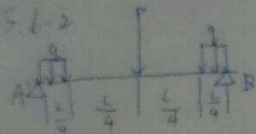


5.6-2



$L = 9.95 \text{ m}$   
 $P = 11 \text{ kN}$   
 $q = 6.6 \text{ kN/m}$   
 $\sigma_a = 119 \text{ MPa} = 124 \text{ N/mm}^2$

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$$R_A = R_B = \frac{11}{2} + \frac{9.95}{4} \times 6.6 = 22.587 \text{ kN}$$

$$M_{\max} = 22.587 \times \frac{9.95}{2} - 6.6 \times \frac{9.95}{4} \left( \frac{9.95}{4} + \frac{9.95}{8} \right) = 51.292 \text{ kNm} = 51292 \text{ Nmm}$$

$$S_{\text{reqd}} = \frac{51292}{124} = 413.663 \text{ cm}^3$$

IPN 280  $S_x = 542 \text{ cm}^3$   
 $W = 41.9 \text{ kg/m} = 469.339 \text{ N/m}$

IPN 260  $S_x = 443 \text{ cm}^3$   
 $W = 41.9 \text{ kg/m} = 410.9 \text{ N/m}$

$$M_{\max} = 469.339 \times \frac{9.95}{5} \times \frac{9.95}{4} = 56.871 \text{ kNm}$$

$$M_{\max} = 410.9 \times \frac{9.95}{5} \times \frac{9.95}{4} = 56.177 \text{ kNm}$$

A = IPN 280

$$S_{\text{reqd}} = \frac{56.871}{124} = 458.699 \text{ cm}^3$$

$458.699 < 542 \text{ (o)}$

$$S_{\text{reqd}} = \frac{56.177}{124} = 453.083 \text{ cm}^3$$

$453.083 > 443 \text{ (x)}$