Continuing Education For the Fire Fighter

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Fire Control

Module 1

Chapter 17

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LEARNING OBJECTIVES

Describe initial factors to consider when suppressing structure fires.

Summarize considerations taken when making entry.

Describe direct attack, indirect attack, combination attack, and gas cooling techniques.

Describe safety considerations that must be identified for upper level structure fires.

Explain actions taken when attacking belowground structure fires.

LEARNING OBJECTIVES

Discuss methods of fire control through exposure protection and controlling building utilities.

Describe steps taken when supporting fire protection systems at protected structures.

Explain considerations taken when deploying, supplying, and staffing master stream devices.

SELECTING STRATEGIES AND COORDINATING RESOURCES IS BASED ON THREE PRIORITIES.

Courtesy of Bob Esposito

OFFENSIVE SUPPRESSION STRATEGIES USUALLY ENTAIL INTERIOR OPERATIONS.

Factors that help determine tactics

- Value
- Time
- Size

Objective

- Rescue and/or extinguishment

DEFENSIVE SUPPRESSION STRATEGIES ARE SELECTED BASED ON SEVERAL FACTORS.

DEFENSIVE SUPPRESSION STRATEGIES WORK TO ISOLATE OR STABILIZE THE INCIDENT.

Courtesy of Chris Mickal

DEFENSIVE STRATEGIES ARE EMPLOYED WHEN CERTAIN CONDITIONS ARE PRESENT.

- Excessive volume of fire
- Structural deterioration
- Risk outweighs benefit
- Unfavorable wind conditions

STRATEGIC TRANSITIONS DURING SUPPRESSION MAY OCCUR AT ANY TIME.

Defensive to offensive

Offensive to defensive

- Follow guidelines during

RESOURCE COORDINATION IS IMPORTANT DURING SEVERAL POINTS OF FIRE ATTACK.

CORRECT HOSELINE SELECTION IS IMPORTANT FOR FIRE SUPPRESSION OPERATIONS.

- Fire conditions and other factors
- Critical for efficiency, safety
- For interior – Dictated by area involved, fire load

(Continued)

CAUTION

A hoseline no smaller than 1½-inch (38 mm) should be used on an interior fire.

NOZZLE SELECTION IS BASED ON SEVERAL CONSIDERATIONS FOUND ON SCENE.

Interior fire attack

Exterior attack

Water pressure, water quantity

Nozzle reaction

Courtesy of Ron Jeffers

YOU SHOULD KNOW THE CONSIDERATIONS FOR HOSELINE USE AND PLACEMENT WHEN MAKING ENTRY .

Decision made by	Place to protect	Factors used to place
• IC • Supervisor	• Firefighters • Occupants • Property	• Wind direction and velocity • Building conditions • Initial fire location • Location of occupants • Exposures

THERE ARE SEVERAL TASKS EVERY MEMBER SHOULD PERFORM BEFORE ENTRY.

- Conduct quick size up
- Maintain high situational awareness
- Be aware of pre-entry considerations

YOU SHOULD UNDERSTAND WHAT YOU MAY NEED TO FULFILL YOUR ROLE DURING ENTRY.

Interior fire crew needs tools, equipment to:

- Open interior doors
- Check concealed spaces for fire extension
- Make an emergency exit

THE FIREFIGHTER ASSIGNED TO THE NOZZLE SHOULD DO SEVERAL TASKS.

Open nozzle fully to ensure adequate flow	Check pattern setting	Bleed air from hoseline

CAUTION

DO NOT open the door until you have a charged hoseline and are ready to control the conditions encountered.

THERE ARE SEVERAL FACTS ABOUT MAKING ENTRY TACTICS THAT YOU SHOULD KNOW.

- When making interior attack on structure fire
- If fire is ventilation controlled, door is opened
- When opening door
- Traditional guideline – Attack from unburned side
- Wind creates airflow patterns within structure

THERE ARE SEVERAL GENERAL TACTICS FOR MAKING ENTRY THAT YOU SHOULD KNOW.

Wind creates airflow patterns within structure

Directly increase fire expansion and cause firefighter casualties

Attack with wind to back

Determine best entry point based upon wind direction

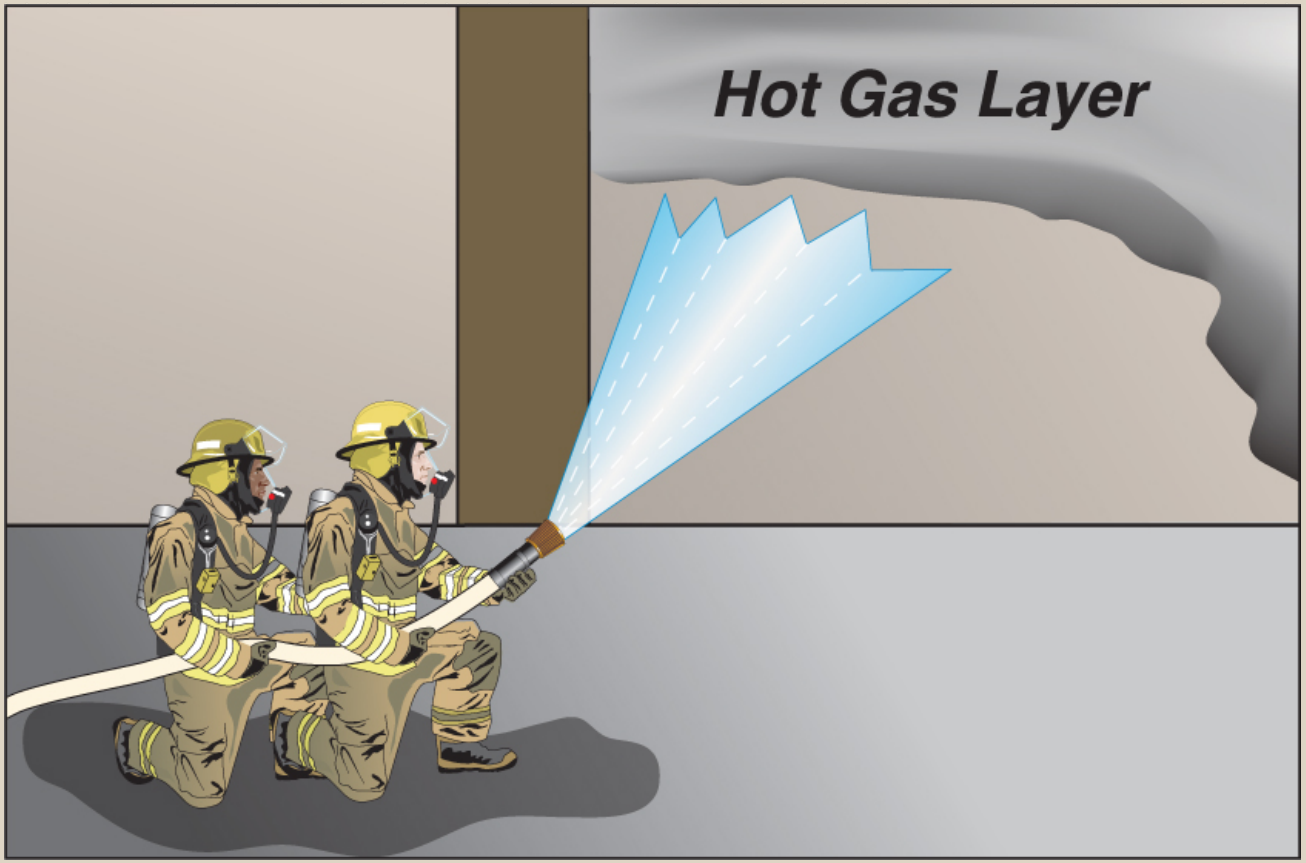
DIRECT ATTACK USES WATER MOST EFFICIENTLY ON FREE-BURNING FIRES.

INDIRECT ATTACK IS USED WHEN ENTRY IS NOT POSSIBLE DUE TO INTENSE HEAT.

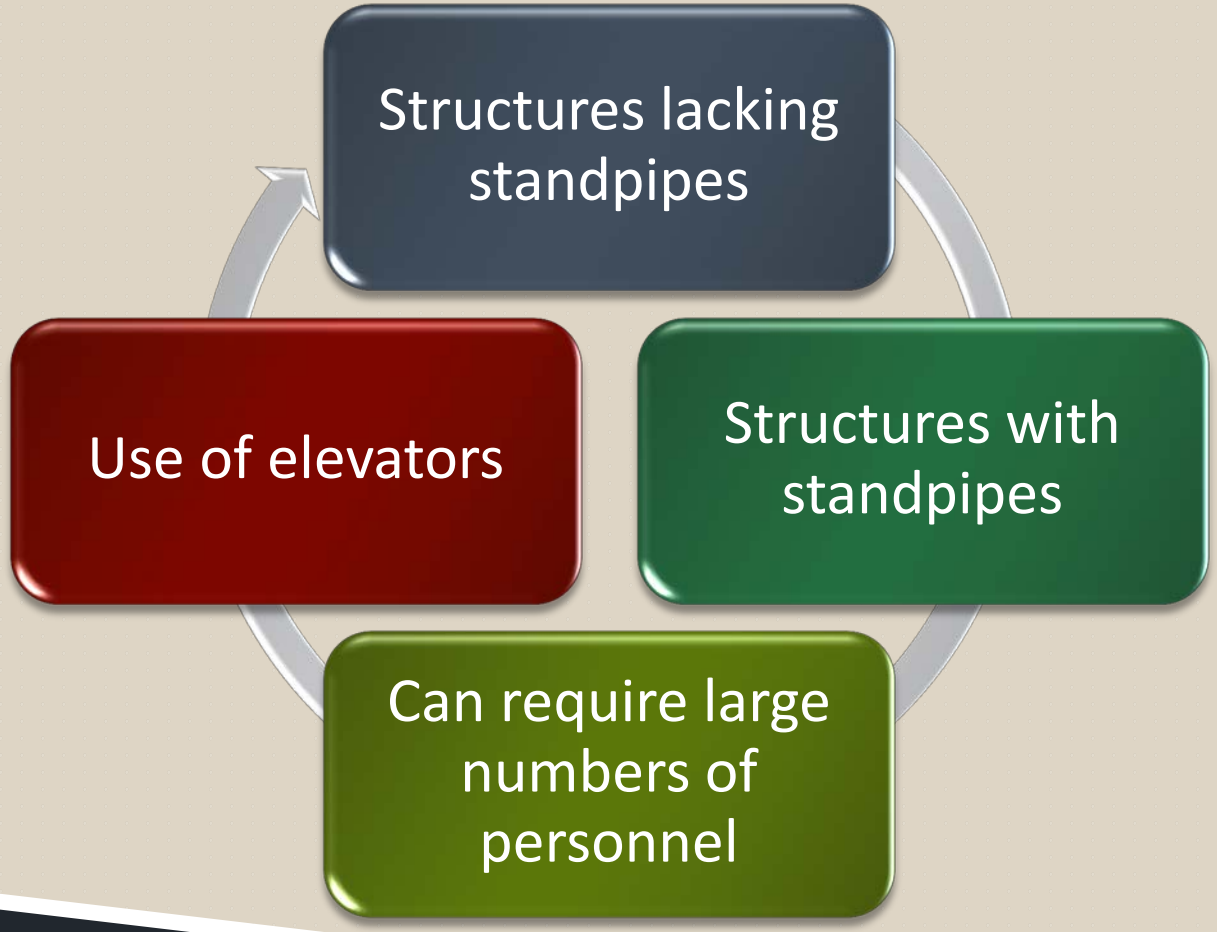
Courtesy of Dick Giles

COMBINATION ATTACK USES STRATEGIES FROM BOTH DIRECT AND INDIRECT ATTACK.

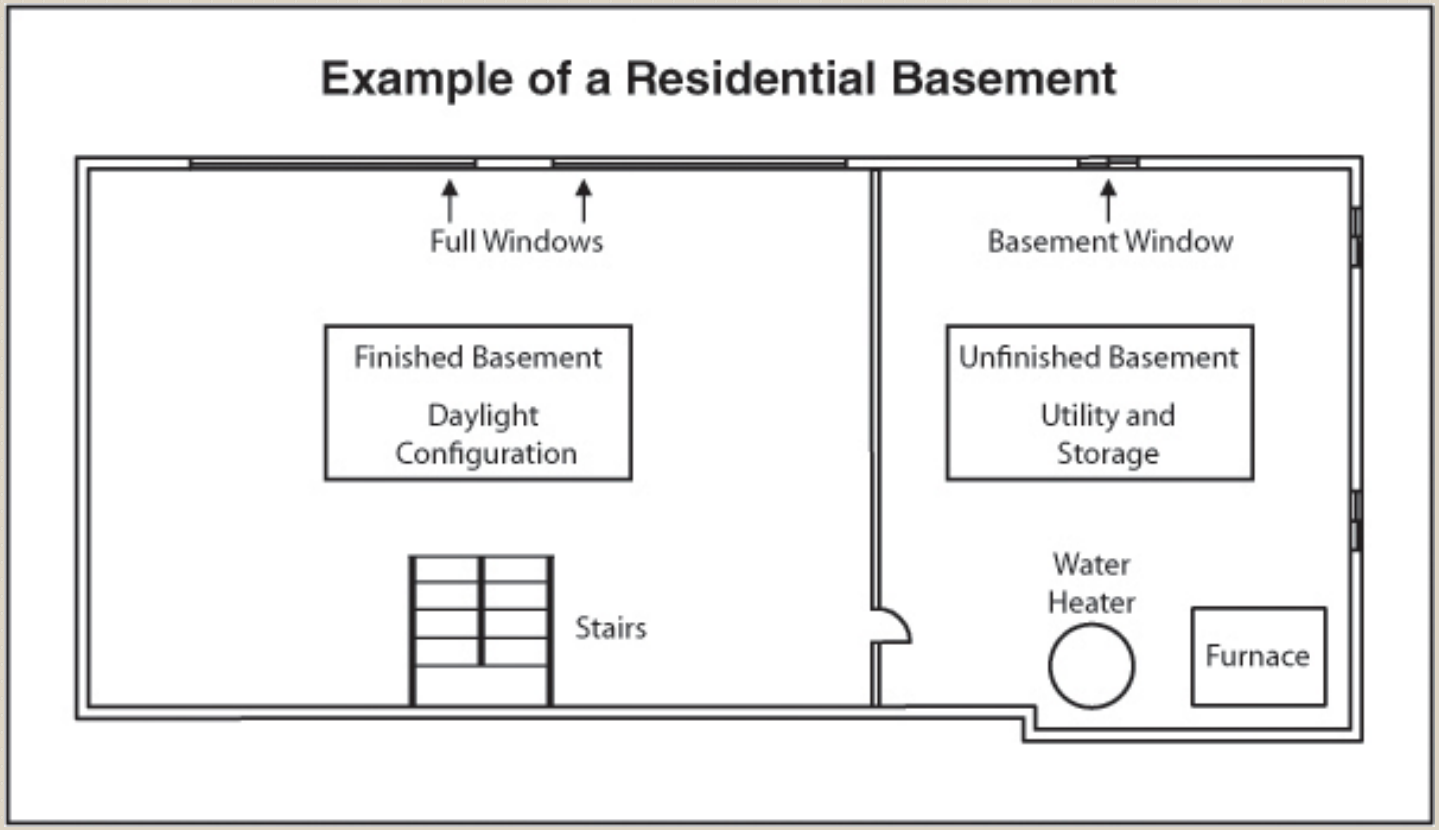
GAS COOLING IS A WAY OF REDUCING HEAT RELEASE FROM THE HOT GAS LAYER.



FIRES IN UPPER LEVELS OF STRUCTURES CAN PRESENT UNIQUE CONSIDERATIONS.



BELOWGROUND STRUCTURES FIRES MAY OCCUR IN RESIDENTIAL BASEMENTS.



THERE ARE SEVERAL FACTORS THAT MAY CONTRIBUTE TO BASEMENT FIRES.

Spaces

- Totally unfinished, partially finished, completely finished

Fuel loading

Age of exposed joists

Hidden path for fire

Use of lightweight construction materials

Life safety hazards created

Initial size-up important

WARNING

Basement fires weaken the main floor of a structure creating a constant danger of structural collapse.

FLOOR ASSEMBLIES OVER BASEMENTS MAY COLLAPSE BEFORE FIREFIGHTERS ARRIVE.

Courtesy of NIST

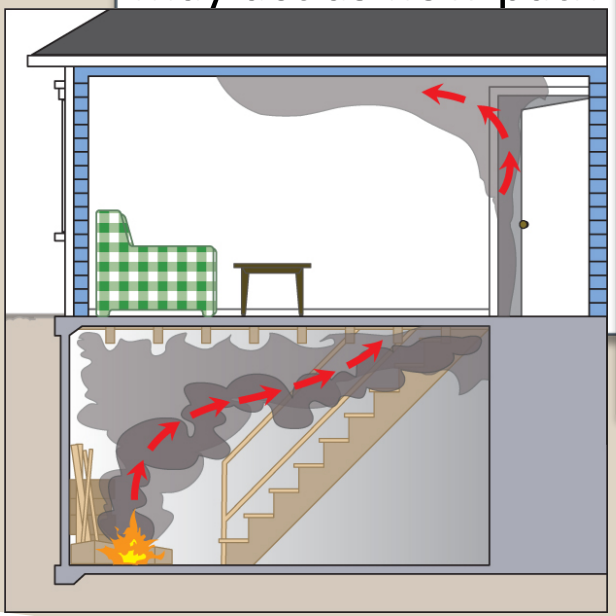
CAUTION

Thermal imagers (TI) will not always provide an accurate assessment of structural integrity of the floor system.

RESIDENTIAL BASEMENT FIRES CAN PRESENT OTHER CONSIDERATIONS.

Access

Enclosed stairwell may act as flow path



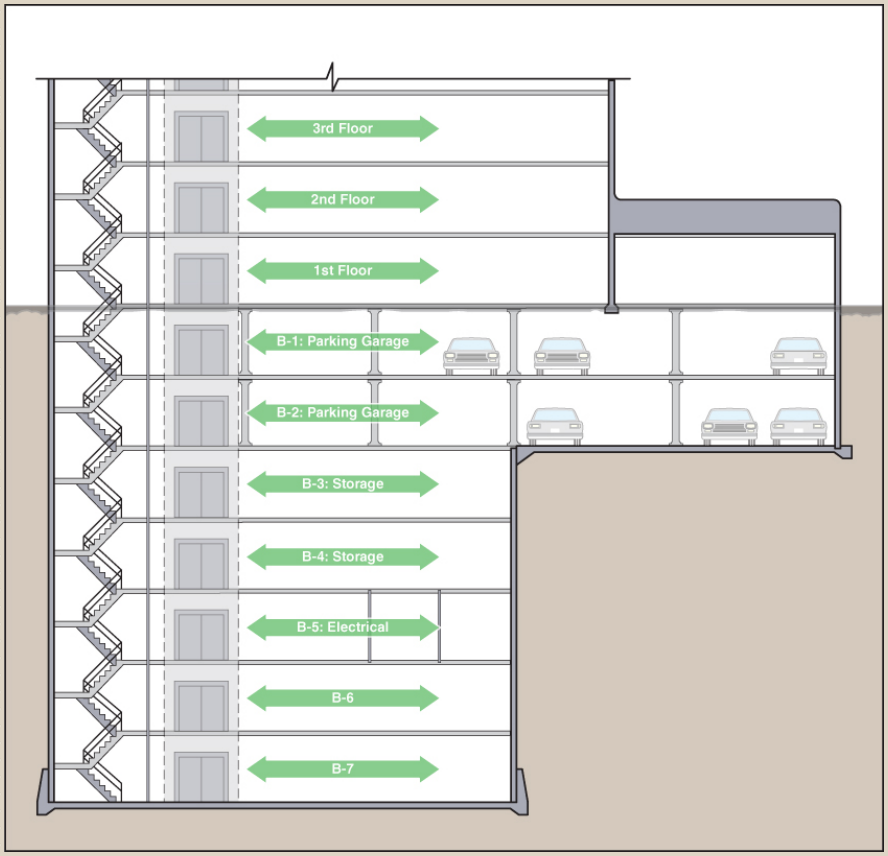
1½- to 1¾-inch (38 mm to 45 mm) hoseline

May not provide enough cooling to overcome venting gases

If ventilation limited

Added ventilation may result in flashover

BELOWGROUND FIRES CAN ALSO OCCUR IN COMMERCIAL BASEMENTS AND SUBFLOORS.



EXPOSURE PROTECTION DEPENDS ON LOCATION AND RESOURCES AVAILABLE.

Interior

- Closing doors, other openings
- Proper use of ventilation
- Passive forms

Exterior

- Remove endangered persons, property, items
- Apply protective spray between fire and exposure

CONTROLLING BUILDING UTILITIES HELPS CONTROL THE FIRE AND LIMITS DAMAGE.

Sources

↓

Must be disconnected when fire in structure

↓

Commercial power supply

CONTROLLING BUILDING UTILITIES HELPS CONTROL THE FIRE AND LIMITS DAMAGE.

Courtesy of Ron Moore and McKinney (TX) FD

WARNING

Solar panels generate current whenever there is a light source (sunlight, moonlight, artificial lighting) and are always energized.

CONTROLLING BUILDING UTILITIES HELPS CONTROL THE FIRE AND LIMITS DAMAGE.

Wind turbines

Courtesy of Ron Moore and McKinney (TX) FD

Fuel-powered generators

CONTROLLING BUILDING UTILITIES HELPS CONTROL THE FIRE AND LIMITS DAMAGE.

CAUTION

Natural gas that leaks underground in wet soil can lose its odorant and become difficult to detect without instruments.

CONTROLLING BUILDING UTILITIES HELPS CONTROL THE FIRE AND LIMITS DAMAGE.

Liquefied petroleum gas

Water

SUPPORTING FIRE PROTECTION SYSTEMS IS ACCOMPLISHED THROUGH SEVERAL STEPS.

Connecting to FDC	Shutting a control valve	Stopping the flow from a sprinkler

DEPLOYING MASTER STREAM DEVICES REQUIRES AN UNDERSTANDING OF SEVERAL CONSIDERATIONS.

- Situations deployed in
- Main uses
- Proper placement
- Effective for exposure protection to other structures

SUPPLYING MASTER STREAMS CAN BE ACCOMPLISHED IN SEVERAL WAYS.

- Nothing less than two 2½-inch (65 mm) hoselines
- Temporarily with one 2½-inch (65 mm) hoseline while adding others
- Third line may be needed
- Operation consumes great quantities of water

CAUTION

Added water weight from master stream operations increases the potential for structural collapse.

STAFFING MASTER STREAM DEVICES USUALLY REQUIRES TWO FIREFIGHTERS.

ELEVATED MASTER STREAMS ARE USED FOR UPPER STORIES IN MULTISTORY BUILDINGS.

Courtesy of Chris Mickal

SUMMARY

Attacking fires early in development is an important aspect of a successful fire fighting operation. In addition, selecting and applying the most effective fire attack strategy and tactics are also important.

SUMMARY

Failing to do any of these things can result in a fire growing out of control, an increase in fire damage and loss, and possibly in firefighter injuries.