ERRATA for

PE Civil Structural Practice Exam

ISBN 978-1-932613-72-8

Errata posted 8-25-2016

Revisions are shown in red.

Question 509, p. 38:

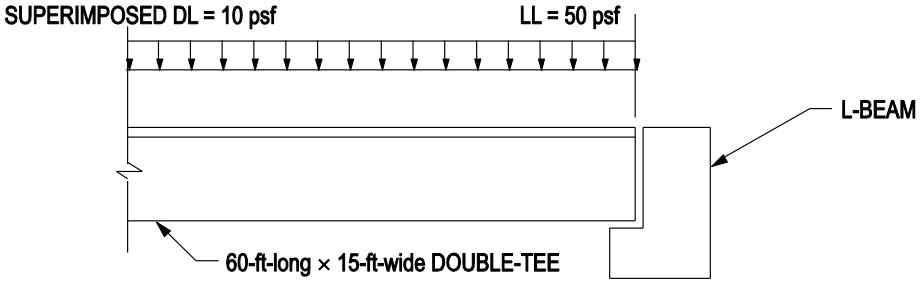
Question 513 should read as follows:

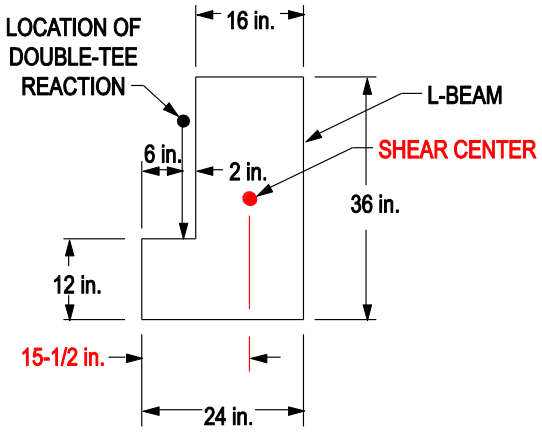
A double-tee supported by an L-beam is loaded as shown in the figure.

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





DETAIL

NOT TO SCALE

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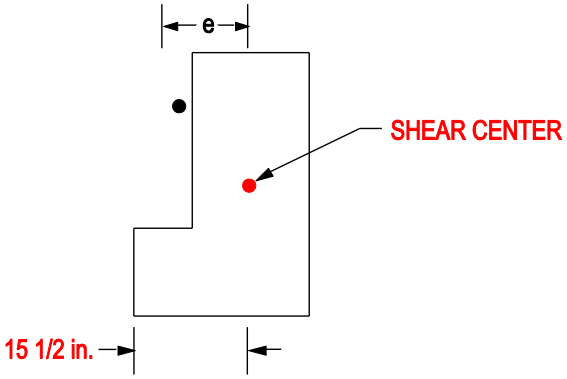
Solution 509, p. 87:

Solution 513 should read as follows:



$15.5 \text{ in.} - 6 \text{ in.} = 9.5 \text{ in.}$

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

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

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

THE CORRECT ANSWER IS: (D)

Question 513, p. 41:

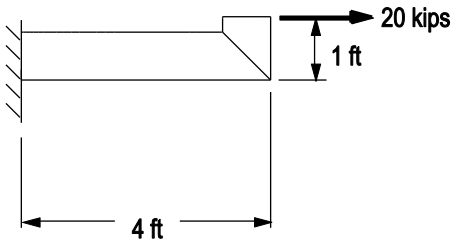
Question 513 should read as follows:

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



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Solution 513, p. 88:

Solution 513 should read as follows:

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

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

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

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

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

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Question 528, p. 52:

Question 528 should read as follows:

A connection is shown in the figure.

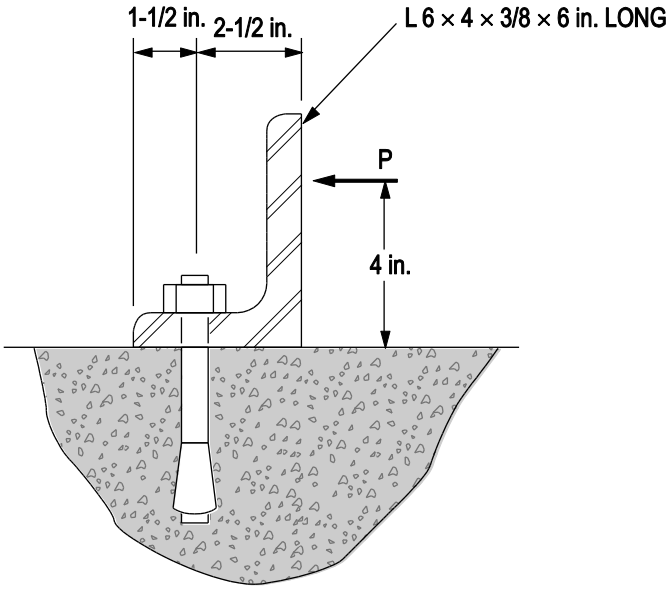
Design Code:
AISC: *Steel Construction Manual*, 14th edition.

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



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Solution 528, p. 94:

Solution 528 should read as follows:

By inspection P controls.

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

$F_y = 36$ ksi

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

$M_y = F_y S_x = (36)(0.141) = 5.076$ in.-kips

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

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

Check $M_p \le 1.6\, M_y$ $\quad 1.6\,(5.076) = 8.1 > 7.6$ ∴ OK

AISC ASD:

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

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

AISC LRFD:

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

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

THE CORRECT ANSWER IS: (C)

Previously posted errata continued on next page

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Errata posted 5-7-2015

Revisions are shown in red.

Solution 538, p. 98:

Solution 538 should read as follows:

Reference: AASHTO Section 9.7.2.3.

AASHTO prescriptively calls out to add back a single flange overhang (not one on each side).

L_{eff} = 8.5 ft – b_f + flange overhang

= 8.5 ft – 1.5 ft + 0.25 ft

= 7.25 ft (7 ft 3in.)

THE CORRECT ANSWER IS: (C)