7 ACCURACY OF FABRICATION

7.1 GENERAL

7.1.1 Scope

1 This Part deals with the accuracy of fabrication of structural steel sections.

7.1.2 References

1 The following standards are referred to in this Part:

BS 4.....Structural steel sections
BS 4848.....Hot rolled structural steel sections (EN 10210)
BS 5950.....Structural use of steelwork in buildings (EN-1993-1- Eurocode 3)

7.2 PERMITTED DEVIATIONS

7.2.1 Permitted Deviations In Rolled Components After Fabrication

1 Permitted deviations in rolled components after fabrication (including structural hollow sections) are given in Table 7.1

Table 7.1
Permitted Deviations in Rolled Components After Fabrication

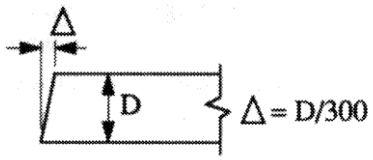
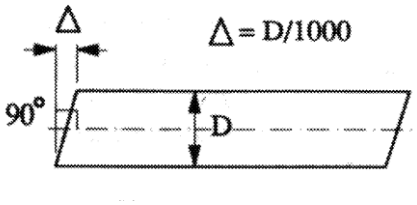
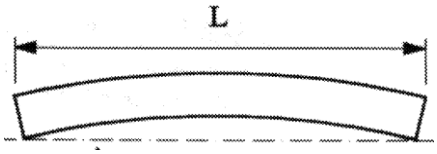
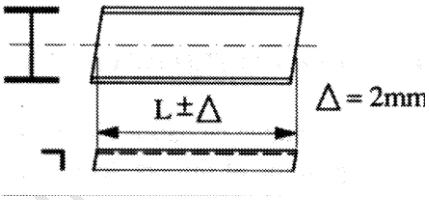
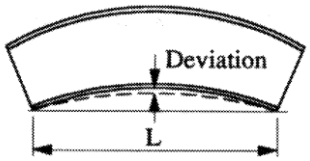
Item	Component	Deviation
1	Cross Section after Fabrication	In accordance with the tolerances specified in BS 4 or BS 4848 as appropriate.
2	Squareness of Ends Not Prepared for Bearing See also clause 4.4.3-1.	 Plan or Elevation of End
3	Squareness of Ends Prepared for Bearing Prepare ends with respect to the longitudinal axis of the member. See also Clauses 4.4.3-2 and 4.4.3-3.	 Plan or Elevation

Table 7.1 (Continued)

Permitted Deviations in Rolled Components After Fabrication

Item	Component	Deviation
4	Straightness on Both Axes	 Δ = L/1000 or 3mm whichever is the greater
5	Length Length after cutting, measured on the centre line of the section of angles.	
6	Curved or Cambered Deviation from intended curve or camber at mid-length of curved portion when measured with web horizontal.	 Deviation = L/1000 or 6mm whichever is greater

7.2.2 Permitted Deviations for Elements of Fabricated Members

1 Permitted deviations for elements of fabricated members are given in Table 7.2

Table 7.2
Permitted Deviations for Elements of Fabricated Members

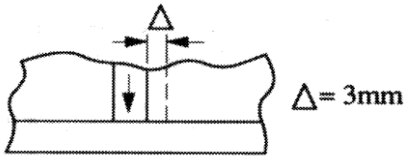
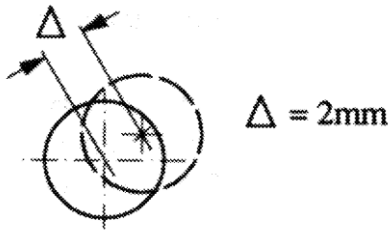
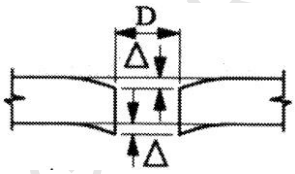
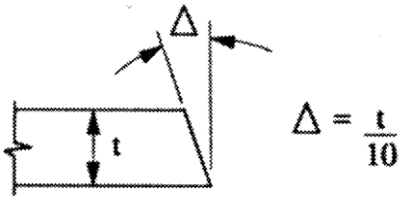
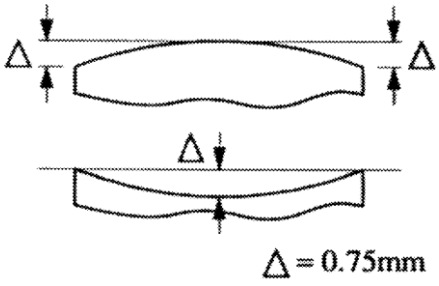
Item	Component	Deviation
1	Position of Fittings Fittings and components whose location is crucial to the force path in the structure, the deviation from the intended position shall not exceed Δ.	

Table 7.2 (Continued)
Permitted Deviations for Elements of Fabricated Members

Item	Component	Deviation
2	Position of Holes The deviation from the intended position of an isolated hole, also a group of holes, relative to each other shall not exceed Δ	
3	Punched Holes The distortion caused by a punched hole shall not exceed Δ (see clause 4.6.3)	 Δ = D/10 or 1mm whichever is the greater
4	Sheared or Cropped Edges of Plates or Angle The deviation from a 90° edge shall not exceed Δ	
5	Flatness Where bearing is specified, the flatness shall be such that when measured against a straight edge not exceeding one metre long, which is laid against the full bearing surface in any direction, the gap does not exceed Δ	

7.2.3 Permitted Deviations In Plate Girder Sections

1 Permitted deviations in plate girder sections are given in Table 7.3

Table 7.3
Permitted Deviations In Plate Girder Sections

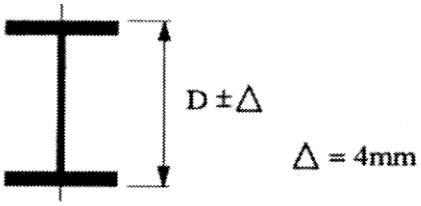
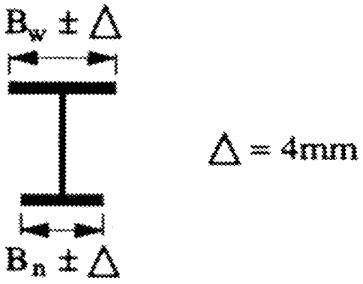
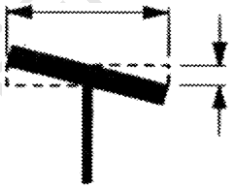
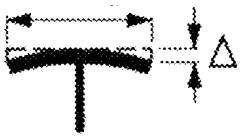
Item	Component	Deviation
1	Depth Depth on centre Line	
2	Flange Width Width of B_w or B_n	
3	Squareness of Section Out of Squareness of Flanges.	B Flange width  Δ Δ=B/100 or 3mm whichever is greater
4	Web Eccentricity Intended position of web from one edge of flange.	 Δ = 5mm
5	Flanges Out of flatness	B Flange width  Δ = B/100 or 3mm whichever is the greater

Table 7.3 (Continued)

Permitted Deviations In Plate Girder Sections

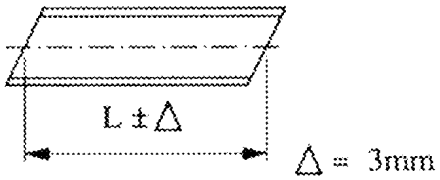
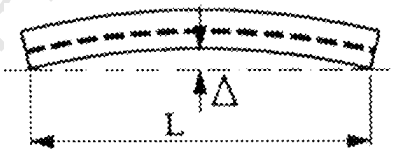
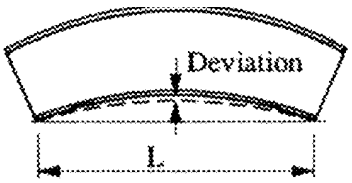
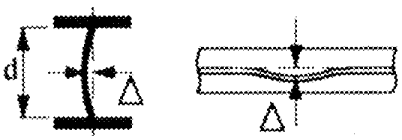
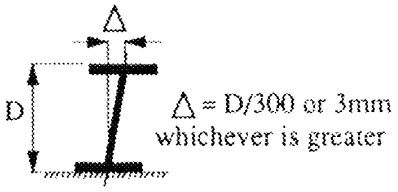
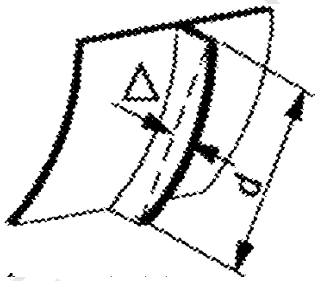
Item	Component	Deviation
6	Top Flange of Crane Girder Out of flatness where the rail seats.	w = Rail width + 20 mm 
7	Length Length on centre line	
8	Flange Straightness Straightness of individual flanges	 Δ = L/1000 or 3mm whichever is the greater
9	Curved or Cambered Deviation from intended curve or camber at mid-length of curved portion, when measured with the web horizontal.	 Deviation = l/1000 or 6mm whichever is the greater
10	Web Distortion Distortion on web depth or gauge length.	gauge length = web depth  Δ = d/150 or 3mm whichever is the greater

Table 7.3 (Continued)

Permitted Deviations In Plate Girder Sections

Item	Component	Deviation
11	Cross Section at Bearings Squareness of flanges to web	
12	Web Stiffeners Straightness of stiffener out of plane after welding.	 Δ = d/500 or 3mm whichever is greater
13	Web Stiffeners Straightness of stiffener in plane after welding.	 Δ = d/250 or 3mm whichever is greater

7.2.4 Permitted Deviations in Box Sections

1 Permitted deviations in box sections are given in table 7.4

Table 7.4

Permitted Deviations in Box Sections

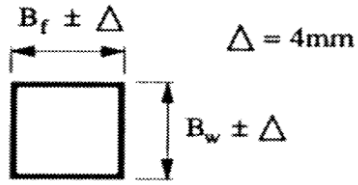
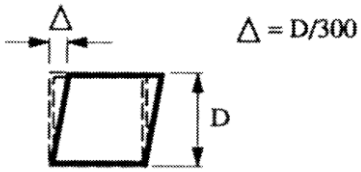
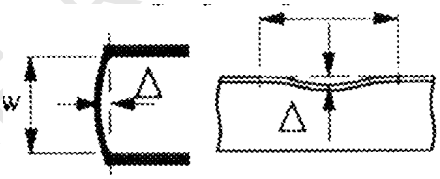
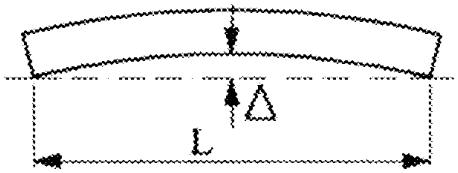
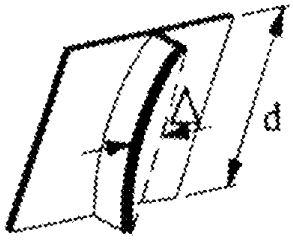
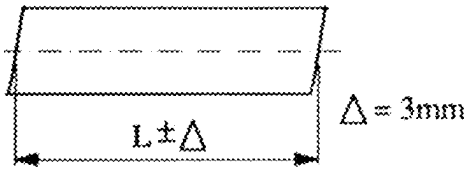
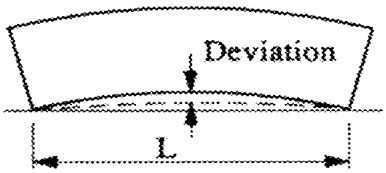
Item	Component	Deviation
1	Plate Widths Width of B_f or B_w	
2	Squareness Squareness at diaphragm positions	
3	Plate Distortion Distortion on width or gauge length.	gauge length = width, w  Δ = w/150 or 3mm whichever is the greater
4	Web or Flange Straightness Straightness of individual web or flanges.	 Δ = L/1000 or 3mm whichever is the greater

Table 7.4 (Continued)

Permitted Deviations in Box Sections

Item	Component	Deviation
5	Web Stiffners Straightness in plane with plate after welding.	 Δ = d/500 or 3mm whichever is the greater
6	Web Stiffners Straightness out of plane to plate after welding.	 Δ = d/250 or 3mm whichever is the greater
7	Length Length on centre line.	
8	Curved or Cambered Deviation from intended curve or camber at mid-length of curved portion when measured with the uncambered side horizontal.	 Deviation = L/1000 or 6mm whichever is the greater

END OF PART