Unified Design of Steel Structures, 4th Edition, Errata **last updated 10/13/24**

p. 45, Equation 2.2 – C_{ts} should be C_t

p. 55, Example 2.2 – heading should be “Beam Load Calculation”

p. 74, Problem 26. Integrated Design Project – should be Problem 27

p. 159, Problem 51 – The two homework problems numbered “51” should be “51.1” and “51.2”.

p. 205, Example 5.10, ASD, Step 11 – “design strength” should be “allowable strength”

p. 206, Example 5.11, ASD, Step 8 – “design strength” should be “allowable strength”

p. 236, Problem 51 – Use A992 steel.

p. 222, Example 5.18, Step 2 – r_x = 1.21 should be r_x = 1.21 in.

p. 224, Example 5.19, Step 1 – $r_x = r_y$ = 1.21 should be $r_x = r_y$ = 1.21 in.

p. 237, Problem 57 – Use A572 Gr. 50 steel instead of A36.

p. 237, Problem 68 – Should refer to *Manual* Table 4-8.

p. 252, Example 6.4a – The dead load is 60 psf, in addition to its self weight, and the live load is 80 psf.

p. 253, Example 6.4b – The dead load is 60 psf, in addition to its self weight, and the live load is 80 psf.

p. 268, Example 6.6b, Step 4 – C_b = 1.0 should be included as follows:

$$M_n/\Omega = C_b(M_p/\Omega\text{-}(BF/\Omega)(L_b\text{-}L_p)) \le M_p/\Omega$$
$$= (1.0)(136 - 5.01(10.0 - 5.40)) = 113 \text{ ft-kips} < 136 \text{ ft-kips}$$

p. 268, Example 6.6b, Step 4 – “design strength of the W14×34” should be “allowable strength of the W14×34”

p. 286, 2nd paragraph – Should refer to *Manual* Table 3-22.

p. 327, Problem 46 – There are 7 W6 shapes.

p. 329, Problems 79, 80 – Assume long legs back to back (LLBB) and a separation, s, of 3/8”

p. 330, Problems 81, 82 – Assume vertical legs are in continuous contact.

p. 330, Problem 90 – Should refer to Problem 24 of Chapter 2.

p. 370, Problem 13 – In the second to last line, “pints” should be “points”.

p. 371, Problem 28 – The two homework problems numbered “28” should be “28.1” and “28.2”.

p. 390, Example 8.1b, Step 5 – after “To determine which equation to use …” the P_u should be P_a

p. 493, Step 14 – In the M_n equation, $\left(\frac{t}{2}\right)$ should be $\left(t - \frac{a}{2}\right)$

p. 495, Step 23 – In the M_n equation, $\left(\frac{t}{2}\right)$ should be $\left(t - \frac{a}{2}\right)$

p. 527, Problem 46 – In the fifth line, “beck” should be “deck”

p.608, Figure 11.7c, the stress at the bottom of the triangle should be $r_{rm.}$

p. 619, Example 11.4b, Step 3 – R_n/Ω = 32.2/200 = 16.1 kips should be 32.2/2.00 = 16.1 kips

p. 668, Problem 47 – The two homework problems numbered “47” should be “47.1” and “47.2”.

p. 669, Problem 48 – Should refer to Problem 47.2 instead of Problem 46.

Please see the next two pages for revisions to Sections 6.10 and 6.12.

6.10.2 Lateral-Torsional Buckling of Tees

Page 294, the sentence after equation (AISC F9-11) should be revised as follows:

> For the stem in compression at any point along the span, ~~whenever the unbraced length is greater than L_p~~

This was a misstatement of the requirements, since L_p is not actually given in the *Specification* for this situation. M_{cr} from equation (AISC F9-10) is limited to M_y, which accomplishes the same thing.

Page 297, Example 6.16 Step 7 opening sentence should be revised as follows:

> Determine the nominal moment strength for the limit state of lateral-torsional buckling for this orientation with L_b = 5.0 ft ~~$> L_p = 4.31$ ft~~.

6.12.2 Lateral-Torsional Buckling of Double Angles

Page 306, the sentence following equation (AISC F9-11) should be revised as follows:

> For web legs in compression at any point along the span, ~~whenever the unbraced length is greater than L_p,~~ the nominal moment strength is determined as it was for single angles, through Equations F10-2 and F10-3.

As was the case for tees, this was a misstatement of the requirements, since L_p is not actually given in the *Specification* for this situation.

Page 307 Example 6.18

For Step 1 add, using properties from Manual Table 1-7, $J = 2(0.129 \text{ in.}^4) = 0.258 \text{ in.}^4$ and $A = 2(3.67 \text{ in.}^2) = 7.34 \text{ in.}^2$ and $I_y = r_y^2 A = 44.8 \text{ in.}^4$

For Step 3 revise as follows:

Step 3: Determine the nominal moment strength for the limit state of lateral-torsional buckling. ~~First determine the unbraced length beyond which lateral-torsional buckling must be considered, L_p, based on Equation F9-8.~~

$$\cancel{L_p = 1.76 r_y \sqrt{\frac{E}{F_y}} = 1.76(2.47)\sqrt{\frac{29,000}{50}} = 105 \text{ in.}}$$

~~Since L_b = 8.0 ft = 96.0 in.< 105 in. lateral torsional buckling does not need to be checked.~~

Determine B from Equation F9-12 since the stem is in tension. Thus,

$$B = -2.3\left(\frac{d}{L_b}\right)\sqrt{\frac{I_y}{J}} = -2.3\left(\frac{6.0}{8(12)}\right)\sqrt{\frac{44.8}{0.258}} = -1.89$$

and from Equation F9-10

$$M_{cr} = \frac{1.95E}{L_b}\sqrt{I_y J}\left(B + \sqrt{1+B^2}\right)$$

$$M_n = M_{cr} = \frac{1.95(29,000)}{8.0(12.0)}\sqrt{44.8(0.258)}\left[-1.89 + \sqrt{1+(-1.89)^2}\right]$$

$$= 497 \text{ in.-kips}$$

Determine the appropriate equation to use to determine M_n. From Equation F9-3,

$$M_y = F_y S_x = 50(2(2.95)) = 295 \text{ in.-kips}$$

Since $M_y / M_{cr} = 295/497 = 0.594 < 1.0$, use Equation F10-2

$$M_n = \left(1.92 - 1.17\sqrt{\frac{M_y}{M_{cr}}}\right) M_y \le 1.5 M_y$$

$$M_n = \left(1.92 - 1.17\sqrt{0.594}\right)(295) \le 1.5(295)$$

$$= 300 \le 443 \text{ in-kips}$$

Thus, for the limit state of lateral-torsional buckling the nominal strength is

$$M_n = 300 \text{ in.-kips}$$