15-2

Select the lightest wide-flange steel beam for a simple beam of 20-ft span that will carry a uniform load of 4 kips/ft. Use A36 steel and assume that the beam is supported laterally for its entire length.

Solution.

15-4

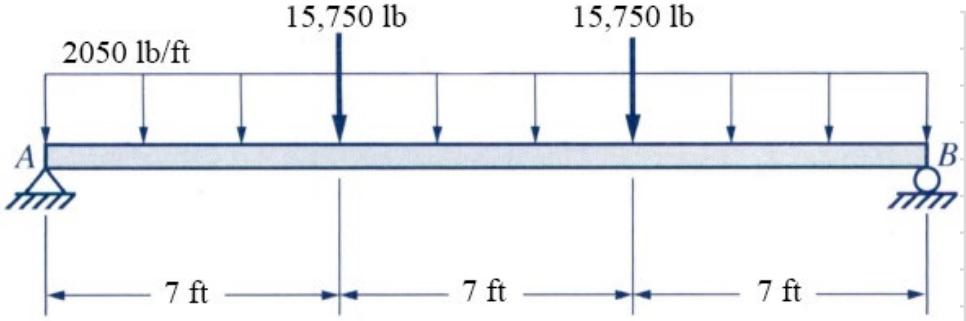
Select the lightest wide-flange steel girder for a simple span of 16-ft that will support a concentrated load of 10,000 lb at the midspan. Use A36 steel and assume that the beam is supported laterally for its entire length.

Solution.

15-7

Refer to Figs. P15-6 to P15-9. For each of the beams subjected to the loadings shown, the weight of the beam is already included in the uniform load. Select the lightest wide-flange steel shape using A36 steel. Assume that the beam is supported laterally for its entire length.

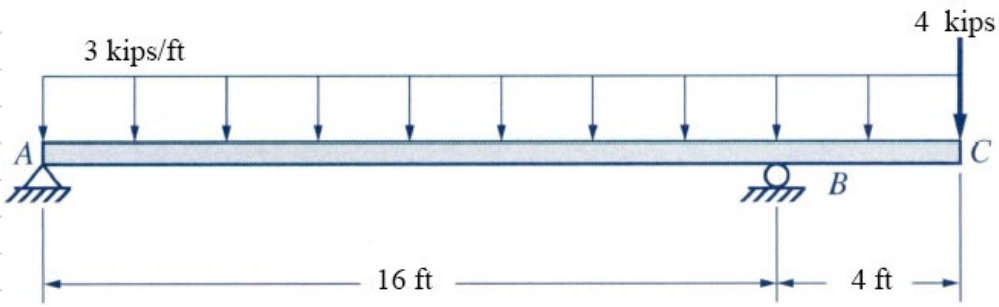
Solution.



15-8

Refer to Figs. P15-6 to P15-9. For each of the beams subjected to the loadings shown, the weight of the beam is already included in the uniform load. Select the lightest wide-flange steel shape using A36 steel. Assume that the beam is supported laterally for its entire length.

Solution.



15-12

Select a solid, rectangular, Eastern hemlock beam section or a 16-ft simple span carrying a superimposed uniform load of 825 lb/ft.

Solution.

15-13

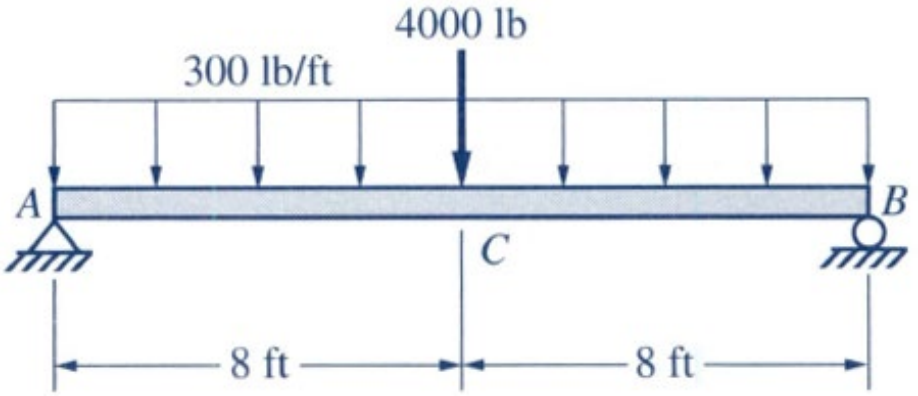
Select the lightest oak beam of rectangular section for a simple beam of 13-ft span subjected to a concentrated load of 10,120 lb at the midspan. Assume that the allowable flexural stress is 1890 psi and the allowable shear stress parallel to the grain is 145 psi.

Solution.

15-16

Select the lightest, rectangular Southern pine section for the simply supported girder subjected to the loading shown in Fig. P15-16.

Solution.



15-17

Select the lightest, rectangular California redwood section for the overhanging beam subjected to the loading shown in Fig. P15-17.

Solution.