Sections 15.1, 15.2, 15.3, 15.5.1, and 15.5.3.5 through 15.5.3.8 of this standard.

#### *15.5.3.5 General Requirements*

Steel storage racks shall satisfy the force requirements of this section.

**EXCEPTION:** Steel storage racks supported at the base are permitted to be designed as structures with an $R$ of 4, provided that the seismic requirements of this standard are met. Higher values of $R$ are permitted to be used where the detailing requirements of reference documents listed in Section 14.1.1 are met. The importance factor, $I_e$, for storage racks in structures open to the public, such as warehouse retail stores, shall be taken equal to 1.5.

#### *15.5.3.6 Operating Weight*

Steel storage racks shall be designed for each of the following conditions of operating weight, $W$ or $W_p$.

a. Weight of the rack plus every storage level loaded to 67 percent of its rated load capacity.
b. Weight of the rack plus the highest storage level only loaded to 100 percent of its rated load capacity.

The design shall consider the actual height of the center of mass of each storage load component.

#### *15.5.3.7 Vertical Distribution of Seismic Forces*

For all steel storage racks, the vertical distribution of seismic forces shall be as specified in Section 12.8.3 and in accordance with the following:

a. The base shear, $V$, of the typical structure shall be the base shear of the steel storage rack where loaded in accordance with Section 15.5.3.6.
b. The base of the structure shall be the floor supporting the steel storage rack. Each steel storage level of the rack shall be treated as a level of the structure with heights $h_i$ and $h_x$ measured from the base of the structure.
c. The factor $k$ is permitted to be taken as 1.0.

#### *15.5.3.8 Seismic Displacements*

Steel storage rack installations shall accommodate the seismic displacement of the storage racks and their contents relative to all adjacent or attached components and elements. The assumed total relative displacement for storage racks shall be not less than 5 percent of the structural height above the base, $h_n$, unless a smaller value is justified by test data or analysis in accordance with Section 11.1.4.

### 15.5.4 Electrical Power Generating Facilities

#### *15.5.4.1 General*

Electrical power generating facilities are power plants that generate electricity by steam turbines, combustion turbines, diesel generators, or similar turbo machinery.

#### *15.5.4.2 Design Basis*

In addition to the requirements of Section 15.5.1, electrical power generating facilities shall be designed using this standard and the appropriate factors contained in Section 15.4.

### 15.5.5 Structural Towers for Tanks and Vessels

#### *15.5.5.1 General*

In addition to the requirements of Section 15.5.1, structural towers that support tanks and vessels shall be designed to meet the requirements of Section 15.3. In addition, the following special considerations shall be included:

a. The distribution of the lateral base shear from the tank or vessel onto the supporting structure shall consider the relative stiffness of the tank and resisting structural elements.
b. The distribution of the vertical reactions from the tank or vessel onto the supporting structure shall consider the relative stiffness of the tank and resisting structural elements. Where the tank or vessel is supported on grillage beams, the calculated vertical reaction due to weight and overturning shall be increased at least 20 percent to account for nonuniform support. The grillage beam and vessel attachment shall be designed for this increased design value.
c. Seismic displacements of the tank and vessel shall consider the deformation of the support structure where determining P-delta effects or evaluating required clearances to prevent pounding of the tank on the structure.

### 15.5.6 Piers and Wharves

#### *15.5.6.1 General*

Piers and wharves are structures located in waterfront areas that project into a body of water or that parallel the shoreline.

#### *15.5.6.2 Design Basis*

In addition to the requirements of Section 15.5.1, piers and wharves that are accessible to the general