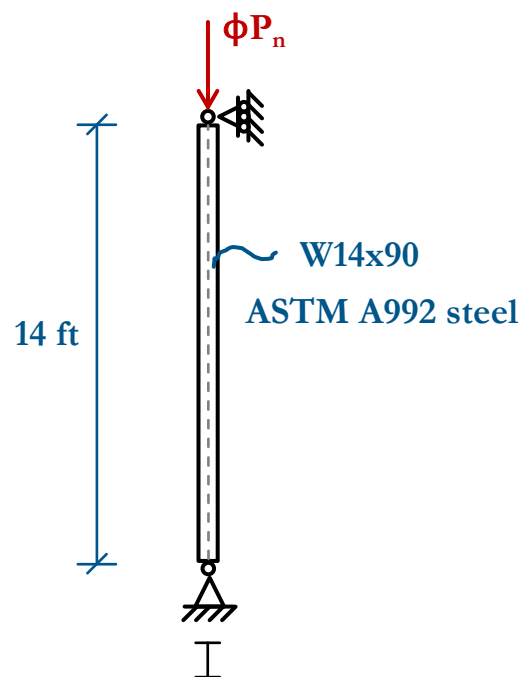


PROBLEM 1

Find the available strength in axial compression, ϕP_n , using LRFD of a 14 ft long, W14x90 column with $F_y = 50$ ksi.

*** Assume fully braced, pinned-pinned connections, i.e. $K = 1.0$**

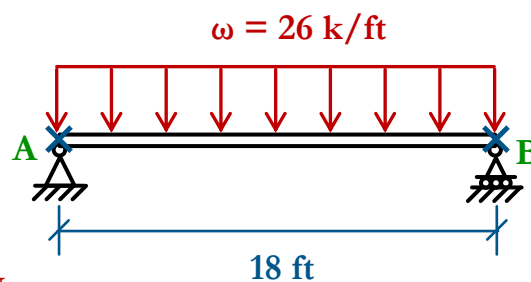


Solution:

PROBLEM 2

Using LRFD, find the most economical W shape to support an 18 ft long, simply supported beam with a uniform distributed load of 26 k/ft.

* Assume beam is laterally braced at ends only (braced at points A and B)



W shape
ASTM A992 steel

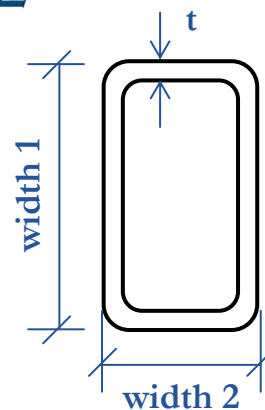
Solution:

PROBLEM 3

Find the limiting width-to-thickness ratio λ_r (nonslender/slender) for a rectangular HSS.

*** Assume rectangular HSS made from preferred material specification.**

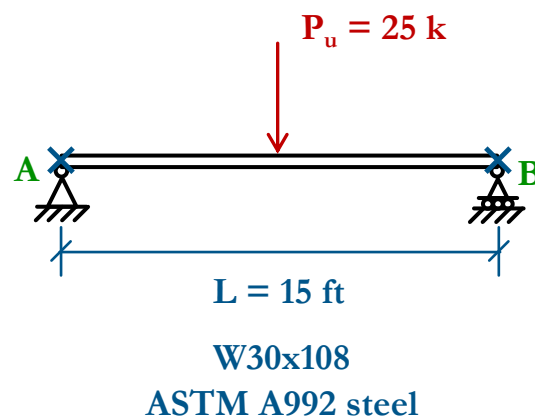
Solution:



Rectangular HSS

PROBLEM 4

Find the maximum deflection for a simply supported beam with a concentrated load at the center.



Solution: