

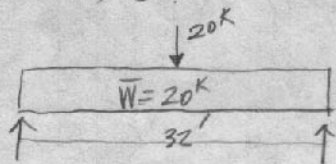
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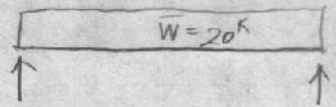
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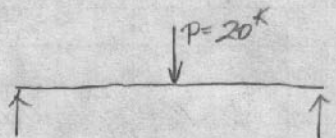
14-1 (3) e.



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M-Diagram →  $M_{max} = \frac{wL^2}{8} = \frac{20 \times 32}{8} = 80 \text{ k-FT}$

→  $M_{max} = \frac{PL}{4} = \frac{20 \times 32}{4} = 160 \text{ k-FT}$

↓

$$\Sigma M_{max} = 80 + 160 = 240 \text{ k-FT} = 2880 \text{ k-in}$$

$$f_b = 30 \text{ ksi} \geq \frac{M_{max}}{S} = \frac{2880 \text{ k-in}}{S}$$

$$\therefore S \geq \frac{2880}{30} = 96 \text{ in}^3$$

FROM D-36. Choose W18x55 :  $S = 98.3 \text{ in}^3$