

Annex H allows for the effect of small eccentricities in axial load by introducing two modification factors, one as a function of the reinforcement ratio and one as a function of eccentricity and column dimensions.

A CIDECT research project (15Q) assessed the Annex H calculation method and found that it can be grossly inaccurate. For this reason, the UK National Annex (published in 2008), states in clause NA.3 that Annex H should not be used.

Instead, it is recommended that the column design method for the fire limit state should be consistent with that at ambient temperature [2], but a reduction in strength and stiffness of the steel and concrete should be incorporated. Such a method has been implemented in the FIRESOFT software package developed by the University of Manchester for Tata Steel. FIRESOFT software and an associated quality assurance document, giving details of methodology and validation testing are available free of charge from Tata Steel. The software and document have the status of Non-Contradictory Complementary Information (NCCI).

The Tata Steel design guide for concrete-filled structural hollow section columns is currently being updated and will be made available from http://www.steel-ncci.co.uk/ in due course.

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1. BS EN 1994-1-2:2005 (Incorporating corrigendum July 2008) Eurocode 4 - Design of composite steel and concrete structures - Part 1-2: General rules – Structural fire design
2. Designers' Guide to EN 1994-1-1; Eurocode 4: Design of composite steel and concrete structures; Part 1.1: General rules and rules for buildings; R P Johnson and D Anderson; Thomas Telford Publishing.