ERRATA for
PE Civil Structural Practice Exam
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Errata posted 8-26-2019

Revisions are shown in red.

Question 519, p. 43

The answer options should read as follows:

(A) 10
(B) 12
(C) 14
(D) 18

Solution 519, p. 88

The last five lines of the solution should read as follows:

Rearranging Equation 2-30:

$$V = 0.5 \left[\frac{A_v F_s d_v}{s} \right]$$

$$= 0.5 \left(\frac{0.2(32,000)(24)}{8(1,000)} \right)$$

$$= 0.5(19.2)$$

$$= 10 \text{ kips}$$

THE CORRECT ANSWER IS: (A)

Solution 533, p. 94

Line 3 of the solution should read as follows:

Allowable load $= 2(13)(0.79) = 21.2$ kips

Previously posted errata begins on the next page.

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Question 509, p. 38:

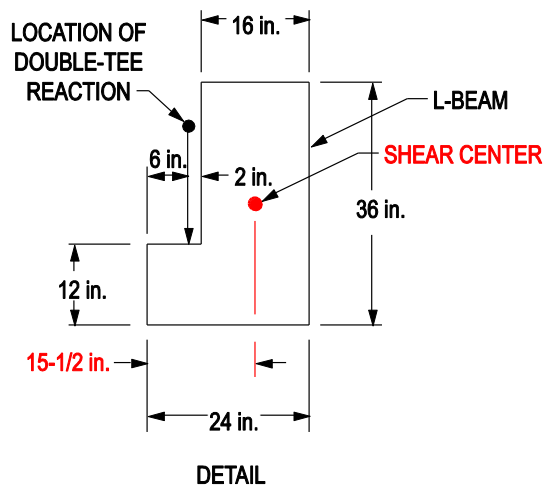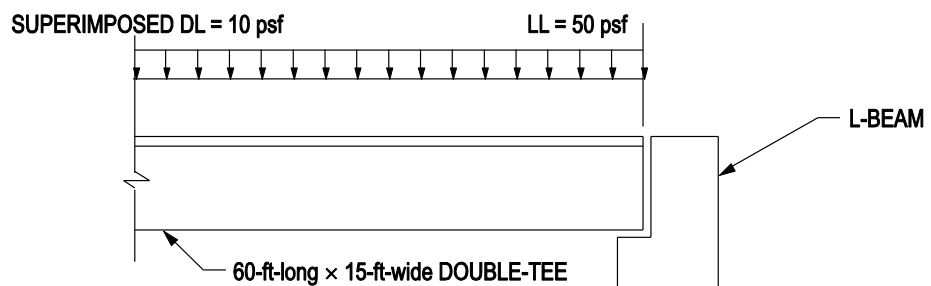Question 509 should read as follows:

A double-tee supported by an L-beam is loaded as shown in the figure.

Design Code:
ACI 318: *Building Code Requirements for Structural Concrete*, 2011.

The magnitude of the ultimate torsion (ft-kips) induced into the L-beam, by superimposed dead and live load applied on the double-tee, is most nearly:

(A)   18.7
(B)   21.4
(C)   28.6
(D)   32.8

SUPERIMPOSED DL = 10 psf   LL = 50 psf

L-BEAM

60-ft-long × 15-ft-wide DOUBLE-TEE

LOCATION OF
DOUBLE-TEE
REACTION

16 in.

L-BEAM

6 in.   2 in.

SHEAR CENTER

36 in.

12 in.

15-1/2 in.

24 in.

DETAIL

NOT TO SCALE

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Solution 509, p. 87:

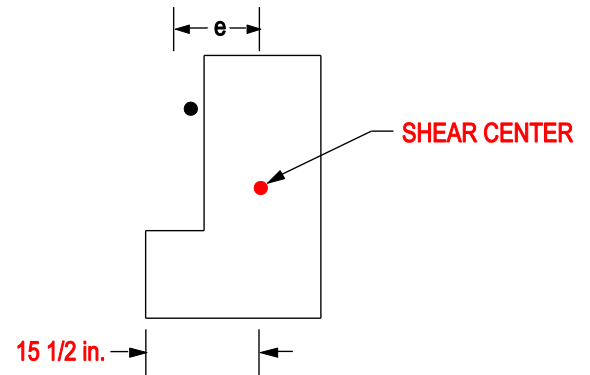Solution 509 should read as follows:

15.5 in. − 6 in. = 9.5 in.

$W_{u/DT} = [1.2(10\ \text{psf}) + 1.6(50\ \text{psf})]15\ \text{ft} = 1,380\ \text{plf}$

$R_{u/DT} = \dfrac{1}{2}(1.38\ \text{klf})(60\ \text{ft}) = 41.4\ \text{kips}$

$T_u = 41.4\ \text{kips}\left(\dfrac{9.5\ \text{in.}}{12\ \text{in./ft}}\right) = 32.8\ \text{ft-kips}$

THE CORRECT ANSWER IS: (D)

SHEAR CENTER

15 1/2 in.

Question 513, p. 41:
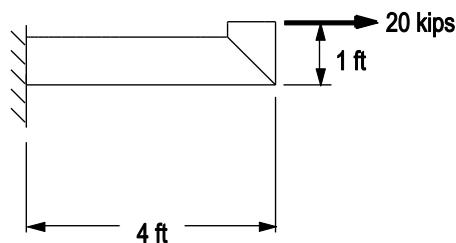
Question 513 should read as follows:

The pipe member shown in the figure has a constant section and the following properties:

Outside diameter	10 in.
Moment of inertia	90 in^4
Area	7 in^2

Neglecting the weight of the pipe, the maximum compressive stress (ksi) at the support is most nearly:

(A)   2.9
(B)   4.9
(C)   13.3
(D)   16.2

20 kips

1 ft

4 ft

Solution 513, p. 88:

Solution 513 should read as follows:

$$M_S = (20 \text{ kips})(12 \text{ in.} - 5 \text{ in.}) = 140 \text{ in.-kips}$$

$$N_S = 20 \text{ kips}$$

$$\sigma_{\text{flexure}} = \frac{(140 \text{ in.-kips})(5 \text{ in.})}{90 \text{ in}^4} = 7.8 \text{ ksi} \begin{cases} \text{Top tension} \\ \text{Bottom compression} \end{cases}$$

$$\sigma_{\text{axial}} = \frac{20 \text{ kips}}{7 \text{ in}^2} = 2.9 \text{ ksi tension}$$

Max compressive stress (at bottom):

$$-7.8 \text{ ksi} + 2.9 \text{ ksi} = -4.9 \text{ ksi}$$

THE CORRECT ANSWER IS: (B)

Solution 520, p. 91:

Line 2 should read as follows:

Two or more spans not exceeding 10 ft

Question 528, p. 52:

Question 528 should read as follows:

A connection is shown in the figure.

Design Code:
     AISC: *Steel Construction Manual,* 14th edition.

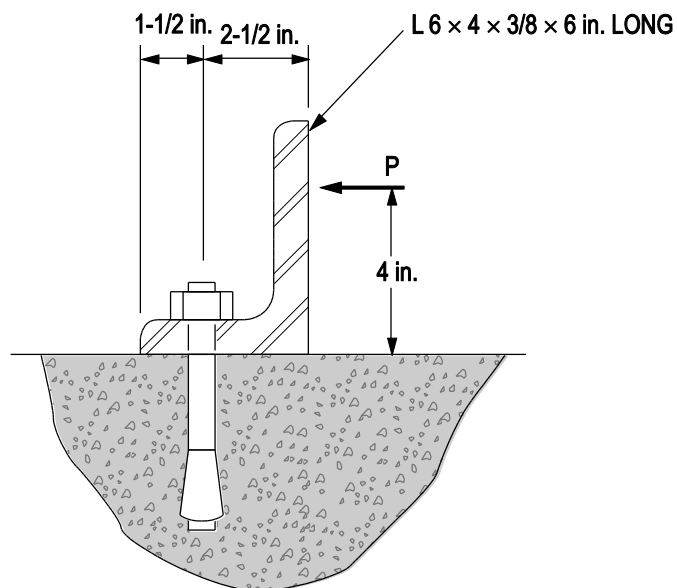Material:
     A36 steel

Assumptions:
     The bolt is sufficient.
     The concrete is sufficient.
     The load P is equally distributed along the entire 6-in.-long angle.

The maximum load P (ASD) or ϕP_n (LRFD) in kips that can be carried by the angle is most nearly:

	ASD	**LRFD**
(A)	0.8	1.2
(B)	1.1	1.7
(C)	1.2	1.8
(D)	2.0	2.0

Solution 528, p. 94:

Solution 528 should read as follows:

By inspection P controls.

$M_n = M_p = F_y Z_x \leq 1.6\, M_y$

$F_y = 36\ \text{ksi}$

$S_x = 1/6\ bd^2 = 1/6\ (6)(0.375)^2 = 0.141\ \text{in}^3$

$M_y = F_y S_x = (36)(0.141) = 5.076\ \text{in.-kips}$

$Z_x = 1/4\ bd^2 = 1/4\ (6)(0.375)^2 = 0.211\ \text{in}^3$

$M_p = F_y Z_x = (36)(0.211) = 7.6\ \text{in.-kips}$ ← governs

Check $M_p \leq 1.6\, M_y$ $1.6\,(5.076) = 8.1 > 7.6\ \therefore\ \text{OK}$

AISC ASD:

$M_n/\Omega = 7.6/1.67 = 4.55\ \text{in.-kips}$

$P_{allow} = \dfrac{4.55}{\left[\,4 - (1/2)(3/8)\,\right]} = 1.19 \sim 1.2$

AISC LRFD:

$\phi M_n = 0.9(7.6) = 6.84\ \text{in.-kips}$

$\phi P_n = \dfrac{6.84}{\left[\,4 - (1/2)(3/8)\,\right]} = 1.79 \sim 1.8$

THE CORRECT ANSWER IS: (C)