

Chapter 4 – FF I

Building Construction

Lesson Goal

After completing this lesson, the student shall be able to explain how common building materials and construction methods are impacted by fire. The student shall also be able to explain how construction methods of basic building materials can either contribute to, or help control, fire spread.

Objectives

Upon successful completion of this lesson, the student shall be able to:

1. Describe the impact of fire on common building materials. *[NFPA® 1001, 5.3.4, 5.3.10, 5.3.12]*
2. Explain the impact of fire on construction classifications. *[NFPA® 1001, 5.3.4, 5.3.10, 5.3.12]*
3. List the main types of occupancy classifications.
4. Describe the basic construction of building components. *[NFPA® 1001, 5.3.4, 5.3.10, 5.3.12]*

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Structural Search, Victim Removal, and Firefighter Survival

Lesson Goal

After completing this lesson, the student shall be able to describe, as well as perform, search and victim removal methods to use during structural search and rescue. Students shall also be able to explain and perform firefighter survival skills used during structural search and rescue.

Objectives

Upon successful completion of this lesson, the student shall be able to:

1. Summarize the impact of building construction and floor plans on structural search techniques. *[NFPA® 1001, 5.3.9]*
2. Explain size-up and situational awareness considerations during structural searches. *[NFPA® 1001, 5.3.9]*
3. Summarize safety guidelines for structural search and rescue. *[NFPA® 1001, 5.3.9]*
4. Differentiate between primary and secondary search techniques. *[NFPA® 1001, 5.3.9]*
5. Recognize basic search methods. *[NFPA® 1001, 5.3.9]*
6. Describe victim removal methods. *[NFPA® 1001, 5.3.5, 5.3.9]*
7. Explain firefighter survival methods. *[NFPA® 1001, 5.3.1, 5.3.5, 5.3.9]*
8. Explain what survival actions firefighters can take when needed. *[NFPA® 1001, 5.3.1, 5.3.5]*
9. Describe the actions of a rapid intervention crew or team (RIC/RIT) when locating a downed firefighter. *[NFPA® 1001, 5.3.5, 5.3.9]*
10. Demonstrate the procedure for conducting a primary search. *[NFPA® 1001, 5.3.9; Skill Sheet 9-1-1]*

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11. Demonstrate the procedure for conducting a secondary search. *[NFPA® 1001, 5.3.9; Skill Sheet 9-I-2]*
12. Demonstrate the incline drag. *[NFPA® 1001, 5.3.9; Skill Sheet 9-I-3]*
13. Demonstrate the webbing drag. *[NFPA® 1001, 5.3.9; Skill Sheet 9-I-4]*
14. Demonstrate the cradle-in-arms lift/carry — One-rescuer method. *[NFPA® 1001, 5.3.9; Skill Sheet 9-I-5]*
15. Demonstrate the seat lift/carry — Two-rescuer method. *[NFPA® 1001, 5.3.9; Skill Sheet 9-I-6]*
16. Demonstrate the extremities lift/carry — Two-rescuer method. *[NFPA® 1001, 5.3.9; Skill Sheet 9-I-7]*
17. Demonstrate the actions required for transmitting a MAYDAY report. *[NFPA® 1001, 5.2.4, 5.3.5, 5.3.9; Skill Sheet 9-I-8]*
18. Demonstrate the proper procedures for an SCBA air emergency. *[NFPA® 1001, 5.3.1, 5.3.5, 5.3.9; Skill Sheet 9-I-9]*
19. Demonstrate the actions required for withdrawing from a hostile environment with a hoseline. *[NFPA® 1001, 5.3.5, 5.3.9; Skill Sheet 9-I-10]*
20. Demonstrate low profile maneuvers without removing SCBA – Side technique. *[NFPA® 1001, 5.3.1, 5.3.5, 5.3.9; Skill Sheet 9-I-11]*
21. Perform low profile maneuvers without removing SCBA – SCBA-first technique. *[NFPA® 1001, 5.3.1, 5.3.5, 5.3.9; Skill Sheet 9-I-12]*
22. Demonstrate the method for breaching an interior wall. *[NFPA® 1001, 5.3.5, 5.3.9; Skill Sheet 9-I-13]*
23. Demonstrate the steps for disentangling from debris or wires. *[NFPA® 1001, 5.3.5, 5.3.9; Skill Sheet 9-I-14]*

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Forcible Entry

Lesson Goal

After completing this lesson, the student shall be able to explain, as well as perform, forcible entry into a structure or structural components. Students shall also be able to explain and perform forcible entry methods and breaching operations.

Objectives

Upon successful completion of this lesson, the student shall be able to:

1. Explain the basic principles of forcible entry. *[NFPA® 1001, 5.3.4]*
2. Describe the basic construction of locksets. *[NFPA® 1001, 5.3.4]*
3. Describe considerations a firefighter must take when using forcible entry tools. *[NFPA® 1001, 5.3.4]*
4. Indicate steps needed to care for and maintain forcible entry tools. *[NFPA® 1001, 5.5.1]*
5. Explain the ways to force entry through various types of doors. *[NFPA® 1001, 5.3.4]*
6. Identify considerations that need to be taken when forcing entry through locks, padlocks, overhead doors, and fire doors. *[NFPA® 1001, 5.3.4]*
7. Describe forcible entry methods used for windows. *[NFPA® 1001, 5.3.4]*
8. Explain considerations firefighters must take when forcing entry through miscellaneous types of windows and covers. *[NFPA® 1001, 5.3.4]*
9. Describe forcible entry methods for breaching walls. *[NFPA® 1001, 5.3.4]*
10. Explain forcible entry methods for breaching floors. *[NFPA® 1001, 5.3.4]*
11. Indicate methods for forcing fences and gates. *[NFPA® 1001, 5.3.4]*

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12. Clean, inspect, and maintain hand tools and equipment. *[NFPA® 1001, 5.5.1; Skill Sheet 11-I-1]*
13. Clean, inspect, and maintain power tools and equipment. *[NFPA® 1001, 5.5.1]; Skill Sheet 11-I-2]*
14. Force entry through an inward-swinging door – Two-firefighter method. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-3]*
15. Force entry through an inward-swinging door – Cutting the lock out of the door method. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-4]*
16. Force entry through an outward-swinging door – Removing hinge-pins method. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-5]*
17. Force entry through an outward-swinging door – Wedge-end method. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-6]*
18. Force entry using the through-the-lock method. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-7]*
19. Force entry using the through-the-lock method using the K-tool. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-8]*
20. Force entry using the through-the-lock method using the A-tool. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-9]*
21. Force entry through padlocks. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-10]*
22. Use a bam-bam tool. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-11]*
23. Cut a padlock with a rotary saw. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-12]*
24. Force entry through a window (glass pane). *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-13]*
25. Force entry through a double-hung window. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-14]*
26. Force a Lexan® window using a rotary saw. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-15]*
27. Force entry through a wood-framed wall. (Type V construction) with hand tools. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-16]*

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28. Force entry through a wood wall. (Type V construction) with a rotary saw or chain saw. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-17]*
29. Breach a wall using a battering ram. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-18]*
30. Force entry through a masonry wall with hand tools. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-19]*
31. Force entry through a metal wall with power tools. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-20]*
32. Breach a hardwood floor. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-21]*
33. Bridge a fence with a ladder. *[NFPA® 1001, 5.3.4, 5.3.14; Skill Sheet 11-I-22]*

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Ground Ladders

Lesson Goal

After completing this lesson, the student shall be able to recognize ground ladders used in the fire service and select the appropriate ladder for the task presented. Students will also be able to carry and deploy fire service ground ladders.

Objectives

Upon successful completion of this lesson, the student shall be able to:

1. Describe different construction types of ground ladders. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
2. Identify the parts of a ladder including markings and labels. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
3. Recognize the types of ladders used in the fire service. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
4. Explain the considerations addressed by ladder inspection, cleaning, and maintenance. *[NFPA® 1001, 5.5.1]*
5. Describe safety guidelines used when handling ladders. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
6. Explain considerations taken when selecting, lifting, and lowering a ladder. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
7. Describe various methods for ladder carries. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
8. Identify basic considerations and requirements for ground ladder placement. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
9. Describe various methods for ladder raises. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
10. Compare procedures for moving ground ladders. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*

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11. Explain the methods used to secure ladders. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
12. Describe ladder climbing considerations. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
13. Indicate what methods can be used to work from a ladder. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
14. Explain methods used for assisting a victim down a ladder. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12]*
15. Clean, inspect, and maintain a ladder. *[NFPA® 1001, 5.5.1; Skill Sheet 12-I-1]*
16. Carry a ladder – One-firefighter low-shoulder method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-2]*
17. Carry a ladder – Two-firefighter low-shoulder method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-3]*
18. Carry a ladder – Three-firefighter flat-shoulder method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-4]*
19. Carry a ladder – Three-firefighter flat-arm's length method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-5]*
20. Carry a ladder – Two-firefighter arm's length on-edge method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-6]*
21. Tie the halyard. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-7]*
22. Raise a ladder – One-firefighter method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-8]*
23. Raise a ladder – Two-firefighter flat raise. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-9]*
24. Raise a ladder – Two-firefighter beam raise. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-10]*
25. Raise a ladder – Three- or four-firefighter flat raise. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-11]*
26. Deploy a roof ladder – One-firefighter method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-12]*
27. Pivot a ladder – Two-firefighter method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-13]*

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28. Shift a ladder – One-firefighter method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-14]*
29. Shift a ladder – Two-firefighter method. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-15]*
30. Heel a ground ladder. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-16]*
31. Leg lock on a ground ladder. *[NFPA® 1001, 5.3.6, 5.3.11, 5.3.12; Skill Sheet 12-I-17]*
32. Assist a conscious victim down a ground ladder. *[NFPA® 1001, 5.3.9; Skill Sheet 12-I-18]*
33. Assist an unconscious victim down a ground ladder. *[NFPA® 1001, 5.3.9; Skill Sheet 12-I-19]*

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Tactical Ventilation

Lesson Goal

After completing this lesson, the student shall be able to apply tactical ventilation knowledge and practices following the policies and procedures set forth by the authority having jurisdiction (AHJ).

Objectives

Upon successful completion of this lesson, the student shall be able to:

1. Describe reasons for tactical ventilation. *[NFPA® 1001, 5.3.11]*
2. Identify considerations that affect the decision to ventilate. *[NFPA® 1001, 5.3.11, 5.3.12]*
3. Explain the critical fire behavior indicators present during tactical ventilation. *[NFPA® 1001, 5.3.11]*
4. Define horizontal and vertical ventilation. *[NFPA® 1001, 5.3.11]*
5. Explain the means for achieving horizontal and vertical ventilation. *[NFPA® 1001, 5.3.11, 5.3.12]*
6. Describe the types of horizontal ventilation. *[NFPA® 1001, 5.3.11, 5.3.12]*
7. Describe the types of vertical ventilation. *[NFPA® 1001, 5.3.11, 5.3.12]*
8. Recognize other types of ventilation situations. *[NFPA® 1001, 5.3.11]*
9. Explain the effects of building systems on tactical ventilation. *[NFPA® 1001, 5.3.11, 5.3.12]*
10. Ventilate using mechanical negative pressure in a window. *[NFPA® 1001, 5.3.11, 5.3.12; Skill Sheet 13-I-1]*
11. Ventilate using mechanical negative pressure in a doorway. *[NFPA® 1001, 5.3.11, 5.3.12; Skill Sheet 13-I-2]*

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12. Ventilate using mechanical positive pressure. *[NFPA® 1001, 5.3.11, 5.3.12; Skill Sheet 13-I-3]*
13. Perform horizontal hydraulic ventilation. *[NFPA® 1001, 5.3.11, 5.3.12; Skills Sheet 13-I-4]*
14. Demonstrate the procedure for sounding a roof. *[NFPA® 1001, 5.3.12; Skill Sheet 13-I-5]*
15. Ventilate using a rotary saw to cut an opening. *[NFPA® 1001, 5.3.12; Skill Sheet 13-I-6]*
16. Ventilate using an axe to cut an opening. *[NFPA® 1001, 5.3.12; Skill Sheet 13-I-7]*
17. Demonstrate the procedure for opening a flat roof. *[NFPA® 1001, 5.3.12; Skill Sheet 13-I-8]*
18. Perform the steps for opening pitched roofs. *[NFPA® 1001, 5.3.12; Skill Sheet 13-I-9]*
19. Demonstrate the procedure for making a trench cut using a rotary saw. *[NFPA® 1001, 5.3.12; Skill Sheet 13-I-10]*

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Fire Control

Lesson Goal

After completing this lesson, the student shall be able to discuss fire control of fires in structures, in Class C fires, in Class D fires, vehicle fires, and ground cover fires and be able to perform various skills related to fire attack.

Objectives

Upon successful completion of this lesson, the student shall be able to:

1. Describe initial factors to consider when suppressing structure fires. *[NFPA® 1001, 5.3.8, 5.3.10]*
2. Summarize considerations taken when making entry. *[NFPA® 1001, 5.3.8, 5.3.10]*
3. Describe direct attack, indirect attack, combination attack, and gas cooling techniques. *[NFPA® 1001, 5.3.8, 5.3.10]*
4. Describe safety considerations that must be identified for upper level structure fires. *[NFPA® 1001, 5.3.8, 5.3.10]*
5. Explain actions taken when attacking belowground structure fires. *[NFPA® 1001, 5.3.8, 5.3.10]*
6. Discuss methods of fire control through exposure protection and controlling building utilities. *[NFPA® 1001, 5.3.18]*
- 7.
- 8.
9. Describe situations that may require suppression of Class C fires. *[NFPA® 1001, 5.3.8, 5.3.10]*
10. Identify hazards associated with suppressing Class C fires. *[NFPA® 1001, 5.3.8, 5.3.10]*
11. Describe actions associated with suppressing Class D fires. *[NFPA® 1001, 5.3.8, 5.3.10]*

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- 12.
13. Compare methods used to suppress fires in stacked and piled materials, small unattached structures, and trash containers. *[NFPA® 1001, 5.3.8]*
14. Summarize the main influences on ground cover fire behavior. *[NFPA® 1001, 5.3.19]*
15. Compare types of ground cover fires. *[NFPA® 1001, 5.3.19]*
16. Describe elements that influence ground cover fire behavior. *[NFPA® 1001, 5.3.19]*
17. Identify the parts of a ground cover fire. *[NFPA® 1001, 5.3.19]*
18. Describe protective clothing and equipment used in fighting ground cover fires. *[NFPA® 1001, 5.3.19]*
19. Describe methods used to attack ground cover fires. *[NFPA® 1001, 5.3.19]*
20. Summarize safety principles and practices when fighting ground cover fires. *[NFPA® 1001, 5.3.19]*
21. Attack a structure fire using a direct, indirect, or combination attack. *[NFPA® 1001, 5.3.8, 5.3.10, 5.3.13; Skill Sheet 17-I-1]*
22. Attack a structure fire above, below, and at ground level – Interior attack. *[NFPA® 1001, 5.3.8, 5.3.10, 5.3.13; Skill Sheet 17-I-2]*
23. Turn off building utilities. *[NFPA® 1001, 5.3.18; Skill Sheet 17-I-3]*
- 24.
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29. Attack a fire in stacked or piled materials. *[NFPA® 1001, 5.3.8; Skill Sheet 17-I-9]*
30. Attack a fire in a small unattached structure. *[NFPA® 1001, 5.3.8; Skill Sheet 17-I-10]*
31. Extinguish a fire in a trash container. *[NFPA® 1001, 5.3.8; Skill Sheet 17-I-11]*

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32. Attack a ground cover fire. [*NFPA® 1001, 5.3.19; Skill Sheet 17-I-12*]