

V. MINIMUM STANDARDS FOR FIRE PREVENTION AND INVESTIGATION PERSONNEL

Fire Prevention and Investigation Personnel who have received training prior to passage of this program may, upon proof to the Board member and his approval, apply the training for certification. Any training hours received prior to January 1, 1993 must be approved by the Board.

A. Reference Materials

The jurisdictional entity in which the volunteer Fire Prevention and Investigation Personnel serves must have access to a set of training manuals, as follows:

IFSTA

- Forcible Entry* (7th Ed.)
- Fire Service Ground Ladders* (9th Ed.)
- Hose Practices* (7th Ed.)
- Fire Service Loss Control* (1st Ed.)
- Pumping Apparatus Driver/ Operator Handbook* (1st Ed.)
- Fire Service Rescue* (6th Ed.)
- Fire Inspection and Code Enforcement* (6th Ed.)
- Aircraft Rescue & Fire Fighting* (4th Ed.)
- Fundamentals of Wildland Fire Fighting* (3rd Ed.)
- Introduction Fire Origin and Cause* (2nd Ed.)
- Fire Investigator* (1st Ed.)

Brady

- 1st Responder* (1st Ed.)

NFPA

- NFPA 30: Flammable and Combustible Liquids*
- NFPA 921: Guide for Fire and Explosion Investigations*
- NFPA 1901: Pumper Fire Apparatus*

Locally Adopted Fire Building, Life Safety and Electrical Codes of Participants Jurisdiction

B. Fire Prevention Specialist

The Certification Program offers two levels of Fire Prevention Specialist Certification:

1. Fire Prevention Specialist I

- a. Upon meeting all requirements, an application should be completed, signed by the applicant, Certification Coordinator, and Fire Chief, and sent to the Austin office, accompanied by the twenty-five dollar (\$25.00) application processing fee.
- b. Upon review the Austin office will issue the appropriate certificate and, upon request, a shoulder patch. A permanent record of the certification will be maintained in the Austin office.

2. Fire Prevention Specialist II

- a. Applicants must meet requirements as follows:
 - 1. All requirements for Fire Prevention Specialist I
 - 2. Completion of all required hours/objectives for SFFMA Advanced Firefighter level
- b. Applicants must hold the following SFFMA certification:
 - 1. Basic Firefighter
- c. Upon meeting all requirements, an application should be completed, signed by the applicant, Certification Coordinator, and Fire Chief, accompanied by the twenty-five dollar (\$25.00) application processing fee and sent to the Austin office.
- d. Upon review the Austin office will issue the appropriate certificate and, upon request, a shoulder patch. A permanent record of the certification will be maintained in the Austin office.

3. Training Requirements

SECTION	SUBJECT	HOURS FOR PREV SPEC I	HOURS FOR PREV SPEC II
1	Oral and Written Communication	8	
2	Legal Aspects	8	
3	Fire and Hose Streams		4
4	Ventilation		2
5	Fire Science	6	10
6	Flammable and Combustible Liquid	4	20
7	Compressed and Liquefied Gas	3	13
8	Explosives, Including Fireworks	4	4
9	Hazardous Materials	3	13
10	Portable Fire Extinguishers		8
11	Fire Protection Systems	3	7
12	Water Supplies		4
13	Fire Alarm Systems and Devices	4	4
14	Heating and Cooking Equipment		2
15	Industrial Ovens and Furnaces		2
16	Principles of Electricity	1	3
17	General Fire Safety	28	26
18	Inspection and Code Enforcement	8	16
19	Plans Review	4	4
20	SFFMA Rules and Regulations	1	
	TOTAL	85	142

4. Credit for SFFMA Firefighter Certification

The applicant may utilize hours obtained in the Firefighter curriculum, documented through progress reports or certifications, for credit towards Fire Prevention Specialist certification.

SECTION	SUBJECT	BASIC	INTER	ADV	TOTAL
6	Fire Streams	4			4
8	Ventilation Practices	2			2
11	Inspection Practices	4	8	12	24
12	Water Supplies	2	2		4
13	Fire Protection System	2	6	2	10
15	Fire Behavior (Fire Science)	8	2	6	16
16	Fire Alarms & Communications	4	2	2	8
26	Hazardous Materials	8	8		16
29	Portable Extinguisher	2	2	4	8
30	Building Construction			12	12
	TOTAL	36	30	38	104

5. Curriculum for Fire Prevention Specialist

SECTION 1 ORAL AND WRITTEN COMMUNICATIONS - 8 HOURS

1-01 Trainee shall demonstrate the ability to communicate both orally and in writing.

1-01.01 Trainee shall demonstrate an ability to clearly express himself/herself orally. Trainee shall demonstrate an ability to clearly express himself/herself in writing.

1-01.02 Trainee shall demonstrate through tests, or interview, or both, the ability to interact with the public, under conditions of code enforcement or fire prevention duties, with tact, discretion, and without loss of authority.

SECTION 2 LEGAL ASPECTS - 8 HOURS

2-01 Trainee shall identify legally established responsibilities and empowerment related to the performance of the inspector's duties.

2-01.01 Trainee shall demonstrate established procedures for modification of code requirements.

2-01.02 Trainee shall identify established appeal procedures and judicial review process for the jurisdiction in which the inspector is employed.

2-01.03 Trainee shall identify agencies that may be referred to for assistance in correcting hazards.

2-01.04 Trainee shall identify other jurisdictional authorities having requirements, or conduct inspections involving life safety or fire protection.

2-01.05 Trainee shall identify procedures for testifying at legal proceedings, given the findings of an inspection, a plan review, or a complaint and consultation with legal counsel, so that all information is presented accurately and the inspector's demeanor is appropriate to the proceedings.

2-02 Trainee shall identify the organization of the fire department or the entity for which duties will be performed.

2-02.01 Trainee shall identify the applicable organizational rules and regulation

2-02.02 Government Code 417.008: Inspection authority of the State Fire Marshal Office

2-02.03 Health and Safety Code 753: Storage and handling of flammable liquids at retail service stations

2-02.04 Health and Safety Code 792: Smoke detectors in hotels, motels or other overnight accommodations

2-02.05 Insurance Code 5.43-1: Regulation of the fire extinguisher industry

2-02.06 Insurance Code 5.43-2: Regulation of the fire alarm industry

2-02.07 Insurance Code 5.43-3: Regulation of the fire sprinkler industry

2-02.08 Insurance Code 5.43-4: Regulation of the fireworks industry and the sale of fireworks at retail

SECTION 3 FIRE HOSE AND FIRE STREAMS - 4 HOURS

3-01 Trainee shall identify the principles of fire hose, appliances, and hydrants.

3-01.01 Trainee shall identify the sizes, types, amounts, and use of hose carried on a pumper, according to NFPA 1901: Pumper Fire Apparatus, as amended.

3-01.02 Trainee shall identify the use of nozzles, hose adapters, and hose appliances.

3-01.03 Trainee shall identify procedures for inspection and maintenance of fire hose, couplings, and nozzles.

3-01.04 Trainee shall demonstrate the procedures for connecting a fire hose to a hydrant, and fully opening and closing the hydrant.

A. Trainee shall define water hammer and the methods for its prevention.

SECTION 4 VENTILATION - 2 HOURS

4-01 Trainee shall identify the principles and effects of ventilation.

4-01.01 Trainee shall identify the advantages of ventilation.

4-01.02 Trainee shall identify the disadvantages of ventilation.

4-01.03 Trainee shall identify the effects of ventilation.

4-01.04 Trainee shall define the term back draft explosion.

4-01.05 Trainee shall identify the term mushrooming.

4-01.06 Trainee shall define chimney effect.

4-01.07 Trainee shall define the term flashover.

SECTION 5 FIRE SCIENCE - 16 HOURS

5-01 Trainee shall define the process of combustion.

5-01.01 Trainee shall identify the four products of combustion.

5-01.02 Trainee shall define the following terms:

A. Flash point

E. Boiling Point

B. Ignition temperature

F. Endothermic & exothermic heat reaction

C. Fire point

G. Oxidation

D. Flammable or explosive limits

H. Pyrolysis

5-01.03 Trainee shall define describe thermal balance and imbalance

5-02 Trainee shall define "Fire Theory."

5-02.01 Trainee shall define "Fire Triangle."

5-02.02 Trainee shall define "Fire Tetrahedron."

5-03 Trainee shall identify the four (4) sources of heat energy.

5-03.01 Trainee shall identify the various types of chemical heat energy.

5-03.02 Trainee shall identify the various types of electrical heat energy.

5-03.03 Trainee shall identify the various types of mechanical heat energy.

5-03.04 Trainee shall identify the various types of nuclear heat energy.

5-04 Trainee shall identify the stages of fire and describe the appropriate action to be taken for extinguishment.

5-04.01 Trainee shall identify and describe the following conditions:

A. Incipient phase of a fire

B. Roll over

C. Steady state, free burning, or flame spread phase of a fire

D. Back draft

5-04.02 Trainee shall identify and describe the free burning phase of a fire.

5-04.03 Trainee shall identify and describe the smoldering phase of a fire.

5-04.04 Trainee shall identify and describe flame spread.

- 5-04.05 Trainee shall identify and describe flashover.
- 5-04.06 Trainee shall identify and describe the steady state.
- 5-05 Trainee shall define the three (3) methods of heat transfer.
 - 5-05.01 Conduction
 - 5-05.02 Convection
 - 5-05.03 Radiation
- 5-06 Trainee shall identify the three (3) physical states of fuel
 - 5-06.01 Trainee shall identify three (3) types of solid fuel.
 - 5-06.02 Trainee shall identify three (3) types of liquid fuel.
 - 5-06.03 Trainee shall identify three (3) types of gaseous fuel.
- 5-07 Trainee shall identify the chemical and physical properties of fuels.
 - 5-07.01 Trainee shall define specific gravity.
 - 5-07.02 Trainee shall define vapor density.
 - 5-07.03 Trainee shall define the theory of fuel to mass ratio as it relates to the combustion process.
 - 5-07.04 Trainee shall define the diffusion flame process.
- 5-08 Trainee shall identify chemical by-products of combustion.
 - 5-08.01 Trainee shall define fire gas.
 - 5-08.02 Trainee shall identify fire gases and their characteristics.
- 5-09 Trainee shall define the units of heat measurement.
 - 5-09.01 British Thermal Unit (BTU)
 - 5-09.02 Fahrenheit (F°)
 - 5-09.03 Celsius (C°)
 - 5-09.04 Calorie (C)
- 5-10 Trainee shall define the flame extinguishment theory.
 - 5-10.01 Trainee shall describe extinguishment by temperature reduction.
 - 5-10.02 Trainee shall describe extinguishment by fuel removal
 - 5-10.03 Trainee shall describe extinguishment oxygen dilution
 - 5-10.04 Trainee shall describe extinguishment by inhibiting chemical reaction.
- 5-11 Trainee shall identify the characteristic of water as it relates to its fire extinguishing potential
 - 5-11.01 Trainee shall identify the physical characteristics of water.
 - 5-11.02 Trainee shall define the Law of Specific Heat.
 - 5-11.03 Trainee shall define the Law of Latent Heat.
 - 5-11.04 Trainee shall identify the advantages and disadvantages of water as an extinguishing agent.

SECTION 6 FLAMMABLE AND COMBUSTIBLE LIQUID - 24 HOURS

- 6-01 Trainee shall define the properties of flammable and combustible liquids.
 - 6-01.01 Trainee shall identify the basic effects of temperature and pressure on flammable and combustible liquids, flammable and explosive limits, specific gravity, and boiling point.
 - 6-01.02 Trainee shall define flammable and explosive limits.
 - 6-01.03 Trainee shall define specific gravity.
 - 6-01.04 Trainee shall define boiling point.
 - 6-01.05 Trainee shall identify and define the classes of flammable and combustible liquids as defined by NFPA 30: Flammable and Combustible Liquids Code.
 - A. Class IA
 - B. Class IB
 - C. Class IC
 - D. Class II
 - E. Class IIIA
 - F. Class IIIB
- 6-02 Trainee shall identify the fire hazards associated with the storage, handling, and use of flammable and combustible liquids.
 - 6-02.01 Trainee shall identify regulations and hazards attendant to the transfer of flammable and combustible liquids.
 - 6-02.02 Trainee shall identify regulations and fire hazards attendant to finishing processes that involve flammable and combustible liquids.
 - 6-02.03 Trainee shall identify what conditions constitute possible sources of ignition during storage, handling, and use of flammable and combustible liquids.
 - 6-02.04 Trainee shall identify conditions that might be conducive to creating explosive atmospheres in the storage, handling, and use of flammable liquids.
 - 6-02.05 Trainee shall identify the regulations or code provisions related to the storage, handling, and use of flammable and combustible liquids.
 - 6-02.06 Trainee shall identify the procedures for investigating flammable or combustible liquid leaks or suspected leaks.

- 6-03** Trainee shall identify regulations and acceptable installations practices relative to underground storage tanks for flammable and combustible liquids.
 - 6-03.01 Trainee shall identify venting procedures and devices installed on underground storage tanks for flammable and combustible liquids.
 - 6-03.02 Trainee shall identify normal requirements and acceptable installation practices relative to piping and valves attendant to underground storage tanks for flammable and combustible liquids.
 - 6-03.03 Trainee shall identify testing methods and requirements for underground storage tanks and piping as specified in NFPA 30: Flammable and Combustible Liquids Code or other applicable sources.
- 6-04** Trainee shall identify the regulations and acceptable installations practices relative to inside storage of flammable and combustible liquids.
 - 6-04.01 Trainee shall identify how to determine whether normal and emergency venting devices are being properly installed.
 - 6-04.02 Trainee shall identify drainage, diking systems, or both, that may be required for above ground storage of flammable and combustible liquids.
 - 6-04.03 Trainee shall identify requirements for an installation of piping and valves attendant to above ground storage tanks for flammable and combustible liquids.
 - 6-04.04 Trainee shall identify testing methods and requirements for above ground storage tanks and piping as specified in NFPA 30: Flammable and Combustible Liquids Code or other applicable sources.
- 6-05** Trainee shall identify the regulations and acceptable installations practices relative to inside storage of flammable and combustible liquids.
 - 6-05.01 Trainee shall identify how to determine if normal and emergency venting devices are being properly maintained.
 - 6-05.02 Trainee shall identify drainage or containment systems that may be required for the inside storage of flammable and combustible liquids.
 - 6-05.03 Trainee shall identify requirements and acceptable installation practices relative to piping and valves attendant to the inside storage of flammable and combustible liquids.
- 6-06** Trainee shall identify the regulations or code requirements relative to the outside container storage of flammable and combustible liquids.
 - 6-06.01 Trainee shall identify acceptable flammable and combustible liquid containers for outside storage.
 - 6-06.02 Trainee shall identify acceptable locations and storage parameters such as aisle spacing, stacking, storing of containers in vertical or horizontal positions, etc., relative to the outside storage of flammable and combustible liquids container venting devices and venting practices.
- 6-07** Trainee shall identify the regulations, including quantity limitations, that may exist for different occupancies relative to the inside storage of flammable and combustible liquids.
 - 6-07.01 Trainee shall identify the acceptable flammable and combustible liquid containers for inside storage.
 - 6-07.02 Trainee shall identify storage parameters such as aisle spacing, stacking, storage containers in vertical or horizontal positions, etc., relative to the inside storage of flammable and combustible liquids.
 - 6-07.03 Trainee shall identify normal and emergency venting devices or procedures acceptable for the inside storage of flammable and combustible liquids.
- 6-08** Trainee shall identify techniques for flammable and combustible liquids fire extinguishment.
 - 6-08.01 Trainee shall identify portable fire extinguisher installation requirements for areas involving flammable and combustible liquids storage, handling, and use.
- 6-09** Trainee shall identify regulations relative to the transportation of flammable and combustible liquids within the jurisdiction.
 - 6-09.01 Trainee shall identify which agencies regulate the transportation of flammable and combustible liquids within the jurisdiction.
 - 6-09.02 Trainee shall identify which agencies offer assistance in handling flammable and combustible liquids emergencies within the jurisdiction.
 - 6-09.03 Trainee shall identify regulations relative to flammable and combustible liquids within the local jurisdiction.
 - 6-09.04 Trainee shall identify the regulatory labeling and placarding systems use for flammable and combustible liquids identification.

SECTION 7 COMPRESSED AND LIQUEFIED GASES - 16 HOURS

- 7-01 Trainee shall identify the general properties of compressed and liquefied gases.
- 7-02 Trainee shall identify the fire hazards associated with the typical storage, handling, and use of compressed and liquefied gases.
- 7-03 Trainee shall identify the regulations relative to the transportation of compressed and liquefied gases.
- 7-04 Trainee shall identify fire extinguishment practices and procedures for compressed and liquefied gases emergencies.

SECTION 8 EXPLOSIVES, INCLUDING FIREWORKS - 8 HOURS

- 8-01 Trainee shall identify the general properties of explosives.
- 8-02 Trainee shall identify the regulations relative to the transportation of explosives, including fireworks, within the local AHJ.
- 8-03 Trainee shall identify regulatory labeling and placarding systems relative to explosives, including fireworks.
- 8-04 Trainee shall identify code requirements and regulations for the storage of explosives including fireworks.

SECTION 9 HAZARDOUS MATERIALS - 16 HOURS

- 9-01 Trainee shall identify the characteristics of various hazardous materials and code requirements and regulations for the storage, handling, and use of various types and quantities of hazardous materials.
- 9-02 Trainee shall identify combustible metal characteristics.
- 9-03 Trainee shall identify combustible dust characteristics.

SECTION 10 PORTABLE FIRE EXTINGUISHERS - 8 HOURS

- 10-01 Trainee shall be able to describe the purpose of the NFPA standard applicable to portable fire extinguishers.
- 10-02 Trainee shall identify the classification of types of fires as they relate to the use of portable fire extinguishers and the materials involved in each class of fire.
- 10-03 Trainee shall define and describe the Underwriter's Laboratories, Inc. portable fire extinguisher rating system.
- 10-04 Trainee shall identify the appropriate fire extinguisher for each class of fire.
- 10-05 Trainee shall identify the extinguishing effects needed for each class of fire.
- 10-06 Trainee shall describe and demonstrate the operation of fire extinguishers.

SECTION 11 FIRE PROTECTION SYSTEMS - 10 HOURS

- 11-01 Trainee shall be able to describe the purpose of the NFPA standard applicable to fire protection systems.
- 11-02 Trainee shall identify the features and characteristics of automatic sprinkler systems.
- 11-03 Trainee shall identify various automatic sprinkler heads.
- 11-04 Trainee shall identify the types, components, and operation of automatic sprinkler systems.
- 11-05 Trainee shall identify the types, components, and operation of standpipe systems.
- 11-06 Trainee shall identify various types of special extinguishing systems.
- 11-07 Trainee shall identify system initiating devices.

SECTION 12 WATER SUPPLIES - 4 HOURS

- 12-01 Trainee shall identify the various types of pressure in a water system.
- 12-02 Trainee shall identify water sources available for fire fighting.
- 12-03 Trainee shall identify typical water supply systems and their components.
- 12-04 Trainee shall identify common types of fire hydrants.
- 12-05 Trainee shall identify conditions interfering with the normal operations of fire hydrants.
- 12-06 Trainee shall identify the following types of water valves associated with water supply systems.
- 12-07 Trainee shall identify the different suggested minimum water main sizes and approximate discharge capacities of each.
- 12-08 Trainee shall determine available water supply.

SECTION 13 FIRE ALARM SYSTEMS AND DEVICES - 8 HOURS

- 13-01 Trainee shall identify the characteristics of fire alarms systems and devices.
- 13-02 Trainee shall identify the procedures for emergency and non-emergency telephone calls.

SECTION 14 HEATING AND COOKING EQUIPMENT - 2 HOURS

- 14-01 Trainee shall identify and describe the fire hazards related to the various types of heating and cooking equipment.

SECTION 15 INDUSTRIAL OVENS AND FURNACES - 2 HOURS

- 15-01 Trainee shall identify fire hazards of industrial ovens and furnace systems.

SECTION 16 PRINCIPLES OF ELECTRICITY - 4 HOURS

- 16-01 Trainee shall identify the principles of electricity and associated hazards.