Onsite Fire Risk Reduction Methods
Outline

• Construction Fire Background
• Site Safety Code Requirements
• Construction Fire Safety Practices
• Additional Resources
Construction Fire Statistics

According to NFPA, 2007-2011:

- 38,000 wood-frame apartments constructed
- 550 non-confined structure fires
- 1.4% of apartments constructed
- 209,360 non-confined structure fires in all apartments & family homes
- Only 0.9% of these occurred during construction
According to NFPA, Construction Fires in Multi-Family:

- Most likely to start on lower floors of a multi-story building (76% started on 1st or 2nd floor)
- Not tied to increased height of buildings
Causes of Construction Fires

US Fire Administration has identified 6 causes of construction site fires:

- Hot Work
- Smoking
- Heating Devices
- Electrical Malfunctions
- Cooking Fires
- Criminal Activity and Vandalism
Construction Fire Safety in the Code
Construction Fire Safety in the Code

Base Building Codes:
• California Building Code (CBC)
  • Chapter 33 & References CFC
• California Fire Code (CFC)
  • Chapter 33

NFPA Standards:
• NFPA 1
  • Chapter 16
• NFPA 241
Construction Fire Safety: CBC

CBC Chapter 33: Safeguards During Construction

CBC Section 3302.3 Fire safety during construction.
Fire safety during construction shall comply with the applicable requirements of this code and the applicable provisions of Chapter 33 of the California Fire Code
Fire Extinguisher (CBC 3309)

During construction, one portable fire extinguisher must be placed at:

• Each stairway on all floor levels with combustible materials
• Each storage or construction shed and where special hazards exist
Standpipes (CBC 3311)

A minimum of one standpipe must be available during construction for fire department use.

• The standpipe is installed before the construction is 40 feet above fire department access.
Sprinkler System Commissioning (CBC 3312)

Sprinkler system must be tested and approved before the certificate of occupancy is awarded
Construction Fire Safety: CFC

Additional requirements for fire safety during construction are contained in CFC

• Temporary heating equipment must be listed and labeled (3303).
• Smoking is prohibited except in approved areas with posted signage (3304.1).
• A fire watch must be maintained with qualified personnel if required by the fire code official (3304.5).
Construction Fire Safety: CFC

• Welding operations must follow the provisions of IFC Chapter 35. Electrical wiring must comply with NFPA 70 (IFC 3304).

• The owner must designate a fire prevention superintendent responsible for the fire prevention program during construction (3308).

• An accessible emergency phone must be provided in an approved location at the construction site (3309).
OSHA Requirement: Fire Protection Plan

OSHA 1926.150:
The employer shall be responsible for the development of a fire protection program
Construction Fire Safety

- Construction Fire Safety is not a new concept
- Issue is not lack of codes that address this
- Issue is lack of enforcement & lack of compliance
- Construction Fire Safety necessitates functioning as a team, upholding a higher level of accountability, compliance & enforcement

- What resources are available to assist with this?
Construction Fire Safety Practices

OUR MISSION

The mission of this website is to provide background information to both public and private sector organizations regarding how to reduce the frequency and severity of fires during construction. This site identifies many best management practices that were collected during a literature search.

RECENTLY POSTED

CFSP Introduction
Construction Fire Safety Practices

Collaborative Effort of:
• American Wood Council
• Industry Based Stakeholders Group
• FireForceOne (fire protection consultant)

Goal:
• Provide information to public & private sector organizations regarding how to reduce the frequency and severity of fires during construction
Construction Fire Safety Practices

Builds on existing code requirements to add guidance, based on the premise:

**Fire is No Accident**

Information can be incorporated in:
- Fire Protection Plan
- Safe Work Methods
- Hot Work Permit System
- Fire Protection Policy & Procedures
Construction Fire Safety Practices

3 Manuals:
• Basic Fire Precautions During Construction
• Hot Work During Construction
• FD Response to Fires During Construction
Construction Fire Safety Practices

7 Short Videos, Discuss:
• Generating & Enforcing a Fire Protection Plan
• Hot Work Best Practices (Welding, Soldering)
• Fire Department as a Partner
• Clean Job Site
• Job Site Security
• More
Fire Protection Plan

Some Jurisdictions Provide FPP Templates

General Safety Guidelines Include:

• Fire safety is everyone’s responsibility
• Provide fire safety orientation & training for all on site, including sub-contactors
• Report fire hazards immediately
Construction Fire Safety Practices

Fire is No Accident: **No Smoking on Job Site**

- Many utilize a zero-tolerance policy: one strike and you’re out
Construction Fire Safety Practices

Fire is No Accident:
Clean Construction Waste, Debris
• Use FPP to require routine, scheduled cleaning
Construction Fire Safety Practices

Fire is No Accident: **Clean Construction Site**

- Waste from drilling for MEP, cutting wood (sawdust, wood chips) should be cleaned immediately
  - Can create significant fire load
- Safely secure flammable liquids
Construction Fire Safety Practices

Fire is No Accident: **Provide Requirements for**
- On-Site food preparation equipment
- Proper regulation of temporary heating equipment
- Proper use & maintenance of construction equipment
Hot Work Best Practices

Hot Work Permitting System

• Identifies where each day’s hot work is taking place
• Allows site supervisor, field personnel & security personnel to readily identify key areas
Hot Work Best Practices

Maintain hot work watchman

- Located adjacent to any hot work taking place
- Armed with fire extinguisher, looking to spot any sparks, etc. from hot work
- Check area after hot work is complete
Fire Service As a Partner

• Maintain good communication & relationship with local fire service
• Provide frequent updates on water supply connection locations, status of passive & active fire protection measures
• Maintain access points
Site Security & Safety

- Off-hours more prone to vandalism, arson
- Should plan walk-through of entire building, especially in areas of that day’s hot work
- Physical presence & video surveillance are key
- Proper fencing, locks, other security measures as necessary to prevent unauthorized access
Construction Fire Safety Practices

Stop Fire Before it Starts

• Enforce & Maintain Code Requirements for Construction Site Fire Safety
• Generate & Follow Fire Protection Plan
• Involve Fire Service as a Key Partner
• Open Communication
• A Fire-Free Project is in Everyone’s Best Interest
Construction Fire Safety Practices

Awareness
Action
Accountability
Additional Resources

WoodAware.com

The National Institute of Occupational Safety and Health (NIOSH) provides a Fire Fighter Fatality Investigation and Prevention Program. In addition to the incident investigations, NIOSH provides recommendations to prevent similar incidences from occurring. This information may be valuable as an educational aid of lessons learned.

Note: Light frame construction is defined as: Light frame construction, any method of construction utilizing dimension lumber joists, MFC trusses, MPCM trusses, steel bar joist trusses, wood joists, or composite wood joists as floor or roof system structural elements.


For Firefighter Tactics and Strategies, please visit ModernFirefighting.com.

This website provides awareness level information to the fire service on traditional and modern wood products used in residential construction. These publications were developed under a cooperative agreement between the Department of Homeland Security's United States Fire Administration and the American Wood Council.

As with all types of structural framing exposed to fire, the intensity of the fire load varies from incident to incident, as do the construction materials and details. This results in performance which is unpredictable under fire conditions.
Additional Resources: WoodAware.com

- Wood products primer guide with specific fire performance & fire service interaction
- Info on adhesives, smoke toxicity, charring & more
Building Construction

Every building that is ever constructed is constructed in adherence to the set of standards that exist at the time. If you go back even to the early colonial days there are buildings that remain on the inventory today one of the terms that we often use for building construction of this type is called Legacy construction. It means that it was built at a time and place in which the materials were different construction techniques may have been different but they were appropriate for the time.

As modern construction techniques have been brought into play these old buildings and not have to be brought up to modern standards. It is not uncommon for two buildings sitting side-by-side to be built at different time periods and therefore under different codes and standards. When we use the word legacy in the fire service it usually is meant to describe dimensional lumber that was used up to about 1980. When we use the word modern building construction it refers almost entirely to new materials and techniques that have been approved by the codes and standards group for use in buildings since 1980.

It is important for the modern firefighter to be able to clearly understand the difference between these two environments. Fire tests and personal observations by fire ground officers point to the fact that in less you understand the age and condition of building construction you are unlikely to be able to make appropriate decisions when the building is being assaulted by fire.

One of the observations of fire officers is that the timeframe that we used to anticipate or assume when fighting fires has undergone major change. A
Additional Resources: ModernFireFighting.com

- Provides information for fire service to educate on reaction of different building materials in fire events to enhance situational awareness & tactical preparedness
- Collaborative effort of US Fire Administration, AWC & Fireforceone
Questions?

This concludes The American Institute of Architects Continuing Education Systems Course

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