

SPRINKLER FITTING: Level One

18101 Orientation to the Trade (6 Hours)

Identifies sprinkler fitter career opportunities and looks at some typical work environments. Examines trade-specific safety hazards and identifies shop plans specific to the sprinkler fitting industry. Introduces workplace safety, material handling, and common tools. Illustrates the correct use of common tools.

18102 Introduction to Components and Systems (7.5 Hours)

Introduces testing laboratories and listing agencies. Provides an overview of the major types of sprinkler systems, including wet pipe, dry pipe, preaction, and deluge systems. Defines sprinkler-head types, orifice size, and K-factor. Underground and above-ground pipe and tube are discussed, including hangers, bracing, and restraints. Summarizes valves, alarms, and fire department connections.

18103 Steel Pipe (22.5 Hours)

Identifies steel piping materials along with tools used to cut and thread steel pipe. Describes methods for threading, cutting, and grooving pipe, including how to determine pipe length between fittings (takeouts). Discusses threaded, plain-end, and flanged fittings.

18104 CPVC Pipe and Fittings (10 Hours)

Describes handling and storing of CPVC pipe. Identifies CPVC safety concerns and cautions. Outlines methods and tools for cutting, chamfering, and cleaning CPVC pipe, including calculating takeouts. Joining techniques are described, particularly the solvent-cement (one-step) method. Rules for using plastic pipe hangers are explained.

18105 Copper Tube Systems (10 Hours)

Introduces copper tubing and fittings, along with cutting and bending tools. The soldering process is described along with techniques for measuring, cutting, reaming, and cleaning. Brazing is described as are brazing metals, fluxes, and brazing equipment. Support bracing for copper tube is discussed as are grooved couplings for copper pipe.

18106 Underground Pipe (17.5 Hours)

Details underground piping installations for various types of pipe. Thrust blocks and restraints are explained. In-building risers, hydrants, yard valves, and hydrant houses are discussed as are testing, inspection, flushing, and chlorinating. The underground test certificate is covered.

SPRINKLER FITTING: Level Two

18201 Hangers, Supports, Restraints, and Guides (15 Hours)

Identifies and describes strength/spacing requirements, types, and installation of pipe hangers, supports, restraints, and guides. Covers types and installation of earthquake bracing and explains sleeving and firestopping.

18202 General Purpose Valves (15 Hours)

Covers the various types of valves, and valve applications used in the sprinkler industry, including service procedures for standard valves. Also covers installation of OS & Y valves, butterfly grooved valves, and tamper switches. Outlines procedures for disassembling, servicing, and reassembling check valves.

18203 General Trade Math (20 Hours)

Explains basic math principles used to solve everyday problems, including converting quantities from the English system to the metric system and vice versa. Specific sprinkler fitting problems are covered such as calculating 45-degree offsets and tank volume, centering sprinkler heads using geometric methods, and problems relating to hanger sizing.

18204 Shop Drawings (32.5 Hours)

Instructs how to read drawings to identify materials, calculate square footage and number of sprinklers required, lay out sprinkler hanger locations, and identify sprinkler orifice sizes.

18205 Standard Spray Fire Sprinklers (20 Hours)

Discusses standard spray sprinklers relative to occupancies and to maximum coverage calculations. Explains how to identify sprinkler manufacturer and type using the Sprinkler Identification Number (SIN).

18206 Wet Fire Sprinkler Systems (25 Hours)

Explains the purpose, function, and operation of wet pipe system components. Describes riser check valves, alarm check valves, and trim; flow tamper, and pressure switches; fire department connections and hose stations; antifreeze systems; faulty pressure gauges; inspector's test connections and auxiliary drains; and hydrostatic testing and test pumps.

18207 Dry-Pipe Systems (25 Hours)

Explains the purpose, function, and operation of components used in a dry-pipe system. Instructs how to install pressure gauges on alarm valves and accelerators, how to set and adjust an air maintenance device, and how to reset and troubleshoot dry-pipe systems.

SPRINGKLER FITTING: Level Three

18301 Deluge/Preaction Systems (40 Hours)

Describes deluge and preaction systems and explains installation techniques and troubleshooting. Covers hydraulic and pneumatic release mechanisms, non-interlocked and interlocked preaction systems and *Firecycle* Systems.

18302 Standpipes (25 Hours)

Describes standpipe classifications and explains flow capabilities of each type. Covers requirements for sizing and installation of standpipes. Explains pressure reducing valves, under flow and no flow conditions. Also covers *LINK-SEAL* installations.

18303 Water Supplies (15 Hours)

Covers basic water chemistry and properties. Discusses methods of determining water supply requirements and considerations for supply systems. Discusses infrastructure, measurement of water supply capability, water supply appurtenances, fire department connections, and typical city water pits.

18304 Fire Pumps (40 Hours)

Covers fire pump categories and components. Describes fire pump controller requirements and fire pump performance and alignment. Explains pump and driver characteristics and performance curves as well as, controllers, sensing line, supervision, and starting methods. Outlines project requirements, installation, maintenance, and troubleshooting.

18305 Application-Specific Sprinklers and Nozzles (27.5 Hours)

Describes application-specific sprinkler types and requirements. Discusses area of coverage, positioning, and obstruction requirements and explains system selection.

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Sprinkler Fitting Program – NCCER *Contren Learning Series***

SPRINKLER FITTING: Level Four

18401 System Layout (45 Hours)

Identifies and explains basic hydraulic concepts and selection of hydraulic design methods. System configuration, design criteria, discharge characteristics, and types of pressure loss are explained. Performing fire sprinkler system hydraulic calculations is also covered in this module.

18402 Inspection, Testing, and Maintenance (17.5 Hours)

Identifies and explains initial and periodic testing and inspection requirements, as well as maintenance and repair of wet pipe systems, dry pipe systems, preaction/deluge systems, and special systems.

18403 Special Extinguishing Systems (42.5 Hours)

Identifies and explains the following extinguishing exposure systems: water spray, foam, carbon dioxide, Halon, auxiliary and local alarm. Limited water systems, fire extinguishers, and water mist suppression systems are also covered.

18404 Introductory Skills for the Foreman (20 Hours)

Introduces the trainee to foremanship and covers responsibilities, leadership, and safety. Also explains project documentation and reports related to materials tracking and labor tracking.