ERRATA for

PE Civil Structural Practice Exam

ISBN 978-1-947801-20-2

Errata posted 9/1/2023

Revisions are shown in red.

Question 61, p. 44

The W10×22 steel beam (F_y = 50 ksi) shown in the figure is braced at unknown intervals.

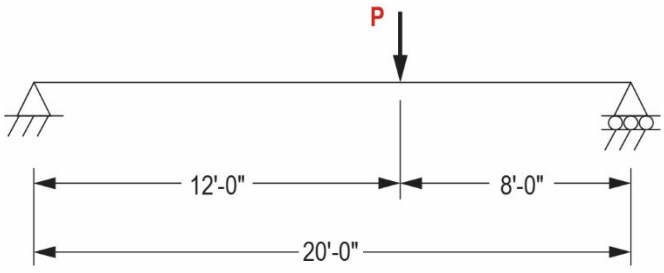
Work either the ASD or the LRFD version of the question. Assume c_b = 1.0.

ASD

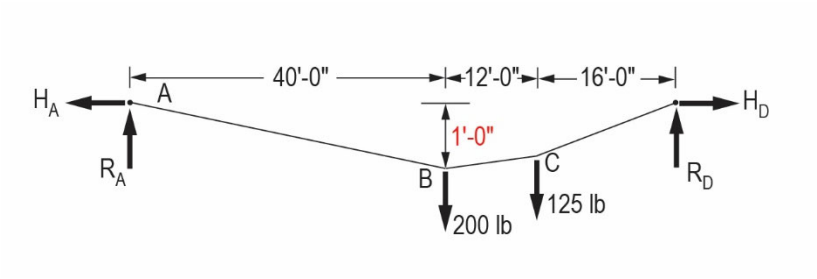
The allowable flexural strength (ft-kips) of the beam is most nearly:

LRFD

The design moment capacity ϕM_n (ft-kips) of the beam is most nearly:



Solution 54, p. 84



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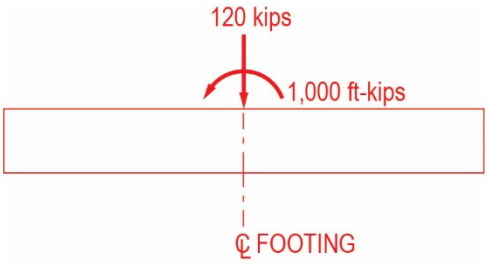
Solution 70, p. 92

Weight of footing $= 2.5 \text{ kips/ft}\left(24 \text{ ft}\right) = 60 \text{ kips}$

$$+\uparrow \sum F_v = -80 \text{ kips} - 60 \text{ kips} + 20 \text{ kips} = -120 \text{ kips}$$

$$+\circlearrowright \sum M_{℄} = -80 \text{ kips}\left(10 \text{ ft}\right) - 20 \text{ kips}\left(10 \text{ ft}\right) = -1{,}000 \text{ ft-kips}$$



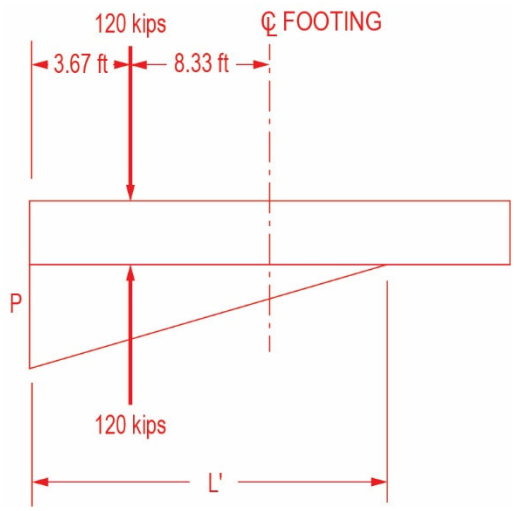
$$e = \frac{1{,}000 \text{ ft-kips}}{120 \text{ kips}}$$

$e = 8.33$ ft from ℄

$$\frac{L}{6} = \frac{24}{6} = 4 \text{ ft} < 8.33 \text{ ft}$$

Resultant not within kern

$\therefore$ Footing not fully effective



Resultant of soil pressure must align with eccentric resultant load.

L' is the effective length of the triangular soil pressure pattern.

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Solution 70, p. 92 (Continued)

$$\therefore 3.67\,\text{ft} = \frac{L'}{3} \rightarrow L' = 3(3.67\,\text{ft}) = 11.01\,\text{ft}$$

$$\frac{1}{2}PL' = \frac{1}{2}P(11.01\,\text{ft}) = 120\,\text{kips} \rightarrow P = \frac{2(120\,\text{kips})}{11.01\,\text{ft}} = 21.8\,\text{kips/ft}$$

$$P_{max} = \frac{P}{8\,\text{ft}} = \frac{21.8\ \text{kips/ft}}{8\,\text{ft}} = 2.72\ \text{kips/ft}^2$$

THE CORRECT ANSWER IS: C