

The combined design actions to design the splice are:

$$M_{y,Ed} + M_{z,Ed} + M_{z,LTB,sp}$$

Beam-columns subjected to axial compression and bending moments:

The second order effects described in Items 1 to 4 above need to be considered for elements subjected to [axial compression and bending](#). The additional second order moments due to amplification of the applied moment about the axis 'i' by the axial force are given by:

$$M_{i,Amp,max} = (k_{amp,i} - 1) \cdot C_{mi} \cdot M_{i,Ed,max}$$

where:

$M_{i,Ed,max}$ is the maximum design bending moment along the length L between points of inflexion (about axis 'i');

C_{mi} is the equivalent uniform moment factor, given by EN 1993-1-1 Table B.3 about axis 'i' (C_{my} or C_{mz}).

The second order moment at the splice position between points of inflexion ($M_{i,Amp,sp}$) is given by:

$$M_{i,Amp,sp} = \sin\left(\pi \cdot \frac{x}{L}\right) \cdot M_{i,Amp,max}$$

The combined design actions at the splice position are:

$$1: N_{Ed} + M_{y,Ed} + M_{z,Ed} + M_{yFB,sp} + M_{y,Amp,sp} + M_{z,Amp,sp} + M_{z,LTB,sp}$$

$$1: N_{Ed} + M_{y,Ed} + M_{z,Ed} + M_{zFB,sp} + M_{y,Amp,sp} + M_{z,Amp,sp} + M_{z,LTB,sp}$$

The splice should be verified for both combinations.

$$\text{If } \frac{N_{Ed}}{N_{b,Rd,i}} + \frac{M_{Ed}}{M_{b,Rd}} > 0.9 \text{ then:}$$

$M_{i,FB,sp}$ should be calculated as if $N_{Ed} > 0.9N_{b,Rd,i}$ as given above for columns, and

$M_{z,LTB,sp}$ should be calculated as if $M_{Ed} > 0.9 M_{b,Rd}$ as given above for unrestrained beams.

Complementary information

Further detail and calculation examples are provided in References 1 and 2. Details of the studies completed to establish the minimum values of $e_{p\delta_i}$ and $M_{z,LTB,max}$ referred to will be described in an NSC paper to appear at a later date.

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References

- 1 Henderson R, *Bearing splice in a column*, NSC, March 2020
- 2 Pimentel R, *Design of beam-column splice connections according to Eurocode 3*, NSC, October 2020

AD 486: NSSS Annex J amendment

The [Sustainability Specification](#) for structural steelwork, which is the new Annex J to the National Structural Steelwork Specification for Building Construction (NSSS), comes into force on 1st June 2022.

Before Annex J goes 'live', BCSA has amended the first paragraph of clause J.3.4.1 relating to fabrication waste management. The revised clause reads:

Where possible, the Steelwork Contractor should consider ordering sections "cut to length" to minimise off-cuts either by the mill, the Stockholder or the Steelwork Contractor. Alternatively, if stock lengths are ordered, these should be used efficiently by the Steelwork Contractor

to minimise waste. Splice locations in steel members, where possible, should be coordinated to fall within standard stock length sizes.

The intention is to not preferentially source sections via a particular route rather to encourage suppliers and Steelwork Contractors to optimise section lengths and to minimise off-cuts, for example using [section](#) nesting software.

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New and revised codes and standards

From BSI Updates May 2022

BS EN PUBLICATIONS

BS EN ISO 9712:2022

Non-destructive testing. Qualification and certification of NDT personnel
supersedes BS EN ISO 9712:2012

BS EN 15942:2021

Sustainability of construction works. Environmental product declarations. Communication format business-to-business
supersedes BS EN 15942:2011

BS IMPLEMENTATIONS

BS ISO 7788:2021

Steel. Surface finish of hot-rolled plates and wide flats. Delivery requirements
no current standard is superseded

BS ISO 22058:2022

Construction procurement. Guidance on strategy and tactics
no current standard is superseded

CORRIGENDA TO BRITISH STANDARDS

BS EN ISO 2566-1:2021

Steel. Conversion of elongation values. Carbon and low-alloy steels
Corrigendum, March 2022

NEW WORK STARTED

EN 1090-2:2018/A1

Execution of steel structures and aluminium structures. Technical requirements for steel structures
will supersede none

DRAFT BRITISH STANDARDS FOR PUBLIC COMMENT – ADOPTIONS

22/30438666 DC

BS ISO 24084 Curtain walling. Inter-storey displacement resistance. Test method
Comments for the above document were required by 23 May, 2022

22/30441531 DC

BS EN 12152 Curtain walling. Air permeability. Performance requirements and classification
Comments for the above document were required by 24 May, 2022

ISO PUBLICATIONS

ISO 9016:2022

Destructive tests on welds in metallic materials. Impact tests. Test specimen location, notch orientation and examination
Will be implemented as an identical British Standard

ISO 20710-1:2022

Fire safety engineering. Active fire protection systems. General principles
Will be implemented as an identical British Standard

ISO 22057:2022

Sustainability in buildings and civil engineering works. Data templates for the use of environmental product declarations (EPDs) for construction products in building information modelling (BIM)
Will be implemented as an identical British Standard