SFS 110 : BUILDING CONSTRUCTION FOR FIRE PERSONNEL

Transcript title

Bldg Const. for Fire Personnel

Credits

3

Grade mode

Standard letter grades

Contact hours total

30

Lecture hours

30

Recommended preparation

SFS 101, SFS 102.

Description

Studies building construction with emphasis on how buildings fail when subjected to fire. Case studies used to illustrate points. Studies of roof and wall construction enable the student to predict failure points and adapt fire fighting strategies accordingly. Buildings under construction and those subjected to external forces will also be studied. Field trips take students into the community to study various construction techniques.

Learning outcomes

1. Describe building construction as it relates to firefighter safety, buildings codes, fire prevention, code inspection, firefighting strategy, and tactics.
2. Classify major types of building construction in accordance with a local/model building code.
3. Analyze the hazards and tactical considerations associated with the various types of building construction.
4. Explain the different loads and stresses that are placed on a building and their interrelationships.
5. Identify the function of each principle structural component in typical building design.
6. Differentiate between fire resistance, flame spread, and describe the testing procedures used to establish ratings for each.
7. Classify occupancy designations of the building code.

Content outline

I. Introduction
a. History of Building Construction
b. Government Functions, Building and Fire Codes
c. Fire Risks and Fire Protection
d. Fire Loss Management and Life Safety
e. Pre-fire Planning and Fire Suppression Strategies
II. Principles of Construction
a. Terminology and Definitions
b. Building and Occupancy Classifications
c. Characteristics of Building Materials
d. Types of Characteristics of Fire Loads
e. Effects of Energy Conservation
III. Building Construction
a. Structural Members
i. Definitions, Descriptions and Carrying Capacities
ii. Effects of Loads
b. Structural Design and Construction Methods
c. System Failures
IV. Principles of Fire Resistance
a. Standards of Construction
b. Fire Intensity and Duration
c. Theory versus Reality
V. Fire Behavior versus Building Construction
a. Flame Spread
b. Smoke and Fire Containment
i. Construction and Suppression Systems
ii. HVAC Systems
iii. Rack Storage
iv. Combustible
VI. Wood Construction
a. Definition and Elements of Construction
b. Types of Construction
c. Fire Stopping and Fire Retardants
d. Modification/Code Compliance
VII. Ordinary Construction
a. Definitions and Elements of Construction
b. Structural Stability and Fire Barriers
c. Modifications/Code Compliance
VIII. Collapse
IX. Ventilation
X. Non-Combustible
XI. Steel Construction
a. Definitions and Elements of Construction
b. Structual Stability, Fire Resistance and Fire Protection of Elements
c. Modification/Code Compliance
XII. Concrete Construction
a. Definitions and Elements of Construction
b. Structural Stability and Fire Resistance
c. Modification/Code Compliance
XIII. High Rise Construction
a. Early versus Modern Construction
b. Vertical and Horizontal Extension of Fire and Smoke
c. Fire Protection and Suppression
d. Elevators
e. Atriums/Lobbies
f. Modifications/Code Compliance
XIV. Collapse
XV. Ventilation