Revisions and Errata List
AISC Steel Design Guide 4, 2nd Edition, 1st Printing (Printed Copy)
May 13, 2025

The following list represents corrections to the first printing (dated April 2004) of the second edition of AISC Design Guide 4, *Extended End-Plate Moment Connections Seismic and Wind Applications*.

Page(s)	Item
9	In Item 7, change "yield stress" to "specified minimum yield stress, F_y,".
10	In Equation 2.3, the f at the end of the equation should be deleted.
20	In the right column, in the list of variables defined following Equation 3.6, F_i should be changed to F_t.
22	Equation 3.21 should read: $$\phi M_{cf} = \phi_b F_{yc} Y_c t_{fc}^2$$
22	In the right column, revise the first sentence to read: "Therefore, the maximum beam flange design force that can be delivered to the unstiffened beam flange is".
22	Equation 3.24 should be changed to: $$\phi R_n = \phi\left[C_t\left(6k_c + 2t_p\right) + N\right]F_{yc}t_{wc}$$
25	The equation for Y_p should be replaced with: $$Y_p = \frac{b_p}{2}\left[h_1\left(\frac{1}{p_{fi}} + \frac{1}{s}\right) + h_0\left(\frac{1}{p_{fo}}\right) - \frac{1}{2}\right] + \frac{2}{g}\left[h_1\left(p_{fi} + s\right)\right]$$
26	For Case 1, the equation for Y_p should be replaced with: $$Y_p = \frac{b_p}{2}\left[h_1\left(\frac{1}{p_{fi}} + \frac{1}{s}\right) + h_0\left(\frac{1}{p_{fo}} + \frac{1}{2s}\right)\right] + \frac{2}{g}\left[h_1(p_{fi} + s) + h_0(d_e + p_{fo})\right]$$
26	For Case 2, the equation for Y_p should be replaced with: $$Y_p = \frac{b_p}{2}\left[h_1\left(\frac{1}{p_{fi}} + \frac{1}{s}\right) + h_0\left(\frac{1}{s} + \frac{1}{p_{fo}}\right)\right] + \frac{2}{g}\left[h_1\left(p_{fi} + s\right) + h_0\left(s + p_{fo}\right)\right]$$
27	For Case 1, the equation for Y_p should be replaced with:

$$Y_p = \frac{b_p}{2}\left[h_1\left(\frac{1}{2d_e}\right) + h_2\left(\frac{1}{p_{fo}}\right) + h_3\left(\frac{1}{p_{fi}}\right) + h_4\left(\frac{1}{s}\right)\right] + \frac{2}{g}\left[h_1\left(d_e + \frac{p_b}{4}\right) + h_2\left(p_{fo} + \frac{3p_b}{4}\right) + h_3\left(p_{fi} + \frac{p_b}{4}\right) + h_4\left(s + \frac{3p_b}{4}\right) + p_b^2\right] + g$$

27 For Case 2, the equation for Y_p should be replaced with:

$$Y_p = \frac{b_p}{2}\left[h_1\left(\frac{1}{s}\right) + h_2\left(\frac{1}{p_{fo}}\right) + h_3\left(\frac{1}{p_{fi}}\right) + h_4\left(\frac{1}{s}\right)\right] + \frac{2}{g}\left[h_1\left(s + \frac{p_b}{4}\right) + h_2\left(p_{fo} + \frac{3p_b}{4}\right) + h_3\left(p_{fi} + \frac{p_b}{4}\right) + h_4\left(s + \frac{3p_b}{4}\right) + p_b^2\right] + g$$

28 The equation for Y_c for unstiffened column flanges should be replaced with:

$$Y_c = \frac{b_{fc}}{2}\left[h_1\left(\frac{1}{s}\right) + h_0\left(\frac{1}{s}\right)\right] + \frac{2}{g}\left[h_1\left(s + \frac{3c}{4}\right) + h_0\left(s + \frac{c}{4}\right) + \frac{c^2}{2}\right] + \frac{g}{2}$$

28 The equation for Y_c for stiffened column flanges should be replaced with:

$$Y_c = \frac{b_{fc}}{2}\left[h_1\left(\frac{1}{s} + \frac{1}{p_{si}}\right) + h_0\left(\frac{1}{s} + \frac{1}{p_{so}}\right)\right] + \frac{2}{g}\left[h_1\left(s + p_{si}\right) + h_0\left(s + p_{so}\right)\right]$$

29 The equation for Y_c for unstiffened column flanges should be replaced with:

$$Y_c = \frac{b_{fc}}{2}\left[h_1\left(\frac{1}{s}\right) + h_4\left(\frac{1}{s}\right)\right] + \frac{2}{g}\left[h_1\left(p_b + \frac{c}{2} + s\right) + h_2\left(\frac{p_b}{2} + \frac{c}{4}\right) + h_3\left(\frac{p_b}{2} + \frac{c}{2}\right) + h_4(s)\right] + \frac{g}{2}$$

29 The equation for Y_c for stiffened column flanges should be replaced with:

$$Y_c = \frac{b_{fc}}{2}\left[h_1\left(\frac{1}{s}\right) + h_2\left(\frac{1}{p_{so}}\right) + h_3\left(\frac{1}{p_{si}}\right) + h_4\left(\frac{1}{s}\right)\right] + \frac{2}{g}\left[h_1\left(s + \frac{p_b}{4}\right) + h_2\left(p_{so} + \frac{3p_b}{4}\right) + h_3\left(p_{si} + \frac{p_b}{4}\right) + h_4\left(s + \frac{3p_b}{4}\right) + p_b^2\right] + g$$

31 In the left column, in the W14×109 column properties, the plastic section modulus should be revised to: $Z_{xc} = 192 \text{ in.}^3$

33 In the left column, under “12. Check Compression Bolts Bearing/Tearout”, item i), the tearout check on the bolts should be revised from “Tearout Outer Bolts” to “Tearout Inner Bolts”.

33 In the left column, under “12. Check Compression Bolts Bearing/Tearout”, at the end of item i) add the statement: “Because the shear force at the connection is up, that is toward the center of the beam and the compression side is at the bottom, edge bolt tearout is not a limit state.”

33 In the left column, under the heading “13. Design Welds”, item ii), “The required weld to develop the bending stress in the beam web near the tension bolts using E70 electrodes” should read:

$$D = \frac{\left(\frac{0.9}{1.5}\right)F_{yb}t_{wb}}{2(1.392)} = \frac{\left(\frac{0.9}{1.5}\right)(50)(0.375)}{2(1.392)}$$
$$= 4.04 \text{ sixteenths}$$
$$\text{USE 5/16 in. Fillet Welds}$$

33 In the left column, under the heading "13. Design Welds", item ii), the words "bending stress in the beam web" should be replaced with "yield stress of the beam web".

34 In the left column, under the heading "16. Calculate Local Web Yielding Strength", the equation for *N* should read:

$$N = t_{fb} + 2(\text{groove weld reinforcement leg size})$$
$$= 0.522 \text{ in.} + 2\left(\frac{5}{16} \text{ in.}\right)$$
$$= 1.15 \text{ in.}$$

34 In the left column, under the heading "16. Calculate Local Web Yielding Strength", the equation for ϕR_n should read:

$$\phi R_n = \phi C_t(6k_c + N + 2t_p)F_{yc}t_{wc}$$
$$= 1.0(1.0)[6(1.46) + 1.15 + 2(1.25)](50)(0.525)$$
$$= 326 \text{ kips} < F_{fu} = 396 \text{ kips}$$
$$\therefore \text{Column Stiffeners Required}$$

34 In the right column, under the heading "18. Calculate Web Crippling Strength", the equation for ϕR_n should read:

$$\phi R_n = \phi 0.80 t_{wc}^2 \left[1 + 3\left(\frac{N}{d_c}\right)\left(\frac{t_{wc}}{t_{fc}}\right)^{1.5}\right] \times \sqrt{\frac{E\ F_{yc}t_{fc}}{t_{wc}}} \qquad (3.29)$$
$$= 0.75(0.80)(0.525)^2\left[1 + 3\left(\frac{1.15}{14.3}\right)\left(\frac{0.525}{0.860}\right)^{1.5}\right] \times \sqrt{\frac{29000(50)(0.860)}{0.525}}$$
$$= 284 \text{ kips} < F_{fu} = 396 \text{ kips}$$
$$\therefore \text{Column Stiffeners Required}$$

36 In the left column, in the W14×109 column properties, the plastic section modulus should be revised to: $Z_{xc} = 192 \text{ in.}^3$

36 In the left column, under the heading "1. Connection Design Moment", the inequality should be replaced with:

$$M_{uc} = 4000 \text{ kip-in.} < \phi M_p = 0.9(50)(126)$$
$$= 5670 \text{ kip-in.}$$

37 In the left column, under the heading "9. Check Shear Rupture of Extended Portion of End Plate," the equation below "Check Inequality 3.13" should be replaced with:

$$\frac{F_{fu}}{2} = 98.5 \text{ kips} \leq \phi R_n = 179 \text{ kips OK}$$

37 In the right column, the first part of step 13 should be modified and rearranged to read:

13. Design Welds

i) Beam Flanges to End-Plate Weld

Note: For wind and low-seismic applications, it is recommended that the weld design force, R_u, be taken equal to the calculated flange force but not less than $\phi(0.6)F_y A_{fb}$. This recommended minimum weld design force is based upon engineering judgment and intended to preclude small weld sizes on comparatively larger beams sized for stiffness, and to account for the variations in the distribution of the flange force across the weld length.

Minimum Fillet Weld size 5⁄16 in.

$$\phi(0.6)F_y A_{fb} = 0.9(0.6)(50 \text{ ksi})(8.22 \text{ in.} \times 0.522 \text{ in})$$

$$= 116 \text{ kips}$$

$$R_u = F_{fu} > \phi(0.6)F_y A_{fb}$$

$$R_u = 197 \text{ kips} > 116 \text{ kips}$$

Use R_u = 197 kips.

The remainder of step 13 beginning with "Effective length of weld…" is unchanged.

38 In the left column, item ii), "The required weld to develop the bending stress in the beam web near the tension bolts using E70 electrodes" should read:

$$R = \frac{\left(\frac{0.9}{1.5}\right)F_{yb}t_{wb}}{2(1.392)} = \frac{\left(\frac{0.9}{1.5}\right)(50)(0.375)}{2(1.392)}$$

$$= 4.04 \text{ sixteenths}$$

USE 5/16 in. Fillet Welds

38 In the left column, item ii), the words "bending stress in the beam web" should be replaced with "yield stress of the beam web".

39 In the left column, the equation under "18. Calculate Web Crippling Strength" should read:

$$\phi R_n = \phi 0.80 t_{wc}^2 \left[1+3\left(\frac{N}{d_c}\right)\left(\frac{t_{wc}}{t_{fc}}\right)^{1.5}\right] \times \sqrt{\frac{E\, F_{yc} t_{fc}}{t_{wc}}}$$

$$= 0.75(0.80)(0.525)^2 \left[1+3\left(\frac{0.787}{14.3}\right)\left(\frac{0.525}{0.860}\right)^{1.5}\right] \times \sqrt{\frac{29000(50)(0.860)}{0.525 \text{ in.}}}$$

$$= 275 \text{ kips} > F_{fu} = 197 \text{ kips}$$

$$\therefore \text{Column Stiffeners Not Required}$$

43 In the left column, in the W14×109 column properties, the plastic section modulus should be revised to: $Z_{xc} = 192$ in.^{3}

44 In the right column, under the heading "12. Check Compression Bolts Bearing/Tearout", the value of n_i should be changed to 4 and the value of n_o should be changed to 4.

46 In the left column, under the heading "16. Calculate Local Web Yielding Strength", the Equation for N should read:

$$\begin{aligned} N &= t_{fb} + 2(\text{groove weld reinforcement leg}) \\ &= 0.522 \text{ in.} + 2\left(\frac{5}{16} \text{ in.}\right) \\ &= 1.15 \text{ in.} \end{aligned}$$

46 In the left column, under the heading "16. Calculate Local Web Yielding Strength", the equation for ϕR_n should read:

$$\phi R_n = \phi C_t (6k_c + N + 2t_p) F_{yc} t_{wc}$$

$$= 1.0(1.0)[6(1.46) + 1.15 + 2(0.875)](50)(0.525)$$

$$= 306 \text{ kips} < F_{fu} = 399 \text{ kips}$$

$$\therefore \text{Column Stiffeners Required}$$

46 In the right column, "18. Calculate Web Crippling Strength" should read:

$$\phi R_n = \phi 0.80 t_{wc}^2 \left[1+3\left(\frac{N}{d_c}\right)\left(\frac{t_{wc}}{t_{fc}}\right)^{1.5}\right] \times \sqrt{\frac{E\, F_{yc} t_{fc}}{t_{wc}}}$$

$$= 0.75(0.80)(0.525)^2 \left[1+3\left(\frac{1.15}{14.3}\right)\left(\frac{0.525}{0.860}\right)^{1.5}\right] \times \sqrt{\frac{29000(50)(0.860)}{0.525}}$$

$$= 284 \text{ kips} < F_{fu} = 399 \text{ kips}$$

$$\therefore \text{Column Stiffeners Required}$$