

## Protection of the structure

The stability of the building is important to protect the occupants trying to evacuate as well as the firefighters entering the building to extinguish a fire. Therefore, the IBC regulates how the structural elements of a building are to be protected from fire. As previously discussed, Chapter 6 of the IBC discusses the types of construction of a building and outlines the fire protection of the building elements that are essential to the stability of a building. Table 601 of the IBC outlines those protection requirements.

Structural frame members are separated into two different categories, primary and secondary members. Primary structural frame members are columns; beams, girders, and trusses directly attached to columns; floor and roof construction connected directly to columns; and bracing members that are designed to support the gravity loads in a building (see Figure 8-3). Secondary members are any structural members not connected directly to columns; floor and roof construction not connected to columns; and bracing members not supporting gravity loads (see Figure 8-4). [Ref. 202]

Structural frame members constructed of concrete and masonry provide the required fire protection by insulating the steel reinforcement with concrete or masonry. The thickness of the protection is listed in Table 720.1 as previously noted. Steel structural members are typically protected by spraying a fire-resistant material to insulate the steel from the heat of the fire. The material must be installed in accordance with the manufacturer's installation instructions and the material's approved listing (see Figure 8-5).



**FIGURE 8-3** Column and girder truss are considered primary members

**Primary Structural Members**

**Secondary Structural Members**



**FIGURE 8-4** Primary and secondary structural members



**FIGURE 8-5** Sprayed applied fireproofing on structural members