



# Pre-planning and Fire Suppression of Buildings under Construction

BCD-232



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## COURSE DESCRIPTION



This program is designed to provide background and information to fire departments that may experience the construction of large area buildings in their community. Many fire departments have limited experience in the planning and response to these complex buildings. This requires a thorough understanding of the fire and building code provisions as well as the proper use of NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations* and NFPA 1620, *Standard for Pre-Incident Planning*.

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## LEARNING OBJECTIVES

Upon completion, participants will be better able to:

- |   |   |
|---|---|
| <p><b>1 Risks &amp; Hazards</b></p> <p>Identify risks &amp; hazards on constructions sites. Learn the leading causes of fires in structures under construction.</p> | <p><b>3 Pre-Incident Planning</b></p> <p>Identify the procedures and methods of pre-incident planning from the moment a building is contemplated.</p>             |
| <p><b>2 Codes &amp; Standards</b></p> <p>Apply model codes and standards that pertain to safety precautions during construction and pre-incident planning.</p>      | <p><b>4 Tactics and Strategy</b></p> <p>Using case studies develop strategies and tactics to suppress a fire on a construction site of a large area building.</p> |

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[www.constructionfiresafety.org](http://www.constructionfiresafety.org)

Pre-planning and Fire Suppression of Buildings Under

Free to Qualified Officials

Fire Safety Manuals

Links & Resources

Webinars

Checklists & Guidance documents

Quarterly newsletters



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## NATURE OF THE PROBLEM

U.S. fire departments report the following structure fire averages

- 3,840 under construction
- 2,580 during major renovations

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020

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## IMPACT ON THE COMMUNITY

- While fires on construction sites made up only 0.8% of all fires in structures from 2010-2014\*, they get a disproportional amount of media coverage
- The media reaction is often negative
- Economic development takes a huge hit when a construction fire occurs
- Conforming to best practices to reduce the frequency and severity of these fires can reduce a considerable amount of criticism



\*Campbell, Richard, NFPA, *Fires in Structures Under Construction, Undergoing Major Renovation, or Being Demolished*, April 2017

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## Significant Fires During Construction



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### BOUND BROOK, NJ– JANUARY 12, 2020

- “Meridia Downtown”
- 174-unit apartment
- 7 alarms
- 70 departments/ 3 Counties
- Destroyed 4 surrounding buildings
- Power cut to downtown for a day
- Commuter rail line shut down
- 100 homes evacuated
- Arson- arrest made



Courtesy of NJ.com



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## DENVER, COLORADO – MARCH 7, 2018

- Two dead,
- Middle of afternoon
  - Three alarms
  - Six roof exposure fires
- Five-story wood-frame
  - 80-unit multi-family
- Radiant heat melted 40 vehicles
- Undetermined cause



Courtesy the Denver Post



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Courtesy the CBS Denver

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## COLLEGE PARK, MARYLAND – APRIL 24, 2017

- Seven-story mixed use
  - Retail/residential
- Sprinkler system installed, but not yet operational
- UMD closed, senior housing evacuated
- \$39 million
- Cause: accidental
- Razing top five floors



Courtesy the Washington Post

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## OAKLAND, CALIFORNIA – JULY 7, 2017

- The Waverly
  - Seven story, mixed use
  - 328,000 ft<sup>2</sup>
  - 196 units
- Construction crane collapse risk
  - Spinning in thermal column
- 100 neighbors evacuated
- ATF: Undetermined cause
- Similar to other East Bay arson fires



Photo credit: SF Gate. com

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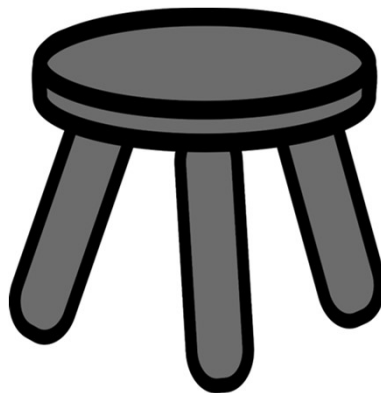
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## THE THREE-LEGGED STOOL OF FIREFIGHTING

**FD ACCESS**

**EARLY  
NOTIFICATION**



**WATER SUPPLY**

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## Understanding Risks & Hazards

It's no surprise that construction sites can become an unsafe environment

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### SOURCES OF IGNITION



- Smoking Materials
- Cooking
- Open Flames
- Electrical equipment
- Light fixtures
- Heat and Sparks from grinding and cutting metal
- Arson

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## SOURCES OF FUEL



- Combustible refuse and trash
- Building materials
- Flammable gases - e.g. propane
- Flammable liquids
- Packaging materials

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## CAUSES OF NEW CONSTRUCTION FIRES



- Cooking Equipment - 22%
- Electrical- 16%
- Heating Equipment- 15%
- Intentionally Set- 11%
- Torch, burner or soldering iron- 7%
- Exposure Fires - 4%
- Smoking- 4%
- Spontaneous Combustion- 4%

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020

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## CAUSES OF NEW CONSTRUCTION FIRES

- Cooking equipment is the leading cause of fires, but they are usually minor.
- Electrical fires account for 16% of all construction fires but 42% of property damage
- Intentionally set fires make up 11% of construction fires but responsible for 32% of property damage

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020



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## TIMING OF NEW CONSTRUCTION FIRES

- Occur more frequently in colder months.
- Peak times are between 1600 hrs. and 2000 hrs.
- 12% occur between midnight and 0400 hrs.

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020



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## LEADING FACTORS CONTRIBUTING TO IGNITION



- Electrical failures or malfunctions
- Abandoned, discarded materials or products
- Heat source too close to combustibles

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020

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## FIRES BY HEAT SOURCE

*The leading heat sources for fires in structures under construction involved either heat or sparks, embers or flame from operating equipment, which together accounted for nearly two of five fires, followed by arcing.*

*Taken together, some kind of operating equipment acted as the heat source in almost one-half of these fires.*

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020

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## FIRES OCCURRING DURING MAJOR RENOVATION



- Electrical- 23%
- Heating Equipment- 15%
- Intentionally Set Fires - 12%
- Cooking Equipment - 10%
- Torch, Burner, or Soldering Iron - 9%
- Smoking Materials - 3%
- Exposure Fires - 3%

Campbell, Richard, NFPA, *Fires in Structures Under Construction or Renovation*, February 2020

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## CODES & STANDARDS

...that pertain to safety precautions during construction & Pre-incident Planning

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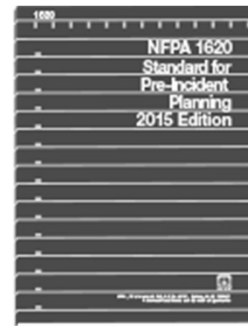
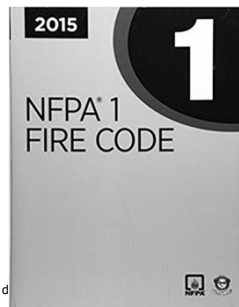
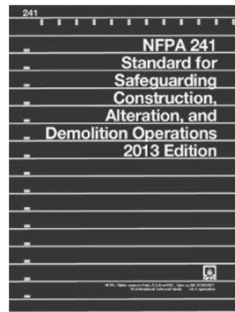
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## MODEL CODES THAT SAFEGUARD CONSTRUCTION



Chapter 33

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## FIRE PREVENTION BUREAU ACTIVITIES

The Fire Department has two roles in dealing with fires in buildings under construction:

- First role is carried out between the builder and the fire prevention bureau during planning
- Second role is carried out between the construction staff and the FD operations division during construction



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## CONSTRUCTION SITE PRE-PLANNING

The model code provides that private party who is responsible for Fire Protection Plan activity at the construction site shall develop and maintain an approved fire plan that includes an approved pre-incident plan in cooperation with the fire department.

**Local policies and procedures must be considered in any pre-incident plan.**



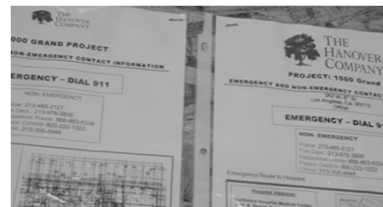
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## CONSTRUCTION PRE-INCIDENT PLAN

- Fire department site access points
- Fire extinguisher and initial attack equipment locations
- Any special provisions for firefighting activities
- Disposition of all built-in fire protection measures
- Emergency escape routes and stairs
- Hydrant positions
- Assembly point locations
- Details of temporary accommodation and storage areas, including hazardous item storage locations (e.g. flammable liquids, gas cylinders, etc.)



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## PRE-INCIDENT PLANNING – BUREAU PERSPECTIVE

The Fire Department should meet with the owner/ developer before construction, the issues to discuss include

- FD access to the construction site
- Sufficiency of the water supply to the site
- Reporting of emergencies
- Built-in fire protection (Standpipes, sprinkler systems etc.)



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## PRE-CONSTRUCTION MEETINGS

The reason for a pre-construction meeting from a fire department perspective is to lay the groundwork for a pre-fire plan.

Items to discuss:

- Timing of construction
- Anticipated weather and its challenges
- The shifting content of the building
- Fire safety



**During a fire event should not be the first time the fire department talks with the building contractor!**

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## FIRE INSPECTOR INTERFACE W/ BLDG INSPECTOR

- Building inspectors are in the building almost daily while fire inspectors only inspect periodically.
- Fire inspectors should engage in an ongoing dialogue with building inspectors about potential fire risks.
- Building inspectors know a lot about construction codes but traditionally have not engaged on construction fire safety.
- **Don't assume that building inspectors are inspecting for fire safety practices.**



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## BUILT IN FIRE PROTECTION

Many fire protection features will not be fully operational until the building is ready for occupancy.

The FD should be aware of the status of the various building systems that will be relied upon during suppression activities

Knowing whether the systems are in or out of service could be a key factor in the decision to mount an offensive or defensive fire attack.

Early activation of the sprinkler system may help reduce fire loss.



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## OPERATIONAL PLANNING

First due units should identify the following before construction begins and monitor during construction

- The # of fire hydrants & waters sources and their locations
- The types of materials present and their storage methods
- Additional resources to help with fire i.e. moving vehicles, temporary structures
- Identify who will notify the local fire department when construction begins
- The following information should be collected and shared:
  - Contact person and phone number
  - 1<sup>st</sup> due company
  - Verify the address is known to dispatch

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## OPERATIONAL PLANNING – CONTINUED

Before work begins other factors must be addressed

- Do sub-contractors have fire prevention plans as part of their processes?
- Do they have Emergency Response plans as part of their resources?



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## CONSTRUCTION FIRE SAFETY PLAN

**Unlike a Pre-Incident Plan for the FD, this is a Guidance Document for the Builder**

- Do they conduct training?
- Do they have a system of accountability for their workers in an emergency?
- Have they established a warning system?
- Is fire equipment available?
- Do they have a "Hot Work" permit system?
- Are flash-back arrestors used?
- Are compressed gasses on site and how are they stored?
- Is welding equipment inspected and in good shape?
- What PPE is in place?

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## DURING CONSTRUCTION – ELEMENTS TO ADDRESS

- **Constant maintenance of fire protection equipment**
  - Hydrants are visible and unobstructed
  - Hydrants are operational
  - Extinguishers are adequate and properly located
  - Extinguishers are fully charges and tagged
  - Standpipes "go up" with the building
  - FDC is visible, marked and readily accessible



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## DURING CONSTRUCTION – ELEMENTS TO ADDRESS

- **Maintain clear access to buildings and onto the site:**

- All roads kept clear of debris
- An all weather driving surface
- 20 ft. of unobstructed width
- Turn arounds for dead end roads of 150 ft. or more
- Access roads extend to within 150 ft. of the building
- At least 13.5 ft. of vertical clearance



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## DURING CONSTRUCTION – ELEMENTS TO ADDRESS

- **Keep materials from accumulating around the building**

- Piles of wood or other combustibles should be kept away from the building unless they are part of the active construction process.
- 30 ft. of clearance from construction materials to the building
- Trash and debris removed daily
- Construction materials not stored in building unless fire protection is in service



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## DURING CONSTRUCTION – ELEMENTS TO ADDRESS



- **Maintain a “no smoking” policy in or near buildings**
  - Set up designated smoking areas for employees off site
  - Monitor the no smoking policy by conducting audits
  - If a smoking area is set up on site; make sure it is covered against inclement weather so employees don't have an excuse to smoke in the building
  - Make sure it's located away from any construction and combustible material and proper receptacles are present for disposal

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## DURING CONSTRUCTION – ELEMENTS TO ADDRESS

- **Hot Work/ Burn permits should be used**
  - Pre-inspection of work area
  - Charged fire extinguisher at all times at the point of work
  - A dedicated fire watch at all times
  - Monitor the area for 30 minutes after work is conducted with a fire extinguisher



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### POINTS OF INTEREST ON A CONSTRUCTION SITE PLAN

- Availability of fire protection systems
- Mitigation practices
- Water supply
- Means of egress and access
- Location of hazmats



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### PRE-INCIDENT PLAN

NFPA 1620

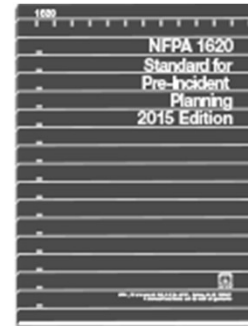
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## NFPA 1620: STANDARD FOR PRE-INCIDENT PLANNING

- NFPA 1620, Section 1.1.1 This document is not intended for pre-incident planning related to construction, alteration, and demolition (*See NFPA 241*)
- NFPA 1620, Section 4.1.8 The development of a pre-incident plan for new facilities and other situations shall begin during the design phase.



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## PRE-FIRE PLANNING FROM AN OPERATIONS PERSPECTIVE

- Pre-incident planning is the process of gathering and documenting information that is critical for making incident command decisions on the scene
- NFPA 1620 provides criteria for developing pre-incident plans for use by emergency personnel responding to emergencies
- Local FD's can create their own version of pre-incident planning forms
- The objective is to map out a common understanding of the facts, probabilities, and possibilities of what could occur on a specific site

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## NFPA 1620 QUICK OVERVIEW

- AHJ shall determine the locations to be pre-planned and the data to be collected- your FD needs a clearly defined scope and comprehensive policy
- The following items should be considered
  - Potential life safety hazards: including first responder safety
  - Structure size & complexity
  - Economic impact
  - Importance to the community
  - Location and seasonal variations
  - Presence of hazardous materials and processes
  - Susceptibility to natural disasters



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## NFPA 1620 QUICK OVERVIEW

Electronic plans are allowed if all four conditions are met

1. The electronic connection is considered reliable by the AHJ
2. The electronic connection is secured against unauthorized users
3. The electronic version is available at the incident scene
4. The electronic version is protected from unauthorized changes



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## NFPA 1620 QUICK OVERVIEW

### The Pre-Planning must cover the following areas:

- Physical and Site Considerations
- Life Safety Consideration
- Water Supply & Fire Protection Systems
- Hazardous Materials



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## NFPA 1620 QUICK OVERVIEW

### Physical and Site Considerations

1. Construction type
2. Building management systems & utilities
3. External site conditions
4. Internal & external security features
5. Fences or other barriers



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## NFPA 1620 QUICK OVERVIEW

### Life Safety Considerations

1. Hours of operation
2. Occupant load
3. Occupant accountability
4. Assistance for non-ambulatory occupants
5. Non-evacuation strategies for protecting occupants - "Shelter in place"



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## NFPA 1620 QUICK OVERVIEW

### Water Supplies and Fire Protection Systems

1. Available water supply
2. Static water sources
3. Hydrant location
4. Fire Pump room
5. FDC locations
6. Non-water based protection systems
7. Fire alarm control unit location



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## NFPA 1620 QUICK OVERVIEW

### Hazardous Materials

1. Types of hazmats on location
2. Inventory
3. Location
4. Special extinguishing agent location
5. Location of MSDS sheets



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## NFPA 1620 QUICK OVERVIEW

### Vacant and Abandoned Structures

1. Last known type of occupancy
2. Open shafts
3. Pits & holes due to removed equipment
4. Structural degradation due to weather and vandalism
5. Exposed structural members
6. Penetrations in barriers that allow abnormal fire travel
7. Combustible contents
8. Maze-like configurations
9. Blocked or damaged stairwells
10. Potential for delay in discovery of fire
11. Potential for a multi-room fire on arrival
12. Exposure issues from nearby structures

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## NFPA 1620 SUMMARY

- Pre-incident plans should be created in conjunction with the builder/ developer
- Every FD needs to have a policy, procedures, and forms for pre-incident planning
- The plans need to be accessible, reliable, and kept current
- Program needs to be supervised



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## STRATEGY & TACTICS

Once ignition occurs, the series of events that result in the fire department response and suppression activities become the number one priority.

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## OPERATIONS DIVISION

- Every FD has different capabilities, so any specific talk of strategy and tactics would be meaningless without knowing the capacity of your individual department to deploy fire suppression resources.
- The focus will be on a couple very straightforward observations about fighting fires on construction sites.



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## FIRE DEPARTMENT CAPACITY

"If You Have a Big Nail, You Need a Big Hammer!"

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## FIRE DEPARTMENT CAPACITY

- Not all FD's are the same: Some are staffed on a full-time basis and have multiple fire stations, some are not.
- It is critical that the person(s) who prepares that pre-fire plan work with the fire department to understand the level of service they can provide
- Site supervisors when developing should meet early with the operations bureau to establish criteria for several components of the plan including vehicle access and water supply
- Also to be discussed, is whether the local department has the capacity to handle a fire on site or whether it will rely on outside resources to assist in controlling the fire



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## LOCAL RESOURCES AND MUTUAL AID

- Automatic Aid: an agreement between communities where equipment can be automatically be sent to an emergency without the IC requesting it. Programmed into the CAD and will dispatch when the box is struck out.
- Mutual Aid: A reciprocal agreement between departments that agree to help each other when requested.
- Mutual aid or automatic aid usually play a part in all large construction fires, most FD's do not have the capacity to fight a large fire and cover the jurisdiction at the same time.
- Fire Departments should compare its capacity to the target hazards involved and plan accordingly.

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## THE BASICS

- Building materials and contents have changed, but firefighting hasn't changed its basic tools; we use water and hoses to suppress fires
- We make decisions to enter a structure based on a series of factors: smoke color, flame spread...experience
- Our understanding of ventilation and the movement hot air and gases has become more refined over the years



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## FIRES DURING CONSTRUCTION

- Tactics and strategy employed by fire departments vary considerably from community to community. There are standards for both staffing and the apparatus and there are many suggested guidelines. The ultimate choice on how a fire department chooses to fight a fire is based upon their knowledge and their policies and procedures.



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## WATER SUPPLY

Water supply is the single biggest factor on what strategy an incident commander will use on a large construction fire.

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## FIRE FLOW

- The determination of fire flow is a common function in fire prevention bureaus and building departments.
- American Water Works Association publishes Manual M31 which is used to determine fire flow for an occupied structure.
- ISO has a calculation for Needed Fire Flow (NFF) expressed in GPM it considers many factors: construction type, building size and sprinklers. It also assumes that the structure is ready for occupancy.
- Calculating fire flows assumes that all fire mitigation factors are in place.
- Fires during construction hit their peak heat production differently than for an occupied structure: **That single factor may determine the effectiveness of the initial attack and the overall strategy!**

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## WATER SUPPLY

- As stated previously, the basic fire flow calculations are for a structure once completed
- A fire during construction will have a different demand because the various built-in fire protection systems may not be online
- It is advantageous to have multiple mains as your fire ground water supply possibly from two different streets



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## WATER SUPPLY

The Incident Commander must ask themselves 3 questions:

- Is the water supply adequate to suppress the fire?
- If not, can more water be brought to bear in a timely manner?
- Is there access to the building for an interior attack?
- If the answer to the above three questions is "no" it's time to take a defensive posture and protect the exposures.



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### WHAT THE CODE SAYS: WATER SUPPLY – NFPA

- Fire protection water supply (temporary or permanent) shall be available once combustible material accumulates - NFPA 241
- Where underground water main or hydrants are to be provided, they shall be installed, completed, and in service prior to start of construction



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### WHAT THE CODE SAYS: WATER SUPPLY – IFC

- An approved water supply for fire protection...shall be made available as soon as combustible materials arrive on the site. IFC Sec. 3312
- What is considered an approved water supply that meets the requirements of the IFC or NFPA 241?
- **Fire flow requirements (during construction) are coming in the 2021 IFC!**



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### WATER SUPPLY: EXAMPLE OF LOCAL INTERPRETATION

- The minimum fire flow required when the contractor brings combustible materials on site is 1,500 gpm at 25 psi
- At least one hydrant shall be within 500 feet of any combustible materials
- Contractor is responsible for ensuring that the water supply is available at all times



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### CASE STUDY- ROCKVILLE, MD 40 UPPER ROCK

- 149 unit, 4 story, construction fire
- Montgomery County, MD Fire Chief stated that to control the fire his units were flowing as much as 20K gpm.
- How many jurisdictions could generate that flow?
- If adequate water is not available, operations must shift to exposure protection



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## WATER SUPPLY- INTERIOR ATTACK

- Do we have the water supply to support an interior attack?
- Do we have adequate personnel to conduct an interior attack?
- Are the standpipes in service?
- Is the FDC readily accessible?
- Is it safe to conduct an interior attack?
- Do we have enough water to suppress the fire or do we use the bulk of the water supply to cover the exposures?



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## FIRE DEPARTMENT ACCESS

Can't fight it, if you can't get near it!

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## WHAT THE CODE SAYS: FIREFIGHTING ACCESS

### EXTERIOR:

- Designate a suitable location as a command post provided with plans, emergency info, keys, and communications
- Every building must be accessible by a road with an all weather driving surface of at least 20' of unobstructed width, 13.5' in height.
- Dead-end roads more than 150' must include a turnaround
- Access road(s) must be within 150' of all exterior 1<sup>st</sup> floor walls



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## WHAT THE CODE SAYS: FIREFIGHTING ACCESS

### STAIRS:

- Provide at least one useable stairway at all times
- Extended upward as each floor is completed
- Stairways must be lighted
- Enclose stairways once exterior walls are complete
- Provide identification signs to include floor level, stair designation, and exit path direction



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## WHAT THE CODE SAYS: FIREFIGHTING ACCESS

### STANDPIPES:

- Maintain in conformity with building progress and ready for use
- Install at least one standpipe, prior to construction exceeding 40', within one floor of the highest point of construction (IFC Section 3313.1)
- Must be conspicuously marked and readily accessible FDC
- One hose outlet on each floor



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### INITIAL ATTACK

"Go Big, or Go Home!"

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## SPOTTING THE APPARATUS

- Consider the higher radiant heat with construction fires- recurring theme.
- Do not spot apparatus in the collapse zone
- Save room for aerial apparatus



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## INITIAL ATTACK

Charging the FDC as soon as possible is critical for making an interior attack.

Firefighters should be prepared to “go big” quickly!

- Generate as much fire flow as possible
- Consider a 2-½” blitz line early on
- Get master streams & aerial ops in place ASAP

### EXPECT RAPID FIRE SPREAD



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## CASE STUDY: FAIRFAX COUNTY, VA



**Date:** February 8, 2020

**Time:** Approximately 8am

**Location:** 2800 block of Poag Street, Penn Daw, Fairfax County, VA

**Response:** 5 Alarms- Firefighters from Alexandria, Arlington, Fort Belvoir and Prince George's County assisted Fairfax County.

**Injuries:** One firefighter and one civilian (passerby) were taken for minor injuries



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## FIRST ARRIVING UNIT



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## CASE STUDY- BOUND BROOK, NJ

From the time the fire was reported until the first arriving unit arrived and immediately called for a second alarm-

**8 MINUTES**



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## RADIANT HEAT CONCERNS

The fire department must make protecting exposures a priority.

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## HEAT PRODUCTION DURING FIRES

- Total heat release: total number of BTU's released when all of the fuel is consumed.
- Peak heat release: When BTU's are at its highest rate.
- **Peak heat release rate is a key factor related to exposure fires.**
- Neighboring buildings are most at risk when a fire hits its peak release rate.
- Construction Fires and occupied structure fires can have the same total heat release but have two vastly different peak heat release rates.

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## CASE STUDY: WILSONVILLE, OR MARCH 31, 2019

- \$10 million loss
- 1am in the morning
  - Three alarms
  - Several exposure fires
- Four-story wood-frame
  - 20-unit apartment building
- Largest Fire in Wilsonville History
- Incendiary fire- ATF



Courtesy the Oregonian



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Courtesy the Oregonian

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## RADIANT HEAT CONCERNS



Wide Streets



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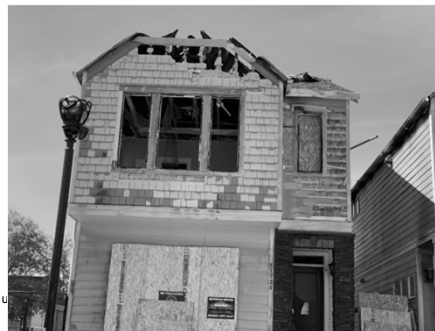
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## RADIANT HEAT CONCERNS



No Water Supply  
issues



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## RADIANT HEAT CONCERNS



14 cars and trucks burned  
even ones parked across  
the street



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## RADIANT HEAT- BOUND BROOK, NJ

Units had to pull out of position 18 minutes from  
the report of the fire because of excessive radiant  
heat



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## OTHER CONSIDERATIONS: FIRE INVESTIGATION

- Fire losses in large construction projects involve many interests; i.e. lenders, developers, owners, insurance companies, some projects are publicly funded.
- The fire will be investigated as a criminal act (arson) until proven otherwise.
- Documentation and collection of physical evidence at the scene is critically important.
- IC need to take note of all factor relevant to origin and cause and protect scene from any unnecessary activities that could destroy evidence.
- NFPA 921 is the *Guide for Fire and Explosion Investigations*.

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## FIREFIGHTER SAFETY

- Offensive vs. Defensive operations?
- The National Fallen Firefighter Foundation supports the decision that firefighters do not enter buildings in which life safety is not an issue.
- If it is verified that the structure under construction is NOT occupied, defensive firefighting may make more sense.



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## FIREFIGHTER SAFETY- SUMMARY

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- Access for firefighting is an extremely important consideration.
- Spot the apparatus properly.
- Consider an adequate collapse zone.
- Choose the most appropriate tactic: Offensive or Defensive
- Suitable location for incident command.



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## CONCLUSION

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Even when the fire service does everything correctly;  
Even with early notification, ample water supply and full FD access;

Buildings can be lost and;  
Fires can jump wide streets and destroy other buildings.

What can be controlled?

The most important consideration: **EVERYONE GOES HOME!**

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## CONCLUSION

"Everyone Goes Home!"

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### Strategy & Tactics

We reviewed fire prevention strategies and firefighting operational tactics in the event of a fire.

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### Firefighter Safety

We discussed firefighter safety considerations.

2

### Codes & Standards

We reviewed safeguards during construction codes in *NFPA 241, IFC* Chapter 33, *NFPA 1* and *NFPA 1620*

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### Fire Safety Plans

We went through components of a well-prepared fire safety plan.

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## FOLLOW-UP

**Ray O'Brocki- [ROBrocki@awc.org](mailto:ROBrocki@awc.org), 410.299.9681**

FAQs - [www.awc.org/education/faqs](http://www.awc.org/education/faqs)

You will receive notice of your Certificate/CEUs within one week

### Save the Dates!

Wed, Jun 10 – I-Joists and Firefighter Safety

Fri, Jun 12 – I-Joists and Firefighter Safety

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## Questions??????????

Thanks for your attention! Contact me at  
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