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CORRIGENDA TO STEEL CONNECTIONS SERIES 1 AND 2 Version 2

This Corrigenda lists all known typographical errors and clarifications to the Australian Steel Institute publications on connections issued in 2007 (Series 1) and 2009 (Series 2) as at 31 December 2011.

Publications in Connections Series Part 1 are:

Handbook 1: Design of Structural Steel Connections

Design Guide 1: Bolting in Structural Steel Connections

Design Guide 2: Welding in Structural Steel Connections

Design Guide 3: Web Side Plate Connections

Design Guide 4: Flexible End Plate Connections

Design Guide 5: Angle Cleat Connections

Design Guide 6: Seated Connections

Design Capacity Tables for Structural Steel Volume 3: Simple Connections—Open Sections

Publications in Connections Series Part 2 are:

Design Guide 10: Bolted Moment End Plate Beam Splice Connections

Design Guide 11: Welded Beam to Column Moment Connections

Design Guide 12: Bolted Moment End Plate to Column Moment Connections

Design Guide 13: Splice Connections

Design Capacity Tables for Structural Steel Volume 4: Rigid Connections—Open Sections

Design Guide 7 was issued separately in 2011—Design Guide 7: Pinned Base Place Connections for Columns.

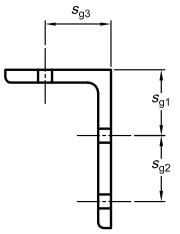
It is intended to issue updated versions of this Corrigenda in the light of comments received. Each publication has a comment form in an Appendix and users of the publications are encouraged to submit comments using this form.

HANDBOOK 1

Page 35 EQN 3.9.19 has an incorrect "1+" in the second bracket. The correct equation is:

$$Z_b = \frac{2n_p}{\sqrt{\left[1+\frac{2e/s_g}{1+\frac{1}{3}\frac{n_p+1}{n_p-1}\left[\frac{1}{s_{pg}}\right]^2}\right]^2+\left[\frac{2e/(s_{pg}s_g)}{1+\frac{1}{3}\frac{n_p+1}{n_p-1}\left[\frac{1}{s_{pg}}\right]^2}\right]^2}}$$

Page 78 Delete Table 28 and substitute new Table 28.



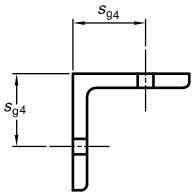


TABLE 28

GAUGE LINES FOR ANGLES

Nominal leg length	s_{g1}	s_{g2}	s_{g3}	Bolt (max.)
200	65(75)	70(75)	100	M24
150	50(55)*	60(55)*	75*	M24
125	45	50	65(62)	M20

Nominal leg length	s_{g4}	Bolt (max.)
100	50*	M20
90	45	M20
75	40(38)	M20
65	35(32)	M16
55	30(28)	M16
50	30(25)	M16
45	25(22)	M12
40	25(20)	M12

*NOTE: ANGLE CLEAT CONNECTIONS IN DESIGN GUIDE 5 USE

s_{g1} = 55 s_{g3} = 65

s_{g2} = 70 s_{g4} = 65

NOTES:

1 The gauges given are suitable for general use in member detailing. When angles are used as components in connections, gauge lines may be varied from the values given above in order to suit a particular connection, as noted for angle cleat connection.

2 The bolt diameters listed are the maximum that can be accommodated on the thickest angles of each leg length, using either:

(a) high strength structural bolts with washers to AS/NZS 1252; or

(b) commercial bolts to AS/NZS 1111 with 'large series' washers to AS 1237 (now superseded).

For thinner legs and commercial bolts with 'normal series' washers, it may be possible to accommodate a larger bolt diameter.

3 Current detailing practice places the gauge on the centre of the angle leg. The values listed in ( ) indicate gauge lines used in detailing software and 3D modelling software on this basis to allow for simplified data input and averting potential problems of orientation.

Page 85 In Figure 50, the formula for A_{gv} for the tension force case should read as follows: $A_{gv} = 2l_v t_i$

HANDBOOK 1 (*contd*)

Page 89

Second line, after "(Figure 53)" add new text:

"ignoring fillet areas on each side of the equation which cancel each other"

In equation for S'_x for holed section add extra term to give

$$S'_x \text{ holed section} = b_f t_f \left(d_1 - y_{bp} + t_f/2\right) + \left(d_1 - y_{bp}\right)^2 t_w/2 + \frac{y_{bp}^2 t_w}{2} + \left(b_f - n_h d_h\right) t_f \left(y_{bp} + t_f/2\right) + 0.4292 r^2 \left(d_1 - 0.446r\right)$$

Page 91

Amend values for $\phi M'_{SX}$ in Table 32A as follows:

Designation	$\phi M'_{SX}$ kNm
610UB125	927*
113	829*
101	782*
530UB92.4	590
82.0	516
460UB82.1	450
74.6	407
67.1	364
410UB59.7	291
53.7	276
360UB56.7	245
50.7	217
44.7	198
310UB46.2	174
40.4	161
32.0	117
250UB37.3	121
31.4	99.1
25.7	78.2
200UB29.8	77.1
25.4	63.4
22.3	54.7
18.2	†

Page 92

Amend the NOTE to TABLE 32C to read "… two 26 mm diameter holes …" in two places in lieu of 24 mm diameter holes.

Add the following additional entries to TABLE 32C:

610UB125	927	927*	927*	1180
113	829	829*	829*	1100
101	782	718	661	1100
530UB 92.4	640	580	527	939
82.0	558	507	463	876
460UB 82.1	496	441	397	788
74.6	449	399	358	719
67.1	399	357	321	667
410UB 59.7	324	285	253	548
53.7	304	270	241	529

Amend the title of TABLE 32C to read "WELDED BEAMS/UNIVERSAL BEAMS".

DESIGN CAPACITY TABLES FOR STRUCTURAL STEEL

VOLUME 3: SIMPLE CONNECTIONS—OPEN SECTIONS

First printing only:

Page 13 FIGURES 8 AND 9

Change text on beam member from “supporting member ‘B’” to “supported member ‘B’”.

DESIGN GUIDE 1

Page 18 For Category 8.8/TB, the far right part of the chart should read “Threads excluded from shear plane” rather than “Threads included in shear plane”.

DESIGN GUIDE 2

Page 5 **Maximum size of fillet along edges**

Delete entire existing text and substitute the following new text:

“Clause 9.7.3.3 of AS 4100 (Ref. 1) limits the size of a fillet weld along a plate edge to:

(a) For a plate less than 6 mm in thickness, the thickness of the plate;

(b) For a plate 6 mm or more in thickness, 1 mm less than the thickness of the plate.

This is summarised in Figure 5. Hence, the maximum fillet weld size for various plate thicknesses when the fillet weld is laid along the plate edge are as follows:

5 mm plate—5 mm fillet weld
6 mm plate—5 mm fillet weld
8 mm plate—6 mm fillet weld
10 mm plate—8 mm fillet weld
12 mm plate—10 mm fillet weld”

Page 6 In Figure 3(b) Bearing Pad, the fillet weld symbol shown  should be

Page 7 FIGURE 5 FILLET WELD SIZE IN LAPPED PLATES

Amend Figure 5 to read as shown:

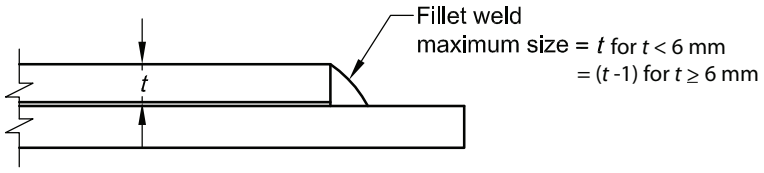


FIGURE 5 FILLET WELD SIZE IN LAPPED PLATES

Page 32 In item (c), “Section 4.6” should read “Section 6.4”.

DESIGN GUIDE 3

Page 29 The expression for Z_b has an incorrect "1+" in the second bracket. The correct equation is:

$$Z_b = \frac{2n_p}{\sqrt{\left[1+\frac{2e/s_{g2}}{1+\frac{1}{3}\frac{n_p+1}{n_p-1}\left[\frac{1}{s_{pg}}\right]^2}\right]^2+\left[\frac{2e/(s_{g2}s_{pg})}{1+\frac{1}{3}\frac{n_p+1}{n_p-1}\left[\frac{1}{s_{pg}}\right]^2}\right]^2}}$$

In three locations, there appears the advice "(Also see Table 19 of DG4)" which should read: "(Also see Table 19 of Handbook 1)".

Page 44 The expression for Z, ten lines from the bottom should read:

"$Z = t_i d_i^2 / 6$"

DESIGN GUIDE 4

Page 16 The definition for f_{yi} should read:

"f_{yi} = yield stress of end plate component"

DESIGN GUIDE 5

Page 16 The expression for ϕM_{si} should read:

$$\phi M_{si} = \frac{0.9 f_{yi} t_i d_i^2}{4} = 0.225 f_{yi} t_i d_i^2$$

Page 27 The expression for Z_{eh} should read:

$$Z_{eh} = \frac{I_{bp}}{e_\beta (n_p - 1) s_p n_p}$$

DESIGN GUIDE 6

Page 18 The last line should read:

"**Design capacity of connection:**

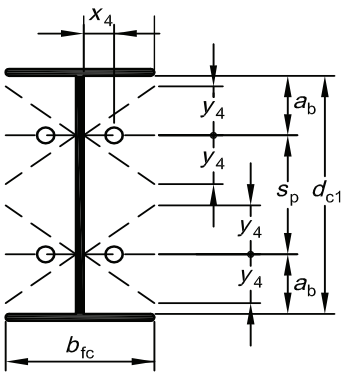
V_{des} = [2525; 2476; 1695; 10915]$_{min}$ = 1695 kN ≥ V^* = 1200 kN COMPLIES"

Page 62 The expression for V_f should read:

$$V_f = \frac{2 L_s \phi v_w}{\sqrt{1+\left[\frac{6e_w}{L_s}\right]^2}}$$

DESIGN GUIDE 7

Page 44 In Table 10, the correct artwork for (A) Yield line pattern for α_a should be as follows (b_{fci} deleted):



(A) Yield line pattern for α_a

Page 52 Under Design requirements, second inequality should read

"$\phi N_{ct} \geq \phi N_{tb}$ to ensure ductile behaviour"

Pge 65 Under DESIGN CHECK NO. 10, insert the following additional text:

ϕN_{ct} = minimum [317; 361] Kn = 317 kN

$< \phi N_{tb}$ = 321 kN [CLOSE ENOUGH TO ACCEPT]

ALTERNATIVELY, increase ϕN_{c1} and ϕN_{ct} by using plate on end of bolt rather than a nut.

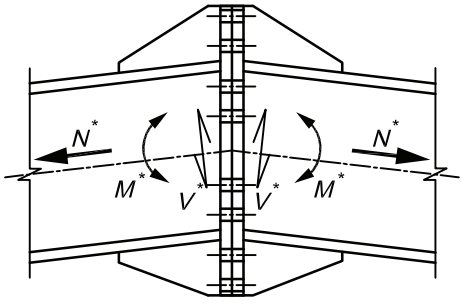
DESIGN CAPACITY TABLES FOR STRUCTURAL STEEL

VOLUME 4: RIGID CONNECTIONS—OPEN SECTIONS

Pages 51 to 57 inclusive Notes, line 6—change all to read:

"Minimum design shear force (V^*) is the maximum of $0.15\phi V_v$ (0.15× design shear capacity) and 40 kN".

Page 57 Table 27, right hand detail is missing stiffeners. Corrected diagram is as follows:



Apex connection - Case 2
$\theta \leq 10$ degrees

DESIGN GUIDE 10

Pages 22, 23 Under "Full penetration butt weld", add after "SP weld category only" the following text:

"… only, provided the end plate is at least Grade 250 for Grade 300 beam sections, and at least Grade 350 for Grade 350 beam sections".

Page 23 Revise expressions for ϕV_{wc} and ϕV_{wt} to read:

$\phi V_{wt} = \phi v_w L_{wt}$ for incomplete penetration butt weld

$= 2\phi v_w L_{wt}$ for fillet welds on both sides of web

$\phi V_{wc} = \phi v_w L_{wc}$ for incomplete penetration butt weld

$= 2\phi v_w L_{wc}$ for fillet welds on both sides of web

Page 27 For clarity as to intent, alter Design Requirement to

$\phi M_{pt} \geq$ minimum $[1.11(\phi M_{bt}); 1.11(\phi M_s)]$

Page 36 DESIGN CHECK NO. 6

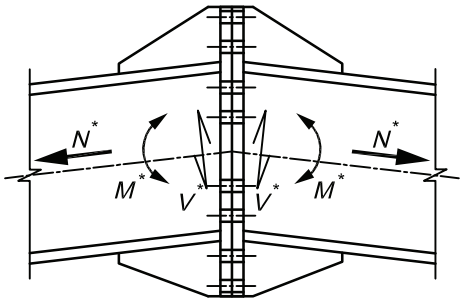
Amend NOTE to read:

"NOTE: ϕM_{pt} need only exceed 1.11 (ϕM_s) = 1.11 × 304 = 337 kNm. A 25 mm thick plate has a ϕM_{pt} = 335 kNm so could be used."

Pages 43 to 49 inclusive Notes, line 6—change all to read:

"Minimum design shear force (V^*) is the maximum of $0.15\phi V_v$ (0.15× design shear capacity) and 40 kN"

Page 49 Table 12, right hand detail is missing stiffeners. Corrected diagram is as follows:



Apex connection - Case 2
$\theta \leq 10$ degrees

Page 51 For consistency with the change to page 27, change the last line to read:

"becomes $\phi M_{pt} \geq$ minimum $[\phi M_{bt}; \phi M_s]$"

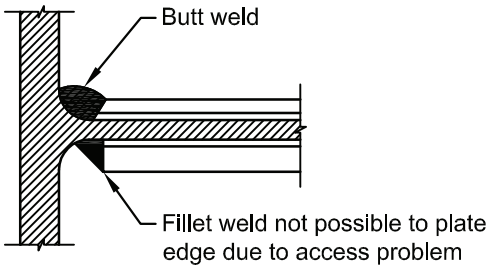
DESIGN GUIDE 13

Page 10 Under the existing text add the following text at the bottom of the page:

"NOTE: The values of M^*, V^* and N^* used in EQNS 3.1 to 3.26 should be the maximum values over the length of the splice."

DESIGN GUIDE 11

Page 9 Figure 9(c) is incorrect. Amended Figure 9(c) is as follows:



(c)

FIGURE 9 STIFFENER DETAILING

Pages 19, 20 Under "Full penetration butt weld", add after "SP weld category only" the following text:

"… only, and provided beam and column are the same grade."

Page 20 Revise expressions for ϕV_{wc} and ϕV_{wt} to read:

$\phi V_{wc} = \phi v_w L_{wc} / \cos\theta$ for incomplete penetration butt weld

$= 2\phi v_w L_{wc} / \cos\theta$ for fillet welds on both sides of web

$\phi V_{wt} = \phi v_w L_{wt} / \cos\theta$ for incomplete penetration butt weld

$= 2\phi v_w L_{wt} / \cos\theta$ for fillet welds on both sides of web

Page 42 Figure 37, arrow from text "Compression flange" should be to bottom flange, not top flange as drawn.

Page 45 Under (i), delete the words "and welded continuously to web".

Under "A_{st} = area of stiffeners = $2b_s t_s$" add the following text:

"Where compression stiffeners are welded over their full length, L_e may be taken as zero. The stiffeners may then be designed as a cruciform section as in DESIGN CHECK NO. 16 or as a stiffener pair in accordance with this DESIGN CHECK."

DESIGN GUIDE 12

Pages 28, 29 Under "Full penetration butt weld", add after "SP weld category only" the following text:

"… only, provided the end plate is at least Grade 250 for Grade 300 beam sections, and at least Grade 350 for Grade 350 beam sections."

Page 29 "Design requirements" should read:

Design requirements— $\phi V_{wc} \geq V_v^*$

$\phi V_{wt} \geq \phi N_{wt}$

Revise expressions for ϕV_{wc} and ϕV_{wt} to read:

$\phi V_{wc} = \phi v_w L_{wc}$ for incomplete penetration butt weld

$= 2\phi v_w L_{wc}$ for fillet welds on both sides of web

$\phi V_{wt} = \phi v_w L_{wt}$ for incomplete penetration butt weld

$= 2\phi v_w L_{wt}$ for fillet welds on both sides of web

Page 34 For clarity as to intent, alter Design Requirement to

$\phi M_{pt} \geq$ minimum [$1.11(\phi M_{bt})$; $1.11\ (\phi M_s)$]

Page 41 For clarity as to intent, alter Design Requirement to

$\phi M_{ct} \geq$ minimum [$1.11(\phi M_{bt})$; $1.11\ (\phi M_s)$]

Page 42 Figure 35, expressions for Y_c, first set of brackets, "s_g" should be "a_h" in four places, so that expressions read:

Continuing column:

$$Y_c = 0.5 b_{fc} \left[\frac{d_{10}}{a_h} + \frac{d_{13}}{a_h} \right] + \frac{2}{s_g} \left[\quad \text{... rest unchanged}$$

Terminating column:

$$Y_c = 0.5 b_{fc} \left[\frac{d_{10}}{2a_h} + \frac{d_{13}}{a_h} \right] + \frac{2}{s_g} \left[\quad \text{... rest unchanged}$$

Page 51 For clarity as to intent, alter Design Requirement to

$\phi M_{ctd} \geq$ minimum [$1.11(\phi M_{bt})$; $1.11(\phi M_s)$]

Page 61 For clarity as to intent, alter Design Requirement to

$\phi M_{cts} \geq$ minimum [$1.11(\phi M_{bt})$; $1.11(\phi M_s)$]

Page 68 Under (i), delete the words "and welded continuously to web".

Under "A_{st} = area of stiffeners = $2b_s t_s$" add the following text:

"Where compression stiffeners are welded over their full length, L_e may be taken as zero. The stiffeners may then be designed as a cruciform section as in DESIGN CHECK NO. 23 or as a stiffener pair in accordance with this DESIGN CHECK."

Page 91 For consistency with the change to page 34, change the fourth last line to read:

"NO. 6 $\phi M_{pt} \geq$ minimum [ϕM_{bt}; ϕM_s]"