



Fire Safety for Buildings Under Construction: NFPA 241

Oregon Fire Marshals Association – TEC 2018

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Fire Safety for Buildings Under Construction



Construction Fires - Incidents

Construction Fires - 2017

- March – August, 2017
 - 8 significant fires
 - \$400,000,000 Direct Loss
- Waltham, MA 7/2017



Construction Fires - 2017

- Windsor Mill
 - Windsor, CO 8/2017



Construction Fires - 2017

- Raleigh, NC & Overland Park, KS 3/2017



- Apartments under construction
- Fires a week apart

Construction Fires - 2017

- Alta Waverly Apartments
- Oakland, CA 7/2017




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Construction Fires - 2017

- Fuse 47: College Park, MD 4/2017
- TreadMark: Boston, MA 6/2017
- Torrey Hall, Burlington, VT 8/2017



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Construction Fires


Is this okay?

Is it a:

- Wood problem?

Anaheim, CA

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Construction Fires

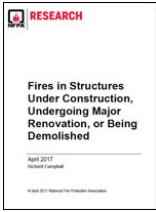
Is it a:

- Building problem?

Boston, MA

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Construction Fires - Data



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Construction Fires: The Numbers

THE NUMBERS Stats on fires in buildings under construction or being renovated or demolished in the U.S., 2010-2014

8,440
Average annual number of fires

23
Average daily number of such fires nationwide

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Construction Fires: The Numbers



Construction Fires: The Numbers

RESEARCH

FIRES IN STRUCTURES UNDER CONSTRUCTION, UNDERGOING MAJOR RENOVATION OR BEING DEMOLISHED FACT SHEET

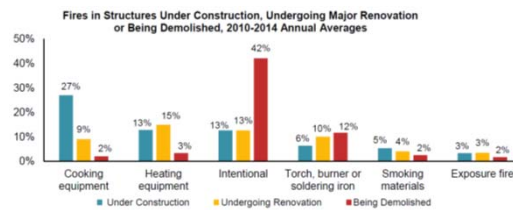
Fires in Structures Under Construction, Undergoing Major Renovation, or Being Demolished, 2010-2014 Annual Averages

| Structure Status | Fires | Civilian Deaths | Civilian Injuries | Direct Property Damage (in Millions) |
|-----------------------------|-------|-----------------|-------------------|--------------------------------------|
| Under construction | 3,750 | 5 | 51 | \$172 |
| Undergoing major renovation | 2,560 | 4 | 65 | \$108 |
| Being demolished | 2,130 | 4 | 16 | \$30 |

Construction Fires: Causes



Construction Fires: Causes



What could possibly go wrong?

Hazards

- ✓ Cutting
- ✓ Welding
- ✓ Roofing
- ✓ Others

Construction Fires - Mitigation

Construction Fires: Mitigation

- NFPA 241, 2019 edition


Standard for Safeguarding Construction, Alteration and Demolition Operations



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Construction Fires: Mitigation


- 1933
 - First Edition
 - Referenced in every fire code in the US



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Chapters 1-3


- Administration
- Referenced Publication
- Definitions



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Chapter 4

- Temporary Construction, Equipment and Storage
 - Temp offices/sheds: separation distances
 - Temp enclosures: non-comb/fire retardant
 - Fire Extinguishers
 - Equipment: heat from combustibles



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Chapter 5 – Processes & Hazards



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Chapter 6 – Utilities

- Electrical
- Temporary wiring
- Lighting
- Fuel gas



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Chapter 7 – Fire Protection

- Fire Safety Program
 - Housekeeping
 - On-site security
 - Fire protection systems
 - On-site fire brigade
 - Pre-fire plan
 - Rapid communication
 - Special hazards
 - Existing structure protection

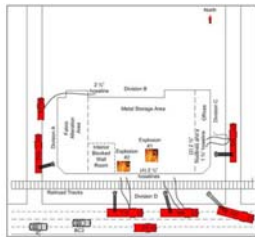


Chapter 7 – Fire Protection

- Fire Prevention Program Manager
 - Designated by owner
 - Authority to enforce stds
 - Knowledge of
 - Standards
 - Systems
 - Inspection procedures
 - Maintain records



Pre-Fire Plans



Site Security



Chapter 7 – Fire Protection

- ITM
- Fire alarm reporting
- Access for firefighting
- Standpipes
- First aid and fire extinguishers
- Means of Egress
- Temporary fire protection



Chapter 8 – Safe Construction Operations

- Scaffolding/Shoring/Forms
- Construction material & equipment (covered & yard stg)
- Permanent heating equipment (ASAP!)
- Utilities
- Building separation walls (priority!)
- Fire protection during construction



Chapter 9 – Safe Roofing Operations

- Asphalt & tar kettles
- Single-ply & torch-applied roofing systems
- Fire Extinguishers for roofs
- Fuel for roofing operations



Chapter 10 – Safe Demolition Operations

- Special precautions
- Temporary heating equipment
- Smoking
- Demolition using explosives
- Utilities
- Fire cut offs
- Fire protection during demolition



Chapters 11-12

- 11 Safeguarding Underground Operations
- 12 Safeguarding Construction Operations for Tall Timber Structures



Annex A & B

- A: Explanatory Material
- B: Informational References



Construction Fires: Mitigation

- Key to success
 - Fire safety program
 - Constant vigilance
 - Fire prevention program manager
 - Constant vigilance
 - Pre-fire plans
 - Constant vigilance



Resources

- www.NFPA.org/241
- April 2017 Data Analysis Rpt
 - Fires in Structures Under Const
- Fact Sheet
- Bulletin
- Journal Sept/Oct 2017



Resources

- 51B On-line training
- 241 On-line training
 - Module 1: The Importance of *NFPA 241*
 - Module 2: Fire Safety Program
 - Module 3: Safeguarding Construction: Equipment, Storage, Hazards Including Hot Work, and Utilities
 - Module 4: Safeguarding Construction: Roofing, Demolition, and Underground Operations



Thank You!

Questions?

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www.NFPA.org/241

