# Load Combinations

$$1.4(D+F) \tag{1}$$
$$1.2(D+F)+1.6(L+H)+0.5(L_r \text{ or } S \text{ or } R) \tag{2}$$
$$1.2(D+F)+1.6(L_r \text{ or } S \text{ or } R)+1.6H+(f_1 L \text{ or } 0.5W) \tag{3}$$
$$1.2(D+F)+1.0W+f_1 L+1.6H+0.5(L_r \text{ or } S \text{ or } R) \tag{4}$$
$$1.2(D+F)+1.0E+f_1 L+1.6H+f_2 S \tag{5}$$
$$0.9D+1.0W+1.6H \tag{6}$$
$$0.9(D+F)+1.0E+1.6H \tag{7}$$

**Where:**

- $D$ = Dead load
- $E$ = Combined effect of horizontal and vertical earthquake induced forces
- $F$ = Load due to fluids with well-defined pressures and maximum heights
- $H$ = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.
- $L$ = Roof live load greater than 20 psf (0.96 kN/m$^2$) and floor live load
- $L_r$ = Roof live load of 20 psf (0.96 kN/m$^2$) or less
- $R$ = rain load
- $S$ = snow load
- $W$ = wind load

**Note:**

- $f_1$ = 1 for places of public assembly live loads in excess of 100 pounds per square foot (4.79 kN/m$^2$), and parking garages; and 0.5 for other live loads.
- $f_2$ = 0.7 for roof configurations (such as saw tooth) that do not shed snow off the structure, and 0.2 for other roof configurations.

**Exceptions:**

1. Where other factored load combinations are specifically required by other provisions of this code, such combinations shall take precedence.
2. Where the effect of $H$ resists the primary variable load effect, a load factor of 0.9 shall be included with $H$ where $H$ is permanent and $H$ shall be set to zero for all other conditions.

**Source:** 2015 International Building Code