

- 2-4** Beams will be designed for the roof and floor systems of an office building. The loads for these systems are as follows:
- Roof:* dead load = 30 psf, roof live load = 20 psf, snow load = 21 psf, and a rain load consisting of 4 inches of water.
- Floor:* dead load = 62 psf and occupancy live load = 80 psf.
- a. For each of these systems, determine the required factored load capacity for LRFD. Which load combination controls?
 - b. For each of these systems, determine the required ASD load capacity. Which load combination controls?
- 2-5** Structural steel buildings frequently are designed with diagonal bracing systems to resist *lateral loads* (horizontal forces resulting from wind or earthquake loadings). A certain bracing system is subjected to the following loads: dead load = 13.3 kips, occupancy live load = 6.9 kips, roof live load = 1.3 kips, snow load = 1.3 kips, wind load = 150.6 kips, and earthquake load = 161.1 kips.
- a. Determine the required factored load capacity for LRFD. Which load combination controls?
 - b. Determine the required ASD load capacity. Which load combination controls?



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This space truss incorporates tension and compression members. Tension member strength is dependent on the cross-sectional area of the member.