CONSTRUCTION TYPES

The 5 types of Construction

The structural resistance to the consequences of extreme fire activity, increased fire load growth rate and severity rates during initial and continuous fire removal was defined and classed. Comprehension of a building's construction and use are essential for effective, efficient firefighting and essential for all phases of the fight against fire.

Conventional Building Types

Constructions and buildings are usually classified into one of the five basic types according to their construction type:

Type One – Fire-resistive Construction

The structural components for this type of construction are non-combustible materials, usually steel or concrete, which offer a fire-resistance rating that ensures the efficiency of the fire protection against fire events (See: **RESOURCES – Fire and Earthquake – Resistant Construction**).

- These specific ratings are determined by the model building codes for this specific type of construction
- These specific ratings apply to the roof and floor assemblies as well as any exterior or interior bearing walls
- Interior partitions are required to be constructed with approved non-combustible materials
- The fire-resistance ratings are provided by different designs that meet minimum performance

Type Two – Non-combustible Construction

Here there are some differences between the same specifications for Type One construction. This type of construction may not afford any fire-resistance rating for the exposed structural elements.

- If any fire protection of the structural elements is provided, it is at a lesser rating than that required for Type One construction
- In this type of building the structural elements are usually made of steel, bolted, riveted or welded together
- This type of construction is susceptible to expansion, distortion or relaxation of the steel members, resulting in early collapse during a fire
- Interior partitions are required to be constructed with non-combustible or approved limited-combustible materials

Type Three – Ordinary Construction

All or some of the structural elements of the interior may be combustible in this form of construction. The external walls should be built of non-combustible materials. Based on the horizontal distinction and whether it is bearable or non-bearable, they can have fire resistance ratings.

- This category usually is divided into protected and unprotected subtypes; the building will have masonry exterior walls and wooden structural members and combustible interior construction.
- The building generally will not exceed six stories and most often will be two or three stories in height.
- Floor and roof supports are usually wood, but other materials, such as steel bar joists, may be used.
- Floor and roof decking most frequently will be plywood or composition board.
- Common walls between buildings may share wall sockets for floor joists and roof rafters.

Type Four – Heavy-Timber Construction

This type of construction features unprotected timber with large cross-sectional areas that are heavy-wood structural elements – columns, pillars, arches, floors and roofs.

- A minimum dimension of eight inches for structural wood supports (columns, beams, arches and girders) is required.
- All other exposed wood must have a minimum dimension of two inches; concealed spaces are usually not permitted
- These buildings consist of masonry (non-combustible) exterior walls and structural members of substantial timber construction.

- Commonly, this type of construction is found in older factories and mills; however, there is a resurgence in their use in various new occupancy types.
- Wood floors generally will have a minimum thickness of three inches and may be oil-soaked from years of oiling heavy machinery.
- Roof supports will be wood with minimum dimensions of four by six inches, and a minimum roof decking thickness of 1-1/8 inches.